

# DRAFT AGENDA OF THE 3TH ESSAC MEETING AIX EN PROVENCE 25-26 NOVEMBER 2004



LOCATION: CEREGE CNRS UMR 6635 , Room 207-main building, Aix-en-Provence

DATE/TIME: Thursday, November 25th, 12.00 to 17.30 Friday, November 26th, 9.00 to 17.00

## ESSAC Meeting #3

 Start
 : 12:00, 25 November 2004

 End:
 : 17:00, 26 November 2004

 Location
 : CEREGE main building, Room 207

### Draft Agenda

### 25<sup>th</sup> November Time: 12.00 -17.30

### 12.00 -13.00 Lunch

- 1. Welcome/introduction and objectives of the meeting (Jeroen Kenter)
- 2. Discussion and approval of the agenda
- 3. Approval of the Bremen ESSAC #2 meeting (Encl.1)
- 4. ESSAC Vice-Chair (temporarily) replacement
- 5. Report on National Office meeting, Albany 24/10/2004

(Valentina Zampetti, 15 min)

6. Report on SPC meeting, Corvallis 25-27/10/2004

(Jeroen Kenter, 20 min/ Encl. 2A & B)

7. Report on ACEX expedition #302

(Dan Evans, 15min)

8. Report on Outreach & Education

(Eve Arnold, 10 min)

10. New ESSAC website and ECORD/ESSAC newsletter

(Patricia Maruejol & Valentina Zampetti)

### <u>15.15– 15.30 Coffee break</u>

**11.** ESSAC in ECORD-net WP-1 (towards a scientific information

database)

(Minutes from ECORD-net WP-1 meeting, Paris/ Encl.3)

12. ESSAC in ECORD-net WP-2

(Minutes from ECORD-net WP-2 meeting, Stockholm/ Encl.4)

13. Nomination of ESSAC scientists for outreach team

(Catherine Mevel/ Encl. 5)

14. Distribution of information in the ECORD scientific community



26<sup>th</sup> of November Time: 9.00 - 17.00

- **15.** Shipboard staffing balance (Encl.6)
- 16. Nomination scientific party for Tahiti expedition #519 (Encl.7)

## 10.30-10.45 Coffee break

**17.** Workshops for drilling proposals in/for Europe #1 (selection topics/identification key scientific team/ organization) (Encl.8)

## 12.00 -13.00 Lunch

- **18.** SPC ECORD co-chiefs nominees for potential FY05 additional expedition schedule (Encl. 9)
- **19.** IODP Science Advisory System

(Judith McKenzie, separate encl. & discussion)

20. Nominations of SAS-COI

(Benoit Ildefonse)

21. SSEPs meetings-Reports

(Gilbert Camoin)

- 22. Nominations for SAS panels (Encl. 10)
- 23. IODP Management Forum and Retreat 2005 Europe?
- 24. EuroCODE pre-cruise site survey proposal

## 15.15-15.30 Coffee break

- **25.** Post-cruise activities
- **26.** Undergraduate student trainee programs
- 27. Upcoming Meetings (Encl. 11)
- 28. Date and Place of the Next Meeting



### DRAFT MINUTES OF THE 2ND ESSAC MEETING IN BREMEN, 16-17 MARCH 2004

**General remarks:** The agenda was too heavy to manage during the one day meeting. As a result, only a limited number of items were discussed among which the staffing of the North Atlantic as well as the nominations for the SAS panel structure. Other items were just discussed briefly and most were deferred to the next ESSAC Meeting (Aix en Provence, September 23<sup>th</sup> -26<sup>th</sup> 2004). These minutes not only cover the discussions during the meeting in Bremen but were also updated with more recent developments. Finally, since staffing for FY04 and FY05 will continue through the next months we will soon brief you on the staffing deadlines for several drilling projects. We will have to deal with these electronically as we did with those for ACEX.

Furthermore, the latest non-riser expedition schedule is enclosed (ESSAC2Min Encl08A) and shows an APL has been scheduled that provides a berth for ONE ECORD scientist. ECORD may send one scientist to participate in this operation and the JOI/Alliance needs the nomination by the Friday, April 23! Please, make sure to submit nominations to the ESSAC Office before or on Thursday April 22.

Finally, OPCOM decided (and SPC recommended) that North Atlantic and Core Complex cruises be considered as single science parties, respectively. This implies that ESSAC will submit nominations for both Core Complex 1&2 in one batch. I am waiting for news on the (final) deadline for North Atlantic 2 nominations.

Location: DFG Research Center for Ocean Margins, Universität Bremen, Bremen, room 3020 (geology building; see { HYPERLINK "http://www.uni-bremen.de/uniplan" } or { HYPERLINK "http://www.rcom-bremen.de/English/IODPICDP\_2004.html" }

**Date, Time** Tuesday, March 16th, 09:00 to 18:00 and Wednesday, March 17<sup>th</sup>, 18.00 to 18.45 (\*present delegates)

### Present:

Hans Brumsack\*, delegate of Germany

Kathryn Gillis\*, alternate of Canada

Angelo Camerlenghi, delegate of Italy

Gilbert Camoin\*, delegate of France

Benoit Ildefonse\*, alternate of France

Menchu Comas\*, delegate of Spain

Kari Strand, delegate of Finland

Fernando J.A.S. Barriga, alternate of Portugal

Helmut Weissert\*, alternate of Switzerland

Eve Arnold, delegate of Sweden

Rolf Pederson, delegate of Norway

Bryndis Brandsdottir\*, alternate of Iceland

Jeroen Kenter\*, ESSAC chair and delegate of The Netherlands

Chris MacLeod\*, ESSAC co-chair and delegate of Unite Kingdom

Valentina Zampetti\*, ESSAC science coordinator

### Invited observers:

Herman-Rudolf Kudraß (Germany)

Catherine Mevel (EMA-France)

Patricia Maruejol (EMA-France)

Dan Evans (ESO-UK)

Andy Kingdon (UK)

### Item 1 Opening remarks by Jeroen Kenter and Chris MacLeod

Kenter and MacLeod welcome the delegates to both Bremen and the second ESSAC meeting. The meeting starts with a round-the-table introduction of those present and the new science coordinator Valentina Zampetti. Kenter communicates that the ESSAC office will be fully active by May 1<sup>st</sup> 2004.

### Item 2 Adoption of the Draft Agenda

### 2a Draft agenda 1<sup>st</sup> ESSAC Meeting (ESSAC2Min Encl01).

The draft agenda is approved.

Item 3	Minutes from previous ESSAC Meetings

### 3a ESSAC Meeting, 14-15 November 2003, Amsterdam

No comments are returned. However, Kenter suggests handling the discussion of the minutes from the previous ESSAC Meetings via e-mail.

Item 4	Minutes from previous ECORD Council meetings	

### 4a ECORD Council meeting, 15 December, Paris

Mevel reports that ECORD is officially established, Spain officially joined and Greece is willing to join. However, Belgium, Ireland and Canada are still in doubt. Gillis replies that Canada hopes to have the final decision in two weeks. [note IODP membership was recently funded for a one year period only].

### 4b Draft memorandum of understanding between ECORD member countries – update

Mevel reports that the MOU (Memorandum of Understanding) is finalized and that this evening the official ceremony will be held, marking the formal incorporation of ECORD into IODP. However, Mevel specifies that Spain is not yet included in the ECORD partners listed in the MOU, because it was not able to join in time, the partner list will be updated soon.

#### Item 5 ESSAC Science Party Staffing

### 5a IODP non-riser drilling science summaries and updated schedule

Kenter shows the table summarizing the IODOP operations (see old enclosure 5). He suggests to label the operations using a specific code and to record it on the ECORD/ESSAC websites. Mevel highlights that in Paris, it was decided that a specific code for each platform will be used.

### 5B Invitations for Juan de Fuca (#545) and ACEX (#533)

Kenter explains that the staffing is now complete for ACEX and that the scientists for Juan de Fuca have been selected and the invitations will be mailed. He acknowledges that Nielsen's application was not considered because it was not received in time by the JOI-Alliance, the non-riser implementation organization (IO). Brumsack communicates that 3 German scientists will participate in Juan de Fuca. He points out the low number of applications and suggests that the delegates

encourage scientist participation. Arnold indicates that the ESCO system applications also used to be limited. Gillis wonders what pressure will be exercised by Japan and the U.S. in the ranking of the nominations. Evans replies that the U.S. will be allocated 14 berths and Japan 9. Kenter stresses that Juan de Fuca has too few participants. Barriga suggests filling the empty positions with scientists from the smaller countries that have been not selected because of quota balancing. Gillis points out that ECORD has a surplus of 2 scientists in ACEX; therefore it is expected to forfeit 2 berths in the subsequent operations. MacLeod and Barriga propose that nationality, and therefore quota balancing, is not to be taken into account in the case of substitutes. Kenter agrees. stressing that in case of substitutive scientists, this will not influence the country quota. Brumsack requires a clear rule and statement. Kenter responds that the staffing strategy has to be flexible. but that the decision has to go via the ESSAC community. Ildefonse raises the issue of on-shore scientists; he highlights that on-shore scientists apply almost exclusively for samples. Therefore, Kenter proposes to make the sample request form available on the ECORD-ESSAC websites. He adds that the availability of samples for the science community will not create conflicting situations because the scientists directly involved in the operations can benefit from the 1 year moratorium period. Comas and Ildefonse conclude by suggesting a clear regulation for sample requests recorded on the ESSAC-ECORD websites.

	Name	First	Country (work)	Nationality	Date of appl	Field of Expertise	Remark s
1	Bartetzko*	Anne	Germany	Germany	08/01/2004	Logging scientist; petrophysics; downhole measurements	
2	Coggon*	Rosalind	United Kingdom	United Kingdom	12/01/2004	Petrologist; metamorphic petrologist	
3	Dumont*	Marion	Sweden	France	18/02/2004	Organic Geochemist	
4	Engelen*	Bert	Germany	Germany	08/01/2004	Microbiologist	
5	Heuer*	Verena	Germany	Germany	08/01/2004	Inorganic/organic geochemist; hydrologist	
6	Steinsbu*	Bjoern Olav	Norway	Norway	03/02/2004	Microbiologist	

ECORD Science Party Invitations IODP Expedition Juan de Fuca

1	Brinkhuis	Henk	Netherlands	Netherlands 03/10/2003		Paleontologist (Dinoflagellates)	
2	Eynaud	Frédérique	France	France	22/01/2004	Paleontologist (Dinoflagellate)/(Forami nifer - Planktonic)	
3	Gattacceca	Jerome	France	France	19/01/2004	Geophysicist; paleomagnetist; stratigraphic correlator; structural geologist	
4	Jakobsson	Martin	Sweden	Sweden	19/01/2004	Geophysicist; Physical Properties Specialist; Geospatial Database and Geoscientific Data Integration Expert	
5	Kaminski	Michael	United Kingdom	USA	15/01/2004	Paleontologist (Foraminifer - Benthic)/(Foraminifer - Planktonic)	
6	Кос	Nalan	Norway	Turkey	19/01/2004	Paleontologist (Diatoms)	
7	Matthiessen	Jens Jurgen	Germany	Germany	08/01/2004	Paleontologist (Dinoflagellate); sedimentologist	
8	Pälike	Heiko	United Kingdom	Germany	25/11/2003	Hydrologist; Oceanographer; Physical Properties Specialist; Sedimentologist; Stratigrapic Correlator	
9	Rio	Domenico	Italy	Italy	18/01/2004	Paleontologist (Nannofossil); Sedimentologist	
10	Stein	Ruediger	Germany	Germany	08/01/2004	Sedimentologist; organic geochemist	
11	Jenkins	Hugh	United Kingdom	United Kingdom	16/01/2004	Sedimentologist; paleoceanographer	(1)

Notes: 1) Shore-based when basement reached only when basement reached only; 2) In bold shipboard and shore based Science Party members

Kenter shows the tables for the ACEX and Juan de Fuca nominations and explains, the temporarily consequences for the ECORD staffing balance.

### 5C ECORD staffing balance IODP Phase I (Raymond Schorno, Encl.)

Kenter summarizes the staffing balance up to and including the Juan de Fuca invitations and provides the delegates with an Excel spreadsheet that allows the user to "compare" the staffing with the funding ratios (ESSAC2Min Encl02).

### 5D IODP staffing balance IODP Phase I

No data provided. Will be provided at a later stage by IODP MI.

### 5E ECORD Applications for North Atlantic 1&2 (#572) and Core Complex 1&2 (#512)

ECORD Applications IODP Expeditions North Atlantic 1 & 2 - version 4.7 March 11 2004)

	Name	First	country work	Nationality	Applic.date	Field of expertise	Oper.
1	Bartoli	Gretta Linda	Germany	France	08/01/2004	Biologist, Paleontologist (Foraminifer - Planktonic), Sedimentologist, Stratigrapic Correlator	NA 1
2	Clarke	Leon John	United Kingdom	United Kingdom	28/02/2004	Inorganic Geochemist, Physical Properties Specialist, Sedimentologist, Stratigraphic Correlator	NA 1&2
3	Cleroux	Caroline	France	France	20/02/2004	Sedimentologist	NA 1
4	De Abreu	Lucia	United Kingdom	Portugal	09/03/2004	Paleontologist (Foraminifer - Planktonic), Sedimentologist, Physical Properties Specialist	NA 1
5	de Vernal	Anne	Canada	Canada	03/12/2003	Paleontologist (Dinoflagellate), Palynologist	NA 1
6	Dinares- Turell	Jaume	Italy	Spain	13/01/2004	Logging Scientist, Paleomagnetist, Downhole Measurements	NA 1
7	Esmerode	Estela	Denmark	Spain	03/03/2004	Geophysicist, Oceanographer, Sedimentologist	NA 1
8	Ferretti	Patrizia	United Kingdom	Italy	03/10/2004	Physical Properties Specialist, Sedimentologist	NA 1&2
9	Frenz	Michael	Germany	Germany	16/01/2004	Sedimentologist	NA 1
10	Gruetzner	Jens	Germany	Germany	28/01/2004	Physical Properties Specialist; Stratigrapic Correlator	NA 2
11	Guyodo	Yohan Jean Bernard	France	France	23/02/2004	Paleomagnetist	NA 2
12	Hefter	Jens Norbert	Germany	Germany	26/01/2004	Organic geochemist	NA 2
13	Hoogakker	Babette	United Kingdom	Netherlands	10/03/2004	Paleontologist (Foraminifer - Planktonic), Sedimentologist	NA 1&2
14	Keller	Christina	Switzerlan d	Switzerland	07/11/2003		NA 1&2
15	Kuhlmann	Holger	Germany	Germany	16/02/2004	Sedimentologist, Physical Properties Specialist	NA 1
16	Lanci	Luca	Italy	Italy	05/02/2004	Paleomagnetist	NA 1
17	Leigh	Sasha	United Kingdom	United Kingdom	10/03/2004	Sedimentologist	NA 1
18	Maiorano	Patrizia	Italy	Italy	30/01/2004	Paleontologist (Nannofossil)	NA 1
19	Mazaud	Alain	France	France	05/12/2003	Paleomagnetist, Physical Properties Specialist	NA 1
20	Nielsen	Simon	Denmark	Danish????	05/03/2004	Logging Scientist, Paleontologist (Diatom), Paleontologist (Megafossil), Sedimentologist, Stratigrapic Correlator	NA 1&2
21	Riisager	Peter	Sweden	Denmark	12/03/2004	Paleomagnetist	NA 1
22	Romero	Oscar Enrice	Germany	Argentina	05/02/2004	Oceanograph, Paleontologist (diatm & Silicofl) biologist	NA 1
23	Schiebel	Ralf	Switzerlan d	Switzerland	30/10/2003	Paleontologist (Foraminifer - Benthic), Paleontologist (Foraminifer - Planktonic)	NA 1
24	Sierro	Francisc o Javier	Spain	Spain	16/01/2004	Paleontologist (Foraminifer - Planktonic)	NA 1&2
25	St-Onge	Guillaum e	Canada	Canada&Fran ce	23/12/2003	Paleomagnetist, Physical Properties Specialist, Sedimentologist	NA 1
26	Voelker	Antje	Portugal	Germany	29/12/2003	Paleontologist (Foraminifer - Planktonic), Sedimentologist	NA 1
27	Wastegård	Stefan	Sweden	Sweden	10/03/2004	Stratigraphic Correlator (tephrochronology)	NA 2
28	Wienberg	Claudia	Germany	Germany	05/02/2004	Physiccal properties specialist and Sedimentologist	NA 1

ECORD Applications IODP Expeditions CoreComplex 1 & 2 - version 5.0 April 1 2004)

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	Name	First	country work	Nationality	Applic.date	Field of expertise	Oper.
1	Andreani	Muriel	France	France	21/01/2004	Metamorphic Petrologist, Structural Geologist	CC 1&2
2	Ball	Philip	United Kingdom	United Kingdom	04/03/2004	Geophysicist, Structural Geologist (both key areas), Petroleum Geologist, Physical Properties Specialist, Downhole Measurements	CC 1&2; also Proposal 543, Installation of a CORK in Hole 642E
3	Brunelli	Daniele	France	Italy	26/12/2003	gneous Petrologist, Inorganic Geochemist	CC1or2
4	Bullock	Andrew	United Kingdom	United Kingdom	09/03/2004	Geophysicist, Physical Properties Specialist	CC 1&2
5	Delacour	Adélie	Switzerlan d	France	12/11/2003	norganic Geochemist, (igneous & metamorphic) Petrologist, Structural Geologist	CC 1&2
6	Escartin	Javier	France	Spain	09/12/2003	not listed	CC 2
7	Gardien	Véroniq ue	France	France	10/03/2004	Petrologist, Igneous Petrologist, Metamorphic Petrologist	CC 1&2
8	Godard	Marguer ite	France	Australia	12/02/2004	Igneous Petrologist, Inorganic Geochemist	CC 1&2
9	Hellebrand	Erik	Germany	Netherlands	01/02/2004	Igneous Petrologist	CC 1
10	Ildefonse	Benoit	France	France	09/01/2004	Logging Scientist, Physical Properties Specialist, Structural Geologist	CC 1&2
11	Jovanovic	Zoran	Austria	Serbia and Montenegro	29/03/2004	Petrologist, Igneous Petrologist	CC 1&2
12	McCaig	Andrew	United Kingdom	United Kingdom	12/03/2004	Metamorphic Petrologist, Structural Geologist	CC 1&2
13	Morris	Antony	United Kingdom	United Kingdom	04/03/2004	Paleomagnetist	CC 1
14	Searle	Roger	United Kingdom	United Kingdom	15/03/2004	Geophysicist, Physical Properties Specialist	CC 1 alternatively 2
15	Seyler	Moniqu e	France	France	09/01/2004	(Igneous&Metamorphic) Petrologist,	CC 1&2
16	Suhr	Guenter Robert	Germany	Germany	29/03/2004	Petrologist, Structural Geologist	CC 1 alternatively 2
17	von der Handt	Anette	Germany	Germany		(Igneous) Petrologist	CC 1 alternatively 2
18	Ball	Philip	United Kingdom	United Kingdom	04/03/2004	Geophysicist, Structural Geologist (both key areas), Petroleum Geologist, Physical Properties Specialist, Downhole Measurements	CC 1&2; also Proposal 543, Installation of a CORK in Hole 642E
19	Brunelli	Daniele	France	Italy	26/12/2003	Igneous Petrologist, Inorganic Geochemist	CC1or2
20	Bullock	Andrew	United Kingdom	United Kingdom	09/03/2004	Geophysicist, Physical Properties Specialist	CC 1&2

### 5F ECORD Nominations for North Atlantic 1&2 (#572) and Core Complex 1&2 (#512)

MacLeod lists the British applications for North Atlantic 1 & 2. Many participants did not specify which of the two North Atlantic operations they want to participate. According to MacLeod this is due to the imprecise proposal descriptions. He expects that this might generate problems for the ranking of both ESSAC nomination and the expertise of the applying scientists. He believes that more consistent and accurate descriptions of the operations need to be provided and recorded on the ESSAC-ECORD websites. Arnold proposes to identify the nominations on scientific skills. MacLeod points out that not all the scientists will be available at the time of a specific operation; therefore it is necessary to pay attention to "time-availability". Kenter shows the table of the applicants for North Atlantic 1 & 2 suggesting the examination of each candidate. Because of the time schedules for the operations. Kenter proposes to finalize the list for North Atlantic 1 and to leave the applications open for North Atlantic 2 and Core Complex 1 & 2 untill April 16<sup>th</sup> 2004. Consensus is returned, however Brumsack stresses the necessity to provide a list of the most suitable candidates based on scientific expertise. Kenter reminds the community that the balancing of quota needs to be respected as much as possible. Camoin wonders whether it is more efficient to list all the received applications or just the nominations selected by the countries. MacLeod responds that a transparent strategy is to show all the applications but, at the same time, to indicate the preferences. Gillis believes that it will be more effective to work directly with the selected nominations for each country. MacLeod promotes to involve also young and less known scientists in the operations. Ildefonse and Mevel recommend not nominating many scientists with the same field of expertise. MacLeod proposes to proceed with the nomination ranking by creating two distinct lists for North Atlantic 1 and North Atlantic 2. Holm is concerned about Master and PhD students' applications; Gillis is in favor for them applying. Ildefonse stresses that student applications need to be regulated. Participation of students needs to be encouraged, but ESSAC must require a document which states that a particular student is connected to a scientific structure (e.g. laboratory) which can guarantee scientific research and results. Kenter suggests involving students particularly in "low-pressure" expeditions. Arnold proposes to develop a policy for education on the ships for master students and teachers. Arnold and Kenter propose to discuss this topic under items 13B and 13C (education) and remind that science is the first priority. Kenter starts the ranking for North Atlantic nominations. Brumsack proposes to give more nominations than required, relying on the co-chiefs for the final decision. Meyel stresses that if there are too many candidates, smaller countries might encounter problems for nominations. Camoin believes that this would complicate the ranking and proposes ESSAC to filter the applications. Ildefonse suggests to list all of the received applications and to mark those selected using a "star-scale" system. Kenter states that participation for applicants belonging to the smaller countries will be guaranteed. Camerlenghi communicates that Italy will not contribute to the North Atlantic operations. Ildefonse proposes that the smaller countries with no scientists participating in the ACEX need to have preference in the ranking for the North Atlantic operations.

Consensus is returned regarding the decision to list all the applications and "star" the ESSAC selected nominations. The starred applicants from the smaller countries in one of the North Atlantic operations will be considered as a low priority for the other North Atlantic operation.

	Name	First	country work	Nationality	Applic.date	Field of expertise	Oper.
1	Bartoli	Gretta Linda	Germany	France	08/01/2004	Biologist, Paleontologist (Foraminifer - Planktonic), Sedimentologist, Stratigrapic Correlator	NA 1
2	Clarke	Leon John	United Kingdom	United Kingdom	28/02/2004	Inorganic Geochemist, Physical Properties Specialist, Sedimentologist, Stratigraphic Correlator	NA 1&2
3	De Abreu	Lucia	United Kingdom	Portugal	09/03/2004	Paleontologist (Foraminifer - Planktonic), Sedimentologist, Physical Properties Specialist	NA 1
4	de Vernal	Anne	Canada	Canada	03/12/2003	Paleontologist (Dinoflagellate), Palynologist	NA 1
5	Dinares- Turell	Jaume	Italy	Spain	13/01/2004	Logging Scientist, Paleomagnetist, Downhole Measurements	NA 1
6	Esmerode	Estela	Denmark	Spain	03/03/2004	Geophysicist, Oceanographer, Sedimentologist	NA 1
7	Ferretti	Patrizia	United Kingdom	Italy	03/10/2004	Physical Properties Specialist, Sedimentologist	NA 1&2
8	Frenz	Michael	Germany	Germany	16/01/2004	Sedimentologist	NA 1
9	Hoogakker	Babette	United Kingdom	Netherlands	10/03/2004	Paleontologist (Foraminifer - Planktonic), Sedimentologist	NA 1&2
10	Kuhlmann	Holger	Germany	Germany	16/02/2004	Sedimentologist, Physical Properties Specialist	NA 1
11	Leigh	Sasha	United Kingdom	United Kingdom	10/03/2004	Sedimentologist	NA1
12	Mazaud	Alain	France	France	05/12/2003	Paleomagnetist, Physical Properties Specialist	NA 1
13	Riisager	Peter	Sweden	Denmark	12/03/2004	Paleomagnetist	NA 1
14	Romero	Oscar Enrice	Germany	Argentina	05/02/2004	Oceanograph, Paleontologist (diatm & Silicofl) biologist	NA 1
15	Schiebel	Ralf	Switzerlan d	Switzerland	30/10/2003	Paleontologist (Foraminifer - Benthic), Paleontologist (Foraminifer - Planktonic)	NA 1
16	Sierro	Francisc o Javier	Spain	Spain	16/01/2004	Paleontologist (Foraminifer - Planktonic)	NA 1&2

#### **ECORD Nominations IODP Expedition North Atlantic**

Notes: ESSAC proposes 9 invitations to the IO: 5 from the UK/Germany/France and 4 from the remaining countries; \* (here in bold) identify ESSAC preferences and require discussion when not invited.

Gillis stresses that Canada has a prior interest, as a national topic, for North Atlantic 1 and states that Canada needs to participate to the operation in order to be supported by its funding agency. Weissert replies that it is difficult to give priorities to countries that have a minor quota, and that the Canadian situation is even more complicated because it did not yet contribute. Kenter outlines the nominations for North Atlantic 1 with regards to the countries and specialties. He points out the surplus of paleontologists, but Kudraß comments that many paleontologists are required as oceanography is the main topic of this operation.

# 5G ESSAC/USSAC/J-DESC discussion proposal for centralized Call for participation – update

No comments during meeting.

### 5H ECORD Invitations/Nominations for FY04-05 co-chiefs (Encl.)

ECORD-IODP Co-chief Invitations (as of 10 March 2004)

Name Country Lomonosov Ridge (#533) – ACEX Jan Backman Sweden

Core Complex I – Expedition Non-riser 3 Chris MacLeod UK

North Atlantic II – Expedition Non-riser 5 Rudiger Stein Germany

### 5I ESSAC Staffing: face-to-face vs. electronic and future staffing schedule (Empty)

No comments.

### Item 6 ECORD delegates and alternates on the SAS panels

### 6A Mandates of SAS Panels (Encl.)

Kenter states not changes have, yet, been made (see enclosure).

### 6B ECORD members for ILP, SSP, and SPC (Encl.)

Kenter suggests that ITEMs 6B and –C need to be resolved this meeting because of the upcoming SPC meeting in Washington where ECORD nominations are expected. Gillis communicates that a change in the voting committee has been proposed. For each SAS panel, Japan and the U.S. have the rights of 7 voting members, meanwhile ECORD may have 3 voting members and 1 non-voting member. Kenter proposes that this rule is not taken into account for the upcoming meeting and also to nominate the members on based on their expertise rather than nationality. In addition, it is agreed to nominate additional scientists as "permanent" alternates. Especially for SPC one of those should attend the meetings to make sure that 4 member ECORD contingent is present at each meeting. Nominations for SPC, SSP and ILP were submitted last fall and are summarized below.

Name	Nationality	Period
Harry Doust	Netherlands	Oct03-Oct06
Philippe de Clarens	France	Feb04-Feb07
Heiko Möller	Germany	Feb04-Feb07
John Hogg	Canada	Oct03-Oct06
Alvaro Pinto**	Portugal	
Peter Jeans/Richard Davies**	UK	

ECORD SAS Panel members - ILP

\*\*permanent alternates

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Name	Nationality	Period
Marc-André Gutscher	France	Oct03-Oct06
Carlota Escutia	Spain	Feb04-Feb07
Soenke Neben	Germany	Feb04-Feb07
Roger Searle	UK	Feb04-Feb07
Holger Lykke-Andersen**	Denmark	
Luca Gasperini/Michele Rebesco**	Italy	

\*\*permanent alternates

Name	Nationality	Period
Jeroen Kenter	NL	Oct03-Oct05
Chris MacLeod	UK	Oct03-Oct07
Benoit Ildefonse	France	Mar04-Mar07
Hans Brumsack	Germany	Mar04-Mar07
Kathy Gillis**	Canada	
Eve Arnold**	Sweden	
Jose Monteiro**	Portugal	

FCORD	SAS	Panel	members	_	SPC
LCOND	070	i anci	III CI III CI S	_	JFU

\*\*permanent alternates

### 6C1 Nominations for PPSP, SSEPs, SciMP, OPCOM, TAP (Encl. old 6C)

The fall 2003 nominations that were communicated by e-mail will be reviewed again under ITEM 6C2.

### 6C2 ECORD nominations (proposal) for PPSP, SSEPs, SciMP, OPCOM, TAP (Add Encl.)

Kenter proposes to nominate 4 names; MacLeod suggests 3 members as representatives of the bigger countries and 1 for the smaller ones. Kenter states that priority for these technical panels has to be given on the basis expertise and not nationality. Camoin proposes to involve and rotate young scientists in the panels, and to inform the alternates with the ongoing discussions in the panels. He finds it necessary that the alternates receive the official minutes (confidential proposal excluded) of the meetings. Kenter proposes not to charge the alternate position held by Gillis to Canada's quota. Gillis suggests providing clear rules for charging in alternates to country quotas. MacLeod believes that it is necessary to have a rose of rotating alternates in case of conflicting situations for proposal ranking. Kenter concludes by asserting that one (or more) permanent alternate will be nominated for each panel, the alternate positions will not be charged to the quota of the country and a substitute will be nominated if necessary. Gillis asks if Canada may be treated as an official member, even if it did not officially sign [Note: Canada recently got funded for one year period].

# Kenter and MacLeod close the meeting and propose to convene again tomorrow, March 17<sup>th</sup>, at 18.00. Consensus is returned.

### 17<sup>th</sup> March:

Kenter shows the table for ECORD 2003-2007. He proposes Arnold and Gillis as permanent alternates. He outlines the rotation of alternates will only involve the smaller countries. Brumsack proposes to start the rotation in March 2004 in order to avoid rotation in all the technical panels, simultaneously. Kenter agrees. He also guarantees that the ESSAC office will check whether the official delegates can attend the panel meetings and in the case of non-attendance it will provide a replacing alternate. Consensus is returned for the SAS panel nominations.

The nominations were submitted during the SPC meeting in Washington (25 March) for the reason that it was decided to query the membership ratio and number for the service panels. It turned out that SPC supports flexibility and leave sit up to the co-chairs to invite additional scientists from US, Japan and/or ECORD. The notes below were included with the nominations:

General remarks: 1) Canadian members provisionally until funding decision (end March at the latest); 2) \* Chair and Vice-Chair; 3) \*\* Permanent alternates and/or additional members if selected by (co-)chairs - we assume that invitations by the (co-)chair(s) will follow the flexibility towards the 7/7/3+1 membership ratio as worded in the consensus motion by SPC in Washington on March 25 2004. CVs missing for Peter Jeans and Richard Davies (ILP)

Name	Nationality	Period
Jean Mascle	France	Oct03-Oct06
Dieter Strack	Germany	Oct03-Oct06
Bramley Murton	UK	Jun04-Jun07
Martin Hovland	Norway	Oct03-Oct06
Neil DeSilva**	Canada	

ECORD SAS Panel members nominations - PPSP

\*\*permanent alternates

ECORD SAS Pane	el members nomir	nations – ESSEP
----------------	------------------	-----------------

Name	Nationality	Period	Replaced by	Nationality	Period
Gilbert Camoin*	France	Oct03-Oct06			
Jürgen Thurow	UK	Oct03-Oct06			
Rüdiger Stein	Germany	Mar04-Mar07			
Helmut Weissert	Switzerland	May04-Jan05	Jan Backman	Sweden	Jan05
Elisabetta Erba**	Italy				
Francesca Martinez- Ruiz**	Spain				

\*\*permanent alternates

ECORD SAS Panel members nominations – **ISSEP** 

Name	Nationality	Period	Replaced by	Nationality	Period
Damon Teagle	UK	Oct03-Oct06			
Pierre Henry	France	Oct03-Oct06	Javier Escartin	France	Jan06
Jörg Erzinger	Germany	Mar04-Mar07			
Rolf-Birger Pedersen	Norway	Oct03-Jun05	Jens Konnerup- Madsen	Denmark	Jun05
Gretchen Früh-Green**	Switzerland				
Luis Pinheiro	Portugal				
Dominique Weis	Canada				

\*\*permanent alternates

Draft minutes of the 2nd ESSAC Meeting in Bremen, 16-17 March 2004; Page { PAGE } of { NUMPAGES }

Name	Nationality	Period	Replaced by			Remarks
Mike Lovell	UK	Oct03-Oct06				
Javier Escartin	France	Oct03-Sep04	Christophe Basile	France	Sep04	
Heinrich Villinger	Germany	Jun04-Jun07				
Annakaisa Korja	Finland	Jun04-Jun07				
Silvia Spezzaferri**	Switzerland					
Douglas Schmitt**	Canada					

\*\*permanent alternates

Name	Nationality	Period	Remarks
Peter Schultheiss	UK	Apr04-Apr07	
Axel Sperber*	Germany	Oct03-Oct06	
Herman Zuidberg	Netherlands	Apr04-Apr07	
Erik Nygaard	Norway	Apr04-Apr07	
Tim Francis**	UK		

	ECORD S	SAS Panel	members	nominations -	TAP
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\*\*permanent alternates

Kenter highlights the item concerning the hosting of meetings. MacLeod reports that in the ECORD meeting of 16<sup>th</sup> of March, ECORD offered financial support for the host country. Comas proposes Barcelona as a possible location for the coming (June 14<sup>th</sup>-17<sup>th</sup>) meeting.

Due to time limitations, only a limited number of the following items were discussed during the meeting.

### 6D ECORD SAS Panel membership Balance

Enclosed is a rather complex spreadsheet that allows the comparison of the number of SAS panel members with the national funding level (ESSAC2Min Encl03). The spreadsheet is up to date with the existing members for SPC, ILP and SSP as well as the nominations for the remaining panels (ITEM 6B). However, only when ESSAC receives the final invitations the spreadsheet can be finalized.

### 6E ECORD position and rules on SAS panel alternates (Empty)

See comments under ITEM 6C2.

### Item 7 News on Science Planning Committee (SPC) Activities

Most of the items following were deferred to the next ESSAC Meeting in September. Only comments where needed.

### 7A Minutes SPC Sapporo 03 and 2<sup>nd</sup> Agenda Book SPC Washington March 04

The Executive Summary for the SPC Washington meeting is available (ESSAC2Min Encl04).

### 7B General urgent SPC issues (Encl.)

### 7C1 SAS conflict-of-interest policy pertaining to SPC and SSEPs (SPPOC Consensus 03-12-13)

Recent Conflict of Interest issue that affected most of the SSEPs panel members was withdrawn. As a consequence a special SPPOC Working Group was assigned the task to come up with a new COI strategy. This WG (See item 7C2) will meet in Japan the 23<sup>rd</sup> of April and Benoit Ildefonse is representing ECORD.

- 7C2 Conflict of Interest SPPOC Ad hoc Committee-2 (SPPOC Consensus 03-12-07)
- 7D SAS panel membership: IODP member ratios and co-chair issue
- 7E Co-chief Nominations: IODP member ratios
- 7F IODP Council Presentation Coffin&Austin

### Item 8 News on IODP Science Steering & Evaluation Panel Activities (Camoin)

### 8A Draft reports SSEPs meeting. 22-25 May, 2003; Niigata Japan

### 8B Draft agenda and members SSEPs meeting Granada, May 17-20, 200

Comas confirms that University of Grenada is hosting the meeting.

### 8C ECORD scientists on active IODP proposals (Gilbert Camoin, Encl.)

Gilbert Camoin presented this ITEM and the presentation is attached as PDF file (ESSAC2Min Encl05). Ildefonse adds that he will make available in English the French presentation about the ESSAC facilities.

# 8D New IODP proposal submission guidelines ({ HYPERLINK "http://www.isas-office.jp/" })

## Item 9 News on IODP Service Panels Activities

- 9A IODP SAS Panel meeting schedule
- 9B Draft report ILP meeting, 22-23 February 2004; Houston, US
- 9C Draft report PPSP meeting, 15-17 December 2003, Nagasaki, Japan
- 9D Draft report SciMP meeting, 15-18 December 2003, Nagasaki, Japan
- 9E Draft report SSP meeting, 11-13 February 2004, Tokyo, Japan
- 9F Draft report TAP meeting, 21-22 February 2003; Amsterdam, Netherlands

### Item 10 JEODI activities

### 10A Draft Final JEODI TN Work Package Report – WP2 update

### Item 11 ESO activities

### 11A Report on ACEX project (Dan Evans)

Evans presentation is available (ESSAC2Min Encl06).

### 11B Update on future MSP projects (Dan Evans)

### 11C ACEX Outreach activities – In Confidence (Andy Kingdon)

The Outreach Activities for ACEX have been extensively discussed outside the ESSAC Meeting and will be regarded confidential until further notice.

### Item 12 News on IODP MI and SPOCC

- 12A Science Policy Planning and Oversight Committee (SPPOC; the former EXCOM) Mandate
- 12B Executive Summary SPPOC, 5-6 December 2003, San Francisco, USA
- 12C Draft report IOs Meeting #2, 27-28 February 2004, Edinburgh, Scotland
- 12D ESSAC Nominations for SPPOC
- 12E IODP IMI Manik Talwani presentation Austin February 2004

### Item 13 ESSAC Working Groups

### 13A ESSAC draft report on IODP Publications

The ESSAC WG on Publications submitted their draft report on February 15 which was subsequently forwarded to Ken Miller (SPC Publications WG) and discussed at SPC Washington.

### 13B ESSAC draft report on Education & Outreach (Eve Arnold)

Arnold proposes that more attention is paid towards education, a policy that is better developed in the U.S. She suggests organizing courses on IODP science for PhD students in different European countries, favoring student exchanges, thesis funding and promoting PhD thesis awards. She asks that the ESSAC community involves teachers, offering them the possibility to participate with operations. Gillis believes that it is better to involve students rather than teachers. But MacLeod, Kudraß and Ildefonse indicate that press involvement would be more outreaching. Mevel stressed that a teacher is part of an education program and cannot be compared with a journalist. Arnold stresses that last minute substitutive positions might be a good opportunity to involve Universities and Colleges in IODP. Camerlenghi points out the economical costs for extra people onboard, and suggests instead inviting teachers and students to the meetings. General consensus is returned to the proposal of using substitutive positions for the purposes of education and outreaching.

# 13C Draft report on Education & Outreach workshop, February 20-24, 2004, Austin, Texas – In Confidence

See under ITEM 13B.

13D ESSAC WG on Down Hole Tools (DHTs) - Workshop on "Autonomous Downhole Tools in the Integrated Ocean Drilling Program: Goals, Techniques, Needs, and Strategies for Development" May 24, 25, 2004 Washington, D.C.

### Item 14 ESSAC Science workshops and conferences

14A IODP Conference in Greece in spring 2004 – update

The Greek meeting has been deferred since Dimitris Sakellariou has not received any information yet from the Greek General Secretariat for Research&Technology regarding the ECORD/IODP workshop proposal that he submitted last fall.

### 14B IODP-ICDP Euroform Conference, 17-19 March 2004, Bremen, Germany – update

### Item 15 ESSAC Business various

- 15A Minutes of the U.S. Science Advisory Committee Meeting (USSAC), 21-23 January 2004
- 15B Minutes of J-DESC http://www.aesto.or.jp/j-desc/index.html
- 15C ESSAC and ECORD website

It has been discussed to have only one portal to ECORD which would be the EMA site recently updated by Patricia Maruejol (EMA-France). Patricia and Valentina Zampetti will work together and host the ESSAC website under the official ECORD site.

### 15D ESSAC and ECORD Newsletters (Encl.)

Recently a 2<sup>nd</sup> ECORD Newsletter has been generated and distributed during the meeting. An electronic version is enclosed (ESSAC2Min Encl07). The ESSAC newsletter is suggested to be electronic and part of the ESSAC website. Unclear is who will maintain this part of the website and the discussion was deferred to the next ESSAC meeting.

- 15E Funding for Distinguished Lecturer Series (like USSAC) and ESSAC panel meetings
- 15F ESSAC Office science community database of addresses
- 15G CLORA ESF RFP for workshops in 2005 (deadline May 1<sup>st</sup> 2004)

This item raises an important responsibility of ESSAC: the generation of proposals funding important ECORD science (support) projects. During the ECORD Council meeting a suggestion was made that ESSAC should submit a EUROCORES for European Collaboration for Ocean Survey Science (EuroCOSS). However, the deadline was 6 April and there was no realistic way that ESSAC could embark on this. Another initiative was proposed by Mevel (ITEM 15G) and ESSAC will take the initiative to nominate a Working Group to investigate these and other opportunities in the very near future.

### 15H Chikyu MOHO capability – ECORD community scientific justification – WG?

### Item 16 Upcoming Meetings

List of relevant upcoming meetings:

2004

AAPG European Region Conference with GSA, 10-13 October 10-13, Prague

32nd International Geological Congress (32IGC), 20-28 August, Florence, Italy

SPC #4 16-18 August 2004 Corvallis, OR, USA

SSP #2 2-4 August 2004 Palisades, NY, USA

SPPOC #2 7-9 July 2004 Europe

TAP #1 28-30 June 2004 Nagasaki, Japan

SciMP #2 23-25 June 2004 Boston, MA, USA

PPSP #2 21-22 June 2004 College Station, TX, USA

SPC #3 14-17 June 2004, Yokohama, Japan

SSEPs #2 17-20 May 2004, Granada, Spain

EGU, Nice, 25-30 April, Nice, France

AAPG/SEPM, 18-21 April, Dallas, TX USA

### Item 17 Miscellaneous (Empty)

No comments.

### Item 18 Date and Place of the Next Meeting (Empty)

Next meeting hosted by Benoit Ildefonse, Aix en Provence, September 23 th -26th 2004

Than the meeting is adjourned and the remaining agenda items will have to be dealt with electronically or deferred to the next ESSAC Meeting. We will keep you informed on this.

# 4<sup>TH</sup> IODP SCIENCE PLANNING COMMITTEE MEETING



# THE LASELLS STEWART CENTER, OREGON STATE UNIVERSITY, CORVALLIS OREGON, USA

25-27 October 2004

## **IODP Science Planning Committee**

4<sup>th</sup> Meeting, 25-27 October 2004

## Agriculture Leaders Conference Room in The LaSells Stewart Center, Oregon State University, Corvallis Oregon, USA

## DRAFT MEETING AGENDA

Monday	25 October 2004	08	:30-17:30
1. Introduction			
1.1. Welcome and meetir	ng logistics	(Duncan)	10 min
1.2. Approve last SPC me	eeting minutes	(Coffin)	10 min
1.3. Approve SPC meetin	ng agenda	(Coffin)	10 min
1.4. Items approved since	e June 2004 meeting	(Coffin)	10 min
1.5. SPC procedures and	protocol	(Coffin)	
1.5.1. Agenda book			10 min
1.5.2. Terms of refere	ence		30 min
1.5.2.1. Ranking/s	scheduling voting procedur	es	
1.5.2.2. Meeting 1	ninutes		
1.5.3. Conflict-of-inte	erest policy and statements		30 min
1.5.4. Robert's Rules	of Order		5 min
2. Agency reports			
2.1. MEXT		(Tanaka)	10 min
2.2. NSF		(Allan)	10 min
2.3. EMA		(Kenter)	10 min
2.4. MOST		(Liu)	10 min
3. IODP-MI report		(Talwani/Larsen/Janecek)	30 min
4. Implementing Organizatio	n (IO) reports		
4.1. CDEX		(Kawamura)	10 min
4.2. JOI Alliance		(Rack)	10 min
4.3. ESO		(Evans)	10 min
5. SPPOC report		(Tamaki)	10 min
6. IODP SAS			
6.1. Panel reports			
6.1.1. SSEPs		(Byrne)	20 min
6.1.2. SSP		(Droxler)	20 min

4th SPC meeting agenda book

6.1.3. EPSP (NA)	20 min
6.1.4. SciMP (Okada/Lovell)	20 min
6.1.5. TAP (Moran/Masuda)	20 min
6.1.6. ILP (Doust/Hogg)	20 min
6.2. Review	
6.2.1. Membership disciplinary, experience, and gender balance (Coffin)	30 min
6.2.2. SPC working group final report (Duncan/Ildefonse)	40 min

26 October 2004	08	:30-17:30
in Microbiology	(Kato/Brumsack)	30 min
eduling scenarios	(Janecek)	90 min
	(Coffin)	60 min
	(Coffin)	30 min
	(Coffin)	30 min
	(Coffin)	30 min
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27 October 2004	08	:30-17:30
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entists	(Coffin)	30 min
	(Coffin)	30 min
to IODP Intial Science Plan	(Coffin)	30 min
	(Duncan)	15 min
	(Kelemen)	20 min
	(Lauterjung)	20 min
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[Possible continuation of agenda item 6.2.2]

## 16. Other business

17. Future meetings	(Coffin)	20 min
17.1. Liaisons to other panels and programs		
17.2. 5 <sup>th</sup> and 6 <sup>th</sup> SPC meetings,		
17.2.1. 14-17 March 2005; Lisbon, Portugal	(Ildefonse)	
17.2.2. xx-xx September or October 2005? Japan?	(TBN)	
18. Review of motions and consensus items	(Coffin)	30 min

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Future meetings

- 17.1. Liaisons to other panels and programs 17.2. 5<sup>th</sup> and 6<sup>th</sup> SPC meetings,
  - - 17.2.1. 14-17 March 2005; Lisbon, Portugal
    - ---- 339 Lisbon map
    - 17.2.2. xx-xx September or October 2005? Japan?

## **AGENDUM 18**

Review of motions and consensus items

### Introduction

- 1.1. Welcome and meeting logistics
  - Welcome letter from chair
  - Meeting logistics
  - Meeting map
  - Attendees list
  - IODP memoranda
  - Acronym list
  - SPC member list
- 1.2. Approve last SPC meeting minutes 3<sup>rd</sup> SPC meeting draft minutes
- 1.3. Approve SPC meeting agenda 4<sup>th</sup> SPC meeting agenda
- 1.4. Items approved since June 2004 meeting List of items
- 1.5. SPC procedures and protocol SPC terms of reference
  - 1.5.1. Agenda book
  - 1.5.2. Terms of reference
    - 1.5.2.1. Ranking/scheduling voting procedures
    - 1.5.2.2. Meeting minutes
  - 1.5.3. Conflict-of-interest policy and statements Conflict of interest policy
  - 1.5.4. Robert's Rules of Order Summary of Robert's Rules of Order



8 October 2004

Dear SPC members, liaisons, and guests,

Welcome to Corvallis, and the last of three Science Planning Committee (SPC) meetings scheduled for 2004. Our meeting's primary purpose is to consider and ultimately vote upon drilling schedule scenarios, developed by the IODP Management International (IODP-MI) Operations Committee (OPCOM) at its 29 September – 1 October 2004 meeting in Washington, D.C., for late fiscal years (FY) 2005 and 2006. The SPC scheduling exercise will contribute to the Science Planning and Policy Oversight Committee's (SPPOC) request for a late FY2005 and FY2006 program plan for consideration at its 11-12 December 2004 meeting in San Francisco. Current guidance from the lead agencies indicates one mission-specific platform expedition each in FY2005 and FY2006, an additional four months of JOIDES *Resolution* operations in FY2005, four months of JOIDES *Resolution* operations in FY2006 (until February 2006), and the possibility of JOIDES *Resolution* operations for the balance of FY2006, although flexibility will likely be required after our Corvallis meeting as the IODP budget for FY2006 becomes clearer.

Our next proposal ranking exercise, for contributing to development of the FY2OO7 program plan, is planned for our March 2005 meeting in Lisbon, at which time we will establish the annual program planning lead time of approximately 18 months deemed desirable by the implementing organizations (IOs) and the IODP-MI. Thereafter, SPC annual proposal ranking exercises are anticipated for each boreal spring, and consideration of annual drilling schedule scenarios is envisaged for each boreal autumn. Current lead agency advice is that FY2007 will inaugurate full riser and non-riser operations, with a minimum of one mission-specific platform expedition.

Other significant business on our agenda includes a discussion of IODP long-term planning, including platform proposal pressure and development of a successor to the initial science plan; a final report from the SPC working group reviewing the entire IODP Science Advisory Structure (SAS); a discussion of SAS committee and panel membership balance, including scientific disciplines, experience, and gender; consideration of IODP proposal handling procedures; a discussion of ODP policies, including third party tools, program planning groups (PPGs), and detailed planning groups (DPGs); and consideration of the SPC agenda book, SPC voting procedures, and SPC meeting minutes.

Once again, I commend and thank you for your dedication and service to the IODP, and look forward to seeing you in Oregon.

Safe travels,

V

Mike Coffin



## LODGING ACCOMMODATIONS:

Hilton Garden Inn 2500 SW Western Blvd. Corvallis, Oregon 97333 541.752.5000 541.752.5001 – fax www.corvallis.gardeninn.com

## MAKING LODGING RESERVATIONS (Important Deadline Information): A

block of rooms has been set aside for this meeting at a special rate of \$69.00USD. Please email the reservation department at the hotel <u>cvoch-salesadm@hilton.com</u> **ON OR BEFORE September 24.** Rooms have been blocked beginning October 24 for four nights. If you are arriving early (Oct 23) to attend the field trip the hotel will honor the \$69.00 rate if they have space available. The hotel will also honor the rate three days post if you want to stay over after the close of the meeting.

## **GROUND TRANSPORTATION:**

From Portland International Airport (PDX) to the hotel: There is a very convenient shuttle van service from Portland Airport to Corvallis (\$70 round trip), whose schedule is at

(http://www.portlandairportshuttle.com/index.html#schedule). Ask the driver to drop you off at the Hilton Garden; otherwise the regular stop is the bookstore on campus – about a 10 minute walk from the hotel. For those of you renting cars, all major agencies have locations at the airport near baggage claim. The drive is about 1.5 hours, following I-205 to I-5 to Hwy 34 into Corvallis. The hotel and meeting location are together on the south side of campus (2500 SW Western Blvd).

## From the hotel to the meeting location:

This is a one-block walk (a map is attached to this email message). The meeting location (LaSells Stewart Conference Center) is on the south side of campus, within easy walking distance of facilities, such as the library, bookstore and College of Oceanic and Atmospheric Sciences. For evening meals, the town of Corvallis is about 10 blocks to the east, and offers a range of dining opportunities.

## MEETING DATES & TIMES:

October 25-27, 2004 08:30 until 17:30 each day

## **MEETING LOCATION:**

Agriculture Leaders Conference Room in The LaSells Stewart Center http://oregonstate.edu/lasells/gettinghere.html

LaSells Stewart Center is located at the corner of 26<sup>th</sup> St. and Western Blvd, across the road from the hotel. A detailed map is attached.

## **MEETING HOST:**

Bob Duncan, Associate Dean and Professor College of Oceanic and Atmospheric Sciences, Oregon State University rduncan@coas.oregonstate.edu phone: 541 737 5189 fax: 541 737 2064

## SOCIAL FUNCTION (S):

BBQ at local winery October 26 Location and details will come next month.

Field Trip:

October 24

Leaving 08:00 and returning by 18:00. We will visit either the High Cascades volcanoes or the Coast Range accreted terrane, depending on weather. Cost will be ~\$25 and will cover transport and lunch. The final fee will depend on the number of participants. **Please email your desire to participate to Bob Duncan ASAP** rduncan@coas.oregonstate.edu.



## **IODP Science Planning Committee**

## 4<sup>th</sup> Meeting, 25-27 October 2004

## **The LaSells Stewart Center Oregon State University** Corvallis, Oregon, U.S.A.

### **Science Planning Committee - SPC**

Keir Becker (vice-chair)	Rosenstiel School of Marine & Atmospheric Science, University of Miami, USA
Barbara Bekins	U.S. Geological Survey, USA
Hans Brumsack	Institut für Chemie und Biologie des Meeres (ICBM), Universität Oldenburg, Germany
David Christie <sup>a</sup>	College of Oceanic & Atmospheric Sciences, Oregon State University, USA
Mike Coffin (chair)	Ocean Research Institute, University of Tokyo, Japan
Bob Duncan	College of Oceanic & Atmospheric Sciences, Oregon State University, USA
Gabriel Filippelli	Department of Geology, Indiana University-Purdue University Indianapolis, USA
Patricia Fryer	Hawaii Institute of Geophysics, University of Hawaii, USA
Benoît Ildefonse	Laboratoire de Tectonophysique, ISTEEM, Université Montpellier II, France
Kenji Kato	Institute of Geosciences, Shizuoka University, Japan
Hodaka Kawahata	Geological Survey of Japan
Jeroen Kenter	Faculty of Earth and Life Sciences, Vrije Universiteit, The Netherlands
Hiroshi Kitazato	Institute for Research on Earth Evolution (IFREE), JAMSTEC, Japan
Zhifei Liu <sup>b</sup>	Department of Marine Geology and Geophysics, Tongji University, China
Chris MacLeod*	Department of Earth Sciences, Cardiff University, United Kingdom
Ken Miller	Department of Geological Sciences, Rutgers University, USA
James Mori	Disaster Prevention Research Institute, Kyoto University, Japan
Ritsuo Nomura	Faculty of Education, Shimane University, Japan
Terry Quinn	College of Marine Science, University of South Florida, USA
Wonn Soh*	Institute for Research on Earth Evolution (IFREE), JAMSTEC, Japan
Hidekazu Tokuyama <sup>c</sup>	Ocean Research Institute, University of Tokyo, Japan
Zuyi Zhou*	Department of Marine Geology and Geophysics, Tongji University, China

<sup>a</sup>Alternate if necessary for Keir Becker or Ken Miller during scheduling exercise.

<sup>b</sup>Alternate for Zuyi Zhou (non-voting member).

<sup>c</sup>Alternate for Wonn Soh.

\*Unable to attend.

### Liaisons

Jamie Allan	National Science Foundation (NSF), USA
Tim Byrne (ISSEP)	Department of Geology and Geophysics, University of Connecticut, USA
Harry Doust (ILP)	Faculty of Earth and Life Sciences, Vrije Universiteit, The Netherlands
André Droxler	Department of Earth Science, Rice University, USA
Nobuhisa Eguchi	IODP Management International, Inc., Sapporo Office, Japan
Dan Evans	ECORD Science Operator (ESO), British Geological Survey, United Kingdom
Tom Janecek	IODP Management International, Inc., Washington, D.C. Office, USA
Yoshihisa Kawamura	Center for Deep Earth Exploration (CDEX), JAMSTEC, Japan
Hans Christian Larsen	IODP Management International, Inc., Sapporo Office, Japan
Mike Lovell (SciMP)	Department of Geology, University of Leicester, United Kingdom
Yoshihiro Masuda (TAP)	Department of Geosystem Engineering, University of Tokyo, Japan
Kate Moran (TAP)	Graduate School of Oceanography, University of Rhode Island, USA
Makoto Okada (SciMP)	Department of Environmental Sciences, Ibaraki University, Japan
Frank Rack	JOI Alliance, Joint Oceanographic Institutions, Inc. (JOI), USA
Jeff Schuffert	IODP Management International, Inc., Sapporo Office, Japan
Yasuhisa Tanaka	Ministry of Education, Culture, Sports, Science, and Technology (MEXT), Japan

### Guests

Jack Baldauf	JOI Alliance, Texas A&M University, USA
Rodey Batiza	National Science Foundation (NSF), USA
Peter Kelemen (Leg 209)	Woods Hole Oceanographic Institution, U.S.A.
Kenji Kimura	Ministry of Education, Culture, Sports, Science, and Technology (MEXT), Japan
Shin'ichi Kuramoto	Center for Deep Earth Exploration (CDEX), JAMSTEC, Japan
Jörn Lauterjung (ICDP)	GeoForschungZentrum, Potsdam, Germany
Kiyoshi Otsuka	Advanced Earth Science and Technology Organization (AESTO), Japan
Yoichiro Otsuka	IODP Management International, Inc., Washington, D.C. Office, USA
Shingo Satomura	Ministry of Education, Culture, Sports, Science, and Technology (MEXT), Japan
Manik Talwani	IODP Management International, Inc., Washington, D.C. Office, USA
Kensaku Tamaki	Department of Geosystem Engineering, University of Tokyo, Japan

### MEMORANDUM BETWEEN

### THE MINISTRY OF EDUCATION, CULTURE, SPORTS, SCIENCE AND TECHNOLOGY (MEXT) of JAPAN

and

### THE NATIONAL SCIENCE FOUNDATION (NSF) of THE UNITED STATES OF AMERICA

### concerning COOPERATION on

### THE INTEGRATED OCEAN DRILLING PROGRAM (IODP)

The Ministry of Education, Culture, Sports, Science and Technology (MEXT) and the National Science Foundation (NSF), hereinafter referred to as the Agencies:

<u>Recognizing</u> the importance of research on earth system processes ranging from changes in the earth's climate to the rifting and drifting of continents;

<u>Emphasizing</u> that scientific ocean drilling is the primary technique for sampling sediment and crustal rock from 70% of the earth's surface covered by ocean and the only technique for sampling deep into the ocean floor;

<u>Desiring</u> to build on the outstanding scientific results of the Deep Sea Drilling Project (DSDP) initiated in 1968 and of the Ocean Drilling Program (ODP) which succeeded it in 1985;

<u>Acknowledging</u> the contribution that international cooperation and sharing of financial and intellectual resources have made to the ODP, e.g., through participation of over 1500 scientists from forty countries since 1985;

<u>Desiring also</u> to develop substantive cooperation with other earth and ocean sciences programs and initiatives;

<u>Responding to recommendations</u> of the earth science communities in Japan and the United States expressed at the Conference on Cooperative Ocean Riser Drilling (CONCORD: 1997) and Conference on Multiple Platform Exploration of the Ocean (COMPLEX: 1999);

<u>Taking into account</u> the encouragement that the United Nations Convention on the Law of the Sea has provided to international cooperation in marine scientific research;

<u>Stressing</u> the importance of assuring stable support for scientific ocean drilling by government/national agencies with both interest and capability in geosciences research;

<u>Recognizing further</u> the close cooperation that has developed in scientific ocean drilling between scientists, research institutions and government/national agencies of both Japan and the United States;

Hereby express the Agencies' intention to cooperate as follows:

### **I.** Purposes and Commitment

The Agencies intend to cooperate in the planning, management and operations of a new program of cooperative, international, scientific ocean drilling, to be known as the Integrated Ocean Drilling Program (IODP), and contribute equally to support of the core scientific facilities and capabilities, as the IODP Lead Agencies (Annex I). The IODP Lead Agencies are to have equal membership rights and responsibilities. The objective of the IODP is to conduct marine scientific research whose purpose is neither exploration nor exploitation of natural resources. The scientific and technical results of the Program are to be openly available.

The IODP scientific program is identified in the Initial Science Plan for the IODP, *Earth, Oceans and Life*, and includes emphasis on the following research themes:

<u>The Deep Biosphere and the Sub-seafloor Ocean:</u> Drilling will concentrate on defining the architecture and dynamics of the vast subseafloor plumbing system, where flowing water alters rock, modifies the long-term chemistry of the oceans, lubricates seismically active faults, concentrates economic mineral deposits, and controls the distribution of the deep biosphere.

<u>The Processes and Effects of Environmental Change:</u> Using a global array of sites, ocean sediment cores will be used to construct a detailed record of the causes, rates and severity of changes in the earth's climate system and their relation to major pulses in biologic evolution.

<u>Solid Earth Cycles and Geodynamics</u>: Drilling will concentrate on sampling and monitoring regions of the seafloor that currently have the highest rates of energy and mass transfer, and comparing these results to older geologic settings. A crucial initial program of deep drilling will be to study the seismogenic zone responsible for large destructive earthquakes along active plate boundaries.

The IODP drilling operations are to focus on a core capability provided by two scientific ocean drilling platforms. One is a riser-capable vessel to be provided by the MEXT and owned and operated by the Japan Marine Science & Technology Center (JAMSTEC), and the other is a non-riser vessel to be provided by the NSF. The NSF is to determine the implementing organization for the non-riser platform. Both vessels are to be available for scheduling and operations on a global basis. Access to mission specific platforms (in addition to the two primary vessels) is required to meet specific objectives of the science plan. Financial support for the operation of these additional platforms is to be the responsibility of the IODP member(s) which make the decision to offer this additional capability to the Program. IODP operations are planned to be implemented as described in Annex II. The IODP is to seek substantive cooperation with other earth and ocean science programs and initiatives.

All activities undertaken under this Memorandum are to be implemented on the basis of equality, reciprocity and mutual benefit of the Agencies.

### **II. Scientific Planning**

### Science Advisory Structure

A Science Advisory Structure (SAS) for the IODP is to be established and composed of scientists and engineers designated by and representing the Agencies and other IODP members, as appropriate. The SAS is to provide long-term guidance on the scientific planning of the IODP, and recommend annual science and engineering plans based on proposals from the international science community.

An Executive Authority is to be established for the SAS and is to be composed of representatives from scientific institutions or organizations in the IODP member countries that have a major interest in the study of the sea floor. The Executive Authority is to formulate scientific and policy recommendations with respect to IODP planning and operations.

The Chairmanship of the SAS is expected to initially rotate between institutions in Japan and the United States, with a term of 2 years.

The SAS may establish panels and/or committees as needed to address its responsibilities, including panels on platforms and on science operations. The Agencies are to be entitled to equal representation on the SAS and all of its panels and committees.

### Science Advisory Office

The SAS Chair is to be staffed by a Scientific Advisory Office that is to be located with the Chair. Support for SAS planning is to be provided by the Central Management Office described in section III.

### **III. Operational Framework**

### Program Management

A Central Management Office (CMO) is to be established with the concurrence of MEXT and NSF to develop and manage operations and implementation plans for the IODP program. The CMO receives advice and recommendations on scientific priorities and plans from the IODP SAS; requests plans which are responsive to this advice from implementing organizations, and, negotiates with implementing organizations and the SAS to produce an integrated annual IODP Program Plan. The annual IODP Program Plan is to be consistent with budget guidance provided to the CMO by the Agencies. The annual IODP Program Plan includes a presentation of total program costs, which include both science operations costs and platform operations costs (as defined in Annex I). The CMO manages science operations funds that are provided under contract with the NSF. The NSF is expected to administer the contract with due consideration to the interests of MEXT, as described in Annex III.

The CMO is expected to submit the annual IODP Program Plan to the Executive Authority of the SAS for review and approval prior to its consideration by the Agencies. The NSF has responsibility for contractual approval of the annual IODP Program Plan, in consultation with the MEXT. After approval by the Agencies, significant changes in the annual IODP Program Plan are to be considered and approved by the CMO and the Agencies prior to implementation, in consultation with the Executive Authority of the SAS and the Implementing Organizations, as appropriate.

### Program Operations

Implementing Organizations are to have primary responsibility for management of the Program's facilities, operational capabilities and services as identified in the annual IODP Program Plan. The JAMSTEC is to be the Implementing Organization for operation of the riser platform. The NSF is to determine the Implementing Organization for the non-riser platform. The Agencies share the responsibility of ensuring that the IODP cores, samples and data are properly maintained and made available to the international scientific community.

The Agencies may, through mutual understanding, approve establishment of other implementing organizations by the CMO for specific purposes, as appropriate.
# **IV. IODP Program Costs and Funding**

The Agencies determine annual total program costs and contribute equally to support of these costs over the duration of IODP, after subtracting other IODP member's contributions. Total program costs are composed of platform operation costs and science operation costs (Annex I). Platform operation costs of the two primary vessels are to be the responsibility of the MEXT and the NSF, respectively. Mission specific platform operation costs are to be the responsibility of the IODP member(s) providing the platform. The IODP members, including the Agencies, are to contribute to support of the science operations costs of the IODP.

Support of scientific research and development costs for shore-based analysis and research on the IODP samples and data and for non-routine downhole measurements are the responsibility of the individual Agencies or the IODP members and are not to be supported by program costs.

IODP members are expected to make appropriate annual payments to the NSF in U.S. dollars on a payment schedule acceptable to the Agencies for participation in the IODP. The contribution, as identified in Annex IV, entitles an IODP member to one participation unit, with one participation unit equivalent to one member per panel and two scientific participants per cruise leg, or equivalent. An IODP member may acquire additional participation units through a corresponding increase in financial contribution, and/or long-term provision of mission specific platforms.

The Agencies contribute equally to total program costs and acquire participation units necessary to fully support the Program.

Funds from the IODP members are to be commingled in an IODP operating fund administered by the NSF. The NSF provides commingled funds to the CMO for science operations costs based on the approved annual IODP Program Plan. The CMO, in turn, provides funds to the implementing organizations for science operation costs through contracts.

The Agencies intend to provide funds directly to the implementing organizations for platform operations costs. Legal and financial responsibility including mobilization and platform operation costs for the riser capable vessel resides with the MEXT and for the non-riser vessel with the NSF. Legal and financial responsibility, including mobilization and platform operation costs of additional platforms, is to reside with the IODP member(s) which provide this capability to the IODP. Provision of such capability is not to be considered a contribution in lieu of an annual IODP membership contribution.

#### V. Participation in Scientific Activities and Operations

Membership in the IODP is available to government and/or national agencies (or their representatives) which have an interest and capability in geoscience research. The Agencies intend to cooperate to ensure broad international participation in the IODP.

Membership maybe secured through signing an appropriate memorandum with the Agencies. Membership is to be based on participation, in principle, through 2013.

Each IODP member, has the right to: (1) have its scientists participate in each drilling cruise; (2) be represented on all planning and advisory panels; (3) have access to all data, samples, scientific and technical results, all engineering plans, data or other information produced under contracts supported as program costs; (4) have access to all data from geophysical and other site surveys performed in support of the program which are used for drilling planning; (5) submit proposals to the SAS for drilling or engineering developments in support of IODP science; and, (6) be represented on the IODP Council as identified in section VI below.

Each IODP member has the responsibility to: (1) actively participate in all aspects of the IODP; (2) assure that all data, samples and scientific and technical results are shared among the IODP members and are

made widely available; and, (3) participate in providing data and proposals for planning of drilling programs.

#### VI. IODP Council

The Agencies intend to establish an IODP Council, which provides governmental oversight for all IODP activities; assures effective planning, management and operation of the IODP; and encourages and promotes broad international participation in the IODP.

The members of the Council are to be representatives of each country or entity contributing to support of the IODP, regardless of whether it is participating as an individual member or as a member of a consortium. The participating countries are to designate members of the Council and their alternates. The Chair of the Council is to be from the Agencies and is to alternate between the Agencies on a yearly basis.

The Council is expected to meet at least once per year, but additional meetings may be called as needed. The agenda and site for all meetings is expected to be decided through mutual understanding. The responsibility for meeting arrangements is to reside with the Chair. The Chair is expected to be responsible for developing the meeting agenda, in consultation with other Agency. Meetings of the Council may be open to participation by others through mutual confirmation of the Agencies.

The Council is expected to serve as a consultative body reviewing financial, managerial, and other matters involving the overall support of the IODP. A formal agenda is to be prepared for each meeting and written records are to be kept.

Liaison representatives from the CMO, Implementing Organizations, and science advisory structure are expected to be available to the Council.

#### VII. Data, Information, Intellectual Property Rights

The Agencies take necessary measures to assure that all data, samples, and scientific and technical results of the Program's scientific and engineering activities are made widely available to the international scientific community and to the public through customary channels and in accordance with the normal procedures of the Agencies, or as identified by the SAS. Such measures should be taken in accordance with the respective laws and regulations of Japan and the United States.

Information transmitted by one Agency to the other under this Memorandum is expected to be accurate to the best knowledge and belief of the transmitting Agency which may not be liable for the content or issue of such information.

Protection of intellectual property and rights thereto resulting from scientific research activities conducted under the auspices of this Memorandum will be addressed as set forth in Annex IV to the Agreement between the Government of Japan and the Government of the United States of America on Cooperation in Research and Development in Science and Technology, signed at Toronto on June 20, 1988, and extended by the Protocols done at Washington on June 16, 1993, on June 16, 1998, on March 19, 1999 and on May 19, 1999, and extended and amended by the Protocol done at Washington on July 16, 1999.

#### VIII. Administrative Provisions

This Memorandum is not legally binding and should have no effect as a legal precedent.

Cooperation between the Agencies under this Memorandum is subject to the availability of appropriated funds and in accordance with the applicable laws and regulations in each country, including those intended to prevent, reduce and control pollution of the marine environment.

The Agencies intend to cooperate under this Memorandum from 1 October 2003, within the limits of available funds, until 30 September 2013. The Agencies through mutual concurrence have chosen to support and participate in important planning activities for the IODP prior to 1 October 2003.

This Memorandum may be amended by mutual confirmation of the Agencies.

Either Agency may at any time give written notice to the other Agency of its intention to terminate the cooperation under this Memorandum, in which case the cooperation may terminate one year after such notice has been given.

Termination or expiration of the cooperation under this Memorandum should not affect the carrying out of any project or program initiated under this Memorandum, but not yet completed at the time of termination or expiration, unless otherwise decided.

DONE in Tokyo, this 22nd day of April, 2003, in the English language.

良山敦于

Atsuko Toyama Minister THE MINISTRY OF EDUCATION, CULTURE, SPORTS, SCIENCE AND TECHNOLOGY (MEXT) of JAPAN

R. Colwell

Rita R. Colwell Director THE NATIONAL SCIENCE FOUNDATION of THE UNITED STATES OF AMERICA

# ANNEX I DEFINITIONS

**Lead Agencies** have equal membership rights and responsibilities, contribute core capabilities to the IODP program, determine total program costs, and contribute equally to total program costs. Lead Agencies provide budget guidance to the Central Management Office, and review and approve the annual IODP Program Plan prior to its implementation.

**Platform Operations Costs** are expected to support the basic operation of the vessel as a drillship, and include, for example: (1) costs of the drilling and ship's crew; (2) catering services; (3) fuel, vessel supplies and other related consumables; (4) berthage and port call costs; (5) disposal of wastes; (6) crew travel; (7) inspections and insurance; (8) drilling equipment, supplies, and related consumables; (9) engineering or geophysical surveys, and data acquisition and laboratory analyses required for the safety of platform and drilling operations; and, (10) administration and management costs of the platform operators.

**Science Operation Costs** are expected to provide for those activities onboard program platforms necessary to the proper conduct of the scientific research program and those shore-based activities required to properly maintain and distribute samples and data, support seagoing activities, and administer and manage the program. These costs include, for example: (1) technical services; (2) computer capability; (3) data storage and distribution; (4) description, archiving, and distribution of data and samples; (5) deployment of a standard suite of logging tools; (6) development of new drilling tools and techniques required by IODP research; (7) program publications; (8) costs of consumables (exclusive of those identified under platform operations costs); and, (9) costs required for administration and management, including the Central Management Office.

Modifications to the above categorization of Platform and Science Operation costs may be changed through consultation and concurrence of the Agencies.

#### ANNEX II IODP IMPLEMENTATION SCHEDULE

The IODP is expected to begin with an implementation period extending from 1 October 2003 until 30 September 2006. During this period, drilling is to be accomplished from the non-riser platform, and from mission specific platforms (if recommended by the SAS and provided by IODP members). Preparation for riser drilling (including detailed scientific planning, engineering planning, and engineering and safety surveys, etc.) should also be undertaken in this period. The IODP should be fully implemented beginning 1 October 2006 to include drilling programs on the riser vessel, the non-riser vessel, and from mission specific platforms (if recommended by the SAS and provided by the SAS and provided by the IODP members).

# ANNEX III MEXT AND NSF MANAGEMENT AND ADMINISTRATIVE PROCEDURES

The MEXT and the NSF are to each designate an individual to serve as the Principal Official for the activities identified in this Memorandum. The Principal Officials should have responsibility for the Lead Agency oversight of the IODP implementation, operations, management and funding issues.

The Principal Officials are to serve as the chairs of the IODP Council (alternating on a yearly basis), with responsibilities as identified in section VI of this Memorandum. The Principal Officials are to identify the budget guidance for the CMO which is to be used in preparation of the annual IODP Program Plan. The Principal Officials are expected to meet on an annual basis to review and approve the annual IODP Program Plan prepared by the CMO, and to identify the annual member financial contributions that are intended to support the annual IODP Program

Plan. The Principal Officials may meet/confer as required to evaluate and approve recommendations from the CMO on changes in key personnel on the CMO contract, and to approve significant changes in the CMO contract which affect the IODP operations. To ensure continuity and responsiveness of CMO planning, management and administrative procedures, annual support of \$1 million each is expected to be made to the CMO by the MEXT and by the NSF. MEXT's annual payment of \$1 million is to be made to the NSF, which in turn includes these funds on behalf of MEXT as part of the annual funding to the CMO for science operations costs.

The MEXT designates and provides support for an IODP liaison to the NSF located in the NSF IODP program office. The liaison is expected to work with the NSF program staff in day-to-day administration of the CMO contract. The liaison may have access to all information and documents related to the CMO contract and should have authority to act on behalf of MEXT in recommending contract actions and approvals that are not reserved for the Principal Officials, as noted above. Such actions may include: 1) required approvals for changes to the annual IODP Program Plan or budgets; 2) required approvals of management office activities; 3) required acceptance of management office reports; 4) required approvals of changes in salaries of the CMO staff; 5) other actions to be determined.

# ANNEX IV ANNUAL MEMBER CONTRIBUTIONS AND RIGHTS

Based on 2002 projections of total annual Program costs for a fully operational IODP program (approximately \$150 million), and considering the IODP Program activities and costs planned for the implementation period (1 October 2003 to 30 September 2006) identified in Annex II, the annual contribution required for one IODP Participation unit in U.S. dollars is estimated to be:

1 October 2003 - 30 September 2004 (U.S. Fiscal Year 2004) = \$1.5 million 1 October 2004 - 30 September 2005 (U.S. Fiscal Year 2005) = \$3.5 million 1 October 2005 - 30 September 2006 (U.S. Fiscal Year 2006) = \$3.5 million

The annual contribution required for one IODP Participation unit for the period 1 October 2006 to 30 September 2013 is estimated to be \$5.6 million (U.S. dollars), but is subject to increase or decrease based on operating experience and projected operating costs. Identification of the annual contribution level for this period is to be done by the Agencies.

One participation unit entitles an IODP member to a representative serving on each committee or panel of the Science Advisory Structure, and two scientific participants per "cruise leg", or equivalent, for each Platform operation identified as an IODP cost. More than two participants on a cruise leg may be acceptable as offset by reduced participation in other legs. An IODP member may acquire additional participation units through a corresponding increase in financial contribution, and/or long-term provision of mission specific platforms.

An IODP member with at least one participation unit may maintain the same rights in data as the Agencies for activities conducted using the IODP science operations funds.

An IODP member with at least one participation unit is to have the right to a royalty free license for all patents resulting from developments supported by the IODP science operations funds.

#### **MEMORANDUM**

#### among

# THE NATIONAL SCIENCE FOUNDATION (NSF) of THE UNITED STATES OF AMERICA,

# THE MINISTRY OF EDUCATION, CULTURE, SPORTS, SCIENCE AND TECHNOLOGY (MEXT) of JAPAN,

and

# CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE – INSTITUT NATIONAL DES SCIENCES DE L'UNIVERS (CNRS/INSU) of FRANCE as THE ECORD MANAGING AGENCY (EMA)

#### concerning PARTICIPATION of

# THE EUROPEAN CONSORTIUM FOR OCEAN RESEARCH DRILLING (ECORD)

in THE INTEGRATED OCEAN DRILLING PROGRAM (IODP) as a Contributing IODP Member

The Integrated Ocean Drilling Program (IODP) is a multinational program of scientific research in the oceans which uses drilling and logging to undertake research on earth system processes ranging from changes in the earth's climate to the rifting and drifting of continents. The IODP builds on the scientific results of the Deep-Sea Drilling Project (DSDP) initiated in 1968 and the Ocean Drilling Program (ODP), which succeeded the DSDP in 1985, and the encouragement that the United Nations Convention on the Law of the Sea has provided to international cooperation in marine scientific research. The IODP seeks to expand the international sharing of intellectual and financial resources, which have been critical to the success of scientific ocean drilling. The IODP scientific

program is identified in the Initial Science Plan for the IODP, *Earth, Oceans and Life*, and includes emphasis on the following research themes:

<u>The Deep Biosphere and the Sub-seafloor Ocean:</u> Drilling will concentrate on defining the architecture and dynamics of the vast sub seafloor plumbing system, where flowing water alters rock, modifies the long-term chemistry of the oceans, lubricates seismically active faults, concentrates economic mineral deposits, and controls the distribution of the deep biosphere.

<u>The Processes and Effects of Environmental Change:</u> Using a global array of sites, ocean sediment cores will be used to construct a detailed record of the causes, rates and severity of changes in the earth's climate system and their relation to major pulses in biologic evolution.

<u>Solid Earth Cycles and Geodynamics:</u> Drilling will concentrate on sampling and monitoring regions of the seafloor that currently have the highest rates of energy and mass transfer, and comparing these results to older geologic settings. A crucial initial program of deep drilling will be to study the seismogenic zone responsible for large destructive earthquakes along active plate boundaries.

The primary operations of the IODP are conducted by contractors (Implementing Organizations) responsible to the National Science Foundation of the United States of America (NSF) and the Ministry of Education, Culture, Sports, Science, and Technology of Japan (MEXT), hereafter referred to as the Agencies. The IODP drilling operations focus on a core capability provided by two scientific ocean drilling platforms. One is a riser-capable vessel provided by the MEXT and owned and operated by the Japan Marine Science and Technology Center (JAMSTEC), and the other is a non-riser vessel provided by the NSF and operated by the Joint Oceanographic Institutions, Inc. (JOI). Both vessels are available for scheduling and operations on a global basis, based on recommendations from the IODP Science Advisory Structure (SAS). Access to mission specific platforms (MSPs) (in addition to the two primary vessels) is required to meet specific objectives of the science plan for shallow water and Arctic drilling that cannot be effectively done through use of the riser-capable or non-riser vessels. Financial support for the operation of these additional platforms comes from IODP member(s) or associate IODP member(s), who make the decision to offer this additional capability to the Program. The British Geological Survey (BGS) (as the ECORD Science Operator) is the primary MSP Implementing Organization for the IODP as identified in Annex C. The IODP seeks cooperation with other earth and ocean science programs and initiatives. The scientific and technical results of the IODP are openly available.

The NSF, the MEXT, and the ECORD Managing Agency (EMA), hereafter referred to as the Participants, intend to cooperate in IODP activities during the period 1 October 2003 to 30 September 2013, as described in the following sections:

# <u>1</u> - STATUS OF THIS DOCUMENT

This Memorandum and its annexes are not legally binding, do not give rise to obligations or commitments under international law, and should have no effect as legal precedents.

# $\underline{2}$ - MEMBERSHIP IN THE IODP

The EMA/ECORD has elected to be a contributing IODP member and intends to cooperate and participate in the IODP in support of the IODP science program during the period of 1 October 2003 to 30 September 2013.

All cooperative activities described in this Memorandum, including funding arrangements and exchanges of technical information, equipment, and data, are conducted within the limits of available funds and in accordance with the national laws and regulations of each Participant, as well as with international agreements to which the Participants are party, particularly any intended to prevent, reduce, and control pollution of the marine environment, or to protect intellectual property rights.

# <u>3</u> - DURATION OF IMPLEMENTATION

The IODP implementation period extends from 1 October 2003 until 30 September 2006. During this period, drilling is to be accomplished from the nonriser platform, and from MSPs (if recommended by the SAS and if funding and/or other resources is provided by IODP members or associate IODP members). Preparation for riser drilling (including detailed scientific planning, engineering planning, and engineering and safety surveys, etc.) is also to be undertaken in this period. Full implementation of the IODP, including drilling programs on the riser-capable vessel, the non-riser vessel, and from MSPs (if recommended by the SAS and if funding and/or other resources is provided by IODP members or associate IODP members), is expected to occur beginning 1 October 2006.

#### <u>4</u> - SCIENTIFIC PLANNING

Scientific planning and direction of the IODP is a function of the SAS. The SAS is composed of scientists and engineers representing the Participants and other IODP members. It provides long-term guidance on the scientific planning of the IODP, and recommends annual science and engineering plans based on proposals from the international science community.

The SAS Executive Authority and committee for scientific planning are composed of representatives from scientific institutions or organizations in the IODP member countries/consortia that have a major interest in the study of the seafloor. The SAS Executive Authority formulates scientific and policy recommendations with respect to IODP planning and operations. The SAS committee for scientific planning undertakes detailed planning and may establish panels, working groups and committees as required.

The EMA/ECORD may elect to be represented on the SAS as identified in Annex B.

The Chairmanship of the SAS initially rotates between institutions in Japan and the United States, with a term of 2 years. The SAS may establish panels and/or committees as needed to address its responsibilities, including panels on platforms and on science operations.

# 5 - OPERATIONS PLANNING AND MANAGEMENT

The Central Management Office (CMO) develops and manages operations and implementation plans for the IODP program. The CMO receives advice and recommendations on scientific priorities and plans from the SAS, requests plans that are responsive to this advice from Implementing Organizations, and negotiates with Implementing Organizations and the SAS to produce an integrated annual IODP Program Plan. The annual IODP Program Plan contains a presentation of total program costs, which include both science operation costs and platform operations costs (see section <u>10</u>). The CMO manages science operations funds that are provided under contract with the NSF.

The SAS Executive Authority reviews and approves the annual IODP Program Plan and budget prior to its consideration by the Agencies. The NSF has responsibility for contractual approval of the annual IODP Program Plan, in consultation with the MEXT. After approval by the Agencies, significant changes in the annual IODP Program Plan are to be considered and approved by the CMO and the Agencies prior to implementation, in consultation with the SAS Executive Authority and the Implementing Organizations, as appropriate.

# <u>6</u> – IODP COUNCIL

The EMA/ECORD may elect to be represented on the IODP Council. The members of the Council are representatives of each country or entity contributing to the support of the IODP, regardless of whether it participates as an individual IODP member or as a member of a consortium. Each Participant designates its own representatives to the Council. There should ordinarily be one representative of each participating country, except that additional representation from Japan and the United States may be appropriate.

The Council serves as a consultative body reviewing financial, managerial, and other matters involving the overall support of the IODP. The Council provides a forum for exchange of views among the contributing countries. No formal voting procedures are to be established.

The MEXT and the NSF designate Principal Officials who have responsibility for Agency oversight of IODP implementation, operations, management, and funding issues. The Principal Officials serve as the chairs of the Council, alternating on an annual basis. A formal agenda is prepared for each meeting and written records of each meeting are kept.

The chair provides secretariat services to the Council. The Council normally meets once each year. The annual meeting includes a financial report and

discussion, an audit report, a review of scientific and technical achievements for the past year, presentation of draft program plans and budgets for the coming year, and other topics of mutual interest. Liaison representatives of prime contractors, Implementing Organizations and important scientific planning entities are available to the Council.

# <u>7</u> – PROJECT PROPOSALS AND DATA SHARING Scientists of the ECORD:

a) may make proposals to the SAS for scientific projects or technical objectives of interest to the scientific communities of the ECORD member countries;

b) may have access to all data from geophysical and other site surveys performed in support of the program which are used for drilling planning; and

c) may have access to engineering plans, data or other information developed under contracts supported as program costs.

Support for geophysical and geological surveys and research to prepare drilling proposals and identify drilling targets may be contributed by the ECORD as its scientific interests and available resources allow. Site survey requirements are identified by the SAS.

#### **8** - PARTICIPATION ON BOARD IODP DRILLING PLATFORMS

The Implementing Organizations provide science operations and services on IODP drilling platforms, and, with the advice of the SAS, select the scientific teams for each cruise or drilling program, based on nominations and applications from IODP members and associate IODP members. It is understood that the Agencies are to have equal participation of their country's scientists in all IODP drilling programs, and together are to have no less than two-thirds of the available scientific positions.

ECORD scientists may participate in IODP drilling cruises and programs. It is understood that opportunities for such participation are intended to reflect the level of support provided by the EMA and are identified in Annex B.

It is recognized that some cruises may be of special scientific interest to ECORD scientists and increased participation by scientists of the ECORD members on these cruises may be appropriate. It is recognized that such increased participation would be expected to be offset by reduced participation in other cruises.

Co-chief scientists for IODP drilling programs are nominated by the SAS. It is expected that at least two-thirds of the scientists invited to serve as co-chief

scientists are to be representatives of Japan and the United States. It is expected that scientists representing the ECORD would be invited to serve as co-chief scientists in proportion to the EMA's contribution. In nominating co-chief scientists, the SAS pays due consideration to those scientists responsible for proposing drilling proposals and plans.

#### 9 – ACCESS TO SAMPLES, DATA AND REPORTS

Scientists from the ECORD have access to IODP data and core samples. The procedures and policies for obtaining IODP samples and data are recommended by the SAS. The EMA indicates that it endeavors to ensure that the ECORD scientists and institutions provide the scientific data resulting from site surveys and laboratory analyses in time for preparation of IODP publications, and for inclusion in IODP data bases. The EMA is expected to provide the Agencies with copies of all publications from the ECORD scientists that are based on program material. The EMA is to receive an appropriate number of copies of all IODP publications and reports.

# **10** - FINANCIAL SUPPORT

The EMA intends to support the IODP with financial contributions as described in Annexes A and B. The financial contributions to the NSF of all IODP members and associate IODP members are commingled to support science operation costs of the IODP. Science operation costs are determined by the Agencies. Science operation costs provide for those activities onboard program platforms necessary to the proper conduct of the scientific research program and those shore-based activities required to properly maintain and distribute samples and data, support seagoing activities, and administer and manage the program. Such costs include, for example: (1) technical services, (2) computer capability, (3) data storage and distribution, (4) description, archiving, and distribution of data and samples, (5) deployment of a standard suite of logging tools, (6) development of new drilling tools and techniques required by IODP research, (7) program publications, (8) costs of consumables (exclusive of those identified under platform operations costs below), and, (9) costs required for administration and management, including the CMO.

Platform operations costs of the riser-capable and non-riser vessels are supported by the MEXT and the NSF respectively, and for MSPs by the IODP member or the associate IODP member electing to provide such capability. Member financial contributions are not used to support platform operations costs. Platform operations costs for these vessels and for MSPs support the basic operation of the vessel as a drillship, and include, for example: (1) costs of the drilling and ship's crew, (2) catering services, (3) fuel, vessel supplies and other related consumables, (4) berthage and port call costs, (5) disposal of wastes, (6) crew travel, (7) inspections and insurance, (8) drilling equipment, supplies, and related consumables, (9) engineering or geophysical surveys, and data acquisition and laboratory analyses required for the safety of platform and drilling operations, and, (10) administration and management costs of the platform operators. Legal and financial responsibility, including mobilization and platform operations costs, for the riser-capable vessel resides with the MEXT, and for the non-riser vessel with the NSF. Legal and financial responsibility, including mobilization and platform operations costs, for additional platforms is to reside with the organization(s) or country(ies) which provide such capability to the IODP. Provision of such capability is not considered a contribution in lieu of annual IODP membership contribution.

Support of scientific research and development costs for shore-based analysis and research on IODP samples and data and for non-routine downhole measurements are the responsibility of the participating countries, or IODP members or associate IODP members, and are not supported as program costs.

Activities carried out by the Participants contractors in direct support of the Participants individual scientific undertakings are not program costs and are not supported from commingled funds.

# 11 - SALARIES, TRAVEL AND EXPENSES

Salaries, travel and expenses for participants representing the ECORD are to be borne by the ECORD members. Costs of accommodations for ECORD scientists and members of technical parties aboard IODP drilling platforms are program costs and are the responsibility of the platform operator. The platform operators are to offer ECORD scientists assistance when going between the airport and the drillship.

#### **<u>12</u>** - CONSULTATION

Meetings of the Agency representatives and representatives of the EMA may be held at any mutually acceptable time upon the request of any Participant to discuss this Memorandum and other matters of mutual interest, including those related to the funding and management of MSPs.

# 13 – CONCLUDING PROVISIONS

The Participants intend to cooperate under this Memorandum from 1 October 2003 until 30 September 2013.

This Memorandum may be modified by written consensus of the Participants.

Cooperation under this Memorandum may be discontinued at any time by any Participant. The other Participants should receive written notice at least one year in advance.

SIGNED in the English language.

16th March 2004

Sylvie Joussaume Director Date

For CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE – INSTITUT NATIONAL DES SCIENCES DE L'UNIVERS (CNRS/INSU) OF FRANCE

as THE ECORD MANAGING AGENCY (EMA)



2004/2/26

Takeo Kawamura Minister Date

For THE MINISTRY OF EDUCATION, CULTURE, SPORTS, SCIENCE AND TECHNOLOGY (MEXT)

OF JAPAN

Jehnang (9, 2004

Rita R. Colwell Director

Date

For THE NATIONAL SCIENCE FOUNDATION (NSF) OF THE UNITED STATES OF AMERICA

# ANNEX A ANTICIPATED ANNUAL MEMBER CONTRIBUTIONS

A Participant's expected level of participation in the IODP is recognized to be proportional to the number of "participation units" represented by that Participant's contribution to the IODP.

Based on 2002 projections of total annual Program costs for a fully operational IODP program(approximately \$150 million U.S. dollars), and considering IODP program activities and costs planned for the implementation period (1 October 2003 to 30 September 2006) identified in the Memorandum, the annual contribution for one participation unit is considered to be as follows:

(U.S. Dollars) 1 October 2003 - 30 September 2004 (U.S. Fiscal Year 2004) = \$1.5 million 1 October 2004 - 30 September 2005 (U.S. Fiscal Year 2005) = \$3.5 million 1 October 2005 - 30 September 2006 (U.S. Fiscal Year 2006) = \$3.5 million

Additional financial contributions as well as the long-term provision of mission specific platforms (MSPs) for shallow water and Arctic drilling count toward additional participation units.

The annual contribution for one IODP participation unit for the period 1 October 2006 to 30 September 2013 is estimated to be \$5.6 million (U.S. dollars), but this figure is subject to increase or decrease based on operating experience and projected operating costs. Identification of the annual contribution level for this period will be done by the Agencies.

It is recognized that an IODP member may elect to have a representative on each committee or panel of the SAS, and two scientific participants per "cruise leg", or equivalent, for each platform operation identified as an IODP cost, for each participation unit. Additional participants on a cruise leg may be acceptable, but it is expected that these would be offset by reduced participation in other legs.

Associate IODP members are those that contribute for an amount equivalent to at least 1/6 participation unit. Associate IODP members may elect to have scientific participation and representation on SAS service committees, panels, or working groups in proportion to their contributions. However, it is not anticipated that an associate IODP member would have representation on the SAS Executive Authority or the SAS committee for scientific planning.

# ANNEX B ANTICIPATED FINANCIAL CONTRIBUTION and PARTICIPATION FOR THE U.S. FISCAL YEARS 2004-2013 by

#### CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE – INSTITUT NATIONAL DES SCIENCES DE L'UNIVERS (CNRS/INSU) of

#### FRANCE

as

#### THE ECORD MANAGING AGENCY (EMA)

It is recognized that in the period 1 October 2003 to 30 September 2004 that the ECORD Managing Agency (EMA) may support science operation costs and platform operations costs for mission specific platform (MSP) drilling approved by the SAS in lieu of financial contribution to the NSF. During the period 1 October 2004 to 30 September 2006 the EMA intends, subject to its budget, to support the IODP with an annual financial contribution to the NSF of no less than seven million dollars (U.S. \$7.0 million) per year. In the period 1 October 2006 to 30 September 2013, the EMA intends, subject to its budget process, to support the IODP with an annual contribution of no less than sixteen million, eight hundred thousand dollars (U.S. \$16,800,000) as identified in Annex A.

If recommended by the SAS, the EMA further intends to support platform operations costs for MSPs at a level financially equivalent to two participation units per year in the period 1 October 2004 to 30 September 2006, and one participation unit per year in the period 1 October 2006 to 30 September 2013.

For IODP core drilling programs, it is recognized that the ECORD is to have four participation units and may elect to send eight scientists per core drilling cruise or program. Participation on MSP drilling programs is to be dependent on MSP activity and corresponds to four participation units. It is recognized that the ECORD may send three voting and one non-voting member to each SAS panel or committee.

The EMA intends to make arrangements to transfer its contribution funds to the NSF, and anticipates doing so according to the following schedule:

It is recognized that, should the IODP be discontinued before September 30<sup>th</sup> of a fiscal year, the NSF intends to reimburse the EMA one-twelfth of its annual contribution for each month of curtailment in that fiscal year. Should the EMA withdraw from the Program prior to September 30<sup>th</sup> of a fiscal year, the EMA acknowledges that the NSF does not intend to refund its contributions.

ANNEX C

# THE BRITISH GEOLOGICAL SURVEY (BGS) AS THE PRIMARY IMPLEMENTING ORGANIZATION FOR MISSION SPECIFIC PLATFORMS (MSPs)

It is the intent of the ECORD Managing Agency (EMA) to support the British Geological Survey (BGS) (the ECORD Science Operator - ESO) as the primary Implementing Organization for the management of mission specific platform (MSP) drilling in the IODP. The ESO carries out functions for MSP drilling operations analogous to those of the riser and non-riser Implementing Organizations.

As the primary MSP Implementing Organization, the ESO is to:

Coordinate the available infrastructure for MSP operations for Central Management Office (CMO) planning.

Provide advice on MSP drilling technology and development of state of the art drilling tools and associated shipboard laboratories for the IODP.

Undertake the operation of IODP MSP drilling except when a compelling case for a more effective operation is made by another provider, as determined by the CMO.

Present yearly drilling plans to the CMO in conjunction with any secondary MSP providers.

# ANNEX D

# THE EUROPEAN CONSORTIUM FOR OCEAN RESEARCH DRILLING (ECORD) MEMBERSHIP

The following organizations/countries have elected to be members of the European Consortium for Ocean Research Drilling (ECORD):

Denmark	Danish Research agency (SNF) John Renner Hansen, Chairman of SNF	Forskningsstyrelsen, Randersgade 60 2100 København Ø, Denmark
Finland	Academy of Finland Riitta Keiski, Chair of the Research Council for Natural Sciences and Engineering	Academy of Finland Vilhonvuorenkatu 6, PO Box 99 00 501 Helsinki, Finland
France	Institut National des Sciences de l'Univers - Centre National de Recherche Scientifique (INSU-CNRS) Sylvie Joussaume Director, INSU - CNRS	<b>INSU-CNRS</b> 3, rue Michel-Ange BP 287 75766 Paris Cedex 16, France
Germany	Deutsche Forschungsgemeinschaft (DFG) Ernst-Ludwig Winnacker, President	Deutsche Forschungsgemeinschaft Kennedyallee 40 53175 Bonn, Germany
Iceland	Rannsoknamidstod Islands - The Icelandic Centre for Research (RANNIS) Hans Kristján Gudmundsson, Director	The Icelandic Centre for Research - RANNIS Laugavegi 13, 101 Reykjavik, Iceland
Italy	<b>Instituto Nazionale di Oceanografia e di Geofisica Sperimentale (OGS)</b> Ignio Marson, President	Instituto Nazionale di Oceanografia e di Geofisica Sperimentale OGS Borgo Grotta Gigante 42/c I-34010 Sgonico (Trieste) Italy
Netherlands	Netherlands Organisation for Scientific Research (NWO) Peter Nijkamp, Chair, NWO Governing Board	Netherlands Organisation for Scientific Research Laan van Nieuw Oost Indië 300, 2593 CE Den Haag, The Netherlands
Norway	<b>Research Council of Norway</b> Roy H. Gabrielsen, Executive Director, Division for Science	Research Council of Norway P.O. Box 2700 St. Hanshaugen N-0131 Oslo, Norway
Portugal	Ministério da Ciência e do Ensino Superior Maria da Graça Carvalho, Ministra da Ciência e	Ministério da Ciência e do Ensino

	Ensino Superior	Superior Palácio das Larangeiras Estrada das Larangeiras 1649-018 Lisboa, Portugal
Sweden	<b>Swedish Research Council</b> Pär Omling, Director General	Swedish Research Council, S-103 78 Stockholm, Sweden
Switzerland	Swiss National Science Foundation (SNF) Heidi Diggelmann, President of the Research Council	Swiss National Science Foundation (SNF) Wildhainweg 20 3001 Bern Switzerland
United Kingdom	<b>Natural Environment Research Council</b> ( <b>NERC</b> ) John lawton, Chief Executive	Natural Environment Research Council Polaris House, North Star Avenue, SWINDON SN2 1EU, U.K.
	Still pending:	
Spain	<b>Spanish Ministry of Science and Technology</b> ( <b>MCYT</b> ) Pedro Morenés Eulate, Secretary of State for Scientific and Technological Policy	Spanish Ministry of Science and Technology (MCYT), C/ José Abascal 4, 28003 Madrid, Spain
Ireland	Geological Survey of Ireland (GSI)	Geological Survey of Ireland Beggars Bush, Haddington Road Dublin 4, Ireland

#### **MEMORANDUM**

#### among

#### THE NATIONAL SCIENCE FOUNDATION (NSF) of THE UNITED STATES OF AMERICA,

# THE MINISTRY OF EDUCATION, CULTURE, SPORTS, SCIENCE AND TECHNOLOGY (MEXT) of JAPAN,

and

# THE MINISTRY OF SCIENCE AND TECHNOLOGY (MOST) of THE PEOPLE'S REPUBLIC OF CHINA

#### concerning PARTICIPATION of

#### THE PEOPLE'S REPUBLIC OF CHINA

#### in THE INTEGRATED OCEAN DRILLING PROGRAM (IODP) as an Associate IODP Member

The Integrated Ocean Drilling Program (IODP) is a multinational program of scientific research in the oceans which uses drilling and logging to undertake research on earth system processes ranging from changes in the earth's climate to the rifting and drifting of continents. The IODP builds on the scientific results of the Deep-Sea Drilling Project (DSDP) initiated in 1968 and the Ocean Drilling Program (ODP), which succeeded the DSDP in 1985, and the encouragement that the United Nations Convention on the Law of the Sea has provided to international cooperation in marine scientific research. The IODP seeks to expand the international sharing of intellectual and financial resources, which have been critical to the success of scientific ocean drilling. The IODP scientific program is identified in the Initial Science Plan for the IODP, *Earth, Oceans and Life,* and includes emphasis on the following research themes:

<u>The Deep Biosphere and the Sub-seafloor Ocean:</u> Drilling will concentrate on defining the architecture and dynamics of the vast sub seafloor plumbing system, where flowing water alters rock, modifies the long-term chemistry of the oceans, lubricates seismically active faults, concentrates economic mineral deposits, and controls the distribution of the deep biosphere.

<u>The Processes and Effects of Environmental Change:</u> Using a global array of sites, ocean sediment cores will be used to construct a detailed record of the causes, rates and severity of changes in the earth's climate system and their relation to major pulses in biologic evolution.

<u>Solid Earth Cycles and Geodynamics:</u> Drilling will concentrate on sampling and monitoring regions of the seafloor that currently have the highest rates of energy and mass transfer, and comparing these results to older geologic settings. A crucial initial program of deep drilling will be to study the seismogenic zone responsible for large destructive earthquakes along active plate boundaries.

The primary operations of the IODP are conducted by contractors (Implementing Organizations) responsible to the National Science Foundation of the United States of America (NSF) and the Ministry of Education, Culture, Sports, Science, and Technology of Japan (MEXT), hereafter referred to as the Agencies. The IODP drilling operations focus on a core capability provided by two scientific ocean drilling platforms. One is a riser-capable vessel provided by the MEXT and owned and operated by the Independent Administrative Institution, Japan Agency for Marine-Earth Science and Technology (JAMSTEC), and the other is a non-riser vessel provided by the NSF and operated by the Joint Oceanographic Institutions, Inc. (JOI). Both vessels are available for scheduling and operations on a global basis, based on recommendations from the IODP Science Advisory Structure (SAS). Access to mission specific platforms (MSPs) (in addition to the two primary vessels) is required to meet specific objectives of the science plan for shallow water and Arctic drilling that cannot be effectively done through use of the risercapable or non-riser vessels. Financial support for the operation of these additional platforms comes from IODP member(s) or associate IODP member(s), who make the decision to offer this additional capability to the Program. The British Geological Survey (BGS) is the primary MSP Implementing Organization for the IODP as identified in Annex C. The IODP seeks cooperation with other earth and ocean science programs and initiatives. The scientific and technical results of the IODP are openly available.

Based on IODP membership principles, the NSF, the MEXT, and the Ministry of Science and Technology of the People's Republic of China (MOST), hereafter referred to as the Participants, intend to cooperate in IODP activities during the period 1 October 2003 to 30 September 2008, as described in the following sections:

# **<u>1</u>** - STATUS OF THIS DOCUMENT

This Memorandum and its annexes are not legally binding, do not give rise to obligations or commitments under international law, and should have no effect as legal precedents.

#### <u>2</u> - MEMBERSHIP IN THE IODP

The MOST has elected to be an associate IODP member and intends to cooperate and participate in the IODP in support of the IODP science program during the period of 1 October 2003 to 30 September 2008.

All cooperative activities described in this Memorandum, including funding arrangements and exchanges of technical information, equipment, and data, are conducted within the limits of available funds and in accordance with the national laws and regulations of each Participant, as well as with international agreements to which the Participants are party, particularly any intended to prevent, reduce, and control pollution of the marine environment.

# **<u>3</u>** - DURATION OF IMPLEMENTATION

The IODP implementation period extends from 1 October 2003 until 30 September 2006. During this period, drilling is to be accomplished from the nonriser platform, and from MSPs (if recommended by the SAS and if funding and/or other resources is provided by IODP members or associate IODP members). Preparation for riser drilling (including detailed scientific planning, engineering planning, and engineering and safety surveys, etc.) is also to be undertaken in this period. Full implementation of the IODP, including drilling programs on the riser-capable vessel, the non-riser vessel, and from MSPs (if recommended by the SAS and if funding and/or other resources is provided by IODP members or associate IODP members), is expected to occur beginning 1 October 2006.

#### 4 - SCIENTIFIC PLANNING

Scientific planning and direction of the IODP is a function of the SAS. The SAS is composed of scientists and engineers representing the Participants and other IODP members. It provides long-term guidance on the scientific planning of the IODP, and recommends annual science and engineering plans based on proposals from the international science community.

The SAS Executive Authority and committee for scientific planning are composed of representatives from scientific institutions or organizations in the IODP member countries/consortia that have a major interest in the study of the seafloor. The SAS Executive Authority formulates scientific and policy recommendations with respect to IODP planning and operations. The SAS committee for scientific planning undertakes detailed planning and may establish panels, working groups and committees as required. The MOST may elect to be represented on the SAS as identified in Annex B.

The Chairmanship of the SAS initially rotates between institutions in Japan and the United States, with a term of 2 years. The SAS may establish panels and/or committees as needed to address its responsibilities, including panels on platforms and on science operations.

#### 5 - OPERATIONS PLANNING AND MANAGEMENT

The Central Management Office (CMO) develops and manages operations and implementation plans for the IODP program. The CMO receives advice and recommendations on scientific priorities and plans from the SAS, requests plans that are responsive to this advice from Implementing Organizations, and negotiates with Implementing Organizations and the SAS to produce an integrated annual IODP Program Plan. The annual IODP Program Plan contains a presentation of total program costs, which include both science operation costs and platform operations costs (see section <u>10</u>). The CMO manages science operations funds that are provided under contract with the NSF.

The SAS Executive Authority reviews and approves the annual IODP Program Plan and budget prior to its consideration by the Agencies. The NSF has responsibility for contractual approval of the annual IODP Program Plan, in consultation with the MEXT. After approval by the Agencies, significant changes in the annual IODP Program Plan are to be considered and approved by the CMO and the Agencies prior to implementation, in consultation with the SAS Executive Authority and the Implementing Organizations, as appropriate.

#### <u>6</u> – IODP COUNCIL

The MOST may elect to be represented on the IODP Council. The members of the Council are representatives of each country or entity contributing to the support of the IODP, regardless of whether it participates as an individual IODP member or as a member of a consortium. Each Participant designates its own representatives to the Council. There should ordinarily be one representative of each Participant, except that additional representation from Japan and the United States may be appropriate.

The Council serves as a consultative body reviewing financial, managerial, and other matters involving the overall support of the IODP. The Council provides a forum for exchange of views among the contributing countries. No formal voting procedures are to be established. There are to be no national symbols displayed at IODP Council meetings, or as part of official IODP publications or exhibitions.

The MEXT and the NSF designate Principal Officials who have responsibility for Agency oversight of IODP implementation, operations, management, and funding issues. The Principal Officials serve as the chairs of the Council, alternating on an annual basis. A formal agenda is prepared for each meeting and written records of each meeting are kept.

The chair provides secretariat services to the Council. The Council normally meets once each year. The annual meeting includes a financial report and discussion, an audit report, a review of scientific and technical achievements for the past year, presentation of draft program plans and budgets for the coming year, and other topics of mutual interest. Liaison representatives of prime contractors, Implementing Organizations and important scientific planning entities are available to the Council.

# $\underline{7}$ – PROJECT PROPOSALS AND DATA SHARING

Scientists of the People's Republic of China:

a) may make proposals to the SAS for scientific projects or technical objectives of interest to the scientific community of the People's Republic of China;

b) may have access to all data from geophysical and other site surveys performed in support of the program which are used for drilling planning; and

c) may have access to engineering plans, data or other information developed under contracts supported as program costs.

Support for geophysical and geological surveys and research to prepare drilling proposals and identify drilling targets may be contributed by the People's Republic of China as its scientific interests and available resources allow. Site survey requirements are identified by the SAS.

# **<u>8</u>** - PARTICIPATION ON BOARD IODP DRILLING PLATFORMS

The Implementing Organizations provide science operations and services on IODP drilling platforms, and, with the advice of the SAS, select the scientific teams for each cruise or drilling program, based on nominations and applications from IODP members and associate IODP members. It is understood that the Agencies are to have equal participation of their country's scientists in all IODP drilling programs, and together are to have no less than two-thirds of the available scientific positions.

The People's Republic of China scientists may participate in IODP drilling cruises and programs. It is understood that opportunities for such participation is intended to be proportional to the level of support provided by the MOST and are identified in Annex B. It is recognized that some cruises may be of special scientific interest to the People's Republic of China scientists, and increased participation by scientists of the People's Republic of China on these cruises may be appropriate. It is recognized that such increased participation would be expected to be offset by reduced participation in other cruises.

Co-chief scientists for IODP drilling programs are nominated by the SAS. It is expected that at least two-thirds of the scientists invited to serve as co-chief scientists are to be representatives of Japan and the United States. It is expected that scientists representing the People's Republic of China would be invited to serve as co-chief scientists in proportion to the MOST's contribution. In nominating co-chief scientists, the SAS pays due consideration to those scientists responsible for proposing drilling proposals and plans.

#### 9 - ACCESS TO SAMPLES, DATA AND REPORTS

Scientists from the People's Republic of China have access to IODP data and core samples. The procedures and policies for obtaining IODP samples and data are recommended by the SAS. The MOST indicates that it endeavors to ensure that the People's Republic of China scientists and institutions provide the scientific data resulting from site surveys and laboratory analyses in time for preparation of IODP publications, and for inclusion in IODP data bases. The MOST is expected to provide the Agencies with copies of all publications from the People's Republic of China scientists that are based on program material. The MOST is to receive an appropriate number of copies of all IODP publications and reports.

#### **10** - FINANCIAL SUPPORT

The MOST intends to support the IODP with financial contributions as described in Annexes A and B. The financial contributions to the NSF of all IODP members and associate IODP members are commingled to support science operation costs of the IODP. Science operation costs are determined by the Agencies. Science operation costs provide for those activities onboard program platforms necessary to the proper conduct of the scientific research program and those shore-based activities required to properly maintain and distribute samples and data, support seagoing activities, and administer and manage the program. Such costs include, for example: (1) technical services, (2) computer capability, (3) data storage and distribution, (4) description, archiving, and distribution of data and samples, (5) deployment of a standard suite of logging tools, (6) development of new drilling tools and techniques required by IODP research, (7) program publications, (8) costs of consumables (exclusive of those identified under platform operations costs below), and, (9) costs required for administration and management, including the CMO.

Platform operations costs of the riser-capable and non-riser vessels are supported by the MEXT and the NSF respectively, and for MSPs by the IODP member or the associate IODP member electing to provide such capability. Member financial contributions are not used to support platform operations costs. Platform operations costs for these vessels and for MSPs support the basic operation of the vessel as a drillship, and include, for example: (1) costs of the drilling and ship's crew, (2) catering services, (3) fuel, vessel supplies and other related consumables, (4) berthage and port call costs, (5) disposal of wastes, (6) crew travel, (7) inspections and insurance, (8) drilling equipment, supplies, and related consumables, (9) engineering or geophysical surveys, and data acquisition and laboratory analyses required for the safety of platform and drilling operations, and, (10) administration and management costs of the platform operators.

Legal and financial responsibility, including mobilization and platform operations costs, for the riser capable-vessel resides with the MEXT, and for the non-riser vessel with the NSF. Legal and financial responsibility, including mobilization and platform operations costs, for additional platforms is to reside with the organization(s) or country(ies) which provide such capability to the IODP. Provision of such capability is not considered a contribution in lieu of annual IODP membership contribution.

Support of scientific research and development costs for shore-based analysis and research on IODP samples and data and for non-routine downhole measurements are the responsibility of the participating countries, or IODP members or associate IODP members, and are not supported as program costs.

Activities carried out by the Participants contractors in direct support of the Participants individual scientific undertakings are not program costs and are not supported from commingled funds.

#### 11 - SALARIES, TRAVEL AND EXPENSES

Salaries, travel and expenses for participants representing the People's Republic of China are to be borne by the People's Republic of China. Costs of accommodations for the People's Republic of China scientists and members of technical parties aboard IODP drilling platforms are program costs and are the responsibility of the platform operator. The platform operators are to offer the People's Republic of China scientists assistance when going between the airport and the drillship, and NSF through its contractors is to provide assistance for the People's Republic of China scientists when pursuing visas.

#### **<u>12</u> - CONSULTATION**

Meetings of the Agency representatives and representatives of the MOST may be held at any mutually acceptable time upon the request of any Participant to discuss this Memorandum and other matters of mutual interest.

#### <u>13</u> – CONCLUDING PROVISIONS

The Participants intend to cooperate under this Memorandum from 1 October 2003 until 30 September 2008.

This Memorandum may be modified by written consensus of the Participants.

Cooperation under this Memorandum may be discontinued at any time by any Participant. The other Participants should receive written notice at least one year in advance.

SIGNED in the English language.

2004 4 4 7 26 12

Xu Guanhua Minister

Date

For THE MINISTRY OF SCIENCE AND TECHNOLOGY (MOST) OF THE PEOPLE'S REPUBLIC OF CHINA

10 夫

4/26/2004

Takeo Kawamura Minister Date

For

THE MINISTRY OF EDUCATION, CULTURE, SPORTS, SCIENCE AND TECHNOLOGY (MEXT) OF JAPAN

4/19/04

Arden L. Bement, Jr. Acting Director Date

For THE NATIONAL SCIENCE FOUNDATION (NSF) OF THE UNITED STATES OF AMERICA

# ANNEX A ANTICIPATED ANNUAL MEMBER CONTRIBUTIONS

A Participant's expected level of participation in the IODP is recognized to be proportional to the number of "participation units" represented by that Participant's contribution to the IODP.

Based on 2002 projections of total annual Program costs for a fully operational IODP program(approximately \$150 million U.S. dollars), and considering IODP program activities and costs planned for the implementation period (1 October 2003 to 30 September 2006) identified in the Memorandum, the annual contribution for one participation unit is considered to be as follows:

(U.S. Dollars)

1 October 2003 - 30 September 2004 (U.S. Fiscal Year 2004) = \$1.5 million 1 October 2004 - 30 September 2005 (U.S. Fiscal Year 2005) = \$3.5 million 1 October 2005 - 30 September 2006 (U.S. Fiscal Year 2006) = \$3.5 million

Additional financial contributions as well as the long-term provision of mission specific platforms (MSPs) for shallow water and Arctic drilling may count toward additional participation units.

The annual contribution for one IODP participation unit for the period 1 October 2006 to 30 September 2013 is estimated to be \$5.6 million (U.S. dollars), but this figure is subject to increase or decrease based on operating experience and projected operating costs. Identification of the annual contribution level for this period will be done by the Agencies.

It is recognized that an IODP member may elect to have a representative on each committee or panel of the SAS, and two scientific participants per "cruise leg", or equivalent, for each platform operation identified as an IODP cost, for each participation unit. Additional participants on a cruise leg may be acceptable, but it is expected that these would be offset by reduced participation in other legs.

Associate IODP members are those that contribute for an amount equivalent to at least 1/6 participation unit. Associate IODP members may elect to have scientific participation and representation on SAS service committees, panels, or working groups in proportion to their contributions. However, it is not anticipated that an associate IODP member would have representation on the SAS Executive Authority.

ANNEX B

#### ANTICIPATED FINANCIAL CONTRIBUTION FOR THE U.S. FISCAL YEARS 2004-2008 by THE MINISTRY OF SCIENCE AND TECHNOLOGY (MOST) of THE PEOPLE'S REPUBLIC OF CHINA

The Ministry of Science and Technology, of the People's Republic of China (MOST) intends, subject to its budget process, to support the IODP with a total contribution of five and one-half million dollars (U.S. \$5.5 million) over the period 1 October 2003 to 30 September 2008.

It is recognized that the MOST may elect for its scientists to have six participation months per year (3 scientists per year of operations) on non-riser vessel programs for the period 1 October 2003 to 30 September 2008, and six participation months per year on riser-capable vessel programs for the period 1 October 2006 to 30 September 2008 (during implementation of full IODP operations). Participation on mission specific platform (MSP) drilling programs is to be dependent on MSP activity and corresponds to one-quarter participation units.

Based on MOST's intent to seek resources to increase its contribution to IODP, its participation in SAS from 1 October 2003 until 30 September 2008 is:

- Non-Voting Membership on: Science Planning Committee (SPC) Technical Advisory Panel (TAP)
- Membership on: Interior Processes of the Earth Panel (ISSEP) Exterior Processes of the Earth Panel (ESSEP) Scientific Measurements Panel (SCIMP) Site Survey Panel (SSP) Industry Liaison Panel (ILP)

or their equivalents.

Invited Observers from MOST may attend all other SAS committee and panel meetings.

The MOST intends to make arrangements to transfer its contribution funds to the NSF, and anticipates doing so according to the following schedule:

	(U.S. Dollars)
1 October 2003 - 30 September 2004	(U.S. Fiscal Year 2004) = \$1,500,000
1 October 2004 - 30 September 2005	(U.S. Fiscal Year 2005) = \$1,000,000

1 October 2005 - 30 September 2006	(U.S. Fiscal Year 2006) = \$1,000,000
1 October 2006 - 30 September 2007	(U.S. Fiscal Year 2007) = \$1,000,000
1 October 2007 - 30 September 2008	(U.S. Fiscal Year 2008) = \$1,000,000

It is recognized that, should the IODP be discontinued before September 30th of a fiscal year, the NSF intends to reimburse the MOST one-twelfth of its yearly contribution for each month of curtailment in the fiscal year. Should the MOST withdraw from the Program prior to September 30<sup>th</sup> of a fiscal year, the MOST acknowledges that the NSF does not intend to refund its contributions.

ANNEX C

# THE BRITISH GEOLOGICAL SURVEY (BGS) AS THE PRIMARY IMPLEMENTING ORGANIZATION FOR MISSION SPECIFIC PLATFORMS (MSPs)

It is the intent of the ECORD Managing Agency (EMA) to support the British Geological Survey (BGS) (the ECORD Science Operator - ESO) as the primary Implementing Organization for the management of mission specific platform (MSP) drilling in the IODP. The ESO carries out functions for MSP drilling operations analogous to those of the riser and non-riser Implementing Organizations.

As the primary MSP Implementing Organization, the ESO is to:

Coordinate the available infrastructure for MSP operations for Central Management Office (CMO) planning.

Provide advice on MSP drilling technology and development of state of the art drilling tools and associated shipboard laboratories for the IODP.

Undertake the operation of IODP MSP drilling except when a compelling case for a more effective operation is made by another provider, as determined by the CMO.

Present yearly drilling plans to the CMO in conjunction with secondary MSP providers.

# ACRONYM LIST

AESTO	Advanced Farth Science and Technology Organization
APLACON	Alternate Platform Conference 4th SPC meeting agenda book
CDEX	Center for Deep Farth Exploration
CDP	Complex Drilling Project
CMO	Control Management Office
COMPLEX	Conference on Multiple Platform Exploration of the Ocean
CONCORD	Conference on Cooperative Ocean Piser Drilling
CRISP	Contenence on Cooperative Ocean Kiser Drinning
ECORD	Costa Kica Seisinogenesis Piojeci
ECORD	European Consortium on Ocean Research Drining
	ECORD Managing Agency
	Environmental Protection and Safety Panel
ESF	European Science Foundation
ESO	ECORD Science Operator
ESUC	ECORD Science Operation Committee
ESSAC	ECORD Science Support and Advisory Committee
ESSEP	Science Steering and Evaluation Panel-Environment
IAVCEI	International Association of Volcanology and Chemistry of the Earth's Interior
ICDP	International Continental Scientific Drilling Program
ILP	Industry Liaison Panel
ILWG	Industry Liaison Working Group
IMAGES	International Marine Past Global Changes Study
IODP-MI	IODP Management International, Inc.
InterMARGINS	International Margins Program
InterRidge	An initiative for international cooperation in ridge-crest studies
IO	Implementing Organization
IODP	Integrated Ocean Drilling Program
ISP	Initial Science Plan for IODP
ISSEP	Science Steering and Evaluation Panel-Interior
JAMSTEC	Japan Marine Science and Technology Center
J-DESC	Japan Drilling Earth Science Consortium
JOI	Joint Oceanographic Institutions, Inc.
JOIDES	Joint Oceanographic Institutions for Deep Earth Sampling
LDEO	Lamont-Doherty Earth Observatory
MEXT	Ministry of Education, Culture, Sports, Science and Technology
MOU	Memorandum of Understanding
MOST	Ministry of Science and Technology
MSP	Mission-Specific Platform
NanTroSEIZE	Nankai Trough Seismogenic Zone Experiment
NSF	National Science Foundation
OPCOM	Operations Committee
POC	Platform Operation Cost
SAS	Science Advisory Structure (IODP)
SciMP	Scientific Measurements Panel
SOC	Science Operation Cost
SPC	Science Planning Committee
SPPOC	Science Planning and Policy Oversight Committee
SSEPs	Science Steering and Evaluation Panels
SSP	Site Survey Panel
TAMU	Texas A&M University
ТАР	Technology Advice Panel
TAWG	Technical Advice Working Group
USSAC	US Science Advisory Committee
USSSP	US Science Support Program
00001	ob beienet support i fogram

			SPC Members				As of September 2004
Name	Country	Expertise	Organization	Address	Tel	Fax	E-mail
Becker, Keir** (Vice Chair)	USA	Marine Geology, Geophysics	RSMAS Division of Marine Geology & Geophysics University of Miami	4600 Rickenbacker Causeway Miami, FL 33149	1 305 361 4661 1 30	15 361 4632 kbecker(	@rsmas.miami.edu
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5 Duncan, Bob	NSA	Petrology, Volcanology	College of Ocean & Atmospheric Sciences Oregon State University	Ocean Admin Bldg 104 Corvallis, OR 97331-5503	1 541 737 5206 1 54	11 737 2064 rduncan(	Dcoas.oregonstate.edu
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7 Ildefonse, Benoit	France	Petrology, Structural geology	Laboratoire de Tectonophysique - UMR 5568 ISTEEM, Université Montpellier II,	34095 Montpellier cedex05	33 4 67 14 38 18 33 4	4 67 14 36 03 benoit@	lstu.univ-montp2.fr
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13 Miller, Ken	NSA	Stratigraphy, Micropaleontology	Dept. of Geological Sciences Rutgers Universiy	610 Taylor Road, Piscataway, NJ 08854	1 732 445 3622 1 7:	32 445 3374 kgm@rc	i.rutgers.edu
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18 Zhou, Zuyi	China	Tectonics, Basin analysis	Tongji University	1239 Spring Road, Shanghai 200092	86 21 6598 2358 86 2	21 6598 4906 zhouzy@	mail.tongji.edu.cn
19 TBA	USA						

# **IODP Science Planning Committee**

# 3<sup>rd</sup> Meeting, 14-17 June 2004

# Yokohama Institute for Earth Sciences Japan Agency for Marine-Earth Science and Technology Yokohama, Japan

#### Science Planning Committee - SPC

Jamie Austin Keir Becker (vice-chair) Hans Brumsack Mike Coffin (chair)	Institute for Geophysics, University of Texas at Austin, USA Rosenstiel School of Marine & Atmospheric Science, University of Miami, USA Institut für Chemie und Biologie des Meeres (ICBM), Universität Oldenburg, Germany Ocean Research Institute, University of Tokyo, Japan
Bob Duncan	College of Oceanic & Atmospheric Sciences, Oregon State University, USA
Gabriel Filippelli <sup>a</sup>	Department of Geology, Indiana University-Purdue University Indianapolis, USA
Andy Fisher*	Earth Sciences Department, University of California, Santa Cruz, USA
Benoît Ildefonse	Laboratoire de Tectonophysique, ISTEEM, Université Montpellier II, France
Hisao Ito	Geological Survey of Japan
Kenji Kato	Institute of Geosciences, Shizuoka University, Japan
Hodaka Kawahata	Geological Survey of Japan
Jeroen Kenter	Faculty of Earth and Life Sciences, Vrije Universiteit, The Netherlands
Hiroshi Kitazato <sup>b</sup>	Institute for Frontier Research on Earth Evolution (IFREE), JAMSTEC, Japan
Chris MacLeod	Department of Earth Sciences, Cardiff University, United Kingdom
Ken Miller	Department of Geological Sciences, Rutgers University, USA
Ted Moore	Department of Geological Sciences, University of Michigan, USA
James Mori	Disaster Prevention Research Institute, Kyoto University, Japan
Terry Quinn	College of Marine Science, University of South Florida, USA
Yoshiki Saito <sup>c</sup>	Geological Survey of Japan
Wonn Soh	Deep Sea Research Department, JAMSTEC, Japan
Yoshiyuki Tatsumi	Institute for Frontier Research on Earth Evolution (IFREE), JAMSTEC, Japan
Zuyi Zhou	Department of Marine Geology and Geophysics, Tongji University, China

<sup>a</sup>Alternate for Andy Fisher.

<sup>b</sup>Alternate for Kenji Kato on last day.

<sup>c</sup>Alternate for Wonn Soh during proposal ranking exercise.

\*Unable to attend.

#### Liaisons

Jamie Allan	National Science Foundation (NSF), USA
Shoji Arai (ISSEP)	Department of Earth Sciences, Kanazawa University, Japan
Tim Byrne (ISSEP)	Department of Geology and Geophysics, University of Connecticut, USA
Gilbert Camoin (ESSEP)	CEREGE-CNRS, France
Nobuhisa Eguchi	IODP Management International, Inc., Sapporo Office, Japan
Dan Evans	ECORD Science Operator (ESO), British Geological Survey, United Kingdom
Barry Katz (PPSP)	Energy Technology Company, ChevronTexaco, USA
Yoshihisa Kawamura	Center for Deep Earth Exploration (CDEX), JAMSTEC, Japan
Hans Christian Larsen	IODP Management International, Inc., Sapporo Office, Japan
Yoshihiro Masuda (TAP)	Department of Geosystem Engineering, University of Tokyo, Japan
Catherine Mevel	ECORD Management Agency (EMA), Institut de Physique du Globe de Paris, France
Makoto Okada (SciMP)	Department of Environmental Sciences, Ibaraki University, Japan
Kyoko Okino (SSP)	Ocean Research Institute, University of Tokyo, Japan
Frank Rack	JOI Alliance, Joint Oceanographic Institutions, Inc. (JOI), USA
Jeff Schuffert	IODP Management International, Inc., Sapporo Office, Japan
Yasuhisa Tanaka	Ministry of Education, Culture, Sports, Science, and Technology (MEXT), Japan

#### Guests

Seiko Asaka Jack Baldauf Ocean Research Institute, University of Tokyo, Japan JOI Alliance, Texas A&M University, USA

Rodey Batiza National Science Foundation (NSF), USA David Cyranoski Nature Japan K.K., Japan Eiichi Kikawa OD21 Program Department, JAMSTEC, Japan Kenji Kimura Ministry of Education, Culture, Sports, Science, and Technology (MEXT), Japan Hajimu Kinoshita Japan Agency for Marine-Earth Science and Technology (JAMSTEC), Japan Tsuyoshi Kogo Ministry of Education, Culture, Sports, Science, and Technology (MEXT), Japan Shin'ichi Kuramoto Center for Deep Earth Exploration (CDEX), JAMSTEC, Japan OD21 Program Department, JAMSTEC, Japan Tadao Matsuzaki Toru Nishikawa Advanced Earth Science and Technology Organization (AESTO), Japan Kivoshi Otsuka Advanced Earth Science and Technology Organization (AESTO), Japan Yoichiro Otsuka IODP Management International, Inc., Washington, D.C. Office, USA Takehiro Sasayama OD21 Program Department, JAMSTEC, Japan Jean Claude Sibuet (Leg 210) IFREMER, France Kiyoshi Suyehiro Japan Agency for Marine-Earth Science and Technology (JAMSTEC), Japan Uko Suzuki Center for Deep Earth Exploration (CDEX), JAMSTEC, Japan Asahiko Taira Center for Deep Earth Exploration (CDEX), JAMSTEC, Japan Ken Takai Frontier Research System for Extremophiles, JAMSTEC, Japan Takeo Tanaka Advanced Earth Science and Technology Organization (AESTO), Japan



# **IODP Science Planning Committee**

# 3<sup>rd</sup> Meeting, 14-17 June 2004

# Yokohama Institute for Earth Sciences Japan Agency for Marine-Earth Science and Technology Yokohama, Japan

# DRAFT EXECUTIVE SUMMARY (v2.0)

# **1.4.** Approve last SPC meeting minutes

**SPC Consensus 0406-1:** The SPC approves the minutes of its second meeting on 23-26 March 2004 in Washington, D.C., USA.

# **1.5. Approve SPC meeting agenda**

**SPC Consensus 0406-2:** The SPC approves the revised agenda for its third meeting on 14-17 June 2004 in Yokohama, Japan.

# 1.6.1. Review draft SPC terms of reference

**SPC Motion 0406-3:** The SPC recommends revising three clauses of its terms of reference as follows:

1.2 Mandate. The SPC encourages the international community to develop and submit drilling proposals for the IODP. The SPC can initiate and terminate temporary SAS groups as needed. The SPC recommends reviews SAS membership to the SPPOC, particularly with respect to disciplinary balance. The SPC recommends SAS meeting frequency...

1.5 Membership. The SPC will consist of seven members from Japan, seven members from the U.S., and four members (three voting and one non-voting) from the ECORD, and one member (non-voting) from China. All appointees to the SPC shall satisfy the fundamental criteria of having the ability and commitment to provide mature and expert scientific direction to IODP planning. Each member should have a designated alternate to serve in his or her absence. The term of membership will be three years and at least one third of the members shall rotate off the committee annually, so that the SPC membership is replaced every three years. Re-appointment shall be made only in exceptional circumstances. Any changes in the SPC member representation (i.e., naming of alternates for members for meetings without prior approval of the alternates by the SPPOC) must be reviewed by the SPPOC for approval. The fields of specialization on the SPC shall be kept balanced as far as possible by requests to national and consortia program committees. If an SPC member misses two meetings in succession, the SPC chair or vice-chair will discuss the problem of SAS representation with the appropriate eountry national or consortia representative(s) on the SPPOC.

1.6 Liaison. The Vice-President of Science Planning at the IODP-MI, the directors of the implementing organizations, or nominees thereof, and representatives of the lead agencies are permanent, non-voting liaisons. The SPC chair is the liaison to the SPPOC, and the SPC assigns other liaisons to the SSEPs, <u>PPSP EPSP</u>, and other SAS panels and groups.

Moore moved, Miller seconded; 16 in favor, 1 absent (Kato)
# 2.4. Schedule for scoping groups, task forces, and RFP's

**SPC Consensus 0406-4:** The SPC recognizes that because of fiscal constraints, a request for proposals (RFP) for publications cannot be issued in time to provide publication support of the first IODP expeditions. In view of SPC Consensus 04-03-18, the committee reaffirms that "Each implementing organization be responsible for providing scientific content for its platforms, but that one contractual organization be a central point for technical editing, layout, and production, thus ensuring uniformity of style." The committee recognizes that the current situation is unusual and encourage the IODP-MI: 1) to have the implementing organizations of expeditions not covered under the RFP prepare the content of the expedition reports, and 2) to contract with one organization for technical editing, layout, and production of the reports. The committee also encourages the IODP-MI to issue an RFP for publications as soon as possible and to inform the SPC of any changes in publication strategy.

# 4.1. IODP SAS review

**SPC Consensus 0406-5:** The SPC receives the mid-term report from its own SAS Review working group (Duncan, Ildefonse, Tatsumi), commends the efforts of the group to date, and looks forward to receiving a final report at the October 2004 SPC meeting.

# 4.2 IODP SAS Terms of Reference

**SPC Consensus 0406-6:** The SPC receives the revised terms of reference for the SAS panels from its own SAS Terms of Reference working group (Kenter, Mori, Prell), requests minor modifications, and forwards the revised terms of reference with modifications to the SPPOC for consideration.

# 4.3. Travel and CO<sub>2</sub> emissions

**SPC Consensus 0406-7:** The SPC endorses the voluntary efforts of the IODP community to offset  $CO_2$  emissions related to participating in SAS activities.

# 5. Clarify status of Proposal 545-Full3 – second expedition

**SPC Consensus 0406-8:** The SPC recognizes that the Juan de Fuca Hydrogeology expedition (301) represents the first phase of a multi-phase effort involving installation of a CORK array across several sediment-covered ridges. To assess properly the appropriateness of proceeding to the next phase and the utility of this array, the SPC and OPCOM must receive a prompt report on the aforementioned expedition from the co-chief scientists and the JOI Alliance, detailing the scientific and operational progress towards the stated objectives of Proposal 545-Full3. OPCOM should consider that report at its next meeting (fall 2004) and forward its recommendation to the SPC in time to evaluate the next phase of Juan de Fuca Hydrogeology studies for inclusion in the prioritized SPC groupings for FY2005 and FY2006 program planning, as developed at this SPC meeting. The committee anticipates augmenting those groupings without re-ranking at the October 2004 SPC meeting.

# 6. Review of Proposal 650-APL

**SPC Consensus 0406-9:** The SPC applauds the initiative represented by Proposal 650-APL and in particular the potential for a productive interaction among the proponents, the scientific party of the Tahiti component of Proposal 519-Full2 (the expected FY2005 MSP project), and industry. However, the committee cannot yet fully assess the operational, environmental, and fiscal impacts of operations associated with the proposed imaging experiments, and in particular the need to install and remove PVC liners from a subset of the holes proposed for the TAH-02A transect. The SPC therefore requests that OPCOM consider Proposal 650-APL at its September 2004 meeting, with input from the proponents and the ECORD Science Operator as appropriate, and provide a report and a recommendation at the October 2004 SPC meeting.

# 7. SSEPs report

**SPC Consensus 0406-10:** The SPC accepts SSEP Recommendations 0405-01 on guidelines for submitting addenda versus revised proposals and 0405-03 on reviewing ancillary project letters (APLs) and forwards them to IODP-MI for implementation.

**SPC Consensus 0406-11:** The SPC receives SSEP Recommendations 0405-02 on guidelines for submitting preliminary and full proposals, 0405-04 on prioritizing proposals, and 0405-05 on the terms of SSEP co-chairs. The committee requests the SSEPs to reconsider issues associated with Recommendation 0405-02.

**SPC Motion 0406-12:** The SPC appoints Michael Underwood as a new co-chair of the Science Steering and Evaluation Panels (SSEPs), effective following the November 2004 SSEPs meeting.

Moore moved, Austin seconded; 13 in favor, 4 absent (Becker, Duncan, Soh, Quinn)

# 9.1. Select proposal pool to rank

**SPC Consensus 0406-13:** In view of recent ICDP drilling of the Chicxulub impact structure and planned geophysical work, the SPC decides to exclude Proposal 548-Full2 from the current pool of proposals for global scientific ranking. The committee suggests that the proponents organize a joint IODP/ICDP workshop to discuss major scientific questions related to the Chicxulub impact structure, once new seismic data from onshore and offshore become available. The major goal of such a workshop should be to specify the drilling targets evolving from the latest cratering models and recent ICDP drilling, and to locate the best sites required to test the hypotheses and fulfill the scientific objectives of Proposal 548-Full2.

SPC Consensus 0406-14: The SPC recognizes the importance of installing borehole observatories within the Monterey Accelerated Research System (MARS) facility as described in Proposal 621-Full Monterey Bay Observatory. The strength of this proposal lies in the engineering investment for developing future borehole observatories and for integrating such observatories into cabled seafloor observatories. In that context, the committee deems it inappropriate to evaluate this proposal using the same scientific criteria as for other proposals and therefore decides not to include it in the current pool of proposals for global scientific ranking. Instead the SPC forwards Proposal 621-Full directly to OPCOM for possible scheduling of the engineering effort in FY2005 or FY2006. The committee requests that OPCOM provide a report and recommendation at the October 2004 SPC meeting. At that meeting, the SPC anticipates augmenting the June 2004 groupings of scientific proposals, without re-ranking, including consideration of Proposal 621-Full. The SPC also requests the SciMP and the TAP to work with MBARI and other proponents in developing a draft plan for managing the MARS-IODP borehole test facility. The SciMP and the TAP should submit a joint report for the October 2004 SPC meeting, and the SPC and OPCOM will submit a final report for the December 2004 SPPOC meeting.

# 9.4. Select group of proposals to forward to OPCOM

**SPC Consensus 0406-15:** The SPC forwards the top fourteen of fifteen ranked proposals to OPCOM in three groups as follows. The committee requests that OPCOM propose scheduling options for FY2005 and FY2006 that honor and adhere to these ranking groups as closely as possible.

Group I includes the top seven proposals. This group equates in priority to the Group I proposals previously forwarded to OPCOM and currently awaiting scheduling (519-Full2 South Pacific Sea Level, 545-Full3 Juan de Fuca Flank Hydrogeology, 564-Full New Jersey Shelf, and 589-Full3 Gulf of Mexico Overpressures). The committee recommends scheduling the Group I proposals if at all possible within operational constraints.

Group II includes the next three proposals (#8-10). The committee recommends considering these proposals as alternatives only if the Group I proposals cannot fill the schedule.

Group III includes the lower four proposals (#11-14). The committee recommends considering these proposals as alternatives only if those in Groups I and II cannot fill the schedule. Although scheduling should and will be guided primarily by the results of the global scientific ranking, the SPC recommends limiting the drilling options of Proposal 581-Full2 Late Pleistocene Coralgal Banks to several sites around one of the drowned reefs at Southern Bank, while nonetheless addressing as many of the proposed scientific objectives as possible. Likewise, the committee recommends limiting the drilling options of Proposal 573-Full2 Porcupine Basin Carbonate Mounds to several sites around one mound.

**SPC Consensus 0406-16:** The SPC recognizes the scientific potential of a complex drilling project (CDP) in the Middle America Trench off Costa Rica. However, Proposals 537-CDP4 and 537A-Full3 entail certain scientific and balance issues that need to be addressed before the first stage can be considered for drilling. Following the response of the proponents to the SPC reviews of these two proposals, the committee may consider establishing a detailed planning group (DPG) to work with the proponents on clarifying the scientific objectives of the CDP and the drilling strategy in the component proposals.

**SPC Consensus 0406-17:** The SPC supports efforts to understand the timing, rates, and impact of the uplift of the Himalayan-Tibetan Plateau as elucidated in Proposal 595-Full3 Indus Fan and Murray Ridge. The committee strongly endorses the proposed idea to test the feasibility of the project in two phases, beginning with shallow drilling at the Murray Ridge site (MU-1B). This will allow the proponents to explore how they might quantify some of the variables involved in reconstructing sediment volumes, noting that previous Indian Ocean drilling has not yet provided a robust erosion record even for the Neogene. For this reason, the committee requests that OPCOM form a project-scoping group to maximize site drilling objectives and develop a drilling plan at Murray Ridge that optimizes this potential.

**SPC Consensus 0406-18:** The SPC recommends that OPCOM explore possible scheduling options for FY2005 and FY2006 that would enable coring the two Irminger Basin (IRM) sites of Proposal 572-Full3 North Atlantic Late Neogene-Quaternary Climate without requiring a support vessel. Such possibilities might include rescheduling the second North Atlantic Paleoclimate expedition into the optimal weather window or incorporating the IRM sites into another expedition. If the IRM sites get scheduled, alternate sites should not be drilled on the North Atlantic Paleoclimate expeditions.

**SPC Consensus 0406-19:** In light of a lead agency report on new possibilities for potential non-riser operations in FY2005 and FY2006, the SPC requests that OPCOM reconsider its April 2004 decision to delay an independent evaluation of existing hazard survey data for Proposal 589-Full3 Gulf of Mexico Overpressures. Such an evaluation should be conducted as soon as possible to allow for potential scheduling of this highly ranked program in FY2005 or FY2006.

# 10. Reef Drilling Working Group

**SPC Consensus 0406-20:** The SPC receives the working group report (Quinn, Kato, Kenter, and Evans) on the environmental impact of coral reef drilling and forwards it to the Environmental Protection and Safety Panel (EPSP) for comment.

# Executive Session on SAS–IODP-MI interactions

**SPC Motion 0406-21:** The SPC enters into executive session to discuss interactions between the SAS and IODP-MI.

Moore moved, Austin seconded; 17 in favor

**SPC Consensus 0406-22:** The SPC recognizes its role in providing scientific advice to IODP-MI through the SPPOC as a fundamental part of its mandate to represent the scientific community supporting the IODP. The committee forwards a ranking of proposals to the OPCOM for development of scheduling options and must remain closely involved in subsequent decisions about the drilling schedule because evaluations of scheduling options involve scientific prioritization. The SPC welcomes iterative scheduling discussions with the OPCOM and reaffirms the SPC mandate to provide an advisory vote on the drilling schedule from options provided by the OPCOM and to forward this vote to IODP-MI through the SPPOC as part of annual program planning.

**SPC Motion 0406-23:** The SPC concludes its executive session on interactions between the SAS and IODP-MI.

Moore moved, Tatsumi seconded; 16 in favor, 1 absent (Becker)

# **12. IODP core distribution**

**SPC Consensus 0406-24:** The SPC recommends storing DSDP, ODP, and IODP cores in the Bremen, Gulf Coast, and Kochi core repositories based in principle on the geographic considerations presented by IODP-MI at this meeting. The SPC requests regular progress reports as IODP-MI works on the timing and fiscal details of this initiative.

# 14.2. Microbiology WG report

**SPC Consensus 0406-25:** The SPC accepts the microbiology working group report and forwards it to IODP-MI and the implementing organizations.

#### 14.3. Sample, Data, and Obligations Policy

**SPC Consensus 0406-26:** The SPC accepts the revised IODP Sample, Data, and Obligations Policy and forwards it to the SPPOC for consideration.

#### 16. Review of motions and consensus items

**SPC Consensus 0406-27:** Few people have served the international scientific ocean drilling community for as long, as well, and in so many different and important ways as James A. Austin, Jr. This may be a totally inadequate way for us to thank Jamie for all that he has done for the ODP and the IODP, but let us at least acknowledge our great debt to him. Jamie has dedicated much of his career to scientific ocean drilling as a proponent and a participant of many drilling expeditions. He has been a valued colleague on many of the advisory committees (Atlantic Regional Panel, PCOM, ESSEP, SCICOM, SPC) that have evaluated and mentored the drilling proposals of other scientists. He has been a leader in planning the ODP and the IODP through his essential role in the organization of, and participation in, numerous workshops and discussion sessions (including the long term planning efforts undertaken at COSOD II, COMPOST, COMPOST II, CONCORD, and COMPLEX). Jamie was a key member of the two committees (IPSC and iPC) that laid the foundation for the new Integrated Ocean Drilling Program and helped write the IODP Initial Science Plan. He also has been willing to step forward into the administrative breach whenever a strong and knowledgeable hand was needed to guide the scientific ocean drilling programs. By serving as acting director of both the ODP and the IODP, he assured the smooth working of the former and the seamless transition into the latter. This prodigious effort over many years of service cannot be matched by anyone else in the community. We value him for his great wisdom, his broad experience, his leadership ability, his willingness to do the hard jobs, and his straightforward candor, energy, and enthusiasm about all issues important to the drilling programs. As Jamie completes his service on the SPC, we hope that this only marks the completion of one more of the many tasks that he has undertaken for the good of the scientific ocean drilling community and earnestly ask him to continue to lend his support to our efforts.

**SPC Consensus 0406-28:** Andy Fisher represents a prime example of the key contributions of scientific ocean drilling in educating marine geoscientists. As a graduate student, he participated on two early ODP legs; then he served as an ODP staff scientist and later earned a berth as ODP co-chief scientist on Leg 168. He was fully recognized as a world leader in subseafloor hydrogeology in co-leading that working group at the COMPLEX workshop, and he was then appointed to SCICOM, the iPC, and the SPC for 2001-2004. During that term he demonstrated a thorough, even-handed approach and was highly valued for his penetrating advice on all matters hydrological as well as common sense on other issues. It is entirely fitting that he was named co-chief scientist of the very first IODP expedition, which will push the limits of subseafloor hydrogeology in scientific ocean drilling. As Andy rotates off the SPC, we thank him for his service and wish him well. Eventually, we hope he will find time to recharge into the SAS, even while he continues to expand the realm of subseafloor hydrogeology.

**SPC Consensus 0406-29:** The SPC thanks Hisao Ito for his great contributions to the SPC as well as the iPC over the last three years as a seismic specialist. Ito-san is in some sense a typical Japanese gentleman; he is rather quiet and trustworthy, but hot-blooded. We definitely need such a member and hope to see him return to the SAS in the near future.

**SPC Consensus 0406-30:** This is the last SPC meeting for Ted Moore, one of the great champions of scientific ocean drilling. Ted led the IODP Planning Subcommittee (IPSC) in the Herculean task of developing the nuts and bolts of IODP from 1999 to 2001. Ted then co-chaired the interim Planning Committee from 2001 until 2003, and with his colleagues engineered the seamless transition from ODP to IODP. Now, in "retirement", Ted prepares to cruise to the high Arctic as a member of the shipboard scientific party of the Arctic Coring Expedition. We remind Ted that though the Lomonosov Ridge may be far away, he can run but he cannot hide. The international scientific ocean drilling community will likely soon again need his unparalleled leadership and matchless integrity. Therefore, we say *arigato gozaimashita!* but not good-bye.

**SPC Consensus 0406-31:** The SPC expresses its deep appreciation to Yoshiyuki Tatsumi for his long-term dedication to the success of this committee, in particular for his energetic efforts since joining the iPC in 2001. We also acknowledge his strong contributions in initiating the IODP, including key roles in CONCORD, development of the IODP Initial Science Plan, *Earth, Oceans, and Life*, and founding and building JDESC. We fully anticipate that he will continue contributing to the success of scientific drilling in his new roles, including overseeing this committee, and we wish him the very best fortune in his future endeavors.

**SPC Consensus 0406-32:** The SPC thanks Yoshiyuki Tatsumi for his efforts in hosting this meeting and Toru Nishikawa and Seiko Asaka for their able hand in ensuring that everything went smoothly. Meeting participants truly appreciate the fine hospitality, delectable cuisine, and thirst-quenching refreshments featured at the convivial opening banquet in the Metasequoia Room, as well as the educational tour of the Earth Simulator.

# **IODP Science Planning Committee**

3<sup>rd</sup> Meeting, 14-17 June 2004

# Yokohama Institute for Earth Sciences Japan Agency for Marine-Earth Science and Technology Yokohama, Japan

# **DRAFT MINUTES (v2.1)**

#### Monday

#### 14 June 2004

09:00-17:30

#### 1. Introduction

#### **1.1. Welcome and meeting logistics**

Mike Coffin opened the meeting at 09:00, and the participants introduced themselves. Hajimu Kinoshita welcomed everyone to Yokohama and to the JAMSTEC facilities. Yoshiyuki Tatsumi briefly explained the meeting logistics.

#### 1.2. Reports from MEXT and NSF

Kenji Kimura reported that ECORD and China had joined the IODP as contributing and associate members, respectively. Jamie Allan announced the likely availability of four extra months of funds for operating the *JOIDES Resolution* in FY2005. He encouraged the SPC to rank enough proposals for one to two new expeditions in FY2005, preferably simple ones commensurate with anticipated additional SOCs, and as many as six new expeditions in FY2006. Allan stated that previous budget guidance to the IODP-MI remained valid for now, though the lead agencies could allocate additional SOC funds to the IODP-MI after considering an amendment to the program plan in December 2004 or January 2005.

Mevel asked if this news signaled a delay in refitting a non-riser vessel. Allan said no, as long as Congress approves the FY2005 budget, and it would allow greater flexibility by keeping the *JOIDES Resolution* on contract until FY2006. He also mentioned the possibility of conducting expeditions with the *JOIDES Resolution* in FY2006 while converting another ship. Becker asked if the SPC would conduct another ranking in October for FY2006. Coffin noted that the committee would not receive any new proposals by then. Austin asked when the lead agencies would give guidance on the FY2006 budget. Allan said not until January 2005. Austin suggested that the SPC would have to do the entire ranking now to produce the program plan by July for the SPPOC. Coffin responded that the SPPOC could approve the existing plan in July and an amended plan in December. Katz worried about how the EPSP could contribute reviews for additional scheduling for FY2005 and FY2006. Byrne wondered if the SPC could delay the ranking for FY2006 until March. Coffin said that it depended on the response from the SPPOC. He viewed the NSF report as good news overall because it could mean less of a hiatus in non-riser drilling.

# 1.3. Reports from EMA and MOST

Catherine Mevel expressed optimism that Canada would sign a memorandum to join ECORD this week. She expected Austria to join by early FY2005 or sooner but did not anticipate any other new members soon, though ECORD planned to approach the new EU countries. Mevel reported that the EC 7<sup>th</sup> Framework Program would put more emphasis on basic research and participation in international programs, thus potentially allowing for IODP funding. She mentioned that the UK IODP meeting last week associated with the official launch of the Arctic Coring Expedition had received good media coverage throughout Europe. Mevel

concluded by noting with much sadness the recent passing of Helmut Beiersdorf, a stalwart leader of scientific ocean drilling in Germany.

Soh asked if ECORD had considered approaching Australia and New Zealand. Mevel said no, they did not plan on expanding outside Europe, except for Canada, which had approached ECORD.

Zuyi Zhou reported that China will hold a symposium for IODP planning in Beijing in November 2004. The China-IODP science committee held its first meeting in February 2004 and discussed the Chinese IODP science plan, reports from working groups established to develop IODP proposals on paleoenvironments and on the tectonics of the South China Sea, coordination with other international programs, functions of the IODP-China office now established at Tongji University, and the theoretical institute on the deep biosphere and accompanying distinguished lecture series on geomicrobiology planned for June 2004 at Tongji University. Zhou explained that the Chinese IODP science plan, though not yet available in English, focuses on the three main themes of the deep biosphere and sub-seafloor ocean, paleoenvironments, and tectonics of West Pacific margins. He added that China has now identified most of its SAS panel members since officially joining the IODP in late April.

#### 1.4. Approve last SPC meeting minutes

Coffin sought a consensus to approve the minutes from the previous meeting. The committee offered no comments.

**SPC Consensus 0406-1:** The SPC approves the minutes of its second meeting on 23-26 March 2004 in Washington, D.C., USA.

#### 1.5. Approve SPC meeting agenda

Coffin asked for proposed changes or additions to the agenda. The committee offered no comments.

**SPC Consensus 0406-2:** The SPC approves the revised agenda for its third meeting on 14-17 June 2004 in Yokohama, Japan.

# **1.6. SPC procedures and protocol**

#### 1.6.1. Review draft SPC terms of reference

Coffin cited the history of developing the SPC terms of reference. He then reviewed the current wording of the individual sections and noted some of the most recent changes. The committee offered no comments on Sections 1.1 General Purpose, 1.3 Structure, 1.7 Vote and Quorum, and 1.8 Chair and Vice-Chair. Coffin proposed a minor change in Section 1.2 Mandate on reviewing SAS membership instead of recommending it to the SPPOC. Moore asked if that implied taking approval of SAS membership away from the SPPOC. Coffin said yes and noted that the executive authority never had such approval in the past. Austin recommended having panel member lists and CVs available for review. MacLeod suggested asking for pro forma one-page CVs. Miller preferred not to proscribe too much. Coffin noted in Section 1.4 Meetings the recommended schedule of two meetings per year, in March and August. Austin remarked that the schedule must mesh with the proposal deadlines and SSEPs meetings. Becker suggested removing the specific months from the terms of reference. Moore advised changing it only if necessary. Coffin proposed minor changes in Section 1.5 Membership to reflect the membership of China and to delete the statement on SPPOC approval of SPC alternates. He questioned why the SPPOC should approve SPC alternates when it does not approve regular SPC members. Coffin noted in Section 1.6 Liaison the necessity of changing the abbreviation PPSP to EPSP because of the recent change in the

name of the panel. The committee agreed to recommend amending Sections 1.2, 1.5, and 1.6 as proposed.

**SPC Motion 0406-3:** The SPC recommends revising three clauses of its terms of reference as follows:

1.2 Mandate. The SPC encourages the international community to develop and submit drilling proposals for the IODP. The SPC can initiate and terminate temporary SAS groups as needed. The SPC recommends reviews SAS membership to the SPPOC, particularly with respect to disciplinary balance. The SPC recommends SAS meeting frequency...

1.5 Membership. The SPC will consist of seven members from Japan, seven members from the U.S., and four members (three voting and one non-voting) from the ECORD, and one member (non-voting) from China. All appointees to the SPC shall satisfy the fundamental criteria of having the ability and commitment to provide mature and expert scientific direction to IODP planning. Each member should have a designated alternate to serve in his or her absence. The term of membership will be three years and at least one third of the members shall rotate off the committee annually, so that the SPC membership is replaced every three years. Re-appointment shall be made only in exceptional circumstances. Any changes in the SPC member representation (i.e., naming of alternates for members for meetings without prior approval of the alternates by the SPPOC) must be reviewed by the SPPOC for approval. The fields of specialization on the SPC shall be kept balanced as far as possible by requests to national and consortia program committees. If an SPC member misses two meetings in succession, the SPC chair or vice-chair will discuss the problem of SAS representation with the appropriate country national or consortia representative(s) on the SPPOC.

1.6 Liaison. The Vice-President of Science Planning at the IODP-MI, the directors of the implementing organizations, or nominees thereof, and representatives of the lead agencies are permanent, non-voting liaisons. The SPC chair is the liaison to the SPPOC, and the SPC assigns other liaisons to the SSEPs, <u>PPSP EPSP</u>, and other SAS panels and groups.

Moore moved, Miller seconded; 16 in favor, 1 absent (Kato)

Coffin highlighted the statement in Section 1.2 that the SPC approves by at least a two-thirds majority the annual drilling schedule as forwarded from OPCOM. He presented various excerpts from the SPPOC minutes confirming the intent for the SPC to approve the final schedule, and he wondered how this would work now that the SPPOC had transferred OPCOM from the SAS to the IODP-MI. Coffin also presented from the IODP-MI an optimum timeline for OPCOM activities and a structural diagram showing how the SPC would interact iteratively with OPCOM across the divide between the advisory structure and management, but he worried that neither the timeline nor the diagram indicated that the SPC would have approval of the schedule. Coffin identified two choices for the SPC of either approving the schedule forwarded from OPCOM or making iterative adjustments without voting to approve. He also emphasized that the science committee in the past often made significant changes to the schedule presented from OPCOM.

Becker preferred leaving the first option in the SPC mandate and wondered what the IODP-MI imagined would satisfy the SPC. Moore observed that the structural diagram did not show a connection between the SPC and the SPPOC. He suggested that since the OPCOM also reports to the SPPOC then the SPPOC must arbitrate if necessary. Miller expressed concern about having insufficient scientific oversight of the scheduling exercise. He noted that JOIDES had originally formed OPCOM as a subcommittee of SCICOM to take care of

details with the operators, but they still came back with more information to the whole committee for approval. Austin said that the IODP-MI plan assumed that the SPC members on OPCOM constituted an executive authority of the SPC. He therefore wanted to codify that the SPC members on OPCOM represented the whole committee. Moore objected that even the most knowledgeable scientists could not cover everything, so the schedule should come back to the whole committee. Quinn stressed the importance of counting votes for the sake of accountability. Coffin concluded that the committee did not have to do anything except leave in its mandate the statement on approving the schedule by a two-thirds vote, unless they preferred making an additional statement to impart the flavor of this discussion to the SPPOC. Ildefonse preferred issuing a loud and clear message to the SPPOC in addition to leaving the mandate unchanged.

Austin suggested waiting for the OPCOM report and approving the plan later. Becker clarified that the SPC had already approved the FY2004-2005 schedule at its previous meeting. Larsen added that no OPCOM report appeared on the agenda. Austin cited that as evidence of a communications problem and called for more open communication with OPCOM. He expressed disappointment, for example, at not seeing any material from the April OPCOM meeting in the SPC agenda book. Miller also regretted not having the OPCOM minutes or the OPCOM chair available at this meeting. Tanaka suggested disseminating the draft OPCOM minutes now. Rack indicated that the draft report might contain very preliminary budget estimates. Coffin explained that the OPCOM meeting participants had received the draft minutes but did not yet have permission to distribute them to others. Larsen later gave approval to distribute the draft OPCOM report at this meeting.

#### **1.6.2.** Conflict-of-interest statements

Coffin presented the current conflict of interest statement, as clarified by the SPPOC to exclude proponents from serving as watchdogs on other proposals. Austin asked about the status of institutional conflicts. Miller asked if it included site survey cruises as well. MacLeod wondered about scheduled site surveys. Coffin wanted to have all potential conflicts declared now, and then he would initially decide, subject to full SPC review, if any true conflicts existed. The committee members and other participants declared the following direct or potential conflicts of interest regarding the proposals on the agenda.

*Current proponent:* Becker (545-Full3), Kenter (650-APL), Soh (603-CDP3, 603A-Full2), Camoin (650-APL), and Suyehiro (537A-Full3).

*Former proponent of an earlier version:* Becker (553-Full2, 584-Full2, 603-CDP3) and Ito (603-CDP3, 603B-Full2).

#### Collaborator on proposal, but not listed as proponent: Camoin (581-Full2)

# Nominee for co-chief scientist of related expedition: Quinn (650-APL)

*Colleague at same institution as proponents:* Austin (537-CDP4, 600-Full, 603-CDP3), Coffin (477-Full4, 595-Full3, 603CDP, 603A-Full2, 603B-Full2), Duncan (547-Full4), Ildefonse (537A-Full3), Kenter (595-Full3), MacLeod (555-Full3, 557-Full2, 573-Full2, 584-Full2), Miller (584-Full2), Moore (522-Full3, 545-Full3, 584-Full2), Soh (537-CDP4, 537A-Full3, 584-Full2, 603B-Full2), Tatsumi (537-CDP4, 537A-Full3, 584-Full2, 603-CDP, 603A-Full2, 603B-Full2), and Suyehiro (537-CDP4, 584-Full2, 603-CDP, 603A-Full2, 603B-Full2)

Colleague at same institution as site-survey planners: Austin (548-Full2)

# Proponent of a related, but rejected, site-survey proposal: Austin (595-Full3)

Coffin determined that all current proponents definitely had a direct conflict of interest. He decided not to regard institutional conflicts as grounds for excusal and said that he would consider all other potential conflicts on an individual basis. Coffin reiterated that conflicted committee members must leave the room during the entire discussion and global ranking of proposals. He also noted that the SPC must clarify for itself and OPCOM the status of the unscheduled portion of Proposal 545-Full3 (see Agendum 5).

#### 1.6.3. Robert's Rules of Order

Coffin briefly reviewed several points of order concerning the proceedings of the meeting.

#### **2. IODP Management International, Inc. (IODP-MI) report 2.1. Statement from the President**

Hans Christian Larsen distributed a letter to the SPC from the IODP-MI president and highlighted several of its points, particularly the need for a transition period to define the proper boundary between advice and management. He also noted that panel chairs would receive an honorarium from the IODP-MI.

Austin asked about defining the advisory and management roles. Moore reemphasized that the link between advice and management goes through the SPPOC because the SPC reports to the SPPOC, not to OPCOM or the IODP-MI. Larsen asked if any difference existed between the reporting and advisory pathways. Moore replied not really. Coffin clarified that some SPC advice goes directly to the IODP-MI and the implementing organizations. Miller proposed making a statement on reaffirming the SPC mandate to approve drilling schedules through reporting to the SPPOC. Coffin suggested letting the SPC working group refine such recommendations for later. Austin questioned the need of having both an SPC working group and a SPPOC *ad hoc* committee reviewing the SAS. Coffin explained that the SPPOC asked for input from the SPC, and he hoped the timing and coordination of the efforts would work. Mori preferred having a single group with appropriate representatives from each committee. Larsen said that the IODP-MI expects a single, unified report from the SPPOC.

# 2.2. Status of establishing IODP-MI offices

Larsen listed the current personnel of the Washington, D.C. office and mentioned its upcoming move to a new permanent location in late September. He anticipated seeing the Web site online by the end of June, with a quick-start or mini-guide to the program posted there. Larsen listed the current personnel in the Sapporo office and noted three advertised positions for new staff, including a program data and publications manager, a data management specialist, and an associate science coordinator. He reported that many well-qualified candidates had applied, but budget realities might preclude hiring for FY2005. Larsen praised the surroundings and facilities of the new office located on the campus of Hokkaido University. He stated that the Sapporo office would continue operating its own Web site, but the URL would change in the near future. Larsen added that the 13- to 14-hour time difference between the two offices makes things difficult, but everyone would learn how to adjust.

# 2.3. Schedule for OPCOM

Larsen described the goal of creating an OPCOM-SPC meeting schedule that would allow the IOs more lead-time for expedition planning. He indicated that the SPC would hold only two meetings per year, with ranking conducted at the spring meeting. He then outlined a proposed meeting schedule for a generic eighteen-month period.

Austin thought that the proposed schedule looked more formal and less flexible than the iterative procedure advocated by the president. He asserted that the SPC did not just want to receive a drilling schedule from OPCOM and rubber-stamp it, but rather receive multiple schedules and choose one. Moore suggested that such a process could fit in the proposed schedule. Miller observed that the generic schedule showed the SPC just commenting on the proposed drilling schedule rather than advising, and he characterized that as a subtle but important distinction. Kenter thought it still amounted to providing advice, and he preferred having it recorded as such. Austin remarked that management can follow SAS advice or not at its own peril.

Coffin cited the difficulty of discussing important issues and making decisions by email. He stressed that the previous system had withstood the test of time and embodied efficiency with only two meetings per year of the science and operations committees together. Larsen understood and wondered again about the level of authority invested in the SPC members on OPCOM. Coffin believed that a few members alone simply could not provide a sufficient range of expertise. Becker described the role of the SPC members on OPCOM as ensuring that a good range of options would come forth. Austin thought that the SPC could still deliberate on the drilling schedules by email, provided they would have a report or minutes available from OPCOM meetings. Moore favored having a formal meeting where the entire committee could discuss the options and vote on a schedule. Miller said that the proposed meeting schedule would allow for group discussion and endorsement, supplemented by email information as available.

Becker asked if the responsibility for communicating back to the SPC belonged to the OPCOM chair or the SPC members reporting directly back to the committee. Moore suggested that the chair should always hold such responsibility. Coffin believed that the entire advisory structure and wider community retained a strong interest in getting informed about scheduling decisions. Larsen asked if it would suffice to post the information on the Web. Miller worried that making a draft report ready for the public would delay access to the committee. Coffin concluded that the SPC could advise OPCOM on the desired form and delivery of the report.

# 2.4. Schedule for scoping groups, task forces, and RFPs

Larsen reported on the status of several project-scoping groups. He noted that the Arctic scoping group had disbanded and the NanTroSEIZE scoping group would hold its first meeting in late June 2004, whereas the Tahiti project did not require a scoping group at the moment because the operator could handle matters for now, and establishment of the Indus Fan and CRISP scoping groups would wait until after OPCOM had developed general protocols for such groups. Larsen identified the current membership of the NanTroSEIZE Scoping Group as including representatives from the proponents, the SPC, the SSEPs, the TAP, CDEX, and the IODP-MI.

Duncan asked about the assessment phase of scoping and how that would occur after disbanding the initial scoping group. Larsen recognized the importance of the assessment phase and said that the scoping group membership could evolve over time, but he viewed it as a forward-looking group initially rather than a review group. He also would hesitate to have the same group doing planning and assessment. Katz said that the EPSP has a review group independent from the initial planning group. Becker remarked that CDPs would require evaluation during the project as part of the project management system. Coffin noted that the IODP-MI had not had enough time yet to digest the discussion and recommendations included in the project management system report. Austin suggested that the IODP-MI should return with a discussion of the project management system and what parts they wanted to incorporate.

Ildefonse wondered who would do the assessment of ACEX, since it would happen soon. Larsen replied that it depended on whether the assessment happened immediately or not until after knowing the results. Austin asserted that ACEX must have an operational assessment to determine the cost effectiveness such an expensive project before doing it again. Coffin added that the operational assessment should occur as soon as possible while the events stayed fresh in mind. Mevel assured everyone that ECORD would certainly need to do an operational assessment of ACEX.

Moore suggested that the NanTroSEIZE Scoping Group could use more independent expertise in engineering and risk assessment. Kuramoto believed that CDEX could handle those matters sufficiently with input from the SAS. Larsen emphasized that the list did not reflect a desire to have only one independent engineer but merely to make an effort to get started.

Larsen reported that funding for the current Site Survey Data Bank (SSDB) extended through January 2005, with additional funding requested through September 2005. He announced that the IODP-MI Sapporo office would issue a request for proposals (RFP) for a new SSDB in September 2004, with a proposal deadline in October 2004 for instituting a contract by March 2005 at the earliest. Larsen expected to convene a final RFP planning meeting with a subset of the SSP in August 2004. He presented several excerpts from the data-bank working group that would provide the basis for the RFP, and he emphasized the goal of creating an entirely digital, Web-based SSDB that should lead to closer integration of the proposal and seismic databases and could affect where the SSP would hold its meetings.

Byrne worried about drowning the system in data and asked for clarification on merging proposals and the data bank. He explained that the SSEPs traditionally did not get involved in data review because the external reviewers do not have access to the data. Moore urged making it clear to industry participants that the data would remain proprietary. Katz said that the digital concept also could affect where the EPSP would hold its meetings. He still saw resistance among the panel members to working exclusively with digital data and said that they really need to have high-resolution hardcopies available. Larsen asked about the best timing for the transition from one system to another. Katz suggested that some flexibility existed, but the panel could not wait until the last minute for guidance. Allan suggested that it might work better not to change completely and instantaneously to an exclusively digital database. Larsen understood that one could digitize even old analog data, and he regarded now as the right time to make the change, when instituting the new program. Austin remained uncertain about the availability of sufficient funds to implement the vision for the new data bank.

Larsen reported that the IODP-MI currently lacked funding to institute new data management and publications functions in FY2005, but they planned to add new staff in late FY2005 to undertake those initiatives in FY2006. He explained that the IOs would have responsibility in the meantime for program publications, and he cited the urgency of resolving the policies and guidelines for publishing scientific results. Larsen outlined the concept for a successor to the *JOIDES Journal* that would cover all scientific drilling. He said that the lead agencies had expressed interest in the concept and the ICDP had reacted positively to the idea of contributing content. Larsen welcomed the SPC to advise on this issue.

Austin asked whether the ICDP would contribute any funds toward the publication. Larsen replied that the details remained undetermined. Coffin asked about the availability of printed expedition reports. Larsen mentioned the idea of printing only on demand. Miller noted that the expedition report for ACEX would need to come out before the IODP-MI could issue an RFP for publications. Allan stated that no contractual obligations existed at the moment for FY2004. Mevel clarified that the ACEX report would come out in FY2005. Austin worried that without a single publications coordinator identified at the beginning, each IO might embark on its own path and thus make it very difficult for the program to produce a coherent and efficient set of publications. Evans explained that although the ECORD budget for FY2004 did not provide for publishing the ACEX report, they would produce the scientifically edited content and present it to the designated publications contractor as appropriate for FY2005. Coffin reminded the committee that they had already made recommendation on publications, whereas the IODP-MI now indicated that other priorities would take precedence in FY2005. He suggested that the SPC might still want to recommend that publications should take priority over some other issues. Miller stressed the importance of getting the ACEX report published in a timely manner. Rack stated that the JOI Alliance had responded to a query from the IODP-MI concerning publications. Kenter thought that sounded a little vague. Austin wanted to reaffirm the previous advice that a single organization should produce all program publications. Coffin asked the publications working group to draft a recommendation for later consideration.

On Thursday morning, Miller presented a proposed recommendation on publications. Austin noted that the statement remained intentionally vague on how long the current situation would last, and he suggested revisiting the issue on a regular basis. Kenter asked about the nature of the one organization mentioned in the statement as receiving the contract. Moore said that the answer would depend on the response to the RFP.

**SPC Consensus 0406-4:** The SPC recognizes that because of fiscal constraints, a request for proposals (RFP) for publications cannot be issued in time to provide publication support of the first IODP expeditions. In view of SPC Consensus 04-03-18, the committee reaffirms that "Each implementing organization be responsible for providing scientific content for its platforms, but that one contractual organization be a central point for technical editing, layout, and production, thus ensuring uniformity of style." The committee recognizes that the current situation is unusual and encourage the IODP-MI: 1) to have the implementing organizations of expeditions not covered under the RFP prepare the content of the expedition reports, and 2) to contract with one organization for technical editing, layout, and production of the reports. The committee also encourages the IODP-MI to issue an RFP for publications as soon as possible and to inform the SPC of any changes in publication strategy.

# 2.5. Final expedition and site designation scheme

Larsen reviewed the final scheme for designating IODP expeditions and sites. He described it as simple, logical, inexpensive, and quick to implement, as well as consistent with legacy databases and amenable for search purposes. Larsen noted that expedition names would not distinguish between platforms or IOs, but site numbers would, as recommended by the SAS.

Coffin asked if the SPC had to approve the names of the upcoming expeditions at this meeting. Austin wanted to ensure that expedition names would properly reflect the scientific objectives and preferred not leaving that task to the IODP-MI. Baldauf stated that the SPC would have to provide immediate input if they wanted to change anything in the ready-to-distribute prospectus of scheduled expeditions.

# 2.6. IODP mini guide

Larsen announced that an IODP mini-guide would appear soon in the last issue of the *JOIDES Journal*.

Yoichiro Otsuka reported on IODP-MI education and outreach efforts, undertaken primarily through establishing a standing task force to advise on immediate education and outreach priorities, prepare a long-range plan, and develop appropriate guidelines and policies. The task force held its the first meeting in late May 2004 in Washington, D.C. Otsuka listed the participants from the U.S., Japan, and Europe and cited the priorities of creating an IODP logo, compiling resources, establishing a portal Web site, writing short definitions of the program, engaging in promotional activities, and drafting a set policies and procedures for communicating with the international community.

Duncan asked if the task force involved professional educators. Otsuka said yes, one or two so far. Tatsumi stressed the importance of defining what constitutes national versus international efforts. Otsuka said that the workshop report contains many detailed recommendations, and now the program has to find funding to support the activities. Kenter asked if the participants of the workshop equated to the task force. Otsuka replied yes. Coffin suggested that the task force membership should remain flexible to bring in experts as needed. Otsuka believed that the task force itself offered flexibility, but he preferred having a constant membership for consistency.

# **3. Implementing Organization (IO) reports 3.1. CDEX**

Yoshi Kawamura reported that JAMSTEC had changed its full name as of April 2004 but retained the same acronym. He updated the status of the *Chikyu*, mentioning the ongoing commissioning of the drilling equipment and the BOP, sea trials by the shipbuilder, and an integrated function test, with final delivery of the ship to JAMSTEC expected by April 2005. Kawamura said that the ship had reentered dry dock to place the BOP onboard. He described the engineering site survey for the training cruise off northeastern Japan and noted the upcoming presentation of the site-survey plan to the EPSP in June. Kawamura outlined a basic schedule for establishing scoping groups for the NanTroSEIZE, Indus Fan, and Costa Rica projects, and he showed a tentative five-year timeline for planning the first riser expedition. Kawamura cited several outreach activities involving a university and museum campaign through J-DESC and the Asia Oceania Geoscience Society (AOGS) meeting on 5-9 July 2004 in Singapore.

Kuramoto reported on the development of database technology by the CDEX Information Services group and cited the needs and motivations behind the effort. He described the new system as flexible and robust, easy to add new components, very compatible with other systems, and capable of handling site-survey, logging, and core data. Kuramoto briefly outlined the data transfer technology, saying that it relied on standard tools in hand and would provide free access to authorized users through the high-security, high-speed infrastructure available at the JAMSTEC Yokohama Institute for Earth Sciences. He added that users would need only a PC and a Web browser to access and use the system. Kuramoto described the basic developments as completed. He showed a test example of how to use the system and welcomed everyone to try the hands-on demonstration adjacent to the meeting room and provide feedback. Coffin asked about the types of geophysical data that the system could incorporate. Larsen asked specifically about heat-flow data. Kuramoto replied that the system could handle most kinds of geophysical data, including heat flow.

#### 3.2. JOI Alliance

Frank Rack reported on JOI Alliance activities. He identified several new staff members at JOI and new personnel assignments at TAMU and described the internal team approach to integrated management. Rack presented the current operations schedule, but acknowledged likely changes based on the latest guidance from the lead agencies. He reported that JOI had signed a contract for non-riser vessel operations in FY2004-05 and had already accepted the vessel and commenced the mobilization process. Rack said that the alliance had submitted an FY2005 program plan to the IODP-MI for approval of SOCs, completed an environmental assessment for Phase 1 activities, received approval of a vessel indemnification request submitted to the NSF, and established new protocols for vessel security in compliance with the International Ship and Port Facility Security Code. He described the vessel security protocols in greater detail, pertaining to the effects of three escalating levels of security threat. Rack reported on the teacher selected to participate on Juan de Fuca Hydrogeology Expedition 301 as part of the teacher at sea initiative. He also noted that the alliance had identified willing co-chiefs for all scheduled expeditions, completed the staffing for the first expedition, begun the process for several others, and formalized the concept of the joint scientific party for the North Atlantic I and II Expeditions. Rack described the high-latitude marine contingency plan for mitigating the risks associated with weather and sea ice on the North Atlantic expeditions. He concluded by outlining various elements of the JOI Alliance outreach to stakeholders, including soliciting comments from the IODP SAS on the ship design, reviewing responses to the invitation to tender, planning the onboard science capability of the new vessel, introducing the community to the MREFC Web site, holding town meetings, and inviting the USSAC chair to serve as non-voting member of the vessel selection team.

Austin asked how the new information on FY2005-2006 operations would affect the JOI Alliance plans. Rack replied that the most critical overlap pertained only in the event of conducting non-riser drilling operations simultaneously with the refitting of another non-riser vessel. Moore asked about the final plans for implementing Proposal 543-Full2 CORK in Hole 642E. Rack reported that OPCOM decided to drill a new hole for the CORK based on the science rationale, and the JOI Alliance had factored that into its budget for this fiscal year. Miller expressed concern that OPCOM had approved a scientific issue that the SPC had not fully reviewed or endorsed. He wondered if that gave OPCOM too much authority. Coffin reminded the committee of the decision made at the last SPC meeting (SPC Consensus 0403-23) to request an addendum from the proponents before the OPCOM meeting, which they provided. He also noted that OPCOM added Proposal 641-APL Costa Rica CORK II to the schedule and dropped two sites from the North Atlantic I and II Expeditions because of weather concerns, though perhaps those sites could get rescheduled if drilling operations get extended through FY2005. Coffin added that Proposal 589-Full3 Gulf of Mexico Overpressures remained at OPCOM but had not undergone any safety review.

Miller questioned the implicit extension of the sample moratorium on the first part of the North Atlantic Expedition.

# 3.3. ESO

Dan Evans reported on activities of the ECORD Science Operator (ESO). He listed the status of four MSP expeditions, including the Arctic Coring Expedition (ACEX) scheduled to get underway in August 2004, the Tahiti project planned for 2005, and the New Jersey Shelf and Great Barrier Reef projects now in the early planning stages. Evans noted that the proponents of the Great Barrier Reef project planned to conduct a seismic survey in November 2004, and the ESO held an initial meeting with the lead proponent of the New Jersey Shelf project. They also met with the lead proponent of the Tahiti project to prepare the FY2005 program plan. Evans explained that the plan for Tahiti involved three nearshore transects and required a ship with dynamic positioning capability. Evans announced that the ESO had signed the contracts for the ACEX ships and drilling rig, and although the original logging contractor pulled out of negotiations because of new ownership, he anticipated getting a new and better quote from another contractor. Evans illustrated the outfitting of the ACEX drilling ship with the moonpool and the drilling rig and said that work continued on finalizing the scientific prospectus, setting up the database, finalizing the ice management plan, making additional core-barrel assemblies, and purchasing expendable supplies. He updated the development of the piston coring assembly, noting that the ESO had tested it successfully in the lab and on land and would test it again in the North Sea after the first phase of mobilization. Evans added that the expedition would carry the DOSECC system as an alternative piston corer, at a cost equivalent to one day of ship time, but this back-up corer would take one day to switch out and would not work with the wireline coring assembly. He also noted the unavailability of the memory logging system because of the change in logging contractor. Evans mentioned several education and outreach activities for ACEX, such as launch parties and artist and teacher participation. He then presened the schedule for the operational phase, indicating that the expedition would begin mobilizing in June in Aberdeen, Scotland, and finish mobilizing in early August in Landskrona, Sweden. Evans cited the availability of up to twenty-three days for on-site operations, followed by a two-stage demobilization that would reverse the mobilization scheme. He also reported that the onshore science party would meet in the old Bremen core repository beginning on 1 November, and the length of the meeting would depend on the amount of core collected.

Moore asked where the artists and teachers would board on ACEX. Evans answered that the artists would board on the nuclear icebreaker and the teachers probably on the *Oden*. Brumsack asked about the plan for porewater measurements on ACEX. Evans said that the ESO received input from the SciMP and everything now looked in order. Austin questioned the need for using a vessel with dynamic positioning for drilling on the shallow-water reef off Tahiti. Evans replied that it would eliminate some of the concerns about the environmental impact on the reef, and he also characterized the water as not that shallow. Quinn wondered if the technology had evolved for obtaining good cores on a coral reef using a DP system without heave control. Austin suggested using a taut-line anchored barge as a cheaper alternative.

# 4. IODP SAS

The committee initially postponed this item until Wednesday before Agendum 10 and eventually returned to it late Thursday morning after the executive session.

# 4.1. Review

Benoit Ildefonse outlined the approach taken by the SPC working group to solicit community input on evaluating the SAS. He said that they kept in mind the science driven nature of the program and that the SAS should remain as flexible, efficient, and transparent as possible.

The group distributed a short questionnaire to J-DESC, USSAC, and ESSAC and received a fairly good response. They also received independent comments from an ICDP representative. Ildefonse briefly summarized the results of the survey.

Yoshiyuki Tatsumi delivered a preliminary report from the SAS working group, describing it as providing a framework for further discussion. The report focused on the functions, membership, and management of the SAS panels and integration with other international research programs, and it called for maintaining a flexible SAS that would operate with maximum efficiency and transparency. Tatsumi characterized the SAS terms of reference as generally well received, though certain questions arose concerning the functions of the TAP and the ILP. He suggested that perhaps an ad hoc advice team could perform the functions of the TAP, whereas various other components of the program management could handle most of the activity of the ILP. Tatsumi suggested reducing the overall number of technical panel members, either by reducing the number of panels or the number of members on the panels, and he urged greater flexibility in balancing the technical panel membership in favor of expertise rather than nationality. Tatsumi said that the co-chair system had worked well and the chair with vice-chair system could also work well. He stated that individual panels had seriously addressed the cultural and language challenges of having a diverse international membership, but communication between panels could still improve significantly. Tatsumi advocated better integration with other international research efforts to expand the IODP community and explore broader scientific issues. He viewed the appointment of liaisons as an effective way to share information, but one that exacted a toll on human resources and travel costs. Tatsumi cited several other potentially effective avenues such as workshops and syntheses on specific themes, a journal on scientific drilling, and coordination through national committees.

Allan asked if the group examined whether the SciMP covered too broad of a scope. Ildefonse said yes, they did perceive that as a problem. Coffin noted that the SciMP itself disagreed and felt satisfied with the scope of its mandate. Ildefonse saw that as a clear indicator of a communication problem if the panel and the community perceived matters so differently. Moore thought that publications in particular presented a stretch for the SciMP. Miller suggested that the SPC should have oversight of publications.

Byrne wondered about the motivation behind the recommendations on the ILP, when so far that panel had met only twice. Ildefonse conceded that opinions could change as more information became available. MacLeod asked about the overlap between the SSP and the EPSP. Ildefonse clarified that the concern related to an overlap between the SSP and the SSEPs. MacLeod suggested that perhaps a similar concern applied toward involving the TAP in the proposal evaluation process. Moore described the ILP as brand new and still carving out its own niche, and the IPSC originally conceived the TAP as a forward-looking panel rather than one that would react to technical problems after the fact. He also noted that the TAP co-chairs wanted to have a small core group of members and bring in other expertise as needed. Ildefonse said that the comments on the TAP and the ILP indicated that the community perceived those panels as more reactive in nature. Masuda asked if the TAP could still reconsider its terms of reference at the next TAP meeting. Coffin confirmed that they could, but any changes would require SPC approval before going to the SPPOC. Ildefonse welcomed more input to the SPC working group, particularly on the forward-looking role of the TAP.

Soh wondered how to improve the transparency of the SAS. Ildefonse believed it would help to have a single Web site and prompt delivery of meeting minutes. Austin asserted that every member of the SAS has a responsibility to inform the community about SAS and IODP activities. MacLeod hoped to reach out to a broader scope of the community. Coffin regretted that many panel members did not fully understand how the advisory system and the program worked. He commended the working group for their efforts in obtaining input and urged the entire committee to contribute to the final report due in October. Duncan asked about the pathway for the report. Coffin responded that the SPPOC working group would consider the mid-term report in July, and the final SPC report would probably appear as an appendix of the final SPPOC report.

**SPC Consensus 0406-5:** The SPC receives the mid-term report from its own SAS Review working group (Duncan, Ildefonse, Tatsumi), commends the efforts of the group to date, and looks forward to receiving a final report at the October 2004 SPC meeting.

#### 4.2. Terms of Reference

Jim Mori presented the results from the SPC working group on the SAS terms of reference. He explained that they took the terms of reference presented at the March 2004 SPC meeting and worked on making the language consistent across the various panels, and they tried to avoid the more difficult structural issues that other working groups should address. Mori described the specific points of change pertaining in general to all panels. He again urged maintaining flexibility in membership for all panels accept the SSEPs.

Allan noted that the official program memoranda specify the entitlements for panel memberships, and countries or consortia have the freedom not to exercise their entitlement. Kenter thought that the SPC agreed to strive toward achieving the obligations. Katz saw no need to specify the membership of each panel in the terms of reference if already defined elsewhere. Ildefonse added that it would also eliminate the need to change the terms of reference for each panel every time the program membership changed. Coffin suggested including a generic membership clause that refers to the entitlements defined in the memoranda.

**SPC Consensus 0406-6:** The SPC receives the revised terms of reference for the SAS panels from its own SAS Terms of Reference working group (Kenter, Mori, Prell), requests minor modifications, and forwards the revised terms of reference with modifications to the SPPOC for consideration.

# 4.3. Travel and CO<sub>2</sub> Emissions

Jeroen Kenter reported on an emerging trend for organizations with frequent travelers to compensate for the associated  $CO_2$  emissions by purchasing offsets from various environmental organizations. He proposed that the IODP should adopt such a policy in these times of increasing environmental awareness.

Miller asserted that policy issues belonged to the SPPOC and not the SPC. Coffin noted that the SPC had an advisory function on policy matters. Ildefonse asked how the concept might work for the IODP. Kenter answered that it could happen either on a personal, individual basis or collectively by the program. Austin estimated that such an offset would significantly increase the program travel budget. Miller suggested that the offset should also include emissions from the drilling platforms as well, and that would increase the cost considerably. Brumsack understood the reluctance to address this issue now, but he believed it would gain greater public awareness in the near future and the program would eventually have to face it. Austin asked how many committee members would do it voluntarily. Only a few indicated they would. Allan viewed this as perhaps a good reason to consider video conferencing. Katz remarked that teleconferencing worked well for some activities such as information sharing, but it did not work very well at all for making decisions or resolving disagreements. He noted that the ILP tried to have a virtual meeting but could not make it work. Katz recommended looking for more efficient ways to conduct meetings and reduce the number of guests. Miller suggested that the committee could endorse the concept of meeting participants making voluntary efforts to offset  $CO_2$  emissions.

**SPC Consensus 0406-7:** The SPC endorses the voluntary efforts of the IODP community to offset  $CO_2$  emissions related to participating in SAS activities.

#### 5. Clarify status of Proposal 545-Full3 – second expedition

Keir Becker left the room as a proponent of Proposal 545-Full3. Coffin outlined the issue of how to handle the remaining unscheduled science of this proposal. Ito reviewed the past SPC comments and recommendation on this proposal and described the operations that would occur on the first expedition and what would remain for the second. He stressed that the committee had previously recognized that separating the two phases by one to two years would improve the scientific results. Ito outlined the potential options for the SPC and noted that the first expedition could provide feedback for the second, as well as more experience working with CORKs in hostile environments.

Kenter asked how much it would hurt the original science objectives by not doing the second expedition. Ito explained that the overall project required a combination of boreholes to accomplish the objectives related to three-dimensional properties, anisotropy, and tracer experiments. Miller said that since the SPC had already approved the science, it only amounted to the question of who would decide whether the initial CORKing operations had succeeded. Moore suggested getting a report on the first expedition at the October 2004 SPC meeting before giving OPCOM approval to proceed. Brumsack advised taking all opportunity to evaluate the success of the first expedition. Baldauf noted the likely availability of the preliminary expedition report by September 2004. Miller suggested requesting a presentation from the co-chiefs at the next SPC meeting. Quinn agreed with inviting the co-chiefs and noted that this represented not only the first IODP expedition but also the first with multiple phases. Austin doubted getting an objective assessment from the co-chiefs but wondered how else to do it. He also linked this issue to the general assessment of CDPs.

Coffin cited the spectrum of multi-phase projects now planned, including the back-to-back Oceanic Core Complex expeditions, the two North Atlantic Paleoclimate expeditions separated by several months, and this project where the second part remained unscheduled. Moore viewed the drilling sites as highly interdependent for this project, but less so for the North Atlantic. Larsen asked about the contingency plan in the event of complete technical failure on the first Oceanic Core Complex expedition and whether the SPC evaluated those risks in the first place. MacLeod explained that various contingency scenarios existed, including drilling a series of shorter holes to meet many of the objectives. Coffin added that the SPC charge did not involve evaluating operational risks, only the science.

Coffin summarized the consensus of asking for an expedition report before making a recommendation to OPCOM. MacLeod added that the second expedition required a successful first expedition. Austin stated that OPCOM must determine the level of independent assessment needed. Katz suggested using the existing advisory structure to conduct assessments. Miller imagined that some projects might require an *ad hoc* committee

to do the assessment. Ildefonse asserted that the process should not change from one project to another. He suggested framing the discussion in terms of the project management system. Austin clarified that he meant a truly external, unbiased review. Coffin said that the proposed project management system clearly gave the assessment function to management after the initial phases of project scoping. Larsen envisioned involving one or two independent reviewers combined with the SAS. Masuda viewed the cross-well experiments as very interesting from an engineering perspective and challenging from a technical standpoint. He favored involving the full range of SAS expertise in the assessment process, either through individual panels such as the TAP or else through *ad hoc* committees. Austin suggested that this case could provide a good example for conducting an iterative electronic review to assess the expedition report.

Coffin asked if the committee wanted to advise the IODP-MI to do the assessment of the first expedition. Moore thought it would work in this particular case for evaluating the progress toward achieving the goals of a specific proposal. Filippelli agreed that this represented a separate case not equivalent to CDPs. Katz noted the possibility of drilling holes successfully but still not achieving the scientific goals. Coffin proposed discussing the general issues further after the IODP-MI indicated how they would implement PMS. He asked Ito, Austin, and Kenter to draft a recommendation on Proposal 545-Full3.

The committee returned to this issue on Wednesday afternoon. Becker again left the room. Ito presented a draft recommendation. Baldauf asked if the SPC would have enough time to give approval by the late September OPCOM meeting. Coffin said yes. Kenter thought that the committee had discussed the option of getting an independent assessment. Austin said that OPCOM could ask for one, but it would have to go to the SPC at the same time as OPCOM.

**SPC Consensus 0406-8:** The SPC recognizes that the Juan de Fuca Hydrogeology expedition (301) represents the first phase of a multi-phase effort involving installation of a CORK array across several sediment-covered ridges. To assess properly the appropriateness of proceeding to the next phase and the utility of this array, the SPC and OPCOM must receive a prompt report on the aforementioned expedition from the co-chief scientists and the JOI Alliance, detailing the scientific and operational progress towards the stated objectives of Proposal 545-Full3. OPCOM should consider that report at its next meeting (fall 2004) and forward its recommendation to the SPC in time to evaluate the next phase of Juan de Fuca Hydrogeology studies for inclusion in the prioritized SPC groupings for FY2005 and FY2006 program planning, as developed at this SPC meeting. The committee anticipates augmenting those groupings without re-ranking at the October 2004 SPC meeting.

#### 6. Review of Proposal 650-APL

Kenter and Camoin left the room as proponents. Quinn left the room as a potential co-chief of the related Tahiti expedition derived from Proposal 519-Full2. Ito and Austin served as watchdogs in explaining the technical issues and the scientific rationale of the proposed ancillary project. They also noted that the proponents sought external funding for the experiments.

The committee recognized that the proposed project would augment the primary objectives of the Tahiti expedition by providing an independent method of determining porosity and permeability beyond acquiring core samples, plus the prospect of imaging a modern reef environment would generate a lot of interest in industry as well as the general scientific community. The committee identified potential environmental issues pertaining to the sparker experiments, installing PVC pipes in the boreholes, and the use of ocean bottom cables. They

also discussed the possibility of using onshore sites for some of the tomography experiments, the difficulty of reoccupying old holes with the geophysical instruments, and especially the feasibility of pulling the PVC pipes out of the boreholes. Although the committee worried that these complexities could easily require more than three days of platform time, they very much favored seeing if some of the experimental techniques would work. Coffin asked Ito and Austin to draft a recommendation for later consideration.

The committee returned to this issue on Wednesday afternoon. Kenter, Quinn, and Camoin again left the room because of conflicts of interests. Ito presented a draft recommendation. The committee agreed that the EPSP should eventually review the project, but not before the proponents obtained the external funding. They also preferred focusing for now more on the science of the project than the technology.

**SPC Consensus 0406-9:** The SPC applauds the initiative represented by Proposal 650-APL and in particular the potential for a productive interaction among the proponents, the scientific party of the Tahiti component of Proposal 519-Full2 (the expected FY2005 MSP project), and industry. However, the committee cannot yet fully assess the operational, environmental, and fiscal impacts of operations associated with the proposed imaging experiments, and in particular the need to install and remove PVC liners from a subset of the holes proposed for the TAH-02A transect. The SPC therefore requests that OPCOM consider Proposal 650-APL at its September 2004 meeting, with input from the proponents and the ECORD Science Operator as appropriate, and provide a report and a recommendation at the October 2004 SPC meeting.

# 7. SSEPs report

Camoin summarized the results of the May 2004 SSEPs meeting in Granada, Spain. He listed the proposals reviewed, summarized the dispositions, identified the conflicts of interest among the SSEPs members, and explained the five-star rating scale for the proposals forwarded to the SPC. Camoin reported that an internal working group on proposal handling had suggested no longer accepting addenda for proposals at the SSEPs level, requiring preliminary proposals except for CDPs, ensuring that the SSEPs review all APLs, rejecting preliminary proposals after the second try, and not rejecting full proposals until after external review. Camoin also described the format of the final SSEPs review when forwarding a proposal to the SPC and said that proponents would receive the final review but not the rating.

Byrne presented the results of a second working group on present and future IODP science. He identified several scientific themes as well represented among the active proposals and a longer list of themes as not well represented, and he identified various geographic areas and environments with limited coverage. Byrne cited the difficulties of tool development and obtaining site-survey data as problems that could inhibit proposal development in certain areas, and he suggested establishing planning groups and sponsoring thematic workshops as ways to increase proposal pressure and attract a wider community. Byrne presented the results of a third working group on the SSEPs five-star rating system. He explained the lack of a consensus on defining the exact meaning of the different rating levels other than as a relative priority scale. Byrne also presented guidelines for replacing SSEPs co-chairs and reported that the panel recommended Mike Underwood as his replacement from among three nominees.

Coffin deferred further discussion of the SSEPs recommendations until later in the meeting. The committee resumed the discussion on late Thursday afternoon. Camoin presented the SSEPs recommendations in a more concise and direct format.

SSEP Recommendation 0405-01: All additional data submitted by proponents to the SSEPs must be incorporated in a revised version of the proposal rather than addenda.

Miller expressed concern about making the guidelines too restrictive. Camoin explained the advantage to the SSEPs of keeping a proposal as a single package and eliminating an opportunity to circumvent the page limits. Austin favored the idea and said it would help proponents and improve the proposals, especially for external reviewers. MacLeod thought it still might occasionally suffice to submit a short letter. Filippelli noted that proponents could still submit response letters for certain purposes.

SSEP Recommendation 0405-02: All new proposals, with the exception of CDP components, should be submitted as a preliminary proposal following SAS guidelines. New full proposals should be submitted only with pre-approval of the SSEPs co-chairs.

Moore opposed requiring preliminary proposals because not all proponents needed to submit a preliminary proposal. He noted furthermore that getting site-survey data often depended on receiving a favorable evaluation of a full proposal and not just a preliminary proposal. Miller agreed that it could unnecessarily slow down experienced and fast-paced proponents. He would approve it as a recommendation but not as a requirement. Quinn preferred keeping flexible and imagined that the proposed solution could cause more problems than it would solve. Brumsack wanted to preserve a pathway for experienced proponents and identified the more important issue of determining when to reject proposals. Coffin argued that requiring approval from the SSEPs co-chairs amounted to a non-uniform standard because the co-chairs change. He proposed that the SSEPs return with a revised recommendation.

SSEP Recommendation 0405-03: The SSEPs should review all APLs and provide a recommendation and justification to the SPC.

Moore recognized the usefulness of routing all APLs through the SSEPs, except it excluded the possibility of accepting late-arriving APLs before SPC meetings. Coffin confirmed that the last two APLs arrived late and received approval from the SSEPs co-chairs but not from the whole panel.

SSEP Recommendation 0405-04: The SSEPs should group each proposal forwarded to the SPC using a five-star system with five stars representing the very highest priority. The five-star and one-star categories should be used sparingly.

Ildefonse believed that fewer categories should suffice because the SSEPs can reject proposals and should not forward the one- or two-star proposals to the SPC. Moore would let the SSEPs use any scheme they wanted. Miller suggested using the one- and two-star categories internally to indicate reject and not ready to forward. Kuramoto wondered how well the rating worked given the current ranking by the SPC. Austin called the SSEPs rating a priority scale and not the same as ranking. MacLeod asked if the rating would go to the proponents or appear in the minutes. Camoin said the SSEPs would provide it strictly for the SPC.

SSEP Recommendation 0405-05: The SSEPs co-chairs can serve two or three years, but no more than five continuous years as a SSEPs member and co-chair. The terms are normally staggered.

The committee offered no comments on the terms of service for SSEPs co-chairs.

**SPC Consensus 0406-10:** The SPC accepts SSEP Recommendations 0405-01 on guidelines for submitting addenda versus revised proposals and 0405-03 on reviewing ancillary project letters (APLs) and forwards them to IODP-MI for implementation.

**SPC Consensus 0406-11:** The SPC receives SSEP Recommendations 0405-02 on guidelines for submitting preliminary and full proposals, 0405-04 on prioritizing proposals, and 0405-05 on the terms of SSEP co-chairs. The committee requests the SSEPs to reconsider issues associated with Recommendation 0405-02.

SSEP Recommendation 0405-06: The SSEPs nominate Mike Underwood as SSEPs co-chair following the November 2004 SSEPs meeting.

Camoin summarized the qualifications of the nominee to fill the anticipated vacancy of a SSEPs co-chair after the next SSEPs meeting. Moore spoke in support of the nominee.

**SPC Motion 0406-12:** The SPC appoints Michael Underwood as a new co-chair of the Science Steering and Evaluation Panels (SSEPs), effective following the November 2004 SSEPs meeting.

Moore moved, Austin seconded; 13 in favor, 4 absent (Becker, Duncan, Soh, Quinn)

Coffin raised the issue of what material the SPC should receive in the prospectus of proposals from the IODP-MI Sapporo Office. The committee agreed that they only needed to see the most recent version of the proposals, reviews, and response letters and not the complete set of files. Coffin raised several other questions about the guidelines for active proposals, such as how long a proposal should remain with the SPC without going forward to OPCOM, how long an unmodified proposal and unscheduled proposal should remain with the OPCOM, and how often CDP proposals should get updated. Austin did not see any problems at the moment and suggested that the committee could focus on other higher priority issues. Coffin deferred the matter and asked the SSEPs to address it at their next meeting.

The committee adjourned for the day at 17:45.

# Tuesday

# 15 June 2004

09:00-17:30

#### 8. Presentation and discussion of proposals

In compliance with the IODP conflict-of-interest policy, conflicted SPC member Wonn Soh did not attend the entire proposal review and ranking session. Yoshiki Saito served as an alternate for Soh during the session. Coffin reviewed the procedure for presenting, discussing, and ranking proposals. He also presented a sample review letter and emphasized the importance of the second and third watchdogs taking notes during the discussions. Mori encouraged all watchdogs to review the history of a proposal when presenting it. Becker asked if the review letters would go to the proponents after this meeting or wait until after the scheduling meeting in October. Coffin replied that the reviews certainly must get recorded now but perhaps should wait until October for delivery. Austin argued for giving the proponents feedback as soon as possible. He wondered how to give a consistent message for previously ranked proposals. Miller asked who would determine the relative ranking of proposals forward to OPCOM at different times. Coffin noted that only three full proposals and part of another still resided with OPCOM.

The committee reviewed the nineteen drilling proposals in the order specified below, with the proposals grouped according to the three main themes of the IODP Initial Science Plan. For

each proposal, the lead watchdog presented the scientific objectives, the committee discussed the objectives in detail, and the SSEPs co-chairs offered a final assessment of the scientific priority as determined by the SSEPs.

Proposal	Short title	Watchdogs	Conflicts
Deep Bios	phere and Subseafloor Ocean		
547-Full4	Oceanic Subsurface Biosphere	Kato/Moore/Ito	None
553-Full2	Cascadia Margin Hydrates	Kato/Ito/Moore	None
555-Full3	Cretan Margin	MacLeod/Duncan/Ito	None
557-Full2	Storegga Slide Gas Hydrates	Miller/Tatsumi/Mori	None
573-Full2	Porcupine Basin Carbonate Mounds	Kenter/Quinn/Saito	None
584-Full2	TAG II Hydrothermal	Tatsumi/Kawahata/Brumsack	None
621-Full	Monterey Bay Observatory	Ito/Becker/Kato	None
Environme	ental Change, Processes, and Effects		
477-Full4	Okhotsk/Bering Plio-Pleistocene	Kawahata/Brumsack/Moore	None
482-Full3	Wilkes Land Margin	Moore/Saito/Miller	None
548-Full2	Chicxulub K-T Impact Crater	Brumsack/Mori/Filippelli	None
581-Full2	Late Pleistocene Coralgal Banks	Quinn/Kenter/Kawahata	None
595-Full3	Indus Fan and Murray Ridge	Filippelli/Saito/Quinn	None
600-Full	Canterbury Basin	Filippelli/Miller/Kawahata	None
TT1			

The committee adjourned for the day at 18:35.

Wednesday		16 June 2004	09:00-17:30
8. Presenta	ation and discussion	of proposals (continued)	
Proposal	Short title	Watchdogs	Conflicts

roposar	Short the	v utenuogo	commets				
Solid Earth Cycles and Geodynamics							
522-Full3	Superfast Spreading Crust	Duncan/MacLeod/Kenter	None				
537-CDP4	CRISP Overview	Ildefonse/Mori/Austin	None				
537A-Full3	CRISP Stage 1	Mori/MacLeod/Duncan	Suyehiro				
603-CDP3	NanTroSEIZE Overview	Austin/Ildefonse/Tatsumi	Soh				
603A-Full2	NanTroSEIZE Phase 1	Ildefonse/Austin/MacLeod	Soh				
603B-Full2	NanTroSEIZE Phase 2	Tatsumi/Austin/Ildefonse	None				

# 9. Global ranking of proposals

# 9.1. Select proposal pool to rank

Coffin proposed excluding the overarching CDP proposals from the ranking and discussing the other fifteen proposals one at a time. The committee agreed to rank the individual CDP components separately within the context of their associated overarching CDP proposal and sought to clarify the number of proposals that could get scheduled in FY2005 and FY2006. Allan repeated that the SPC should prepare to schedule one or two expeditions in FY2005 and up to six expeditions in FY2006. Larsen recommended forwarding more proposals rather than fewer to provide management with greater flexibility. He also noted that OPCOM decides matters by consensus and has several members from the SPC. The committee decided without debate to include Proposals 477-Full4, 482-Full3, 522-Full3, 547-Full4, 553-Full2, 555-Full3, 557-Full2, 584-Full2, 600-Full, 603A-Full2, and 603B-Full2 in the pool for global ranking.

The committee considered not ranking Proposal 537A-Full3 because of the critical scientific concerns raised earlier. Members worried that the project could rank high enough to go to OPCOM even though they regarded it as not ready for drilling. The committee debated whether the proponents could address the SPC comments in an addendum or needed to revise the proposal, though recognizing the previous SPC intent not to request revised proposals (see SPC Motion 03-09-05). Members wanted to send a clear message to the proponents and noted that the proponents had chosen their own path after receiving advice and nurturing from the SAS. Eventually the committee agreed to rank Proposal 537A-Full3 first and then worry about what to forward to OPCOM and how the proponents could respond.

The committee believed that Proposal 548-Full2 clearly would not compete well in the ranking because it still lacked sufficient site-survey data, and members worried that another low ranking could seriously damage it. The committee suggested that the proponents needed better imaging to improve their model and recognized that if the proponents revised the proposal as intended then it had to return to the SSEPs. Members also recalled the previous intent to form a detailed planning group after seeing the new survey data. The committee agreed not to re-rank Proposal 548-Full2 at this meeting, and Coffin asked the watchdogs to draft a recommendation for later review.

On Thursday morning before the recess, Brumsack presented a recommendation on Proposal 548-Full2. Coffin proposed including a statement on incorporating the results of ICDP drilling. The committee also discussed whether to recommend holding a workshop, creating a working group, or establishing a detailed planning group, and they decided to advise organizing a joint workshop so as not to imply financial support from the program.

**SPC Consensus 0406-13:** In view of recent ICDP drilling of the Chicxulub impact structure and planned geophysical work, the SPC decides to exclude Proposal 548-Full2 from the current pool of proposals for global scientific ranking. The committee suggests that the proponents organize a joint IODP/ICDP workshop to discuss major scientific questions related to the Chicxulub impact structure, once new seismic data from onshore and offshore become available. The major goal of such a workshop should be to specify the drilling targets evolving from the latest cratering models and recent ICDP drilling, and to locate the best sites required to test the hypotheses and fulfill the scientific objectives of Proposal 548-Full2.

The committee considered limiting the scope of Proposal 573-Full2 before ranking it but decided to follow the precedent from the previous ranking exercise and rank the science of the whole proposal and then determine whether to forward only part of it to OPCOM for scheduling. The committee decided the same for Proposal 581-Full2 after initially considering to limit its scope or split it into two pieces before ranking it.

The committee noted that Proposal 595-Full3 lacked sufficient site-survey data except for the Murray Ridge sites. Members recognized that the proposal initially began as two separate proposals and considered splitting it again into two pieces and ranking only the Murray Ridge component now and forming a DPG for the Indus Fan part. The committee decided however to follow the same precedent as above and rank the whole proposal as presented and then advise OPCOM about splitting it if necessary.

Coffin recommended forwarding Proposal 621-Full to OPCOM without ranking it. He also suggested removing the scientific component to decrease the operational time and expense. Baldauf noted that the original proposal called for twenty-one days of operations. The committee agreed, while recognizing that an engineering expedition could always have a

small science party attached. Coffin also proposed asking the SciMP and the TAP to address the issue of how to manage the test bed facility and asked the watchdogs to draft a recommendation for later review.

On Thursday morning before the recess, Ito presented a recommendation on forwarding Proposal 621-Full to OPCOM without ranking it. After briefly discussing whether to recommend specifically cutting out the proposed science, the committee accepted merely describing the project as an engineering effort.

SPC Consensus 0406-14: The SPC recognizes the importance of installing borehole observatories within the Monterey Accelerated Research System (MARS) facility as described in Proposal 621-Full Monterey Bay Observatory. The strength of this proposal lies in the engineering investment for developing future borehole observatories and for integrating such observatories into cabled seafloor observatories. In that context, the committee deems it inappropriate to evaluate this proposal using the same scientific criteria as for other proposals and therefore decides not to include it in the current pool of proposals for global scientific ranking. Instead the SPC forwards Proposal 621-Full directly to OPCOM for possible scheduling of the engineering effort in FY2005 or FY2006. The committee requests that OPCOM provide a report and recommendation at the October 2004 SPC meeting. At that meeting, the SPC anticipates augmenting the June 2004 groupings of scientific proposals, without re-ranking, including consideration of Proposal 621-Full. The SPC also requests the SciMP and the TAP to work with MBARI and other proponents in developing a draft plan for managing the MARS-IODP borehole test facility. The SciMP and the TAP should submit a joint report for the October 2004 SPC meeting, and the SPC and OPCOM will submit a final report for the December 2004 SPPOC meeting.

#### **9.2. Balloting by SPC members**

Each SPC member assigned the numerical rankings of one to fifteen to the fifteen proposals in the pool. The members submitted their rankings on signed ballots.

# 9.3. Tabulate results

Eguchi and Schuffert collected the ballots and tabulated the results as follows.

Rank	Proposal #	Short Title	Mean	Stdv
1	522-Full3	Superfast Spreading Crust	3.18	2.30
2	603A-Full2	NanTroSEIZE Phase 1	3.47	2.45
3	603B-Full2	NanTroSEIZE Phase 2	3.76	2.77
4	477-Full4	Okhotsk/Bering Plio-Pleistocene	5.12	3.43
5	482-Full3	Wilkes Land Margin	5.94	3.27
6	553-Full2	Cascadia Margin Hydrates	6.35	3.12
7	600-Full	Canterbury Basin	6.88	3.57
8	595Full3	Indus Fun and Murray Ridge	8.82	2.88
9	547-Full4	Oceanic Subsurface Biosphere	9.24	3.99
10	557-Full2	Storegga Slide Gas Hydrates	9.65	4.05
11	581-Full2	Late Pleistocene Coralgal Banks	10.53	2.94
12	584-Full2	TAG II Hydrothermal	10.88	2.96
13	555-Full3	Cretan Margin	11.18	2.24
14	573-Full2	Porcupine Basin Carbonate Mounds	12.06	2.95
15	537A-Full3	CRISP Stage 1	12.94	1.95

# 9.4. Select group of proposals to forward to OPCOM

Coffin proposed sending at least the top seven proposals to OPCOM for scheduling and sending the eighth-ranked proposal but recommending drilling first at only the Murray Ridge site. No one disagreed. Coffin also suggested considering the ninth- and tenth-ranked proposals. Duncan questioned the need to limit the number of proposals going forward since the ranking should suffice to indicate priority. Coffin replied that the committee could decide individually on the lower-ranked proposals. Moore noted that the committee had significant concerns about the lowest two and could ask for a response from the proponents before the October SPC meeting. Austin suggested forwarding the whole list now for maximum flexibility and also asking for feedback for the October SPC meeting. Quinn recalled that the committee had identified a higher priority tier among the proposals forwarded to OPCOM the last time. Miller suggested forwarding all of the proposals in three priority groups consisting of the top seven, the next three, and the last five. Coffin questioned whether or not to forward the lowest ranked proposal. Austin regarded it as unready for scheduling but noted that it could fall on the ship track. Mori agreed about the lack of readiness for scheduling. Coffin asked Miller to draft a recommendation on forwarding proposals to OPCOM, incorporating statements from the watchdogs on shortening Proposals 573-Full2 and 581-Full2. He also asked the watchdogs to draft a recommendation on Proposal 595-Full3 for considering later.

On Thursday morning before recess, Miller presented a recommendation on forwarding proposals to OPCOM. Byrne asked how these proposals ranked relative to the other unscheduled proposals already residing with OPCOM. Coffin stated that the only proposals remaining at OPCOM equated to those in Group I.

Kenter presented a recommendation on considering Proposal 581-Full2 for partial scheduling. Moore characterized it as very cheap and easily doable, despite how it ranked. Miller stressed that MSP projects could not get scheduled as a matter of convenience or opportunity. Becker suggested not specifying it for FY2005-2006. MacLeod thought this proposal had a lower

priority than the other MSP proposals already awaiting scheduling and thus wanted to re-rank it in the future with other MSP proposals. Quinn confirmed that the other two unscheduled MSP proposals went forward in Group I and clearly have a higher priority. Austin did not want to start separating proposals on a platform basis or make an advance commitment to too many MSP proposals. Moore suggested deciding what to do with this proposal after seeing the scheduling options from OPCOM. Coffin said that the Group I proposals could again remain with OPCOM after the October scheduling, and the others would come back to the SPC for future re-ranking. The committee approved the recommendation and ultimately incorporated it in the overall recommendation on proposals forwarded to OPCOM (see below).

Kenter presented a recommendation on considering Proposal 573-Full2 for scheduling as a partial expedition. Ildefonse advised saying one mound instead of one or more sites. He also suggested not referring to it as a mini-expedition because that made it sound like an operational issue. MacLeod stressed that the committee would really like to see one mound get drilled and did not view it as a last resort. Moore said that the committee decided to rank the whole proposal and now had to work with the result. Quinn trusted that the SPC members on OPCOM would make known the preference of the committee. Austin added that the SPC could revisit the matter in October when reviewing the scheduling scenarios from OPCOM. The committee approved the recommendation after minor comments and ultimately incorporated it in the overall recommendation on proposals forwarded to OPCOM.

**SPC Consensus 0406-15:** The SPC forwards the top fourteen of fifteen ranked proposals to OPCOM in three groups as follows. The committee requests that OPCOM propose scheduling options for FY2005 and FY2006 that honor and adhere to these ranking groups as closely as possible.

Group I includes the top seven proposals. This group equates in priority to the Group I proposals previously forwarded to OPCOM and currently awaiting scheduling (519-Full2 South Pacific Sea Level, 545-Full3 Juan de Fuca Flank Hydrogeology, 564-Full New Jersey Shelf, and 589-Full3 Gulf of Mexico Overpressures). The committee recommends scheduling the Group I proposals if at all possible within operational constraints.

Group II includes the next three proposals (#8-10). The committee recommends considering these proposals as alternatives only if the Group I proposals cannot fill the schedule.

Group III includes the lower four proposals (#11-14). The committee recommends considering these proposals as alternatives only if those in Groups I and II cannot fill the schedule. Although scheduling should and will be guided primarily by the results of the global scientific ranking, the SPC recommends limiting the drilling options of Proposal 581-Full2 Late Pleistocene Coralgal Banks to several sites around one of the drowned reefs at Southern Bank, while nonetheless addressing as many of the proposed scientific objectives as possible. Likewise, the committee recommends limiting the drilling options of Proposal 573-Full2 Porcupine Basin Carbonate Mounds to several sites around one mound.

Byrne asked if the March 2005 ranking could contribute to the FY2006 schedule. Coffin announced the intent of using the March 2005 ranking for developing the FY2007 schedule. Larsen asked if the funding agencies would provide any budget guidance in time for the OPCOM meeting. Allan replied that it depended on whether the U.S. Congress would pass the new budget by then or just adopt a continuing resolution. Austin mentioned preparing the FY2004 program plan without budget guidance and cautioned that reality might differ from

what everyone expected. Katz indicated that the EPSP needed guidance on what proposals they should review at their next meeting. Baldauf suggested starting with the Group I proposals and also considering Proposal 589-Full3, the unscheduled portion of Proposal 545-Full3, and the unscheduled Irminger Basin sites from Proposal 572-Full3.

The committee discussed the response to the proponents of Proposals 537-CDP4 and 537A-Full3. Members recognized the scientific potential of the project and viewed it as an opportunity for management and OPCOM to work on implementing the project management system. They also recognized the possibility of forming a DPG pending the response of the proponents. Given the problem of scientific balance, the question arose of whether to keep the proposal at the SPC level and merely ask for a response letter or an addendum or else ask for a revised proposal that would have to go back to the SSEPs according to normal procedures. Although the SSEPs had already judged the current proposals as mature enough to forward to the SPC, members believed that the proponents could and should improve them, especially to clarify the issue of scientific balance in Proposal 537-CDP4. The watchdogs drafted and the committee modified the following recommendation.

**SPC Consensus 0406-16:** The SPC recognizes the scientific potential of a complex drilling project (CDP) in the Middle America Trench off Costa Rica. However, Proposals 537-CDP4 and 537A-Full3 entail certain scientific and balance issues that need to be addressed before the first stage can be considered for drilling. Following the response of the proponents to the SPC reviews of these two proposals, the committee may consider establishing a detailed planning group (DPG) to work with the proponents on clarifying the scientific objectives of the CDP and the drilling strategy in the component proposals.

Filippelli presented a recommendation on Proposal 595-Full3 and questioned if it should refer to a project-scoping group or something else. Moore agreed with calling it a project-scoping group because it would involve operators and proponents. Austin wanted to make sure that it would not include the Indus Fan component. Coffin asked the watchdogs to revise the recommendation. He suggested specifying that the SPC would reconsider the proposal after the proponents collected further seismic data, and meanwhile it could stay with OCPOM.

**SPC Consensus 0406-17:** The SPC supports efforts to understand the timing, rates, and impact of the uplift of the Himalayan-Tibetan Plateau as elucidated in Proposal 595-Full3 Indus Fan and Murray Ridge. The committee strongly endorses the proposed idea to test the feasibility of the project in two phases, beginning with shallow drilling at the Murray Ridge site (MU-1B). This will allow the proponents to explore how they might quantify some of the variables involved in reconstructing sediment volumes, noting that previous Indian Ocean drilling has not yet provided a robust erosion record even for the Neogene. For this reason, the committee requests that OPCOM form a project-scoping group to maximize site drilling objectives and develop a drilling plan at Murray Ridge that optimizes this potential.

# Additional advice to OPCOM

Coffin announced that OPCOM would hold its next meeting on 29 September to 1 October in Washington, D.C. The committee discussed providing additional advice to OPCOM on scheduling the Irminger Basin sites from Proposal 572-Full3, on conducting the shallow hazard safety survey for Proposal 589-Full3, and on logging during the Arctic Coring Expedition (ACEX).

**Proposal 572-Full3 Irminger Basin sites** Coffin explained that OPCOM had excluded the two Irminger Basin sites from the previously scheduled North Atlantic I and II Expeditions

because of the need for a support vessel during the associated time window. He wanted to recommend including those sites in the FY2005 or FY2006 schedule if at all possible. Baldauf cited the options of either rescheduling the second expedition or inserting the Irminger Basin sites elsewhere in the schedule during a better weather window.

Ildefonse noted that rescheduling the second expedition for later would heighten the existing concerns about the effects of the time lag on the unified science party. MacLeod wondered if any of the new proposals could fit in the slot for the second expedition. Becker asked about dropping the scheduled alternate sites from the first two expeditions if OPCOM could find a way to schedule the Irminger Basin sites separately. Austin also certainly preferred drilling the primary sites instead of the alternate ones. Baldauf asked about keeping the Norwegian Margin Bottom Water expedition linked to the North Atlantic II expedition or fitting it in some other way. The committee preferred the current linking. Coffin asked Becker to draft a recommendation on scheduling the Irminger Basin sites.

On Thursday morning before recess, Becker presented a recommendation on incorporating the two Irminger Basin sites in the schedule for FY2005 or FY2006. Austin recalled the earlier SPC recommendation to consider the two North Atlantic expeditions as a single science party. He wondered how including these sites separately might complicate matters. Miller suggested not worrying about that now.

**SPC Consensus 0406-18:** The SPC recommends that OPCOM explore possible scheduling options for FY2005 and FY2006 that would enable coring the two Irminger Basin (IRM) sites of Proposal 572-Full3 North Atlantic Late Neogene-Quaternary Climate without requiring a support vessel. Such possibilities might include rescheduling the second North Atlantic Paleoclimate expedition into the optimal weather window or incorporating the IRM sites into another expedition. If the IRM sites get scheduled, alternate sites should not be drilled on the North Atlantic Paleoclimate expeditions.

*Proposal 589-Full3 hazard safety survey* Coffin explained the issue of encouraging OPCOM to undertake a shallow hazard safety survey for Proposal 589-Full3. Austin described it as an issue of timeliness as well as readiness and called for better communication with OPCOM. Katz indicated that the EPSP required such a survey. Coffin asked Becker to draft a recommendation for later consideration.

On Thursday morning before recess, Becker presented a recommendation on conducting the safety survey for Proposal 589-Full3. Austin referred to it as definitely a POC and a matter for OPCOM. Allan doubted that the budget could allow for it this year. Katz stated that the EPSP could still review the project in December if the survey occurred at the beginning of the next fiscal year. He thought the contractors felt they could accomplish that. Austin said that since the proposal had already moved to OPCOM for implementation, the SPC could only reaffirm its support for the science. Coffin noted the previous delay of the survey because of advice received from the funding agencies on the FY2005 schedule.

**SPC Consensus 0406-19:** In light of a lead agency report on new possibilities for potential non-riser operations in FY2005 and FY2006, the SPC requests that OPCOM reconsider its April 2004 decision to delay an independent evaluation of existing hazard survey data for Proposal 589-Full3 Gulf of Mexico Overpressures. Such an evaluation should be conducted as soon as possible to allow for potential scheduling of this highly ranked program in FY2005 or FY2006.

*Arctic Coring Expedition (ACEX)* Moore left the room as a member of the ACEX science party. Larsen presented an update from OPCOM on the ACEX operations. He explained that in light of the delay in contracting for logging operations, cutting the logging plan would yield a potential savings of \$300K and 3-5 days of operations. Larsen cited the pros and cons of using those savings for drilling instead of logging.

Austin believed that the co-chiefs certainly viewed cores as more important than logs. Miller recognized the value of logging but emphasized the greater importance of coring first. Evans noted that the program could always save money on MSP expeditions by not logging, but the proposal called for logging every site, and the scientific program had included memory and wireline logging from the start. He said that OPCOM and the scoping group had discussed the potential savings of replacing wireline logging with memory logging, despite its experimental nature in this environment. Evans cautioned that if the SPC recommended against logging now, it would set a precedent in terms of planning principles. Becker recalled that the co-chiefs identified recovery of a complete section as their top priority to the Arctic scoping group, and logging could aid that goal in the event of poor recovery. He felt very uncomfortable setting a precedent of pulling logging from the plan.

Larsen stated that the expedition lacked full funding, and logging operations comprised the only element not contracted so far. Ito noted that other drilling projects almost always faced the problem of eliminating logging, whereas the IODP had set a standard of including logging on every expedition, and he would regret seeing that change now. Larsen clarified that the IODP-MI had not proposed eliminating logging but just wanted to make the SPC aware of potential ways to cut costs. Miller wondered if any possibility existed for doing basic logging more cheaply. Kenter saw logging as important because even five or six holes might not yield complete recovery. Austin doubted that logging would succeed at sites of such poor recovery, but he objected to the idea of not taking the logging equipment.

Coffin stated that all past decisions on waiving the logging requirement for sites deeper than 400 m had always come to this level for approval, and he did not hear a consensus from the SPC not to follow that precedent. Brumsack understood that any core from the Arctic would fill a wide gap in knowledge. He also viewed logs as beneficial but definitely a secondary priority. Duncan suggested letting the science party decide on site if it just concerned a matter of time. MacLeod clarified it as a matter of taking the logging equipment or not, otherwise it would not save any costs. Ildefonse did not want to underestimate the importance of logging and preferred sending the tools and letting the science party decide. Ito also preferred adhering to the standard of logging, though he recognized the difficulties associated with MSP projects and suggested asking the SciMP to address the issue. Coffin noted that the SciMP petrophysics report identified logging as part of the minimum standard measurements across platforms. Kenter wanted to request the maximum realistic effort to get logging data because it sounded like the co-chiefs might lean immediately toward eliminating logging. Becker supported having the basic logging suite onboard since the Arctic scoping group report called for logging any cored sites.

MacLeod wanted to clarify the number of days for drilling operations. After some discussion about the exact number of days, Evans stated that the cost of the logging tools equated to three fewer days of operations. Austin asked the ESO to confirm the exact number of days on site. Evans explained that he could not state an exact figure because the costs had fluctuated significantly over the last few weeks and probably would continue doing so. He cited the examples of sharply increasing fuel costs and the fact that the BGS had assumed the cost for piston core development instead of the IODP-MI. Kenter added that the changes had already consumed the contingency budget. Austin wanted to determine the minimum number of days acceptable for doing science considering the overall budget.

Miller expressed concern about jeopardizing the success of the whole \$12 million expedition over \$300,000 for logging. Quinn expressed similar disappointment over those circumstances. Tatsumi agreed that sampling cores must take priority. Kato thought that if the prospectus included logging then the program should provide it. He inquired if the IODP really could not find a way to provide the relatively small amount of extra funds required. Larsen responded that logging constituted a POC, whereas the IODP-MI only had control of the SOCs. Allan predicted that the program would likely face more hard decisions such as this one because the task of separating POCs and SOCs had proved difficult and allowed much less flexibility in moving funds between budget categories and contractors.

Austin expressed disappointment that the committee received this information without warning. He urged better communication between OPCOM and the SPC. Mevel hoped everyone would recognize the contribution of ECORD to implement this highly ranked project. Larsen expressed surprise at the character of the discussion over what he considered a straightforward matter. Coffin believed that the committee had delivered a clear message and he proposed moving on. He also noted that the SPC had sorely missed the presence of the IODP-MI vice-president for operations at this meeting, and he suggested recommending that the SPPOC require a formal link between that position and the SPC.

#### 10. Reef drilling WG report

Terry Quinn reported on behalf of the reef drilling working group, comprised of himself, SPC members Kenji Kato and Jeroen Kenter, and ESO representative Dan Evans. Quinn reviewed the goals and current state of knowledge on reef drilling. He outlined several guiding principles for MSP operations in reef environments, such as 1) minimizing ecological perturbations by adopting drilling practices that limit physical destruction of living and dead reefs, 2) minimizing accumulation of drilling detritus on the seafloor, and 3) conducting an environmental assessment.

Allan inquired what the IODP-MI intended to do with this advice. Larsen noted the question. Baldauf suggested incorporating these principles in an overarching statement developed by the EPSP. He added that the operators would also develop their own principles. Katz suggested not including the third statement as an issue because of drilling deep-water corals. Kato explained that the group meant for the third principle to apply to the first reef drilling expedition and not necessarily to subsequent ones. Evans agreed with Katz and referred to the Porcupine Mounds as amenable to drilling with the non-riser vessel. Allan urged caution in publicizing any principles that might imply liability. Quinn characterized the principles as just draft statements at the moment. Coffin asked the working group to revise the statements for the next day.

**SPC Consensus 0406-20:** The SPC receives the working group report (Quinn, Kato, Kenter, and Evans) on the environmental impact of coral reef drilling and forwards it to the Environmental Protection and Safety Panel (EPSP) for comment.

# 11. ODP Leg 210 report

Jean-Claude Sibuet presented some of the initial results from ODP Leg 210 to the Newfoundland Margin. He cited the objective of understanding one side of the conjugate Atlantic margins. Sibuet reported that they drilled one site on oceanic crust and another in the transitional domain. They recovered early Cretaceous to Eocene mudstone and black shale with interbedded sandstone units and two diabase sills, but they did not penetrate below the lower sill. They also recovered serpentinized mantle breccias at the oceanic site. Sibuet claimed that the results closely resembled those obtained thirty years ago from Site 398 on the Iberian Margin.

Allan noted that certain aspects of the leg had approached the operational limits of the *JOIDES Resolution*, and this raised the interesting possibility for the IODP of using the *Chikyu* in non-riser mode for heavy operations and using a lighter, less costly ship for normal non-riser operations. Larsen asked if the lack of logging data hampered correlating the sill with the U reflector. Sibuet replied that the sill and the U reflector seemed to coincide with an unconformity. Duncan asked about the origin of the sills. Sibuet noted some similarity with other sills 200 km southward, but he could not say anything more definite at the moment. Miller called it surprising to find sills on a non-volcanic margin and asked if it suggested that the margin had a more volcanic nature. Sibuet found it a bit shocking as well and regretted not knowing the nature of the basement below the sill. Coffin asked about plans for more drilling to reach the original objectives of penetrating the basement. Sibuet answered that he had discussed it with the engineers and would like to return.

#### Thursday

#### 17 June 2004

#### 9:00-15:00

SPC member Wonn Soh returned to the meeting. Alternate member Hiroshi Kitazato replaced the absent Kenji Kato for the day. Before the morning recess, the committee concluded several items of unfinished business from the previous days, as indicated above under Sections 9.1 and 9.4. Following a short recess, Coffin proposed convening an executive session to discuss relations between the SAS and the IODP-MI. The committee agreed and remained in executive session from 10:45 until 12:00.

**SPC Motion 0406-21:** The SPC enters into executive session to discuss interactions between the SAS and IODP-MI.

Moore moved, Austin seconded; 17 in favor

**SPC Consensus 0406-22:** The SPC recognizes its role in providing scientific advice to IODP-MI through the SPPOC as a fundamental part of its mandate to represent the scientific community supporting the IODP. The committee forwards a ranking of proposals to the OPCOM for development of scheduling options and must remain closely involved in subsequent decisions about the drilling schedule because evaluations of scheduling options involve scientific prioritization. The SPC welcomes iterative scheduling discussions with the OPCOM and reaffirms the SPC mandate to provide an advisory vote on the drilling schedule from options provided by the OPCOM and to forward this vote to IODP-MI through the SPPOC as part of annual program planning.

**SPC Motion 0406-23:** The SPC concludes its executive session on interactions between the SAS and IODP-MI.

Moore moved, Tatsumi seconded; 16 in favor, 1 absent (Becker)

# 12. IODP core distribution

Hans Christian Larsen stated that the IODP-MI took advice from the previous SPC meeting in drafting a policy for distributing cores among the three IODP repositories. He proposed a geographic distribution scheme whereby cores from the North and South Atlantic, the Arctic,

and the Mediterranean would reside in Bremen; those from the Caribbean, the Gulf of Mexico, the eastern Pacific, and the Southern Ocean would reside at TAMU; and those from the western Pacific and marginal seas and the Indian Ocean would reside in Kochi.

Coffin asked about the JOI Alliance plan for redistributing DSDP and ODP legacy cores. Larsen preferred considering that as a separate issue. Allan remarked that the NSF had always intended making the DSDP and ODP cores available to the new program, and those core will transfer to the IODP. Tatsumi imagined the possibility of wanting to make exceptions to the geographic distribution for scientific reasons. Larsen agreed that the program should retain that flexibility. MacLeod wanted to know the costs of moving cores around. Coffin clarified that the IODP-MI wanted advice on the general plan before they actually started budgeting for it. He asked for any principle objections to the geographic distribution scheme. No one objected and Coffin asked Quinn to draft a recommendation.

Larsen explained the JOI Alliance plan for consolidating DSDP and ODP cores in fewer repositories and asked if it should follow the same guiding policy of geographic distribution. Austin preferred having the budget information before deciding on a scheme. Larsen explained again that the IODP-MI just wanted advice from the SPC on whether to investigate such a plan. Moore argued that it made the most sense from a scientific perspective to distribute the cores based on geographic origin.

Quinn presented a draft recommendation. Coffin asked if the committee wanted to include the DSDP and ODP cores. Ildefonse said that it would mean that the Kochi repository would receive DSDP and ODP cores soon and not stand empty until the first cores arrive from the *Chikyu*. Katz viewed it as an inefficient use of limited funds to ship old cores around the world rather than just storing them in the nearest repository. Allan indicated that the lead agencies had not yet received a comprehensive plan for IODP core storage and thus had not concurred on any plan. MacLeod asked if any other funding agencies had joined the discussion. Allan said yes. Ito suggested asking the SciMP to consider other aspects besides geographic distribution, such as microbiological storage considerations, analytical instruments, core cuttings, etc.

**SPC Consensus 0406-24:** The SPC recommends storing DSDP, ODP, and IODP cores in the Bremen, Gulf Coast, and Kochi core repositories based in principle on the geographic considerations presented by IODP-MI at this meeting. The SPC requests regular progress reports as IODP-MI works on the timing and fiscal details of this initiative.

# 13. Observatories and the IODP

Kiyoshi Suyehiro reported on the ION vision. He showed the distribution of current borehole observatories and results from the Western Pacific Observatory. Suyehiro described a two-phase approach for drilling and installing observatories, with commingled program funds used for drilling boreholes and sometimes installing instruments and national funds used for instruments and monitoring. He gave details on specific installations and described an example scenario for the IODP involving a drilling proposal, site surveying, developing and testing equipment, drilling a hole with observatory specifications, installing an autonomous recording system, installing the observatory infrastructure, and maintenance. Suyehiro outlined several points to consider such as creating a universal infrastructure, viewing observatories as an integral part of drilling, deep penetration, and the need for innovative principal investigators. He wondered how principal investigators would interact with the IODP and how much of the scientific outcome the IODP wanted to encompass, given the greater emphasis on observatories in the Initial Science Plan.

Coffin characterized the IODP as extremely committed to observatories and trying to bring more under the IODP umbrella. He added that the SPC needed more input on this subject from other SAS panels such as the SciMP and the TAP. Moore regarded observatories as integral to certain scientific objectives of the IODP. He asked about ways to support and supplement the costs and link to other scientific objectives. Allan remarked that the lead agencies determined for FY2005 that casing represented a POC and instruments represented a national cost. Austin referred to the history of ION in the ODP and said that the importance of innovative PIs had certainly not decreased. Coffin asked if the IODP had any active ION proposals in the system. Camoin replied that the SSEPs had reviewed an overarching preliminary proposal in May 2003 and recommended developing a full proposal, but the proponents had not yet submitted one. Rack cited the USSAC-sponsored workshop in Seattle, a recent NSF-sponsored downhole tools workshop, and the Ocean Observatories Initiative (OOI) project office now operating at JOI and CORE as evidence of continuing strong links. Suvehiro hoped that the IODP would provide an international umbrella. Ildefonse urged the IODP to endorse this kind of science. Austin noted that the Initial Science Plan already endorsed it, and the program would respond to proposals.

#### 14. Other business

#### 14.1. Synthesis volumes

The committee postponed discussing this issue for lack of time and because the intended leader of the discussion, Bob Duncan, had already left the meeting.

#### 14.2. Microbiology working group report

Coffin reviewed the history of the microbiology working group report and noted that the SPPOC had not indicated clearly why they did not approve it. Austin stated that the SPPOC had not viewed it as an urgent matter and deferred it until the after the establishment of the real IODP-MI. Okada reviewed the charge from the iPC to form a working group under the iSciMP. He presented four detailed recommendations from the working group report and suggested that the best way to increase the number of microbiologists participating in the program probably involved increasing the number of microbiology proposals. Working group member Ken Takai wondered if the SPPOC had enough microbiological expertise to understand the recommendations.

Kawahata asked if the working group had discussed sample curation systems. He cited the difficulty of transporting samples stored in liquid nitrogen by air but said that microbiologists might expect or require more rapid sample transport than offered by ship. Takai explained that the working group report did not really address that issue. He agreed that liquid nitrogen could pose a problem for air shipment, whereas dry ice would not. Takai added that scientists could visit the shore-based labs to work on samples. Rack suggested that the IODP-MI needed a task force to translate recommendations into specific processes that the IOs could implement. Coffin proposed forwarding the report to the IODP-MI and the IOs and letting them determine how to implement it.

**SPC Consensus 0406-25:** The SPC accepts the microbiology working group report and forwards it to IODP-MI and the implementing organizations.

# 14.3. Sample, Data, and Obligations Policy

Coffin reviewed the history of developing the sample, data, and obligations policy. He reported that the SPPOC had questioned certain aspects of the previous version of the policy and did not approve it. Okada presented the latest revised version from the SciMP, describing
it as almost the same policy as presented at the last SPC meeting. He reviewed the specific SPPOC questions and the answers from the SciMP.

Ildefonse thought that the SPPOC worried about whether a three-person review board provided enough transparency, and he wondered if this answer would satisfy them. MacLeod recalled that the editorial review board had formerly consisted of two co-chiefs, a staff scientist, and an external member. Miller believed that the SPPOC members probably now understood that the nature of the review only required three reviewers, but they preferred discussing it at their next meeting instead of by e-mail.

**SPC Consensus 0406-26:** The SPC accepts the revised IODP Sample, Data, and Obligations Policy and forwards it to the SPPOC for consideration.

#### **15. Future meetings**

#### 15.1. Liaisons to other panels and programs

Coffin proposed waiting to name new liaisons until after learning the identity of the five new SPC members.

# 15.2. 4<sup>th</sup> and 5<sup>th</sup> SPC meetings,

#### 15.2.1. 25-27 October 2004, Corvallis, Oregon, USA

Bob Duncan announced that he planned to conduct a field trip the day before the SPC meeting. He also confirmed the availability of reasonably priced accommodations.

#### 15.2.2. xx-xx March 2005, Lisbon, Portugal

Benoit Ildefonse cited three options for the meeting venue and identified the host as Fernando Barriga of the University of Lisbon. The committee agreed to decide later on the exact dates.

#### 16. Review of motions and consensus items

SPC members presented the following tributes to five departing SPC members and to the hosts of this meeting.

SPC Consensus 0406-27: Few people have served the international scientific ocean drilling community for as long, as well, and in so many different and important ways as James A. Austin, Jr. This may be a totally inadequate way for us to thank Jamie for all that he has done for the ODP and the IODP, but let us at least acknowledge our great debt to him. Jamie has dedicated much of his career to scientific ocean drilling as a proponent and a participant of many drilling expeditions. He has been a valued colleague on many of the advisory committees (Atlantic Regional Panel, PCOM, ESSEP, SCICOM, SPC) that have evaluated and mentored the drilling proposals of other scientists. He has been a leader in planning the ODP and the IODP through his essential role in the organization of, and participation in, numerous workshops and discussion sessions (including the long term planning efforts undertaken at COSOD II, COMPOST, COMPOST II, CONCORD, and COMPLEX). Jamie was a key member of the two committees (IPSC and iPC) that laid the foundation for the new Integrated Ocean Drilling Program and helped write the IODP Initial Science Plan. He also has been willing to step forward into the administrative breach whenever a strong and knowledgeable hand was needed to guide the scientific ocean drilling programs. By serving as acting director of both the ODP and the IODP, he assured the smooth working of the former and the seamless transition into the latter. This prodigious effort over many years of service cannot be matched by anyone else in the community. We value him for his great wisdom, his broad experience, his leadership ability, his willingness to do the hard jobs, and his straightforward candor, energy, and enthusiasm about all issues important to the drilling programs. As Jamie completes his service on the SPC, we hope that this only marks the completion of one more of the many tasks that he has undertaken for the good of the scientific ocean drilling community and earnestly ask him to continue to lend his support to our efforts.

**SPC Consensus 0406-28:** Andy Fisher represents a prime example of the key contributions of scientific ocean drilling in educating marine geoscientists. As a graduate student, he participated on two early ODP legs; then he served as an ODP staff scientist and later earned a berth as ODP co-chief scientist on Leg 168. He was fully recognized as a world leader in subseafloor hydrogeology in co-leading that working group at the COMPLEX workshop, and he was then appointed to SCICOM, the iPC, and the SPC for 2001-2004. During that term he demonstrated a thorough, even-handed approach and was highly valued for his penetrating advice on all matters hydrological as well as common sense on other issues. It is entirely fitting that he was named co-chief scientist of the very first IODP expedition, which will push the limits of subseafloor hydrogeology in scientific ocean drilling. As Andy rotates off the SPC, we thank him for his service and wish him well. Eventually, we hope he will find time to recharge into the SAS, even while he continues to expand the realm of subseafloor hydrogeology.

**SPC Consensus 0406-29:** The SPC thanks Hisao Ito for his great contributions to the SPC as well as the iPC over the last three years as a seismic specialist. Ito-san is in some sense a typical Japanese gentleman; he is rather quiet and trustworthy, but hot-blooded. We definitely need such a member and hope to see him return to the SAS in the near future.

**SPC Consensus 0406-30:** This is the last SPC meeting for Ted Moore, one of the great champions of scientific ocean drilling. Ted led the IODP Planning Subcommittee (IPSC) in the Herculean task of developing the nuts and bolts of IODP from 1999 to 2001. Ted then co-chaired the interim Planning Committee from 2001 until 2003, and with his colleagues engineered the seamless transition from ODP to IODP. Now, in "retirement", Ted prepares to cruise to the high Arctic as a member of the shipboard scientific party of the Arctic Coring Expedition. We remind Ted that though the Lomonosov Ridge may be far away, he can run but he cannot hide. The international scientific ocean drilling community will likely soon again need his unparalleled leadership and matchless integrity. Therefore, we say *arigato gozaimashita!* but not good-bye.

**SPC Consensus 0406-31:** The SPC expresses its deep appreciation to Yoshiyuki Tatsumi for his long-term dedication to the success of this committee, in particular for his energetic efforts since joining the iPC in 2001. We also acknowledge his strong contributions in initiating the IODP, including key roles in CONCORD, development of the IODP Initial Science Plan, *Earth, Oceans, and Life*, and founding and building JDESC. We fully anticipate that he will continue contributing to the success of scientific drilling in his new roles, including overseeing this committee, and we wish him the very best fortune in his future endeavors.

**SPC Consensus 0406-32:** The SPC thanks Yoshiyuki Tatsumi for his efforts in hosting this meeting and Toru Nishikawa and Seiko Asaka for their able hand in ensuring that everything went smoothly. Meeting participants truly appreciate the fine hospitality, delectable cuisine, and thirst-quenching refreshments featured at the convivial opening banquet in the Metasequoia Room, as well as the educational tour of the Earth Simulator.

The committee adjourned the meeting at 17:20.

# **IODP Science Planning Committee**

4<sup>th</sup> Meeting, 25-27 October 2004

#### Agriculture Leaders Conference Room in The LaSells Stewart Center, Oregon State University, Corvallis Oregon, USA

#### **DRAFT MEETING AGENDA**

#### Monday 25 October 2004 08:30-17:30 1. Introduction 1.1. Welcome and meeting logistics (Duncan) 10 min 1.2. Approve last SPC meeting minutes (Coffin) 10 min 1.3. Approve SPC meeting agenda (Coffin) 10 min 1.4. Items approved since June 2004 meeting (Coffin) 10 min 1.5. SPC procedures and protocol (Coffin) 1.5.1. Agenda book 10 min 1.5.2. Terms of reference 30 min 1.5.2.1. Ranking/scheduling voting procedures 1.5.2.2. Meeting minutes 30 min 1.5.3. Conflict-of-interest policy and statements 1.5.4. Robert's Rules of Order 5 min 2. Agency reports 2.1. MEXT (Tanaka) 10 min 2.2. NSF (Allan) 10 min 2.3. EMA (Kenter) 10 min 2.4. MOST 10 min (Liu) (Talwani/Larsen/Janecek) 3. IODP-MI report 30 min 4. Implementing Organization (IO) reports 4.1. CDEX (Kawamura) 10 min 4.2. JOI Alliance (Rack) 10 min 4.3. ESO (Evans) 10 min 5. SPPOC report (Tamaki) 10 min 6. IODP SAS 6.1. Panel reports 6.1.1. SSEPs (Byrne) 20 min 6.1.2. SSP (Droxler) 20 min

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6.1.3. EPSP	(NA)	20 min
6.1.4. SciMP	(Okada/Lovell)	20 min
6.1.5. TAP	(Moran/Masuda)	20 min
6.1.6. ILP	(Doust/Hogg)	20 min
6.2. Review		
6.2.1. Membership disciplinary, experience, and get	nder balance (Coffin)	30 min
6.2.2. SPC working group final report	(Duncan/Ildefonse)	40 min

Tuesday	26 October 2004	08	:30-17:30
7. Review of 651-APL Irminger Bas	in Microbiology	(Kato/Brumsack)	30 min
8. FY05/06 expedition schedule I			
8.1. Presentation of OPCOM sch	eduling scenarios	(Janecek)	90 min
8.2. Discussion of scenarios		(Coffin)	60 min
9. Proposal handling		(Coffin)	30 min
10. IODP policy development			
10.1. 3 <sup>rd</sup> party tools		(Coffin)	30 min
10.2. PPGs and DPGs		(Coffin)	30 min
[Possible continuation of agenda iter	m 6.2.2]		
[Possible continuation of agenda iter	m 3]		
Wednesday	27 October 2004	08	:30-17:30
11. FY05/06 expedition schedule II			
11.1. Select scenarios to prioritiz	ze/approve	(Coffin)	30 min
11.2. Prioritize/approve scenarios		(Coffin)	30 min
11.3. Presentation of results		(Coffin)	30 min
11.4. Nomination of co-chief scientists		(Coffin)	30 min
12. IODP long term planning			
12.1. Platform proposal pressure		(Coffin)	30 min
12.2. Development of successor	to IODP Intial Science Plan	(Coffin)	30 min
13. Synthesis volumes		(Duncan)	15 min
14. ODP Leg 209 report		(Kelemen)	20 min
15. ICDP report		(Lauterjung)	20 min

[Possible continuation of agenda item 6.2.2]

## 16. Other business

17. Future meetings	(Coffin)	20 min
17.1. Liaisons to other panels and programs		
17.2. 5 <sup>th</sup> and 6 <sup>th</sup> SPC meetings,		
17.2.1. 14-17 March 2005; Lisbon, Portugal	(Ildefonse)	
17.2.2. xx-xx September or October 2005? Japan?	(TBN)	
18. Review of motions and consensus items	(Coffin)	30 min

# Items approved since June 2004 SPC meeting

### - SciMP co-chair nomination (issued 16 July 2004) -

SPC Motion 04-10-03: The SPC appoints Mike Lovell as a new co-chair of the Scientific Measurement Panel (SciMP), effective immediately.

Coffin moved, Kawahata seconded, 12 in favor, 2 abstain (Ito and Kenter) 3 absent (Fisher, Mori, Tatsumi), MacLead non-voting

### - MSP Tahiti expedition co-chief scientists prioritization (issued 13 July 2004) -

SPC Consensus 04-10-04: The SPC prioritizes MSP Tahiti expedition co-chief as follows:

- 1. Camoin
- 2. Quinn
- 3. Dullo and Iryu
- 5. Droxler and Taylor
- 7. Betzler, Machiyama and Matsuda

### - SSP co-chair nomination (issued 4 August 2004) -

SPC Motion 04-10-05: The SPC appoints Roger Searle as a new co-chair of the Site Survey Panel (SSP), effective immediately.

Coffin moved, Austin seconded, 14 in favor, 3 absent (Kitazato, Kato, and Mori), Brumsack non-voting

The IODP Science Advisory Structure, Terms of Referen**4th** SPC meeting agenda book Approved by the SPPOC, July 2004

# Science Planning Committee (SPC)



#### 1 General Purpose.

The Science Planning Committee (SPC) reports to the Science Policy and Planning Oversight Committee (SPPOC) and provides advice to Integrated Ocean Drilling Program (IODP) Management International (IODP-MI) and, through the IODP-MI, to the implementing organizations (IOs) on plans designed to optimize the scientific productivity and operational efficiency of the IODP.

The SPC is specifically responsible for: the custody and initial implementation of the IODP Initial Science Plan; ranking of mature drilling proposals (*i.e.*, those that have undergone external review, been grouped by the Science Steering and Evaluation Panels (SSEPs), and been judged as complete by the Science Advisory Structure (SAS)) that address the scientific themes and initiatives in the IODP Initial Science Plan; advising how these proposals might be most effectively mapped into a drilling plan based on the IODP multiple platform concept; carrying out long-term science planning; fostering communications among and between the general community, the SAS, the IODP-MI, and the IOS.

#### 2 Mandate.

The SPC encourages the international community to develop and submit drilling proposals for the IODP. The SPC can initiate and terminate temporary SAS groups as needed. The SPC reviews SAS membership with respect to disciplinary balance. The SPC recommends SAS meeting frequency and timing to the SPPOC. In addition, the SPC may assign special tasks to SAS committees, panels, and planning groups. The SPC approves the chairs of all SAS panels and planning groups. The SPC approves the meeting agendas for all SAS committees, panels, and planning groups other than the SPPOC. The SPC sponsors and convenes planning conferences at intervals determined by long-term science plans for IODP. The SPC assigns its own watchdogs to proposals that are forwarded from the SSEPs. The SPC ranks the scientific objectives of the proposals into final priority after they are reviewed by the SSEPs. The SPC approves by at least a two-thirds majority the annual drilling schedule as forwarded from the OPCOM. The SPC nominates chief scientists to the implementing organizations, who make the final selection.

The SPC periodically reviews the IODP SAS in light of developments in science and technology and recommends amendment of the SAS and its mandates to the SPPOC. Much of the work of the SPC is carried out by the commissioning of reports from other SAS panels, including both formal and *ad hoc* working groups, *ad hoc* subcommittees of its own membership, and by its chair or vice-chair.

#### 3 Structure.

The SPC is empowered to modify an infrastructure appropriate to the definition and accomplishment of tasks described in the annual program plan as approved by the SPPOC. Communication with the SAS panels and planning groups is maintained by having their chairs meet with the SPC annually and by assigning SPC members as non-voting liaisons to SAS panels and planning groups as necessary. Where counsel and communication are deemed important, other individuals may be asked to meet *ad hoc* with the committee or its panels.

#### 4 Meetings.

The SPC meets at least twice a year, normally in March and August. Robert's Rules of Order will govern its meetings and those of all of its subcommittees.

#### 5 Membership.

The SPC will consist of seven members from Japan, seven members from the U.S., four members (three voting and one non-voting) from the ECORD, and one member

The IODP Science Advisory Structure, Terms of Referen**4th** SPC meeting agenda book Approved by the SPPOC, July 2004

(non-voting) from China. All appointees to the SPC shall satisfy the fundamental criteria of having the ability and commitment to provide mature and expert scientific direction to IODP planning. Each member should have a designated alternate to serve in his or her absence. The term of membership will be three years and at least one third of the members shall rotate off the committee annually, so that the SPC membership is replaced every three years. Re-appointment shall be made only in exceptional circumstances. The fields of specialization on the SPC shall be kept balanced as far as possible by requests to national and consortia program committees. If an SPC member misses two meetings in succession, the SPC chair or vice-chair will discuss the problem of SAS representation with the appropriate national or consortia representative(s) on the SPPOC.

#### 6 Liaison.

The Vice-President of Science Planning at the IODP-MI, the directors of the IOs, or nominees thereof, and representatives of the lead agencies are permanent, non-voting liaisons. The SPC chair is the liaison to the SPPOC, and the SPC assigns other liaisons to the SSEPs, EPSP, and other SAS panels and groups.

#### 7 Vote and Quorum.

The SPC shall reach all its decisions by the affirmative vote of at least two thirds of all members present and eligible to vote. A quorum shall equal two-thirds of the committee.

#### 8 Chair and Vice-Chair.

The SPC chair and vice-chair shall alternate between Japanese and U.S. institutions, excluding the implementing organizations. The vice-chair will replace the chair every two years, with a new vice-chair appointed.

# **IODP Conflict-of-Interest Policy**

(Approved by the SPPOC, July 2004)

#### A. INTRODUCTION

#### General statement:

The objective of the conflict-of-interest (COI) policy for the Science Advisory Structure (SAS) of the Integrated Ocean Drilling Program (IODP) is to minimize both real and perceived conflicts of interest while maintaining the fullest possible involvement of knowledgeable scientists in providing scientific and technical advice to the program. The IODP SAS needs a comprehensive, effective, and, to the maximum extent possible, flexible COI policy that takes into account the differing international structures and histories of the funding agencies, other governmental agencies, implementing organizations, research organizations, and universities of its participating members. The statement presented in Appendix A builds upon the efforts of the predecessor scientific ocean drilling programs to determine and manage conflicts of interest within the SAS.

#### Definition:

A conflict of interest is a situation in which the interests (for example: personal, familial, professional or commercial) of an IODP SAS member or designated alternate involved in proposal nurturing, evaluation, ranking, scheduling, or assessment processes, or in IODP-related financial or commercial enterprises, have a real or perceived impact, either positive or negative, on the results of the nurturing, evaluation, ranking, scheduling or assessment processes, or related contractual work. Conflict of interest depends on the situation, not the character or actions of the individual.

#### Principles:

The COI policy is based on the following principles:

- An individual scientist can be a regular member of only one standing SAS committee or panel.
- Any representative of IODP Management International, Inc. (IODP-MI), IODP lead funding agencies, implementing organizations (IOs), and their subcontractors cannot serve as a member on standing SAS committees and panels, other than the IODP-MI Board of Governors members who also serve as Science Planning and Policy Oversight Committee (SPPOC) members.
- All potential conflicts of interest will be declared at the start of every meeting, or at an otherwise appropriate time during the meeting.
- Committee and panel members or other meeting attendees determined as having a conflict of interest regarding an IODP or IODP-related proposal should not be present when the relevant proposal is evaluated, considered for ranking, ranked, considered for scheduling, or scheduled. Proponents may be present for the general discussion of proposals (e.g., how proposals address long-range objectives).
- Committee and panel members or other meeting attendees determined as having a conflict of interest regarding IODP-related financial or commercial enterprises should not be present during discussions relevant to such financial or commercial enterprises.

### B. COI POLICY

The issues of conflict of interest have three foci: an understanding of who may serve on panels; procedures and safeguards with regard to proposal nurturing, evaluation, ranking, scheduling, and assessment processes; and procedures and safeguards with regard to IODP-related financial or commercial enterprises. The goal of the COI policy is to maintain the fullest involvement possible by knowledgeable scientists from across the spectrum of IODP members in providing scientific advice to the SAS, IODP-MI, and the IOs. Managing conflict

of interest effectively and efficiently within the IODP SAS will enable achievement of this goal. The SPPOC will receive a brief annual report from SAS committee and panel chairs noting how conflicts were dealt with in their respective meetings.

In regard to panel service, no employee of the IODP-MI, IODP funding agencies, IOs, or their subcontractors may serve as a member of a standing SAS committee or panel. (The exception to this is the IODP-MI board members who also serve on the SPPOC.) Such persons, however, may be proponents of IODP proposals (for example staff scientists).

SAS activities fall into two primary categories, a nurturing, evaluation, and technical advice component (SAS panels); and an evaluation, ranking, scheduling, and assessment part (SAS committees). Accordingly, the COI policy may allow for involvement of proponents in informative roles at appropriate panels and in general discussions, but not in any evaluations of their respective proposals leading directly to and including competitive proposal rankings and scheduling decisions.

In regard to SAS panels, the specific issues concern the participation of panel members and other meeting attendees who are proponents of active proposals. Panel members and other attendees who are proponents of active proposals are to be excluded from discussions of the specific proposal/s on which they are proponents. They may participate in the discussion of all other proposals, including serving as watchdogs. These panel members may participate in nurturing and evaluating all other proposals, with these members declaring their potential conflicts and the chair/s keeping a record of these conflicts. The chair/s should clearly announce and document all potential conflicts of interest and resulting recusals, including in the minutes. In a similar fashion, panel members who have a financial or commercial interest in tools, programs, etc, by means of their employment will be regarded as having a conflict of interest. The IODP-MI Sapporo Office retains any paper ballots from the grouping exercise to document adherence to the COI policy.

In regard to the Science Planning Committee (SPC), a committee member or any other attendee who is a proponent on a proposal being considered for ranking or scheduling may not be present for the specific discussions of proposals leading to ranking, the ranking process itself, determination of which proposals to forward to the Operations Committee (OPCOM), or the scheduling process. Further, these conflicted members may not serve as watchdogs on other proposals. It is the responsibility of the committee chair to define when these specific discussions begin.

In regard to OPCOM, an SPC committee member who is a proponent on a proposal included in the group of proposals residing with or forwarded to OPCOM may not participate as an OPCOM member but is eligible to be called upon for advice as needed.

In regard to the SPPOC, a committee member or any other attendee who is a proponent on a proposal included in the annual program plan may not be present for the presentation, discussion, or approval of that annual program plan.

Conflicts of interest are unavoidable. Potential conflicts should be identified as early as possible, and the various national and consortia offices should identify alternates with suitable scientific and technical expertise for conflicted members. This will require due diligence by the IODP-MI Vice-President for Science Planning and Deliverables and the IODP SAS chairs to make such requests in advance of meetings. Sufficient time must be given for the national and consortia offices to nominate alternates, if standing alternates have not been identified in advance, and for the alternates to be fully informed of relevant business in time to be prepared for meetings. Whether or not alternates are appointed for conflicted members, quorum rules as specified in the SAS terms of reference for that committee or panel will apply.

## Appendix A. SAS Conflict-of-Interest Statement

### I. Declarations of Conflicts of Interest by SAS Members

If any SAS panel or committee member, alternate, or any other attendee of a panel or committee meeting, has any direct interest that might be affected by, or might reasonably be perceived to be affected by, any action under consideration by the panel or committee, that member or attendee is required to make a public declaration of the existence of such interest to the chair. The possible existence of such interest may also be proposed to the chair by a member or attendee other than the member having the interest.

All declared or proposed possible conflicts of interest, and the actions taken, will be recorded in the minutes of the meeting at which the interest was considered and the annual conflict of interest report prepared for the SPPOC. With respect to any such declared interest or proposed possible interest, the chair will make an initial determination regarding whether the circumstances constitute a conflict of interest. In determining whether the circumstances constitute a conflict of interest, the chair may, at his or her discretion, consult with other members of the panel or committee. The chair's decision will be subject to review in accordance with Robert's Rules of Order.

## II. Policies for Conflicted SAS Members or Other Attendees

a) Panel or committee members, or other attendees, who are determined by the chair to have a conflict of interest with respect to a drilling proposal will not be present during any part of a panel or committee meeting when that proposal is nurtured, evaluated, ranked, scheduled, or assessed. However, a conflicted panel or committee member may participate in general discussions that do not lead directly to voting, regarding proposals in general, including discussion of his or her own proposal. Such members must restrict their comments and discussion to the scientific objectives of proposals being discussed and shall not make comparisons with their own proposals.

b) Panel or committee members who are in conflict of interest because of IODP-related financial or commercial enterprises will not be present during any part of a panel or committee meeting during discussions relevant to those financial or commercial enterprises.

c) SPC members or alternates determined as having a conflict of interest will not be present during deliberations leading directly to a vote and will not vote with respect to the inclusion in, or exclusion from, the upcoming recommended science plan of a proposal affected by such conflict of interest.

d) SPPOC members or alternates who are proponents on proposals included in the annual program plan will not be present for the presentation, discussion, or approval of that annual program plan.

e) During panel or committee discussions that do not lead directly to a vote or that do not involve competitive ranking of proposals (e.g., discussion of long-term platform plans by the SPC or evaluation of proposals by the panels), all members may participate in general discussions in order to provide a full range of expertise to the decision-making process. A member having a proposal under active consideration by the SSEPs or the SPC that may form part of the long-term platform plans will not be present during final deliberations and voting related to those long-term plans.

f) Panel or committee members or other attendees who are determined to have a conflict of interest will not be present during deliberations leading directly to a vote and will not vote with respect to any other matters affected by such conflict of interest.

# **Robert's Rules of Order**

(from Robert's Rules of Order: Simplified and Applied, 2nd Edition, Wiley Publishing Inc., 2001)

Some basic principles and procedures apply to all decision making processes; these principles and procedures are referred to formally as 'parliamentary procedure'. Parliamentary procedures are the rules that help us maintain order and fairness in all decision-making processes. Robert's Rules of Order is one man's presentation and discussion of parliamentary procedure that has become the leading authority in most organizations today. The basic principles behind Robert's Rules of Order are:

-someone has to facilitate and direct the discussion and keep order.

-all members of the group have the right to bring up ideas, discuss them, and come to a conclusion.

-members should come to an agreement about what to do.

-members should understand that the majority rules, but the rights of the minority are always protected by assuring those members the right to speak and vote.

Principles and Salient Points

1) Take up business one item at a time.

Doing so maintains order, expedites business, and accomplishes the purpose of the organization.

a. Each meeting follows an order of business called an agenda.

b. Only one main motion can be pending at a time.

c. Only one member can be assigned the floor at a time.

d. Members take turns speaking.

e. No member speaks twice about a motion until all members have had the opportunity to speak.

2) Promote courtesy, justice, impartiality, and equality.

This ensures that everyone is heard, that members treat each other with courtesy, that everyone has the same rights, and that no individual or special group is singled out for special favors.

a. Members take their seats promptly when the chair calls the meeting to order, and conversation stops.

b. Members raise their hands to be recognized by the chair and don't speak out of turn.

c. In debate, members do not 'cross talk', or talk directly to each other, when another member is speaking.

d. Members keep their discussion to the issues, not to personalities or other members' motives.

e. Members speak clearly and loudly so all can hear.

f. Members listen when others are speaking.

-The majority rules, but the rights of individual, minority, and absent members are protected.

This principle ensures that, even though the majority rules, the minority has a right to be heard and its ideas are taken seriously. Similarly, the minority doesn't leave the organization because it didn't win; it knows that it may win another day. Following this principle preserves the unity and harmony of the organization.

# AGENDUM 2

Agency reports

- 2.1. MEXT MEXT report
- 2.2. NSF

NSF report

- 2.3. EMA EMA report
- 2.4. MOST

# Science Planning Committee 4th Meeting 25-27 October 2004, Corvallis

#### MEXT report

### 1. MEXT Organization

On 27th of September, Prime Minister Junichiro Koizumi reshuffled the Cabinet for his second administration, and Mr. Nariaki Nakayama was appointed as the forth Minister of the MEXT, succeeding Mr. Takeo Kawamura.

Prior to the appointment of the new Minister, on 1st of July, Mr. Hiroshi Sato took up the position of the Director of Ocean and Earth Division, succeeding Mr. Hideshi Suda. Mr. Sato is in charge of overseeing IODP along with other earth science issues.

## 2. SAS meetings and IODP Council

For 3rd SPC meeting which was held at Yokohama in June, Yasuhisa Tanaka, the Director for Deep Sea Research and Kenji Kimura, the MEXT Liaison to NSF attended. A month later, they attended the 2nd SPPOC meeting in Paris and presented MEXT activities since last December.

Following the SPPOC meeting in Paris, Mr. Tanaka, as the MEXT Principal Official, chaired the 2nd IODP Council meeting. The representatives of IODP member countries (US, Japan, ECORD and China), SAS, IOs, IODP-MI and potential IODP member countries (Korea and Russia) attended and presented their activities at the meeting.

### <u>3. MEXT meeting</u>

On 9th of August, MEXT held the 4th meeting of the Committee on Ocean Drilling. It is an advisory committee for Minister of the MEXT and there, continuous domestic IODP issues such as facilitating science activity and strengthening education and outreach strategy were discussed. Also, the draft FY05APP was presented in terms of periodical review of IODP.

## NSF report

## October 2004 SPC meeting

NSF has examined its FY2005 budget obligations and determined that it is able to support an additional 4 months of Platform Operations Costs (POCs) for the JOIDES Resolution in FY2005, extending operations from April 23, 2005 until September 30, 2005. The target supplemental budgets for these activities are \$10M in POC and \$2M in SOC.

We are happy to report that Dr. Carolyn Ruppel has agreed to spend another year with us at NSF as a Associate Program Director, continuing her significant contributions in overseeing research proposal evaluation, research grant management, and other activities.

#### ECORD Managing Agency report 13/09/2004

#### **ECORD** council

The council chair rotates very six months. John Ludden steps down at the end of September and the new chair is Soeren Dürr, from DFG, Germany. Jonas Björk, from the Swedish Research Council, is the incoming vice-chair, to become the chair on April 1st, 2005. The ECORD council will meet in Bonn, oct 20-21 2004.

#### **ECORD** membership

Canada joined ECORD in FY04. The funding extends only for one year, to help seek other funding sources for the future.

Austria joins ECORD, starting Oct 1st 2004 (FY05)

Negociations are still in progress with Ireland.

Contacts continue with Russia and Greece

Under the frame of the EC funded ECORDnet, ECORD is setting up a strategy to approach possible new members, specifically among the new European countries (Poland, Baltic States...).

#### **ECORD** funding for Tahiti

Tahiti is now in the implementation phase. At its next meeting in Bonn, ESO will submit a provisional budget to the ECORD council for approval

#### **ECORD** cruise participants

The nomination of ECORD expedition participants at the European level is effective. The applications from European scientists are received and discussed at the ESSAC level. The staffing of the expedition is done through discussions between the IOs and ESSAC. European scientists sailing on IODP expeditions represent ECORD and not their own country.

#### Coordinating site survey programs in Europe

A plan to cooordinate a program to facilitate site surveys in Europe is being set up, to be submitted within the frame of ESF (European Science Foundation) EUROCORES.

#### **IODP** booths

IODP MI has set up a team to man IODP booths at international congresses. EMA was in charge of the booth at the IGC in Florence. Svetlana Zolotikova (EMA) and Valentina Zampetti (ESSAC) organized the coordination of the booth together with IODP MI, the JOI Alliance and CDEX. EMA also helped providing material for the booth at the Paleoceangraphy conference in Biarritz.

The next booth coordinated by EMA will be the at the EGU conference in Vienna (April 2005).

Catherine Mével, ECORD Managing Agency Director.

## AGENDUM 3 IODP-MI report

IODP-MI update

# **IODP-MI Update, Sapporo Office report**

Updates in the following areas are presented:

- Office Developments
- Proposal Update
- Site Survey Data Bank
- Publications
- Data Management

#### **Office Developments**

- Four new staff members are to join in FY05:
  - Publications, Sample and Data Integration Manager, Dr. Emanuel Soeding. Consultant work from November 1<sup>st</sup>. Regular appointment from January 1<sup>st</sup>, 2005
  - 2. Data Management Specialist, Mr. Bernard Miville. From January 1<sup>st</sup>, 2005
  - 3. Science Coordinator (final decision pending budget approval) from June 1<sup>st</sup>, 2005
  - Executive Program Associate, Dr. Sanny Saito from October 1<sup>st</sup>. Replacing Dr. Izumi Sakamoto (Program Associate, April 1<sup>st</sup> – September 30<sup>th</sup>, 2004)
- Outlook for FY06: 1-2 new FTE's will complete planned staffing and make the office fully operational in all areas.
- Scientific IODP liaison. Full time research faculty position funded for five years by Hokkaido University. An invitation from Hokkaido University to relevant IODP-MI Sapporo staff to be guest researchers will be extended.
- New web and mail server implemented in August, 2004. Hosted and maintained by Advanced Earth Science and Technology Organization (AESTO) in Tokyo
- New five-year contract for AESTO support of the IODP-MI Sapporo Office agreed

### **Proposal Update**

The October 1<sup>st</sup> proposal deadline resulted in 27 proposal submissions of which 12 are new proposals. This is quite a satisfactory number of new proposals and the maximum number in recent years. Details of distribution (science theme, origin, likely platform type) will be given at the meeting. The office is currently mapping all proposals wholly or partly involving riser drilling. On the basis of this review, initiatives to encourage riser drilling proposals will be developed.

#### Site Survey Data Bank

Specifications for a new, completely electronic and web based Site Survey Data Bank (SSDB) was discussed with a subgroup of SSP members at a half day meeting following the recent SSP meeting at LDEO in August. An IODP-MI task force group was formed during September with members from SSP (including industry member), IOs and one GIS specialist. Draft specifications for the minimum requirements for a new SSDB were sent out for task force review in early October. Following task force review, a full RFP will be completed and reviewed by NSF before released. There will be 60 days response time for vendors to prepare bids. At least one vendor is known to be interested.

The contract between JOI Alliance and the current SSDB at LDEO expires by the end January, 2005. IODP-MI is in the process of entering an extension of this contract with LDEO for three months (February-April, 2005) with a possible further extension until end FY05 should a new contract and SSDB not be available by May 1<sup>st</sup>.

The new science coordinator at IODP-MI, hopefully to be appointed no later than June1st, 2005, will be working closely with the SSDB and the integration of proposals and site survey data. S/he will also serve SSP and EPSP, and help SSEPs or other panels that might need/benefit from direct access to data in support of proposals over and above those presented in the proposal.

### **Publications**

Current publication policy has been discussed (in various details) with all IO's. For Phase 1 it has been decided that JOI Alliance/TAMU will do the final editing and printing of Expedition Reports for riser-less drilling and for mission specific platform expeditions. Some minor changes in the layout of the Expedition Reports are currently under consideration. But for phase 1, the ODP model for Expedition Reports will be followed rather closely. Like in the case of ODP, it is realized that this format (printed booklet with TOC, Expedition Summary and CD-ROM with all chapters and data) is not a true legacy product. Web based versions (PDF and html) will also be available. The intention is that the web based version will be developed into the legacy, archival version. This will open up for applications and visualizations that were not previously possible, and will provide options for making the Expedition Reports 'living' document that later can link to new data as they become available. Presumably through digital object identifier techniques. This is also intended to apply in the reference protocols for Expedition Reports. TAMU publications group is currently looking into this.

An IODP-MI publications task force is under formation. A first meeting is scheduled for November 3-4<sup>th</sup> in the IODP-MI Washington Office. Invited task force members include SAS members, IO representatives, AGU, National Academy Press (US), the (US) Geoscience Information Society, International Continental Scientific Drilling Program, and IODP-MI. The task force is expected to change composition as time and tasks develop. The first meeting will focus on the question of publicizing the IODP Scientific Results according to recent ODP policy and endorsed by SPC as (minimal) acceptable solution, or if a different approach should be attempted. This could include the formation of a new electronic journal on scientific drilling, i.e., not restricted to IODP drilling. Unlike the Expedition Report series, IODP-MI is keen to make any change in Scientific Results publication policy right from the start of IODP, if indeed this is to be pursued.

A successor to the JOIDES Journal will be established during the period November-January. Two issues/year is targeted. Plans are to have both printed and web-based versions. Scientific drilling reports will continue to be an important part, and it is intended to include other scientific drilling programs, ICDP in particular.

#### Data Management

The IODP-MI is expanding its staff and expertise in this area in order to oversee (short and long term) coordination of data management issues at the IOs and to prepare for the Information Servises Center recommended by SAS. A task force in this area will be formed prior to the SPPOC meeting in December 2005 and first task force meeting is planned for February 2005. Prior to this meeting IODP-MI staff will make extended visits to all IOs for coordination purposes.

An IODP-MI attended IO meeting including data management on the agenda will be held in Corvallis, October 28-30, 2004. This will focus on short term issues of IO coordination in this field.

## AGENDUM 4

Implementing Organization (IO) reports

4.1. CDEX

CDEX report

- 4.2. JOI Alliance
- 4.3. ESO

ESO report

# **CDEX** Report

For the SPC meeting, October 25-27, 2004 at Corvallis, OR, USA

# 1. General

JAMSTEC has undergone a major organizational change effectively on July 1, 2004. Seven new centers were created that carry out major programs and projects. The OD21 Department was merged with CDEX to establish a new CDEX center. New "CDEX" consists of four departments and one group; a) Planning and Coordination Dept., b) Operation Dept., c) Technology Dept., d) Science and Planning Dept., and e) HSE Group.

CDEX prepared its USFY'05 annual program plan and submitted the plan to IODP-MI, in which CDEX proposed to conduct engineering site survey activities for the Nankai Trough Seismogenic Zone Experiment (NanTroSEIZE). CDEX also explained its efforts to develop a telemetry system for a long-term observatory.

NanTroSEIZE Project Scoping Group (PSG) kick-off meeting was held in Texas last June. The 1st PSG meeting will be held in Japan in October.

# 2. Construction of "CHIKYU"

Onboard testing of drilling equipment has been conducted since February 2004 as "CHIKYU" outfitting activities progress. CDEX plans to complete the equipment testing by the end of October, and to conduct an integrated test of all equipment and a sea trial late 2004.

# 3. Preparation for "CHIKYU" Operations

CDEX plans to conduct a crew-training cruise off the Shimokita peninsula prior to the vessel's international operations. The cruise will start in the spring of 2005 and include the Blow-Out Preventer (BOP) set-up and drilling trainings. CDEX will conduct the side scan sonar, sub-bottom profiler and swath bathymetric surveys in October to investigate the sea floor condition for the BOP set-up training. CDEX is developing a detailed plan for the cruise based on the site survey data collected.

For the NanTroSEIZE operations, CDEX conducted single channel seismic surveys in early June in the Kumanonada area. CDEX will initiate ocean current surveys in early October. CDEX plans to conduct side scan sonar, sub-bottom profiler, swath bathymetric and core sampling surveys late 2004. CDEX is also investigating the technical feasibility of 3D seismic surveys.

# 4. Science Service

CDEX is developing the onshore CDEX Database that manages site survey and other science data collected by the center, and the J-CORES onboard research database that is to be used to analyze ocean cores in the "CHIKYU" laboratory area. The center also helps the Kochi core center install facilities and measurement equipment, and the data management server.

CDEX demonstrated the CDEX Database at the third SPC meeting held at JAMSTEC's Yokohama Institute last June, and many SPC members participated in the demonstration. They highly appreciated the database's user interface, operability and functionality. The database now stores site survey data of the Shimokita peninsula and Nankai Trough areas that CDEX collected. At the second SSP meeting held at LDEO last August, CDEX conducted a demonstration to access and analyze the site survey data via internet using a PC. The demonstration proved that internet access to, and PC display and analysis of, data are feasible.

CDEX is investigating the feasibility to conduct a final J-CORES test at the Kochi core center where it is possible to simulate laboratory measurement activities onboard "CHIKYU".

# 5. Education & Outreach

In addition to conventional PR activities such as distributing press releases and providing general information via internet Web, CDEX conducted several E&O activities in Japan and abroad in cooperation with J-DESC, one of which is the IODP university and museum campaign.

One of the campaign's main object is to introduce IODP to graduate and undergraduate university students to encourage them to become future IODP researchers and scientists as well as to outreach general public, in cooperation with museums, to obtain its support for IODP. CDEX held two campaigns in April and May. The third campaign will be held on October 16 to 24 at the Yamagata University and the Yamagata Museum of Science and Industry.

CDEX also conducts booth exhibitions, town meetings and other E&O activities at various events and opportunities such as the Asia Oceania Geosciences Society's (AOGS) first annual meeting in July, the Western Pacific Geophysics Meeting (WPGM) in August and the Geological Society of Japan (GSJ) meeting in September.

Operational Report to 4th SPC Meeting

#### ECORD Science Operator

### 1. ACEX

Mobilisation of the Vidar Viking began in Aberdeen on 22nd July, following which sea trials were held on 28th to 30th July at the Witch Ground in the North Sea. These trials demonstrated the dynamic position capability of the ship and the successful mobilisation of the drilling infrastructure, as well as testing the new BGS piston corer that produced excellent results.

Subsequently the Vidar Viking steamed to Landskrona to install the helideck and its stern notch as required for ice work; she then proceeded to Tromsø.

Meanwhile the Oden sailed from Gothenburg to Tromsø, arriving on 5th August. On 6th August a press conference was held on the Oden, and the Vidar Viking arrived overnight. Science Party and ESO members joined Oden and Vidar Viking in Tromsø at 0900 hrs local time on Saturday 7th August. Safety briefing and training was carried out, and attended by all onboard. The Oden sailed from Tromsø at midnight on 7th August and the VV the morning afterwards. The vessels met up near the ice edge where they joined the Sovetskiy Soyuz on 10th August, as planned. The passage through the ice was faster than anticipated, and the primary drill site (M0001, LORI 8A) was reached at 2350 hrs on Friday 13th August.

Once there, the Sovetskiy Soyuz conducted ice reconnaissance, while Oden and Vidar Viking were stationed in the ice to measure the local ice movement, and at 2200 hrs on 14th, a 12-hour station-keeping trial commenced, and, subsequently, clearance was given to begin drilling operations.

After early problems including a lost barrel at Site M0001, Hole M0002A was drilled. The Vidar Viking held station well, and was able to keep ice-forced lateral movements within acceptable limits, while the Oden and Sovetskiy Soyuz were breaking ice effectively in worse conditions than had been thought possible. There was nevertheless an ice standby period when the drill string was retracted to 30 m below the sea bed. Hole M0002A continued to a final depth of 271.69 m, at which stage the hole had to be abandoned due to adverse ice conditions. Final core recovery in Hole M0002A was 79%. Initiation of Hole M0003A was delayed due to equipment failure (iron roughneck), and the resulting need for manual handling to lower the drill string. M0003A was cored to a depth of 15 m (99% recovery) before being abandoned due to wire- termination detachment.

After transit to a new site, and equipment repairs, Hole M0004A was started on 28th August with piston coring at 17 mbsf. However, problems were experienced with retrieval of the first piston core, so it was consequently decided to collect two further XCB cores to 30.5 m before open-holing (washing) down to 265 m with the insert bit. The hole was then drilled to a total depth of 427.9 m (50% recovery) at which point the unconformity at the base of the sedimentary pile had been penetrated. It was then planned to log the hole but the logging sondes failed to pass through the BHA as the bit was blocked by rock.

Hole M0004B was largely open-holed to a depth of 218 m before being logged, and at the end of operations on 5th September Hole M0004C had been drilled with the APC and the XBC to a depth of 37.33 m with 63% recovery. Some seismic data were also collected during the cruise.

The Onshore Party for ACEX, when all Science party members will be present, will take place in Bremen starting on 1st November. A total of 337 metres of core are available for further work.

## 2. Tahiti

Following a meeting with the nominated contact proponent, initial plans have been produced for the 05 Program Plan and a SOCs budget presented to IODP-MI. Co-chiefs for the expedition will be Gilbert Camoin (France) and Yasufumi Iryu (Japan). Initial notification of tendering for a drilling vessel has been placed in OJEC, the Official Journal of the European Commission, and a co-chiefs meeting will be held in Leicester in mid-October.

## AGENDUM 5 SPPOC report

2<sup>nd</sup> SPPOC meeting executive summary

# **IODP Science Planning and Policy Oversight Committee**

# 2<sup>nd</sup> Meeting, 8-9 July 2004

# Hotel Concorde St. Lazare Paris, France

## **Draft Executive Summary (v0.1)**

**SPPOC Consensus 0407-1:** The SPPOC approves the revised agenda of its second meeting on 8-9 July 2004 in Paris, France.

**SPPOC Motion 0407-2:** The SPPOC approves the minutes of its first meeting on 5-6 December 2003 in San Francisco, California, U.S.A.

Pisias moved, Larson seconded; 17 in favor

**SPPOC Consensus 0407-3:** The SPPOC accepts the modified report of the SPPOC *ad hoc* committee on the conflict-of-interest policy (including Appendix A and excluding Appendices B and C) and adopts it as the conflict-of-interest policy for the IODP Science Advisory Structure.

**SPPOC Consensus 0407-4:** The SPPOC acknowledges the ramifications of changing the SPC voting, vote tabulation, and recording processes for ranking proposals and will include that topic on the agenda for the December 2004 SPPOC meeting.

**SPPOC Motion 0407-5:** The SPPOC approves the IODP Program Plan for FY2005.

Pisias moved; Larson seconded; 17 in favor

**SPPOC Consensus 0407-6:** To conduct an assessment of progress towards the goals and objectives of the IODP Initial Science Plan and to assist in long-term planning, the SPPOC requests for its December 2004 meeting that the SPC chair present an overview of the current status of submitted proposals and their distribution with respect to the designated themes and initiatives of the IODP Initial Science Plan.

**SPPOC Consensus 0407-7:** The SPPOC receives SPC Consensus 0406-26 regarding a revised IODP Sample, Data, and Obligations Policy and thanks the Science Advisory Structure for its work on combining and revising the previous Sample and Data Policy and Obligations Policy. The SPPOC forwards this policy to IODP-MI and asks them to review it with the implementing organizations and revisit it with the SAS as necessary before seeking final approval by the SPPOC in December 2004.

**SPPOC Consensus 0407-8:** The SPPOC receives SPC Consensus 0403-18 regarding an IODP Publications Policy and looks forward to learning at its December 2004 meeting the results of the review being conducted by IODP-MI and the implementing organizations on implementing the policy.

**SPPOC Consensus 0407-9:** The SPPOC accepts SPC Motion 0406-03 and approves the proposed changes to three clauses of the SPC terms of reference.

**SPPOC Consensus 0407-10:** The SPPOC appreciates the efforts of the SPC working group in reviewing the IODP Science Advisory Structure. The SPPOC *ad hoc* committee on the Science Advisory Structure looks forward to continued interactions and discussions with this group as the *ad hoc* committee completes its review by early December 2004.

**SPPOC Consensus 0407-11:** The SPPOC approves the proposed changes, with minor modifications, to the terms of reference of the IODP Science Steering and Evaluation Panels (SSEPs), Site Survey Panel (SSP), Scientific Measurements Panel (SciMP), Environmental Protection and Safety Panel (EPSP), Technology Advice Panel (TAP), and Industry Liaison Panel (ILP).

The SPPOC also approves the addition of observatory science to the SciMP terms of reference as follows:

1. General Purpose: The Scientific Measurements Panel (SciMP) will contribute information and advice to the IODP community through the SPC with regard to the handling of IODP data and information, methods and techniques of IODP measurements (including factors that impact measurements, such as sample handling, curation, etc.), laboratory design, portable laboratory needs, and downhole measurements and experiments, and observatories.

2. Mandate: ... Specific responsibilities for the panel are publications, databases, sampling handling, curation, computers, shipboard equipment usage and needs, measurement calibrations and standards (including intercalibration between platforms and shorebased laboratories), as well as borehole <u>and observatory</u> measurements, equipment, usage, and needs.

5. Membership: Members should have expertise representing the three <u>four</u> core areas of the panel mandate covering information handling, downhole measurements, and scientific measurements, and observatories.

The SPPOC notes that the ongoing review of the Science Advisory Structure may result in further changes to the terms of reference of some panels.

**SPPOC Consensus 0407-12**: The SPPOC thanks Catherine Mevel for hosting this meeting in such a pleasant and hospitable environment. We also thank Svetlana Zolotikova for her superb efforts in organizing all of the necessary arrangements.

#### AGENDUM 6 IODP SAS

#### 6.1. Panel reports

- 6.1.1. SSEPs
- 6.1.2. SSP
  - 2<sup>nd</sup> SSP draft minutes
- 6.1.3. EPSP 2<sup>nd</sup> EPSP draft minutes Draft IODP HSE policy

# 6.1.4. SciMP

2<sup>nd</sup> SciMP draft minutes

Working group reports

- Drill cuttings team
- Paleontology and MRC working group
- Physical properties working group
- Petrophysics QA/QC
- Downhole measurements working group
- Core description working group
- Paleomagnetism working group
- Chemistry working group
- 6.1.5. TAP
- 6.1.6. ILP

## 6.2. Review

- 6.2.1. Membership disciplinary, experience, and gender balance Membership expertise and gender balance charts
- 6.2.2. SPC working group final report

SPPOC SAS ad-hoc committee mid-term report

#### 2nd Site Survey Panel Meeting 2-4 August 2004 Lamont-Doherty Earth Observatory Columbia University, Palisades, USA

**Draft Minutes (September 27)** 

### Day 1: 2 August 2004 (9:00-17:30)

- 1 Welcome and Introduction
  - 1.1 Co-chair's welcome (Okino)
  - **1.2** Round table introduction of participants (All)
  - **1.3** Meeting logistics (Quoidbach)
  - **1.4** Approve of last meeting minutes The minutes of last meeting (11-14 February, 2004 at Tokyo) were approved.
  - **1.5** Approve of agenda The draft agenda was approved. Report from ESO was cancelled because no liaison was at the meeting.

#### 2 Reports

#### 2.1 IODP-IMI office (Eguchi)

- The structure of new IODP-IMI office was overviewed. The IODP-IMI started operation 1 April, 04. 2 offices in Washington DC and Sapporo, Japan.
- The Sapporo office is responsible for overseeing science advisory process, coordinating, and maintaining public records, assisting committee chairs, coordinating submission and review of drilling program, managing data base and publications
- The total 104 proposals are active. Proposals ranked, ready to be ranked, and the remainders were summarized. 50% of proposals are related to environmental change, 30 % solid earth 20% biosphere. 23 new proposals were submitted by last deadline (1 April 2004).

### 2.2 SPC (Coffin)

- Coffin summarized the last SPC (June, 2004 in Yokohama) results.

- Full start of operations will be FY2007. *JR* will operate through FY05 and 06, *Chikyu* will become operational in FY07

- SPC in June 2004 ranked proposals for FY05 and FY06, forwards the following top 14 of 15 ranked proposals to OPCOM.
- > 522,603A, 603B, 477,482,553,600,595,547,557,581,584,555,573
- According to the budget advice from NSF/MEXT/ESO, up to two additional non-riser expeditions may be scheduled in FY05 and up to six non-riser expeditions may be scheduled in FY06, and one less expensive MSP in FY05.
- IODP policies are developed.
- Conflict of interest: Conflict of interest policy needs to be announced at each panel meeting and written explanation on how it was implemented will need to be included in the minutes of each meeting. It is more encompassing than

that under ODP. Full text of IODP Conflict of Interest policy is available on the web.

- Sample, data, and obligation policy: The policy will be finalized in Dec. 04, for ensuring availability of samples, encouraging analyses over wide rage of disciplines, and archiving samples. Moratorium period is 1 year if multi-year program then it is 1 year after last expedition.
- Publication policy: Manuscripts must be submitted within 20 months. A formal tracking procedure is established. All publications must include IODP in title for tracking. Most publications will be electronic (web based), but with some papers as well. New policy will have more details once it was finalized in FY05. A Guide will be available regarding IODP publications an abbreviated version of the IODP publication policy will appear in an issue of the JOIDES Journal.
- Core distribution: All cores will be stored in three different core depositories in Bremen, TAMU, and Japan – each depository will receive cores from specific regions of the world. Lamont and Scripps Core DSDP and ODP depositories would be shut down and the cores will be redistributed to the three IODP depositories.
- Observatories: MBARI has been proposed to become a test facility and discussion are currently developed on how observatories can be developed and tested.
- SSP Terms of Reference: Terms of Reference stays in SPC/SPOC WG.

#### 2.3 ISSEP/ESSEP (Searle)

- Searle summarized the last (May, 2004 in Grenada. SSEPs discussion and conclusions
- In overview of SAS structure, common interests between SciMP, SSP, and Databank were pointed out. SSP has accepted a liaison from SciMP during the WG activities and discussion on the development of new IODP databank, but steady liaison between the two panels is not necessary.
- In the JOI alliance report, the current issue regarding the impact of seismic surveys on marine mammals and the permitting issues were mentioned. JOI is preparing an Environmental Assessment on seismic sources and marine mammals sent to NSF. This will be a problem for future site surveys that in the past had been done by the drill ship immediately prior to the drilling operations.
- A WG on "Present and future science" discussed site survey issues; good proposals may be weakened by difficulties in acquiring site survey data and SSP will need to be more pro-active and mentoring in the future.
- Proposals will be grouped (not ranked) into five categories according to IODP priorities, 5\* highest priority to drill  $\sim$  1\* low priority.
- Mike Underwood was nominated as new co-chair and will replace Tim Byrn who is rotating off the ISSEP.

### 2.4 EPSP (Watkins)

- Watkins summarized the last EPSP meeting (June, 2004 in College Station) results.
- EPSP reviewed three proposals, North Atlantic paleoclimate, Cascadia hydrates, and Arctic programs. Many site reviews were done prior to the meeting by e-mail.
- Problems that can occur in coral reef drilling operations were discussed. Potential hazards can be listed such as mechanical damage (mostly due to anchoring),

changes to reef hydrology, cuttings and drilling muds, and drilling hydraulics and muds.

- LWD has been done in the past but information had not been transmitted back to the ship. EPSP is pushing to transmitting to ship for safety reasons.
- PPSP encourages the South Pacific Sea Level proponents to give some information on the scheduling of the future Great Barrier Reef site survey, NE Australia.

### 2.5 ODPDB (Quoidbach)

- ODPDB continue to support the IODP site survey data managements. Contract was extended to Jan 31, 2005.
- Database system is changing from an old File Maker system to a new system based on MySQL, PHP and Apache.
- Key improvements to the online search system include 1) web-based search, 2) many to many relationships with sites, and 3) multi-level user permission. New web site is available at <u>http://ssdp.ldeo.edu</u>.
- Readiness classification, and typically needed data types are hard to find for users. MATRIX will help users and procedure will appear in a future IODP guide.

#### 2.6 CDEX (Kuramoto)

- The status of *Chikyu* was reviewed. *Chikyu* will be delivered to CDEX in April, 2005.
- The outline of site survey 2D deep MCS and high-resolution seismic- in the Nankai Trough was reviewed.
- A Data base system has been developed for internal usage as well as for panel members who can access some of the data sets. CDEX's site survey data will be available on-line as well can launch seismic viewer as well as ways to view other data sets. An account and password is requested to see more than just the common data. <u>http://cdexdb2.jamstec.go.jp:8888index.html</u>

### 2.7 JOI alliance (Kleinrock)

- As for FY2005/2006 non-riser ship schedule
  - > Demobilization looks like it will be extended into 2006.
  - ➢ Juan de Fuca: collected some core and installed one CORK.
  - Staffing is almost complete for the following expeditions; Costa Rica hydrogeology, North Atlantic Paleoclimate, and Oceanic Core Complex.
- Outreach activities are going on;
  - "teacher at sea" program
  - A full time education coordinator was hired.
- New drilling vessel: JOI alliance is preparing RFP for the new non riser vessel which will be issued by the end of August creating a briefing book for the community hope to have the ship ready to sail in early 2006.
- The structure of USIO (US Implementing Organization) and JOI management structure were overviewed. Management is shared between JOI, TAMU, and LDEO. A question about site surveys funding was raised; site surveys are still funded by individual country's science agencies.
- Marine Mammals and Seismic Reflection/VSP data acquisition: After Environmental Assessment, NSF issued a best possible "No Take" assessment, and NOAA NMFS is expected to approve it. New Environmental Impact Statement is being developed.

## 2.8 NSF (Allan)

- The current status of IODP part in NSF was reviewed.
  - Contract: US system integration, new US drilling ship, Central management organization
  - US Science Support program supports scientific participation on drilling program, planning activities, tool development
  - Grants Program funds site surveys, tool development, large conventions
  - Post cruise analyses
- US science funding will remain flat during FY05.
- Phase II drilling vessel is the highest priority for NSF requesting \$40 m in FY05 and \$60 m in FY06. Drilling with the *JR* might continue while another vessel is being converted.
- Gaining clearance for seismic surveys is becoming serious problem
- A real problem is to match the funding with scheduling
- R/V Ewing will be replaced in FY2006 with a vessel capable of acquiring 3D seismic data sets, and ALVIN will be replaced in 2008 (extending the diving operation to 6,500 m).

### **3** General Discussion: MATRIX

- Okino overviewed the MATRIX WG activities and reported the SPC response to MATRIX in the March 2004 SPC meeting. SPC recommended to IODP-MI to implement the MATRIX as soon as possible the SSP report will be reviewed later this week
- FY04 budget did not include any funds for database issues. A question from IODP-MI was raised, as to what level of funding is needed to develop the MATRIX (web-based tool) development. ODPDB and co-chairs are going to discuss this issue with IODP-IMI.

### 4 Watchdog Preparation of Proposal Reviews I

#### 5 Proposal reviews

- Before the proposal reviews, the current readiness classification scheme was reviewed.
- The panel considered the following proposals. The conflict of interest rule was respected during the whole review procedure.

Proposals already ranked by SPC (additional data submission)

537A-Full3	Costa Rica Seimogenesis Project 1
553-Full2	Cascadian Margin Hydrates
603A-Full2	NanTroSEIZE 1 Reference Sites
603B-Full2	NanTroSEIZE 2 Mega-Splay Faults
	*Conflict of Interest: Park walked out

#### Day 2: 3 August 2004 (8:30-16:45)

#### 6 Watchdog Preparation of Proposal Reviews II (8:30-9:30)

#### 7 Proposal reviews (continued)

Proposals already ranked	by SPC (additional data submission)
595-Full3	Indus Fan and Murray Ridge
600-Full	Canterbury Basin
519-Full2	South Pacific Sea Level
New and Revised Propos	sals reviewed by SSEPs in May 04
505-Full5	Mariana Convergent Margin
552-Full3	Bengal Fan
603C-Full	NanTroSEIZE 3 Plate Interface
612-Full2	Geodynamo
626-Full2	Pacific Equatorial Age Transect
537B-Full	Costa Rica Seismogenesis project 2
549-Full5	Northern Arabian Sea Monsoon
601-Full	Iheya Ridge
604-Full	Ulleung Basin
618-Full2	East Asia Margin
620-Full2	Hotspot Seamounts
623-Full2	Ontong Java Plateau
	*Conflict of Interest: Coffin walked out
633-Full	Middle America Slope
636-Full	Louisville Seamount Trail
648-Full	Big Blue Seamount

#### Day 3: 4 August 2004 (8:30-10:30)

#### 8 **Proposal reviews (continued)**

Pre-Proposals reviewed by SSEPs in May 04

	*Conflict of Interest: Searle walked out
646-Pre	Iceland Hotspot
645-Pre	North Atlantic Gateway
603D-Pre	NanTroSEIZE 4 Observatories

#### 9 Nomination of new co-chair

- Andre Droxler is rotating off the SSP panel. It was recommended to select a European SSP member to become the new SSP co-chair, with the idea that Kyoko Okino the current co-chair from Japan will be replaced by a US co chair when she is rotating of the SSP Panel. However, it was also mentioned that scientific leadership, willingness to serve as co-chair, and overall availability of a candidate were the most important criteria based on which co-chair need to be selected. Roger Searle was nominated by both SSP co-chairs, and unanimously approved by the SSP members to replace Andre Droxler as co-chair of SSP. The nomination of Roger Searle will be presented to the SPC meeting in October 2004.

#### 10 Other Business

-Park and Nogi will be liaisons for next ISSEP/ESSEP at Okinawa, Japan, in November 2004.

#### 11 Date selection for next meeting

Next SSP will be held in Europe, 21-23 February, 2005. Co-chairs will contact the possible local hosts and ECORD and decide the location as soon as possible.

#### Participants

-SSP panel members:

Carbotte, Suzanne (USA) Corthay, James (USA) Droxler, Andre (co-chair) (USA) Gutscher, Marc-Andre (France) Harding, Alistar (USA) Hoyanagi, Koichi (Japan)) Naar, David (USA) Nogi, Yoshifumi (Japan) Okino, Kyoko (co-chair) (Japan) Park, Jin-Oh (Japan) Qiu, Xuelin (China) Sato, Hiroshi (Japan) Sohn, Rob Reeve (USA) Searle, Roger (UK) Takano, Osamu (Japan) Twichell, David (USA) Tsuru, Tetsuro (Japan) -Liaisons and guests: Coffin, Millard (SPC) Watkins, Joel (PPSP) Larsen, Hans Christian (IODP-IMI) Eguchi, Nobuhisa (IODP-IMI) Quoidbach, Daniel (ODP Databank) Kuramoto, Shinichi (CDEX) Matsuda, Shigemi (CDEX) Kleinrock, Marty (JOI Alliance) Allan, James (NSF) -Absent panel members Escutia, Carlote (Spain) Neben, Soenke (Germany)

#### EPSP Meeting – June 21-22, 2004 Annenberg Presidential Conference Center @ Texas A & M University College Station, TX

**Called to order**: Meeting was called to order by the chair. A brief safety moment was presented on the location of the room and conference center exits. Jack Baldauf (host) presented information on meeting logistics. General rules and guidelines for the meeting were presented.

**Self introductions**: Self introductions made by all attendees.

**EPSP Members Present**: Bob Bruce, Akito Furutani, Hans Juvkam-Wold, Susumu Kato, Barry Katz (Chair), Jean Mascle, Bramley Murton, Craig Shipp, Dieter Strack, Manabu Tanahashi, Toshiki Watanabe, and Joel Watkins

**EPSP Members Absent**: Jiro Chinju and Nobuo Morita

**Guests**: Jack Baldauf (USIO-TAMU), Colin Brett (ESO), Bob Burger (USI-JOI), John Castagna (Nominated EPSP Member), George Claypool (TAMU-SP), Mike Coffin (SPC), Neil DeSilva (TAMU-SP), Earl Doyle (USSAC), Andre Droxler (SSP), Dave Goldberg (USIO-LDEO), Martin Hovland (TAMU-SP), Tom Janecek (IODP-MI), Yoshihisa Kawamura (CDEX), Shomei Kobayashi (CDEX), Shinichi Kuramoto (CDEX), Daniel Quoidbach (ODP/IODP Databank), Takao Saito (CDEX-HSE), Jerome Schubert (Nominated EPSP member), Uko Suzuki (CDEX), Manik Talwani (IODP-MI), Fred Taylor (Presenter – Reef Drilling), Julia Smith Wellner (SHALDRIL), Masaoki Yamao (GODI), Tamio Yohroh (CDEX)

**Agenda review**: Preliminary agenda was reviewed and modified with two program additions: 1- A review of the CDEX database; and, 2- drilling in the vicinity of chemosynthetic communities.

**Minutes approval**: Minutes from the December 2003 meeting were approved without any additional revision.

**Review of SPC activities that may impact EPSP**: Mike Coffin reviewed SPC activities from the last two meetings that may impact the activities of the panel. It was noted that there was the potential that funding could be available for additional nonriser legs filling out the remainder of fiscal year 2005 and 2006. This possible addition would significantly impact the activities of the panel increasing the number of reviews that will need to be conducted over the next 12 months. SPC completed their rankings in June 2004 and classified these and previously ranked proposals into three groups of priority for scheduling. OPCOM has been asked to build a drilling program incorporating the scientific ranking of the proposals. The next OPCOM meeting is scheduled for September 30 – October 1, 2004 in Washington, D.C. OPCOM will be building a program assuming that this additional funding will be available. EPSP will need to act in the same manner. Additional budgetary advice will not be available until January 2005.
The acceptance of the panel's name change by SPPOC was noted. A high-level overview of the reef drilling impact statement was made.

**Comments on ranked proposals**: Barry Katz reviewed the proposals forwarded to and residing with OPCOM. It was noted that several of the proposals could provide significant challenges to EPSP. These are summarized below.

Proposal Identification	EPSP Challenges/Issues
Group I	
545 - Juan de Fuca (part 2)	None
589 - Gulf of Mexico	Overpressure/shallow gas
621- Monterey Bay Observatory	Marine sanctuary
564 - New Jersey Margin	Shallow gas
519 - Great Barrier Reef	Reef drilling, marine park
522 - Superfast Spreading Crust	None
603A - NanTroSEIZE phase 1	Penetration up to 1750m
603B - NanTroSEIZE phase 2	Penetration up to 3500m
477 - Okhotsk/Bering Sea	Hydrates/penetration up to 700m
482 - Wilkes Land Margin	Penetration up to 1000m
553 – Cascadia Margin Hydrates	Hydrates
600 - Canterbury Basin	Penetration up to 1825m/hydrocarbons?
Group II	
595 - Murray Ridge	Penetration 2910m
547 – Oceanic Subsurface Biosphere	None
577 - Storegga Slide	Gas hydrates
Group III	
581 – Late Pleistocene Coralgal Banks	
584 – TAG II Hydrothermal	
573 - Porcupine Basin Carbonate Mounds	Hydrocarbon seeps/chemosynthetic communities
555 - Cretan Margin	Deep penetrations/mud volcanoes

**Review of OPCOM activities**: Tom Janecek presented an overview of OPCOM. Within IODP OPCOM has shifted from part of the scientific advisory structure to the management structure. There will be an attempt made to schedule as much as 18 months of drilling during each cycle. Membership of OPCOM will vary through time, with only a limited number of "fixed" membership positions. The planning and scheduling process will take nearly two years. OPCOM will meet after SPC has ranked and prioritized the drilling proposals. They will formulate a series of alternate drilling schedules. They will then work with SPC to insure that the science plan is being met by the proposed drilling plans. Once consensus is reached a program plan will be developed for submission to the lead agencies.

Discussion on the presentation followed. It was noted that under the new scheme the lack of EPSP liaison with OPCOM could complicate the panel's operation. Historically this liaison provided the panel with a "heads-up" on how the panel's agenda needed to develop. In its revised form there will need to be improved communication between EPSP and OPCOM. It was also noted that there appears to be a need for better

feedback from EPSP into both the scientific planning process and operations. It was observed that EPSP could limit drilling under some circumstances so that the approved science objectives would not be met yet there is no formal mechanism in the current system for a follow-up review.

**Review of draft IODP HSE guideline statement**: The revised IODP HSE guideline statement was presented to the panel for review. It was recommended that with the addition of the following statement to list of program actions that the draft be approved by SPC, OPCOM, and the operators.

"Drilling programs will undergo a predrill risk assessment prior to implementation to minimize environmental impact and maximize safety."

# Barry Katz will forward the modified guideline to Mike Coffin (SPC), Tom Janecek (OPCOM), Jack Baldauf (JA), Colin Brett (ESO) and Takao Saito (CDEX)

**Review status of the Arctic drilling program**: Colin Brett provided an update to the panel. It appears that most probably only a single site will be drilled. Other locations will most probably represent alternates. A three ship strategy is planned - *Sovetskiy Soyuz, Oden*, and the *Vidar Viking*, which will act as the drillship. Plans currently are for a real-time ice management plan using GPS. Drilling will only be carried out within EPSP approved locations. Borehole stability will be monitored by the driller who will sanction wire line core barrel retrieval if safe to do so. Retrieved core will be monitored for gas. The presence of gas will normally terminate the borehole. If hydrocarbons are encountered sub-samples of the core will be collected using approved oilfield exploration techniques for subsequent detailed analysis onshore.

**Discussion of shipboard hydrocarbon monitoring program**: Colin Brett introduced the proposed monitoring program for mission specific platforms. ESO presented a plan to use gas detectors rather than conventional gas chromatography for monitoring. It was noted that the equipment proposed was actually designed for safety monitoring of enclosed spaces. In the case of hydrocarbons, it is used to detect whether gas concentrations have approached an explosive threshold. It was stated that the ESO plan would terminate a hole when gas is detected because of the limited space for "kill mud". The choice of equipment was largely made because of space limitations for equipment, supplies, and analyst. It was generally felt that the proposed program could prematurely terminate drilling operations because of the ubiquitous occurrences of trace quantities of gas and that gas chromatography should still be used as the primary means of hydrocarbon monitoring. The currently in-place gas monitoring program is largely dependent on the tracking of gas wetness, with drilling being terminated when values exceed that predicted based on the geothermal gradient. It was noted by George Claypool that small portable, largely self-contained, gas chromatographs are available and that an analyst could be easily trained. The interpretation of any anomalies could be handled onshore. It was also proposed that more information be

obtained on the potential utility of the gas detectors through a comparative study with conventional gas chromatographic data.

It was recommended that Colin Brett contact George Claypool about obtaining a "loaner" GC. If one is unavailable from Claypool they pursue other means of securing a GC. Gas chromatography remains the only currently acceptable means of hydrocarbon monitoring.

Jack Baldauf will work with ESO and the scientific staff of the *Joides Resolution* to develop an experimental program to determine how and whether the gas detectors may be used for hydrocarbon monitoring. It is hoped that they will report back to EPSP at their December meeting following the initiation of IODP drilling.

**Review of activities of the USIO**: Jack Baldauf presented the status and plans of the nonriser portion of the program. Focus has been on the remobilization of the *Joides Resolution*. The first cruise (Juan de Fuca - Expedition 301) is scheduled to depart on June 27<sup>th</sup>. A number of modifications to program presented at the December EPSP meeting were made for operational and budgetary reasons. These are summarized below.

Juan de Fuca - Expedition 301

<u>Proposed</u>: 1 deep hole at site SR-1A with CORK installation and multiple complex experiments, and replace CORKs at ODP Sites 1026 and 1027

Current plan: 3 holes at SR-1A and replace CORKs at Sites 1026 and 1027:

- Hole A: APC cored to basement (275 mbsf)
- Hole B: Cased re-entry hole w/CORK through the rubble zone (est. 335 mbsf)
- Hole C: Cased reentry hole w/CORK to 700 mbsf

Revised plan decreases the overall complexity of the program Costa Rica – APL – Expedition 302

Replace samplers while in transit. (Not in the original plan.) North Atlantic – Expeditions 303 and 306

> <u>Proposed</u>: Quadruple APC 5 sites to 300 mbsf on each expedition, plus instrumenting an existing hole (642E) at the end of Expedition/ <u>Current plan</u>: Triple APC 5 sites on each expedition and drill a new instrumented hole near Site 642. IRM sites were removed from program because of the need for an ice support vessel.

> Revised plan will fit within allotted time, but costs will be increased by about \$80,000 due to additional hardware requirements plus the time required for drilling a new hole at ODP Site 642.

> EPSP will need to complete the site review for these expeditions at this meeting.

Core Complex – Expeditions 304 and 305

Proposed: drill 2 cased re-entry holes in oceanic crust w/bare rock spud in; one hole to 400-500 mbsf (detachment fault and hanging wall) and one hole to at least 700 mbsf (footwall/high seismic velocity zone)

Current plan: Both holes will be started with the hammer drill system, then RCB cored to casing depth on Expedition 3. Remaining time, including Expedition 4 devoted to coring to maximum possible depth at the deep site.

Revised plan will fit within available time, but costs have increased for use of both hammer and re-entry system. Revised program nearly doubled the expedition costs.

Other issues that may be of interest to the panels were

- Postponement of the Gulf of Mexico hazard survey,
- Development of a shipboard security program
- Cross-training programs across the operators
- Development of a high latitude contingency program
- Marine Mammal Site Survey protocol pending

**Overview of the CDEX database**: Shinichi Kuramoto presented an overview of the CDEX database system. The system will allow electronic access to site survey data through the Internet using XML technology. Access to the database will not require a broadband connection. The system uses a GIS interface and will integrate all of the available data. The system will permit the use of Schlumberger's *GeoFrame* software. Comments and suggestions should be forwarded to CDEX.

**Review of CDEX HSE management system**: Takao Saito presented an overview of the CDEX HSE system. Noting that there are three internal groups responsible for different portions of the HSE process – Site Survey, Operations, and HSE. CDEX's well management system includes five general stages, each with a series of associated activities. An appraisal stage which includes such activities as the development of the proposal, the gathering of available data, and an initial engineering site survey. This initial appraisal stage would include a planning kick-off meeting. The second stage includes the well design, safety assessment, and the preparation of the environmental impact statement. The third stage is the execution of the program (i.e., drilling of the well). The fourth stage is the analysis of the activities, including a post-well review and meeting. The final step is the incorporation of the learnings into the next operation.

A question was raised as to whether the term "well" should be introduced into the program because of its commercial implications.

**Discussion on riser drilling EPSP review process**: Following the CDEX presentation a general discussion on the riser drilling process was conducted. It was observed that because of the increased technical difficulties of most of the proposed riser drilling operations a more robust geologic/geophysical interpretation will be required. Additional information concerning the specifics of the drilling program will also need to be introduced. There was some concern whether all the necessary skills for a complete review were present on EPSP. It was felt that there could be a need to occasionally bring in an external consultant. CDEX noted that there exists internal expertise in riser drilling expressed concerns about the introduction of a third party. It was clarified that this external consultant was to assist EPSP with the review and not to directly support CDEX's technical and engineering staff.

It was observed that the proposed system was a major departure from the current safety review process with much more direct operator involvement. As a result of the shift away from the proponent to the operator, it appears that EPSP's role would be shifting to one of greater oversight responsibilities (i.e., examining the work product of the operator). Several of the panel members expressed discomfort with this role and feel the need for continuing dialogue on the process.

# It is recommended that the role of EPSP in the review of riser expeditions be discussed in more detail at the December EPSP meeting.

**Preview of Chikyu Training Cruise**: Tamio Yohroh provided an overview of the planned training cruise. The Shimokita-Toho (East) region was selected for the training cruise. Engineering geophysical surveys were conducted and identified regions of possible free gas and gas hydrates (BSR's) within the training area. Potential drilling locations were selected outside of the areas with these potential hazards. The training program will have three components: 1- BOP setting practice around IPOD Site 439; 2- the drilling of a riser 2000m hole in 2000m of water; and 3- riser drilling of a 3000m hole in 1000m of water. Plans are for the offshore training program to begin in September 2005.

After the presentation a general discussion was held and a partial list of data needs for a riser program review was developed. Meeting attendees listed the following data needs for an effective review:

- Proposed drilling location
- Seismic cross-lines (common scale)
- Annotated seismic, with drilling locations and apparent hazards
- Current profile throughout the water column
- Heat flow estimates
- Downhole pressure estimates
- Drilling plan including casing, mud, and coring programs (contingency plan should also be include)
- Hydrocarbon monitoring program and contingency plan for hydrocarbon shows
- Structure map on key horizons (common projection and scale)
- Surface feature maps (same projection and scale as structure maps)
- Single "hazard" summary table

# Plans currently are for the initiation of a review of the Chikyu Training Cruise at the December 2004 meeting.

**Review of remaining sites from Proposal 572 (North Atlantic Paleoclimate)**: Dan Quoidbach presented the sites pending from the December 2004 meeting and an additional proposed site. Two sites were relocated by the panel and a third site was approved to a greater depth than originally proposed.

Site	Latitude	Longitude	Depth of Penetration (m)	Status
IRD- 3A	41°0.068'N	32°57.438'W	400	Approved with modified depth
LAB- 8A	58°28.52520'N	46°27.82314'W	300	Relocated to shot point 13975 on KN166 – Line25a
LAB- 8C	58°30.34632'N	46°24.03360'W	400	Relocated to shot point 14375 on IKN166 – Line25a

# Dan Quoidbach will provide latitudes and longitudes for the relocated sites.

Discussion on drilling in the vicinity of chemosynthetic communities: Neil DeSilva presented a general discussion on the current status on drilling in the vicinity of chemosynthetic communities. These communities live in perpetual darkness and derive their energy from dissolved gases. The known distribution of these communities is expanding. They may be detected through direct observations or inferred through highresolution geophysical data, shallow cores, and bathymetric anomalies. There is an association between these communities and hydrocarbon seeps. Legislation is currently in-place in Canada, the United Kingdom, and the United States dealing with drilling near chemosynthetic communities. This legislation would generally prohibit or restrict drilling operations. In the UK drilling is generally precluded, if permitted there are specific requirements associated with the discharge of drill cuttings and anchoring. In Canada an environmental assessment would need to be undertaken, but there is a general recommendation to avoid these locations. In the US drilling would not be permitted within 1500 feet of a community nor within 250 feet of a feature that could support a community.

A general discussion followed on how these restrictions could impact the drilling program. For example, if the program followed the more restricted legislation globally it could be prevented from drilling at some proposed locations including some Cascadia sites and the Porcupine basin carbonate mounds.

# Panel members will be prepared to discuss at the December 2004 meeting survey needs and a general program strategy for drilling in high risk areas.

**Review of Proposal 553 (Cascadia Gas Hydrates)**: As a result of illness the lead proponent was unable to attend the meeting and no substitute was available. A revised safety presentation was electronically forwarded to Craig Shipp, who introduced the package. No additional review of the scientific goals and objectives was made at this meeting. The proponent had presented the science plan at the panel's December 2003 meeting. Craig Shipp and Barry Katz lead the panel through the site-by-site review. (CAS-04B was approved at the panel's December meeting.)

Site	Latitude	Longitude	Depth of Penetration (m)	Status
CAS-01B	48°41.884'N	126°51.924'W	400	Approved as proposed
CAS-01C	48°40.682'N	126°50.630'W	600	Approved as proposed
CAS-02B				Not approved at present location
CAS-03B	48°37.058'N	127°2.413'W		Approved as proposed
CAS-05B	48°44.161'N	126°47.537'W	350	Approved as proposed
CAS-05C				Not approved. Panel would require a cross- line for approval
CAS-06A	48°40.050'N	126°51.053'W	300	Approved with a modified depth (50 m less than originally proposed)

All approvals granted by the panel are conditional upon receipt of a fully revised safety package. The proponents will need to provide to EPSP this package before the December meeting for an e-review. This should include a full set of site safety sheets, fully annotated seismic lines, and clarification of the site names (e.g., in the December 2003 safety packet the dual CORK location was identified as CAS-01B holes A&B it is now identified as CAS-01C). The annotation should include well locations to proposed penetration depths, scales and vertical exaggerations. All sites no longer under consideration should be removed from maps and sections to avoid confusion.

The proponents can resubmit for review at the December meeting CAS-02B and CAS-05C. Concerns were expressed about free-gas at CAS-02B and without the proponents present were unable to relocate the site. CAS-05C would need to be located on a cross-line. The proponents will also need to present any plans for LWD during the expedition. It is recommended that the proponent attend this meeting.

Concerns were expressed by the panel whether approval would be granted by the Canadian government for the drilling of the CAS-06A

because of its proximity to a chemosynthetic community. Proponents should consider the selection of alternate sites beyond the required standoff distance in case the operator is unable to secure approval. Note that IODP guidelines for the drilling of chemosynthetic communities are still under development.

**Courtesy review of SHALDRIL Program**: Julia Smith Wellner presented an overview of the scientific and technical plans of the SHALDRIL Program. The program is a test of drilling capabilities in Antarctic waters using conventional ice-breaking research vessels. Although the study area selection was largely driven by logistics (e.g., availability of site survey data, access to onshore support bases, etc.) the potential for a significant scientific return was also considered. The scientific objectives include an examination of: 1) the expansion of the Antarctic Peninsula ice cap onto the continental shelf; 2) the response of Antarctic flora to climatic cooling and glaciation; 3) the Late Eocene-Oligocene paleobiology of high latitude faunas; 4) Holocene climatic variability and ice sheet fluctuations; and 5) ice-sheet sedimentation and the last glacial maximum. The proposed program will take place in the James Ross basin, located at the northern tip of the Antarctic Peninsula.

Meeting participants discussed the proposed drilling program. The panel sees no safety or potential pollution issues with the drilling of the proposed shallow cores. All seven of the planned cores were limited to 100 meters. It was strongly recommended that alternate drilling sites be considered because of potential ice conditions. The proponents were reminded of restrictions that may be placed on the collection of new seismic data because of issues associated with marine mammals. Meeting participants emphasized the need for clear evacuation plans (both medical emergencies and complete vessel evacuation) and an understanding of the time needed to "cut and run".

**Discussion on coral reef drilling**: Fred Taylor presented an overview of some of the environmental drilling issues associated with coral reef drilling. Current information indicates that the effects of reef drilling would be minimal, however studies have been somewhat limited. There may be more of a political risk than real risk associated with reef drilling, with reefs currently being in serious decline. The program needs to engage the biologists. Several potential issues were noted.

- Mechanical damage includes the hole itself and that caused by anchoring. It was
  felt that the solutions to mechanical damage could be found through better hole
  positioning (visual inspection), the use of a dynamically positioned ship, and/or
  the use of anchor bolts emplaced in the sea bed.
- Changes in reef hydrology induced through the borehole may negatively impact reef organisms or undermine reef integrity through the introduction of borers. It was suggested that these effects could be minimized through the plugging of the borehole.
- Introduction of cuttings and drilling mud which may inhibit photosynthesis and stress the reef. Chronic exposure is considered more of problem than the limited exposure caused by typical scientific drilling. Historically most cuttings and mud disappears into the reef's porosity. Wave action and currents is also thought to

rapidly disperse any cuttings further reducing any impact. If drilling fluids were to be used the operators may wish to consider the use of biodegradable vegetablebased fluids (e.g., a guar gum drilling fluid) and should also consider using a circulating system to capture the drilling fluid.

- Leaks of hydraulic fluids and other substance may be limited in scope (on the order of liters) but could have a negative impact on the reef. The program might consider using freshwater or seawater hydraulic fluid systems or a biodegradable hydraulic fluid.
- Noise and vibrations may impact life associated with the reef. The time at one site should be minimized and there should be separation between sites.

The panel continued the discussion and raised the issue of packing-off and cementing the low permeability horizons. It was generally felt that this is not accomplishable and that the cementing may introduce other environmental issues. The panel also felt that monitoring before and after drilling was critical.

# Barry Katz will draft, based on Fred Taylor's presentation and followup discussion, a set of guidelines for reef drilling for discussion at the next EPSP meeting.

**Discussion on Tahiti 650-APL**: A proposal was presented to the SPC for a seismic experiment to be conducted as part of the Tahiti drilling program. This program includes a cross-well tomography program. The proposed program would include the installation and removal of PVC liners in the boreholes and re-entry cones. The panel was asked to review the environmental implications of only those portions of the proposal that were associated with the boreholes (i.e., EPSP did not consider the placement of the ocean bottom cables). Following discussion it was **recommended that the operator consider leaving the PVC liners in the boreholes**. Concerns were expressed that the process of removing the liners could do more damage to the reef than permitting it to remain. As with the drilling operations, it is recommended that the operations should be monitored using an ROV.

**Review of working draft of Environmental Impact Statement on Coral Reef Drilling**: Barry Katz presented the draft statement. Following a brief general discussion no suggested modifications were proposed. The panel will begin to develop the implementation plan and guidelines to support the overarching statement. This will be a discussion item at the December meeting.

**Results of e-reviews**: Barry Katz presented the results of the e-reviews for Proposals 512-Full3, 519-Add2, and 543-Full2.

**Proposal 512-Full3 (Oceanic Core Complex)**: The panel by electronic vote unanimously approved the proposed sites as detailed below. The panel recommends the monitoring of  $H_2S$ .

			Donth of	
Site	Latitude	Longitude	Penetration	Status

			(m)	
AMFW-01A	30°10.2'N	42°7.4'W	700	Approved as proposed
AMHW-01A	30°11.5'N	42°3.9'W	500	Approved as proposed

**Proposal 519-Add2 (South Pacific Sea Level – Tahiti)**: The panel by electronic vote unanimously approved the proposed sites as detailed below. The panel requests that an ROV be used to survey the proposed drilling locations before and after the drilling operations. In addition, if an anchored vessel is used for drilling the anchor points should be visually examined before and during anchor placement.

Site	Latitude	Longitude	Depth of Penetration (m)	Status
TAH-01A #1	17°32.1298'S	149°36.2299'W	85	Approved as proposed
TAH-01A #2	17°32.0989'S	149°36.0869'W	75	Approved as proposed
TAH-01A #3	17°32.0632'S	149°35.9187'W	60	Approved as proposed
TAH-01A #4	17°32.0339'S	149°35.7727'W	45	Approved as proposed
TAH-01A #5	17°31.9917'S	149°35.5772'W	45	Approved as proposed
TAH-01A #6	17°31.9661'S	149°35.4506'W	55	Approved as proposed
TAH-02A #1	17°29.9625'S	149°24.6986'W	85	Approved as proposed
TAH-02A #2	17°29.8142'S	149°24.5788'W	100	Approved as proposed
TAH-02A #3	17°29.6200'S	149°24.4315'W	75	Approved as proposed
TAH-02A #4	17°29.3631'S	149°24.2418'W	75	Approved as proposed
TAH-02A #5	17°29.2799'S	149°24.1822'W	65	Approved as proposed
TAH-02A #6	17°29.2347'S	149°24.1488'W	55	Approved as proposed
TAH-02A #7	17°29.1047'S	149°24.0589'W	105	Approved as proposed
TAH-03A #1	17°45.9808'S	149°32.8766'W	80	Approved as proposed
TAH-03A #2	17°45.9621'S	149°32.9645'W	90	Approved as proposed
TAH-03A #3	17°45.9553'S	149°33.0407'W	70	Approved as proposed
TAH-03A #4	17°45.9888'S	149°33.0529'W	75	Approved as proposed
TAH-03A #5	17°46.0196'S	149°33.0614'W	55	Approved as proposed
TAH-03A #6	17°46.0471'S	149°33.0712'W	55	Approved as proposed

**Proposal 543-Full2 (Cork in 642E)**: The panel by electronic vote unanimously approved the proposed site as detailed below.

Site	Latitude	Longitude	Depth of Penetration (m)	Status
VP-1	67°12.7'N	2°55.8'W	150	Approved as proposed

**Discussion on LWD/MWD operations**: An open discussion on LWD/MWD took place. This discussion was based on the presentation made by Dave Goldberg at the December 2003 panel meeting. It was felt that there were certain environments such as mid-ocean ridges and abyssal plains where there should be no restrictions on LWD and no need for real time monitoring. There were other settings including those associated with hydrates, overpressure conditions, clear shallow gas hazards, and proven petroleum provinces where real-time measurements would be required. It was noted that many proponents would like to use LWD to select coring locations in order to make their time on site more effective. It was suggested that rather than establishing a series of universal restrictions on LWD site-by-site reviews by EPSP are needed. When LWD/MWD is being used for safety/hydrocarbon monitoring it appears that real-time pressure monitoring may be required as well as a camera may need to be placed near the borehole. The "stacking" of the tool may also need to be considered to insure that the key safety monitoring components are close to the bit.

Dave Goldberg will prepare a draft set of operational guidelines for the use of LWD/MWD. The issues to be addressed should include: 1under what circumstances can logging be conducted prior to coring; 2-where and when is real-time data collection required; 3- what tools need to be used for safety (hydrocarbon) monitoring; and 4- what are the general guidelines for interpretation of the data. These guidelines should be circulated to the panel prior to the December meeting. They will be included in December meeting agenda.

**Discussion on drillsite selection and near-surface drilling hazard survey guidelines**: Bob Bruce reviewed the proposed guidelines for shallow hazard assessment. It was noted that the shallow safety issues may vary depending on the nature of the drilling platform. But in general, the data density and area of coverage needs to be sufficient to identify the issues of concern and that shallow gas accumulations are considered an issue across platforms. A reporting format is also included in the guidelines that would provide EPSP the necessary information to quickly evaluate risks.

All panel members are asked to review the document and provide any comments no later than November 15<sup>th</sup> to Bob Bruce and Craig Shipp.

The panel will discuss the final draft at the December meeting and vote on forwarding to the SPC for endorsement.

**New watchdog for proposal 589**: As a result of a conflict of interest Joel Watkins will replace Bob Bruce as EPSP watchdog.

Barry Katz will advise the lead proponent of the change.

**Other new business**: No additional business was brought forward.

**Planning of next two meetings**: Pending final approval by IODP-MI the next meeting of EPSP will be held December 6 and 7, 2004 in Hawaii. The specific venue will be selected after consultation with the JOI travel office. Agenda items will include: reviews

of drilling programs to-date, recommendations on **coral reef** and **chemosynthetic community drilling** and the use of LWD/MWD, formal reviews of Proposal 589 (Gulf of Mexico Overpressure), Proposal 621-Full (Monterey Bay Observatory), Drilling Program of the Chikyu Training Cruise, and preview of Proposal 603A-Full2 and 603B-(NanTroSEIZE Phase 1 and 2). Results of e-reviews of Proposal 522-Full3 (Superfast Spreading Crust), and Proposal 545-Full3 part 2 (Juan de Fuca Flank Hydrogeology Additional items may be added as requested by SPC or IODP-MI. The tentative dates for the first 2005 meeting are June 27-28. The meeting is scheduled for Edinburgh, Scotland.

Barry Katz will advise the proponents of the scheduling and safety package needs.

Adjournment Meeting was adjourned at 15:30.

# INTEGRATED OCEAN DRILLING PROGRAM Health, Safety and Environment Policy

The Integrated Ocean Drilling Program (IODP) is an international research initiative for scientific drilling operations using specifically designed drillships and other platforms. The purpose of IODP is to improve the understanding of the natural processes on the planet.

IODP is responsible to ensure the health and safety of all personnel in the areas in which it operates and to minimize the impact of its operations on the environment. IODP recognizes the importance of protecting the marine environment, its fauna and flora, and will take the necessary action to minimize potential impacts.

The scientific research program operates around the world and is subject to international and host country Health, Safety and Environment legislation. IODP will ensure that operations meet internationally recognized HSE standards and comply with the requirements of host country legislation, standards, guidelines and codes.

To achieve this, IODP will:

- Provide HSE leadership for operations with evidence of a positive HSE culture and training at all levels.
- Develop HSE specific policies and management practices that comply with international standards.

• Drilling programs will undergo a predrill risk assessment prior to implementation to minimize environmental impact and maximize safety.

• Review and track the implementation and performance of the HSE policies. Modify the policies as warranted with changes communicated to all relevant personnel.

• Assure that work performed is conducted according to the agreed upon HSE plan

# Minutes

# Second Meeting of the Scientific Measurements Panel (SciMP) of the IODP

June 23 - 25, 2004

Boston University Boston, Massachusetts, USA

# Attendees

## **SciMP**

Aita, Yoshiaki	Japan, Utsunomiya University
Escartin, Javier	France, CNRS Institut de Physique du Globe
Gulick, Sean	US, Institute of Geophysics, Univ. Texas
Kasahara, Junzo	Japan, University of Tokyo
Korja, Annakaisa	Finland, University of Helsinki
Lyons, Tim	US, University of Missouri
Mandernack, Kevin	US, Colorado School of Mines
Murray, Rick (co-chair)	US, Boston University
Neal, Clive	US, University of Notre Dame
Nunoura, Takuro *	Japan, JAMSTEC
Okada, Makoto (co-chair)	Japan, Ibaraki University
Saito, Saneatsu	Japan, JAMSTEC
Sakamoto, Tatsuhiko	Japan, JAMSTEC
Screaton, Elizabeth	US, University of Florida
Spezzaferri, Silvia **	Switzerland, Univ. of Fribourg
Villinger, Heinrich ***	Germany, Bremen
Wilkens, Roy	US, University of Hawaii
Yamamoto, Masanobu	Japan, Hokkaido University

- \* Serving as alternate to Kenji Nanba (Japan).
- \*\* Serving as alternate for Mike Lovell (UK).
- \*\*\* Non-voting ESSAC representative.

*Note...* the representative from China could not attend.

# Liaisons and Guests

Blum, Peter	JOI Alliance, TAMU (Science Services/Laboratories)
Coffin, Mike	SPC Chair, Univ. of Tokyo, Japan
Freifeld, Barry	Lawrence Berkeley Laboratory, US.
Fujine, Kazuho	CDEX, Curator
Ito, Hisao	SPC, Japan
Kryc, Kelly	JOI Alliance, JOI (Washington, DC).
Kuroki, Kazushi	CDEX, Technical Supervisor
Rea, Brice	ESO, Petrophysics Representative (UK, Leicester)
Robinson, Stuart	JOI Alliance, LDEO, Borehole Research Group (BRG)
Roehl, Ursula	ESO, Bremen Repository
Ruppel, Carolyn	NSF, US.

# **Executive Summary**

# SciMP Recommendations, Consensus Statements, and Action Items

The second meeting of the Scientific Measurements Panel (SciMP) of the IODP occurred from June 23 - 25, 2004, at Boston University, Boston, Massachusetts, with co-chair Rick Murray serving as host. The SciMP meeting resulted in the following 16 Recommendations, 8 Consensus Statements, and 25 Action Items. These are forwarded to SPC for comment and/or approval, with appropriate distribution to IODP-MI or the SPPOC.

Upon the recommendation of the IODP-MI Sapporo office, we are following a numbering scheme of "Year-Month-Number" (that is, for this meeting, 04-06-xx) for the Recommendations, Consensus Statements, and Action Items. Brief overviews are provided where appropriate *in italics* before each Recommendation and Consensus Statement. Detailed background information is provided in the full minutes.

<u>Note</u>: Many of the presentations and draft Working Group reports (Powerpoint, etc.) by panelists and other attendees are included in the 28 different appendices. Recommendations written in these presentations were presented for discussion only, and the recommendations as written here in the Executive Summary and the Minutes are more current than those in the presentations.

Appendices to these minutes are as follows:

- Appendix 1 Agenda (Murray and Okada)
- Appendix 2 Report from most recent SPC meeting (Okada)
- Appendix 3 OD21/CDEX Report (Kuroki)
- Appendix 4 JOI-A Report (Blum)
- Appendix 5 ESO Report (Roehl)
- Appendix 6 Phase Two Non-Riser Ship Status (Blum)
- Appendix 7 Logging Issues (Robinson)
- Appendix 8 Downhole Tools Workshop Report (Murray)
- Appendix 9 Drill Cuttings (Saito and Kuroki)
- Appendix 10 Hydrology PPG Summary (Screaton)
- Appendix 11 X-ray CT Scanner (Freifeld)
- Appendix 12 Report from SPC (Coffin)
- Appendix 13 QA/QC Overview (Saito)
- Appendix 14 Paleontology and MRC WG Report (Aita)
- Appendix 15 Physical Properties WG Report (Gulick)
- Appendix 16 Petrophysics QA/QC Report (Gulick)
- Appendix 17 Downhole Tools WG Report (Saito)
- Appendix 18 Core Description WG Report (Saito)
- Appendix 19 Severely Dilated Samples (Saito)
- Appendix 20 Paleomagnetics WG Report (Okada)
- Appendix 21 Chemistry WG Report (Neal)
- Appendix 22 Microbiology Sub-Sampling (Mandernack)
- Appendix 23 Core-Log-Seismic Integration (Sakamoto)
- Appendix 24 IO Technical Report Coordination (Kuroki)
- Appendix 25 IO Technical Staff Rotation and Training (Kuroki)
- Appendix 26 IO Coordinated Report on Digital Imagery (Blum)
- Appendix 27 ESO-Arctic Lomonosov Ridge Update (Rea)
- Appendix 28 Third Party Magnetometer (Robinson)

# **Recommendations**

SciMP has discussed the JOIDES ODP logging policy (e.g., the "400 m rule") based on an analysis of logging practices during ODP. SciMP emphasizes the scientific importance and value of a regular logging program, realizing that this importance is sometimes not appreciated by the scientific community. The following recommendations stem from these discussions:

**Recommendation 04-06-01**: SciMP recommends that all IODP sites should be logged. The absence of planned logging of IODP sites in a proposal has to be explained and justified explicitly in the proposal.

Vote: 17 yes, 1 no, 0 abstain, 1 absent (representative from China).

The Drill Cuttings Team Working Group, chaired by Saito, has revised its report from the previous SciMP meeting (Nagasaki, December 2003) and presents it here for final approval.

**Recommendation 04-06-02**: SciMP recommends to SPC acceptance of the Drill Cuttings Team report, and requests SPC distribute it to the IO's and IODP-MI. The full report and attached documents are found in Appendix 9.

IODP scientists should recognize the limitation of cutting usage as well as their usefulness. SciMP recommends:

- a. Appropriate sampling parameters, such as the sample interval and volume of drill cuttings, should be decided according to the scientific objectives of the expedition.
- b. Drill cuttings initially processed by on-site specialists should be forwarded to the on-site scientific laboratories as soon as possible.
- c. Washed and dried cuttings should be stored as permanent archives. All cuttings data should be stored in database with Cutting Sample ID.
- d. Access to mud logging data including drilling/geological information should be made available for browsing and storage in science database.

Drill Cuttings Appendix I:	Report of drill cuttings for SciMP
Drill Cuttings Appendix II:	An Introduction to Mud Logging for Scientists
Drill Cuttings Appendix III:	"Chikyu" Mud Logging and Cuttings Procedure
Drill Cuttings Appendix IV:	Physical Properties of Cuttings and their use for IODP

The interim SciMP and now the SciMP have received several presentations on x-ray CT scanning. It is clear that X-ray CT scanning is a mature technology that provides a detailed look at core prior to liners being opened. CT data will be useful for a wide variety of applications including improved sampling and measurements, core correlation, structural studies, and others. CT scanning can be done quickly enough that it will not impede the flow of core through the shipboard laboratories.

**Recommendation 04-06-03**: SciMP recommends that acquisition of x-ray CT scanners be given a high priority for shipboard and shorebased laboratories in IODP.

Vote: 17 yes, 0 no, 0 abstain, 1 absent (representative from China).

Upon a request from the SPC Chair, SciMP is assessing the role of the Science Coordinator (IODP-MI, Sapporo Office) in its meetings. We acknowledge the need to minimize travel and budgetary expenditures relating to the multiple meetings being held by the entire IODP structure.

**Recommendation 04-06-04**: SciMP recognizes the value of having a Science Coordinator from the IODP-MI Sapporo office at its meetings. Among other contributions, participants from that office have historically provided valuable updates on cruise/research proposals, and have also provided programmatic memory. Such updates have defined project-specific needs that fall within the advisory purview of SciMP. SciMP requests that the Science Coordinator record the minutes of the meeting, thus optimizing the advisory role of the SciMP member now compromised by that task.

Vote: 17 yes, 0 no, 0 abstain, 1 absent (representative from China).

The Paleontology and MRC Working Group, chaired by Saito, has revised its report from the previous SciMP meeting (Nagasaki, December 2003), incorporated results from the ad hoc Working Group meeting, and presents a final report here for final approval.

**Recommendation 04-06-05:** SciMP recommends to SPC acceptance of the Paleontology and MRC Working Group report, and requests SPC distribute it to the IO's and IODP-MI as soon as possible. The full report of the WG is found in Appendix 14. SciMP recommends:

- a. The SciMP recommends the establishment of a Paleontology Working Group, perhaps as an IODP-MI task force. Membership should include appropriate persons form SciMP, at least one Micropaleontological Reference Center (MRC) curator and other experts as needed. Issues to be considered include: development of digital atlas and taxonomic dictionaries, acquisition of technical support on board drilling platforms, interaction of MRCs with scientific communities, sample preparation procedures, control of the quality of paleontologic data and other related matters.
- b. SciMP recommends that the MRCs should (1) be renamed as Integrated MRCs (IMRCs), and (2) continued in IODP as an integrated component. Formal inclusion of IMRCs collections and curators will provide an important resource to IODP for the production of micropaleontologic training and public education materials, for maintaining quality control of paleontologic and biostratigraphic data within IODP, as a liaison to the broader micropaleontologic community, and for insuring an archival legacy of IODP

micropaleontologic recovery. "Formal inclusion" could include participation as panel or task force representatives, making regularly scheduled presentations to SciMP, and other activities of the IODP.

c. IODP must coordinate their efforts regarding digital taxonomic dictionaries and cyber atlases and related issues with other national and international initiatives such as CHRONOS, NEPTUNE and et.al. SciMP recognizes the importance of international cooperation and interaction among the IOs and the micropaleontologists community and encourages collaborations with IMRC curators to develop these dictionaries to be used on the IODP drilling platforms

The microfossil groups to be covered should include calcareous nannofossils, planktic foraminifera, benthic foraminifera, diatoms, silicoflagellates, radiolarians, and palynomorphs (dinoflagellates and pollen).

The taxonomic dictionaries for the Cenozoic and Mesozoic should be updated and expanded on a regular basis (e.g., once per year).

- d. The SciMP recommends that post-cruise data capture and updating of older data become an ongoing activities of IODP, working in cooperation with relevant various expert groups, e.g. IMRCs, CHRONOS, NEPTUNE and ODSN. Both taxonomic dictionaries and chronology updates should be core products available via the proposed Information Services Center (ISC).
- e. The MRCs should reduce their sampling to recover only key remaining gaps in current coverage, as they have requested.
- f. The MRCs should explore funding possibilities to insure the timely completion of the IMRC sample set and on-line publication together with the relevant age information.

SciMP also supports the following "Consensus Statement" from the Paleontology WG:

SciMP realizes the critical importance of chronostratigraphy in guiding drilling operations and interpreting earth history in the new multiplatform IODP structure. The SciMP therefore stresses the importance of paleontologists' participation in the panel.

Vote: 17 yes, 0 no, 0 abstain, 1 absent (representative from China).

SciMP is reorganizing to merge the former Physical Properties, Downhole Logging, and Underway Geophysics working groups into a new Integrated Petrophysics Working Group to provide greater breadth of expertise and improved integration of core-based measurements, downhole logging, and surface and downhole geophysics.

**Recommendation 04-06-06**: SciMP recommends the integration of petrophysical disciplines for the formation of IODP working groups, interaction with the IOs, and discussions of technical and scientific feasibility and significance in the IODP.

**Recommendation 04-06-07**: SciMP recommends to SPC acceptance of the Physical Properties Working Group report, and requests SPC distribute it to the IO's and IMI as soon as possible. The full report of the WG is found in Appendix 15 and includes descriptions of standard and minimum measurements across the IODP and on specific platforms. Specific recommendations of the Physical Properties WG include:

- a. The final ODP operations for physical properties measurements be taken as a minimum requirement for IODP Phase I operations, but with the addition of resistivity. Furthermore, we recommend that the following be urgently considered: colour reflectance upgrade, implementation of calibration standards, and upgrade of natural gamma ray.
- b. The MST/MSCL should be standardized on both the riser and non-riser vessels and be incorporated into mission specific platform (MSP) projects. Discrete samples should be taken for QA/QC and calibration procedures of ephemeral properties against the MST.

SciMP also supports the following "Consensus Statement" from the Physical Properties WG:

SciMP should examine petrophysical plans in detail for each MSP expedition. This examination is to ensure the proposed measurement strategy adequately meets the requirements of the science objectives and the legacy nature of IODP data.

Vote: 17 yes, 0 no, 0 abstain, 1 absent (representative from China).

To enable rigorous and acceptable QA/QC procedures to be implemented across IODP platforms the following recommendations are made to SPC. Many of these relate to other areas (e.g. Chemistry WG) with significant overlap, but are formulated from the Petrophysics viewpoint.

**Recommendation 04-06-08**: SciMP recommends to SPC acceptance of the Petrophysics QA/QC report, and requests SPC distribute it to the IO's and IMI as soon as possible. The full report is found in Appendix 16. Specific recommendations include:

- a. IO's be requested to provide details of proposed QA/QC measures, including calibration, for all petrophysics measurements appropriate to their platform. These should address initial calibration, and quality assurance and control on a short term (daily) and long term (monthly) timescale for routine continuous and discrete measurements and occasional measurements.
- b. IO's be requested to provide details of how they propose assessing and recording QA/QC with respect to 3<sup>rd</sup> parties (e.g. logging contractors). This request primarily concerns how the 3<sup>rd</sup> party calibration is dealt with and initially assumes there will not be any additional burden on 3<sup>rd</sup> parties.
- c. IO's be requested to provide details and implementation plans for performance records: these should enable easy identification of problems, drifts/anomalies in measurements, and address how the science party can access the records.
- d. IO's be requested to provide suggestions for explicit training of scientists and technicians in QA/QC and calibration to ensure data accuracy and precision are comparable. This should concern individual and cross-platform issues.

SciMP is aware that a focused look at hydrogeology has not yet occurred in IODP. Near the end of ODP, however, the JOIDES Hydrology PPG produced an in-depth report that still has many relevant aspects to the IODP. SciMP read this report very carefully, and discussed multiple aspects of it. Consensus Statements 04-06-02 and Action Item 04-06-03 also resulted from this discussion. In particular, temperature information is extremely valuable for hydrogeology objectives, as well as for chemistry, microbiology, and tectonic interpretations. The additional time cost of APC temperature measurements is small (20-30 mins per measurement). Accordingly :

**Recommendation 04-06-09**: SciMP recommends that APC temperature measurements be taken at least at one hole per site at a frequency of 1 measurement per approximately 30 m, with a suggested minimum of 3 measurements per site.

Vote: 17 yes, 0 no, 0 abstain, 1 absent (representative from China).

**Recommendation 04-06-10**: SciMP recommends to SPC acceptance of the Downhole Tools Working Group report, and requests SPC distribute it to the IO's and IMI as soon as possible. The full report of the WG is found in Appendix 17 and includes descriptions of common standards and minimum requirements across IODP and platform specific recommendations. Specific recommendations of the Downhole WG include:

- a. QA/QC data, for both logging and other downhole tools, such as calibration data, QC logs, correction parameters should be stored in the science database where possible so that scientists can access the data.
- b. SciMP recommends that logging plans for the riser platform take advantage of availability of large diameter tools to maximize scientific achievements.
- c. For both operational and scientific purposes, SciMP recommends frequent and effective use of LWD/MWD for drilling.

SciMP also supports the following "Consensus Statement" from the Downhole Measurements WG:

Sonic log has a huge potential, however it also has a lot of issues before scientists utilize its data; especially stoneley wave and S (flexial) data. Sonic waveform data should be distributed by standard format in science community. Sonic waveform data should be recorded, where possible. IO's should provide scientists every information to utilize the data.

*The Core Description Working Group, chaired by Saito, has revised its report from the previous SciMP meeting (Nagasaki, December 2003) and presents it here for final approval.* 

**Recommendation 04-06-11**: SciMP recommends to SPC acceptance of the Core Description Working Group report, and requests SPC distribute it to the IO's and IODP-MI as soon as possible. The full report of the WG is found in Appendix 18.

Core description and archival of sampled materials is an essential component of IODP Expeditions, and requires standardized preparation and description, and integrated core processing flow, and a comprehensive database, as addressed in the Core Description Working Group Report. SciMP recommends:

- a. The development of precise splitting techniques of cores to provide maximum quality of surfaces to be described.
- b. The integration of core images in a multi-data browsing system so as to integrate imagery and non-destructive measurements for core description.
- c. The preparation and creation of reference smear and thin section collections common to all platforms and on-land facilities.
- d. An adequate core archiving strategy for all core samples recovered during IODP expeditions to insure post project description and sampling requirements.
- e. An adequate archiving strategy for drill cuttings, when available.

The Paleomagnetics Working Group, currently chaired by Okada, has revised its report from the previous SciMP meeting (Nagasaki, December 2003) and presents it here for final approval.

**Recommendation 04-06-12:** SciMP recommends to SPC acceptance of the Paleomagnetism Working Group report, and requests SPC distribute it to the IO's and IODP-MI as soon as possible. The full report of the WG is found in Appendix 20. SciMP recommends:

- a. A non-magnetic core barrel be used for all IODP APC coring to minimize drilling induced magnetic overprint on sediments.
- b. U-channels will constitute the standard paleomagnetic sample in all cases when it will be feasible to perform u-channel sampling of the cores, and they should be routinely collected in IODP expeditions.
- c. Measurements and analyses should be carried out as soon as possible during the Expedition.
- d. The order of measurements on discrete samples and/or u-channels is as follows:
  - 1. Magnetic susceptibility,
  - 2. Natural Remanent Magnetization (NRM),
  - 3. Stepwise demagnetization of the NRM,
  - 4. (Stepwise) Acquisition and demagnetization of an ARM,
  - 5. (Stepwise) Acquisition and demagnetization of an IRM.
- e. Permanent magnets are recommended for calibration of magnetometers. Paramagnetic rare earth oxides are recommended for calibration of susceptibility meters Calibration standards should be measured before the routine work to produce reliable data.

# Vote: 17 yes, 0 no, 0 abstain, 1 absent (representative from China).

The Chemistry Working Group, chaired by Neal, has revised its report from the previous SciMP meeting (Nagasaki, December 2003) and presents it here for final approval (Appendix 21).

**Recommendation 04-06-13:** SciMP recommends that SPC accept the report of the Chemistry Working Group (CWG) and the recommendations contained therein, which is the result of input from the ocean drilling community regarding analytical facilities associated with IODP. SciMP requests that SPC distribute the report to the IOs and IODP-MI as soon as possible.

The CWG report contains 11 specific recommendations and 6 Action Items that reflect the following overall conclusions that:

A. Better standardization/calibration should be employed for IODP than was available for ODP; and

B. Technician training should be at a higher level than during ODP to maintain the equipment while on-site and also to ensure the data generated is of the highest quality.

Continued on next page...

A full discussion of these and related issues can be found in the Chemistry Working Group report (Appendix 21).

SciMP endorses the following recommendations.

A variety of samples will be handled and in order that these are not compromised for immediate or future analyses, careful handling/storage procedures need to be followed. Accordingly:

<u>CWG Recommendation 1</u>: Sample handling procedures should be specified for each expedition such that the integrity of the drilled samples are not compromised. This should be discussed and specified during the expedition planning stage between the co-chief scientists and the IO.

Use of microscopy during any drilling expedition is a vital part of the characterization and science that is undertaken. Applications include micropaleontology, smear slides, petrologic thin sections, etc. Several of the respondents to the CWG survey requested that the microscopy facilities in IODP be significantly upgraded from ODP; this includes both microscopes and thin section making capabilities. Round-the-clock operation of thin section laboratories is essential for sample throughput, which in turn could influence drilling and, therefore, the scientific return of a given expedition. Accordingly:

<u>CWG Recommendation 2</u>: SciMP recommends that there be a sufficient number of microscopes configured for each specific use to achieve the scientific objectives of a given expedition, that they be equipped with both transmitted and reflected light capabilities, be able to work up to 1600X total magnification in air (and, as much as possible, oil), as well as have the ability to take and store digital images.

The addition of a **laser ablation** (LA) facility that would interface with the ICP-MS has been discussed in some detail. It is evident that the new laser systems (e.g., the New Wave UP-213 nm) are very powerful and relatively simple to operate. Quantitative data may not be possible because major element data, which are used as internal standards, will not be determined while on site. However, as long as the external standardization procedure is robust, diagnostic elemental ratios may be obtained from glass and mineral samples that could be used to influence drilling. These analyses do not require digestion nor is a polished section necessary. Rather, a flat sample surface is needed. Therefore, sample throughput is much quicker than for bulk rock analyses. Furthermore, electron microprobe data can be obtained during shore-based studies and the LA-ICP-MS data gathered on site can then be quantified. Samples that could be analyzed are glasses, minerals, and other features requiring fine-scale resolution. Accordingly:

<u>CWG Recommendation 3</u>: SciMP recommends that a laser ablation facility (with radiation of 213 nm or less) be available on the Riser & non-Riser platforms for interfacing with an ICP-MS.

The CWG is working from the following position: <u>There is no substitute for data of the highest</u> <u>quality</u>. By adhering to this premise, it is anticipated that the data obtained on different platforms will be of the highest quality, such that they will be able to influence drilling decisions and be publishable in scientific journals. With IODP operating multiple platforms and analytical facilities, data quality is an extremely important aspect that requires careful consideration in order for data generated while on site to be used in scientific publications. Where analytical facilities are

Continued on next page...

duplicated on platforms and in shore-based labs, each should have the same suite of reference materials available. Accordingly:

<u>CWG Recommendation 4</u>: Standards/reference materials for each analytical facility be uniform across the different platform and IODP-affiliated shore-based laboratories.

All blank, reference material, and sample data (especially duplicate analyses) should be easily obtained from the data repository. Each datum should include a date and who the analyst was. These data should be regularly scrutinized (as described in the report), problems highlighted, and solutions given. During ODP, routine analysis of Standard Reference Materials (SRMs) that were run as unknowns during a normal sample batch was discouragingly rare. Accordingly:

<u>CWG Recommendation 5</u>: Routine analysis of reference materials as unknowns during every analytical run must become common practice on all IODP platforms and related shore-based labs.

If there is an occasion to use third party equipment (defined as specialized analytical facilities not in the IODP inventory), its suitability should be demonstrated <u>prior</u> to the expedition by reference material and duplicate sample analyses. All sample, reference material, and blank data need to be uploaded to the data repository and be available for scrutiny. Accordingly:

<u>CWG Recommendation 6</u>: If third party analytical equipment is to be used on any IODP platform, its suitability should be demonstrated by the analysis of relevant reference materials *prior* to the start of the expedition.

SciMP should act as a guarantor of high quality data produced by IODP analytical facilities. Regular status reports of the IODP analytical facilities should be made at each SciMP meeting along with actions taken/proposed by the working group/committee. Coordination should be through the co-chairs of SciMP and the respective IOs. Critical in this endeavor is traceability of all data uploaded to the data repository. Each analysis should include the date of the analysis, sample type, the analyst, platform, etc. Accordingly:

<u>CWG Recommendation 7</u>: SciMP will advise the IOs on the development of analytical and sample preparation protocols, as well as their implementation on the various IODP platforms and in shore-based laboratories. SciMP will also oversee and advise on QA/QC issues (and in the mitigation of problems) as they relate to geochemical analyses.

Accurate weighing of the samples and any added reagents is essential for accurate and precise data. As has been seen on the JR, this is difficult on a moving ship, and introduced significant errors into the analyses both directly (through weighing errors) and indirectly (through conducting sample preparations by volume measurements rather than weight). We recommend that a balance be isolated (using a gimble or gyroscope system) for such accurate weighing. Accordingly:

<u>CWG Recommendation 8</u>: The CWG of SciMP recommends that facilities for accurate weighing on a moving ship be made available on the Riser and non-Riser platforms. Such facilities will greatly increase the quality of geochemical data generated on these platforms, enhancing their usability in scientific publications.

Continued on next page...

The following three "CWG Recommendations" deal with chemistry technical support. Technician training and ability is a critical part of obtaining the highest quality data, not only in sample preparation and analysis, but also in maintaining and trouble-shooting problems with individual pieces of machinery. The CWG recommends that all IODP technicians should have at least a Masters degree in analytical chemistry, geochemistry, or related fields, and/or sufficient experience or training. However, this alone will not guarantee that quality data will continue to be produced from each analytical facility over the life of IODP. It is essential that the technicians understand the various sample preparation techniques and be able to adequately judge data quality and the best way to do this is to give the technicians training is an IODP-related research laboratory (e.g., Kochi, Bremen, TAMU) or visiting university laboratories for 2-4 weeks. Accordingly:

<u>CWG Recommendation 9</u>: All IODP chemistry technicians should have at least a Masters degree and/or sufficient experience or training in analytical chemistry, geochemistry, or related fields. This is essential to ensure that the technician is skilled enough to deviate from a prescribed set of procedures should a given situation require it.

<u>CWG Recommendation 10</u>: Each laboratory technician should undergo training with the respective manufacturer of the analytical facility they are to be responsible for. Such training should include maintenance, trouble-shooting, and software. There should be regular (annual?) refresher courses that would allow the technicians to stay up-to-date with hardware and software developments.

<u>CWG Recommendation 11</u>: Each chemistry laboratory technician should undergo training at IODP-related (or where applicable, university research laboratories), in order to understand how to judge data quality and the problems associated with obtaining data that are of the highest quality.

With the first IODP expeditions happening in summer, 2004, and with technological planning well underway for all platforms and shorebased laboratories, the IO's are appropriately moving ahead with documentation of technological and engineering procedures. There needs to be some uniformity in these publications <u>right from the start</u>, and the below recommendation is designed to ensure that such uniformity is put in place.

**Recommendation 04-06-14:** SciMP recognizes the unusual fiscal constraints and its consequences for publications for the first year of the IODP. SciMP encourages SPC/IODP-MI to insure that consistent editing, layout and production for the IODP is established as soon as possible, as described in previous SciMP Recommendations. In particular, SciMP recommends:

- 1) That IOs prepare Expedition Reports, and other documents such as technical notes and engineering reports, until the RFP for publications is issued, and, when possible, that the IOs communicate to minimize differences in the publication process
- 2) That a single organization be contracted for technical editing, layout and production of the reports prior to the RFP.
- 3) That an RFP for publications be issued as soon as possible so as to insure that publications of the IODP, including those of expeditions prior to the RFP for publications, are consistent and centralized.

# Vote: 17 yes, 0 no, 0 abstain, 1 absent (representative from China).

The below recommendation results from repeated discussions through several meetings regarding how SciMP can be better prepared for drilling expeditions that have been scheduled. Often, by the time an expedition is scheduled, it is too late to raise issues regarding potential technical and database implications. When these considerations are considered too late in the cycle, "leg creep" commonly results. This need is important for both routine expeditions (e.g., assessment of logging) as well as for engineering issues. The below strategy is designed to combat this problem. This is the latest in a line of recommendations to this end, and results from discussions with the Chair of SPC.

**Recommendation 04-06-15**: The SciMP recommends that the SPC send ranked proposals to the SciMP for technological evaluation when the proposals are forwarded to OPCOM for potential scheduling.

# Vote: 17 yes, 0 no, 0 abstain, 1 absent (representative from China).

As identified at the May, 2004 Downhole Tools Workshop (Fleming, Fisher, Murray), access to facilities for testing, calibration and inter-comparison of tools is crucial to third-party tool development. While onland testing is a necessary step, actual deployment of a tool on the platform may be necessary to evaluate performance prior to its use to fulfill scientific objectives on a leg. Accordingly:

**Recommendation 04-06-16**: SciMP recommends that IODP-MI examine potential procedures by which regular downhole tool and engineering testing could be hard-wired into the annual program plan.

# **Consensus Statements**

**Consensus Statement 04-06-01:** SciMP is very discouraged by the delay in the creation of a central Information Services Center to coordinate the data generated by and information from IODP related activities. SciMP reiterates the importance of establishing an ISC as soon as possible. This is particularly relevant for Observatories and Legacy Holes and data and how these relate to IODP. With expeditions now operating, the need for an ISC is immediate.

**Consensus Statement 04-06-02:** SciMP appreciates the contributions of the JOIDES Hydrogeology PPG in highlighting data collection issues relevant to hydrogeology, and note that their recommendations to establish protocols and QA/QC procedures for temperature and pressure measurements are in accordance with recommendations recently or currently being put forth by IODP SciMP.

SciMP supports the recommendations by the JOIDES Hydrogeology PPG for consideration of future IODP efforts to support hydrogeologic data collection, including but not limited to expanded packer capabilities, improved shipboard low-flow pumps and real-time downhole pressure monitoring tools, improved capability for downhole water sampling, enhanced ability to recover fluid samples from the pressured core sampler, improved temperature measurement tools, and establishment of apparatus to measure electrical conductivity.

SciMP recognizes the value of collecting hydrogeologic data within a variety of subseafloor settings, including drilling legs that do not have a primarily hydrogeologic objective. Accordingly, SciMP supports the use of in situ formation temperature and pressure tools, and the collection of fluid porewater chemistry data because of their importance for fluid flow objectives, and encourages the availability of cores for permeability and consolidation testing.

**Consensus Statement 04-06-03:** SciMP endorses in principle the SPC recommendation to store cores in the Bremen, Gulf Coast and Kochi repositories based on geographic grouping of cores as suggested by IODP-MI. SciMP requests that it be consulted during the progress of this initiative so as to evaluate its possible impact on shorebased core processing, curation, and other matters.

**Consensus Statement 04-06-04:** SciMP enthusiastically endorses the concept of scanning all DSDP volumes into digital format. This effort will facilitate their wide electronic distribution and could provide digital images suitable for specific scientific purposes, such as quantitative analysis of core photographs. Details of this effort will be dictated by financial considerations and the scientific needs of the community, including the resolution of scanned graphics and the parceling of each document into single or multiple files. A balance of these and other considerations should be achieved so as to complete this task in a timely manner.

**Consensus Statement 04-06-05:** SciMP endorses the use of the 3<sup>rd</sup> party magnetometer from the University of Gottingen on Core Complex 2 (expedition 305), as presented by the JOI-A. We recommend that appropriate spare materials be made available.

See following page for more...

**Consensus Statement 04-06-06:** SciMP expresses their thanks to Rick Murray and Christa Ziegler for their hospitality and efforts towards supporting our meeting and associated functions. We are also grateful to Boston University for providing the meeting venue, and to the Dean of the College of Arts and Sciences and to JOI for supporting the welcoming reception. The facilities for this meeting have been excellent, and we have wanted for nothing in the way of a comfortable, commodious room, audio-visual equipment, electronic and inter-net connection, and food and drink.

**Consensus Statement 04-06-07:** SciMP gratefully thanks Yoshiaki Aita, Saneatsu Saito, and Javier Escartin for their hard work and dedication to the IODP over the years they have served on this panel. Their presence on SciMP will be missed but we anticipate that they will continue to contribute to IODP in them new roles, and we wish them well.

**Consensus Statement 04-06-08:** SciMP gratefully acknowledges all of the work that Rick Murray has put in to the smooth running of SciMP during his time as co-chair. He has led us the right way all the time based on his outstanding organization and coordination abilities covering not only SciMP itself, but also for the complicated entire IODP structure. We believe without any doubt that he will take a lead in scientific drilling in his new roles, and wish him well in his life beyond SciMP.

# Action Items

Action Item 04-06-01: ESO to provide SciMP with issues/ramifications to downstream core processing and archiving associated with the use of core diameters different than standard IODP diameters. The OPCOM Chair will be asking SCIMP to address this issue at their next meeting, so SciMP needs to get started as soon as possible.

Action to be taken by: ESO lead.

Action Item 04-06-02: ESO will provide the SciMP with a "Tahiti Measurements Plan" as soon as possible, so that the SciMP, in consultation with the ESO and IODP-MI may begin the reviewing of the shipboard and shorebased sampling and analytical plan.

Action to be taken by: ESO to lead.

Action Item 04-06-03: A SciMP working group should continue to evaluate more detailed recommendations on measurements for hydrogeologic objectives.

Action to be taken by: S

Screaton to coordinate.

Action Item 04-06-04: SciMP to recommend to IODP-MI representatives to serve on the Curatorial Advisory Board (see "Sample, Data, and Obligations" Policy).

Action to be taken by: Murray.

<u>Status</u>: On June 28, 2004, Murray emailed Hans-Christian Larsen that K. Nanba (Japan, microbiology), C. Neal (US, igneous petrology and geochemistry), and H. Villinger (Germany, geophysics and tools) were selected. These individuals represent balance between national entities and expertise.

Action Item 04-06-05: In response to a request from SPC, the SciMP and the TAP shall work with MBARI in developing a draft plan for managing the MARS-IODP borehole test site as outlined in IODP proposal 621-Full (Installation of Borehole Observatories in Monterey Bay). A Joint SciMP and TAP report, with input from MBARI and other proponents, will be finalized for the October 2004 SPC meeting.

Action to be taken by: Co-chair Okada, who will be attending the upcoming TAP meeting, will work with TAP on identifying an *ad hoc* working group.

# Two "Action Items" Resulting from Paleontology WG Report...

Action Item 04-06-06: The MRCs, in consultation with SciMP, initiate discussions with IODP-MI and funding agencies to explore how to grant permanent archival status in appropriate major Museums for one set of each of the current four collection types (foram, nanno, rad, diatom), as designated by the IMRC curators. The remaining 7 sets of each fossil group should retain their indefinite loan status.

Action to be taken by: MRCs.

Action Item 04-06-07: The Paleontology WG of SciMP will work with the IOs to evaluate and review the common data content items of potential paleontological databases used by the IODP and will report their result at the next SciMP meeting.

Action to be taken by:

Paleontology WG and IO's.

Action Item 04-06-08: The SciMP Petrophysics Working Group should examine petrophysical measurements for non-riser Phase II and the *Chikyu* to ensure maximum incorporation of technological developments, and report to SciMP at its next meeting.

Action to be taken by: Petrophysics WG

Two "Action Items" Resulting from Petrophysics QA/QC Report...

Action Item 04-06-09: SciMP Petrophysics WG to evaluate IOs QA/QC plan and strategy for inter-facility calibration.

Action to be taken by: SciMP Petrophysics WG

Action Item 04-06-10: An *ad-hoc* SciMP group could be established to consider implementation at a later date of blind calibration tests.

Action to be taken by: SciMP Petrophysics WG.

## Three "Action Items" Resulting from Downhole Measurements WG Report...

Action Item 04-06-11: IOs in consultation with SciMP identifies the minimum level of data processing and necessary skill level for the processing for each measurement across all drilling platforms.

Action to be taken by: IO's.

Action Item 04-06-12: SciMP Petrophysics working group, in consultation with IOs, will identify temperature and pressure downhole tools whose standard operating and interpretation procedures need be developed or updated.

Action to be taken by: SciMP Petrophysics WG

Action Item 04-06-13: SciMP facilitates development of general policies for downhole tools, borehole experiments, and long-term monitoring. SciMP will form an *ad hoc* working group to investigate the development of these policies.

Action to be taken by: SciMP co-chairs to name members of ad hoc WG.

Action Item 04-06-14: SciMP identified major issues related to <u>handling and measurements on</u> <u>severely dilated samples</u>. Possible solutions for detection and correction of dilation include; a) development of correction methods for stratigraphic thickening due to elastic rebound and b) facilitation of laboratory petrophysical measurements under *in situ* condition (e.g., consolidation tests). SciMP shall continue to investigate handling and measurements on severely dilated samples.

Action to be taken by: *Petrophysics WG and Core Description WG, with a report to be made at next SciMP meeting.* 

Action Item 04-06-15: The Paleomagnetics Working Group establish a strategy for inter laboratory standardization and QA/QC for paleomagnetic measurements.

Action to be taken by: Paleomagnetics Working Group.

# Six "Action Items" Resulting from Chemistry WG Report...

Action Item 04-06-16: SciMP will work with the IOs to investigate the modular lab concept for MSP operations.

Action to be taken by: SciMP (Petrophysics WG, Chemistry WG, and Microbiology WG) and IOs.

Action Item 04-06-17: SciMP will work with the various IOs to explore the possibility of adding Environmental SEM and Cathodoluminescence capabilities to the microscopy facilities on the various platforms and affiliated shore-based laboratories.

Action to be taken by: SciMP (Chemistry WG) and IOs.

Action Item 04-06-18: The Chemistry WG will explore the suitability of microwave digestion in the preparation of rock and sediment samples for various geochemical analyses, such as ICP-OES and ICP-MS, as a way of increasing sample throughput, safety, and the uniformity of the preparation technique across different platforms and related shore-based labs.

Action to be taken by: SciMP Chemistry WG.

Action Item 04-06-19: SciMP asks that the IOs of the various platforms examine the potential problem of an oscillating plasma when using a quadrupole ICP-MS on a moving platform. SciMP further asks that the IOs report the results if their investigations to SciMP at the January 2005 meeting. SciMP will be conducting independent investigations of this issue and will also report their findings at the January meeting.

Action to be taken by: Chemistry WG and IOs.

Action Item 04-06-20: The feasibility of having a gas-source stable isotope mass spectrometer on both the Riser and non-Riser platforms be explored. The function of this mass spectrometer would primarily be to undertake analyses of ephemeral samples such as headspace gases and pore waters. SciMP recognizes that in order for this to work peripheral, on-line devices must be included as dictated by scientific need (e.g., GC and an Elemental Analyzer).

Action to be taken by: Chemistry WG.

Action Item 04-06-21: The Chemistry Working Group of SciMP will study the issue of "blind calibration tests" and formulate a policy on this matter to be presented at the January 2005 meeting.

Action to be taken by: Chemistry WG.

Action Item 04-06-22: Murray to forward on to IO's and IODP-MI the information provided by panelist and microbiologist Kevin Mandernack in response to Action Item 03-02-16 (from Nagasaki meeting).

Action to be taken by: Murray...material is provided as Appendix 22.

Action Item 04-06-23: SciMP recognizes the need to form a WG to examine various aspects of <u>core-logging-seismic integration</u>. The WG will meet by e-mail and develop a report to next SciMP meeting, including fundamental points of depth correction methods of construction of composite depth section and mcd (meters of composite depth) for the recovered cores, core and logging integration, and logging-seismic integration. Members of the WG will include representatives from the IO's and SciMP members (Sakamoto, Gulick, Blum, Kuroki, Takahashi, Robinson, Rea, Kasahara).

Action to be taken by: Sakamoto lead.

Action Item 04-06-24: SciMP supports the creation of an archive that contains images of the highest quality possible. To this end, SciMP supports and encourages continued communication between the different IOs regarding the quality of archival images, and asks that they report on progress at the next SciMP meeting.

Action to be taken by: IO's.

Action Item 04-06-25: A SciMP working group, in consultation with the IO's, will examine issues related to IODP third-party tool development guidelines and report back to the next meeting of SciMP.

Action to be taken by:

SciMP co-chairs, IO's. SciMP members Kasahara, Villinger, and Wilkens will constitute SciMP's contribution to the working group.

Action Item 04-06-26: SciMP to invite Dr. Johannes Stoll to present at their next meeting a report on the <u>long-term prospects of magnetometer tool usage in IODP</u>.

Action to be taken by: SciMP co-chairs.

# MINUTES

# Wednesday, June 23, 2004

# In these minutes, the Recommendations, Consensus Statements, and Action Items are not repeated in detail. Please refer to the Executive Summary for the full text of each, as indicated.

# 1. <u>Welcome and Logistics</u>

Murray introduced himself, welcomed all participants to the great and famed city of Boston, and outlined the logistics of the meeting.

# 2. Introductions of Continuing and New Members, Guests, Liaisons

Murray introduced all panelists, guests, and liaisons, as well as Christa Ziegler, a Boston University Earth Sciences graduate student who was helping run the meeting. Alternates to the SciMP members are as listed in the "Attendees" list.

# 3. <u>Review and Approval of Agenda</u>

Murray asked for review of the agenda. Several new items were added, including:

Comments from the US NSF:	Item 6A
Election of Curatorial Advisory Board (CAB):	Item 15A
X-Ray CAT Scanning	Item 16A
Downhole Measurement WG Report:	Item 21A
Paleomag WG Report:	Item 23A
Discussion of Uniformity of Technical Reports:	Item 27A
SciMP Involvement in Proposals	Item 30A

Motion to approve the agenda (*Appendix 1*) was moved (Neal), seconded (Screaton), and approved (17 yes, 0 no, 0 abstain, 1 absent [Chinese representative]).

For the remainder of these minutes, all unanimous votes will be recorded as "17-0-0-1".

# 4. <u>Review and Approval of Minutes from December 2003 (Nagasaki, Japan) Meeting</u>

Motion to approve the December 2003 minutes was moved (Neal), seconded (Escartin), approved unanimously and forwarded on to the SAS Office for posting and distribution.

# 5. <u>Review of IODP Panel Structure, SciMP Mandate, and SciMP Working Groups</u>

For the benefit of the very many new members and attendees, Murray briefly reviewed these matters, paying particular attention to SciMP's mandate and interactive position in the Science

Advisory Structure (SAS) and how to relate most efficiently with the Implementing Organizations (IOs).

## 6. <u>Status of Recommendations from Prior Meeting</u>

Murray reviewed the status of Recommendations and Action Items from the December 2003 meeting (Nagasaki, Japan). The status (**in bold**) is as follows, with the word **Boston** meaning it will be discussed again here:

### Recommendations

03-03-01:	Input to SSEPS	Received by SPC, Boston.
03-02-02:	Legacy Hole and D'Hole Meas.	Accepted.
03-02-03:	Seismic Integrator position	Accepted.
03-02-04:	Checkshots/VSPs	Accepted.
03-02-05:	Observatories	Accepted, Boston.
03-02-06:	Sample, Data Policy	Accepted, sent to SPPOC for further
	1 / 5	discussion.
03-02-07:	Publications	Received by SPC, included in their report to SPPOC.

### **Consensus Statements**

All consensus statements were noted by SPC and were included in their discussions.

### Action Items

by SPC.
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Although it was not discussed solely at this time in the meeting, the issue of the status of the Information Services Center (ISC) was raised, with specific regard as to when it would be put forth by IODP-MI. As such an entity, despite being approved by SPC and forwarded to IODP-MI, appears to be stalled in terms of its implementation, the discussion led to:

**Consensus Statement 04-06-01** Information Services Center Please see Executive Summary for full text.

## 6A. <u>Comments from US NSF</u>

Ruppel discussed how the NSF is examining options for extending options to do non-riser drilling through Sept 2005. Perhaps up to 8 viable expeditions after existing schedule may be scheduled. While many things would have to happen for this to occur, they are examining how to do it, and it would require an appendix to the existing program plan. The expeditions would have to be on the inexpensive side, although they are are not using Phase 2 money. Also, it is unclear when the Phase 2 vessel will happen, but the good news is that the IODP money for Phase 2 is MREFC #1 internal to NSF. Murray commented that it is excellent news that we are getting more science done without taking money from Phase 2 and expressed appreciation to NSF for trying to get this done.

## 7. <u>Brief Report from Most Recent SPC Meeting</u>

Okada provided a brief overview, pending detailed comments from Coffin (see Agenda Item 17). Okada's presentation is given in *Appendix 2*. SPC has asked SciMP to discuss the core distribution plan for IODP. This will be discussed later at this meeting. SPC has also asked us to discuss issues about long-term observatories.

The Sample, Data, and Obligations Policy was approved by SPC and forwarded on to SPPOC again.

The Microbiology WG report was approved by SPC and forwarded to IODP.

#### 8. <u>OD21 / CDEX Report</u>

Kuroki spoke of on-going efforts in Japan. His report is given in *Appendix 3*. In particular, there was discussion about the test cruises of the *Chikyu*. Escartin asked about what happens to material from test cruises and whether scientists would be involved in these test cruises. Murray followed with additional questioning along these lines, and expressed concern that a lot of good science could be done, and if that was the case it may be appropriate for the international community to be involved. Kuroki noted that the test cruises are mainly for training and engineering but if cores are gathered they will be analyzed. Neal questioned about training for scientist-crew integration, and Kuroki responded that staff scientists will be on board but that he didn't know about international scientists.

Murray asked if the other IOs have similar Health, Safety, and Environmental (HSE) groups and/or policies, as CDEX does. Blum said "yes", and Rea noted that for the MSPs this occurs on a case-by-case basis. All IO's felt there would and should be some commonality for the future. Kuroki further noted that this policy was discussed at the last IO meeting and will be finalized at their October meeting.

## 9. JOI Alliance

Blum spoke of on-going efforts in the U.S. His report is given in *Appendix 4*. There was much discussion about the number of people (FTE's) that appeared to be involved. Ruppel wondered about the distinction between the Tools and Analytical Service people and those involved with Scientific Operations. Murray wondered how the interaction would occur, or if they were in fact the same individuals. Blum commented that the ASPP (sea-going only) people will be under Sci Ops and non-ASPP (live in College Station) in Tools and Analytical Serv. Certain labs are not under one or the other.

Murray commented on the North Atlantic Climate legs, with regard to the need for balance between sample moratorium and obligations given the 5 month gap between the two expeditions. If the expeditions are linked to each other as one "Scientific Party", care needs to be taken on running the Sample, Data, and Obligations Policy. The moratorium is one year following receipt of samples, for example, and the early cruise may be inadvertently penalized by (early or late) receipt of samples.

Villinger asked about the plans for logging in the upcoming expeditions. Robinson replied that logging will take place at 1 site on Exp 303 and will then determine further strategy. Same for 306. Cork installation at 642E discussion is ongoing. 642E was logging previously but it is cased to 400 m. Expedition 304 will have standard ops, and 305 will have standard ops plus magnetometer possibly (see Agenda Item 32). Juan de Fuca logging ops are in the plan.

Neal appropriately asked about the funding for contingency plans for oil prices and dollar value, particularly given the volatility of such matters in the global economy. The NSF replied that we should "have faith" and that they were covering such matters.

## 10. <u>ESO</u>

Roehl spoke of on-going efforts in Europe. Her report is given in *Appendix 5*. Additional information regarding the Arctic expedition (ACEX) may be found in Agenda Item 30.

There was discussion of the issues and ramifications to downstream core processing and archiving associated with the use of different sized core diameters. There are subtleties associated with storage (curation) and operations that need to be considered. Roehl noted that these may be particularly important for Tahiti. This led to:

Action Item 04-06-01 Core Processing Issues for Non-Standard Cores Please see Executive Summary for full text

Murray questioned about the Tahiti expedition, and in particular regarding the time frame for SciMP being asked about the Tahiti measurements plan. Roehl responded that as soon as the cochiefs get decided we can start the process. Tahiti will again involve partial labs again with a shorebased component. Murray asked about plans for an onshore lab, locally on Tahiti Roehl responded that the problem is once you start operating on the core you have to keep going and thus it might be better to do it at Bremen.

Discussion continued on when SciMP would oversee the Tahiti measurements plan. The panel wants to see this soon, and plans should be identified and finalized before the next SciMP meeting.

Rea stated how useful advice from SciMP was for ACEX and that the system worked very well, regarding SciMP and BGS interaction. This led to:

Action Item 04-06-02 Tahiti Measurements Plan Please see Executive Summary for full text

Ruppel asked if there were any concerns about potential delays that could occur due to environmental concerns. Both Roehl and Rea noted that they were not able to yet answer this but that it was being looked at carefully.

## 11. <u>Phase Two Non-Riser Ship Status</u>

Blum reported on this subject. His report is included as *Appendix 6*. Murray requested further information regarding the overall time frame. Blum responded that things were happening very rapidly, with expected progress by an October meeting with announcements to be posted on the MREFC website soon (July, 2004). Murray further queried as to whether JOI would be sending design documents to SciMP for evaluation and input, and Blum said "Yes, absolutely".

Villinger questioned about the basic ship design, and would it basically be a JR-like ship, or even the JR itself. Blum noted that the JR is in the running but the information will be in the RFQ (request for quote). Villinger further questioned about what new capabilities were to be expected. Blum noted that new capabilities could include small things like enhancements to a lab or major advance to a system or infrastructure (such as core handling). Everything is on the table.

Neal asked that with regards to the staffing needs what sort of requirements would be followed, and Blum responded that they would work strongly based on ODP experience. Murray noted that the important issue is what is in the RFQ because if it is not in there then there is no obligation of the new ship vendor to provide it. Therefore, the community (JOI-A and SAS) needs to make sure new requests get included in the RFQ.

Villinger asked if the RFQ will be for ship and labs? Blum responded that the contractor must provide vessel that meets the stated requirements and that the space and infrastructure must match the science needs. So far, JOI-A has come up with needing twice the lab space than is available on the JR. Murray pointed out that the US held CUSP and other conferences and that input is being included into what is needed for the new labs. Blum followed up with noting the JOI-A also sees the briefing book as a road map and will make hiring decisions based on what is in the book. Murray reminded participants that we are international panel and the input into the briefing book needs to be international. Ruppel agreed that the US will be providing a Phase 2 vessel but it is possible that it won't have all the bells and whistles and that funding is a line item in the congressional budget.

## 12. Logging: Policy Background, Status of Tools, Legacy Issues

Robinson provided this report (*Appendix 7*). Murray asked if the GLT is permanently unavailable and Robinson confirmed that to the best of his knowledge the GLT was a "dead duck".

Murray asked whether the presentation on the 400 m guideline was for information only or do they expect a recommendation from the panel. Robinson noted that it was for information only but input from the panel would be appreciated. Murray asked if it was known who dropped the 50m

basement guideline and when, and Robinson responded that it was very difficult to track these things but it seems to have just faded away.

Gulick queried as to ESO's thoughts on the logging rule. Rea noted that it was site by site dependent but that he was concerned about situations where 350-399 m total depths have occurred due to avoiding logging. If any core breaks occur the logging is really needed in order to get core-log-seismic integration especially for sites we plan to revisit.

Villinger suggested that one way to do this is that a logging plan must get approved ahead of time by SPPOC with input from SciMP. Neal continued that perhaps we need more constraints on the capped/returnable holes to avoid logging being an afterthought. Education may need to occur for sample motivated co-chiefs as to the importance of logging. Robinson observed that we need to avoid logging plans being decided on shipboard. Wilkens recalled that part of the reason the 400 m rule was built was in order to give the logging scientists some ammo. Villinger suggested that the co-chiefs should have to state why they would not log. Murray wondered when would this be decided, and Villinger answered that it would have to occur before the leg in a logging plan. Ruppel pointed out that downhole measurements are likely to have this problem too. Blum agreed with these discussions but noted that not each hole turns out to be as hoped for and so there must be flexibility to not log as the hole is being written off. He also argued that one must make the case where you intend to do no logging, but that we also need onboard real time mechanism for such decisions.

Murray reminded the SciMP that there are no SAS personnel on OPCOM, and thus it would be worth to have a review of a logging plan be within SAS at some capacity. Robinson suggested that perhaps proponents can give more information on the proposal cover sheet as to the logging plan. Neal agreed that this could happen at the proposal stage with a logging plan for each proposed hole. Saito suggested that the logging plan should be looked at in the project scoping group, although Screaton pointed out that often at the proposal stage you have not thought through how to get the science done. Wilkens reminded that we shouldn't forget the legacy aspect and Murray noted that as we get into operational mode we will need review logging plans for each expedition. After further discussion, Murray tasked Villinger with writing up a recommendation on these matters.

> **Recommendation 04-06-01** Logging: All Sites Should Be Logged Please see Executive Summary for full text

## 13. <u>Report from Downhole Tools and CORK Mini-Workshop</u>

Murray provided brief comments on the a workshop recently convened by Peter Flemings, Andy Fisher, and Murray regarding downhole tools. A second mini-workshop led by Keir Becker followed the tools workshop. Murray's report is in *Appendix 8*. Several participants of the workshop were SciMP members (Screaton, Villinger, Ruppel) and were also able to help during the discussion.

Regarding the issue of increasing the power supply to downhole tools, Neal asked if having a cable would preclude batteries, whereby Screaton pointed out that the idea was to have live feedback and Villinger suggested that the goal was to have the flexibility to use either one.

A good portion of the workshop examined funding mechanisms and models in the new IODP. Murray noted that unlike ODP, some direct funding to PI's could come from central management, that is, IODP-MI. Ruppel pointed out that engineering must also be included in proposals now, rather than assuming the IOs will provide the engineering (as was the case in ODP). Lyons noted that these changes were all for the better, and that there were lots of opportunity to bridge the gap between sample collection and using the hole. Ruppel agreed and noted that this should apply to observatories as well.

#### 14. Drill Cuttings Team Working Group Report

Saito and Kuroki together presented the latest version of this report, based on their first presentation (at Nagasaki) and comments received. Their presentation is in *Appendix 9*.

Drawing attention to the table in the report that gives suggested masses of material to be gathered, etc., Murray noted that this plan is not one size fits all, but that the chart represents a good starting point for deciding <u>minimum</u> required sampling. Villinger wondered about what happens to the excess samples. Kuroki thought the case was more likely to be that they wouldn't get enough material, but that if they did get an excess such material would be discarded.

Screaton pointed out that many of the riser expeditions will be CDP's and thus the Project Scoping Group for the given CDP should specifically develop plans for cuttings. Wilkens added that there will be plenty of time after the *Chikyu* training cruise to revisit this issue once we gain more experience experience.

Regarding sampling details, Blum suggested that they might want to define the chip size preference for sampling. Yamamoto pointed out that archival storage in glass is better for organic geochemistry. Murray suggested that they explicitly state that the sampling containers need to be usable for multiple later sampling strategies and scientific uses.

Saito and Kuroki discussed how an industry sub-contractor will likely be describing the cuttings on (beneath) the rig floor, and that they would likely be using their own classification scheme. This caused great concern and let to much discussion. Blum elaborated that we need to use a baseline classification for cuttings as well as core. Murray noted that we do not want to use different classifications within a hole, one for cuttings and one for the core itself. For example, Wilkens noted "What is the industry standard for basalt?" as a way of pointing out that there would be two (or more) different schemes resulting. Blum said that we need to look at industry standards but they will have to be modified.

Continuing this discussion, Gulick wondered if the contractors would be describing for operations and then scientists describe for science according to IODP protocol. Neal pointed out that the descriptions might be very different and would lead to confusion. Rea observed that we need to make sure that it is clearly identified which is the scientific description and which is the contractor operation description. Korja said that we just need to be careful to label at the beginning what the description is. Villinger thought that we need to let operations do their own thing and we worry about science description. On the other hand, Lyons said that it should not be that hard to get the descriptions to be the same, as well as some of the operational needs. For example, we need to be careful about the minimum chip sizes as sometimes you may get huge volumes of small chips. Blum observed that the problem will be if there is a different preference on sampling strategy of well cuttings between what is needed for science and what is needed for operations.

#### **Recommendation 04-06-02** Drill Cuttings Team Report Please see Executive Summary for full text

## **15.** <u>Report on JOIDES Hydrology PPG</u>

Screaton, who was a member of the JOIDES Hydrology PPG, provided a brief summary of this group's report. Her overview is provided in *Appendix 10*. The key thing is that although this was a JOIDES endeavor, they wrote it "for" the IODP, that is, with an eye towards the future. Thus, it is appropriate for IODP SciMP to start addressing their concerns.

Murray asked the panel for their suggestions regarding how should we proceed regarding this mature document. Lyons observed that much of what was mentioned is useful for other groups as well. Villinger and Neal suggested that we pull out some recommendations and send them up to SPC. Murray agreed, and suggested that we figure out what issues are the low-hanging fruit that we can grab and make happen on the short time frame first, and deal with bigger issues later.

Ruppel confirmed that this document was written with the IODP Science Plan in mind and that the temperature tools are a real problem and so perhaps one such low hanging fruit is temperature. Villinger noted that calibrations must be done by the operator. DVTP and P is more complicated as it needs to be upgraded. Piesoprobe and DVTP may be complimentary. Blum noted that there are lots of efforts are going on right now with temperature but coordination problem may exist. Murray noted that the IODP-MI is supposed to coordinate some of these things, so we don't have unnecessary duplication or wasted effort by an IO. Blum agreed but noted that we need to keep separate the operational problem and the technical problem. There are major issues that may be platform specific that and that may need to be dealt with, such as software.

Escartin wondered how expanding a hydrology program would effect staffing. Screaton acknowledged that more personnel would be needed. Wilkens commented that if we make everything required it will take significant time and we might even lose sites. When developing a plan, could we possibly have just one site in important locations instead of all sites?

Because the hydrogeology subject is so closely related to physical properties and other petrophysics issues, please refer to the recommendations made in the "petrophysics" area of discussion later in the meeting. This discussion led to the following Consensus Statement and Action Item:

**Consensus Statement 04-06-02** Hydrology PPG Report from JOIDES Please see Executive Summary for full text

Action Item 04-06-03 SciMP WG on Hydrogeology Please see Executive Summary for full text

## 15A. Election of Curatorial Advisory Board (CAB)

Murray reported that the IODP-MI asked the SciMP to staff the CAB. The SciMP is to select three individuals to serve on the Curatorial Advisory Board, as described in Section 5 of the "Sample, Data, and Obligations Policy". Note that the Policy allows for SciMP to select the three members, but does not say that the members must come from SciMP itself. However, in the interest of acting expeditiously, we simply selected three of our own so as to ensure adequate coverage immediately.

This led to the following:

#### Action Item 04-06-04 Selection of CAB Please see Executive Summary for full text

We selected the below three individuals, which provide balance in terms of national interest as well as in terms of expertise:

Kenji Nanba, Japan, Microbiology Clive Neal, US, Petrology and Geochemistry Heinrich Villinger:Germany, Geophysics/D'hole tools nanba@aujaghi.fs.a.u-tokyo.ac.jp neal.1@nd.edu vill@uni-bremen.de

Neal has been on SciMP for two years, Nanba-san for one, and this Boston meeting is Villinger's first. Thus, there should be good rotation for these individuals as well. As Nanba-san was absent from the Boston meeting, Okada-san was asked to relate to him that he has been selected for this task.

#### 16. <u>Discussion of new co-chair selection process and individuals</u>

A conflicted member of the panel left the room. A brief discussion was held about the selection process, about who was eligible (since Okada is Japanese, only US and Europeans could be considered for Murray's replacement), and about who had expressed interest in the position prior to the meeting. Two individuals had expressed interest and their vitas had been distributed prior to the meeting. At this point of the meeting, no vote was held, and instead just the outlines of the discussion took place. This will be addressed later in the meeting (Agenda Item 36).

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This concluded the day's formal events, and the panel, guests, and liaisons retired to a function room overlooking the city of Boston and the Charles River for an open bar and appetizer party, hosted by the Department of Earth Sciences, the Dean of Arts and Sciences of Boston University, and JOI. A good time was had by one and all, with revely was in the air.

# Thursday, June 24, 2004

## 16A. X-Ray Scanning CT

Barry Freifeld from Lawrence Livermore National Laboratory gave a presentation (*Appendix 11*) on the portable X-ray CT imaging system he and his colleagues have developed and deployed on a few ODP legs. There was widespread support for the system, and the panel was very impressed with its capabilities.

Mandernack asked about the potential to put geochemical or mineralogic information into the platform. Freifeld pointed out that you can use dual energy scanning to get at things like sulfide content.

Murray questioned the scan times, and Freifeld noted that it can go a fast as a minute or two if you can handle lower resolution reconstructions. The data fills a DVD every core, again depending on resolution. Murray was curious as to its price, and it appears to be on the order of a couple hundred thousand plus 10-15K/yr for replacements and servicing.

Kasahara wondered about hard rock capabilities, and Freifeld said that a 10 cm piece of granite can be imaged with no problem, but a thicker piece requires a larger X-ray source. Kasahara further noted that composition can give different density values between X-ray CT and GRAPE. Blum asked about resolution and whether less data could be acquired during the first pass, to identify regions of interest. Freifeld noted that this was exactly was done on Leg 204. Lyons observed this would superb for much sedimentology like bioturbation.

Murray suggests a recommendation that IODP-MI look into this technology very seriously and soon. ESO say it is not on their short list, and JOI-A says it is on their Phase 2 list. *Chikyu* has a full scale medical scanner, but the panel wondered whether its capability was as complete as this newer generation of portable devices demonstrated here.

**Recommendation 04-06-03** High Priority for X-Ray CT Scanning Please see Executive Summary for full text

## 17. <u>Report from SPC</u>

SPC Chair Coffin provided a lengthy report (*Appendix 12*) of SPC update and matters of relevance to SciMP. Many of these items are discussed under separate agenda items and are not discussed here, for example, how to get SciMP more involved in the proposal process where appropriate (Agenda Item 30A).

Coffin drew specific attention to MARS-IODP borehole test site status, which resulted in the following Action Item:

Action Item 04-06-05 SciMP-TAP Joint WG regarding MARS-IODP Borehole Test Site Please see Executive Summary for full text An item not discussed elsewhere in this report--only here--had to do with the role of the Science Coordinators at the Sapporo office. Due to cost considerations, they were not present at this meeting, whereas traditionally one has attended SciMP meetings in the past. Coffin asked us to discuss whether the panel profited from their attendance, and whether we thought it was worth the travel money.

The feeling was that there was value added by their attendance, although the frequency of their attendance and what they did at the meeting was discussed. Neal and Gulick commented that having the Science Coordinator here was helpful in that when we needed to get something changed or help with something from that office. Murray concurred, and noted that the Coordinators often contribute helpful liaison-type input regarding what is going on with other panels. Murray noted as a counterpoint, however, that not having them attend could save money and perhaps the SPC representative could fill that role. Coffin commented that they do serve an important role as "corporate memory". Screaton wondered if they could come to every alternate meeting, or every Japanese meeting, which would save on travel costs somewhat.

Murray commented further that there would be significant "value added" if the Science Coordinator would be the official notetaker at the meeting, and would be responsible for producing a rough draft of the minutes. This would free up the responsibilities of a panel member from taking the notes during the meeting, and would also help get the minutes out in a more timely fashion. Murray noted that of all the tasks associated with being co-chair, doing the minutes is the most difficult, time-consuming, tedious, drawn-out, and mind-numbing aspect of his job. It is like the final scenes of the movie "Apocalypse Now", where the water buffalo gets hacked to pieces. Murray is the water buffalo. Nonetheless, the minutes are a vitally important official record, and it would be terrific if the Science Coordinator could at least do the first draft of them. The discussion led to the following recommendation:

> **Recommendation 04-06-04** Value of Sapporo Science Coordinator at SciMP Meetings Please see Executive Summary for full text

## **18.** <u>QA/QC and Calibration Issues</u>

Saito presented a summary of views regarding how the IODP shipboard and shorebased laboratories can best tackle QA/QC throughout the system. His report is given in *Appendix 13*. Murray noted that each laboratory needs to address this within their own reports, but that the general principles need to be defined by SciMP.

Villinger questioned as to whether this amount of work (which is huge for the IOs) will get us what we want. Murray noted that our job as SciMP is to tell the IOs that measurements have to be accurate, quantified, and comparable across all platforms. On one hand, we could just step back and say "do it". Villinger thought that perhaps we are being more restrictive than publications are. Wilkens, and several others, disagreed, noting that there are publications out there where due to lack of QA/QC the results are incorrect. Neal noted that in ODP you had 1 platform that was sometimes distrusted in terms of QA/QC and now we have 3 and if they are all doing the same standards then it is easy to judge. Blum agreed with this, philosophically, but noted that what is missing is a realisitic implementation plan. His feeling, as an IO, was that SciMP should give advice on implementation and parse it into specific areas/labs.

Murray noted that the beauty of Saito's report is that it puts the responsibility with the IOs but also need feedback from SciMP. He thought there needed to be lots of discussions over the next 6 months and I think SciMP oversight routinely occurring is vital.

Villinger stressed the importance of quality control within the database as well. Korja wants to make sure in the database that the specific lab is labeled and that there is a way to compare to standards automatically. Freifeld noted that the DOE at Yucca Mountain took 10-15 years to fix the standards and make it transparent to outside people as to exactly the procedures and methodology. Murray strongly suggested that this program be anchored according to internationally accepted standards.

This subject matter will be re-addressed at the next SciMP meeting.

#### **19.** <u>Paleontology and MRC WG Report</u>

and

#### 20. <u>Review of Common Data Items for JCORES Paleontology Tools</u>

Aita gave a report on the results from the *ad hoc* Paleontology and MRC meeting held in Washington DC. His report is given in *Appendix 14*. There was discussion of the different taxonomic dictionaries, how to set up various working groups to track and ensure progress, and funding. Also, it was discussed as to who owns the MRC collections, with regard to whether or who would give permission to move materials from one to the other.

Aita also presented a brief summary of the "paleontology tools" being developed by JCORES. Escartin and Villinger questioned whether this effort was intended to be CDEX-specific or not. Escartin further noted that if there is a database task force from IODP-MI it should be their job. Murray thought if we make this not platform specific and then it could perhaps be an action item to initiate discussion on ensuring a common set of paleontology data items in IODP. Spezzaferi suggested that the efforts going on with CHRONOS should be closely monitored, and Murray noted that if the IOs are fine with what CHRONOS is developing, then it could be perhaps simply mapped over.

The various discussions resulted in the following recommendation:

**Recommendation 04-06-05** Acceptance of Paleontology / MRC WG Report (which includes 6 sub-recommendations and 1 consensus statement) Please see Executive Summary for full text

Also, the following Action Items resulted:

Action Item 04-06-06 MRC Collections Please see Executive Summary for full text

#### Action Item 04-06-07

Items in Paleontological Data Bases Please see Executive Summary for full text

# 21. <u>Report from Petrophysics WG and Physical Properties WG</u>

Gulick presented the Physical Properties WG report (*Appendix 15*). He and Screaton emphasized that the Physical Properties WG report pre-dates the new Petrophysics "umbrella", but that there is useful information in it, nonetheless. There was much discussion of, and enthusiasm for, the new Petrophysics orientation, which resulted in the following recommendation:

#### **Recommendation 04-06-06**

Integration of Petrophysical Disciplines Please see Executive Summary for full text

Regarding the Physical Properties WG report, discussion resulted in the following:

Recommendation 04-06-07 Acceptance of Physical Properties WG Report (which includes 2 sub-recommendations and 1 consensus statement) Please see Executive Summary for full text

The following Action Item was identified:

#### Action Item 04-06-08

Phase 2 and *Chikyu* Petrophysics Please see Executive Summary for full text

Gulick also presented the QA/QC Report for Petrophysics, as shown in *Appendix 16*. This resulted in the following recommendation.

**Recommendation 04-06-08** Acceptance of Petrophysics QA/QC Report (which includes 4 sub-recommendations) Please see Executive Summary for full text

Two Action Items also resulted:

Action Item 04-06-09 QA/QC for Petrophysics Interlab Comparison Please see Executive Summary for full text

## Action Item 04-06-10

Blind calibration tests for Petrophysics Please see Executive Summary for full text Finally, due to the close relationship between Petrophysics and Hydrology, the following recommendation was identified:

**Recommendation 04-06-09** Frequency of APC Temperature Measurement Please see Executive Summary for full text

#### 21A. Downhole Tools WG Report

Saito presented the Downhole Tools Working Group report (*Appendix 17*). There was much discussion regarding QA/QC information, with regard to the fact that the contractor (e.g., Schlumberger, but not only Schlumberger) will not give out such information since it is proprietary. Discussion centered around the gray zone where guidelines crossover into science. Processing guidelines are a big issue. LDEO-BRG has some in-house guidelines. Villinger noted that some of these issues are scientific. Ito raised important issues regarding sonic logs. This discussion resulted in the following recommendation:

Recommendation 04-06-10 Acceptance of Downhole Tools WG Report (which includes 3 sub-recommendations and 1 consensus statement) Please see Executive Summary for full text

Three additional Action Items resulted as well:

## Action Item 04-06-11

Minimum Level of Data Processing Please see Executive Summary for full text

## Action Item 04-06-12

Temperature and Pressure Tools Please see Executive Summary for full text

Action Item 04-06-13 Ad Hoc WG on Policies for Tools, Borehole Exp.'s, and Long-Term Monitoring Please see Executive Summary for full text

## 22. <u>Core Description Working Group</u>

Saito presented the latest results from this Working Group, and his presentation is in *Appendix 18*. This report was discussed in depth at the last SciMP meeting and so there was only minor discussion of it here. The following recommendation resulted:

**Recommendation 04-06-11** Acceptance of Core Description WG Report (which includes 5 sub-recommendations) Please see Executive Summary for full text

## 23. <u>Laboratory Measurements on Severely Dilated Samples</u>

Saito presented the report from the group that had looked at how to deal with severely dilated samples (*Appendix 19*). The discussion addressed who should deal with the issue of correcting for stratigraphic thickness. Rea noted that this brings up the issue that at some point you cross into science. Robinson wondered if the intent or need was to upgrade Splicer? Wilkins pointed out that there is enough data to come up with reliable methods of correction and thus it is a science issue. Blum noted that a related issue is the depth mapping. To some extent you can develop standard operating procedures and but in some cases it is a science issue.

This led to the following:

Action Item 04-06-14 Handling and Measurements of Severely Dilated Samples Please see Executive Summary for full text

## 23A. Paleomagnetics Working Group Report

Okada presented the Paleomagnetics Working Group Report (*Appendix 20*). The report was wellreceived with most of the discussion having to do with the component regarding non-magnetic core barrels. There was widespread support for their use. Blum noted that they are a little more expensive, and a little less reliable, but that they are a "small ticket" item. The view of the discussion was that they should be adopted as standard. The discussion led to the following:

> **Recommendation 04-06-12** Acceptance of Paleomagnetics WG Report (which includes 5 sub-recommendations) Please see Executive Summary for full text

The following Action Item also resulted:

Action Item 04-06-15 Inter-laboratory Standardization Please see Executive Summary for full text

# 24. <u>Chemistry Working Group Report</u>

Neal presented the revised version of the Chemistry Working Group (CWG) Report (Appendix 21).

This was a very lengthy and comprehensive report that touch upon many issues faced by other laboratories as well (e.g., qualifications of technical support, etc.). It was emphasized that SciMP needs to be involved in MSP planning at a very early stage, as they were for Arctic planning.

There was discussion about the feasibility of installing ICP-MS on the non-riser vessel. It was thought that vibration may be an issue, but that there was likely to be ways to combat it. Murray noted that in his experience the vendors have very creative ways to deal with it, and he knows of several vendors that have installed such devices on factory-floors and other high vibration regimes. While vibration can't be ignored, it is likely a solvable problem.

There was much discussion about the educational/experience level of the technical support. Overall, the feeling was that the level of technicians provided by TAMU in the past is <u>not</u> going to be sufficient for the new program. While some individuals of the technical staff are certainly capable individuals who are up to the task, overall the TAMU model is not sufficient, and most technicians currently employed are not of the required level. Also, there needs to be a dedicated microbiology technician. Three of the group's subrecommendations specifically dealt with technical staffing issues. The discussion led to:

**Recommendation 04-06-13** Acceptance of Chemistry WG Report (which includes 11 sub-recommendations) Please see Executive Summary for full text

Additionally, six Action Items resulted:

Action Item 04-06-16 Modular Labs for MSPs Please see Executive Summary for full text

#### Action Item 04-06-17

Environmental SEM and Cathodoluminescence Please see Executive Summary for full text

## Action Item 04-06-18

Microwave Digestion Please see Executive Summary for full text

#### Action Item 04-06-19 Quadrupole ICP-MS

Please see Executive Summary for full text

# Action Item 04-06-20

Gas Source Stable Isotope Mass Spectrometer Please see Executive Summary for full text

## Action Item 04-06-21

Blind Calibration Tests

Please see Executive Summary for full text

As part of the Chemistry and Microbiology discussion, panelist and microbiologist Kevin Mandernack provided to co-chair Murray his written documentation in response to Action Item 03-02-16 (from Nagasaki meeting). This short document (*Appendix 22*) is here being forwarded on to the IO's and IODP-MI for their incorporation in the context of the Microbiology WG Report.

Action Item 04-06-22 Sub-Sampling for Microbiology Please see Executive Summary for full text

#### 25. <u>Core-Log-Seismic Integration</u>

Sakamoto provided a nice summary of issues regarding core-log-seismic integration (*Appendix 23*). There was widespread support for many of the issues he presented, from the IOs and the SciMP, and it was recognized that formation of a Working Group was probably the best way to proceed. The Working Group will consist of Sakamoto (to chair it), Gulick, Blum, Kuroki, Takahashi, Robinson, Rea, and Kasahara, and can meet by email. The following Action Item resulted:

Action Item 04-06-23 Core-Log-Seismic Working Group Please see Executive Summary for full text

## 26. <u>Core Repositories and Core Distribution</u>

Murray reminded the panel and attendees of the issue identified in Coffin's report from the SPC (*Appendix 12*). The basic issue is whether the IODP cores should be distributed by a geographic plan or a platform-based plan. There was widespread support for a geographic plan, although SciMP was not presented with any specific one. It was acknowledged that there were complicated factors at play, including the length of time and cost it would take to integrate the IODP plan with that proposed last year regarding DSDP/ODP cores. Also, there are legitimate contractual obligations...say an MSP gathers cores that would end up being curated in Texas. The cores

would travel to Bremen (for analysis) and then to Texas (for curation)....does this make sense? The discussion led to the following Consensus Statement:

Consensus Statement 04-06-03 Geographic Storage of Cores Please see Executive Summary for full text

#### 27. <u>Electronic Access to DSDP Volumes</u>

Murray had been approached by Torsten Stieger (Germany) regarding a potential plan to scan all the DSDP volumes and thus have them available electronically. Without endorsing Stieger's plan, the SciMP expressed great enthusiasm for the idea in concept. All agreed that IODP science would be advanced by having this accomplished. <u>Importantly, the panel agreed that they would like this done rapidly, without necessarily waiting for a "perfect" version to be accomplished</u>. Just getting a scanned copy (PDF) per volume would be a great advance and that this should be done over the short time-frame. This led to the following Consensus Statement:

**Consensus Statement 04-06-04** Scanning of DSDP Volumes for Digital Access Please see Executive Summary for full text

#### 27A. <u>Uniformity of Technical Reports: Coordination and Publication</u>

Kuroki presented a discussion of this subject (*Appendix 24*). The rising issue is that the individual operators are going ahead--as they should--with the documenting of their engineering and other technical accomplishments. However, as such documentation proceeds, without a plan and an agreement between the IO's regarding format (both in terms of layout but more importantly in terms of content), that there will be no unified coordination of these reports. It was emphasized that the discussion here is addressing non-peer reviewed literature (engineering and technical reports, etc.). The IO's were in agreement that this subject needed to be addressed sooner rather than later. The discussion expanded to involve other aspects of the publications program, and resulted in the following recommendation:

**Recommendation 04-06-14** Publication Uniformity and Coordination (which includes 3 sub-recommendations) Please see Executive Summary for full text

#### 28. <u>IO Update on Technical Staff Rotation and Training</u>

Kuroki presented a good update on this subject (*Appendix 25*). Kasahara asked for clarification of the purpose of having a rotation plan, and Kuroki pointed out that it will help standardize across platforms and share knowledge and expertise. Murray noted that it will also contribute to the feeling of an "Integrated" IODP, in ways that perhaps cannot be quantified easily. While it is acknowledged that lead-time and visa issues will be complex, particularly since 9/11, that it can be accomplished.

The IO's were commended for their efforts to develop this plan and were urged to continue with it.

# **29.** <u>IO Update on Digital Imagery</u>

Blum provided an interesting report on digital imagery (*Appendix 26*). There was much discussion of the relative quality of digital imagery, and of whether the IO's were being consistent between themselves as to their practices. Murray asked CDEX and ESO about their imagery plans. Kuroki said that CDEX was doing core sections only, and only by digital scanning. Roehl responded that for the ESO it would be digital and film, line-scanning and single shot. Blum noted that the operations group at TAMU still wanted to have a single shot, but he feels that need will go away shortly when the digital presents itself. Blum noted that it was JOI-A's intent to go digital essentially immediately. As Neal noted, as long as the digital imagery is as high quality with regard to resolution and inter-comparability, the situation should be fine. There was some confusion, however, regarding the state of affairs of the on-going expeditions, and plans to segue to a new system. This led to the following Action Item:

Action Item 04-06-24 Digital Imagery Please see Executive Summary for full text

# **30.** ESO: Arctic Lomonosov Ridge (ACEX) Update

Rea provided an update as to the ACEX expedition (*Appendix 27*). The panel expressed their appreciation to the ESO for their openness and involvement with SciMP during the discussion and approval process for the "Arctic Sampling Plan" that happened over the past several months.

Issues were still highlighted regarding the drilling mud, and microbiological and ephemeral property issues. The problem is that starch based drill mud, billed as "biodegradable" causes problem for microbiology and for organic geochemistry. The very characteristic that makes them "biodegradable" means that they are a food source. Takuro suggested that intracore contamination is not a problem because of permeability and that one could compare DNA level in center to edge. Yamamoto expressed concern that the starch would influence bulk organic analysis. Murray countered by noting that would be the cases only if it penetrates and if it gets contaminated you will be able to tell by pore water chemistry.

Discussion about wax sealed cores ensued for physical property quality control and it was decided to not have SciMP come down on one side or another, and that to leave the frequency of such sampling be decided by the operator and the SAC of the expedition.

Takuro questioned sampling frequency for microbiology, but because a microbiologist was sailing on the expedition, such sampling was deferred to him.

Lyons questioned about how long after acquisition it would be until the pore water is squeezed. Rea said that it would only long enough to get the MST logging done...on the order of 30 mins or so. Murray and Lyons agreed that such a time frame would be sufficient, doing anything longer than that may constitute a problem.

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This concluded the day's events, and the attendees fled to dinner and further informal discussions.

# Friday, June 25, 2004

## **30A.** <u>SciMP Involvement in Proposals</u>

Murray reminded the panel that their last effort to become more involved (see Recommendations from Nagasaki meeting) were rebuffed, but it was encouraging to see that SPC now was asking for more SciMP involvement. It seems that there is genuine interest on many parties with SAS and also within management (IOs and IODP-MI) to ensure that SciMP is brought into the loop early enough to assist. Not only will the quality of the measurements, and thus the science, increase, but it is thought that "expedition creep" in terms of budget growth could be diminished.

Villinger agreed that it would be better to be involved early on, for instance one of the problems is CORK technological complexities. Wilkins observed that all expeditions should have some degree of SciMP oversight, not just CORKS or logging-rich expeditions. The panel agreed that such oversight should only happen after the SSEPs completed their reviews. Ruppel confirmed that the proposals are still considered private until after SSEPs portion of the process. Escartin, who in the past has served as SciMP liaison to SSEPs, and Murray both felt that SciMP cannot simply rely on SSEPs watchdogs. The review must be more systematic. Murray noted that there is concern that SciMPs comments from a technical perspective will affect rankings if our comment occurs before SPC ranks. Coffin and Murray suggested that the other time would potentially be after it is scheduled, but that may be too late. Coffin thought that the ideal window would be after SPC forwards to OPCOM and prior to final schedule approval. This led to the following recommendation:

> **Recommendation 04-06-15** SPC Send Ranked Proposals to SciMP Please see Executive Summary for full text

## 31. <u>Seafloor Observatories and 3<sup>rd</sup> Party Tool Policies</u>

This was a multifaceted discussion about observatories, tools, and multiple labs and policies. One of the main issues of discussion was the current Third Party Tool Development Guidelines. Saito noted that there are analogous issues regarding shipboard or lab instruments. Kasahara suggested using 3 different categories: precise instrument, equal level, experimental. Neal noted that in ODP there are analogous classifications of Development tools, Mature tools, and Experimental tools. Wilkins noted that some of these issues are science issues and get decided by the funding, but that many things in the policy are to prevent demands on resources of the IOs that are unreasonable. Villinger pointed out that during ODP someone at TAMU would just make a decision as to whether something was mature or not, in terms of classifications. Murray noted that such a role would be played in IODP by someone at IODP-MI. Blum and Murray both reinforced that any new policy should protect the IOs from unreasonable demands. This led to the setting up of a small working group (Kasahara, Villinger, Wilkens, with IO involvement when appropriate), as outlined in the following Action Item:

Action Item 04-06-25 Third Party Tool Development Guidelines Please see Executive Summary for full text Continuing the general discussion, Screaton noted that in the recent Flemings et al Downhole Tools workshop there was the suggestion that some drillship time be set aside for testing. Ruppel noted that the NSF is strongly encouraging the testing of tools on continental boreholes. Screaton noted that while any testing (terrestrial, marine) is likely to be helpful, there really needs to be marine testing on the actual drillship to assess the real-world delivery of the system. Murray pointed out that at the workshop it was suggested that IODP-MI hardwire in testing time and that operators have to state why the testing time is <u>not</u> being used. That switches the burden from the engineers/scientists to the IOs, and is likely to ensure that adequate testing time will in fact occur and not be cannibalized. This led to the following recommendation:

**Recommendation 04-06-16** Ensure Regular Downhole Tool and Engineering Testing

Please see Executive Summary for full text

There followed a lengthy discussion regarding how to deal with data generated from CORKs and/or other instruments lowered into boreholes or other hardware put into place by IODP (e..g., seismometer), with specific regard to the Sample, Data, and Obligations Policy. For example, consider a scientist who writes a proposal to the U.S. NSF to place an instrument in a borehole. The proposal is accepted and IODP-MI provides shiptime to put it in. As doing so is an engineering task only (no science), the scientist does not sail on the expedition that installs it, and the installation occurs as part of another expedition during their transit to their first site. None of the scientists on board this expedition have anything to do with the borehole installation. One-point-eight (1.8) years go by (this is longer than the IODP moratorium, but shorter than the U.S. internal moratorium). Whose data is it? The original scientist's?...but s/he didn't sail on the expedition to install it? The scientists who were on the expedition's transit that just happened to stop for a day or two to put in the instrument? Does the U.S.'s moratorium or does IODP moratorium apply. What if somebody else steams up in their own ship and downloads the data?

There was widespread consensus that the current Sample, Data, and Obligations policy is adequate to deal with these issues. The policy was written to allow flexibility...for example, the moratorium time begins when samples (e.g., when there is a post-cruise sample policy) or data (e.g., when data gets gathered/downloaded from a borehole) are "acquired". Wilkens suggested, and the panel agreed, that instead of trying to make an overall policy that covers all options, we may have to revisit some situations on a case-by-case basis. Murray confirmed that the IODP-MI has the ability to modify a moratorium for a particular instance. Kasahara noted that ORION/NEPTUNE instruments are often non-standardized so if you open it up what to do about non-standard data formats. Murray said that the policy does not cover this (nor should it), but we have asked, as part of the Information Services Center (ISC) that all data coming off of any platform must be in compatible formats. Villinger also expressed concern for legacy data from such observatories, and again it was emphasized how important a role the ISC should play in this.

Regarding the potential direct conflict with some national policies (as outlined in the example above), it is clear that the IODP cannot, and probably should not, supersede national policies. IODP-MI will have to in some cases make a ruling in discussion with national agencies

#### 32. <u>Magnetometer Tool for Upcoming Core Complex Expeditions</u>

Robinson from JOI-A provided a good summary of the issues regarding upcoming Core Complex expeditions and sought approval from SciMP to proceed with their plan (*Appendix 28*). Wilkens commented that he has dealt with these same individuals during ICDP and that they had performed very well. Murray noted that there were no technological issues, no new money sought, and no

other-than-usual risks associated with the deployment. Robinson noted that the expedition success does not depend on the tool. This led to the following Consensus Statement:

**Consensus Statement 04-06-05** Gottingen Magnetometer on Core Complex 2 Please see Executive Summary for full text

Continuing the discussion, Ito raised an important question regarding long-term issues of magnetometer usage in IODP. This led to discussion about the importance of getting such magnetometer data, which led to the following Action Item:

Action Item 04-06-26 Invite Dr. Johannes Stoll to Discuss Long-Term Prospects for Magnetometer Usage in IODP Please see Executive Summary for full text

33. <u>Review of Recommendations, Consensus Statements, and Action Items</u>

As part of this process, the following three Consensus Statements were made.

Consensus Statement 04-06-06 Thanks to hosts (Murray, Ziegler, and Boston Univ.) Please see Executive Summary for full text

#### **Consensus Statement 04-06-07**

Appreciation to off-rotating panelists Aita, Escartin, and Saito Please see Executive Summary for full text

> **Consensus Statement 04-06-08** Appreciation to off-rotating Co-Chair Murray Please see Executive Summary for full text

#### 34. <u>Next Meeting and Date</u>

The SciMP would like to informally rotate between countries, locations, and laboratories and would like to select their own locations for the subsequent meetings. Their first meeting was held in Nagasaki, to see the *Chikyu*. This meeting was held in Boston, rather than in Europe, as the Bremen laboratory would not be ready yet. For their next winter meeting, it was thought that Bremen would not yet be fully operational, and the panel had just recently been to Japan. <u>Thus, the next location will be Hawaii, with Wilkens as host</u>, which will enable a visit to the ICDP drillsite. Bremen is likely to be the location of the Summer, 2005, meeting, followed by perhaps Japan.

Continued on next page...

#### 35. Rotation of Panelists and New Specialties Needed

Given the expertise rotating off (4 members, see above Consensus Statements), it was thought that the fields of Micropaleontology, Sedimentology, Geochemistry, and Database were desired. It was expressed that the national offices (USSAC, ESSAC, JDESC) need to be completely in communication regarding these needs, and great care must be made to that all nations do not inadvertently staff the panel with 4 people of the same expertise. Murray, Okada, and the new incoming co-chair will be in contact with the national offices for this reason.

#### 36. Executive Session: Selection of New Co-Chair

The panel unanimously recommends to SPC that they approve Mike Lovell (Leicester, UK) as the new co-chair, to serve along with Okada-san.

This recommendation has been subsequently approved by the SPC.

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To conclude the meeting, Sakamoto motioned to adjourn, and this outstanding action was seconded by Lyons, with thoroughly unanimous approval by the panel with great rejoicing, frolicking, and unbridled enthusiasm.

# **Report of Drill Cuttings for SciMP**

SciMP Drill Cuttings Team

#### Introduction

One of the issues IODP should address for riser drilling platform, one of the IODP Multi-platforms which we do not have any experiences during the ODP phase, is how to handle drill cuttings for IODP sciences. SciMP Drill Cuttings Team (led by panel member Saito) has been investigated since 4th iSciMP meeting. For this investigation, the team asked Center for Deep Earth Exploration (CDEX), IODP riser platform operator, and other specialists to research the mud logging technologies in oil industry. CDEX produced "An Introduction to Mud Logging for Scientists" and "Chikyu" Mud Logging and Cuttings procedure for scientific use" for SciMP in 1st SciMP meeting. One of the external specialists, Dr. Christian Bucker (ex-iSciMP member) provided "Physical Properties of Cuttings and their use for IODP" at the 1st SciMP meeting. Based in these documents, the team provides a series of recommendations for handling of drill cuttings in IODP.

**Recommendation-1**: There is the necessity of adopting industry-based analyses of drill cuttings for the IODP riser platform to achieve the scientific objectives.

Background: Effective utilization of drill cuttings can compensate coring in the intervals of insufficient core recovery, no coring, and LWD operations.

**Recommendation-2**: IODP Scientists should recognize the limitation of cuttings usage as well as their usefulness.

Background: Scientists should be aware of the depth error and chip size. Coring operation increases the depth error. Estimation method and error of the cutting depth are described in "An Introduction to Mud Logging for Scientists". The chip size may be variable due to lithology and drilling method.

When core recovery is low or nothing, cuttings analyses are useful for paleontology, sedimentology, and petrology. There are some techniques to measure various petrophysical parameters (See "Physical Properties of Cuttings and their use for IODP"). Cuttings samples may be also applied even in microbiology.

**Recommendation-3**: Appropriate sampling parameters, such as the sample interval and volume of drill cuttings, should be decided according to the scientific objectives of the expedition.

Background: Minimum interval and volume for routine sampling should be decided by project basis. Interval for cuttings sampling in industries ranges between 5 m, the minimum sampling interval due to depth error, and 100 m depending on their purposes.

**Recommendation-4**: Drill cuttings initially processed by on-site specialists should be forwarded to the on-site scientific laboratories as soon as possible.

*Background:* Primary processing includes washing and description. Description sheets should be also forwarded to laboratories. Training of cutting description for scientists should be considered as required.

**Recommendation-5**: Washed and dried cuttings should be stored as permanent archives. All cuttings data should be stored in database with Cutting Sample ID.

Background: Archived volume should be decided by project. CDEX is assuming that 200 cc of washed/dried samples for routine archiving (see "Chikyu" Mud Logging and Cuttings procedure for scientific use). Paleontology WG is assuming that 500 cc (see Paleontology WG report).

**Recommendation-6**: Access to mud logging data including drilling/geological information should be made available for browsing and storage in science database.

*Background:* Mud logging data comprises drilling information (drilling data, operating efficiency, and mud properties), geological information (gas and cuttings). Drilling parameters such as "rate of penetration", "weight on bit", and "torque" are sometimes important for science to know formation strength and dynamics. Gas composition is important ephemeral property for geochemistry. Further discussion may required for determination what kind of data from mud logging should be delivered and archived.

# Report of the Meeting of the Paleontology Working Group under the Scientific Measurements Panel (SciMP) of the IODP March 15 -16, 2004 Smithsonian National Museum of Natural History Washington, DC, USA

#### Host

Brian Huber, Smithsonian National Museum of Natural History, Washington, DC, USA

#### Attendees

#### Paleo WG Members

\*#Ellen Thomas, US, Wesleyan University, ethomas@wesleyan.edu
Brian Huber, US, Smithsonian National Museum of Natural History, Huber.Brian@nmnh.si.edu
Mark Leckie, US, Univ. of Massachusetts, Amherst, mleckie@geo.umass.edu
Michael Knappertsbusch, Switzerland, Natural History Museum Basel, Michael.Knappertsbusch@unibas.ch
David Lazarus, Germany, Natural History Museum Berlin, david.lazarus@rz.huberlin.de
\*Yoshiaki Aita, Japan, Utsunomiya University, aida@cc.utsunomiya-u.ac.jp,
Masao Iwai, Japan, Kochi University, iwaim@cc.kochi-u.ac.jp
Noritoshi Suzuki, Japan, Tohoku University, suzuki.noritoshi@nifty.com
Felix Gradstein, Norway, Museum for Geology and Paleontology University of Oslo, felix.gradstein@nhm.uio.no

\* = SciMP member or alternate

# = unable to attend

#### Guests

#Eduardo Koutsoukos, Brazil, PETROBRAS-CENPES,

koutsoukos@cenpes.petrobras.com.br

Rick Murray, US, Boston University, Co-chair SciMP, rickm@bu.edu Takashi Yuyama, Japan, Central Computer Services, <u>tyuyama@ccs.co.jp</u> John Firth, IODP/TAMU, Firth@odpemail.tamu.edu

#### **EXECUTIVE SUMMARY**

#### **Paleontology Working Group Recommendations**

The meeting of the ad hoc Paleontology Working Group under the Scientific Measurements Panel (SciMP) of the IODP was held from March 15-16, 2004, at Smithsonian National Museum of Natural History, Washington, DC, USA with the PWG Member, Brian Huber serving as host. The Paleontology WG meeting resulted in the following 6 Recommendations, 1 Consensus Statement and 2 Action Items. These are reported to SciMP for review and comment.

Overviews of the Paleontology WG and integrated Micropaleontological Reference Centers (MRCs) are documented. Brief overviews are provided where appropriate in italics before each Recommendation.

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#### **Recommendations**

#### General Overview of status of the Paleontology Working Group

Paleontologic identifications provide the primary source of shipboard and shorebased age determinations and, therefore, are the foundation of a broad array of the earth history studies that follow nearly every drilling cruise. Two problems were identified by the ad hoc Paleontology Working Group regarding the ability to effectively and accurately establish consistent shipboard and shorebased biostratigraphies. The first problem deals with the declining number of specialists who are training the next generation of micropaleontologists and biostratigraphers. The second problem pertains to inconsistencies which accumulate over time in the nomenclature, application and interpretation of biostratigraphic datums. Unless new emphasis is directed toward ensuring efficiency and reliability in paleontologic data collection and easy access to regularly updated post-drilling age determinations, this latter problem will surely worsen with the transition to a multiplatform drilling operation. The Paleontology Working Group met from 15-16 March 2004 at the Smithsonian Museum of Natural History to discuss these issues along with the future needs, activities, and oversight of paleontology in the future IODP. We also discussed the responsibilities, services, and potential provided by the Micropaleontological Reference Centers (MRCs) and their role within the IODP administrative structure. Below is a list of the recommendations from the Paleontology WG for IODP paleontology and for the MRCs:

#### **Recommendation regarding Working Group establishment**

The following recommendation results from detailed discussions through the Paleontology WG meeting regarding how paleontologic multiple issues on IODP are effectively resolved.

#### **Recommendation PALEO-1: Working Group Establishment**

The ad hoc Paleontology Working Group recommends the establishment of a Paleontology Working Group, perhaps as an IODP-MI task force,. Membership should include appropriate persons form SciMP, at least one Micropaleontological Reference Center (MRC) curator and other experts as needed. Issues to be considered include: development of digital atlas and taxonomic dictionaries, acquisition of technical support on board drilling platforms, interaction of MRCs with scientific communities, sample preparation procedures, control of the quality of paleontologic data and other related matters.

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## **Recommendation regarding MRCs continuation as IMRCs**

The MRC collections and curators represent an important resource to IODP for the production of micropaleontologic training and public education materials, for maintaining quality control of paleontologic and biostratigraphic data within IODP, as a liaison to the broader micropaleontologic community, and for insuring an archival legacy of IODP micropaleontologic recovery. Thus, this recommendation was given high priority by the Paleontology WG.

# **Recommendation PALEO-2: MRCs should be renamed as Integrated MRCs** (IMRCs)

The Paleontology Working Group recommends that the MRCs should (1) **be renamed as Integrated MRCs (IMRCs)** and (2) **continued in IODP as an integrated component.** Formal inclusion of IMRCs collections and curators will provide an important resource to IODP for the production of micropaleontologic training and public education materials, for maintaining quality control of paleontologic and biostratigraphic data within IODP, as a liaison to the broader micropaleontologic community, and for insuring an archival legacy of IODP micropaleontologic recovery. "Formal inclusion" could include participation as panel or task force representatives, making regularly scheduled presentations to SciMP, and other activities of the IODP.

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#### **Recommendation regarding Taxonomic Dictionaries with stratigraphic databases**

The recommendation below results from discussions during the Paleontology WG regarding the needs of taxonomic dictionaries with stratigraphic databases for IODP drilling expeditions.

Development of image based digital taxonomic dictionaries is critical to reliable shipboard age and paleoenvironmental determinations, is essential to the quality control of the shipboard interpretations, and provides an efficient alternative to duplicating hard copy library resources that have been traditionally used by shipboard paleontologists. In order to achieve timely completion of image dictionaries and cyber atlases, associated with stratigraphic databases, incentives will need to be provided to working subgroup leaders working together with IMRC curators to achieve information and image capture and research community input that are required.

**Recommendation PALEO-3: Taxonomic Dictionaries with stratigraphic databases** IODP must coordinate their efforts regarding digital taxonomic dictionaries and cyber atlases and related issues with other national and international initiatives such as CHRONOS, NEPTUNE and et.al. The Paleontology Working Group recognizes the importance of international cooperation and interaction among the IOs and the micropaleontologists community and encourages collaborations with IMRC curators to develop these dictionaries to be used on the IODP drilling platforms

The microfossil groups to be covered should include calcareous nannofossils, planktic foraminifera, benthic foraminifera, diatoms, silicoflagellates, radiolarians, and palynomorphs (dinoflagellates and pollen).

The taxonomic dictionaries for the Cenozoic and Mesozoic should be updated and expanded on a regular basis (e.g., once per year).

# **Recommendation regarding Post-cruise Data Capture**

The most important data used for age determinations of the drill cores are generated during post-cruise studies and are primarily published in peer-reviewed journals. Improvements in biostratigraphic knowledge over time however cause older data to be increasingly difficult to use, particularly by non-specialists. In order to maintain currency in age-depth relationships for the DSDP/ODP/IODP cores. The Paleontology Wgof the SciMP realizes that we must have continual capture of these shore-based data and review /updating of older data.

## **Recommendation PALEO-4: Post-cruise Data Capture**

The Paleontology Working Group recommends that post-cruise data capture and updating of older data become an ongoing activities of IODP, working in cooperation with relevant various expert groups, e.g. IMRCs, CHRONOS, NEPTUNE and ODSN. Both taxonomic dictionaries and chronology updates should be core products available via the proposed Information Services Center (ISC).

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## Two Recommendations regarding IMRC responsibilities

The Paleontology WG is taking reassessing IMRCs responsibilities for IODP activities. These two recommendations result from multiple discussions of the WG members.

MRC microfossil slides are essential to preparing training/ teaching/reference materials, and support other goals such as quality control and age model maintenance. With the exception of a few areas (Mesozoic, Arctic), current MRC sampling is adequate to fulfill planned services. Preparation of these samples however has been inadequate: it has been underfunded and at current rates, completion may take a decade or more.

#### **Recommendation PALEO-5: Incomplete IMRC slide sets should be completed promptly**

The Paleontology Working Group endorses the request of the MRCs to reduce their sampling to recover only key remaining gaps in current coverage.

#### **Recommendation PALEO-6: MRCs funding possibilities**

The MRCs should explore funding possibilities to insure the timely completion of the IMRC sample set and on-line publication together with the relevant age information.

The following Consensus Statements results from detailed discussions through the Paleontology WG meeting regarding how paleontologic multiple issues on the SciMP are effectively resolved.

#### **Consensus Statements : SciMP Membership**

SciMP realizes the critical importance of chronostratigraphy in guiding drilling operations and interpreting earth history in the new multiplatform IODP structure. The SciMP therefore, stresses the importance of paleontologists' participation in the panel.

#### Appreciation

The SciMP acknowledges the effort of CDEX to develop enhanced tools for shipboard paleontologists. The Paleontology Working Group of SciMP thanks Mr. Takashi Yuyama from the Central Computer Services Ltd. for presenting the overview of J-CORES in the *"Chikyu"* vessel and the trial of the shipboard Paleontology tool "Stratigraphy" in J-CORES.

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## **Two Action Items**

## Action item PALEO-1: IMRC Archival Responsibility

The MRCs, in consultation with SciMP, initiate discussions with IODP-MI and for funding agencies to explore how to grant permanent archival status in appropriate major Museums for one set of each of the current four collection types (foram, nanno, rad, diatom), as designated by the IMRC curators. The remaining 7 sets of each fossil group should retain their indefinite loan status.

#### Action Item PALEO-2: Evaluation and review of database content

The Paleontology WG of SciMP will work with the IOs to evaluate and review the common data content items of potential paleontological databases used by the IODP and will report their result at the next SciMP meeting.

## PALEONTOLOGY WORKING GROUP MEETING OVERVIEW

(PWG subgroup-Brian Huber, Felix Gradstein, Noritoshi Suzuki, Masao Iwai, and Takashi Yuyama)

(IMRC subgroup-Michael Knappertsbusch, David Lazarus, John Firth, Yoshiaki Aita,

Mark Leckie)

# 1) Determine relation to IODP structure

-PWG should be advisory to IMI

-IMRC should be associated with IODP Information Services Center (precise relationship to be determined later)

## 2) Meeting frequency

-1/year, or upon demand, when convenient jointly

## 3) Participation

- i) PWG -3 European, 3 Japanese, 3 U.S. plus guests, at least one member of the Paleo WG be a curator from an IMRC
- ii) IMRC-by application to IMRC curators (as currently done)
- iii) SciMP should have at least one Paleo representative from Japan and one from U.S.
- iv) Paleo WG meetings should be attended by both SciMP representatives (or alternate)
- v) Link to CHRONOS project Life through Time Subgroups
  - (1) Taxonomic species list dictionary subgroup for planktic forams, benthic forams, diatoms, radiolarians, and dinoflagellates
    - (a) Networked and internet accessible
    - (b) Available on all IODP platforms and Core Repositories
  - (2) Datum zonal markers linked to images
    - (a) for ICS time scale: Jim Ogg
    - (b) BugCad: Mitch Covington
    - (c) Deep Water Agglutinated Forams: Mike Kaminski/Felix Gradstein
    - (d) Chronos-based databases
  - (3) In coordination with European funding agencies get money for summer students to build regional atlases

## 4) Leadership

-one of the SciMP representatives should be the leader of the Paleo WG -IMRC leader chosen by vote of IMRC curators

## 5) Rotation frequency

-PWG and IMRC -3 years

#### 6) PWG Responsibilities/activities

i) Establish/oversee working subgroups, funneled through central clearinghouses such as IMRCs, IODP contractors and/or Chronos

- Taxonomic species lists and image dictionaries created in coordination with IMRCs, Chronos Neptune, Janus, J-CORES and other available databases
  - (a) Neogene planktic forams: Michael Knappertsbusch
  - (b) Paleogene and Cretaceous planktic forams: Brian Huber and Mark Leckie
  - (c) Jurassic planktic forams: Felix Gradstein
  - (d) Cenozoic diatoms: Masao Iwai
  - (e) Cretaceous diatoms: Julianne Fenner
  - (f) Neogene radiolarians: David Lazarus
  - (g) Paleogene radiolarians: Chris Hollis
  - (h) Mesozoic radiolarians: Yoshiaki Aita and Noritoshi Suzuki
  - (i) Cenozoic and Mesozoic dinoflagellates: John Firth, Felix Gradstein, (also Yuji Kurita (<u>kurita@sc.niigata-u.ac.jp</u>)
  - (j) Cenozoic calcareous nannofossils: Jeremy Young
  - (k) Mesozoic calcareous nannofossils: Jackie Lees
- (2) Search for updates on web site activities (updated catalogue of sites for species dictionaries etc.): Felix Gradstein
- ii) Edit shipboard handbook
  - (1) major commitment of effort! Must consider legal and health implications when chemicals are involved
  - (2) Deadline: For MSP is open ended
- iii) Identify and review science resources needed for IODP platforms and land based IODP core repositories (i.e., new technology/instrumentation, software, hardware, laboratory equipment)
- iv) Age model updates
  - (1) Updating of species lists and datum ages used in age/depth plots:
    - (a) IMRC/Chronos's jointly developed Neptune database
    - (b) Shipboard databases
    - (c) Neogene age datum list for p.f. and nannos, magnetochrons is complete up to GTS 2004: Felix Gradstein
    - (d) Cretaceous age datum list should be complete: Jim Ogg
    - (e) Mesozoic and Cenozoic dinoflagellate datums: Graham Williams
  - (2) Updating of age models based on new studies in peer reviewed literature
  - (3) Provide standard time scale and some regional time scale options and updates
  - (4) Consult on staffing issues (e.g., identify lead paleontologists for all legs that expect to recover sediments)
  - (5) Provide guidance for training needs of paleontologists prior to drilling cruises
- v) Outreach
  - (1) Encourage research community to contribute their DSDP/ODP/IODP data
  - (2) Public outreach (improve visibility of paleontology and credibility among IODP community: talks, listserver messages, workshops, popular articles in JOIDES Journal, etc., multi language availability)

- vi) Teaching and training
  - (1)Produce electronic/VR atlases of marine microfossils for professional training of micropaleontologists
  - (2)Training of less experienced shipboard micropaleontologists precruise,
  - (3)Provide loanable university and professional micropaleontology teaching modules based on MRC materials (for example training collections of index species including documentation),
  - (4)Help in organizing or organize electronic products for or virtual micropaleo and stratigraphy courses and produce of the necessary electronic documents, texts, diagrams and images.
  - (5)Assist in providing image materials of microfossils for outreach, public relation, museum exhibits and various teaching materials for primary schools.

## 7) IMRC Responsibilites

- a) Maintain and make accessible IMRC microfossil collections for research, teaching and training
- b) Provide/arrange archival services for IODP, ODP and DSDP microfossil materials, particularly types
- c) Assist PWG in carrying out teaching, training, and public outreach tasks

## 8) Funding needs

- a) Average 1 meeting/year (for PWG 12 people, incl. guests) each PWG and IMRC
- b) Student graduate assistants for each working subgroup leader listed above

## 9) Funding strategies

- a) If SciMP considers our recommendations to be a high priority and approved by SPC each working subgroup leader would need to request funding through appropriate channels based on guidance by the oversight panel
- b) Petroleum industry?
  - i) Age models would be very useful tailored to basins of interest
  - ii) Calibration of regional chronostratigraphies to standard international time scale
  - iii) Paleobathymetric lookup tables (regional and global)
  - iv) Taxonomic atlases would not likely get funded
- c) NSF Environmental Biology informatics
- d) European Union informatics initiative? (Dave Lazarus and Jeremy Young will check)
- e) SOCs and co-mingled funds: programming funds to migrate data and data models for taxonomic dictionaries and species age assignments and applications to access data through the internet

# **iSciMP Physical Properties Working Group Report** (Revised)

Revised from a Report by Douglas Schmitt, Christian Buecker, Mike Lovell, & Saneatsu Saito

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# 1. Introduction

The Physical Properties working group was begun at the June 2002 iSciMP (the interim Scientific Measurements Panel) meeting in College Station, Texas in order to address issues related to physical property measurements in the context of the IODP. The focus of the working group is to re-evaluate the current physical property measurements, both shipboard and on land, and to explore new directions that physical property measurements should take.

This is a revised report (June 2004).

# 2. Plan for Physical Property Measurements

## a. Suggested Minimum Measurements Mandatory – All Platforms

As with other scientific measurements, it is difficult to know exactly what the differing scientific needs will be across the many different platforms. The need for value added scientific measurements will likely be increased for long term 'complex drilling programs' but only minimal physical properties may required for some of the 'mission specific platforms' and even this might be difficult under certain circumstances on small platforms. Further, the types of materials cored, i.e. whether soft sediments, lithified sediments, or crystalline rocks, will influence core logging and sampling strategies. However, there is a minimum set of measurements that needs to be carried out in the large majority of IODP projects. These are to enable cross correlation of core measurements with geophysical logs and surface/wellbore seismics, to assist matching lithology between wells, and to provide other disciplines with appropriate physical properties data (e.g. Formation Factor for pore water geochemists). The minimum set of measurements includes discrete measurements and those currently made on the MST/MSCL core logging systems:

- gamma ray attenuation bulk density(GRA)
- moisture and density measurements
- magnetic susceptibility (MS),
- P-wave logging (PWL) (on soft sediments), and
- natural gamma radiation (NGR).
- We strongly recommend adding *electrical resistivity* to this list; the technology for resistivity measurement, likely by a noncontact induction technique, that is now available as part of an MST.
- We also recommend adding color reflectance

The MST/MSCL is reasonably portable, and should be standardized on both the riser and non-riser vessels and be incorporated into mission specific platform (MSP) projects. Where an MSP cannot make these measurements on board, facilities should be established close by on shore to enable ephemeral measurements.

Additional discrete samples should be taken for QA/QC and calibration procedures of ephemeral properties against the MST. This is planned for the MSP Arctic Coring Expedition (ACEX).

**Recommendation:** The MST/MSCL should be standardized on both the riser and nonriser vessels and be incorporated into mission specific platform (MSP) projects. Discrete samples should be taken for QA/QC and calibration procedures of ephemeral properties against the MST.

## b. Supplemental Physical Property Measurements – Phase I vessel

Initial consideration is given to Phase I drilling with the non-riser (riserless) vessel.

The requirements for the non-riser vessel are similar to the riser (see Appendix 3) in that the vessel will generally be stationed for a significant period in one region and will usually collect a significant amount of core during a single leg.

One aim here is to have sufficient data to relate downhole data to core through physical measurements, thus enabling integration of the downhole in situ observations with the shipboard and shore-based geological observations. Another is to provide sufficient physical property data to achieve the scientific objectives; unfortunately not all of the objectives are defined at the time of the leg, since the program provides a legacy of data for future investigations.

Continuous measurements (MST) provide detailed high resolution logs for integration with downhole data, and enable detailed planning of sub-sampling programmes on-board ship.

Discrete measurements (e.g. thermal conductivity, P-wave on hard rock) provide reference data for integration, as well as independent reference points for checking

calibration of MST. Discrete measurements of index properties (grain density, porosity) are important and need to be done immediately, prior to transport-induced disturbance.

Additional property measurements that could be included in Phase II include: XRF scanner, CT tomography, particle size analyzer, geotechnical tests, and magnetic resonance.

**Recommendation:** The final ODP operations for physical properties measurements be taken as a minimum requirement for IODP Phase I operations, but with the addition of resistivity. Furthermore, we recommend that the following be urgently considered: colour reflectance upgrade, implementation of calibration standards, and upgrade of natural gamma ray.

# c. Supplemental Physical Property Measurements – MSPs

MSPs provide complex and varied environments for physical property measurements. Some may have ample laboratory room; others may have none (e.g. beach-based, intertidal lorry on scaffolding planks above the water level!). But the science has to drive the programme and consequently we have to plan the best feasible route for obtaining sufficient variety and spatial sampling of data. An MST needs to be as close as possible to the drill site. Running this at the drill site and on-shore provides a quantitative measure of any core disturbance or fluid loss.

Shore-based labs, preferably close to the drill site (not Core Repositories some distance away) need to provide additional detailed ephemeral properties (porosity, thermal conductivity). These could be specific to the project or based at a nearby institution; if the latter then adequate calibration between standards is required.

Some properties such as grain density can be measured anywhere, anytime, unless there is the possibility of imminent diagenesis, perhaps where sensitive clays are present.

**Consensus Statement:** SciMP should examine petrophysical plans in detail for each MSP expedition. This examination is to ensure the proposed measurement strategy adequately meets the requirements of the science objectives and the legacy nature of IODP data.

# d. Supplemental or Advanced Physical Property Measurements – Land

Geotechnical properties are unlikely to be achieved to a sufficiently high standard on a routine basis on any of the platforms, although standard consolidation tests could be performed onboard given customized, computer-controlled equipment, and could constrain the elastic rebound component of the dilation. These should be planned and described separately as appropriate, support the science objectives, and be carried out rigorously.

Permeability is a valuable characteristic but is difficult to measure in water-saturated cores (either they are too fine grained and thus have a low k which takes considerable

time to measure, or they are permeable, coarse grained material which doesn't core as well). Permeability on dried lithified cores is easier, but requires careful removal of salts during the drying process (cleaning of cores and avoidance of any consequent damage to minerals).

Physical property imaging: increasingly we can obtain both surface images (2d) and internal images (2d slices or 3d tomography) using a variety of measurements. It would be good to encourage these developments as shore-based advanced techniques.

NMR T1 and T2 relaxation measurements on core are now possible using fairly small commercially available equipment. This provides useful information on pore-size distribution with links through algorithms to permeability (which, however, has to be calibrated against core measurements). This could be a routine measurement on the Chikyu, possibly on the non-riser too. It has proved particularly useful in downhole investigations of hydrates.

# 3. Recommendations

- 1. Physical properties measurements are important for the following prioritized reasons:
  - a) Safety
  - b) Drilling decisions
  - c) Scientific Objectives:
    - i. Ephemeral properties
    - ii. Routine physical properties for core-log-seismic integration and hole-to-hole correlation
    - iii. IODP Legacy for future studies

It is important that all of these are satisfactorily addressed in any drilling proposal.

- 2. For the Riser vessel and the Riserless vessel this will tend to be easily assessed through almost routine use of the vessel and its facilities. While most measurements will take place at sea, there may be occasions (such as severely dilated samples) where shore-based work forms an integral and important part of the ship-based strategy. For the MSP's this shore-based work will inevitably be of high importance on a more frequent basis.
- 3. Each drilling expedition will have different objectives, and these will be severely constrained by the facilities available. This situation impinges mainly on the MSP's and thus SciMP should carefully assess the Physical Properties measurements proposed in any drilling expedition.
- 4. While it is impossible to define the essential measurements for any scientific expedition without consideration of the Scientific Objectives we recommend the following as a minimum requirement:
- i. The MST/MSCL is reasonably portable, and should be standardized on both the riser and non-riser vessels and be incorporated into mission specific platform (MSP) projects.
- ii. Additional discrete samples should be taken for QA/QC and calibration procedures of ephemeral properties against the MST. This is planned for the MSP Arctic Coring Expedition (ACEX).

# 4. References

Blum, P., Physical Properties Handbook: A guide to the shipboard measurement of physical properties of deep-sea cores, available at <u>http://www-odp.tamu.edu/publications/tnotes/tn26/INDEX.HTM</u>, November, 1997.

Schön, H.J.: Physical Properties of Rocks; Fundamentals and Principals of Petrophysics. Handbook of geophysical exploration, Section I, Seismic Exploration: v.18, K. Helbig and S. Treitel (eds.), Elsevier Science, 1998.

## **Appendix 1: Overview of Physical Properties**

Physical property measurements on retrieved core and drilled cuttings provide a great deal of additional information that assists in correlation between nearby holes and cores. Further, these data can be used to assist in the processing and interpretation of both geophysical well logs, and surface and wellbore seismic observations. The physical properties themselves can reveal a great deal about the formation, composition, and in situ conditions of the materials. Physical properties can also be used as proxy measures indicative of paleoclimate, fluid flow, permeability, and deformation to name only a few. In short, physical property measurements are a necessary part of nearly all modern integrated studies in the earth sciences and particularly any program in which the earth is sampled by drilling either on the oceans or continents.

There are many different physical properties, or perhaps more precisely characteristics of earth materials. This list is not inclusive but attempts to represent those properties that would be of most interest in studies. Many of the measurements are made in geophysical well logs and core based measurements provide useful ties to the downhole information. Many of these properties are routinely measured, as will be discussed in the next section, but others would be difficult to carry out under the time and resource constraints shipboard. Some also overlap with the interests of other working groups (such as chemistry for example). A listing of the physical properties often measured in earth materials includes:

- Porosity  $\phi$  the ratio of the void space to the total volume. (dimensionless).
- Permeability  $\kappa$  the capacity for fluid of a given viscosity to be transported through a porous medium by a gradient in fluid pressure according to Darcy's Law (applies to laminar flow and is generally only be measured on cores, often using inert gas on dried samples). (units = m<sup>2</sup> = 1.01 X 10<sup>12</sup> Darcy)
- Mineralogical and Fluid Composition and Texture the mineralogic modes (mass or weight percentages) and the fluid composition including fluid salinity, absorbed gas, or hydrocarbons. Texture of the rock refers to the preferential alignment of minerals and pores that can lead to anisotropy. Modes and fluid compositions may be described by dimensionless volumetric ratios but texture is more difficult to properly define.
- Fluid Saturation the ratio of the void space that is filled with fluid; In ocean drilling this usually consists principally of water (S<sub>w</sub>), although gas (S<sub>g</sub>) may also be present. In hydrocarbon situations oil (S<sub>o</sub>) may also be present. Saturation is important where gas hydrates are present, especially given the unstable and hence dynamic nature. (dimensionless)
- Density  $\rho$  ratio of the mass to volume (kg/m<sup>3</sup>)
- Moisture content
- Magnetic Susceptibility k A measure of the modification of the magnetic field by the secondary field induced by presence of the material in the original magnetic field. The magnetic field strength **B** is proportional to the magnetic intensity **H** via  $\mathbf{B} = \mu_0(1 + k)\mathbf{H}$  where mo is the permittivity of free space: a fundamental physical constant equal to  $4\pi \times 10^{-7}$  Tm/A. (dimensionless)

- Dielectric Constant k' a measure of the electric permittivity of a material  $\varepsilon = k\varepsilon_0$  where  $\varepsilon_0 = 8.85 \text{ X } 10^{-12} \text{ F/m}$  is the permittivity of free space. The dielectric constant is a measure of the polarizability of the material and for most practical purposes depends on the free water content as  $k \sim 80$  for water and typically well below 10 for most other earth materials. The dielectric constant is frequency dependent and influences the propagation speed v of electromagnetic radiation through the material via  $v = c/\sqrt{k}$ . (dimensionless)
- Elastic Wave Speeds The compressional or P-wave V<sub>P</sub> and shear or S-wave V<sub>S</sub> velocities are measures of the elastic physical properties of the material. There are many different ways these relationships may be expressed but generally  $V_P = \sqrt{(K + 4\mu/3)}/\rho$  where K and  $\mu$  are the bulk and shear moduli, respectively and  $V_s = \sqrt{\mu}/\rho$ . These wave speeds (or the associated elastic moduli) and the variations of these with direction of propagation can reveal a great deal about texture, porosity, stress, and saturation state. Knowledge of such properties is critical to the interpretation of geophysical well logs and for calibration of seismic observations although serious complications arise in the comparison of laboratory to field dimensional scales and frequencies. (units m/s or  $\mu$ s/ft).
- Deformation Properties These depend a great deal on the material under study. In soft sediments aspects of consolidation and shear strength may be important. In consolidated rocks more complex criteria, such as those of Mogi or Mohr-Coulomb, describing shear failure under deviatoric stress states with frictional constraints may be required. Description of the drilling induced core fractures may in some cases yield indications of in situ stress states and faulting regimes.
- Natural Radioactivity Due to the relative ease of measuring the natural radioactivity, or more precisely, the γ-ray radiation emitted primarily from the decays of unstable K, U, and Th isotopes, the measurement of the natural radioactivity of rocks is perhaps the most useful correlative tool. The natural radioactivity of sedimentary deposits is most often sensitive to the clay content and this can be indicative or depend on the depositional environment. (Units usually in term of counts per time period but this may be calibrated against a standard that will account for the test configuration, in well logging this calibrated standard is referred to as API units with 200 API representative of a typical relatively radioactive deep water marine shale).
- Electrical Conductivity/Resistivity Electrical conductivity of materials displays the largest range of variation over many magnitudes, for example the electrical conductivity increases by 7 orders of magnitude from pure distilled water to a saturated brine. Aside from some special materials such as graphite where electron mobility predominates, electrical conductivity in earth materials is primarily indicative of ionic transfer in liquids such as mineralized water or silicate melts. Other mechanisms relate to transfer of adsorbed ions along clay surfaces. Electrical conductivity will often be frequency dependent. Often, the electrical resistivity is used to infer related physical properties such as the tortuosity  $\tau$ , a measure of the pore space path through the material, or the empirically based formation factor F that relates

resistivity to porosity in sands. Electrical conductivity is a standard measurement in geophysical logs and laboratory measurements can assist in the interpretation of such results. (units – resistivity in  $\Omega$ •m, conductivity in S/m). The electrical formation factor is used by pore water chemists. Electrical conductivity is often related to porosity via the empirical Archies Law, which is valid for clean sandstones. In rocks containing a conductive matrix (e.g. clays or metallic minerals) the relationship to porosity is more complicated but still workable.

- Thermal Conductivity λ the thermal conductivity is a measure of the ability to transfer heat energy. A related property is the thermal diffusivity which is the ratio of the thermal conductivity to the average specific heat of the material. The primary importance of such measurements lies in providing data useful in determining the heat flow with knowledge of subsurface temperature gradients.
- Magnetic Resonance Magnetic resonance studies of earth materials primarily focus on the behavior of Hydrogen (i.e. protons) under varying magnetic fields. There are two different time scales T<sub>1</sub> and T<sub>2</sub>, the spin-lattice (or longitudinal) relaxation and the transverse relaxation times, respectively. In rocks these usually depend on the fluids contained in the pore space, their viscosity, and other characteristics of the pore space such as pore and pore-throat size distributions.
- Reflectance spectrophotometry and colorimetry color is the human perception of reflected light over the visible spectrum (400 nm 700 nm). This can be measured by 'diffuse-reflected spectrophotometry'. These data can be used to provide time series of relative changes in the bulk composition that in some cases will allow for correlation hole to hole or core to core. This can further be used to examine the cyclicity of lithological changes. Spectral data can be used in some circumstances to provide a measure of the abundances of minerals.

# **Appendix 2: ODP Physical Property Measurements**

A number of the physical property measurements are currently made on retrieved core in the laboratories on the JOIDES Resolution (Blum, 1997). The list of current physical property measurements possible include:

- Core Logging
  - Whole Core Multi-sensor track (WC-MST)
    - Density via Gamma Ray Attenuation Densitometry (WC-GRA)
    - Magnetic Susceptibility (WC-MS)
    - Natural Gamma Radiation (WC-NGR)
    - P-wave velocity logger (WC-PWL)
    - Slit Core Logger A
      - Diffuse Color Reflectance and Colorimetry
      - Magnetic Susceptibility (SC-MS)
      - Line-scan color imaging
    - Split Core Logger B (in place?)
      - Density via Gamma Ray Attenuation (SC-GRA)
      - P-wave velocity logger (SC-PWL0
      - Resistivity not yet implemented.
- Discrete Measurements on whole or split core
  - Thermal Conductivity (TC)
  - P-wave velocity on split core (PWS1, PWS2, PWS3)
  - Shear strength on split core (AVS)
- Measurements on extracted core samples
  - Moisture and Density (MAD)
  - P-wave velocity on rock cubes or cylinders (PWS3)

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(see http://www-odp.tamu.edu/sciops/labs/physprops/types.html)

It is worth noting that four of these measurements are run in a standard fashion using the whole core Multi-Sensor Track (MST) station, these include gamma-ray densitometry (GRA), the magnetic susceptibility logging (MSL), the natural gamma-ray measurement (NGR), and the P-wave velocity logging (PWL).

#### Appendix 3: Additional properties for the Riser Vessel – Chikyu

The Chikyu has an added advantage of having a great deal of space. As such the physical property laboratories on the Chikyu are expected to include

- Whole core MSCL with:
  - GRA (Gamma Ray Densitometry)
  - Porosity evaluator (GRAPE, this refers to the estimation of porosity from the GRA densitometer measurements using an assumed grain density).
  - Magnetic Susceptibility
  - P-wave logger
  - Electrical Resistivity
- Natural Gamma Ray Spectrometer
- Digital Image MSCL color line scanner
- Split Core MSCL
  - o P-wave logger
  - Magnetic Susceptibility
  - Electrical Resistivity

#### • Cuttings measurements

- o Density
- Susceptibility
- Gamma ray
- Thermal conductivity
- Color Spectrometer
- XRF Core Logger
- Laser Particle Analyzer
- X-ray system, soft x-ray camera
- Thermal conductivity system (contactless, new infrared system)
- Pycnometer (density and porosity)
- XRD mineralogic composition
- Discrete P-wave, resistivity, and perhaps S-wave measurements too – for lithified core sampled in small pieces and for calibration check measurements against the MST and other labs?

The riser ship Chikyu gives the nice advantage of getting cuttings from the drilling process. These cuttings can in most cases also be used for a variety of physical and chemical measurements, and this opportunity should be used. Detailed proposals are required for the routine characterization of cuttings in terms of physical properties.

# **PETROPHYSICS QA/QC Report**

Background: This report is to be considered a work in progress. We start with the action item that generated this report and follow with petrophysics specific issues. This report ends with the official SciMP recommendations voted on in June, 2004, SciMP meeting in Boston.

Action Item 03-02-12: In consultation with the IOs, each SciMP WG explicitly prepare draft plans for QA/QC and calibration issues for presentations at next SciMP meeting. The plans should determine way forward for all measurements, on all platforms and shore-based facilities. At least three issues need be considered: (a) instruments requiring 3rd party calibration (onshore), (b) inter-facility standards, (c) blind calibration tests, and (d) establishing a means of recording the use of, performance of, identification of problems, and drifts/anomalies, in operation of measurement capabilities in a readily accessible manner.

Action to be taken by: Lead SciMP panelists (Saito, Lovell, Neal) and IO's.

- (a) 3<sup>rd</sup> party measurements. These include downhole logs run by independent contractors, and any instruments brought into the program by individuals. Usually the calibration procedures are defined, but there should be some means of assessing whether these are adequate.
- (b) Inter-facility standards refer to different platforms and core repositories. Where these involve the same instrument or measurement technique we should aim for the same QA/QC procedures and calibration process. These should be reported to SciMP formally at each meeting.
- (c) Blind calibration tests. This is a simple means of ensuring different platforms/repositories are producing consistent data. The aim should be for minimal effort but with sufficient detail to ensure confidence in the data. These are lower priority than (b) until inter-facility standards for measurements have been established and performance records are implemented in the databases. An ad-hoc SciMP group could be established as per Clive Neal's suggestion.
- (d) Performance records: these should enable easy identification of problems, drifts/anomalies in measurements. Thus a scientist sailing on a platform should have easy access to these records, preferably prior to sailing as well as during. Equally other platforms/repositories should be able to access these to identify issues that are across multiple instruments. These records should enable clear identification of both short-term (daily) and long-term (monthly) issues.

Specific Petrophysics Issues:

We should involve the community to help establish standard materials for regular testing, starting with the most common (ODP-style) measurements that everyone will be using. Only few such standards exist currently, and only informally (e.g., Al-water segments in core liner for GRA density in PP). Although most measurement systems and procedures will be very similar among IOs, they will never be exactly the same

(different instrument vendors, models, vintages; alternative analytical procedures for different materials/conditions, etc.). The inter-facility standards will ensure that the results are comparable even if different calibration or analytical procedures are used in different labs.

The best types of standards are single-component materials, either synthetics that can be easily produced or natural materials that last forever. However, in many cases more complex mixtures are needed to account for matrix effects.

#### Laboratory physical properties

## MSCL:

Guidelines and recommendations for calibration and spreadsheet for calculations provided by Geotek (Chikyu and MSP/Arctic).

The standards are based around a core liner, filled appropriately for the various sensors - distilled water for P waves - Al and water for density – the magnetic susceptibility check piece centred in the liner - and a saline water check piece for resistivity. Use of different sized core liners necessitates different calibration pieces.

Useful to review the checks and calibrations on the MST and in particular it would be valuable to run a standard more often. Apparently on Leg 204 there was a discrepancy in the gamma density data, which was impossible to back check because the standards were not run often enough.

In addition to providing calibration standards, IOPD needs to ensure the procedures in place are both adequate and are adhered to.

#### Discrete measurements:

Need similar standards for discrete measurements of Vp, thermal conductivity, magnetic susceptibility.

# Examples:

Petrophysics example: Need two materials for magnetic susceptibility, one with a (low) diamagnetic value (water, plastic, limestone) and one with a high-end value (magnetite-rich rock or solution). The IOs should be able to produce the standards with the geometry that the cores have, i.e., any particular core diameter, half-core segment, etc.

XRD example: establish a set of standard powder mixtures typical of the materials we often recover, and share the material among the IOs. The task of producing and distributing the standards should be contracted to a well-trusted organization as it is too sensitive and elaborate to be done by each IO on a shoe string.

Imaging example: Ensure that all IOs image the same standard color reference tiles with each image. This appears to be the only feasible approach because imaging technology advances fast. Besides, image "quality" depends heavily on the timing of imaging as oxidation and drying of the sample surface changes color significantly - no ideal condition exists.

Downhole Tools (temperature and pressure)

1) Temperature calibration (once a year): Each Temperature Tool (APCT or DVTP or TAP) should be shipped to a service company which owns a large-scale bath which is capable of hosting at least the first half meter of the tool (e.g., companies which manufacture CTDs, such as Seabird). During tool deployments, mud line temperature should be compared to the bottom water temperature which one can get from either a global oceanographic data base or from individual measurements. This comparison should be included in the Site Reports to flag any problems associated with the temperatures, and, if possible, should be incorporated into the database.

2) Pressure: The sensor should be calibrated by the manufacturer in regular intervals (once a year?). During all deployments, a stop at mudline should be made. In addition, periodically (once per tool per leg in which it is used?) a quality check should by made by stopping during the lowering of the pressure tool (such as the DVTP&P) in the drill pipe, recording pressures over  $\sim 3 - 5$  min and repeat that at least two more times during the descent (no pumping of course) plus mudline. These pressures should be compared with pressures calculated from coring line depths. Note: this will not be a high quality calibration but a quality check, showing if there are significant problems. Prior to deployments, laboratory measurements at atmospheric pressures should be taken checked.

For both temperature and pressure tools, coring line depths should be archived along with deployment details, and tool maintenance information. If possible, the calibration, deployment information and tool performance records, and output data, should be available online. It is also recommended that site reports note and comment on unsuccessful tool deployments. Downhole logging

QA/QC of individual tools: Logging contractors (e.g. Schlumberger) do calibration tests on their tools and provide that data to us. As such the QA/QC of individual tools is the responsibility of the logging providers and it is the responsibility of the IO to ensure that this happens.

All IO's should ensure contractor's adequately calibrate their tools.

Cross-platform calibration: Calibration between platforms and different logging providers is more complex. The IOs could work together to compare the "calibration standards" of different logging providers for similar tools, the results of which can be made public (if possible). Ideally it would be good to make the same measurement, in the same borehole with different tools from different providers. This may prove to be somewhat difficult, although the IODP logging consortia (European Petrophysics Group, USIO/LDEO-BRG, CDEX) have considerable experience of working together and may be able to achieve this.

A t the start of ODP, tools were run in the USGS Denver test facility (for Schlumberger tools alone).

Output of log analysis: It is important to strive for compatible output format of log data in databases. It is also imperative that the nature of raw /processed data and any post-acquisition processing is fully documented.

## Training

Given the importance of adequate calibration across all platforms is there a need for more explicit training in QA/QC and calibration to ensure data accuracy and precision are comparable? This sharing of knowledge and experience could tie in with the proposals for technical support to rotate between IO's. Training and attentiveness to calibration across all platforms is vital for the attainment of comparable measurements. The IO's plans for this should be requested.

#### Performance records

Example from MST: The data from the GRA calibrations using Al-water core liner segments are accessible at http://iodp.tamu.edu/janusweb/physprops/gracal.cgi (use a leg >1 yr <4 yr ago; don't select a standard). The calibration data are useful to us for troubleshooting the system. Control measurements taken routinely on the small water-filled liner segment mounted on the core boat unfortunately are not available even though they are more important than the calibration data for the general user.

Example from MAD system: A metallic calibration sphere is measured regularly in each of the five gas pycnometer cells to monitor if the latest calibration is still valid - if the value is off by a certain amount, the cells are re-calibrated. Had these control measurement been recorded and archived, we would have a better idea which cells tend to be performing poorly, and volume measurements could be corrected for the drift (related to environmental changes and other sources) if warranted.

To enable rigorous and acceptable QA/QC procedures to be implemented across IODP platforms the following recommendations are made to SPC. Many of these relate to other areas (e.g. Chemistry WG) with significant overlap, but are formulated from the Petrophysics viewpoint.

**Recommendation 04-06-09**: SciMP recommends to SPC acceptance of the Petrophysics QA/QC report, and requests SPC distribute it to the IO's and IMI as soon as possible. The full report is found in Appendix 17. Specific recommendations include:

- a. IO's be requested to provide details of proposed QA/QC measures, including calibration, for all petrophysics measurements appropriate to their platform. These should address initial calibration, and quality assurance and control on a short term (daily) and long term (monthly) timescale for routine continuous and discrete measurements and occasional measurements.
- b. IO's be requested to provide details of how they propose assessing and recording QA/QC with respect to 3<sup>rd</sup> parties (e.g. logging contractors). This request primarily concerns how the 3<sup>rd</sup> party calibration is dealt with and initially assumes there will not be any additional burden on 3<sup>rd</sup> parties.

- c. IO's be requested to provide details and implementation plans for performance records: these should enable easy identification of problems, drifts/anomalies in measurements, and address how the science party can access the records.
- d. IO's be requested to provide suggestions for explicit training of scientists and technicians in QA/QC and calibration to ensure data accuracy and precision are comparable. This should concern individual and cross-platform issues.

# **IODP Standard for Downhole Measurements** (FINAL DRAFT)

iSciMP Downhole Measurements Working Group C. Bücker, S. Gulick, M. Lovell, S. Saito

#### 1. Introduction

- 2. Common standard for all drilling platforms
  - 2.1.Minimum requirements for downhole measurements
  - 2.2.Data QC for acquisition and processing
  - 2.3.Data management

## 3. Specific platforms

- 3.1.Non-Riser platform
- 3.2.Chikyu (riser platform)
- **3.3. Mission Specific Platform**

## 4. Downhole tools, borehole experiments, and long-term monitoring

## 1. Introduction

Downhole logging has been increasingly and successfully integrated into drilling and sampling programs for scientific ocean drilling, and the vision for the future builds on that success. Scientific objectives require the widest range of logging technology and availability as well as improvements in logging capabilities, such as working in more hostile environments (e.g., higher temperatures) and making higher resolution logging measurements. Logging and measurement while drilling (MWD: some online data, LWD: only memory data) is especially important for the near future. These points have to be considered when summarizing the minimum required downhole measurements in IODP.

The most important issue to be considered by downhole logging is borehole safety, which also means that downhole measurements which are necessary to assure borehole safety have first priority (e.g., caliper for borehole breakouts or over pressure zone). The importance of the use of tool combinations in deep hole drilling cannot be over-emphasized, as it is important to minimize logging trips and thus preserve maximum borehole stability. In soft and unstable formations, LWD should become a must.

In this WG report, we summarize common standards for all drilling platforms and specific statements for each platform.

# 2. Common standard for all drilling platforms

#### 2.1. Minimum requirements for downhole measurements

The following items are necessary to provide data consistency across all IODP drilling platforms. The data should be obtained continuously regardless of casing schedule (there should not be any gap at the casing boundaries).

#### 2.1.1. Basic wireline logging

- Borehole environments: caliper and temperature (equilibrium temperature estimation using logs or downhole tools)

- Lithological logs: natural gamma ray
- Nuclear logs: porosity (accelerator or nuclear source) and density
- Electrical resistivities: deep/shallow
- Sonic logs: at least P-wave
- Magnetism: magnetometer and magnetic susceptibility
- 2.1.2. Borehole imaging
  - Electrical and/or ultrasonic
- 2.1.3. Seismic check shots
  - Vertical seismic profiling or at least seismic check shots

# 2.2. Data QC for acquisition and processing

- 2.2.1. Data acquisition
  - A repeat run is recommended to increase measurement reliability.
  - Reasonable measurement resolution and sampling interval should be carefully considered based on each project objectives. Minimum required sampling interval is 15 cm for basic logging and 1 cm for imaging.
  - Sonic frequency should be carefully considered for any sonic-related logging tools.
  - Appropriate calibration should be carried out for all measurements. All calibration data should be collected and stored.
- 2.2.2. Data processing
  - Required minimum on-site data processing should be carefully considered based on Expedition objectives.
  - Required level of data correction for data storage should be defined. Whatever corrections are made, they must be stored with sufficient description to be able to get back at raw data.
  - Required skill level for the processing should be considered.

**Recommendation-1**: QA/QC data, for both logging and other downhole tools, such as calibration data, QC logs, correction parameters should be stored in the science database where possible so that scientists can access the data.

Action Item-1: IO's in consultation with SciMP identifies the minimum level of on-site data processing and necessary skill level for the processing for each measurement across all drilling platforms.

Action Item-2: SciMP Petrophysics working group, in consultation with IO's, will identify temperature and pressure downhole tools whose standard operating and interpretation procedures need be developed or updated.

**Consensus Statement-1**: Sonic log has a huge potential, however it also has a lot of issues before scientists utilize its data; especially stoneley wave and S (flexural) data. Sonic waveform data should be distributed by standard format in science community. Sonic waveform data should be obtained. IO need to understand the DSI concepts and limitations, and provide scientists every information to utilize the data.

## 2.3. Data management

- A loggingdatabase should be established and maintained for each logging IO.
- All logging data produced by IODP as well as ODP legacy data are required to be distributed to the IODP community and public via the "IODP Information Service Center".
- Advanced processing/analysis routines for core-log-seismic integration should be developed.
- Log data analysis centers need to be organized that work across all drilling platforms.

## 3. Specific platforms

Each drilling platform in IODP requires a different standard for downhole measurements. And each logging program must be carefully prepared to assure the goals of each drilling project.

# 3.1. Non-Riser platform

- Maintain current ODP logging standard at minimum
- Standard use of seismic check shots
- Use of new standard tools (use innovation potential)

# 3.2. Chikyu (riser platform)

3.2.1. Maximize advantages of large diameter logging tools

- Industrial standard combinations with necessary modification that match scientific needs
- Imaging tools (fullbore electrical imaging and ultrasonic borehole televiewer)
- Dynamic formation tester and sampling tools with extensive modification from oil and gas field conditions to meet our scientific conditions
- Magnetic resonance tools
- Dipole shear sonic tools
- Hostile environment tools

**Recommendation 2**: SciMP recommends that logging plans for the riser platform take advantage of availability of large diameter

tools to maximize scientific achievements.

3.2.2. Frequent deployments of logging-while-drilling (LWD) and measurement while drilling (MWD)

- LWD/MWD deployment for safety
- LWD deployment in geotechnical hole (pilot hole) or uncored intervals
- Use of new standard tools (use innovation potential)
- Development of Logging-while-Coring

**Recommendation 3**: For both operational and scientific purposes, SciMP recommends frequent and effective use of LWD/MWD for drilling.

Background: MWD/LWD provides data for safety and decision-making as well as high quality data for science. Riser operations enable switching from coring to LWD/MWD at any depth. Such flexible operations are effective in approaching the drilling target efficiently and avoid of coring risks in deeper environments.

# 3.3. Mission Specific Platform

- MSP's have special requirements due to operational limitations. Logging strategy and detailed implementation should be planned carefully on a project by project basis (Project Scoping Group).
- For borehole safety and data QC, equipment for a rig-floor data acquisition system to record parameters such as depth control, heave compensation, cable tension, and head tension should be considered carefully.
- For slim-hole logging programs, 2.5 in diameter tools are able to meet the IODP minimum required measurement plan.

#### 4. Downhole tools, borehole experiments, and long-term monitoring

In situ measurement of stress, pore-fluid composition, of gas, and of temperature and pressure are required by a number of scientific objectives, and downhole microbial measurements would benefit deep biosphere science. Downhole experiments are identified in some thematic areas, and some objectives call for long-term monitoring of holes.

Action item-3: SciMP facilitates development of general policies for downhole tools, borehole experiments, and long-term monitoring. SciMP will form an *ad hoc* working group to investigate the development of these policies.

## SciMP Core Description WG Report: IODP Standard for Core Descriptions

SciMP Core Description Working Group

## 1. Overview

- 2. Core processing flow
  - 2.1. Core splitting
  - 2.2. Archive halves
  - 2.3. Working halves

## 3. Data management system

- 3.1. Multi-data browsing system and data integration
- 3.2. Core description using "electronic barrel sheet"
- 3.3. Smear slides and thin sections
- 4. Hard rock core description for drilling decisions

## 5. Archiving strategy and policy

#### 1. Overview

Core description is a basic and essential component in drilling projects. Especially, visual description by the "naked eye", combined with scientist's theoretical and empirical knowledge, is indispensable to the core processing flow.

An integrated data management system is recommended to provide an effective and efficient environment for visual core description. The integrated data management system may include 1) advanced core-imaging facilities, 2) real-time browsing of images and non-destructive measurement data and 3) data

input/editing/summarizing/integrating system for core description.

Mission Specific Platforms have special requirements based on the platform capacity and limitation.

#### 2. Core processing flow

#### **2.1.** Core splitting

Cores are typically split into two halves after whole round core measurements and sampling. One half is used for visual core description and archiving (archiving half). The other half is used for routine analyses and sampling by approved requesters (working half).

Development of precise split technique is recommended. Roughness of split surfaces is less than 1 mm for non-destructive measurements (especially for data quality control of XRF core logger). Individual hard rock pieces also require precise split technique more careful than in ODP.

**Recommendation 1**: Core Description WG recommends the development of recise splitting techniques of cores to provide maximum quality of surfaces to be described.

#### 2.2. Archive halves

Archive halves are typically measured and archived routinely by following order.

- Image scanning
- XRF Core Logger (option)
- Color reflectance logger
- Visual descriptions
- Refrigerating at 3-4°C onboard
- Additional standard measurements and archiving in IODP Core Repositories

Measurement intervals are decided on a project basis. High-resolution measurements could be conducted at on-land facilities. Most of the measurements may be conducted on land, following constraints for MSP projects.

Digital imagery issues regarding, standards, calibration, archival, and implementation across all drilling platforms and on-land facilities need to be reviewed by SciMP (Action Item 03-02-07).

## 2.3. Working halves

Working halves are typically measured and archived routinely by following order. Sampling strategy is decided by each project. Most of the measurements may conducted on land for MSPs.

- Split core MSCL (Multi-Sensor Core Logger)
- Sampling/Measurements for routine measurements (sedimentology, petrology, physical property, rock magnetism, chemistry, paleontology, microbiology etc.)
- Sampling for accepted post-expedition research projects
- Refrigerating at 3-4°C onboard
- Additional standard measurements and archiving at IODP Core Repositories

#### 3. Data management system

#### 3.1. Multi-data browsing system and data integration

"Multi-data browsing system" is recommended to refer core images and nondestructive measurement data as early as visual description by sedimentologists and petrologists. Images and data may include:

- Whole core X-ray CT images
- Whole core MSCL data
- Whole core scanning images
- Image scanning data
- Color reflection data
- XRF Core Logger data (option)
- Any available logging data

**Recommendation 2**: Core Description WG recommends the integration of core images in a multi-data browsing system so as to integrate imagery and non-destructive measurements for core

description.

#### 3.2. Core description using "electronic barrel sheet"

All descriptive information required to be stored in the database using an "electronic barrel sheet". "Real-time annotation" on the core image is recommended for descriptive and sampling documentation purposes.

Guidelines for core description and training are required for each drilling project (see Action Item 03-02-08). This management will initialize/customize the "electronic barrel sheet" for each drilling project through dialogue with co-chief scientists and the science objectives for each expedition.

#### 3.3. Smear slides and thin sections

Integrated database should store petrographic descriptions with point-counts of modal abundances, photomicrographs, and scanned images of both smear slides and thin sections. Common reference collections should be prepared for all drilling platforms and on-land facilities. A reference smear slide database should be developed for quality control and constancy of smear slide descriptions. A reference collection of polished thin sections containing opaque minerals should also be developed - important for igneous/metamorphic rocks as well as paleomagnetic studies.

**Recommendation 3**: Core Description WG recommends the preparation and creation of reference smear and thin section collections common to all platforms and on-land facilities.

#### 4. Hard rock core description for drilling decisions

Lithological characterizations are essential because it can affect drilling decisions during the expeditions. The following procedure is recommended for hard rock observation:

- Representative samples for each lithounit should be chosen for thin section.
- Each thin section should be scanned in a systematic manner.
- Digital photomicrographs of important and/or representative textures and minerals should be taken.

The following equipment should be required for all drilling projects:

- Tools for making thin sections
- Polarizing (transmitted and reflected) microscope with digital camera for photomicrographs with point counting capabilities
- Stereoscopic microscopes with polarizing system
- XRD (X-ray powder diffraction)
- XRF (recommended for high precision major elements analyses) or ICP-MS/-AES (Atomic Emission Spectrometry) with preparation facilities

Detailed discussion and recommendations on hard rock description were well

documented in the Report of the Hard Rock Working Group, JOIDES SciMP.

## **ANNEX:** Archiving strategy and policy

Core samples recovered during IODP expeditions shall be archived for the purpose of achieving the IODP science plan.

**Recommendation 4**: Core Description WG recommends an adequate core archiving strategy for all core samples recovered during IODP expeditions to insure post project description and sampling requirements.

**Recommendation 5**: Core Description WG recommends an adequate archiving strategy for drill cuttings, when available.

# Report of the Paleomagnetism WG for the iSciMP meeting of July 14-16, 2003 Leonardo Sagnotti, Eiichi Kikawa, Christian Bücker, Mike Lovell (revised)

Revised by Makoto Okada at the SciMP meeting of July 23-25, 2004

## Drilling

Drilling-induced magnetic overprint has been frequently observed in Ocean Drilling Program (ODP) paleomagnetism. To solve this problem, it has been recommended to asses effect the use of non-magnetic drilling tools. During ODP Leg 202, a non-magnetic core barrel was tested to use alternately with a regular magnetic core barrel for APC coring, and the result exhibited that such overprints were dramatically reduced when the non-magnetic core barrel was (Lund et al., 2003). Therefore, it is strongly recommended that the nonmagnetic core barrel be used for IODP APC coring to prevent drilling induced magnetic overprint on sediments.

## Samples

It is recommended that u-channels will constitute the standard paleomagnetic sample in all cases when it will be feasible to perform u-channel sampling of the cores (i.e in favourable lithologies, like unconsolidated fine-grained sediments), and they should be routinely collected both on the riser and non-riser vessels to be employed in IODP. U-channels have become increasingly popular since the advent of narrow-access long-core superconducting rock magnetometers, in 1991, because of the large amount of detailed data that can be obtained in a minimum amount of time at highest resolution. In the framework of ODP, uchannels were first used during Leg 138 and more than 4800 u-channel samples have been collected since. U-channels are sampled by pushing rigid Ushaped plastic liners (2 x 2 cm cross section, up to 1.5 m in length) into the split core sections. The high resolution data essential for several paleomagnetic study require that u-channel will be collected as a continuous strip from the centre of the cores, since this will ensure the minimum physical disturbance and will minimize the effect of drilling-induced remagnetization (see the recent specific publication by Acton et al., JGR, 107, 10.1029/2001JB000518, 2002). Since (paleo)magnetic measurements are typically not-destructive (apart from paleomagnetic properties themselves), after the paleomagnetic study the u-channels can be either stored as undisturbed permanent archives of the cores or made available for further scientific sampling. In all cases where u-channel sampling will not be feasible (i.e. hard rock cores), continuous paleomagnetic measurements should be carried out on split cores (archive halves of cores). For both soft sediment and hard rock cores it is also recommended to perform additional paleomagnetic measurements on discrete samples (i.e. standard paleomagnetic plastic boxes in the case of soft sediments or drilled cylinders in the case of lithified rocks), that will ensure independent checks for short-lived paleomagnetic features

and will greatly help in the evaluation of deconvolution techniques applied to data from continuous measurements of u-channels or split cores. Drilling facilities (drill press, drill bits, rock saws) should be provided in all IODP expeditions.

# Measurements and instrumentation

All paleomagnetic and rock magnetic measurements should be carried out in dedicated, specific, paleomagnetic laboratories, with an appropriate number of scientists and supporting technicians. Measurements and analysis should be carried out as soon as possible during the expedition. For MSP, in which paleomagnetic properties are very important, a "basic" dedicated paleomagnetic van/lab may be considered for measurement and analyses directly "at sea" (i.e. on the model adopted for the Cape Roberts Project in Antarctica, where a temporary paleomagnetic lab was installed during all the three drilling seasons). The software running the instruments should be continuously updated, possibly taking into account comments and suggestions by IODP users. A sort of active interaction between users and the oftware designers by instrument companies is highly advisable.

# Basic magnetic properties (required)

# 1- Magnetic susceptibility

Magnetic susceptibility of all paleomagnetic samples should be routinely measured soon after collection of the samples and, during progressive thermal demagnetization of discrete paleomagnetic samples (see below), as an indicator of thermal alteration. Instruments recommended are the Kappabridges manufactured by AGICO (KLY-3 or KLY-4) for discrete samples and the magnetic susceptibility system MS2 manufactured by Bartington with the loop (MS2 C) of point (MS2 F) sensors for continuous measurements on u-channels or half cores.

# 2- Natural remanent magnetization

The natural remanent magnetization (NRM) of all paleomagnetic samples should be routinely measured soon after collection of the samples. Instruments recommended are the 2G Enterprises pass-through rock magnetometer with DC SQUID sensors and in-line alternating field (AF) coils with anhysteretic remanent magnetization capability and pulse magnetizer. The diameter of the instrument is critical, but sample-dependent. The small diameter will ensure the high-resolution required for u-channel measurements, but half-cores will not fit in it. On the other hand, the large diameter will allow the passage of half-cores through the magnetometer but will significantly decrease the resolution (i.e. it will be poorly suited for u-channels and discrete samples). The 2G Enterprises pass-through superconducting rock magnetometer of 7.6 cm), whose SQUID's response functions, with half-peak widths of ca. 8 cm, span nearly 20 cm. Each measurement averages the signal of a region of 100-150 cm3. Conversely, the small diameter (standard access diameter of 4.2

cm) version of the same instrument, designed for u-channels and discrete samples, has halfpeak widths of the pick up coils response functions comprised between 4 and 6 cm (referred to the two transverse and the axial coils, respectively). Each measurement averages the signal of a region of 15-25 cm<sub>3</sub>. Ideal configuration for IODP paleomagnetic labs will be to have two pass-through rock magnetometer systems, one with small access high resolution, the other with large access - low resolution. Practical consideration concerning space limitations on board of IODP vessels may prevent the installation of two pass-through rock magnetometer systems, moreover time constraints will also prevent the routine detailed measurement and stepwise demagnetisation of u-channels on board. Such limitations will not apply to shore-based paleomagnetic laboratories (i.e. like those that could operate for MSPs). A practical solution could be to measure split cores onboard, and to measure u-channels in shore-based laboratories. Under such setting, a safe transportation system to shore-based laboratories should be established to prevent magnetic alteration of paleomagnetic samples. An additional spinner magnetometer for discrete samples (i.e the DSPIN spinner magnetometer manufactured by Natsuhara-Giken Inc., or the JR6 spinner magnetometer manufactured by AGICO) may be useful in several cases (i.e. in all cases when the magnetization of samples is too high for the dynamics of the SQUID sensors).

#### Magnetic cleaning and Paleomagnetism (required)

A paleomagnetic study relies on the stepwise demagnetization of the NRM for all samples, to be carried out soon after the collection of the samples. Stepwise demagnetization is needed to identify the NRM components, to define their stability and orientation and to isolate a characteristic remanent magnetization (ChRM). Demagnetization treatment can only be by AF for continuous samples (u-channel or half cores), while it could either AF or thermal for discrete samples. It is recommended to carry out a complete stepwise demagnetization for u-channels and discrete samples, whereas the stepwise demagnetization treatment should be limited to low AF (i.e. AF peak values up to 20 mT) for half cores. Instruments required are an AF demagnetizer for continuous samples, installed in-line with the pass-through rock magnetometer, and a paleomagnetic oven (i.e. like the ASC Scientific TD48 thermal demagnetizer). It is recommended to have an additional AF demagnetizer for discrete samples, with ARM capabilities, like the D-2000 DTech Inc. or the AGICO LDA-3A AF demagnetizer and AMU-1A anhysteretic magnetizer. It is advisable to have in each IODP paleomagnetic lab a Three-Axis Fluxgate Magnetometer for the measurement of small ambient magnetic fields (of the order of a few nT) in the sensing/demagnetizing regions of each instrument.

#### Rock Magnetic Measurements (highly recommended)

The characterization of the magnetic particles in paleomagnetic samples is necessary for a proper interpretation of the paleomagnetic signal and is the main target for studies on environmental magnetism. For such studies it is essential to measure the stepwise

acquisition and demagnetization of artificial remanence (ARM and IRM), the hysteresis properties and the thermomagnetic behaviour of selected samples and powders. Such measurements are time consuming and practical considerations imply that during the expeditions such measurements should be limited to selected representative samples only. It is recommended that such measurements will be extended to larger sample collections in the post-cruise measurements, whenever they could be important for the scientific objectives of the Expedition. In some cases it could be also important to study the magnetic anisotropy (either of the magnetic susceptibility or of the remanence) of the paleomagnetic samples. Instruments required are, partly, those used for the paleomagnetic study (i.e AF demagnetizer with ARM capabilities and pulse magnetizers, kappabridges), with the addition of a vibrating sample magnetometer for hysteresis measurements (i.e. the VSM manufactured by the Princeton Measurement Corporation), and some additional devices for the AGICO kappabridge (i.e. the CS-3 for the KLY-3 or KLY-4).

# Sequence for the measurements

The order of measurements on discrete samples and/or u-channels is as follows:

1) Magnetic susceptibility

2) Natural Remanent Magnetization (NRM)

3) Stepwise demagnetization of the NRM

4) (Stepwise) Acquisition and demagnetization of an ARM

5) (Stepwise) Acquisition and demagnetization of an IRM

Hysteresis loops and thermomagnetic curves should be measured on powders or chips, independently from the cycle of measurements listed above. Magnetic anisotropy can also be studied on selected discrete standard paleomagnetic specimens.

# **Calibration and Units**

It is necessary to indicate:

- Description of the instruments (system specifications, i.e. in terms of response functions, resolution, range, accuracy....) and calibration standards/procedures. Paramagnetic Rare Earth oxides (i.e. Gd2O3), are recommended for calibration of susceptibility meters, permanent magnets for calibration of magnetometers. Calibration standards should be measured before the routine work to produce reliable data. The results of standard measurement should be saved into shipboard databases.

- SI units for each parameter. Paleomagnetic data need to be expressed by declination, inclination and intensity at each demagnetization step. It is also recommended to produce a web based equipment history sheet for all the equipment in each P-Mag lab. The idea being that anyone having problems with a particular piece of equipment could look in the history of that tool to see if it has happened before and how to fix it. It should be a sort of dynamic online manual that would be continuously updated.

Data	Riser	Non-riser	MSPs	Notes
Magnetic susceptibility	b, d	b, d	b, d	
Natural Remanent Magnetization (NRM)	b	b	b	Practical considerations imply NRM to be measured as soon as possible in shore-based laboratories for MSPs
Stepwise demagnetization of the NRM	b, c, d	b, c, d	b, c, d	Practical considerations imply NRM to be measured as soon as possible in shore-based laboratories for MSPs
Stepwise acquisition and demagnetization of artificial remanences (ARM, IRM)	d	d	d	Practical considerations imply rock magnetic properties to be analyzed on representative selected samples only during the Leg
Hysteresis properties	d	d	d	Practical considerations imply rock magnetic properties to be analyzed on representative selected samples only during the Leg
Thermomagnetic runs	d	d	d	Practical considerations imply rock magnetic properties to be analyzed on representative selected samples only during the Leg
Magnetic anisotropy	d	d	d	Practical considerations imply rock magnetic properties to be analyzed on representative selected samples only during the Leg
Magnetic ambient field				Necessary to monitor small ambient magnetic fields in each paleomag lab

#### Summary Table

Codes:

- a. needed for safety,
- b. needed to be made on the ship because it is an ephemeral property,
- c. needed because it can affect drilling decisions on the cruise or expedition,

d. needed because making the measurements on the ship results in the best science overall (for example, if not made on the ship, it is unlikely that the measurements will ever get made at all, or, having the capabiliity on the ships will deliver better science more rapidly).

# Report of the Chemistry Working Group, SciMP 23-25 June 2004

## Clive R. Neal, Masanobu Yamamoto, Tim Lyons, and Rick Murray

#### **Executive Summary**

The Chemistry Working Group (CWG) of SciMP produced this report regarding IODP chemistry laboratories and analytical facilities after soliciting input from the ocean drilling community. In addition to this input, the report also contains the results of discussions between CWG members and other leading geochemists. There are two overall conclusions that SPC and the IOs need to pay particular attention to:

- 1) Better standardization/calibration should be employed for IODP than was available for ODP;
- 2) Technician training should be at a higher level than during ODP to maintain the equipment while on-site and also to ensure the data generated is of the highest quality.

The context of the above two unifying points is that the technology has evolved considerably, and the sophistication of the field of geochemistry has been significantly advanced, to the point that the needs of the community have surpassed the abilities of the "ODP-model". The report contains 11 Recommendations and 6 Action Items.

The Chemistry Working Group (CWG) of SciMP has solicited input from the ocean drilling community regarding analytical facilities associated with IODP. This report summarizes the responses to a questionnaire, as described below, as well as discussions within the SciMP and other leading geochemists.

A survey containing 11 questions (Attachment 1) was e-mailed to a list generated by ODP-TAMU for many (not all) co-chiefs, petrologists and geochemists that have sailed on ODP legs since Leg 163, as well as the participants of the "Future Opportunities in Geochemistry for IODP" workshop. In addition, the questionnaire was published in the Geochemical Society's January 2004 issue of "Geochemical News" in order to explore another avenue for community input.

A total of 33 responses were received from a broad international cross section of geochemists and petrologists. Unfortunately over 70 of the e-mail requests were undeliverable because the addresses were no longer active. The breakdown with regard to nationality of the respondents is in Table 1. E-mail was by far the most effective means of soliciting input as only one response was returned from the printed questionnaire in Geochemical News.

<b>Cable 1</b> : Nationality of the respondents to the CWG questionnaire.									
Country	USA	UK	Canada	Italy	France	Japan	Netherlands	Australia	
	21	4	2	2	1	1	1	1	
Total: 33									

Collectively, putting together the responses from the surveys, as well as the SciMP discussions and direct feedback, the overall conclusions of the CWG are:

- 1) Better standardization/calibration should be employed for IODP than was available for ODP;
- 2) Technician training should be at a higher level than during ODP to maintain the equipment while on-site and also to ensure the data generated is of the highest quality.

The context of the above two unifying points is that the technology has evolved considerably, and the sophistication of the field of geochemistry has been significantly advanced, to the point that the needs of the community have surpassed the abilities of the "ODP-model".

# 1. WHAT TYPES OF ANALYSES ARE NECESSARY/RECOMMENDED?

The recommended analytical types are divided into 5 main categories, as described below. Parts 1, 2, and 3, are considered "minimum measurements". Parts 4 and 5 will commonly be dependent on the scientific mission of the expedition and the needs of the Scientific Party.

- 1) <u>Safety Monitoring</u>.
  - Headspace measurement of:
  - Lower molecular weight hydrocarbon gases (methane, ethane, propane, etc.).

- Inorganic gasses (CO<sub>2</sub> and H<sub>2</sub>S).
  - i. Measurement by GC-FID, GC-TCD and/or NGA.

These are probably required for all soft-rock (sediment) expeditions, regardless of platform.

- 2) Ephemeral components.
  - Measure pH (& Alkalinity), silica, NH<sub>4</sub>, NO<sub>3</sub> and PO<sub>4</sub> in pore water samples as soon as possible.
    - i. Measurement with pH sensor, auto titration, colorimeter.
    - ii. Allow for routine sampling for stable isotope determinations in pore waters and headspace gases.
    - iii. For inorganic metal analysis, acidify with ultrapure  $HNO_3$  to ~5% as soon as possible to allow for post-cruise data acquisition.
- 3) Essential components to decide drilling strategy during a given expedition.
  - Measure major dissolved anions (Cl and SO<sub>4</sub>) and all major dissolved cations in pore-water samples (ion chromatograph).
  - Elemental analysis of total carbon, total nitrogen, total sulfur, and inorganic carbon to provide composition of the organic matter in sediments. (CHNS analyzer, Coulometer).
  - Whole-rock major and trace element compositions (ICP-OES, ICP-MS).
  - Laser ablation ICP-MS of glasses for elemental ratio data.
- 4) <u>Rock/sediment-Specific analyses</u>: these depend upon the type of rock being recovered. For example, sedimentary rocks require characterization through, for example, TOC, carbon, CO<sub>3</sub>, major and trace analyses (bulk). For basement rocks, major and trace element compositions are required to characterize the different units recovered.
- 5) "Shipboard" Measurements to determine the best science overall.
  - This will in all probability be project specific.

# 2. SAMPLE HANDLING

A variety of samples will be handled and in order that these are not compromised for immediate or future analyses, careful handling/storage procedures need to be followed.1) Volatile components without air contamination.

- A headspace sample (one per core, where applicable), taken from the core immediately after retrieval, is placed in a glass vial, sealed with a septum under highly purified N<sub>2</sub> atmosphere.
- Determine O<sub>2</sub> concentration for the samples using GC-TCD to ensure that air contamination is minimal.
- 2) Organic matter in sediments.
  - Sediments are freeze-dried and crushed.
  - Powdered samples are weighed for individual future measurements such as biomarker analysis.
- 3) Gas hydrates.
  - The core section is immediately moved to a freezing room.
  - The hydrate is packed in pressure-resistant containers.
  - One container is filled up by purified N<sub>2</sub> gas and pressurized to 100 atmospheres, while the other is not treated.
  - Keep the containers in a freezer under gas-tight conditions.

- Any pressurized core retrieval system must include the ability to micro-sample pristine pore fluids and for biological material.
- 4) <u>Pore fluids</u>.
  - Squeeze pore fluid from the sediments immediately after retrieval on deck.
  - The sampled fluid is divided into a clean polypropylene tube for the archive and a clean glass vial that is sealed with a septum.
- 5) <u>Hard rock and sediments</u>.
  - All personnel to remove jewelry from hands and wrists (precious metal contamination).
  - Composition of drilling mud used must be regularly documented.
  - Unless specified by the science party, do not powder using tungsten carbide use alumina or clean agate or silicon nitride.
  - Grind away all sawn surfaces on diamond wheel.

**Recommendation 1**: Sample-handling procedures should be specified for each expedition such that the integrity of the drilled samples are not compromised. This should be discussed and specified during the expedition planning stage between the co-chief scientists and the IO.

# **3. ANALYTICAL INSTRUMENTATION**

The analytical capabilities requested by the survey respondents were wide ranging. The list in Table 2 shows instrumentation in addition to that available during ODP or would require a significant upgrade to that available on the *JOIDES Resolution*. Some requested items were considered to be too sophisticated for on site operations (i.e., electron microprobe).

The requested instrumentation (Table 2) would be used to influence the scientific output during each expedition, influence drilling strategy, and also be used to ensure safety of the drilling staff, technicians, and scientists. Permanent labs can be set up on the riser and non-riser vessels, but would be more problematic for MSP drilling. In the latter case, a modular lab should be considered that could be accordingly equipped from an inventory of analytical equipment for each specific expedition and the goals therein.

Action Item 1: SciMP will work with the IOs to investigate the modular lab concept for MSP operations.

Action to be taken by SciMP (Petrophysics WG, Chemistry WG, and Microbiology WG) and IOs.

Measurement	Data Type	Sample Type
DBD and porosity*	Physical Properties	Whole Core
Core temperature change*	Physical Properties	Whole Core
Electrical Conductivity* (Formation factors)	Physical Properties	Sediments
In situ interstitial water sampling	g Geochemistry	Sediments
UV Excitation	Organic Geochemistry	High molecular wt. hydrocarbons
O, N, C, H isotopes*	Geochemistry	Gasses, waters, and sediments
C (organic and inorganic) and S (Coulometer* and CHNS analyz	Geochemistry er*)	Sediments and waters
Gas chromatography/GC-MS*	Geochemistry	Waters, gasses, sediments (?)
X-ray diffraction*	Mineralogy	Minerals
Cathodoluminescence	Mineralogy	Minerals
ICP-OES*	Geochemistry	Waters, sediments, hard rocks
ICP-MS*	Geochemistry	Waters, sediments, hard rocks
Redox-sensitive pore waters	Geochemistry	Sediments
X-ray CT Scanner*	Geochemistry	Whole Core
SEM facility	Microscopy	Sediments and hard rocks

 Table 2: Requested Instrumentation.

\* Equipment included in the Chikyu equipment list, March 2003.

# 4. MICROSCOPY.

Use of microscopy during any drilling expedition is a vital part of the characterization and science that is undertaken. Applications include micropaleontology, smear slides, petrologic thin sections, microbiology, etc. Several of the respondents to the CWG survey requested that the microscopy facilities in IODP be significantly upgraded from ODP; this includes both microscopes and thin section making capabilities. Round-the-clock operation of thin section laboratories is essential for sample throughput, which in turn could influence drilling and, therefore, the scientific return of a given expedition. It is essential that a sufficient number of microscopes (3-5?) are available for each specific use and that technical staff be available to maintain these important instruments. Each microscope should be equipped with both transmitted and reflected light capabilities (with a sufficient number of objective lenses), be able to work up to 1600X total magnification in air (and, as much as possible, oil), as well as have the ability to take digital images. The computer shall be equipped with a properly designed photocapture, annotation, and filing program, plus a high-quality image-analysis and statistical (e.g., point-counting/modal analyses) package. We note that many of these items are to be on board

the Chikyu and it will therefore increase programmatic consistency - in addition to enabling the best science possible - to have these facilities accessible throughout the entire IODP. Microscopes dedicated for a specific purpose should not be used for anything else.

**Recommendation 2**: SciMP recommends that there be a sufficient number of microscopes configured for each specific use to achieve the scientific objectives of a given expedition, that they be equipped with both transmitted and reflected light capabilities, be able to work up to 1600X total magnification in air (and, as much as possible, oil), as well as have the ability to take and store digital images.

With better modular scopes Cathodoluminescence could be added, which is especially important for highlighting mineral zonation (e.g., plagioclase) and alteration effects. Also, an Environmental Scanning Electron Microscope (E-SEM) can have a profound effect on drilling strategy. For example, on Leg 193 it would have been extremely useful to have an E-SEM available on board, which would have allowed better decision-making (e.g., how to log core, drilling priorities, etc.). Reliance on XRD and thin sections, of what turned out much finer-grained assemblages than expected, meant delays and inaccuracies (i.e., inefficient drilling).

Action Item 2: The Chemistry Working Group of SciMP will work with the various IOs to explore the possibility of adding Environmental SEM and Cathodoluminescence capabilities to the microscopy facilities on the various platforms and affiliated shore-based laboratories. *Action to be taken by SciMP (Chemistry WG) and IOs.* 

# **5. ANALYSIS TYPES**

**5.1. Safety Analyses**. While safety is a site survey/safety panel issue, it is recognized that certain analyses are important, although the quality of such analyses during ODP was questioned. The types of analyses that could be conducted include organic and headspace gas measurements (e.g.,  $H_2S$ , methane and other hydrocarbons), and in some cases, water analyses (organics). It was also recognized that such analyses would need to be conducted "on-site" as samples would degrade and would lose some information if saved for shore-based studies.

**5.2. Organic Analyses**. In addition to analyses that address safety issues, organic analyses are vitally important for a number of scientific goals. For example, source rock evaluation (organic richness, organic mater types – gas or oil producing, maturity of organic matter) is crucial for drilling strategy to predict the existence of oil and gas reservoirs in further drilling processes.

- Total organic carbon (TOC) by elemental CHN analyzer;
- Hydrogen Index (H.I.) and Oxygen Index (O.I.) by Rock-Eval pyrolysis;
- T<sub>max</sub> value by Rock-Eval pyrolysis.
- UV excitation for the monitoring of petroleum-type higher-molecular-weight hydrocarbons.

Biomarker analysis using GC and GC/MS is useful for source rock evaluation as well as good science. It provides more detailed information on source rock properties than Rock-Eval, although it requires a longer analytical time. GC and GC/MS have already been installed in Riser and non-Riser platforms. Supporting instruments, such as a rapid solvent extractor, will also be installed in raiser platform. Although the biomarker analysis should not be an obligatory analysis, it will be a highly recommended analysis at on-site.

The community recognizes that improvements in the determination of organic and inorganic carbon need to be made over that conducted during ODP. It has been suggested that carbonate continue to be measured on a coulometer, yet that C-org be measured on an acidified sample with a CHN (elemental) analyzer, as this would give better reproducibility. Additionally, it is expected that the analysis of volatile metabolic compounds using GC and GC/MS (attached with a headspace sampler?) would be useful for microbiology studies – this issue will be dealt with by the Microbiology WG.

We note that Riser drilling uses circulation mud, which contains powdered lignite and other chemicals. Biodegradable drilling muds may also be used although safe drilling may preclude this option (we need more communication with the drilling community on this issue); these often contain animal fats and/or starch, which are another cause of contamination for organic geochemical analysis. It is important that samples of the drilling mud used be analyzed along with the samples in order to assess the contribution of such muds to the organic content and possibly to inorganic analyses (e.g., Ba) of the samples.

**5.3. Inorganic Analyses**. The change from X-ray fluorescence (XRF) to Inductively Coupled Optical Emission Spectroscopy (ICP-OES) during ODP for inorganic analyses facilitated a greater diversity of samples that could be analyzed (rocks, sediments, and waters) and sample throughput was increased. However, certain sacrifices were made, especially with regard to quantifying the petrogenetically important trace elements (e.g., Nb). For IODP it is recommended that both ICP-OES and quadrupole ICP Mass Spectrometry (ICP-MS) be used (as is the case for the Chikyu) because the combination of both instruments will allow a full suite of major and trace elements to be quantified for almost all sample types. Each instrument is necessary, as each quantifies many elements that the other cannot. Autosamplers should be used with both the quadrupole ICP-MS and ICP-OES to improve throughput. However, the complexity of these machines requires a greater level of technician training than was available during ODP; the technicians should be able to trouble shoot and fix minor problems while at sea (see Section 8 for specific recommendations regarding IODP technicians). Even with the ICP-OES in the latter stages of ODP, the lack of suitably qualified technicians was a major issue.

A number of procedures need to be put in place in order for the ICP-OES and ICP-MS analytical techniques to work well and consistently so:

- Sample preparation all rock and sediment samples should be crushed and ground in alumina to avoid trace element contamination from tungsten carbide (the high field strength elements, platinum-group elements, etc.) and agate (e.g., Pb). However, some scientists may prefer W-C, so other powdering methods need to be available.
- Samples of drilling mud should be analyzed. The data generated can be used to assess

the extent of sample contamination by the mud (e.g., Ba).

- Clean laboratory facilities with ultrapure acids should be available.
- Digestion vessel cleaning procedures are required (Teflon bombs are expensive so need to be reused).
- Hydrofluoric (HF) acid capable fume hoods are required with sufficient hot-plate space to process tens of samples at one time, along with facilities to cope with a spill of HF.
- The flux-fusion method of sample preparation for ICP-OES required the addition of a flux to the powdered sample followed by fusion to breakdown the silicate matrices. This may dilute some critical trace elements in the samples below detection. Therefore, whole-rock digestion methods are required, which include the use of HF acid.
- The IODP should examine microwave digestion apparatus, such as marketed by CEM and Milestone, as these can easily digest most sediments as well as MORB. Their use dramatically enhances safety, uniformity, and sample throughput.
- Efficiency in sample preparation is essential to make the ICP-MS an effective on-site analytical tool.

Action Item 3: The CWG will explore the suitability of microwave digestion in the preparation of rock and sediment samples for various geochemical analyses, such as ICP-OES and ICP-MS, as a way of increasing sample throughput, safety, and the uniformity of the preparation technique across different platforms and related shore-based labs.

Action to be taken by the Chemistry WG.

The addition of a **laser ablation** (LA) facility that would interface with the quadrupole ICP-MS has been discussed in some detail. It is evident that the new laser systems (e.g., the New Wave UP-213 nm) are very powerful and relatively simple to operate. Quantitative data may not be possible because major element data, which are used as internal standards, will not be determined while on site. However, as long as the external standardization procedure is robust, diagnostic elemental ratios may be obtained from glass and mineral samples that could be used to influence drilling. These analyses do not require digestion nor is a polished section necessary. Rather, a flat sample surface is needed. Therefore, sample throughput is much quicker than for bulk rock analyses. Furthermore, electron microprobe data can be obtained during shore-based studies and the LA-ICP-MS data gathered on site can then be quantified. Samples that could be analyzed are glasses, minerals, and microfossils (i.e., individual foraminifera).

**Recommendation 3**: SciMP recommends that a laser ablation facility (with radiation of 213 nm or less) be available on the Riser & non-Riser platforms for interfacing with a quadrupole ICP-MS.

Having both ICP-OES and quadrupole ICP-MS capabilities will require a lot of Argon gas and sufficient storage space is required for gas cylinders. In addition, the sensitivity of LA-ICP-MS is greatly enhanced by bleeding in Helium as the carrier gas from the sample chamber to the torch.

Therefore, He gas cylinders are required to be taken on every expedition.

One caveat to the potential addition of quadrupole ICP-MS to the inventory of IODP analytical facilities is that it must be tested on a moving platform. The ICP-MS requires the plasma to be focused through the tiny orifice of the sample and skimmer cones, through a differential vacuum, and into the quadrupole mass spectrometer. If the plasma oscillates (moves) due to platform movement, the stream of ions generated will vary in intensity giving a highly unstable signal. This will produce data with large errors. This was noted to be an issue with the ICP-OES (Quintin et al., 2002), but prudent operation of the instrument in terms of weather conditions was able to solve the problem.

Quintin L. L., Faul K., Lear C., Graham D., Peng C., and Murray R. W., 2002, Geochemical analysis of bulk marine sediment by ICP-emission spectrometry on-board the JOIDES Resolution. *Proc. of the Ocean Drilling Program, Initial Reports*, **199**, http://www-odp.tamu.edu/publications/199\_IR/chap\_07.htm.

Action Item 4: The Chemistry Working Group of SciMP recommends that the IOs of the various platforms examine the potential problem of an oscillating (moving) plasma when using a quadrupole ICP-MS on a moving platform. SciMP further recommends that the IOs report the results if their investigations to SciMP at the December 2004 meeting. SciMP will be conducting independent investigations of this issue and will also report their findings at the December meeting. *Action to be taken by the Chemistry WG and IOs.* 

There needs to be better major and trace element analytical facilities for S-rich samples. For ICP-MS, sulfur is a signal suppresser and severely reduces machine sensitivity. The ICP-OES analyses on ODP had problems handling S-rich samples, partly because prior tests of the calibration and sample preparation procedures were not as thorough as planned. This will require specialized procedures to be thoroughly tested and implemented throughout the IODP analytical facilities.

**5.4. Analysis of Fluids**. Expanding the capabilities of pore water sampling is essential for IODP, especially given the nature of some of the first expeditions planned. In all cases, a thorough documentation of how the samples have been taken and the analytical procedures is essential. These capabilities should include:

<u>4.4.1. Centrifuging</u> - this allows temperature control, which has some advantages (e.g., the best technique for sulfide concentration measurements), but it is not good for DIC and sub-mM methane concentrations. The centrifuge could also be used for phyllosilicate (and other minerals) separation schemes for XRD.

<u>4.4.2. Squeezing</u> - in order to study redox-sensitive elements, squeezing under anaerobic conditions should be available. It is also important to develop a method for extracting fluids from indurated (non-squeezable) sediments.

<u>4.4.3. In situ Sampling</u> - a combination of the old WSTP and the so-called DVTP should receive serious attention as such *in situ* sensors, optrodes, and sampling would be of the utmost importance to any serious pore water program. A big step forward would be the

ability to sample high temperature fluids (including gases) with a wire-line sampler.

A lot of on-site data for pore fluids (and gases) are of importance in publications and only on board ship can we get high quality data on these components, prior to storage for other work. However, some samples may require immediate isotopic characterization (see above).

**5.5. Stable Isotope Analyses**. If samples are taken for safety analyses, important scientific data could be obtained from these *provided* the proper equipment was available and the technicians were properly trained in sampling and analytical techniques. For example, stable isotope compositions (C, H, maybe N, and possibly S although a dedicated machine is required for the latter if a lot of sulfur isotope analyses are required) would give invaluable data from ephemeral samples, especially gas hydrates and other organic-rich targets. Furthermore, stable isotope (C, N, O) analyses of bulk sediments would help with stratigraphic correlation and ensure the recovery of complete sections. In addition, some pore water studies would benefit from on-site stable isotope analytical capabilities. Note that the survey respondents suggested that the "on board" stable isotope analyses be restricted to ephemeral samples and those that may affect drilling strategy.

A number of questions arose from within the CWG on this issue. For example, will the mass spectrometer be configured for the analysis of hydrogen? What is the best balance of needs versus resources (financial and technical)? There is broad variance among the options in terms of "what should be done on board" versus "what would be nice to do on board." Selection and operation of an onboard carbonate device in conjunction with the gas source mass spectrometer may be difficult.

That having been said, we must maximize the utility of any onboard gas-source isotope ratio mass spectrometry (IRMS). To that end, the instrument must include the peripheral devices that are specific to (1) the highest priority onboard analyses (e.g., headspace gases [GC-IRMS] and pore waters  $[\delta^{18}O_{H2O}, \delta D_{H2O}, \delta^{13}C_{DIC}$ —GasBench II or equivalent]) and (2) other perceived needs (e.g.,  $\delta^{18}O_{CaCO3}$  and  $\delta^{13}C_{CaCO3}$  [carbonate device];  $\delta^{13}C_{TOC}, \delta^{34}S_{sulfide or sulfate}, \delta^{15}N_{TOM}$  [on-line Elemental Analyzer (EA) for analysis by continuous flow];  $\delta^{18}O_{sulfate}$  [TC-EA]). Each of these devices will increase the range of expertise necessary for the technician and the routine and nonroutine repairs and maintenance. Additionally, many of these procedures, particularly those for non-ephemeral components, will require sophisticated and/or time-consuming sample preparation (e.g., foram picking and sediment extractions).

Action Item 5: The Chemistry Working Group of SciMP recommends that the feasibility of having a gas-source stable isotope mass spectrometer on both the Riser and non-Riser platforms be explored. The function of this mass spectrometer would primarily be to undertake analyses of ephemeral samples such as headspace gases and pore waters. SciMP recognizes that in order for this to work, peripheral on-line devices must be included as dictated by scientific need (e.g., GC and an Elemental Analyzer). *Action to be taken by the Chemistry WG*.

# 6. QA/QC ISSUES.

The CWG is working from the following position:

## There is no substitute for data of the highest quality.

By adhering to this premise, it is anticipated that the data obtained on different platforms will be of the highest quality, such that they will be able to influence drilling decisions *and be publishable in scientific journals*. With IODP operating multiple platforms and analytical facilities, data quality is an extremely important aspect that requires careful consideration in order for data generated while on site to be used in scientific publications. Where analytical facilities are duplicated on platforms and in shore-based labs, each should have the same suite of reference materials available.

**Recommendation 4**: Standards/reference materials for each analytical facility be uniform across the different platform and IODP-affiliated shore-based laboratories.

It is essential that the data generated while on site be of the highest quality such that it can be used in scientific publications. This is especially critical for ephemeral samples where the only data obtained will effectively be during the drilling operation (e.g., pore waters, head space gases, gas hydrate samples, etc.). The survey results showed that the community would use the on-site data *if* it could be shown to be of the highest quality. This can be achieved by regular blank, reference material, and replicate sample analyses, along with a thorough error analysis of all data generated. Replicate sample analyses should be conducted during the same run and at least one sample already analyzed being re-analyzed during a later run. This would demonstrate reproducibility of data and consistency in the sample preparation and analytical procedures. As was highlighted in Section 5.4 for pore waters, documentation of how *all* samples were processed is critical in this process.

All blank, reference material, and sample data (especially duplicate analyses) should be readily available from the data repository. Each datum should include a date and who the analyst was. These data should be regularly scrutinized (see below), problems highlighted, and solutions given. During ODP, routine analysis of Standard Reference Materials (SRMs) that were run as *unknowns* during a normal sample batch was discouragingly rare. It must become routine practice to incorporate a wider array of SRMs (and especially those for porewaters) than was done during the ODP.

**Recommendation 5**: Routine analysis of reference materials as unknowns during every analytical run must become common practice on all IODP platforms and related shore-based labs.

If there is an occasion to use third party equipment (defined as specialized analytical facilities not in the IODP inventory), its suitability should be demonstrated *prior to the expedition* by reference material and duplicate sample analyses. All sample, reference material, and blank data need to be uploaded to the data repository and be available for scrutiny.

**Recommendation 6**: If third party analytical equipment is to be used on any IODP platform, its suitability should be demonstrated by the analysis of relevant reference materials *prior* to the start of the expedition.

Blind calibration tests could be conducted by each analytical facility on an unknown sample (commonly a reference material) given to the laboratory manager. Such tests could be given at the beginning of each expedition (prior to core being recovered), once a year, or as problems are seen to be developing from regular blank and reference material analyses. The data for these unknowns would be uploaded to the central data repository and scrutinized by a panel of experts (see below). If these blind calibration tests were given at the beginning of every expedition, any problems would be immediately apparent and attempts at remedying them could be made before samples are acquired. However, the feasibility of this process needs to be studied further.

Action Item 6: The Chemistry Working Group of SciMP will study the issue of "blind calibration tests" and formulate a policy on this matter to be presented at the December 2004 meeting. *Action to be taken by the Chemistry WG*.

**6.1. Implementation**: Deciding on the suite of reference materials that should be available in the IODP analytical labs needs to be achieved as soon as possible. The CWG suggests two courses of action: 1) that CWG be the committee to draft this reference material list; 2) that CWG form the core of a committee supplemented with people of the requisite expertise. In either case, the committee reports directly to SciMP.

Monitoring the QA/QC of platform- and shore-based labs requires an oversight committee that has access to the requisite data (outlined above). This could be done either by the existing working groups of SciMP or by a special committee containing the requisite expertise. Either way, this committee is required as a guarantor of high quality data produced by IODP analytical facilities. Regular status reports of the IODP analytical facilities should be made at each SciMP meeting along with actions taken/proposed by the working group/committee. Coordination should be through the co-chairs of SciMP and the respective IOs. Critical in this endeavor is traceability of all data uploaded to the data repository. Each analysis should include the date of the analysis, sample type, the analyst, platform, etc.

**Recommendation 7**: SciMP will advise the IOs on the development of analytical and sample preparation protocols, as well as their implementation on the various IODP platforms and in shore-based laboratories. SciMP will also oversee and advise on QA/QC issues (and in the mitigation of problems) as they relate to geochemical analyses.

# 7. ANALYTICAL ACCURACY

This requires sensitive and specialized analytical equipment and low-blank reagents. Furthermore, accurate weighing of the samples and any added reagents is essential for accurate and precise data. As has been seen on the JR, this is difficult on a moving ship, and introduced significant errors into the analyses both directly (through weighing errors) and indirectly (through conducting sample preparations by volume measurements rather than weight). We
recommend that a balance be isolated (using a gimble or gyroscope system) for such accurate weighing. For low-blank reagents, these can either be purchased or generated by distillation on-board.

**Recommendation 8**: The CWG of SciMP recommends that facilities for accurate weighing on a moving ship be made available on the Riser and non-Riser platforms. Such facilities will greatly increase the quality of geochemical data generated on these platforms, enhancing their usability in scientific publications.

#### 8. TECHNICAL SUPPORT.

Technician training and ability is a critical part of obtaining the highest quality data, not only in sample preparation and analysis, but also in maintaining and trouble-shooting problems with individual pieces of machinery. The CWG recommends that all IODP technicians should have at least a Masters degree in analytical chemistry, geochemistry, or related fields. However, this alone will not guarantee that quality data will continue to be produced from each analytical facility over the life of IODP. It is essential that the technicians understand the various sample preparation techniques and be able to adequately judge data quality and the best way to do this is to give the technicians training is an IODP-related research laboratory (e.g., Kochi, Bremen, TAMU) or visiting university laboratories for 2-4 weeks. We therefore, the Chemistry Working Group of SciMP proposes the following recommendations:

**Recommendation 9**: All IODP technicians should have at least a Masters degree and/or equivalent experience or training in analytical chemistry, geochemistry, or related fields. This is essential to ensure that the technician is skilled enough to deviate from a prescribed set of procedures should a given situation require it.

**Recommendation 10**: Each laboratory technician should undergo training with the respective manufacturer of the analytical facility they are to be responsible for. Such training should include maintenance, trouble-shooting, and software. There should be regular (annual?) refresher courses that would allow the technicians to stay up-to-date with hardware and software developments.

**Recommendation 11**: Each laboratory technician should undergo training at IODP-related or where applicable, university research laboratories in order to understand how to judge data quality and the problems associated with obtaining data that are of the highest quality.

#### **Community Questionnaire from the CWG.**

The Chemistry Working Group of the **Sci**entific **M**easurement **P**anel (SciMP) of the IODP is requesting input from the community regarding the types of geochemical analyses to be conducted "on-site" during IODP. The term "on-site" reflects analyses performed during the drilling phase of any IODP expedition (analogous to the shipboard analyses of ODP) and is inclusive of riser and non-riser platforms as well as Mission Specific Platforms (MSPS). We recognized that analyses performed during drilling with a MSP may not be as extensive as with shipboard drilling.

The purpose of this short questionnaire is to ensure that the correct analyses are performed on all IODP platforms, data quality is high, and safety is not compromised. Please respond to Clive Neal (neal.1@nd.edu), on behalf of the Chemistry Working Group.

On previous ODP ocean drilling legs that you participated in, what material(s) and analyses were important? (check all that apply)

Materials

Hard rock Soft Rock Metamorphic Water Gas Extracts <u>Analyses</u>

Organic Inorganic Major Trace Isotopic Petrographic

Please specify the types of analyses that *were* performed on-board ship:

Given your answer to the first question, what types of analyses *are* required to fully characterize materials that are important to your research?

What types of analyses do you consider are necessary to influence drilling strategy?

In your experience, what types of analyses are required to ensure safe drilling and core handling?

Using your experience with ODP, what other "on-site" analyses would be critical during the drilling phase?

Again, using your experience with ODP, how could "on-site" analyses be improved?

Would you consider using data gathered "on-site" in scientific publications?

If you answered "no" to the question above, what would it take for the "on-site" data to be considered usable by you in scientific publications?

Please feel free to provide any other feedback to us.

Many thanks,

Clive Neal Urumu Tsunogai Rick Murray







### **SAS Ad Hoc Committee Interim Report to SPPOC**

### 2nd Meeting, 8 July 2004 Paris, France

SPPOC Consensus 03-12-06: The SPPOC establishes Ad hoc Committee-1 to evaluate the current IODP Science Advisory Structure and modify it in light of the IMI requests issued on and after 2 October 2003. The following functions are expected to be implemented into the modified IODP SAS: effective program evaluation and assessment, effective multi-platform and long-term science planning, effective interaction between the IMI and the SAS, and integration with other international earth science programs.

Membership of Ad hoc Committee-1 should include three SPPOC members (one serving as chair), the SPC chair, and the IMI vice president for science planning. The committee should meet at the March 2004 SPC meeting and the July 2004 SPPOC meeting, and it should give a mid-term report at the July 2004 SPPOC meeting and a final report at the December 2004 SPPOC meeting.

(SPPOC 2<sup>nd</sup> Meeting Agenda Book, p. 111)

Meetings: 21 March, Washington, D.C.; 7 July, Paris

Membership: SPPOC- Delaney, McKenzie, Tsujii (and Rea) SPC – Coffin (and Ildefonse) IMI - Larsen SPPOC Consensus 03-12-06: The SPPOC establishes Ad hoc Committee-1 to evaluate the current IODP Science Advisory Structure and modify it in light of the IMI requests issued on and after 2 October 2003. The following functions are expected to be implemented into the modified IODP SAS: <u>effective program evaluation and assessment</u>, <u>effective multi-platform and long-term science planning, effective</u> interaction between the IMI and the SAS, and integration with other international earth science programs.

- 1.) effective program evaluation and assessment,
- 2.) effective multi-platform and long-term science planning,
- 3.) effective interaction between the IMI and the SAS, and
- 4.) integration with other international earth science programs.



YEAR	DOCUMENT	PROGRAM	SCIENCE ADVICE
1981	COSOD I		RE <mark>GION</mark> AL
1985		ODP	PANELS 3 THE MATIC
1987	COSOD II		PANELS
1990	ODP LRP		4 THEMATIC
1996	ODP LRP		PANELS
2001	IODP ISP		2 SSEPS PANELS
2003		IODP	
			?



### Issues to be considered

# New Panel XXX = Science Outreach & Assessment Panel SOAP

### **Issues to be considered**

- New Panel XXX = Science Outreach & Assessment Panel
- TAP & ILP = Transform from panels to task forces
- Appropriate expertise on panels = co-operation
- Gender balance on panels & committees
- Chair system = chair only, co-chairs, vice-chair, tri-chair?
- Need for ethical statement?

**Request Comments & Input** 

SPPOC J-DESC ESSAC USSAC

### **SPC = Finalized SAS Report in October**

**SAS Panel Member Review & Comments** 

**3rd Meeting prior to 3rd SPPOC Meeting Leading to Final Report to SPPOC** 

#### AGENDUM 7

Review of 651-APL Irminger Basin Microbiology

651-APL cover sheet

IODP P	roposal Cover S	heet	4th SPC meeting aperda book
New	Revised	Addendum	
Please fill out information	n in all gray boxes		Above For Official Use Only

Title:	Microbiological processes in the Irminger Basin Site IRM2A		
Proponent(s):	Rolf Warthmann, Judith A. McKenzie, Crisogono Vasconcelos, Laurie	e Mauclaire	e
Keywords:	deep biosphere, sub-seafloor microbiology,		North Atlantic
(5 or less)	methane-sulfate transition zone, dolomite formation,	Area.	
	anaerobic methane oxidation	nicu.	
	Contact Information:		
Contact Person:	R. Warthmann, and McKenzie J.A.		
Department:	Geological Institute		
Organization:	ETH-Zentrum		

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Permission to post abstract on IODP-MI Sap	pporo We	b site: Yes	□ <sub>No</sub>
	ETH-Zentrum 8092 Zurich, Switzerland +4116325697 Warthmann@erdw.ethz.ch Permission to post abstract on IODP-MI Saj	ETH-Zentrum         8092 Zurich, Switzerland         +4116325697         Fax:         Warthmann@erdw.ethz.ch         Permission to post abstract on IODP-MI Sapporo Weilling	ETH-Zentrum         8092 Zurich, Switzerland         +4116325697         Fax:       +4116321080         Warthmann@erdw.ethz.ch         Permission to post abstract on IODP-MI Sapporo Web site:       Yes

Abstract: (400 words or less)

We propose to study the microbiology and porewater geochemistry at the Greenland Margin, Ihrminger Basin Site IRM2A, previously drilled as ODP 152 Site 919, and compare the results with data obtained from ODP Leg 201 Site 1229. Previous drillings in the Ihrminger Basins ODP Sites 918 and 919 indicated microbial activity at the distinct zones of anaerobic methane-oxidation, (probably combined with authigenic carbonate formation), similar to the Peru Margin Sites 1229. OPD Sites 918, 919 and 1229 all showed extremely high dissolved methane contents (up to 20'000 ppm, which is completely consumed by sulphate reduction in two distinct zones: An upper part of the sediment where sulphate is supplied from overlaying seawater and in a deeper part where sulphate is supplied by intrusion fluids. As an ancillary project letter to IODP Proposal 527, we would like to add the following shipboard studies for a fourth, dedicated APC hole:

(1) To localize and characterize the microbial habitats, high resolution routine porewater geochemistry will be undertaken for microbial relevant parameters, substrates and products, such as pH, acetate, formate, HS, and dissolved ferrous iron (near the methane-sulphate transition zones).

(2) ATP (adenosine-triphosphate) analysis, a sensitive biomarker for living microbes, will locate the exact position of the methane-sulphate transition zone (MST-zone). We expect high cell numbers and high microbial activity (between 80 and 90 mbsf in the upper MST zone and at ca. 400 m at the lower MST zone, based on ODP Sites 918 and 919 geochemistry). In the MST zones, sterile sampling for DNA-analysis, SEM, microscopically fluorescence cell counts culturing anaerobic methane-oxidizing bacteria is planned.

(3) Authigenic carbonates and sulphates will be investigated in the MST zones to study their isotopic composition as an indication of microbial activity.

We plan to focus our study on the MST zone because, parallel to the general exponential decrease of cell concentration with depth, a 10 to 100-fold increase of microbial abundance and activity has been observed within these particular chemical transition zones on the Peru Margin (ODP Leg 201 Initial Reports Vol. 201, p. 930-941). As state-of-the-art microbiology has, until now, not been able to culture anaerobic methane-oxidizing microorganisms in the laboratory, a further challenge will be to attempt to culture microorganisms from the MST zone.

Time estimation is 1 day.

651-APL

#### Scientific Objectives: (250 words or less)

We propose to study the microbiology in the methane-sulphate transition (MST) zone, which has two main objectives:

(1) Studying the microbial anaerobic methane oxidation in the MST zone at Site IRM2A (microbial diversity, microbial activity, abundance)

(2) Studying diagenetic carbonates formation related to microbial activity at Site IRM2A

Please describe below any non-standard measurements technology needed to achieve the proposed scientific objectives.

(1) Extended porewater geochemistry: Determination of dissolved sulfide, pH and acetate

(2) Biogeochemical identification of the MST zone by the biomarker ATP (adenosine triphosphate)

(3) Sterile sampling for microbiology

<i>a</i> :		Water		Penetration (m)		
Site Name	Position	Depth (m)	Sed	Bsm	Total	Brief Site-specific Objectives
IRM2A	62°40.20`N, 37°27.61`W	2088	400		400	Late Neogene/Quaternary

#### Proposed Sites:

#### **AGENDUM 8**

FY05/06 expedition schedule I

8.1. Presentation of OPCOM scheduling scenarios Proposal cover sheets

Proposal history

8.2. Discussion of scenarios

	4th SPCF	rivering a	<u>Jenda Book</u>			
IOD	P Proposal Cover Sheet	77				
New	Revised Addendum					
Please fill out information in all gray box Above For Official Use Only —						
Title:	Title: The Okhotsk and Bering Seas: High resolution Plio-Pleistocene Evolution					
	of the Glacial/Interglacial Changes in the Marginal S	Seas				
Proponent(s):	<ul> <li>Proponent(s):</li> <li><sup>1</sup>Kozo Takahashi, <sup>2</sup>Itaru Koizumi, <sup>3</sup>Sergei A. Gorbarenko, <sup>4</sup>Makoto Okada, <sup>5</sup>Ana Christina Ravelo, <sup>6</sup>Ralf Tiedemann, <sup>7</sup>Tatsuhiko Sakamoto, <sup>8</sup>Minoru Ikehara, <sup>9</sup>Hidekazu Tokuyama, <sup>3</sup>Alexander S. Svarichevsky, and <sup>10</sup>David W. Scholl</li> <li><sup>2</sup>Dept. of Earth and Planetary Sci., Grad. School of Sci., Hokkaido Univ., Sapporo 060-0810, Japan <sup>3</sup>Pacific Oceanological Inst., Far Eastern Branch, Russian Acad. of Sci., Vladivostok 690041, Russia <sup>4</sup>Dept. Environmental Sci., Faculty of Sci., Ibaraki University, Mito 310-8512, Japan <sup>5</sup>Ocean Sci., Univ. of Calif., Santa Cruz, CA 95064 USA <sup>6</sup>GEOMAR Research Center for Marine Geosciences, Kiel, Germany <sup>7</sup>Institute for Frontier Research on Earth Evolution (IFREE), JAMSTEC, Yokosuka 237-0061, Japan <sup>8</sup>Marine Core Research Center, Kochi University, Kochi 783-8502, Japan <sup>9</sup>Ocean Research Inst., Tokyo Univ., Tokyo 164-8639, Japan <sup>10</sup>U S. Geological Survey, Menlo Park, CA 94025, USA</li> </ul>					
Keywords:	Climate change, glacial-interglacial, northern source	Area:	The Okhotsk Sea			
(5 or less)	water, sea-ice, gateway.		The Bering Sea			
	Contact Information:					
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	Permission to post abstract on iSAS Web site:	Yes	No			

Abstract: (400 words or less)

Over the last 5 Ma, global climate has evolved from being warm with only small Northern Hemisphere glaciers to being cold with major Northern Hemisphere glaciations occurring every 100 to 40 kyrs. The reasons for this major transition are unknown. Over the last hundreds of thousands of years Milankovitch and millennial scale climate oscillations have occurred also due to mechanisms that are unknown. Possible mechanisms responsible for both the long term evolution of global climate as well as the generation of high frequency climate oscillations involve intermediate water ventilation of the North Pacific. However, the paucity of data in critical regions of the Pacific, specifically the Okhotsk and Bering Seas, has prevented an evaluation of the role of North Pacific processes in global climate change. The Okhotsk and Bering Sea are marginal seas in the North Pacific that have experienced major climate changes. Because Pacific intermediate water is formed in these basins, they are not just recorders of, but are potentially critically involved in, causing major climate changes. Thus, drilling in the Okhotsk and Bering Seas can help to answer questions not just about the global extent of climate trends and oscillations, but also about the mechanisms that produce them.

We propose to drill sediments appropriate for a detailed study of the Plio-Pleistocene evolution of millennial to Milankovitch scale climatic oscillations in the Okhotsk and Bering Seas. Biological, chemical and physical oceanography as well as adjacent continental climate of the Okhotsk and Bearing Seas are highly sensitive to global climate conditions, and are recorded by variations in the sedimentary composition of diatoms and other microfossil groups, as well as many other paleoclimatic indicators. Intermediate water formation in these regions can be tracked using paleoceanographic proxies of subsurface water that can be related to open Pacific Sediments can not only be used to produce records of climate and intermediate water records. ventilation in these critical marginal seas, but can also be applied to testing the effect of changes in the Bering Strait Gateway and it influence (via the Arctic) on heat and nutrient partitioning between the Atlantic and Pacific. The proposed drilling will provide continuous and high resolution paleoenvironmental records from these critical marginal seas for the first time. These new records can then be used to understand the processes that influence intermediate water ventilation and its role in global climate change over the last 5 Ma.



Scientific Objectives: (250 words or less)

Major objectives of this proposed drilling in the Okhotsk and Bering Seas are:

- 1. To elucidate detailed evolutionary history of climate and surface ocean conditions since the earliest Pliocene in the Okhotsk and Bering Seas where amplified high resolution changes of climatic signals are recorded.
- 2. To shed light on temporal changes in the origin and intensity of North Pacific Intermediate Water and possibly deeper water mass formation in the Okhotsk and Bering Seas.
- 3. To characterize the history of continental glaciation, river discharges, and sea-ice formation, in order to investigate the link between continental and oceanic conditions of the Okhotsk and Bering Seas and adjacent land areas.

4. To investigate linkages, through comparison to pelagic records, between ocean/climate processes that occur in the more sensitive marginal sea environment and processes that occur in the north Pacific and/or globally. This objective includes an evaluation of how the history of ocean/climate of the Bering Strait gateway region may have had an effect on north Pacific and global conditions. All of these scientific objectives will focus both on the long term ocean and climate trends, as well as the evolution of higher frequency glacial-interglacial to millennial scale oscillations through the Plio-Pleistocene.

Please describe below any non-standard measurements technology needed to achieve the

proposed scientific objectives.

Proposed Sites:							
			Water	Per	netration	n (m)	
Site Name	Pos	sition	Depth (m)	Sed	Bsm	Total	Brief Site-specific Objectives
Highest Pr	iority Sites						
ASR-1A	49°07.0'N	150°25.0'E	1250	200	0	200	Pleistocene history of Okhotsk Sea
ASR-2A	48°37.0'N	150°50.0'E	2140	700	0	700	Plio-Pleist history of Okhotsk Sea
COP-2C	51°50.1'N	146°53.787'E	1275	700	0	700	Plio-Pleist history of Okhotsk Sea
KAM-2A	51°50.0'N	153°28.0'E	675	200	0	200	Pleistocene history of Okhotsk Sea
PGR-1A	47°05.7'N	145°56.0'E	3000	200	0	200	Pleistocene history of Okhotsk Sea
SHR-3A	56°30.0'N	170°35.0'E	2250	200	0	200	Pleistocene history of Bering Sea
BOW-12A	53°23.47'N	179°33.47'W	1287	700	0	700	Mio-Pleist history of Bering Sea
BOW-14A	54°02.21'N	179°01.37'E	2168	700	0	700	Mio-Pleist history of Bering Sea
GAT-4A	57°35.37'N	175°40.54'W	1780	700	0	700	Mio-Pleist history of Bering Sea
GAT-3A	59°2.12'N	179°10.43'W	3182	700	0	700	Mio-Pleist history of Bering Sea
UMK-4B	54°37.67'N	170°02.32'W	1872	200	0	200	Pleistocene history of Bering Sea
High Priori	ity Alternate S	bites					
ASR-3A	48°58.0'N	150°25.0'E	1425	700	0	700	Plio-Pleist history of Okhotsk Sea
ASR-4A	48°43.0'N	151°11.0'E	1725	700	0	700	Plio-Pleist history of Okhotsk Sea
COP-2B	52°03.673'N	147°01.571'E	1275	200	0	200	Pleistocene history of Okhotsk Sea
SHR-1A	57°19.0'N	170°12.0'E	950	200	0	200	Pleistocene history of Bering Sea
UMK-3A	54°25.22'N	170°13.38'W	1892	200	0	200	Pleistocene history of Bering Sea
Intermediat	te Priority Site	s					
SAK-2A	51°21.0'N	145°55.0'E	937	200	0	200	Pleistocene history of Okhotsk Sea
KST-1A	55°52.0'N	165°05.0'E	3300	200	0	200	Pleistocene history of Bering Sea

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New	🔀 Revised	Addendum	(402-1 ulis

Proposal Received 01-Oct-2001

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Title:	Cenozoic East Antarctic Ice Sheet History from the		
	Wilkes Land Sediments		
Proponent(s):	C. Escutia C., A.K. Cooper, S.L. Eittreim, M. Tanahashi, T	. Ishihar	a, L. DeSantis, P.
	O Brien		
Keywords:	Cenozoic, Antarctica, Ice sheet, Paleoclimate,	Area:	S. Ocean
(5 or less)	Sedimentary sequences		
Contact Information:			

		anom	
Contact	Carlota Escutia		
Person:			
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	Permission to post abstract on iSA	AS Web	b site: Yes No

Abstract: (400 words or less)

This is a revision of proposal 482-Full2 which includes preliminary results from the WEGA cruise as recommended by the ODP panels. Drilling the Wilkes Land margin is designed to provide a long-term record of Antarctic glaciation and its relationship with global sea level, paleoclimate and paleoceanographic changes. The primary goals are: 1) to obtain the nature and the timing of the Cenozoic onset of grounded ice from the continental shelf and rise deposits (shelf Sites WLSHE-07A, WLSHE-09A and rise Site WLRIS-02A), and 2) to obtain a high-resolution late Neogene-Quaternary glacial/interglacial record of glaciation from the rise deposits (Sites WLRIS-01A and WLRIS-03A). An additional objective is to identify and date large fluctuations in the extent of the East Antarctic Ice Sheet possibly throughout much of the Miocene (shelf Site WLSHE-08A).

Drilling the Wilkes Land margin has the unique advantage that is the only known margin around Antarctica where the unconformity (referred to as WL2), inferred to separate pre-glacial strata below from glacial strata above in the continental shelf, can be traced to the continental rise deposits, allowing sequences to be linked from shelf to rise. Because strata below and above the "glacial onset" unconformity can be sampled at relatively shallow depths, the record of the onset of glaciation can be obtained during a single drilling leg from two depositional environments, the shelf foreset (Sites WLSHE-07A and WLSHE–09A) and the rise hemipelagic (Site WLRIS-02A) strata. The shelf foreset section provides a direct record of first occurrence of grounded ice but one that is less continuous and harder to date. The rise hemipelagic section provides an indirect record of glaciation but one that is more continuous and easier to date.

The proposed 37 day drilling program will constrain the age, nature and paleoenvironment of deposition of the Wilkes Land sedimentary sequences. The chronostratigraphy from drilling the Wilkes Land margin, at present non-existent, is necessary to ground-truth the existing glacial- stratigraphic and ice-sheet volume models. Ice sheet models show that the Wilkes Land margin became glaciated in the later stages of East Antarctic glaciation, after Prydz Bay and the Weddell Sea and is thus more sensitive to future temperature changes. The results from drilling the Wilkes Land can be compared with results from the Antarctic Peninsula (Leg 178), Prydz Bay (Leg 188), and Cape Roberts Project drilling (1997-1999) to determine Antarctic Ice Sheet history, glacial processes and facies



#### Scientific Objectives: (250 words or less)

We propose to core sediments deposited on the Wilkes Land margin with the following objectives:

- 1. to obtain the onset of glaciation (Eocene or older) by drilling strata across the glacial onset reflector (regional unconformity WL2) in two depositional environments, shelf progradational wedge foreset (Sites WLSHE-07A or alternate WLSHE-09A) and lower continental rise/abyssal plain hemipelagic strata (Sites WLRIS-02A);
- 2. to obtain a high-resolution Neogene-Quaternary record of glacial/interglacial cycles from continental rise mounded deposits (Sites WLRIS-01A);
- 3. to date major changes in shelf prograded wedge geometry (below and above the regional WL1 unconformity) that document large fluctuations in the glacial regime, possibly through much of the Miocene (Site WLSHE-08A);
- 4. to help assess the main controls on sediment transport and deposition on ice-dominated continental shelves and rises in order to test present architectural models of glacial processes and facies for high-latitude margins; and
- 5. to constrain the timing and the nature of changes in glacial regime and paleoceanography that result in the development of large mounded deposits (i.e. up to 700 m relief), and large upper-fan channel-levee complexes (i.e. 900 m relief) on the continental rise.

Proposed Sites:							
		Water	Penetration (m)		Penetration (m) Priof Site and		Briaf Sita spacific
Site Name	Position	Depth	Sed	Bs	Total	Objectives	
		(m)		m	rotai	5	
WLSHE-07A	66°03 S/143°08 E	600	510	0	510	Onset of glaciation	
WLSHE-09A	66°20 S/142°40 E	525	200	0	200	Onset of glaciation	
WLRIS-02A	64°00 S/139°49 E	3712	1000	0	1000	Onset of glaciation	
WLRIS-01A	64°54 S/145°59 E	3345	700	0	700	Late Neogene and	
WLRIS-03A*	64°51 S/144°46 E	3225	700	0	700	Quaternary high-	
						resolution record	
WLSHE-08A	66°00 S/143°18 E	525	250	0	250	Miocene fluctuations	
						in glacial regime	

#### ODP Proposal Log Sheet



#### The Last Deglacial Sea-Level Rise in the South Pacific: Offshore Drilling in Tahiti (French Polynesia) and on the Australian Great Barrier Reef

G.F. Camoin, E. Bard, B. Hamelin, P. Pezard, P.J. Davies, W.C. Dullo

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#### **Brief description:**

The history of sea-level and sea surface temperature variation associated with the last deglaciation is of prime interest to understand the dynamics of large ice sheets and their effects on Earth's isostasy. So far, the only sea-level record that encompasses the whole deglaciation is based on offshore drilling of Barbados coral reefs which overlie an active subduction zone, implying that the apparent sea-level record may be biased by tectonic movements. This proposal seeks to establish the course and effects of the last deglaciation in two reef settings developed in tectonically inactive areas at sites located far away from glaciated regions, in Tahiti (French Polynesia) and on the Australian Great Barrier Reef. At each site, it is proposed to realize a transect of several offshore drill holes using a Portable Remotely Operated Drill ('PROD') in combination with submersible ('JAGO') observation and mapping, downhole measurements and high-resolution seismic-reflection profiles. The study will have three major objectives. The first objective will be to reconstruct the deglaciation curve for the period 20,000 to 10,000 yrs BP in order to establish the minimum sea-level during the Last Glacial Maximum (LGM), and to assess the validity, the timing and amplitude of meltwater pulses (so-called MWP-1A and MWP-1B) events; c. 13,800 and 11,300 cal. yr BP) which are thought to have disturbed the general thermohaline oceanic circulation and, hence, global climate. Secondly, we will establish the SST variation accompanying the transgression at each transect. These data will allow us to examine the impact of sea-level changes on reef growth, geometry and biological makeup, especially during reef drowning events, and will help improving the modeling of reef development. The third major objective will be to identify and to establish patterns of short-term paleoclimatic changes that are thought to have punctuated the transitional period between present-day climatic conditions following the LGM. It is proposed to quantify the variations of sea surface temperatures based on high-resolution isotopic and trace element analyses on massive coral colonies. When possible, we will try to identify specific climatic phenomena such as El Nino-Southern Oscillation (ENSO) in the time frame prior to 10,000 yrs BP.

#### **ODP Proposal Log Sheet**

Interior

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CEREGE

B.P. 80

519-Full2

4th SPC meeting agenda book Proposal received: Mar 15, 1999 Proposal reviewed:

**Environment** New proposal

**Revised** proposal

Addendum to proposal

Other

#### The Last Deglacial Sea-Level Rise in the South Pacific: Offshore Drilling in Tahiti (French Polynesia) and on the Australian Great Barrier Reef

G.F. Camoin, E. Bard, B. Hamelin, P. Pezard, P.J. Davies, W.C. Dullo

Abbrev. Title: Sea-Level Rise South Pacific Reefs Key: Grea

t Barrier Reefs	Area:	SW P

2

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Interne	t: camoin@cerege.fr	

#### **Objectives:**

Contact:

1. To reconstruct the deglaciation curve for the period 20,000-10,000 years BP in order to establish the minimum sealevel during the Last Glacial Maximum (LGM), and to assess the validity, timing and amplitude of meltwater pulses.

2. To establish the SST variations accompanying the transgression at each transect.

3. To identify and establish patterns of short-term paleoclimatic changes that are thought to have punctuated the transitional period between present-day climatic conditions following the LGM.

Proposal acknowledged by JOI	DES Office: Mar 17,	1999 to : Camoin,	G.F.	
Proposal forwarded for review	v: Apr 14,	1999 to : SSEPs		
Proposal copies:	Apr 14,	1999 to : JOI Inc.,	SO (ODP/TAMU), SSDB	
				Page 2 of

IOD	P Proposal Cover Sheet	4th	577e	ting un da book
New	X Revised Addendum	Ľ		
Please fill out infor	mation in all gray boxes	— Aba	ove For O <u>f</u>	ficial Use Only —
Title:	522-Full3: A Complete in-situ Section of Upper	r Oce	anic Cr	ust Formed at a
	Superfast Spreading Rate - Part II: Testing Fundam	nental	Paradig	ms for Formation
	of the Oceanic Lithosphere			
Proponent(s):	Jeffrey C. Alt, Damon A.H. Teagle, Douglas S. Wils	son, R	obert S.	Detrick,
	Susumo Umino, Kari M. Cooper, Neil R. Banerjee			
Keywords:	Ocean crust, hydrothermal, seismic structure, dikes, gabbro		Aron	Guatemala
(5 or less)			Alca.	Basin
	Contact Information:			
Contact Person:	Jeffrey C. Alt			
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Organization:	The University of Michigan			
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	Permission to post abstract on iSAS Web site:	XX	Yes	No
	Abstract: (400 words or less)			

Received 28-Sentember-2003

This proposal is the second part of a two stage drilling strategy to sample, at ODP Site 1256, a complete section of the upper oceanic crust formed at a superfast (>200 mm/yr) spreading rate. The observed relationship between ocean ridge spreading rate and the depth to axial low velocity zones, interpreted to be melt lenses, predicts that the dike-gabbro transition should be at its shallowest in crust formed at superfast spreading rates, and gabbros are predicted to occur at the depth range 900 to 1300 meters sub-basement (msb). This proposal follows on from successful operations during ODP Leg 206 at Site 1256 that for the first time in scientific ocean drilling successfully constructed the bore-hole infrastructure required for deep drilling into the ocean basement. A large re-entry cone with 16-inch casing cemented into basement was installed in Hole 1256D before this hole was deepened to more than 500 meters sub-basement. Deepening Hole 1256D to the gabbros is achievable in a single IODP leg dedicated to drilling at this site, for which a total depth achievable of  $\sim 1500$  msb is estimated. This would be the first sampling of a complete section of ocean crust from extrusive rocks, dikes and into the gabbros, and would confirm the nature of high level axial magma chambers and define the relationship between magma chambers and their overlying lavas and the interactions between magmatic, hydrothermal, and tectonic processes. These cores will provide further evidence for the geological nature of the seismic stratigraphy of the ocean crust as well as quantify the relative influence of different layers as sources of marine magnetic anomalies.



#### Scientific Objectives: (250 words or less)

Results of the proposed drilling will be the first sampling of a complete section of ocean crust from extrusive rocks, dikes and into the gabbros, and will confirm the lithology of the seismic Layer 2- Layer 3 transition, the nature of high level axial magma chambers, define the relationship between magma chambers and their overlying lavas and dikes, and the interactions between magmatic, hydrothermal, and tectonic processes throughout the upper and middle oceanic crust. This site represents one end-member in the continuum of seafloor spreading, and this end-member presents the best opportunity for achieving the scientific goals.

Please describe below any non-standard measurements technology needed to achieve the proposed scientific objectives.

Only standard RCB coring is required, although basement depths will be greater than typical (to 1500 m subbasement)

Proposed Sites:						
0.4 N	D	Water	Pe	enetration		
Site Name	Position	(m)	Sed	Bsm	Total	Brief Site-specific Objectives
GUATB-03C	6°44.2'N, 91°56.1'W	3635	0 (250 m already cored and cased)	>950 (500 m already cored )	>950 (to total basement depth >1450 m	Reenter ODP Hole 1256D and RCB core through basalt lavas and dikes and into gabbros

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New	Revised	Addendum	

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Title:	The Hydrogeologic Architecture of Basaltic Oceanic	Crust:	
	Compartmentalization, Anisotropy, Microbiology, and Crustal-sc	ale Prope	rties on the Eastern
	Flank of Juan de Fuca Ridge		
Proponent(s):	Fisher, A. T., Alt, J., Bach, W., Baross, J., Becker, K., Cowen, J., D'H	Iondt, S., I	Davis, E. E., Hutnak,
	M., Kadko, D., McCarthy, M., McClain, J. S., Mottl, M	<i>A</i> . J., Si	inha, M. ,
	Spinelli, G., Spiess, V., Teagle, D., Villinger, H., Wheat, C. G.,	Zühlsdorff	, L.
Keywords:	Hydrogoology hydrothermal erustal evolution fluxes	Aroo	Northeast Pacific
(5 or less)	Hydrogeology, hydrothermai, crustar evolution, huxes	Alea.	Ocean

#### **Contact Information:**

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Permission to post abstract on iSAS Web site: U Yes

#### Abstract: (400 words or less)

We propose a multidisciplinary research program to evaluate the formation-scale hydrogeologic properties (transmission, storage) within oceanic crust; determine how fluid pathways are distributed within an active hydrothermal system; establish linkages between fluid circulation, alteration, and geomicrobial processes, and determine relations between seismic and hydrologic anisotropy. We will accomplish these goals through replacement of two existing subseafloor observatories penetrating the upper crust, and through drilling two new holes (600 m and 200 m into the crust) that will be cored, sampled, instrumented, and sealed. We will conduct the first multi-dimensional, cross-hole experiments attempted in the oceanic crust, including hydrologic, microbiological, seismic, and tracer components. After completion of drill-ship operations, we will initiate multiyear tests using this network of subseafloor observatories, allowing us to examine a much larger volume of the crustal aquifer system than has been tested previously. By monitoring, sampling, and testing within multiple depth intervals, we can evaluate the extent to which oceanic crust is connected vertically and horizontally; the influence of these connections on fluid, solute, heat, and microbiological processes; and the importance of scaling on hydrologic properties. We propose to complete this work where (1) thick sediment cover isolates permeable basement, allowing small pressure transients to travel long lateral distances, (2) outstanding coverage of seismic, heat flow, coring, geochemical, and observatory data allow detailed hypotheses to be posed and tested, (3) existing ODP drill holes and long-term observatories provide critical monitoring points for pre- and post-drilling experiments, (4) the formation is naturally overpressured so as to drive multi-year, cross-hole experiments (5) and a planned, cabled seafloor observatory network will facilitate long-term experiments, data access, and instrument control. Alternate sites are proposed within a shallow hydrothermal upflow zone, and in deeper basement areas where the crust is more mature. This work will elucidate the nature of permeable pathways in the crust, the depth extent of circulation, the importance of permeability anisotropy, and the significance of hydrogeologic barriers in the crust. We will learn where viable microbiological communities live, and how these communities cycle carbon, alter rocks, and are influenced by flow paths. We will quantify lateral scales over which solute transport occurs, the extent of flow channeling and mixing in the crust, and how these processes relate to rock structure and fabric. We will determine how to relate seismic velocities and velocity anisotropy to hydrogeologic properties.



#### Scientific Objectives: (250 words or less)

**Second Ridge** (first priority): Drill at Site SR-1, 1000 m SSW of ODP Site 1026, where sediment thickness is 260-275 m. Core into basement upper basement and set casing, then penetrate 600 m into basement. Log, packer, VSP, and CORK Hole SR-1A to isolate multiple levels in basement. Drill at Site SR-2, 200 m SSW of Site 1026, and 800 m NNE of Site SR-1. Operational plan is identical to that at SR-1, except that (1) basement penetration will be 200 m, and (2) we will conduct a long-term hydrogeologic and tracer experiment by pumping into Hole SR-2A for 24 hours. Monitor pressures and chemistry at nearby holes. CORK Hole SR-2A and allow to equilibrate. Open seafloor valves post-drilling to initiate multi-year hydrologic and microbiological test, using natural overpressure to generate pressure perturbation.

**First Ridge** (second priority): Drill one to three holes into hydrothermal up flow zone, where the extent and significance of basement alteration, and the likely nature of along-strike hydrothermal recharge, can be evaluated. Sediment thickness is 40-70 m and basement penetration will be 0-40 m.

**Deep Ridge** (second priority): Drill into deeply-buried basement ridges, 125-145 km from the spreading center, where basement temperatures may approach and exceed 100°C, to evaluate the influences of hydrothermal circulation on crustal evolution and microbiology. Sediment thickness is 500-900 m and basement penetration will be 20-50 m.

		Water		notration (	(m)	
Site Name	Position	Depth (m)	Sed	Bsm	Total	Brief Site-specific Objectives
SR-1 SR-2	47°45.19'N, 127°45.74'W 47°45.64'N, 127°45.59'W	2600 2600	275 275	600 200	875 475	hydrogeologic properties, distributions, alteration, construction, layering, microbiology, chemistry
FR-1	47°53.9'N, 128°34.50'W	2600	40-70	0-40	50-110	nature of and alteration in hydrothermal upflow zone, microbiology, chemistry
DR-1	47°46.69'N 127°21.52'W	2600	500	20-50	520-550	sediment, basement, chemistry, microbiological sampling, evaluate crustal evolution
DR-2	47°46.07'N 127°10.12'W	2600	900	20-50	920-950	sediment, basement, chemistry, microbiological sampling, evaluate crustal evolution

Proposed Sites:

iSAS/IODP	<b>Proposal Cover Sheet</b>	

Revised

Addendum



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New

Title:	Proposal 547 Full Revised.							
	Oceanic Subsurface Biosphere: Life in Subsection Volcanic Rock							
	occanic Substituce Diosphere. Ene in Subscattoor Volcanic Rock							
-								
Proponent(s):	Martin Fisk, Carol Di Meo, Stephen Giovannoni, Stefan Sievert, F	tuth Blake	e, Kenneth Nealson,					
	Radu Popa, Everett Shock, Jack Istok, Ingunn Thorseth, Rolf Pedersen,	Karsten P	edersen					
Keywords.	microorganisms ocean crust microbial biomass microbial		Juan de Euca					
(5 or logg)	diversity lithetrenh	Area:	Didge and Diete					
(5 or less)	diversity, innotroph		Ridge and Plate					
	Contact Information:							
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Department:	College of Oceanic and Atmospheric Sciences							
Organization	Oragon State University							

Department.	Conege of Oceanie and Autospherie Selences					
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Permission to post abstract on iSAS Web site: 📕 Yes

□ No

#### Abstract: (400 words or less)

Microorganisms are present in subsurface volcanic environments, and water emanating from oceanic crust contains microorganisms adapted to life in the subsurface. The oceanic volcanic crust may host a significant fraction of the Earth's biomass, yet little is known about subsurface microbial communities. This proposal is a multidisciplinary effort to understanding the nature and extent of subsurface biosphere in volcanic ocean crust.

Our six goals are: (1) to demonstrate that the ocean crust is capable of sustaining microbial life, (2) to identify organisms in the crust, (3) to obtain pure cultures of subsurface organisms, (4) to stimulate microbial growth and measure microbial activity in the crust, (5) to identify microbial interactions with minerals and microbial impact on chemical, mineralogical, and physical conditions of the igneous crust, and (6) to determine the influence of temperature on microbe physiology, microbial activity, and microbe-mineral interactions.

Experiments designed to achieve these goals are best carried out in a well-characterized and accessible region with a range of basement temperatures. Our efforts focuses on four sites, three on the east flank of the Juan de Fuca Ridge, and one in Middle Valley of Juan de Fuca Ridge (Fig. 1) where the basement temperatures are known (15°, 35°, 60°, and 90° C).

To achieve the six goals, the primary activities are: (1) deploy *in situ* sample chambers that can be recovered and examined for microbial growth, (2) extract and amplify DNA and RNA, analyze lipids, and conduct direct counts on rocks, formation water and drill water, batch cultures, and *in situ* sample chambers, (3) culture microorganisms from rocks and thermal waters, (4) conduct push-pull tests to stimulate and evaluate *in situ* microbial growth, (5) deploy and recover mineral substrates in boreholes and examine microbial alteration of natural samples, and (6) to conduct these tests in holes where temperatures of 15° to 90° C. These primary activities are linked to shipboard and shorebased chemical and physical measurements, analyses, and experiments.

The revisions resulted from a U.S. and European sponsored workshop held in Bergen, Norway, September 5 and 6, 2002. The proposal now focuses on life in igneous crust. Three sites have been eliminated from the original proposal. Sites OSB01C, D are relocated. OSB05A and OSB06A are unchanged. One site, OSB07A, has been added.

### 547-Full4

Scientific Objectives: (250 words or less)

We wish to answer key questions that are repeatedly asked about the subsurface biosphere. These questions reflect the six goals outlined above. The most intriguing questions for which we like answers are:

- Is the ocean crust is capable of sustaining microbial life?
- What microorganisms are present in the ocean crust?
- What substrates support microbial life?
- Can microbial activity be stimulated and quantified by introducing substrates?
- What microbial-mineral interactions occur in the crust?

• What effects to do microorganisms have on the chemical, mineralogical, and physical conditions of the igneous crust?

• What are the effects of microorganisms on element distribution in the ocean crust and the composition of sea water?

• What is the influence of temperature on microbe physiology, microbial activity, and microbe-mineral interactions.

		Water	Pe	netration (	m)	
Site Name	Position	Depth (m)	Sed	Bsm	Total	Brief Site-specific Objectives
OSB01C	48° 24.0'N 128° 40.0'W	2455	120	150	270	High-temperature (90°C) subsurface microbial observatory.
OSB01D	48° 23.2'N 128° 38.2'W	2400	80	150	230	High-temperature (90°C) subsurface microbial observatory.
OSB05A	47° 55.0'N 128° 47.5'W	2593	192	150	342	Low-temperature (15°C) subsurface microbial observatory.
OSB06A	47° 53.2'N 128° 38.9'W	2606	97	150	247	Mesophilic (35°C) microbial observatory.
OSB07A	47° 45.8'N 127° 45.6'W	2658	225	150	375	Thermophilic (60°C) microbial observatory.

Proposed Sites:

iSAS	S/IODP Proposal Cover Sheet <sup>4th</sup>	P6 reet	ng agende book			
New New	Revised Addendum					
	Please fill out information in all gray box					
Title:	Gas Hydrates on the Cascadia Margin					
Proponent(s):	): Michael Riedel, Roy D. Hyndman, Earl E. Davis, Tim S. Collett, Douglas Bartlett,					
	Miriam A. Kastner, George D. Spence, and Scott R. Dallimore					
Keywords: (5 or less)	Gas hydrates, fluid expulsion, accretionary prism	Area:	Vancouver Island Margin			
	Contact Information:					
Contact Person:	Michael Riedel					
Department:	Pacific Geoscience Centre					
Organization:	Geological Survey of Canada					
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Tel.:	1 250 363 6451 Fax: 1 250 363 65	65				
E-mail:	mriedel@pgc-gsc.nrcan.gc.ca					
	Permission to post abstract on iSAS Web site: x	Yes	No			

Received 1-April-2003

#### Abstract: (400 words or less)

This proposal is for an IODP program to constrain models for the formation of marine gas hydrate in subduction zone accretionary prisms. The objectives include the deep origin of the methane, its upward transport, its incorporation in gas hydrate, and its subsequent loss to the seafloor. The main attention is on the widespread seafloor-parallel layer of dispersed hydrate located just above the base of the stability field. Such layers may make up the largest volume of hydrate globally. In the model, methane is carried upward through regional grain-scale or small-scale fracture permeability, driven by the tectonic consolidation of the accretionary prism. Also important is the focusing of a portion of the upward methane flux into localized plumes or channels to form concentrations of near-seafloor hydrate. The amount of hydrate in local concentrations near the seafloor is especially important for understanding the response of marine hydrate to climate change. Long-term monitoring in the boreholes will assist in determining the role of shaking in the sediment consolidation, episodic upward fluid transport, and hydrate formation. The proposal is for drilling, downhole measurements, and long-term recording at a transect of sites across the Northern Cascadia accretionary prism. The sites will track the history of methane in an accretionary prism from: (1) its production by mainly microbiological processes over a thick sediment vertical extent, (2) its upward transport through regional or locally focused fluid flow, (3) its incorporation in the regional hydrate layer above the BSR or in local concentrations at or near the seafloor, to (4) methane loss from the hydrate by upward diffusion, and (5) methane oxidation and incorporation in seafloor carbonate, or expulsion to the ocean. The proposal builds on the previous Cascadia hydrate drilling of Leg 146 in the area and on more recent Leg 204 off Oregon. Important facilities for this proposal include, (1) the now well-developed CORK downhole monitoring, (2) Log-While-Drilling (LWD), (3) Distributed Temperature Sensors (DTS), and (4) Pressure Core Barrel sampler for

hydrate, free gas, and fluid recovery under insitu conditions.

4th SPC meeting agenda book

### 553-Full2

#### Scientific Objectives: (250 words or less)

The proposal follows the goals for gas hydrate drilling of the ODP Gas Hydrates Program Planning Group, i.e., (1) Study the formation of natural gas hydrate in marine sediments; (2) Determine the mechanism of development, nature, magnitude and global distribution of gas hydrate reservoirs; (3) Investigate the gas transport mechanism, and migration pathways through sedimentary structures, from site of origin to reservoir; (4) Examine the effect of gas hydrate on the physical properties of the enclosing sediments, particularly as it relates to the potential relationship between gas hydrates and slope stability; (5) Investigate the microbiology and geochemistry associated with hydrate formation and dissociation.

These scientific goals are an expansion of the latest achievements of ODP Leg 204, dedicated to study gas hydrates at Southern Hydrate Ridge (Trehu et al., 2002). Leg 204 was entirely focused on the specific structure of Hydrate Ridge and has only limited potential for applications at different continental margins.

The objectives of this proposal are to test gas hydrate formation models and constrain model parameters, especially models of hydrate concentration through upward fluid and methane transport. These objectives require:

(1) High quality data on the vertical concentration distributions of gas hydrate and free gas, and variation landward in the accretionary prism.

(2) Estimates of the vertical fluid and methane fluxes through the sediment section, as a function of landward distance from the deformation front.

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		Water Penetration (m)		m)		
Site Name	Position	Depth (m)	Sed	Bsm	Total	Brief Site-specific Objectives
CAS-04B	048 34 N 127 10 W	2600	500	0	500	Site will provide important reference information about the sediments that do not contain gas and/or gas hydrate.
CAS-03B	048 37.15 N 127 03.45 W	2000	400	0	400	Characterize fluid expulsion and related hydrate formation
CAS-02B	048 38.57 N 127 00.00 W	2150	400	0	400	Characterize fluid expulsion and related hydrate formation
CAS-01B	048 41.98 N 126 52.10 W	1400	600,400, 400	0	600	Dual ACORK experiment
CAS-05B	048 46.00 N 126 43.45 W	1100	350	0	350	Last Site along transect, shallowest BSR occurrence
CAS-06A	048 40.00 N 126 51.00 W	1400	350	0	350	Vent field, focused fluid flow and near-seafloor hydrate formation
CAS-07A	049 11.00 N 127 52.00 W	2600	600	0	600	Nootka fault, earthquake induced fluid expulsion

Proposed Sites:

			Received 8-Marc
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New	Revised	Addendum	

Please fill out information in all gray boxes

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Yes

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Title:	Backstop hydrogeology of a wide accretionary complex Mediterranean Sea	south a	of Crete, Eastern		
Proponent(s):	A. Kopf, A.H.F. Robertson, E.S. Screaton, J. Mascle, R.J. Parkes, J.P. Foucher, G.J. De Lange, B. Stökhert, D. Sakellariou				
Keywords: (5 or less)	accretionary complex, fluid flow, backstop, mud volcanism, Mediterranean Ridge	Area:	Mediterranean		

#### Contact Information:

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Permission to post abstract on iSAS Web site:

#### Abstract: (400 words or less)

We propose to drill a transect of three sites south of Crete (E. Mediterranean) from the distal part of the Mediterranean Ridge accretionary prism across its backstop. Following geophysical surveys and analog modeling, drilling a backstop setting is now essential to elucidate fundamental deep fluid flow processes and deformation mechanisms in a landward accretionary prism and its backstop. This single leg approach builds on successful campaigns at the toes of Barbados or Nankai, but addresses out-of-sequence thrusts (OOSTs) further landward which have been demonstrated to have high fluid flux rates. The variability in fluid flow across the wedge to its backstop strongly influences fluid budgets of the accretionary complex, and the entire subduction factory. Specifically, dewatering along hinterland backthrusts could diminish fluid available for migration along the accretionary décollement, and may hence affect chemical backflux into the hydrosphereas well as frictional properties of the subduction thrust. As a backstop has never been drilled before, we aim to shed light on (1) mass and fluid transfer at an accreting convergent margin, (2) the significance of spatial variability of fluids from mineral dehydration and diagenetic alteration at depth, and their interaction with the rock, (3) the control of seismicity by physical properties, and (4) deep biological activity near the up-dip limit of the seismogenic zone, to be contrasted with study of living bacteria within more shallowly buried organic-rich sediments (sapropels) in the same area. The area south of Crete is selected because the backstop setting is well imaged on quality seismic profiles, accessible to drilling, and comprises lithologies of different rheology, age and origin. The existence of the backstop is a consequence of a short-lived cycle of subduction slab breakoff, uplift and thrusting, accompanied by normal faulting within the forearc-high (Crete) and accretion further south (Med. Ridge). Deformation processes are accentuated due to collision of Africa with Eurasia, so that the accretionary prism is characterized by active backthrusting, fluid venting, chemo-bioherms, and mud volcanism. Each of the three proposed sites will penetrate a deep-seated fault whose fluids act as windows down to several km depth. Fluid chemistry will be indicative of enhanced dewatering reactions (diagenesis, mineral dehydration) and deep biological processes. We envisage an initial leg of mainly conventional drilling, with some logging, a Packer test, and one conventional CORK, the latter of which would help define and quantify variations in fluid flow and microbial activity across the faulted backstop through time.

#### Scientific Objectives: (250 words or less)

With drilling the distal wedge and backstop of the fast-growing Mediterranean Ridge accretionary complex, the following hypotheses will be tested:

- 1. The backstop is an important area of fluid flow from deep décollement depths (c5 km), volumetrically sufficient to affect mass balances of fluid flow in accretionary prisms;
- 2. Low-Cl, but otherwise geochemically mature fluids are expelled in the backstop region and provide a window to the deep plate boundary thrust (e.g. via mud volcanoes);
- 3. Deep-living bacteria exist in the fluids and sediments and provide a window into life at decollement depths (c5 km);
- 4. Advanced dewatering and commensurate chemical and biogeochemical changes occur deep within the backstop setting, influencing the mass/fluid wedge as a whole.
- 5. The backstop comprises older "non-rigid" accreted sedimentary rocks (including brine-type, upper Miocene pore fluids!), thrust over a "rigid" basement of units correlated with the Cretan nappes onland;
- 6. Crustal "roll-back" (extension) is currently taking place along the northern margin of the backstop, co-existing with compressional deformation (including backthrusts) further south, and represents a viable model to explain the exhumation of high-pressure rocks in the Cretan forearc-high.

Sita Nama	Desition	Water	Penetration (m)			Priof Site specific Objectives
Site Name	Position	Depth (m)	Sed	Bsm	Total	Bhei She-specific Objectives
BUTT-1	34° 18.6N, 24° 54.3E	2486	~900		~900	characterize backstop sedimentary rock and contact to HP/LT thrust sheets of forearc high (Crete), and fluid flow and deep biosphere along OOST
BUTT-2	34° 17.1N, 24° 11.9E	2540	~900		~900	drill backthrust between northernmost Med. Ridge (inner ridge) and forearc high, characterize fluid flow, geochemistry, deep biosphere
BUTT-3	33° 51.3N, 24°34.1E	1920-2080	~800 (A) ~200 (B,C)		~1200	drill active backthrust fault and mud volcano to study fluid flow, deep biosphere, rocks in the prism (using the mud volcano as tectonic "window" to the deep décollement)

#### Proposed Sites: (Only High Priority Sites are listed here.)

#### ODP Proposal Log Sheet

Interior

557-Full2

4th SPC meeting agenda book Proposal received: Sep 29, 2000 Proposal reviewed:

Environment

**Revised** proposal

Addendum to proposal

Other

#### Storegga Slide Gas Hydrate Drilling K. Andreassen, J. Mienert, C.K. Paull, J. Parkes, J.-P. Foucher, H.P. Sejrup, T.J. Kvalstad and J. Behrmann Abbrev. Title: Storegga Slide Gas Hydrate Key: Storegga Slide Area: N Atl Contact: Dr. K. Andreassen +47 77 644420 Tel: Dept. of Geology Internet: karina@ibg.uit.no University of Tromsoe N-9037 Tromsoe () **Brief Description:** An ODP drilling to the Norwegian continental margin is proposed, focusing on the connection between gas hydrates, fluid expulsion, continental margin instability, and gas loss during slumping. The Norwegian Margin is targeted for several site-specific reasons: (A) The largest continental margin sedimentary failure known, the Storegga Slide occurs here, and is believed to be related to sediment weakness stimulated by dissociation of gas hydrates after a thermal warming affected the area since last deglaciation. Here we have the opportunity to quantify the amounts of gas that is lost from the original host sediment during slumping. (B) At the northern flank of the Storegga Slide geophysical evidence suggest an association between dissociation of gas hydrates, expulsion of fluid and gas, and unstable sediments. This relationship will be investigated by drilling the sections near the slide scar, and deploying a CORK observatory at one site. The current stability of the slope and incipient slide block will be assessed, by a combination of geotechnical studies, structural analysis of the core material and results from the CORK experiment. (C) Selected drill sites provide the special opportunity to understand the effect of gas hydrate and gas, and its variability within the same lithological formations. (D) The coupling of biosphere and geosphere processes will be investigated, including using CORK deployment for monitoring the bacterial methane oxidation to evaluate the gas hydrate instability. (E) The Quaternary slide frequencies in the Storegga Slide region will be assessed, from drill site(s) at the distal parts of the slide deposits. To address the above mentioned objectives we propose to drill three holes into the undisturbed sediments on the flanks of the slide scar, and up to four holes within the slide scar and slump deposits, accompanied by pressure-core sampling and in situ measurements. Because the present movement of the hydrocarbon industry to deep-water areas and the great concern about slope stability in the Storegga Region, this proposal has one of the greatest potential to bring together industry and academia. Specific area: Storegga Slide, Norwegian Margin **Proposed Sites:** Penetration Site Water Position Brief site-specific objectives Sed Bsm Total Name depth 0 500 (1) Sample sediments and gases for assessing gas loss durin ST-1 64°45.294'N; 4°28.320'E 500 906 ST-2 64°43.089'N; 4°23.367'E 1030 590 0 590 (1) Sample sediments and gases for assessing gas loss durin ST-3 64°37.923'N; 4°12.267'E 1425 262 0 262 (1) Sample sediments and gases for assessing gas loss durin 0 406 (1) Reference site with no BSR observed, for physical prop ST-4 64°52.58'N; 3°59.962'E 1093 406 ST-5 64°15.688'N; 3°59.99'E 1800 0 480 Sample sediments and gases for assessing gas loss during di 480 0 673 Sample sediments and gases for assessing gas loss during sl ST-6 66°28.23'N; 1°5.4'E 3320 673 ST-7 68°9.3'N; 4°20.7'E 3700 Sample sediments and gases for assessing gas loss during di 280 <sup>0</sup> 280 264

<b>ODP</b> Proposal	Log Sheet	557 E112	Prop
🗙 Environment	Interior	557-Full2	Propo

4th SPC meeting agenda book Proposal received: Sep 29, 2000 Proposal reviewed:

New proposal

Revised proposal

Addendum to proposal

Other

Contact:       Dr. K. Andreassen       Tel: +47 77 644420         Dept. of Geology       Internet: karina@ibg.uit.no         University of Tromsoe       N-9037 Tromsoe ()         Objectives:       1. To study massive slope failure caused by sediment weakness through dissociation of gas hydrates after a thermal warming.         2. To quantify the amounts of gas that is lost from the original host sediment during large scale slumping at continental margins.         3. To investigate the relationship between dissociation of gas hydrates, expulsion of fluid and gas, and unstable sediments.         4. To understand the effect of gas hydrate and gas, and its variability within the same lithological formations.         'roposal acknowledged by JOIDES Office: Sep 29, 2000 to : Andreassen, K.         'roposal forwarded for review:       Oct 5, 2000 to : SSEPs         'roposal copies:       Oct 5, 2000 to : JOI Inc., SO (ODP/TAMU), SSDB	Abbrev. Title: S	toregga Slide Gas Hydrate	Key: Storegga Slide Area: N Atl
Objectives:         1. To study massive slope failure caused by sediment weakness through dissociation of gas hydrates after a thermal warming.         2. To quantify the amounts of gas that is lost from the original host sediment during large scale slumping at continental margins.         3. To investigate the relationship between dissociation of gas hydrates, expulsion of fluid and gas, and unstable sediments.         4. To understand the effect of gas hydrate and gas, and its variability within the same lithological formations.         Proposal acknowledged by JOIDES Office: Sep 29, 2000 to : Andreassen, K.         Proposal forwarded for review:       Oct 5, 2000 to : SSEPs         Proposal copies:       Oct 5, 2000 to : JOI Inc., SO (ODP/TAMU), SSDB	Contact:	Dr. K. Andreassen Dept. of Geology University of Tromsoe N-9037 Tromsoe ()	Tel: +47 77 644420 Internet: karina@ibg.uit.no
<ol> <li>To study massive slope failure caused by sediment weakness through dissociation of gas hydrates after a thermal warming.</li> <li>To quantify the amounts of gas that is lost from the original host sediment during large scale slumping at continental margins.</li> <li>To investigate the relationship between dissociation of gas hydrates, expulsion of fluid and gas, and unstable sediments.</li> <li>To understand the effect of gas hydrate and gas, and its variability within the same lithological formations.</li> <li>Proposal acknowledged by JOIDES Office: Sep 29, 2000 to : Andreassen, K.</li> <li>Proposal forwarded for review: Oct 5, 2000 to : SSEPs</li> <li>Proposal copies: Oct 5, 2000 to : JOI Inc., SO (ODP/TAMU), SSDB</li> </ol>	Objectives:		
<ol> <li>To quantify the amounts of gas that is lost from the original host sediment during large scale slumping at continental margins.</li> <li>To investigate the relationship between dissociation of gas hydrates, expulsion of fluid and gas, and unstable sediments.</li> <li>To understand the effect of gas hydrate and gas, and its variability within the same lithological formations.</li> <li>Proposal acknowledged by JOIDES Office: Sep 29, 2000 to : Andreassen, K.</li> <li>Proposal forwarded for review: Oct 5, 2000 to : SSEPs</li> <li>Proposal copies: Oct 5, 2000 to : JOI Inc., SO (ODP/TAMU), SSDB</li> </ol>	1. To study ma warming.	ssive slope failure caused by	sediment weakness through dissociation of gas hydrates after a thermal
<ul> <li>3. To investigate the relationship between dissociation of gas hydrates, expulsion of fluid and gas, and unstable sediments.</li> <li>4. To understand the effect of gas hydrate and gas, and its variability within the same lithological formations.</li> <li>Proposal acknowledged by JOIDES Office: Sep 29, 2000 to : Andreassen, K.</li> <li>Proposal forwarded for review: Oct 5, 2000 to : SSEPs</li> <li>Proposal copies: Oct 5, 2000 to : JOI Inc., SO (ODP/TAMU), SSDB</li> </ul>	2 To quantify	the amounts of gas that is los	st from the original host sediment during large scale slumping at
<ul> <li>4. To understand the effect of gas hydrate and gas, and its variability within the same lithological formations.</li> <li>Proposal acknowledged by JOIDES Office: Sep 29, 2000 to : Andreassen, K.</li> <li>Proposal forwarded for review: Oct 5, 2000 to : SSEPs</li> <li>Proposal copies: Oct 5, 2000 to : JOI Inc., SO (ODP/TAMU), SSDB</li> </ul>	continental mar	gins.	
Proposal acknowledged by JOIDES Office: Sep 29, 2000 to : Andreassen, K. Proposal forwarded for review: Oct 5, 2000 to : SSEPs Proposal copies: Oct 5, 2000 to : JOI Inc., SO (ODP/TAMU), SSDB	<ol> <li>To quantify continental man</li> <li>To investigation sediments.</li> </ol>	gins. te the relationship between d	issociation of gas hydrates, expulsion of fluid and gas, and unstable
Proposal forwarded for review: Oct 5, 2000 to : SSEPs Proposal copies: Oct 5, 2000 to : JOI Inc., SO (ODP/TAMU), SSDB	<ol> <li>a. To quantify continental mat</li> <li>b. To investigate sediments.</li> <li>c. To understa</li> </ol>	gins. te the relationship between d nd the effect of gas hydrate an	issociation of gas hydrates, expulsion of fluid and gas, and unstable and gas, and its variability within the same lithological formations.
Proposal copies: Oct 5, 2000 to : JOLI 5 Oct 5, 2000 to : JOLI 5	<ol> <li>2. To qualify continental mat</li> <li>3. To investigate sediments.</li> <li>4. To understa</li> </ol>	gins. te the relationship between d nd the effect of gas hydrate an	issociation of gas hydrates, expulsion of fluid and gas, and unstable and gas, and its variability within the same lithological formations.
	<ol> <li>Proposal acknow</li> </ol>	gins. te the relationship between d nd the effect of gas hydrate an redged by JOIDES Office: S ded for review:	issociation of gas hydrates, expulsion of fluid and gas, and unstable and gas, and its variability within the same lithological formations. Gep 29, 2000 to : Andreassen, K. Det 5, 2000 to : SSEPs

#### ODP Proposal Log Sheet

564-Full

4th SPC meeting agenda book Proposal received: Sep 27, 1999 Proposal reviewed:

Environment

**Revised** proposal

Interior

Addendum to proposal

Other

#### **Global Sea Level and the Architecture of Passive Margin Sediments: Shallow** -Water Drilling of the New Jersey Continental Shelf

K.G. Miller, G.S. Mountain, N. Christie-Blick, J.A. Austin, C.S. Fulthorpe, P.J. Sugarman

Abbrev. Title: S	Shallow-Water Drilling, New Jersey Shelf	Key: New Jersey Shelf	Area: NW Atl
Contact:	Dr. Kenneth G. Miller	Tel: (908) 445-3622	
	Department of Geological Sciences	FAX: (908) 445-3374	
	Rutgers, The State University	Internet: kgm@rci.rutgers.edu	
	New Brunswick, NJ 08903 (US)	Bitnet: http://www-rci.rutgers.edu/	
		~geolweb	

#### Brief Description:

We propose to drill three sites on the inner continental shelf of New Jersey to estimate amplitudes and rates of Cenozoic global sea-level (eustatic) change and to evaluate the response of passive continental margin sedimentation to such eustatic changes. These sites will provide continuous recovery of siliciclastic sequences on a modern continental margin at locations chosen to provide definitive measures of sea-level amplitudes and to evaluate models of sedimentation and facies distribution. This will be the culmination of many years of effort in implementing "The New Jersey/Mid-Atlantic Sea-Level Transect" (MAT) strategy developed and endorsed by several advisory and review bodies. Prior MAT drilling has focused on the New Jersey slope (ODP Legs 150, 174A), outer shelf (ODP Leg 174A), and onshore (ODP Legs 150X, 174AX). Collectively these efforts have been successful in providing ages of sequence boundaries and tying each to the d18O proxy of glacioeustasy, yet have fallen short of the ultimate objectives because facies that register the most sensitive record of sea-level change, the paleo inner shelf, have not been continuously sampled. Consequently, a critical gap remains in the MAT concerning our knowledge of global sea-level change and its imprint on the stratigraphic record. We propose to obtain continuous cores and downhole logging measurements within crucial paleo inner shelf facies using a commercial drilling platform. The sites we propose, MAT 1-3, represent the most sensitive and financially accessible locations for deciphering amplitudes and testing facies models. Funds will either be provided by NSF and the International Continental Drilling Project (ICDP) with support-in-kind from ODP (and thus be designated a ODP/ICDP/NSF project) or else funded primarily by JOI and with \$500,000 from ICDP (and thus be an ODP project with ICDP support). New Jersey drilling will be the first to unite these agencies in a cooperative international effort and may help forge new alliances for drilling activities in the future. By integrating our results with those derived from other sections in both shallow water and the deep sea, we anticipate that drilling MAT1-3 will allow us to: 1) provide estimates of eustatic amplitudes and generate a testable record of eustatic variations; 2) evaluate the effects of eustasy, tectonics, and sediment supply on the stratigraphic record; and 3) test models that predict the nature and distribution of sedimentary facies in passive margin strata.

### Specific area: New Jersey Continental Shelf Proposed Sites:

Site Name	Position	Water d <u>e</u> pth	Pener Sed	t <b>ratio</b> Bsm 7	<b>n</b> Fotal	Brief site-specific objectives
MAT-1	39°37.616'N; 73°36.533'W	33	762	0	762	Determine age, fcies, and paleobythymetry of surfaces corre
MAT-2	39°34.1797'N; 73°30.2607	36	762	0	762	Determine age, facies, and paleobathymetry of surfaces corr
MAT-3	39°31.1327'N; 73°24.7063	36	762	0	762	Determine age, facies, and paleobathymetry of surfaces corr

Page 1 of 2

ODP Proposal Log Sheet   56     Environment   Interior	64-Full	Proposal received: Sep 27, 1999 Proposal reviewed:
ODD Branacal Lag Shoot		4th SPC meeting agenda book

#### New proposal

**Revised** proposal

Addendum to proposal

Other

#### **Global Sea Level and the Architecture of Passive Margin Sediments: Shallow** -Water Drilling of the New Jersey Continental Shelf

K.G. Miller, G.S. Mountain, N. Christie-Blick, J.A. Austin, C.S. Fulthorpe, P.J. Sugarman

Contact:Dr. Kenneth G. MillerTel: (908) 445-3622Department of Geological Sciences Rutgers, The State University New Brunswick, NJ 08903 (US)FAX: Bitnet: bitnet: http://www-rci.rutgers.edu/ ~geolweb	Abbrev. Title: Sha	llow-Water Drilling, New Jersey Sh	elf	Key: New Jersey Shelf	Area: NW A	Atl
	Contact:	Dr. Kenneth G. Miller Department of Geological Science Rutgers, The State University New Brunswick, NJ 08903 (US)	Tel: es FAX: Interne Bitnet:	(908) 445-3622 (908) 445-3374 t: kgm@rci.rutgers.edu http://www-rci.rutgers.edu/		
Objectives:	Objectives:	(	~geoiw			
Proposal acknowledged by JOIDES Office: Sep 29, 1999 to : Miller, K.G.Proposal forwarded for review:Oct 5, 1999 to : SSEPsProposal copies:Oct 5, 1999 to : JOI Inc., SO (ODP/TAMU), SSDBPage 2	Proposal acknowled Proposal forwarde Proposal copies:	dged by JOIDES Office: Sep 29, d for review: Oct 5, 1 Oct 5, 1	1999 to : Miller, K. 999 to : SSEPs 999 to : JOI Inc.,	.G. SO (ODP/TAMU), SSDB	Page	2 of 2

## ODP Proposal Log Sheet 573-Full2

Interior

4th SPC meeting agenda book Proposal received: Sep 28, 2000 Proposal reviewed:

Environment New proposal

Revised proposal

Addendum to proposal

Other

#### Modern Carbonate Mounds: Porcupine Drilling J.-P. Henriet, B. De Mol, W.-C. Dullo, A. Freiwald, B.B. Joergensen, J. Parkes, J.W. Patching Abbrev. Title: Carbonate Mounds/Porcupine Basin Area: N Atl Key: Carbonate Mounds Contact: Dr. Jean-Pierre Henriet Tel: +32-9-2644585 +32-9-2644967 Renard Center of Marine Geology FAX: University of Gent Internet: jeanpierre.henriet@rug.ac Krijgslaan 281, S8 .be 9000 Gent () **Brief Description:** The carbonate mounds of the Porcupine Basin resemble mud mounds in terms of their dimension, geometry, faunal communities and environmental setting. The Porcupine Basin displays - within the North Atlantic realm and perhaps in a global perspective - a unique association and diversity of carbonate mound provinces, which may yield the key to address the question of mound genesis and its significance in a global oceanic plot , from a process-oriented point of view. The giant mounds on the present seabed surface southwest of Ireland, 200 to 250 m high, the extensive cluster of over a thousand buried reefs embedded in drift sediments, the whole range of mounds towering from a deeply ravinating unconformity on the eastern slope of Porcupine Basin are not mere curios, but significant build-ups, which may put Man on the track of hitherto unknown Biosphere processes thriving at the confluence of fluxes from both internal (geological) and external (oceanic) origin. In many aspects and mutatis mutandis, carbonate mounds might be for the Margins what sulphide mounds are on the Ridges: the product of biologically controlled geological processes, of global significance. The "Porcupine Drilling Project" is driven by four major research projects funded under the 5th Framework Programme of the European Union (GEOMOUND, ECOMOUND, DEEP-BUG and ACES) and hence it mobilizes a multi-disciplinary consortium of 22 institutes and research centres. A range of provoking hypotheses will be tested: the role of gas seeps as a prime trigger for mound genesis, the role of bacteria as main mound builders, the role of reef-forming corals as major part of the mound community and their environmental record potential, the significance of mound "events" in a palaeoenvironmental plot, the identification of prominent erosional surfaces as product of global oceanic turn-overs, the potential of mounds as high-resolution palaeoenvironmental recorders, the value of the Porcupine-Rockall mounds as present-day analogs for Phanerozoic reef mounds and carbonate mud mounds, and the potential role of fluid flow as common source of both slope failures and mound growth. Finally, a virtual link to biological processes is provided by the widespread existence of cold and deep-water coral and sponge reef ecosystems which colonize the flanks of the mounds. However, their nutritional mode either through bentho-pelagic coupling processes, or through fuelling by the deep hydrocarbon reservoirs and thus the role of such processes in the evolution of mounds remains unresolved. Specific area: Porcupine Basin **Proposed Sites:**

Site Name	Position	Water depth	Penet Sed	t <b>ration</b> Bsm Total	Brief site-specific objectives
PORC-01A	51°01.208'N; 11°24.317'W	439	440	0 440	Huge drift body, which overlays an erosional unconformity
PORC-02A	51°26.161'N; 11°33.020'W	412	350	0 350	Drift body related directly to Belgica mounds. Overlays an e
PORC-03A	51°22.848'N; 11°43.108'W	785	210	0 210	"Living" carbonate mound sitting on a gently inclined flan
PORC-04A	51°22.553'N; 11°43.803'W	937	102	0 102	Onlapping drift body, partly draping the lower part of the c
PORC-05A	51°19.126'N; 11°53.091'W	1065	320	0 320	Buried acoustic transparent layer by drift sediments. We wa
PORC-06A	51°25.579'N; 11°46.362'W	890	150	0 150	This unique site should provide information on the active de
PORC-07A	52°09.084'N; 12°49.962'W	607	370	0 370	Outcropping carbonate mud mound with a living surface cov
PORC-08A	52°09.0198'N; 12°53.839'	643	250	0 250	Thickest part of the drift body related to the Hovland mound
PORC-09A	52°21.221'N; 12°39.902'W	637	300	0 300	Erosional features along an imbricated wall, possibly linke
PORC-10A	52°19.740'N; 12°37.702'W	652	385	0 <b>268</b>	As PORC-09A. This site will provide the stratigraphic age

ODD Dreve and Law Chart		4th SPC meeting agenda book
ODP Proposal Log Sneet	573-Full2	Proposal received: Sep 28, 2000
<b>Environment</b> Interior	575-1 ull2	Proposal reviewed:

New proposal

**Revised** proposal

Addendum to proposal

Other

Modern Carbonate Mounds: Porcupine Drilling					
JP. Henriet, B. De Mol, WC. Dullo, A. Freiwald, B.B. Joergensen, J. Parkes, J.W. Patching					
Abbrev. Title: Car	bonate Mounds/Porcupine Basin	Key: Carbonate Mounds Area: N Atl			
Contact:	Dr. Jean-Pierre Henriet Renard Center of Marine Geology University of Gent Krijgslaan 281, S8 9000 Gent ()	Tel: +32-9-2644585 FAX: +32-9-2644967 Internet: jeanpierre.henriet@rug.ac .be			
Objectives:					
<ol> <li>To study and evaluate the role of gas seeps as a prime trigger for mound genesis.</li> <li>To study and evaluate the role of bacteria as main mound builders.</li> <li>To study and evaluate the role of reef-forming corals as major part of the mound community and their environmental record potential.</li> <li>To study and evaluate the significance of mound "events" in a palaeoenvironmental context.</li> <li>To study and evaluate the potential of mounds as product of global oceanic turn-overs.</li> <li>To study and evaluate the potential of mounds as high-resolution palaeoenvironmental recorders.</li> <li>To study and evaluate the value of the Porcupine-Rockall mounds as present-day analogs for Phanerozoic reef mounds and carbonate mud mounds.</li> <li>To study and evaluate the potential role of fluid flow as common source of both slope failures and mound growth .</li> </ol>					
Proposal acknowle Proposal forwarde Proposal copies:	dged by JOIDES Office: Sep 28, d for review: Oct 5, 20 Oct 5, 20	000 to : Henriet, JP. 0 to : SSEPs 0 to : JOI Inc., SO (ODP/TAMU), SSDB Page 2 of 2			
			Received 31-March-2002		
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iSAS/IO	DP Proposal C	over Sheet	4th 58 meeting agonda book		
New	<b>K</b> evised	Addendum			

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L No

Yes

Title:	Latest Pleistocene drowned coralgal banks and mounds along the edge of the South Texas and Mississippi continental shelves André W. Droxler (Rice University) and William W. Sager (Texas A&M)				
Proponent(s):					
Keywords:	Coralgal Reefs and Sea Level, Sea Level History, Last	Arooi	Northern Gulf of		
(5 or less)	Deglaciation, Carbonate Drowning	Alea.	Mexico		

Contact Information:

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Permission to post abstract on iSAS Web site:

Abstract: (400 words or less)

Southern and Baker Banks are currently drowned coralgal reefs about 40 to 50 m-thick on the edge of the South Texas Shelf 55 km offshore Corpus Christi. They are interpreted to have grown during the first half of the last sea level transgression on top of topographic highs occurring along a Last Glacial Maximum lowstand siliciclastic paleo coastline. Contemporaneous and similar coral reef establishment, growth, and demise have been reported along the Mississippi-Alabama shelf margin.

We are proposing to drill and analyze seven 80 to 100 m - deep boreholes, an array of five boreholes through Southern Bank and a two borehole-transect through Baker Bank and their siliciclastic substratum. Each borehole in Southern and Baker Banks will include at least two of the three following sedimentary packages: (1) the siliciclastic substratum of the reefal edifice, (2) the coralgal sequence itself, and (3) the mud blanket that partially covers the reefal edifices. In addition a two borehole-transect across similar transgressive banks observed at the edge of Mississippi-Alabama continental shelf has been integrated to this drilling proposal.

This proposal is a slightly modified version of ODP proposal # 581, submitted in Spring 2000. An addendum to the proposal was submitted in Sept. 2000 as a response to the ESSEP review. The proposal received three excellent external reviews out of a total of four reviews. Based upon these reviews, a PRL was submitted a year ago in April 2001. Finally, the proposal was discussed by SCICOM in Summer 2001.

Although this drilling proposal is submitted based upon its sole scientific merit, this drilling program should be also considered as an exemplary scientific drilling activity in shallow water conditions to promote alternate drilling platform as being a full part of IODP. This drilling program could also be used as a feasibility test in using the highly maneuverable, 190-ft-long R/V *Seaprobe I* or *Fugro Explorer* of Fugro-McClelland as an alternate drilling platform to drill coralgal edifices in water depths shallower than 120 m.

## Scientific Objectives: (250 words or less)

The detailed description of the different lithologies and depositional environments, the borehole logs, the geochemical analyses, and U/Th and <sup>14</sup>C AMS dating of these nine cored sedimentary sequences will allow us to develop the following objectives:

- (a) The drilled material will shed some new light on the enigmatic findings that coralgal edifices flourished on the edge of the South Texas and Mississippi-Alabama shelves during the first part of last deglaciation, an interval of time when conditions of sea surface temperature were and sea surface salinity were expected to be lower in the Gulf of Mexico, and rates of eustatic sea-level rise much faster than they are today;
- (b) The drilled material will improve the resolution of the last deglacial sea-level history from late Glacial to the Younger Dryas, including the interval of the melt-water pulse 1A, from a passive margin environment less influenced by discontinuous tectonic activity as in the offshore Barbados,
- (c) The drilled material will help us to better understand the sedimentary and biological processes involved with the origin (initial establishment), growth, and demise of carbonate reef tracts along the edge of siliciclastic shelves.
- (d) The latest Pleistocene transgressive coralgal reefs on the edge of the South Texas Shelf can bestudied as recent analogs for reefal reservoirs buried in siliciclastic shelves.

	Water Penetration (m)		m)	Drief Site and if a Ohiertione		
Site Name	Position	Depth (m)	Sed	Bsm	Total	Brief Site-specific Objectives
Southern Bank SB-1	N 27 25.0, W 96 31.5 SP 1390 MC D4	60 m	100 m		100 m	Thickest part of coralgal U. III
SB-2	SP 1315 MC D4	60 m	100 m		100 m	Thickest part of coralgal U. III
SB-3	SP 1690 MC D1	62 m	100 m		100 m	Thick part of coralgal U. III
SB-4	SP 1510 MC D4	70 m	75 m		75 m	Thick part of coralgal U. III
SB-5	SP 1360 MC S4	78 m	70 m		70 m	Recover youngest Unit IV on A back reef position
Baker Bank BB-1	N 27 45.5, W 96 13.5	60 m	100 m		100 m	Thickest part of coralgal U. III
BB-2	N 27 45.8, W 96 13.8	70 m	90 m		90 m	Recover youngest Unit IV on A back reef position
Mississippi- Alabama						
MA-1	N 29 20.205, W 87 45.072	90 m	70 m		70 m	Early deglacial mound
MA-2	N 29 26.253, W 87 34.506	80 m	70 m		70 m	Mid deglacial mound

#### Proposed Sites: (Only High Priority Sites are listed here.)

iSAS New	Korrent Cover Sheet     Addendum       Revised     Addendum
Please fill out infor	mation in all gray boxes Above For Official Use Only
Title:	TAG II: Evolution of a Volcanic-hosted Hydrothermal System on a Slow- spreading Ocean Ridge
Proponent(s):	Peter A. Rona, Jeffrey C. Alt, Fernando J.A.S. Barriga, Michael J. Bickle, Hitoshi Chiba, David S. Cronan, Yves Fouquet, Kantaro Fujioka, J. Bruce Gemmell, Mark D. Hannington, Peter M. Herzig, Jose Honnorez, Zengqian Hou, Susan E. Humphris, Gerardo J. Iturrino, Masataka Kinoshita, Martin C. Kleinrock, Randolf A. Koski, Claude Lalou, Marvin Lilley, Robert P. Lowell, Jay Miller, Rachel A. Mills, Michael J. Mottl, Bramley J. Murton, Martin Palmer, R. John Parkes, Sven Petersen, Anna-Louise Reysenbach, Adam Schultz, Steven D. Scott, Susan E. Smith, Robert A. Sohn, Damon A. H. Teagle, Margaret K. Tivey, Maurice A. Tivey, David A. Vanko

Keywords: (5 or less)	Biosphere, hydrothermal, sulfides, ocean ridge, TAG	Area:	TAG hydrothermal field, Mid-Atlantic Ridge, 26°N,45°W
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Permission to post abstract on iSAS Web site:

#### Abstract: (400 words or less)

We propose TAG II, a second leg of drilling at the TAG hydrothermal field (Mid-Atlantic Ridge 26N, 45oW), considered to be the location of choice for study of a volcanichosted hydrothermal system hosted in slow-spreading ocean lithosphere. TAG II will extend seafloor hydrothermal research in space and time by targeting an interactive assemblage of large massive sulfide mounds ranging from young/hot to old/cold encompassed within the 5 by 5 km area of the TAG field, and will fulfill objectives of the first leg (ODP Leg 158, 1994). This will be accomplished by achieving three goals in support of the deep biosphere, subseafloor ocean, and oceanic lithosphere themes of the IODP Science Plan:

 Deeper drilling (to 250 mbsf) with coring/logging/water sampling to determine the nature of water-rock reactions and biosphere in the stockwork zone of the active hightemperature sulfide mound drilled on Leg 158 (to 125 mbsf), with the ultimate objective of reaching the reaction zone (2-3 kmbsf) as a legacy hole.

- 2) Extension of drilling with coring/logging/water sampling from the active hightemperature mound to four other sequentially older active and relict hydrothermal zones within the TAG field to determine the evolution of a seafloor hydrothermal system and its massive sulfide from origin to fate.
- 3) Determination of the nature of the deep biosphere under a range of conditions from hot to cold (high- and low-temperature venting; high to ambient conductive heat flow), and in young to old hydrothermal deposits (0 to c. 140,000 years) in the five hydrothermal zones.

These goals are attainable with present drilling (AHC, HRRS with HDIC, or DIC), and logging capabilities (LWD and wireline for lithological and structural characterization), and realistic expectations of core recovery (10-20 percent with.RCB, ADCB and other coring devices). Extending drilling downward at the active high-temperature sulfide mound and outward to the sequentially older hydrothermal zones of the TAG field will maximize scientific investment in TAG by placing biological, chemical, and physical processes at the active sulfide mound in context of the evolution of a long-lived major hydrothermal field as a whole, and will elucidate the nature of the typically clustered occurrence of large massive sulfide mounds produced by these systems in the geologic record.

584-Full2

#### Scientific Objectives: (250 words or less)

- 1. Determine the nature of the deep biosphere: Use the deeper drilling at the active sulfide mound and the drilling at the other mounds as an exceptional opportunity to investigate the deep biosphere under conditions ranging from high-, to intermediate-, to low- background temperatures representing different regimes of mixing of oxidized nutrient-rich cold seawater and reduced H2S-rich reduced vent fluid.
- 2. Determine the nature of water-rock reactions in the stockwork and underlying reaction zones beneath the active high-temperature sulfide mound in order to: (i) understand how seawater is transformed into the hydrothermal fluids venting at the seafloor, (ii) evaluate the associated elemental exchanges and their influence on global geochemical budgets.
- 3. Determine the evolution of a volcanic-hosted subseafloor hydrothermal system and its deposits in space and in time from origin to fate: Volcanogenic massive sulfide (VMS) deposits in the geologic record typically occur as clusters. The TAG hydrothermal field consists of an assemblage of active and relict deposits in different stages of evolution from young/hot to old/cold. This provides an unprecedented opportunity to advance beyond the present focus on active high-temperature deposits and to investigate the temporal and spatial evolution of a modern seafloor hydrothermal assemblage analogous to the clustered mode of occurrence of ancient VMS deposits

Proposed Sites: (Only High Priority Sites are listed here.)						
Cite Name	Position	Water	Penetration (m)			Drief Site and if a Ohiosting
Site Maille		Depth (m)	Sed	Bsm	Total	Brief Site-specific Objectives
TAG-1A: Active high-temperature sulfide mound, 0 to 50,000 years old (ODP Site 957)	26°08.21'N, 44°49.57'W	3635-3670			250 m	Drilling, coring, logging, and water sampling for biosphere, water-rock interaction, characterization of sulfide, stockwork, and basalt alteration.
TAG-2A: Shimmering mound (active low-temperature mound)	26°10.25'N, 44°48.88'W	3436-3504			100 m	Drilling, coring, logging, and water sampling for biosphere, water-rock interaction, characterization of sulfide, stockwork, and basalt alteration.
TAG-3A:Mir zone (inactive; high heat flow, 2,000 to 102,000 years old)	26°08.70'N, 44°48.40'W	3430-3575			100 m	Drilling, coring, logging, and water sampling for biosphere, water-rock interaction, characterization of sulfide, stockwork, and basalt alteration.
TAG-4A: Shinkai mound (inactive, cold, 2,000 to 23,000 years old)	26°09.52'N, 44°49.15'W	3545-3615			100 m	Drilling, coring, logging, and water sampling for biosphere, water-rock interaction, characterization of sulfide, stockwork, and basalt alteration.
TAG-5A: Alvin mound (inactive, cold, 50,000 years old)	26°09.54'N, 44°48.89'W	3512-3540			100 m	Drilling, coring, logging, and water sampling for biosphere, water-rock interaction, characterization of sulfide, stockwork, and basalt alteration

		Received 1-April-2002
iSAS/IO	DP Proposal Cover Shee	4th SPC meeting agenda bo
<b>New</b>	Revised Adda	endum

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Title:	Overpressure and Fluid Flow Processes in the Deepwater Gulf of Mex	xico	
Proponent(s):	Peter B. Flemings, Alan Huffman, James A. Thomson, Michael O. Andrew Whittle, Charles Winker	Maler, Ri	chard E. Swarbrick,
Keywords: (5 or less)	Overpressure, sedimentation, fluid flow, slope stability	Area:	Gulf of Mexico

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	Permission to post abstract on iSAS Web site: Ves Vo					

# Abstract: (400 words or less)

Passive margin continental slopes are extraordinarily active hydrodynamic systems where sedimentation, fluid migration, and structural deformation are intimately coupled. Sea floor slumping, fluid expulsion (e.g. mud volcanoes), vent biological communities, and near lithostatic fluid pressures are all expressions of this active system. We propose a drilling program on the Gulf of Mexico continental slope. We will examine a normally pressured depositional basin (Brazos- Trinity Basin 4 in order to characterize rock and fluid properties and in-situ conditions at a range of known effective stress conditions. We will examine an overpressured location (Ursa Basin) to characterize rock and fluid properties in shallow overpressure and to test a flow-focusing model. This model predicts that where sand bodies are rapidly buried by overburden of varying thickness, characteristic pressure, stress, and compaction states will result. At each location, in-situ measurements will include Logging While Drilling, piezoprobe experiments to determine in-situ pressure and temperature in low permeability mudrocks, and wireline packer stress measurements to determine in-situ stress conditions. Whole round cores will be taken for geotechnical analysis (consolidation tests) to compare lab-derived pre-consolidation stresses with in-situ observations. Pore water sampling will be used to further constrain hydrodynamic fluxes. We propose to seal one hole with a packer and CORK to accurately determine the pressure within a permeable overpressured sand and to establish the framework for long-term observation of fluid flow behavior. A better understanding of pressure evolution and flow focusing has the potential to: 1) illuminate the controls on slope stability; 2) illustrate the processes driving seeps and associated biological communities; 3) allow industry and iODP to use a predictive approach to drilling stable boreholes; 4) show how pressure, stress and geology couple to control fluid migration on passive margins; and 5) provide extraordinary data set to observe ponded and channelized turbidite deposits.

# 589-Full3

## Scientific Objectives: (250 words or less)

We have developed a macro-scale (km scale) model that describes how sedimentation drives compaction and fluid flow in geologic settings where low permeability mudstones load high permeability aquifers. We will test this model by characterizing the spatial variation in pressure, stress, and rock and fluid properties along a known flow focusing structure (Ursa Basin). The micro-scale material behavior of the shallow sediments will be established through analysis of two reference sites where pore pressures are normal, yet in-situ effective stresses are different (the Brazos Trinity Basin). A core component of the study will be laboratory based geotechnical analysis of sediment properties to further constrain material behavior. Achievement of the scientific objectives will illuminate controls on slope stability, seeps, and large scale crustal fluid flow.

		Water	Pe	enetration (	m)	
Site Name	Position	Depth (m)	Sed	Bsm	Total	Brief Site-specific Objectives
BT41A	East Breaks Block 604 Gulf of Mexico Lat: 27°22.7' Long: -94°21.2'	1396.4	1497.0	1620.5	1666.2	Reference Site determine Rock and fluid properties in normal pressure at moderate effective stress
BT4-2A	East Breaks Block 692 Gulf of Mexico Lat: 27°18.1 Long: -94°23.3'	1471.1	1626.6	1736.3	1782.0	Reference Site determine Rock and fluid properties in normal pressure at high effective stress
BT4-3A	East Breaks Block 691 Gulf of Mexico Lat: 27°16.5' Long: -94°23.9'	1452.4	1539.3	1653.6	1699.3	Reference Site determine Rock and fluid properties in normal pressure at moderate effective stress
BT4-4A	East Breaks Block 735 Gulf of Mexico Lat: 27°22.7' Long: -94°21.2'	1437.5	1460.4	1588.4	1634.1	Reference Site determine Rock and fluid properties in normal pressure at low effective stress
URS-1B	Miss. Canyon Block 897, Gulf of Mexico Lat: 28°4.8' Long: -89°8.4'	1051.6	1688.0	1937.6	1967.8	High Effective Stress well on flow focusing structure. Det. Pressure/stress.

#### Proposed Sites: (Only High Priority Sites are listed here.)

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iSAS	S/IODP Proposal Cover Sheet 4th	<b>595</b> =	ting apenda book
New	Revised Addendum		
Please fill out infor	mation in all gray boxes Abc	ove For Off	icial Use Only ——
Title:	Deep Riser and Non-Riser Drilling on the Indus Fan and M	urray Rid	ge: Reconstructing
	Erosion of Tibet, western Himalaya and the Karakoram from the	ne Detrital	Record
Proponent(s):	Peter D. Clift, Hidekazu Tokuyama, Christoph Gaedicke, Peter Mo	olnar, Dirk	Kroon, Karen Bice,
	Hans-Ulrich Schlüter, Rosemary Edwards, Yani Najman, Shahid Am	jad, Muhar	nmad Tahir, M. Asif
	Khan, Peter Hildebrand, Kip V. Hodges, John Grotzinger, Eduardo	Garzanti, F	eter Miles, Maureen
	Raymo, Mike P. Searle and Ashraf Uddin		
Keywords:	Tectonics, erosion, climate	Area:	Arabian Sea
(5 or less)			
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Permission to post abstract on iSAS Web site:

Abstract: (400 words or less)

We propose to investigate the erosional record of the Indus Fan since India-Asia collision, and assess its relationship to regional and global climate change. The detrital record in the Indus Fan allows erosion to be quantified in a region where the Neogene paleoceanographic evolution is well documented and linked to monsoonal strength especially at 8.5 Ma, and where the sediment source regions have also been the focus of detailed radiometric thermochronology work. If the links between continental tectonic evolution, oceanographic circulation, continental climate and erosion are to be understood then the history of each of these needs to be reconstructed and correlated to one another. Drilling of the Indus Fan within the context of a regional seismic stratigraphic framework can provide an erosion budget for the Cenozoic. Provenance studies can reveal changes in the sediment source and uplift rate, while clay mineralogy and geochemistry can be used to assess continental weathering regimes. We propose a two-site, two-leg drilling program for the Murray Ridge (MU-1) and the Indus Fan (IR-1). In the first leg non-riser drilling at MU-1 will recover 1800 m of the Oligocene missing in the foreland, while at IR-1 1500 m of penetration will sample the Late Miocene-Recent, spanning the apparent intensification of the monsoon at 8.5 Ma. Changes in erosion rates and weathering style triggered by this event will be determined. In the second leg riser drilling to 5000 mbsf at IR-1 will recover the Middle and Early Miocene, while at MU-1 drilling will recover the Eocene, penetrate the fan base at ~3000 mbsf, and sample pre-fan sediment and basement. Documenting the Mid Miocene is important to test models proposing an earlier onset to the monsoon at that time linked to plateau uplift. Riser drilling is required for such deep penetrations, especially in an area of potentially unstable sands, and possible hydrocarbons. The arrival of material from north of the Indus Suture into the Arabian Sea constrains the controversial age of India-Asia collision. Drilling will date the onset of fan sedimentation in a proximal location. Because the rate of India-Asia convergence is known, the age of collision allows us to determine whether the volume of crust added to Asia greatly exceeds that now in the orogen. If the volume added exceeds the present total then lateral extrusion or crustal subduction must be invoked, in addition to horizontal compression, as a mode of orogenic strain accommodation.



The objectives of the drilling are to date the initiation of the Indus Fan and to recover a clastic record for the proximal Indus Fan from that time to the present day. Application of single grain provenance and thermochronology techniques to the sediment grains recovered will allow the evolving patterns and rates of exhumation to be calculated for the Indus drainage basin during the construction of the Himalaya and Tibet. Studies of clay minerals will constrain evolving weathering regimes over the same period. The drilling will further provide ages for the three dimensional seismic stratigraphic framework being constructed for the Indus system, thus permitting the relationships between erosion, tectonics and climate to be tested in detail in the global type area. The erosion record can be directly correlated to the existing records of paleoceanographic evolution from the Oman margin, and to continental weathering records in the foreland using the nannofossil biostratigraphy. Drilling below the level of the Indus Fan will provide paleoceanographic constraints on ocean circulation patterns in a critical area during the Paleocene-Early Eocene, a time of intense oceanographic change.

		Water	Pe	netration (	m)	
Site Name	Position	Depth (m)	Sed	Bsm	Total	Brief Site-specific Objectives
MU-1	Murray Ridge	1200	2900	10	2910	Recovery of Paleogene Indus Fan detrital record, date age of fan initiation and determine paleoceanographic setting of pre-fan Arabian Sea
IR-1	Indus Fan	2473	5000		5000	Recovery of Neogene Indus Fan detrital record for reconstruction of erosion rates and patterns in the western Himalaya and correlation with existing paleoceanographic records. Dating of seismic stratigraphy on Indus Fan for calculation of erosion history and determination of its relationship to climate change.

Proposed Sites:

IOD	P Proposal Cover Sheet	600-Full				
New New	Revised Addendum					
Please fill out infor	mation in all gray boxes	Above For Official Use Only				
Title:	Global and Local Controls on Continental Margin S Eastern South Island, New Zealand	tratigraphy: Canterbury Basin,				
Proponent(s):	Craig S. Fulthorpe, Paul Mann, Hongbo Lu, Robert M. Carter, Lionel Carter, Gregory Browne, Michelle Kominz					
Keywords: (5 or less)	Sea level, seismic stratigraphy, sediment drifts, tectonics	Area: New Zealand				
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	Permission to post abstract on iSAS Web site:	Yes No				

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Abstract: (400 words or less)

This proposal focuses on understanding the relative importance of global sea level (eustasy) versus local tectonic and sedimentary processes in controlling continental-margin depositional cyclicity. The emphasis is on Oligocene to Recent period when global sea-level change was dominated by glacioeustasy. Drilling the Canterbury Basin, on the eastern margin of the South Island of New Zealand takes advantage of high rates of Neogene sediment supply, which preserved a high-frequency (0.5-1 m.y. periods) record of depositional cyclicity. The Canterbury Basin offers the opportunity for expanded study of the complex interactions between processes responsible for the preserved stratigraphic record of sequences, as well as providing information on the early history of the Alpine Fault plate boundary. In particular, currents have strongly influenced deposition in parts of the basin, locally building large sediment drifts, which aggraded to shelf depths, within the prograding Neogene section. Understanding the depositional history, paleoceanographic record and sequence stratigraphic significance of these drifts are objectives of the propsosed drilling. The sequences to be drilled are correlative with those drilled on the New Jersey margin (Legs 150, 150X, 174A, and 174AX), Bahamas (Leg 166) and Marion Plateau (Leg 194) by ODP. Completion of at least one transect across a far-field siliciclastic margin, which has been subject to entirely different local forcing, is a necessary next step in deciphering continental margin stratigraphy. The Canterbury Basin, where both sequence stratigraphic geometries and seismic data base are of qualities comparable to those of New Jersey, is an ideal setting for such a drilling program.



#### Scientific Objectives: (250 words or less)

- 1) Date clinoform seismic sequence boundaries for global correlation and sample associated facies to provide information for subsidence histories and estimation of eustatic amplitudes.
- 2) Determine the paleoceanographic record and sequence stratigraphic significance of the large sediment drifts integral to the shelf/slope system.
- 3) Confirm the regional distribution of the Marshall Paraconformity and investigate its origin.
- 4) Constrain the early erosion history of the Southern Alps by dating the progradational units, to determine sedimentation rates, and linking sediments to onshore source areas.

Please describe below any non-standard measurements technology needed to achieve the proposed scientific objectives. Requires drilling at shelf water depths (minimum of 82 m). May require a mission-specific platform, if the *JOIDES Resolution* replacement vessel does not have enhanced ability to drill and recover sediment in this environment.

Proposed Sites:						
Cite Manua		Water	Penetration (m)			
Site Name	Position	(m)	Sed	Bsm	Total	Brief Site-specific Objectives
CB-01A	44° 46.06' S 171° 40.26' E	82	650		650	Facies landward of clinoform breakpoints (particularly U4-U9).
CB-02A	44° 50.49'S 171° 47.12' E	103	730		730	Facies landward of breakpoints (particularly U7-U9), U6 slope.
CB-03A	44° 53.26' S 171° 50.59' E	123	1200		1200	Facies landward of breakpoints (particularly U8-U19), U4-U7 slopes.
CB-04A	44° 56.05' S 172° 01.09' E	337	1825		1825	Slope facies, Marshall Paraconformity.
CB-05A	44° 40.54'S 172° 33.06' E	383	1765		1765	Sediment drift D11, Marshall Paraconformity.

IOD	P Proposal Cover Sheet	4th SPC meeting gents book
New	Revised Addendum	
Please fill out inform	mation in all gray boxes	<i>— Above For Official Use Only —</i>
Title:	NanTroSEIZE: The Nankai Trough Sei	smogenic Zone Experiment
	<b>Complex Drilling Project</b>	
Proponent(s):	Gaku Kimura, Harold Tobin, and the NanTros	SEIZE Working Group
	(24 Co-Proponents)	
Keywords:	Seismogenic zone, earthquakes, tsunamig	enesis, Southwest
(5 or less)	fault mechanics	Area: Japan margin
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	Permission to post abstract on iSAS Web site	$\sim \mathbf{V}_{\text{Yes}} \square_{\text{No}}$

Received 1-October-2003

Abstract: (400 words or less)

This Complex Drilling Project (CDP) proposal describes the rationale and scientific objectives for an integrated program of geophysical and geologic studies, non-riser drilling, and riser drilling designed to investigate the aseismic to seismic transition of the megathrust system and the processes of earthquake and tsunami generation at the Nankai Trough subduction zone. **Our fundamental goal is the creation of a distributed observatory spanning the up-dip limit of seismogenic and tsunamigenic behavior.** This will involve sampling and instrumenting key elements of the active plate boundary fault system at several locations off the Kii Peninsula, where the plate interface and active mega-splay faults – implicated in tsunamigenesis – are accessible to drilling within the region of coseismic rupture in the 1944 Tonankai M8 great earthquake. The most ambitious objective is to access and instrument the Nankai plate interface within the seismogenic zone to advance our knowledge of fundamental aseismic and seismic faulting processes and controls on the transition between them. The strategy of NanTroSEIZE differs fundamentally from that of other proposed deep fault drilling programs because we will document the evolution of fault zone properties by trading time for space along the dipping plate boundary.

We propose 3 distinct phased IODP drilling efforts: **Phase 1** – *Inputs to the seismogenic zone system*, investigating variations in the sediments, oceanic crust, and fluids input to the plate boundary system; **Phase 2** – *Mega-splay (OOST) fault drilling* to sample and instrument thrusts which splay from the basal décollement up through the forearc, in order to characterize fault properties transecting the aseismic to seismic transition from 1 to 3.5 km depth shallow; and **Phase 3** – *Sampling and instrumenting the plate interface* (décollement) at ~ 6 km below seafloor, in a region predicted to be within both the zone capable of generating seismogenic behavior and in the zone of co-seismic slip in the 1944 great earthquake. Long-term monitoring of a wide range of phenomena will be a major part of the effort, to detect signals of fault zone processes in the near-field. In addition, ongoing seismological and geodetic arrays in the vicinity as well as in the deep boreholes, geologic studies, laboratory and modeling efforts are all integral components of the NanTroSEIZE project, essential to success in achieving project objectives.

603-CDP3

Scientific Objectives: (250 words or less)

The principal scientific objective of the proposed drilling is to acquire data bearing on and testing the following key hypotheses:

1. Systematic, progressive material and state changes control the onset of seismogenic behavior on subduction thrusts.

2. Subduction zone megathrusts are weak faults.

3. Within the seismogenic zone, relative plate motion is primarily accommodated by coseismic frictional slip in a concentrated zone.

4. Physical properties, chemistry, and state of the fault zone change with time during the earthquake cycle.

5. The mega-splay (OOST) thrust fault system slips in discrete events which may include tsunamigenic slip during great earthquakes.

Proposed **NanTroSEIZE** efforts will test models for the frictional behavior of fault rocks across the aseismic – seismogenic transition, the composition of faults and fluids and associated pore pressure and state of stress, partitioning of strain spatially between basal interface and splays, temporally between coseismic and interseismic periods, and between infraseismic and aseismic events vs. seismic events. Long-term borehole observations potentially ultimately will test whether interseismic variations or detectable precursory phenomena exist prior to great subduction earthquakes.

Please describe below any non-standard measurements technology needed to achieve the proposed scientific objectives.

In various combinations, the following non-standard measurements are desired for sites covered by this CDP:

**During Drilling and Casing Installation:** Logging/measurement while drilling, drill stem & wireline pressure/permeability tests, cross-hole hydrologic tests, offset/walkaway vertical seismic profiling, cross-hole seismic.

**Long-Term Borehole Observatory Monitoring:** Array temperature measurement, pressure measurement in packerisolated intervals, array measurement for short-period, three-component seismometry, bottom-hole broadband and strong motion seismometry, bottom hole strain, multi-level tilt, and long-term fluid collection for biological and geochemical measurements. Many of these measurements will need to be made at temperatures of  $\sim 80 - 150 + C$ .

**Proposed Sites:** 

#### SEE INDIVIDUAL PROPOSALS FOR EACH PHASE FOR SITE DESCRIPTIONS

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Title:	NanTroSEIZE Reference Sites.						
	Sampling and Measuring Inputs to the Seismogenic Zone						
	Michael Hademand Lichting Ashi Ware Cal. Lulis Marsan Constan Caite						
Proponent(s):	Michael Underwood, Juichiro Ashi, wonn Son, Julia Morgan, Saneatsu Saito, Demion Soffer, Elizabeth Screeton, Masataka Kinoshita, Gragory Moore						
	Miriam Kastner, Susan Bilek, Kohtaro Ujie						
Keywords:	Subduction inputs; physical and chemical hydrology; Nankai Trough,						
(5 or less)	lithostratigraphy; structural geology; heat flow and diagenesis Aica. Shikoku Basin						
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	Permission to post abstract on iSAS Web site: X Yes No						

Abstract: (400 words or less)

A foremost goal of IODP is to drill into the seismogenic zone of a plate-boundary fault. The CDP proposal for NanTroSEIZE (Nankai Trough Seismogenic Zone Experiment) identifies several phases or milestones in pursuit of that goal. Phase 1, the shallow reference sites, will test five fundamental hypotheses: (1) Systematic and progressive changes in material properties and state control the onset of seismogenic behavior and locking of subduction thrusts. (2) Subduction zone megathrusts are weak faults; that is, they slip under conditions of low resolved shear stress. (3) Within the seismogenic zone, relative plate motion is accommodated primarily by coseismic frictional slip in a concentrated zone. (4) Out-of-sequence (or splay) faults develop where the plate-boundary fault is strong relative to adjacent zones without splay faults. (5) The plate-boundary fault, near its up-dip limit of seismicity, follows the interface between underthrust metasedimentary rocks and igneous basement.

Reference sites serve three vital roles in testing these hypotheses. First, they establish, prior to subduction, how lithology, deformation features, hydrologic properties (porosity, permeability), variables of state (stress, pore pressure, temperature) and *in situ* properties (mineral and fluid composition, alteration, grain fabric, strain rate, microseismicity) change from a basement high (potential asperity) to a basement plain. Second, after showing how basement topography affects stratigraphy and hydrology (and, therefore, mechanical properties), we will separate those inherited variables from changes superimposed by diagenesis, deformation, and fluid flow along the P-T path of subduction. Third, to track fault-zone evolution toward stick-slip behavior, we need to begin characterizing the plate-boundary fault where it is shallow and aseismic, then move down dip (with deep drilling) into the seismogenic zone.

Data from previous DSDP-ODP legs cannot be imported to the Kii-Kumano region because stratigraphic, thermal, and hydrologic inputs to Nankai Trough change so much along strike. Drilling two reference sites within the Shikoku Basin will quantify initial conditions and show how basement relief influences the pre-subduction geometry of sedimentary facies, temperature, permeability, sediment and basement alteration, and fluid flow. A third reference site at the toe of the accretionary prism will show early-phase deformation and verify how strata get partitioned above and below the frontal decollement. The prism-toe site, moreover, will add a third dimension to constraints on facies architecture, hydrogeology, thermal structure, and reaction progress where rocks first enter the subduction zone.

# 603A-Full2

Scientific Objectives: (250 words or less)

The overarching goal of this proposed investigation is to show how the primary geologic differences between subducting basement plains and basement highs (potential asperities for earthquakes) modulate the plate boundary's mechanical properties, relative strength, and earthquake rupture properties in the down-dip direction. To begin this assessment, we propose two reference sites seaward of the trench. This pairing of sites in Shikoku Basin will capture the end-member cause-and-effect of sand-rich versus sandpoor strata in the lower part of the section and show whether or not basement hydrology and alteration history vary significantly in response to basement topography. Drilling a third site through the frontal decollement into basement will be a challenge because total sediment thickness at the prism toe is ~1750 m. Such a site is essential, however, to verify the location of structural partitioning by the fault, as well as to identify early products of fault-related deformation and fluid flow. The only way to document threedimensional heterogeneities in hydrologic, compositional, thermal, and mechanical inputs is to integrate the following methods and tools at each site: (1) continuous coring, with penetration into at least 100 m of igneous basement; (2) complete suites of LWD logs for core-log-seismic integration and mapping; (3) lab tests of sediment composition, diagenesis, geotechnical properties, and hydrologic properties; (4) wireline hydrologic tests of *in situ* permeability (packer, pump, etc.); (5) high-resolution borehole measurements of temperature, pore pressure, and seismic velocity; and (6) chemical analysis of pore fluids, including fluids extracted from igneous basement.

	Water Penetration (m)		Water Pener	m)		
Site Name	Position	Depth (m)	Sed	Bsm	Total	Brief Site-specific Objectives
NT1-01A	Lat: 32° 44.8878' N Long: 136° 55.0236' E	3540	460 m	100 m	560 m	Comprehensive characterization of Shikoku Basin strata and upper igneous crust above basement high (coring, downhole measurements, logging)
NT1-02A	Lat: 32° 47.4996' N Long: 137° 55.0236' E	4210	730 m	100 m	830 m	Comprehensive characterization of Shikoku Basin strata and upper igneous crust above basement plain (coring, downhole measurements, logging)
NT1-03A	Lat: 33° 1.23258' N Long: 136° 47.9485' E	4125	1740 m	10 m	1750 m	Comprehensive characterization of deformation, structural partitioning by decollement, diagenesis, and fluid flow at toe of Nankai accretionary prism (coring, downhole measurements, logging)

Proposed Sites: (Only High Priority Sites are listed here.)

IOD	P Proposal Cover Sheet	ceived 1-	October-2003 tingagenda besk				
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Title:	NanTroSEIZE Drilling and Observatory	Phase	2				
	Mechanical and Hydrologic State of Mega	-Splay Fai	ılts:				
	Implications for Seismogenic Faulting and Tsu	ınami Gen	eration				
Proponent(s):	Masataka Kinoshita, Kevin Brown, Demian Saffer, Pierre Henry, Fre	ed Chester, 7	Tadanori Goto,				
-	Sean P. S. Gulick, Tetsuro Hirono, Hisao Ito, Aitaro Kato, Gaku Kin	nura, Achim	Kopf, Gregory				
	Moore, J. Casey Moore, Yasuyuki Nakamura, Jin-Oh Park, Saneatsu	Saito, Susa	n Schwartz,				
	Masanao Shinohara, Ralph Stephen, Harold Tobin, Kohtaro Ujiie, Urumu Tsunogai, and Makoto						
	Yamano						
Keywords:	Seismogenic zone, splay fault, tsunamigenesis, fault mechanics,	Aroo	Southwestern				
(5 or less)	fluid flow	Alea.	Japan margin				
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Department:	Deep-sea Research Department						
Organization:	Japan Marine Science and Technology Center						

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Address

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Abstract: (400 words or less)

No

Yes

The principal goal of NanTroSEIZE is to understand the mechanics of seismogenesis and rupture propagation along subduction plate boundary faults as stated in the accompanying CDP. At Nankai, large out-of-sequence-thrust faults ("mega-splays") that branch from the décollement are common, first order structural elements of the margin and appear continuous for several 10's of km along strike. These faults offset recent slope basin sediments, are characterized by seafloor scarps, and are commonly associated with active fluid venting. Off the Kii peninsula, such a mega-splay lies within the 1944 Tonankai coseismic rupture area estimated from tsunami and seismic waveform inversions; inversions cannot distinguish splay fault slip from décollement slip. Accordingly, both the décollement zone and the splay fault system represent necessary primary fault targets to address seismogenic zone processes.

The goal of this proposal is to (1) characterize the magnitude and nature of strain accumulation and slip along mega-splays off the Kii peninsula, and (2) sample and instrument the mega-splay fault system at a range of P-T conditions from ~1-3.5 km bsf. Specifically, this proposal is aimed at testing 5 key hypotheses: (1) The megasplay is a significant locus of plate boundary slip, slips in seismogenic events, and is currently locked; (2) The mega-splay is part of a weak plate boundary fault system and slips at low resolved shear stress; (3) Changes in physical and chemical properties of the fault zone with increasing temperature and pressure cause slip along the mega-splay to undergo a transition from aseismic to seismic slip; (4) The mega-splay is hydrologically connected to the seismogenic décollement zone at great depths impacting its mechanical and chemical state, and (5) Physical properties, chemistry, and state of the fault zone change systematically during the interseismic period.

Proposed drilling includes (1) coring of 1 site in the Kumano Basin, focused on characterizing the tectonic history of the plate above the mega-splay faults, and (2) intersection of the active mega-splay fault system at three depths from  $\sim$ 1 to  $\sim$ 3.5 km bsf (down dip evolutionary studies). We propose installation of long-term borehole monitoring instruments at several of the sites. These borehole observatories, along with surface arrays of measurements, regional geodetic and seismic monitoring both on land and via offshore cabled observatories, will provide critical data toward understanding the slip distribution, temporal nature, and controlling mechanisms of seismogenic faulting along the plate boundary system.

# 603B-Full2

# Scientific Objectives: (250 words or less)

To test the five principal hypotheses (above), 5 holes will be drilled utilizing a dense net work of 2D and 3D seismic reflection data. Comprehensive programs of coring, logging and downhole measurements will target the insitu mega-splay and wall-rock structural architecture, fault properties, stress state, fluid pressure, and temperature. Post-drilling laboratory studies will include the fluid chemistry, veining/diagenesis, mechanical properties, and fault micro-fabric relationships. NT2 sites 1 through 3 will target the mega-splay fault at depths between ~ 1 and 3.5 km. They will assess evolutionary changes in all the various parameters over a temperature range of 20°C through ~100+ °C (Hypotheses 2 and 3). In addition, at NT2-01A and B sites (1km sites), closely-spaced, paired holes will allow extensive cross hole hydrologic and geophysical studies of the shallow fault-zone. Ultimately the 3.5 km site. NT2-3, will also be used for similar cross hole studies during the Phase 3 program. These cross hole tests, together with the fluid chemistry and vein studies, will constrain the down dip hydrologic connectivity of the fault system (Hypothesis 4). The NT2-04 site in the Kumano Basin, together with additional geological investigations along the splays fault traces, will allow us to constrain the mega-splay faulting activity (Hypothesis 1). At a minimum, Sites NT2-01A and NT2-03A will be instrumented for studies of the fault locking patterns (geodetic measurements), and long-term interactions of pore pressure, temperature, tilt and strain, seism city, fluid chemistry, and electrical properties during this interseismic period.

Please describe below any non-standard measurements technology needed to achieve the proposed scientific objectives.

LWD (RAB), DVTP-P, hydrofracturing test (wireline packer test), VSP. Geodetic (strain/tilt), seismic and hydrologic (P,T) sensors and osmotic sampler are installed for a long-term borehole observatory at NT2-03A. Cross-well hydrologic (pumping / fluid injection test) and electrical propertiers experimentsare planned at NT2-01A and B.

			P			
	<b>D</b>	Water	Pe	Penetration (m)		
Site Name	Position	Depth (m)	Sed	Bsm	Total	Brief Site-specific Objectives
NT2-01A NT2-01B	33°13.0'N, 136°41.4'E	2470	1000	0	1000	Characterization of active splay fault and fluid flow regime by core sampling, logging, cross- hole experiments and long- term monitoring
NT2-02A	33°14.0'N, 136°40.8'E	2080	2000	0	2000	Study the progressive change in the fault properties by intersecting the splay fault at intermediate depth of 2km
NT2-03A	33°15.9'N, 136°39.5'E	2240	3500	0	3500	Study the progressive change in the fault properties by intersecting the splay fault at intermediate depth of 3.5km
NT2-04A	33°23.4'N, 136°34.6'E	1990	1400	300	1700	Total history of the splay fault through continuous coring the Kumano basin sediments and pilot drilling for riser platform
NT2-06A,B	33°06.6'N, 136°31.3'E	2990	1000	0	1000	Alternate site for NT2-01A,B
NT2-07A	33°08.6'N, 136°30.0'E	2260	2000	0	2000	Alternate site for NT2-02A
NT2-08A	33°10.8'N, 136°28.6'E	2170	3500	0	3500	Alternate site for NT2-03A

Proposed Sites:

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Title:	Installation of Borehole Observatories in Monterey Bay			
Proponent(s):	Barbara Bekins, David Caress, Andy Fisher, Marcia McNutt, John	Orcutt, Ch	arles Paull, Barbara	
	Romanowicz, Debra Stakes, Ralph Stephen, William Ussler III, Rich	ard von H	erzen,	
			,	
Keywords:	Boreholes, cabled-observatory, geohydrology, seismic	A	Central California	
(5 or less)		Area:	Margin	
	Contact Information:			
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Department:	Research and Development			
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Permission to post abstract on iSAS Web site:

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#### Abstract: (400 words or less)

We propose that IODP install three  $\sim$ 300-m cased reentry boreholes in Monterey Bay, California, to establish a borehole instrument test facility and to develop borehole-to-submarine-cable technologies. Two closely spaced holes (50 m apart) will have basic completion assemblies. These sites will first be used to conduct borehole hydrologic and geochemical measurements to establish what equilibrium conditions are in a low flow environment. Subsequently these sites will be used to conduct perturbation experiments (by pumping) that will be fundamental to our understanding of how porosity and permeability measurements scale in time and space. After these tests, the side-by-side boreholes will be available for other down-hole experiments and tests. The third hole will be configured for a borehole seismometer with a casing strategy to minimize fluid flow into or out of the formation, which is a source of seismic noise. The seismic hole will be placed ~ 2 km from the other holes to isolate it from noise associated with the other facilities. This site will be the first cable-connected borehole seismic observatory along the North American Margin that is entirely on the Pacific Plate.

The borehole sites are located near the proposed terminus of the MARS cabled observatory. The MARS observatory was funded by the USA's NSF to serve as a test bed for oceanographic instrumentation, experiment protocols, operational procedures, management policies, data archiving, and educational outreach for any future regional cabled observatories. Given the very wide interest in the marine community for combining the power and communications capabilities of cabled observatories with the ability of IODP to get instruments into the sub-seafloor environment, the site of an IODP hole with reentry capability near the MARS test bed is a wonderful match. It will not only make the test bed more attractive to a wider range of researchers, but should also accelerate the development of new instruments and experiments to be deployed in IODP holes globally.

The primary borehole sites will be located on the surface of Smooth Ridge in Monterey Bay, offshore California, in water depths of 831 m and 1008 m and penetrate Neogene hemipelagic sediments. The proposed borehole sites are only 2 hours steaming time from Moss Landing, home port to two vessels equipped with remotely operated vehicles (ROVs) operated by the Monterey Bay Aquarium Research Institute (MBARI). The combination of near-shore deep water, year-round favorable weather, the cable test bed, and logistically-convenient ROV support make Monterey Bay an ideal site for developing the next generation of instrumentation for scientific boreholes and for developing experiments that take advantage of synergy between cabled observatories and future IODP holes.



## Scientific Objectives: (250 words or less)

The objective is to stimulate the development of the next generation of seafloor borehole experiments. IODP promises to expand on the progress made in ODP to conduct experiments in boreholes under the ocean floor. However, the experience with conducting bore hole experiments shows that these are inherently complicated systems to develop and deploy. Thus, an accessible facility in which new systems can be tested and refined will be critical to stimulating this new style of science within the IDOP community.

Please describe below any non-standard measurements technology needed to achieve the proposed scientific objectives. While the sub-seafloor completions envisioned for this facility are essentially standard, the seafloor expressions will be altered to make them more easily ROV serviceable, less noisy, and capable of being connected to a seafloor cable that will provide power and bi-directional communication.

		ric	posed SI	les.		
	Position	Water	Penetration (m)		m)	
Site Name		Depth (m)	Sed	Bsm	Total	Brief Site-specific Objectives
MARS node	36.71137° N 122.18681° W	890				Node to connect with borehole
MBTS-03A	36.71751° N 122.17605° W	831	300	0	300	Geohydrology test site supply borehole
MBTS-04A	(side-by-side with MBTS-03A)	831	300	0	300	CORKed monitoring site borehole
MBTS-05A	36.70214° N 122.20320° W	1008	300	0	300	Seismic observatory borehole

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New	Revised	Addendum	

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Title:	3D High Resolution Seismic Transmission and Reflection Imaging of a Tahiti Pleistocene-Holocene Reef Margin (IODP Proposal 519)				
Proponent(s):	Dr. J. A.M. Kenter (PI), Dr. G. Drijkoningen, Drs. H. Braaksma, Drs. K. Verwer, Prof. W. Spakman, Dr. G. Camoin, Dr. P. Pezard, Dr. J.P. Henriet, G. Lericolais				
Keywords: (5 or less)	Reef imaging, tomography, transmission, sea level	Area:	South Pacific		

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Permission to post abstract on iSAS Web site: X Yes

Abstract: (400 words or less)

Coralgal reefs have traditionally been very difficult objects for geophysical imaging but contain valuable records of climate change (sea level, temperature and salinity, ecological assemblages), contain important hydrocarbon reservoirs and hold strategic water reserves. Reflection seismic imaging, however, is mostly obscured due to their spatially highly variable acoustic properties as a result of their intrinsic pore systems during evolution and diagenetic overprint. We propose a high-resolution 3D seismic tomography-reflection experiment as "add on" (APL) to the existing IODP proposal 519 that is scheduled for drilling in FY05. The primary scientific goal is the physical interpretation of multi-component transmission and reflection seismic data in a highly porous Pleistocene-Holocene coralgal reef system, and to provide fundamental information on the geometric evolution of the reef system and its effect on sea-level reconstruction.

The proposed experiment consists of exploiting both transmission and reflection techniques as well as using two different types of acoustic body waves, S-waves as well as P-waves at one of the transects in various combinations in boreholes, at the seafloor and at the surface. This provides the unique opportunity to directly compare the reflection and transmission experiments on one and the same object and, in addition, test the resolving capability of S-waves as well as P-waves in such porosity (shape, type and distribution) dominated coralgal reef system.

We intend to use boreholes TAH02A-#1-5 following the drilling, coring and wire line logging by the IO. Therefore, we request from IODP assistance to set up the experiment: 1) minor additions to the wire line logging program, 2) the installation of PVC liners in boreholes, 3) installation of instrumentation strings following end of operations at those boreholes, 4) installation of re-entry cones and, 5) removal of the PVC liners. We expect that the operational time will be less than 3 days.

A full proposal for this project will be submitted to NWO/ALW (Dutch National Science Foundation) and the CRNS (French Science Foundation) early summer 2004. In addition, a matching funding proposal will be submitted to a consortium of companies in the energy sector where a clear interest has been expressed in the science objectives.

#### Scientific Objectives: (250 words or less)

The primary scientific goal is the physical interpretation of multi-component transmission and reflection seismic data in a highly porous Pleistocene-Holocene coralgal reef system. This will provide: 1) fundamental information on the geometric evolution of the reef system and its effect on sea-level reconstruction, 2) insights in the methodological approach of imaging such complex structures and, 3) valuable data on the physical and geological heterogeneity of reefs. These goals are entirely complimentary to at least two of the three for proposal #519: to reconstruct the deglaciation curve for the period 20,000 to 10,000 yrs BP and to analyze the impact of sea-level changes on reef growth, geometry and biological makeup.

Please describe below any non-standard measurements technology needed to achieve the proposed scientific objectives.

See attached expanded proposal; same for information requested below.

	Wate		Water Penetration (m)		m)		
Site Name	Position	Position Dept (m)	Depth (m)	Sed	Bsm	Total	Brief Site-specific Objectives

#### Proposed Sites:

# Proposal History - SPC October 2004 4th SPC meeting agenda book

Proposal	Review	Date
477		1995-07
	Thematic	1995-Fall
477-Rev		1996-07
	Thematic	1996-10
477-Add		1997-01
477-Add2		1997-09
	SSEP	1997-10
477-Full2		1998-10
	SSEP	1998-11
	External	1999-02
477-PRL		1999-03
	SSEP	1999-05
	SSP	1999-07
	SCICOM	1999-08
477-Add3		1999-09
	SSEP	1999-11
	SSP	2000-02
	SSP	2000-07
	SCICOM	2000-08
477-Add4		2001-10
	iSSEP	2001-11
477-PRL2		2002-02
	iPC	2002-04
477-Full3		2003-04
	iSSEP	2003-05
	iSSP	2003-07
477-Full4		2003-10
	SSEP	2003-11
	SSP	2004-02
	External	2004-04
477-PRL3		2004-05
	SSEP	2004-05
	SPC	2004-06

Proposal	Review	Date
482		1996-01
482-Add		1996-07
	SSP	1996-11
482-Rev		1997-01
	SSEP	1997-06
482-Full2		1997-10
	SSEP	1997-10
	SSP	1998-02
	External	1998-02
482-PRL		1998-03
	SSEP	1998-05
	SSP	1998-07
	SCICOM	1998-09
482-Add2		1998-10
	SSEP	1998-11
	SSP	1999-02
482-Add3		1999-03
	SSEP	1999-05
	SCICOM	1999-09
482-Add4		1999-09
	SSEP	1999-11
	SSP	2000-02
482-Full3		2000-03
	SSEP	2000-05
	SSP	2000-07
	SCICOM	2000-08
	iSSEP	2001-11
	iPC	2002-04
	SPC	2003-09
	SPC	2004-06

Proposal	Review	Date
519-Pre		1997-09
	SSEP	1997-10
519-Full		1998-10
	SSEP	1998-11
519-Full2		1999-03
	SSEP	1999-05
	SSP	1999-07
	External	1999-08
519-PRL		1999-10
	SSEP	1999-11
	SSP	2000-02
	SSEP	2000-05
	SSP	2000-07
	SCICOM	2000-08
	SSP	2001-02
519-Add		2001-03
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	SSP	2001-07
	SCICOM	2001-09
519-Add2		2002-03
	iSSEP	2002-06
	iSSP	2002-07
	iPC	2002-08
	iSSP	2003-02
	iSSP	2003-07
	SPC	2003-09
519-Add3		2004-02
	SPC	2004-03
	EPSP	2004-06
	SSP	2004-08

Proposal	Review	Date
522-Pre		1997-09
	SSEP	1997-10
522-Full		1998-10
	SSEP	1998-11
522-Full2		1999-09
	SSEP	1999-11
522-Add		2000-03
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522-PRL2		2000-07
	SSP	2000-07
	SCICOM	2000-08
	SSP	2001-02
522-Add2		2001-03
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522-PRL3		2001-07
	SSP	2001-07
	SCICOM	2001-08
522-Full3		2003-09
	SSEP	2003-11
	SSP	2004-02
522-PRL4		2004-02
	SPC	2004-06

545-Pre		1998-10
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545-Full		1999-03
	SSEP	1999-05
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545-PRL2		2000-07
	SCICOM	2000-08
545-Add		2001-09
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545-PRL3		2002-02
	iPC	2002-04
545-Full3		2003-04
	iSSEP	2003-05
	iSSP	2003-07
	SPC	2003-09
	PPSP	2003-12

547-Pre		1998-10
547-Full		1999-10
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547-Full2		2000-03
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547-Full3		2000-10
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547-PRL2		2001-07
	SCICOM	2001-09
547-Full4		2003-04
	iSSEP	2003-05
	iSSP	2003-07
547-PRL3		2003-07
	SPC	2003-09
	SPC	2004-06

553-Full		1998-10
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553-PRL		1999-04
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553-Add		1999-06
	SSP	1999-07
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	SSEP	1999-11
553-Add2		1999-11
	SSP	2000-02
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	SSP	2000-07
	SCICOM	2000-08
	iSSEP	2002-06
	iSSP	2002-07
	iPC	2002-08
553-Full2		2003-04
	iSSEP	2003-05
	iSSP	2003-07
	External	2003-08
553-PRL2		2003-08
553-Add3		2003-08
	iSSEP	2003-08
553-PRL3		2003-09
	SPC	2003-09
	PPSP	2003-12
	SSP	2004-02
	SPC	2004-06
	EPSP	2004-06
	SSP	2004-08
553-PRL4		2004-08

555-Full		1999-03
	SSEP	1999-05
555-Full2		1999-09
	SSEP	1999-11
	SSP	2000-02
	External	2000-03
555-PRL		2000-04
	SSEP	2000-05
	SSP	2000-07
	SCICOM	2000-08
555-Full3		2002-03
	iSSEP	2002-06
555-Add		2003-09
	SSEP	2003-11
	SSP	2004-02
	SPC	2004-06
555-PRL2		2004-09

# Proposal History - SPC October 2004 4th SPC meeting agenda book

1		
Proposal	Review	Date
557-Pre		1999-03
	SSEP	1999-05
557-Full		2000-03
	SSEP	2000-05
557-Full2		2000-09
	SSEP	2000-11
	SSP	2001-02
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557-PRL		2001-04
	SSEP	2001-05
	SSP	2001-07
557-PRL2		2001-07
	SCICOM	2001-09
	iSSEP	2002-06
	iSSP	2002-07
557-PRL3		2002-08
	iPC	2002-08
	SPC	2003-09
557-PRL4		2004-03
	SPC	2004-06
557-PRL5		2004-09

584-Full

584-PRL

584-Add

584-PRL2

584-Full2

584-PRL3

584-PRL4

584-Add2

584-PRL5

SSEP SSP External

SSEP SSP

SSEP SSP

SCICOM

iSSEP iSSP

iPC

SPC

SPC

SPC

2004-03

2004-06

	SSEP	1999-05
564-Full		1999-09
	SSEP	1999-11
	SSP	2000-02
	External	2000-03
564-PRL		2000-04
	SSEP	2000-05
564-PRL2		2000-06
	SSP	2000-07
	SCICOM	2000-08
	SSP	2001-02
	SSP	2001-07
564-PRL3		2001-07
564-PRL4		2001-08
	SCICOM	2001-09
	iSSEP	2002-06
	iSSP	2002-07
564-PRL5		2002-07
	iPC	2002-08
	iSSP	2003-02
	iPPSP	2003-06
	iSSP	2003-07
	SPC	2003-09
589-Full		2000-03
	SSEP	2000-05
589-Full2		2000-09
	SSEP	2000-11
	SSEP SSP	2000-11 2001-02
	SSEP SSP External	2000-11 2001-02 2001-02
589-PRL	SSEP SSP External	2000-11 2001-02 2001-02 2001-04
589-PRL	SSEP SSP External SSEP	2000-11 2001-02 2001-02 2001-04 2001-05
589-PRL	SSEP SSP External SSEP SSP	2000-11 2001-02 2001-02 2001-04 2001-05 2001-07
589-PRL 589-PRL2	SSEP SSP External SSEP SSP	2000-11 2001-02 2001-02 2001-04 2001-05 2001-07 2001-07
589-PRL 589-PRL2	SSEP SSP External SSEP SSP SCICOM	2000-11 2001-02 2001-02 2001-04 2001-05 2001-07 2001-07 2001-07
589-PRL 589-PRL2 589-Full3	SSEP SSP External SSEP SSP SCICOM	2000-11 2001-02 2001-02 2001-04 2001-05 2001-07 2001-07 2001-07 2001-09 2002-04
589-PRL 589-PRL2 589-Full3	SSEP SSP External SSEP SSP SCICOM iSSEP	2000-11 2001-02 2001-02 2001-04 2001-05 2001-07 2001-07 2001-07 2001-09 2002-04 2002-06
589-PRL 589-PRL2 589-Full3	SSEP SSP External SSEP SSP SCICOM iSSEP iSSP	2000-11 2001-02 2001-02 2001-04 2001-05 2001-07 2001-07 2001-07 2001-09 2002-04 2002-06 2002-07
589-PRL 589-PRL2 589-Full3 589-PRL3	SSEP SSP External SSEP SSP SCICOM iSSEP iSSP	2000-11 2001-02 2001-02 2001-04 2001-05 2001-07 2001-07 2001-07 2002-04 2002-06 2002-07 2002-07
589-PRL2 589-PRL2 589-Full3 589-PRL3	SSEP SSP External SSEP SSP SCICOM iSSEP iSSP iSSP	2000-11 2001-02 2001-02 2001-04 2001-05 2001-07 2001-07 2001-07 2002-04 2002-06 2002-07 2002-07 2002-08
589-PRL2 589-PRL2 589-Full3 589-PRL3 589-PRL4	SSEP SSP External SSEP SSP SCICOM SSEP iSSP iPC	2000-11 2001-02 2001-02 2001-04 2001-05 2001-07 2001-07 2001-07 2002-06 2002-06 2002-07 2002-08 2002-08

Proposal	Review	Date
573-Pre		1999-10
	SSEP	1999-11
573-Full		2000-03
	SSEP	2000-05
573-Full2		2000-09
	SSEP	2000-11
	SSP	2001-02
	External	2001-02
573-PRL		2001-04
	SSEP	2001-05
	SSP	2001-07
573-PRL2		2001-07
	SCICOM	2001-09
573-Add		2002-03
	iSSEP	2002-06
573-PRL3		2002-07
	iSSP	2002-07
	iPC	2002-08
	SPC	2003-09
573-PRL4		2004-03
	SPC	2004-06
573-PRL5		2004-09

Proposal	Review	Date
581-Full		2000-03
	SSEP	2000-05
581-Add		2000-10
	SSEP	2000-11
	SSP	2001-02
	External	2001-02
581-PRL		2001-04
	SSEP	2001-05
	SSP	2001-07
581-PRL2		2001-07
	SCICOM	2001-09
581-Full2		2002-03
	iSSEP	2002-06
	iSSP	2002-07
	iPC	2002-08
	SPC	2003-09
	SPC	2004-06

589-Full	
	SSEP
589-Full2	
	SSEP
	SSP
	Extern
589-PRL	
	SSEP
	SSP
589-PRL2	
	SCICO
589-Full3	
	iSSEP
	iSSP
589-PRL3	
	iPC
589-PRL4	
	SPC
	589-Full 589-Full 589-PRL 589-PRL2 589-Full 589-Full 589-PRL3 589-PRL4

Proposal

564-Pre

Review

Date 1999-03

	SPC	2003-09
89-Full		2000-03
	SSEP	2000-05
89-Full2		2000-09
	SSEP	2000-11
	SSP	2001-02
	External	2001-02
89-PRL		2001-04
	SSEP	2001-05
	SSP	2001-07
89-PRL2		2001-07
	SCICOM	2001-09
89-Full3		2002-04
	iSSEP	2002-06
	iSSP	2002-07
89-PRL3		2002-07
	iPC	2002-08
89-PRL4		2003-08
	SPC	2003-09

595-Full		2001-03
	SSEP	2001-05
595-Full2		2001-09
	iSSEP	2001-11
595-Full3		2002-03
	iSSEP	2002-06
	iSSP	2002-07
595-Add		2003-03
	iSSEP	2003-05
	iSSP	2003-07
	Estamo 1	2002 00
	External	2003-08
595-PRL	External	2003-08
595-PRL	iSSEP	2003-08 2003-08 2003-08
595-PRL 595-PRL2	iSSEP	2003-08 2003-08 2003-08 2003-09
595-PRL 595-PRL2	iSSEP SPC	2003-08 2003-08 2003-08 2003-09 2003-09
595-PRL 595-PRL2 595-Add2	iSSEP SPC	2003-08 2003-08 2003-08 2003-09 2003-09 2003-09
595-PRL 595-PRL2 595-Add2	iSSEP SPC SSP	2003-08 2003-08 2003-08 2003-09 2003-09 2003-09 2004-02
595-PRL2 595-PRL2 595-Add2 595-PRL3	iSSEP SPC SSP	2003-08 2003-08 2003-08 2003-09 2003-09 2003-09 2003-09 2004-02 2004-02
595-PRL 595-PRL2 595-Add2 595-PRL3	ISSEP SPC SSP SPC	2003-08 2003-08 2003-08 2003-09 2003-09 2003-09 2004-02 2004-02 2004-06

600-Pre		2001-09
	iSSEP	2001-11
	iSSP	2002-07
600-Full		2003-09
	SSEP	2003-11
	SSP	2004-02
	External	2004-04
600-PRL		2004-04
	SSEP	2004-05
	SPC	2004-06
	SSP	2004-08

603-Pre		2001-09
	iSSEP	2001-11
	iSSP	2002-07
603-CDP		2002-10
	iSSEP	2002-11
	iSSP	2003-02
603-CDP2		2003-04
	iSSEP	2003-05
603-CDP3		2003-10
	SSEP	2003-11
	SSP	2004-02
	SSEP	2004-05
	SPC	2004-06

603A-Full		2002-10
	iSSEP	2002-11
	iSSP	2003-02
603A-Full2		2003-04
	iSSEP	2003-05
	iSSP	2003-07
	SSP	2004-02
	External	2004-04
603A-PRL		2004-05
	SSEP	2004-05
	SPC	2004-06
	SSP	2004-08

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2004-03

603B-Pre		2002-10
	iSSEP	2002-11
	iSSP	2003-02
603B-Full		2003-04
	iSSEP	2003-05
	iSSP	2003-07
603B-Full2		2003-10
	SSEP	2003-11
	SSP	2004-02
	External	2004-04
603B-PRL		2004-05
	SSEP	2004-05
	SPC	2004-06
	SSP	2004-08

621-Pre		2002-10
	iSSEP	2002-11
	iSSP	2003-02
621-Full		2003-10
	SSEP	2003-11
	SSP	2004-02
	External	2004-04
621-PRL		2004-05
	SSEP	2004-05
	SPC	2004-06

650-APL		2004-03
	SPC	2004-06
	EPSP	2004-06

651-APL

# AGENDUM 9

Proposal handling

Proposal flow chart

Full Proposal Stage





# **AGENDUM 10**

IODP policy development

- 10.1. 3<sup>rd</sup> party tools 10.2. PPGs and DPGs
  - interim SAS terms of references

Excerpt from Interim Science Advisory Structure terms of reference

# **Interim Detailed Planning Groups**

**General Purpose.** Interim Detailed Planning Groups (iDPGs) are usually short-lived planning groups that may be created by iPC for more intensive study of certain aspects of scientific or technical planning that may arise.

**Mandate.** iDPGs will be created by iPC with individual mandates that may be either scientifically or technologically based. iDPGs will provide written reports to iPC. Example tasks for iDPGs include: advising on specific technological issues; translating mature IODP science proposals into concrete drilling plans; advising on regional and site surveys needed for future drilling; preparing drilling prospectuses which synthesize all thematic and site survey input, and the detailed planning of all riser sites. The iDPGs associated with planning of riser sites will be longer lived and will maintain close communication with the iPC, the iSSEPs, the iSSP, the iPPSP and the science operators throughout their multi-year planning process.

When their mandates involve scientific planning (such as for riser sites) or the integration of scientific proposals, the iDPG should establish liaisons and confer with the iSSEPs. The iDPGs reports to iPC should pass through the iSSEPs and other appropriate iSAS panels for comment.

**Meetings.** iDPGs meet at the request of iPC as required. Meeting dates, locations and agendas will be approved by the iPC Co-Chairs. iDPGs will be disbanded once their task is completed.

**Membership.** Members of iDPGs will be appointed by iPC for their expertise and experience with respect to the assigned iDPG mandate. Members may be recommended by the iSSEPs. Each member of IWG will have the right of representation. The size of the iDPG should be commensurate with the charge of the group; a maximum number of 16 members is suggested.

**Liaison.** The iPC appoints a liaison to each standing iDPG, and when appropriate, requests that liaisons from the science operators be assigned to the iDPGs.

Chair. The iDPG Chair will be appointed by iPC.

Excerpt from Interim Science Advisory Structure terms of reference

## **Interim Program Planning Groups**

**General Purpose**. Interim Program Planning Groups (iPPGs) are small focused planning groups formed by iPC when there is a need to-plan drilling programs to achieve the goals of the IODP Initial Science Plan. Calls for the establishment of an iPPG may arise from either the iSSEPs or from the iPC membership.

**Mandate.** The iPPGs will advise upon drilling strategies and proposals for major scientific objectives that are not adequately covered by existing drilling strategies or proposals. Drilling proposals arising from iPPG meetings must be submitted to the iSAS Support Office by individual proponents or groups of proponents. The iPPGs will report directly to theappropriate iSSEP in the interim Science Advisory Structure as directed by iPC.

**Meetings.** These will be on an as-required basis, determined by iPC and approved by the iPC Co-Chairs, who will also approve dates, locations, and agendas.

**Membership.** Members of iPPGs will be focused groups of specialists and proponents, chosen by iPC through consultation with the iSSEPs. Each member of IWG will have the right of representation. A maximum number of 16 members is suggested. The number of iPPGs will bedetermined by iPC's need to fulfill the IODP Initial Science Plan objectives, subject to budgetary constraints.

**Liaison.** The iPC establishes liaison with iPPGs by the appointment of liaisons. A liaison from the appropriate iSSEP will also be established. The iPC may ask that liaisons to iPPGs be established when appropriate to help foster communication between the IODP and other major geoscience initiatives.

Chair. The iPPG Chairs are appointed by iPC.

# AGENDUM 11 FY05/06 expedition schedule II

#### Current expedition schedule

- 11.1. Select scenarios to prioritize/approve
- 11.2. Prioritize/approve scenarios
- 11.3. Presentation of results
- 11.4. Nomination of co-chief scientists

# Current Expedition Schedule (as of 4 October 2004)

# USIO – Non-riser operation

- Expedition 303 North Atlantic 1: 25 September 17 November 2004
- Expedition 304 Oceanic Core Complex 1: 17 November 2004 8 January 2005
- Expedition 305 Oceanic Core Complex 2: 8 January 2 March 2005

Expedition 306 - North Atlantic 2: 2 March - 25 April 2005

Transit: 25 April - 13 May 2005

Demobilization: 13 May - 4 June 2005

# ESO – MSP operation

Expedition 3xx – Tahiti, (implementation phase)

# AGENDUM 12

IODP long term planning

# 12.1. Platform proposal pressure Platform proposal pressure figure

Active proposal list

12.2. Development of successor to IODP Initial Science Plan IODP Initial Science Plan

# Platform Proposal Pressure

Platform type	No. Proposal (multi platform)
Riser	5 (17)
Non Riser	90 (107)
MSP	11 (19)
Multiple platforms	17

	Proposal #	Short Title	Proponent	Affiliate	ISP
1	455-Full4	Laurentide Ice Sheet Outlets	Piper	ECORD	2
2	477-Full4	Okhotsk/Bering Plio-Pleistocene	Takahashi	Japan	2
3	478-Full4	Eastern Nankai Subduction	Tokuyama	Japan	3
4	482-Full3	Wilkes Land Margin	Escutia	ECORD	2
5	489-Full3	Ross Continental Shelf	Barrett	others	2
6	491-Full3	Cretaceous S. Atlantic Accretion	Hinz	ECORD	3
7	503-Full2	Weddell Basin	Jokat	ECORD	2
. 8	505-Full5	Mariana Convergent Margin	Frver	USA	1
9	513-Full2	Scott Plateau Paleoceanography	Opdyke	others	2
10	514-Full4	Maldives Sea Level	Droxler	USA	2
11	515-Full	Black + Marmara Seas Sediments	Flood	USA	2
12	519-Full2	South Pacific Sea Level	Camoin	FCORD	2
13	522-Full3	Superfast Spreading Crust	Alt	USA	3
14	531-Pre2	Max Spreading Rate Core Complex	Snow	FCORD	3
15	532-Full	Kane Megamullion	Tucholke	USA	3
16	535-Full4	735B Deep	Dick	USA	3
17	537A-Full3	Costa Rica Seismogenesis Project Stage 1	Vannucchi	FCORD	3
18	537B-Full2	Costa Rica Seismogenesis Project Stage 2	Ranero	FCORD	3
19	537-CDP5	Costa Rica Seismogenesis Project Clage 2	von Huene	USA	3
20	537C-Pre	Costa Rica Seismogenesis Project Stage 1b	Scholl	USA	1
21	539-Full2	Blake Ridge Gas Hydrates	Holbrook	USA	1
22	541-Full	Chilean Fiord Sediments	Anderson		2
22	542-Pre	Hikurangi Plateau I IP (SW Pacific)	Mortimer	othere	<u> </u>
24	545-Full3	luan de Euca Elank Hydrogeology	Fishor		1
24	547-EullA		Fiek		1
20	547-1 UII4	Chievulub K T Impact Crater	Morgon		2
20			livioligan	ECORD	2
21	549-Fullo	Carbonato Clipoforma, NW Aust	Bradshaw	ethore	2
20	550-Full		Gillic		2
29	551-Full	Rengel Ean	Gillis Erango Lanord	ECORD	3
21	552-Fullo	Coopedia Margin Hydrotoa	Piedel	ECORD	2 1
20		Cascadia Margin Hydrates	Kieuei		1
32		Guil of Mexico Hydrates	Kenflicult	ECORD	1
24			Nofor (Mulitza)	ECORD	2
25	550-Full2	Storoggo Slide Coo Hydrotoo		ECORD	4
30		Storegga Silve Gas Hydrates	Toylor	LIGA	2
30			Duncon	USA	<u></u> о
20		New Jersey Shellow Shelf	Duncan	USA	3 2
20	565 Pro	Fuela Carbonata Platform	Foon		1 2
39		Nonkoj Trough Gos Hydrotos	Achi	lanan	1,∠
40	500-Fulls	S Desific Deleggene Transact	Ree	Japan	2
41	507-Full	S. Facilie Faleogene Transect	Dravlar		2
42	500-PTe		Diuxiei	USA	2
43	509-FUII	East Dacific Pico	Havmon	USA	1 2
44	570-Full	Last Faulto Nise Darouping Rasin Carbonate Mounda	Hopriot	othere	১ 1
40	573-FUIIZ	Painbow Hydrotharmal Field	Fouquet		1
40	575 Eullo	Culf of Adon African Climata	deMenacel		ו ר
4/	576 Pro2	S Barbados Accretionery Price		ECOPD	∠ 1
40	578-Pro	Armara Sea Gatoway	Hiscott	ECORD	ו ר
49	570-Pro	N Pacific Climate/Anovie Skan Pay	Anderson		2
50	581-5010	I ata Plaistocance Coralgal Banka	Drovler		2
51	584-Eullo	TAG II Hydrotharmal	Rona		∠ 1
52	586-Eullo	Hawaiian Coral Roofe and Rocalte	Rubenstone		י ר
53	587-Pro	Gulf of Mexico Mini-Resin	Nelson	FCOPD	2
54	588-Full	Arctic-Atlantic Cretaceous Cotowov	Gradstein	FCOPD	22
55	580-Full2	Gulf of Maxico Overpressures	Fleminge	1164	2, 3
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62	507. 501	Alaska High-resolution Sodimente	lagger		3 2
03	597-FUII	o. Alaska high-resolution Sediments	Jaegei	USA	2

	Proposal #	Short Title	Proponent	Affiliate	ISP
64	600-Full	Canterbury Basin	Fulthorpe	USA	2
65	601-Full2	Okinawa Trough Deep Biosphere	Takai	Japan	1
66	602-Full2	Tropical Epeiric Seas	Edgar	USA	2
67	603A-Full2	NanTroSEIZE Reference Sites	Underwood	USA	3
68	603B-Full2	NanTroSEIZE Mega-Splay Faults	Kinoshita	Japan	3
69	603-CDP3	NanTroSEIZE Overview	Kimura (Tobin)	Japan	3
70	603C-Full	NanTroSEIZE Phase 3: Plate Interface	Suyehiro (Tobin)	Japan	3
71	603D-Full	NanTroSEIZE Observatories	Screaton	USA	3
72	604-Full	Ulleung Basin	Lee (Han)	others	2
73	605-Full	Asian Monsoon	Tada	Japan	2
74	606-Pre	Mesozoic Greenhouse	Nishi	Japan	2
75	607-Full2	New Jersey Slope	Dugan	USA	1
76	608-Pre	NW Pacific Cretaceous Greenhouse	Hasegawa	Japan	2
77	609-Pre	Himalaya–Bengal System	Spiess	ECORD	2
78	610-Full2	W. Florida Margin	Mallinson	USA	2
79	611-Pre	Pacific Warm Pool	Stott	USA	2
80	612-Full2	Geodynamo	Yamazaki	Japan	3
81	613-Pre	NW Pacific Margin Transect	Hoyanagi	Japan	2
82	614-Pre2	Izu-Bonin Arc	Tamura (Ishizuka)	Japan	3
83	615-Pre	NW Pacific Coral Reefs	Matsuda	Japan	2
84	616-Pre	North Carolina Margin	Bralower	USA	2
85	618-Full3	East Asia Margin	Clift	ECORD	2
86	619-Pre	Indian-Southern Ocean Latitudinal Transect	Mackensen	ECORD	2
87	620-Full3	Hotspot Seamounts	Sager	USA	3
88	621-Full	Monterey Bay Observatory	Paull	USA	1.3
89	622-Pre	Chilean Fiords	Dunbar	USA	2
90	623-Full2	Ontong Java Plateau	Neal	USA	3
91	624-Pre	Atlantic-Southern Ocean Paleoclimate	Pudsev	UK	2
92	625-Pre	Pleistocene Pacific Southern Ocean	Gersonde	ECORD	2
93	626-Full2	Pacific Equatorial Age Transect	Pälike	UK	2
94	627-Pre	Clipperton Atoll	Linslev	USA	2
95	629-Full	Chamorro Seamount Deep Biosphere	Inagaki	Japan	1
96	630-Pre	Magellan and Manihiki Plateaus	Erba	ECORD	2
97	631-Pre	ION Observatories	Stephen	USA	3
98	632-Pre	Lamont Seamount	Lundstrom	USA	3.1
99	633-Full	Middle America Slope	Brückmann	ECORD	1
100	634-Pre	Antarctic Circumpolar Current	Barker	ECORD	2
101	635-Full	Hydrate Ridge Observatory	Torres	USA	1
102	636-Full2	Louisville Seamounts	Koppers	USA	3
103	637-Full	New England Margin Hydrogeology	Person	USA	1
104	638-APL	Adelie Drift	Dunbar	USA	2
105	640-Pre	Godzilla Mullion	Ohara	Japan	3
106	643-Pre	Okinawa Trough - Ryukyu Forearc	Wei	others	2
107	644-Pre	Gulf of Cadiz	Hernández	ECORD	2
108	645-Pre	North Atlantic Gateway	Jokat	ECORD	2
109	646-Full	Iceland Hotspot	Murton	ECORD	3
110	647-Pre	Lisbon Seismogenic Zone Experiment	Gutscher	ECORD	3
111	648-Full2	Big Blue Seamount	Frver	USA	1
112	649-Pre	Portuguese Submarine Canvons	Lebreiro	ECORD	2
113	650-APL	Tahiti Reef Imaging	Kenter	ECORD	2
114	651-APL	Irminger Basin Microbiology	Warthmann	ECORD	1
115	652-Pre	Arctic Mesozoic Climate	Jokat	ECORD	2
116	653-Pre	Tonga-Kermadec Subduction	Gurnis	USA	3
117	654-Full	Shatsky Rise Mantle Plume	Sager	USA	3
118	655-Pre	Juan de Fuca Observatories	Davis	ECORD	1
11.9	656-Full	Belize Margin Paleoclimate and Tectonics	Droxler	USA	2
120	657-Pre	Galicia Rifted Margin	Sawver	USA	3
121	658-Pre	North Atlantic Volcanism and Paleoclimate	Planke	FCORD	2
122	659-Full	Newfoundland Rifted Margin	Tucholke	USA	3
123	660-Pre	Baltic Sea Basin Evolution	Andrén	FCORD	3
124	661-Pre	Newfoundland Sediment Drifts	Norris	USA	2
125	662-Full	South Pacific Gyre Microbiology	D'Hondt	USA	1
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4th SPC meeting agenda book



Scientific Investigation of the Earth System Using Multiple Drilling Platforms and New Technologies

> Integrated Ocean Drilling Program Initial Science Plan, 2003-2013

> > May 2001

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# A Letter from IPSC

The most ambitious program of ocean drilling and exploration ever conceived is contained in this Initial Science Plan. An international community of earth scientists gathered on several occasions over the past three years, sharing scientific goals, challenging one another's imaginations and generating ideas which IPSC used to develop this plan for the first decade of the Integrated Ocean Drilling Program (IODP). Even as mankind prepares for extraterrestrial exploration beyond the Moon to Mars and the outer planets of our solar system, earth scientists will embark upon this exciting expedition to "inner space." Building upon 30 years of scientific achievements, this Initial Science Plan defines the goals of an international ocean drilling program, synthesizing the results of a comprehensive suite of conferences and workshops, including CON-CORD\* and COMPLEX.\*\* It highlights new process-oriented directions for addressing the Earth system, and it proposes a fundamentally new multiple drilling platform approach to the science of ocean drilling.

Ocean drilling achievements have set the stage for understanding the complex linkages among the different parts of the Earth system. The Deep Sea Drilling Project (DSDP, 1968-1983) validated the theory of plate tectonics, began to develop a high-resolution chronology associated with study of ocean circulation changes, and carried out preliminary exploration of all of the major ocean basins except the high Arctic. The Ocean Drilling Program (ODP, 1985-2003), capitalizing on DSDP's momentum, probed deeper into the oceanic crust to study its architecture, analyzed convergent margin tectonics and associated fluid flow, and examined the genesis and evolution of oceanic plateaus and volcanic continental margins. ODP has also greatly extended our knowledge of long- and short-term climate change.

These ocean drilling achievements, and many others, have set the stage for understanding the complex linkages among different parts of the Earth system. This new, integrated Earth view is fundamental to IODP's vision, which is to better understand, among other things: (1) the nature of the earthquake-generating zone beneath convergent continental margins, (2) the nature of the complex microbial ecosystem that inhabits

> \*Conference on Cooperative Ocean Riser Drilling, Tokyo, July 22-24, 1997 \*\*Conference on Multiple Platform Exploration of the Ocean, Vancouver, May 23-27, 1999

Earth's subseafloor and (3) gas hydrates, the tremendous frozen carbon reservoir that lies beneath continental margins. Other primary IODP goals and initiatives include a more complete understanding of past climate extremes and rapid climate change as potential indicators of the sensitivity of Earth's climate system to anthropogenic inputs; examination of the role of continental breakup in sedimentary basin formation as one key to future resource exploration; the formation and evolution of volcanic margins and plateaus as an example of Earth's non-steady-state behavior through time; and the "21st Century Mohole," the drilling and monitoring of a complete section of oceanic crust. These goals will be realized through the use of multiple drilling platforms and the most advanced sampling and observing technologies available, and by forging new collaborations with other international earth science initiatives and with industry.

As Earth grows smaller, mankind's relationship with it must improve. IODP will help to provide the information that can make that possible.

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# A Vision of the SPC meeting agenda book for Scientific Ocean Drilling

# Executive Summary

Earth's surface veneer of seafloor sediment and extrusive volcanic rock represents the most recent snapshot of geologic time. Beneath that veneer, buried in sedimentary sections and the underlying crust, is a rich history of the waxing and waning of glaciers, the creation and aging of oceanic lithosphere, the evolution and extinction of microorganisms and the building and erosion of continents. More than thirty years of scientific ocean drilling have explored this history in increasing detail, revealing the complexity of the processes that control crustal formation, earthquake generation, ocean circulation and chemistry, and global climate change. Drilling has also revealed that deep within marine sediments, rock pore spaces and rock fractures is an active environment where ocean water circulates, microbes thrive and natural resources accumulate.

The Integrated Ocean Drilling Program, planned to begin October 1, 2003, envisions an ambitious expansion of exploration beneath the oceans, made possible by increasing drilling capability, from the single-ship operation currently in use, to the multiple-drilling platform operation of the future. The centerpiece of IODP's deep-water efforts will be a brand new riser-equipped, dynamically positioned drillship, to be provided and operated by JAMSTEC (Japan Marine Science and Technology Center). This vessel will be partnered with a modern, non-riser, dynamically positioned drillship, a successor to the Ocean Drilling Program's *JOIDES Resolution*, to be supplied and operated by the US National Science Foundation. These drillships will be supplemented with additional drilling platforms as needed (e.g., drilling barges, jack-up rigs and seafloor drilling systems). European and circum-Pacific nations are establishing initiatives to provide some of these "mission-specific" drilling technologies. Enhanced downhole measurement devices and longterm seafloor observatories complete the suite of sophisticated, state-of-the art tools planned for the new program. This new technology and multiple-platform approach will allow scientists to conduct experiments and collect samples in environments and at depths never before attempted.

3



Figure 1. Earth system components, processes, and phenomena. Figure courtesy of Asahiko Taira, University of Tokyo.

5

The international community of ocean drilling scientists has devised a bold new strategy for investigating the Earth system that takes full advantage of these new drilling, sampling and observing capabilities. The IODP Initial Science Plan organizes scientific study by major Earth processes, encouraging specialists to broaden their proposals to include cooperative work with colleagues in related disciplines. Using the new multiple-platform approach to scientific ocean drilling and a new process-oriented approach to research, IODP will focus on three broad scientific themes:

- The deep biosphere and the subseafloor ocean. New evidence suggests that vast microbial populations may live within a broad range of temperatures and pressures, where sediment and rock appear to provide life-sustaining resources. Microbes that characterize these extreme environments are now broadly considered a potential source of new bio-materials and are the basis of ideas for new biotechnical applications, such as water treatment and microbially enhanced oil recovery. Little is known about the architecture and dynamics of the vast subseafloor plumbing system, where flowing water alters rock, influences the chemical composition of the ocean, lubricates seismically active faults, concentrates economic mineral deposits and may teem with life. IODP will probe this environment globally, providing the first comprehensive characterization of this ocean below the seafloor.
- Environmental change, processes and effects. Ocean sediments provide a unique record of Earth's climate fluctuations and permit detection of climate signals on four time scales: tectonic (longer than about 0.5 m.y.); orbital (20 kyr to 400 kyr); oceanic (hundreds to a few thousand years); and an-thropogenic (seasonal to millennial). Studies of drill cores indicate that the pace of climate change has varied over time, from gradual to abrupt. What needs to be fully explored, however, is what initiates these changes, how they are propagated, what circumstances amplify or reduce the climatic effects of large and small events and what processes bring about change in Earth's environment. IODP will recover cores from as yet poorly sampled environments, such as the Arctic Ocean basin, atolls, reefs, carbonate platforms, continental shelves beneath very shallow waters and settings where sediments accumulate very rapidly (especially anoxic basins). Combined with drilling results from a global array of sites, these new sediment samples will allow a more sophisticated analysis of the causes, rates, sequencing and severity of change in Earth's climate system over all time scales. They also permit a more thorough investigation of the relationship among climate extremes, climate change and major pulses in biological evolution.
- Solid earth cycles and geodynamics. The vast amount of energy stored within the Earth is regularly brought to our attention by transient and often destructive events such as earthquakes, volcanic eruptions and tsunamis. These punctuating events are part of the solid Earth cycle, which involves the creation and aging of oceanic crust, its recycling at subduction zones and the formation and evolution of continents. The rates of mass and energy transfer from the mantle to the crust and back again are not constant through time. The causes of these variations and their influences on the global environment are poorly understood. Using new IODP technologies, some pioneered by DSDP and ODP, researchers will sample and monitor regions of the seafloor that currently have the greatest mass and energy transfers, as well as regions where these transfers were largest millions of years ago. IODP will also drill deeper into Earth's crust than ever before, providing new insight into—and perhaps answers

## AGENDUM 13

Synthesis volumes

## AGENDUM 14 ODP Leg 209 report

Summary of Leg 209

*Excerpt from preliminary report, for more detail please visit following site* http://www-odp.tamu.edu/publications/prelim/209\_prel/209toc.html

# Drilling Mantle Peridotite along the Mid-Atlantic Ridge from 14° to 16°N

6 May 2003–6 July 2003

Shipboard Scientific Party

Ocean Drilling Program Texas A&M University 1000 Discovery Drive College Station TX 77845-9547 USA

October 2003

## PUBLISHER'S NOTES

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## ABSTRACT

Leg 209 was devoted to drilling mantle peridotites and associated gabbroic rocks along the Mid-Atlantic Ridge from 14° to 16°N. This area was identified at the 1996 Workshop on Oceanic Lithosphere and Scientific Drilling into the 21st Century (OL Workshop) as the ideal region for drilling of a strike line of short holes to sample the upper mantle in a magma-starved portion of a slow-spreading ridge (spreading rate =  $\sim$ 25 km/m.y.). In this area, igneous crust is locally absent and the structure and composition of the mantle can be determined at sites more than  $\sim$ 100 km apart along strike.

A central paradigm of Ridge Interdisciplinary Global Experiments (RIDGE) studies is the hypothesis that mantle flow, or melt extraction, or both, are focused in three dimensions toward the centers of magmatic ridge segments, at least at slow-spreading ridges such as the Mid-Atlantic Ridge. This hypothesis has essentially reached the status of accepted theory, but it has never been subject to a direct test. A strike line of oriented mantle peridotite samples extending for a significant distance within magmatic segments offers the possibility of directly testing this hypothesis. Continued dredging and submersible studies cannot provide the spatial information required to make such a test.

The primary aim of drilling was to characterize the spatial variation of mantle deformation patterns, residual peridotite composition, melt migration features, plutonic rocks, and hydrothermal alteration along axis. Hypotheses for focused solid or liquid upwelling beneath ridge segments make specific predictions regarding the spatial variation of mantle lineation or the distribution of melt migration features. These predictions were directly tested by drilling. We discovered that penetrative mantle deformation fabrics are weak at every site where mantle peridotite was sampled from 14°43′N to 15°39′N. Instead, at all of these sites, deformation was localized along high-temperature shear zones and later brittle faults. Intact blocks of peridotite with high-temperature, protogranular fabrics were preserved between these zones of localized deformation and underwent substantial tectonic rotation, perhaps as much as 90° around horizontal, ride-parallel rotation axes in some places.

At most sites, drilling recovered substantial proportions of gabbroic rocks intrusive into mantle peridotite. Some of these rocks have mineral assemblages that are probably indicative of crystallization at depths of 12 to 20 km beneath the Mid-Atlantic Ridge. Localized deformation at several of these sites occurred preferentially within contact zones between peridotite and these gabbroic intrusions. Abundant gabbroic intrusions were found close to the 15°20' Fracture Zone, at Site 1271, and far from the fracture zone at Sites 1270, 1268, and 1275. Conversely, some holes intersected very little gabbroic material; these were at Site 1272, very close to the fracture zone, and Site 1274, far from the fracture zone. Thus, there is little evidence from the results of this leg for focusing of melt distribution away from the fracture zone and toward the centers of volcanically active ridge segments.

Three new hypotheses may account for our observations:

1. Shallow mantle peridotites beneath the Mid-Atlantic Ridge in this region do not undergo penetrative deformation during "corner flow" associated with plate spreading. Instead, they rise passively until they reach the base of the thermal boundary layer at depths of 15 to 20 km below this slow-spreading ridge. There, they cool and become incorporated into the lithosphere. Subsequently, corner flow and ridge extension are accommodated along localized ductile shear zones which gradually evolve into brittle faults at shallower depths and lower temperatures. As some faults rotated to shallow dips and could no longer accommodate extension, new ones formed. Crosscutting generations of faults rotated nearly undeformed blocks of peridotite and associated gabbroic intrusions, with total rotations probably >60° or even 90° in some cases.

- 2. Textures in the relatively undeformed peridotite blocks suggest that many residual peridotites interacted with melts migrating by diffuse porous flow along grain boundaries at the base of the thermal boundary layer. In most peridotites, our qualitative observations of textures suggest that igneous spinel and pyroxene crystallized within a matrix of residual mantle olivine and orthopyroxene. More extensive crystallization of intergranular melt at slightly lower temperatures formed impregnated peridotites and hybrid troctolites, particularly abundant at Sites 1271 and 1275. Based on our limited sampling, it seems that focusing of melt transport into dunite conduits with sharp contacts against residual mantle peridotites, common in some ophiolites and perhaps beneath fast-spreading ridges, was not a very important process in the region we investigated. Instead, melts probably were in equilibrium with mantle peridotite up to the base of the thermal boundary layer, after which they probably ascended in brittle cracks.
- 3. We wonder if the "amagmatic" region between 14°40′ and 15°40′N along the Mid-Atlantic Ridge is truly "magma starved" as has often been proposed or whether, instead, the relative lack of lava and gabbroic crust is offset by a relatively high proportion of gabbroic intrusions into peridotite, distributed over 15 to 20 km depth. In this view, many melts may crystallize 100% below the seafloor, with no magma rising to form lava flows. In keeping with this hypothesis, gabbroic rocks, particularly those at Site 1275, the top of Mt. Mike at 15°44′N, ~25 km west of the ridge axis, are generally very evolved. They cannot represent the refractory, primitive cumulates required to complement compositional variation in mid-ocean-ridge basalts, and instead must represent the crystal products of very evolved melts that rarely erupt. This may be heresy, but we wonder if, for example, gravity data for the Mid-Atlantic Ridge might be reconciled with such a theory, given that the widely distributed gabbroic rocks in such a lithospheric structure would generally be farther from the seafloor and therefore would have a smaller gravity signal than a thick gabbroic layer concentrated near the surface.

Very different hydrothermal alteration styles were observed at different Sites. In Hole 1268A, talc was particularly abundant in metaperidotites, accompanied by a dramatic metasomatic decrease in the (Mg + Fe)/Si ratio. Elsewhere, brucite was a prominent part of the alteration assemblage in peridotites, and rocks retain high (Mg + Fe)/Si. Gabbroic intrusions appear to have an important local control on serpentinization reactions in peridotite. Carbonate alteration of peridotites in some locales seems to be correlated with a metasomatic influx of calcium and may also substantially affect the trace element budget of serpentinites in some cases.

## **INTRODUCTION**

## Site Survey Data and Other Geological Background

The Mid-Atlantic Ridge near the 15°20′ Fracture Zone has been the focus of a long-term cooperative French-American and allied Russian research program. During the summer of 1998 the area was visited by a Japanese/American team, funded in part as a site survey for the Ocean Drilling Program (ODP). In addition to identifying many suitable drill sites, these cruises identified many suitable drill sites and completed shipboard bathymetric, gravity, and magnetics surveys (Fig. F1).

In addition to nearly continuous outcrops of mantle peridotite on both walls of the rift valley for at least 100 km from 14°40′ to 15°40′N (Fig. F2), significant features of the area include:

- 1. Large "gravity bulls-eyes," concentric negative residual Bouger and mantle Bouger gravity anomalies, centered at ~14° and 16°N (Fig. F1);
- 2. A regional chemical anomaly with "hotspot" characteristics centered at ~14°N (Fig. F3);
- 3. "Megamullion" structures, interpreted to be long-lived low-angle faults exposed on the seafloor over regions of ~100 km<sup>2</sup> (e.g., 46°54'W, 15°44'N) (Fig. F2); and
- 4. At least three areas with high methane signatures in the water column, including one active hydrothermal field within mantle peridotites.

## **Seismic Studies**

In June 1997, a seismic refraction experiment was carried out north of the 15°20' Fracture Zone from the *Ewing*, led by John Collins of Woods Hole Oceanographic Institute (WHOI). Using NOBEL (Near Ocean Bottom Explosives Launcher), refraction profiles were shot over areas previously mapped using the submersible *Nautile*. Source and receiver were on the seafloor for determination of seismic velocity structure at length scales of 10 to 100 m instead of 100 m to 1 km with conventional surveys. NOBEL profiles were taken at 15°37'N on (1) an ultramafic outcrop, (2) a gabbro/wehrlite outcrop, and (3) basalt, to determine whether seismic velocities can be used to map the extent of gabbro and peridotite emplaced at or near the seafloor. In addition, a 100-km-long conventional refraction profile was shot along the median valley of the Mid-Atlantic Ridge north of the 15°20' Fracture Zone. Results show anomalous seismic structure in the crust with pronounced gradients in velocity rather than the layered structure typical for fast-spreading ridges (Fig. F4). This type of seismic structure is typical for slow-spreading ridges near fracture zones (R. Detrick, pers. comm., 1998).

## **Submersible Studies**

Many possible drill sites were identified during the Faranaut cruise with the French *Nautile* submersible in 1992 (e.g., Cannat et al., 1995, 1997b). In 1998, the joint Japan Marine Science and Technology Center (JAMSTEC)/WHOI MODE 98, Leg 1 cruise with the Japanese *Shinkai* 6500 submersible completed the survey for possible drill sites. A summary of lithologic observations from dredging and diving is shown in Figure F2, and a summary of drill sites is shown in Figure F5. In addition, it is worthy of note that extensive exposures of moderate- to low-angle fault surfaces underlain by peridotite were observed on the seafloor, particularly at Sites 1275 and 1270 (Fig. F5).

## **Shipboard Geophysics**

Although the 1992 Faranaut cruise included shipboard bathymetric, gravity, and magnetics surveys, the quality of the gravity and magnetics data was less than optimal. The 1998 MODE 98, Leg 1 cruise conducted additional surveys. The combined Faranaut and MODE 98 survey coverage is illustrated in Figure F2 (Cannat et al., 1995, 1997b; Casey et al., 1998; Kelemen et al., 1998b; Matsumoto et al., 1998; Escartin and Cannat, 1999; Fujiwara et al., 2003). For the purposes of this report, the most important result is the identification of large "gravity bulls-eyes," concentric negative residual Bouger and mantle Bouger gravity anomalies, centered at ~14° and 16°N (Fig. F1). These gravity lows correspond to areas with well-organized seafloor magnetic anomalies and ridge-parallel abyssal hill topography, whereas the relative gravity highs correspond to known areas with outcrops of serpentinized peridotites along the ridge axis and to areas with poorly organized seafloor magnetic anomalies and chaotic topography. Also note that the negative gravity anomaly at 14°N is about twice as large as that at 16°N, in keeping with geochemical indications that the 14°N area resembles a "hotspot."

The gravity lows have been interpreted as centers of magmatic segments where there is accretion of thick igneous crust, whereas the gravity highs on the periphery of these magmatic segments were thought to be magma starved. This idea was central to our drilling plan because it provides a potential explanation for the extensive outcrops of peridotite along the Mid-Atlantic Ridge between 14°40′ and 15°40′N, but it has never been tested. This region was ideal for testing hypotheses that explain focused crustal accretion, or at least focused volcanic activity in regions with low gravity, along magmatic segments.

### **Geochemical Background**

Extensive analytical work has been done on samples recovered by dredging in the 14° to 16°N region along the Mid-Atlantic Ridge (Bonatti et al., 1992; Bougault et al., 1988, 1990; Casey, 1997; Casey et al., 1992, 1994, 1995; Dick and Kelemen, 1992; Dosso et al., 1991; Peyve et al., 1988; Silantyev et al., 1996; Sobolev et al., 1992a, 1992b, 1992c; Staudacher et al., 1989; Xia et al., 1991, 1992; C. Xia et al., unpubl. data). This work reveals that the mantle source of basalts south of the 15°20′ Fracture Zone is geochemically "enriched," similar to the source of hotspot-related mid-ocean-ridge basalts (MORB) elsewhere along the Mid-Atlantic Ridge (Fig. F3). Perhaps related to this is the observation that mantle peridotites seem to have undergone unusually high degrees of melting (mantle olivines have molar Mg/ (Mg+Fe) up to 0.92, and spinels have molar Cr/(Cr+Al) up to 0.7, forming the depleted end-members for peridotites recovered from mid-ocean ridges (Fig. F6). North of the fracture zone, however, basalts and peridotites sampled by dredging and submersible have compositions typical for the Mid-Atlantic Ridge away from hotspots (Fig. F3).

## MANTLE UPWELLING, MELT TRANSPORT, AND IGNEOUS CRUSTAL ACCRETION

## **Focused Crustal Accretion at Slow-Spreading Ridges**

A central paradigm of RIDGE studies is the hypothesis that mantle flow, or melt extraction, or both, are focused in three dimensions toward the centers of magmatic ridge segments, at least at slow-spreading ridges such as the Mid-Atlantic Ridge. This is based on:

- 1. Observations from ophiolites, with emphasis on the Oman ophiolite (Ceuleneer, 1991; Ceuleneer et al., 1988; Ceuleneer and Rabinowicz, 1992; Jousselin et al., 1998; Nicolas and Boudier, 1995; Nicolas and Rabinowicz, 1984; Nicolas and Violette, 1982);
- 2. The theory that partially molten mantle may be subject to diapirism via Rayleigh Taylor instabilities (Barnouin-Jha et al., 1997; Buck and Su, 1989; Crane, 1985; Jha et al., 1994; Parmentier and Phipps Morgan, 1990; Rabinowicz et al., 1984, 1987; Schouten et al., 1985; Sparks and Parmentier, 1993; Sparks et al., 1993; Su and Buck, 1993; Whitehead et al., 1984);
- 3. The observation that peridotites are commonly dredged near fracture zones along slow-spreading ridges but not near ridge segment centers (Dick, 1989; Whitehead et al., 1984); and
- 4. Gravity and seismic studies of the Mid-Atlantic Ridge suggesting thick crust near segment centers and thin crust at segment ends (e.g., Barclay et al., 1998; Kuo and Forsyth, 1988; Lin et al., 1990; Tolstoy et al., 1992; Tucholke et al., 1997).

In addition to a possible role for mantle diapirism, various workers have proposed that melt transport may be focused in two or three dimensions, on the basis of theoretical work and field observations (e.g., Aharonov et al., 1995; Kelemen et al., 1995a, 1995b, 2000; Magde et al., 1997; Phipps Morgan, 1987; Sparks and Parmentier, 1991, 1994; Spiegelman, 1993; Spiegelman and McKenzie, 1987). Such focused melt extraction could operate, with or without focused flow of the upwelling mantle, to produce the observed focusing of crustal accretion toward the center of magmatic ridge segments.

The idea that focused mantle upwelling at the centers of magmatic ridge segments occurs only beneath slow-spreading ridges was formulated by Marc Parmentier and his students (e.g., Lin and Phipps Morgan, 1992; Parmentier and Phipps Morgan, 1990; Turcotte and Phipps Morgan, 1992) and is supported by seismic results from the recent Mantle Electromagnetic and Tomography (MELT) experiment along the fast-spreading southern East Pacific Rise, in which no focused mantle upwelling was detected (e.g., Forsyth et al., 1998; MELT Team, 1998; Toomey et al., 1998). However, recent observations from Oman and the fast-spreading northern East Pacific Rise have called this into question (e.g., Barth and Mutter, 1996; Dunn and Toomey, 1997; Nicolas et al., 1996). Nevertheless, most investigators agree that slow-spreading ridges such as the Mid-Atlantic Ridge represent the best place to test general hypotheses for the mechanism(s) of three-dimensional (3-D) focusing of crustal accretion.

## Really Focused, Sort of Focused, Unfocused, Blurry: Terms For Mantle Upwelling

In the literature describing theories of three-dimensionally focused mantle upwelling, the terms "focused" and "3-D" receive different definitions from different authors. Thus, Parmentier and Phipps Morgan (1990), who first presented the now-famous "phase diagram" for two-dimensional (2-D) vs. 3-D mantle upwelling as a function of spreading rate and mantle viscosity, chose a detailed example that is indeed 3-D but that does not correspond well to observations of diapirs in the mantle section of the Oman ophiolite. In Parmentier and Phipps Morgan's example, the region of mantle upwelling at, for example, 40 km depth is ~200 km wide in a ridge-parallel section and widens upward; near the top it is almost as wide as their 300-km ridge segment. Along-ridge transport of upwelling mantle occurs gradually over the upper 60 km of the upwelling region. In contrast, the interpretation of Jousselin et al. (1998), loosely based on observations from Oman, is that "at any depth above 50 km there is no vertical flow outside the narrow zone of subridge upwelling." They take the zone of upwelling to be cylindrical, with a diameter of ~10 km. Furthermore, in their interpretation, all corner flow (ridge parallel and ridge perpendicular) occurs in the upper 500 m of the upwelling region. More than one-half of the shallow mantle in their 25-km-long ridge

segments is fed by horizontal flow in this 500-m-thick layer just below the base of the lithosphere. Such narrow pipes of upwelling mantle may be consistent with the physical models of Buck and Su (1989; Su and Buck, 1993), which show very sharp focusing of mantle flow. Such features could conceivably have escaped seismic detection in the recent MELT experiment. However, if this is the geometry of mantle upwelling, then the amount of ridge-parallel, horizontal transport of mantle material must be very large.

In the ensuing discussion, we take the Jousselin et al. geometry as the end-member example of 3-D focused mantle flow and passive corner flow to be the end-member example of 2-D mantle flow with no focusing. The Jousselin et al. scenario may seem extreme at first, but it does provide a clear description of an upwelling geometry that could produce a variation in igneous crustal thickness from ~10 km at a segment center to ~0 km near the segment ends, as interpreted on the basis of geological and geophysical observations in the 14° to 16°N region of the Mid-Atlantic Ridge. These observations are typical of the first-order features of slow-spreading ridges, which are thought to reflect three-dimensionally focused magmatic accretion.

In contrast, available 3-D physical models of diapric mantle upwelling beneath ridges cannot account for these observations because the upwelling is not sufficiently tightly focused. As stated by Barnouin-Jha et al. (1997), "short wavelength segmentation of slow-spreading centers requires some process not included in our models of mantle flow." This missing process might be tightly focused upwelling, as in the schema of Jousselin et al., or focused melt migration.

## Testing Hypotheses for the Mechanism(s) of Focused Crustal Accretion

Despite the difficulties with 3-D physical models (outlined above in "**Really Focused**, **Sort of Focused**, **Unfocused**, **Blurry: Terms for Mantle Upwelling**"), the hypothesis that mantle flow, or melt extraction, or both, are focused in three dimensions toward centers of magmatic segments at slow-spreading ridges has essentially reached the status of accepted theory. However, these ideas have never been subject to a direct test. A strike line of oriented mantle peridotite samples extending for a significant distance within such magmatic segments offers the possibility of directly testing hypotheses for focused crustal accretion.

The primary aim of drilling in the 14° to 16°N area along the Mid-Atlantic Ridge was to characterize the spatial variation of mantle deformation patterns, residual peridotite composition, melt migration features, and hydrothermal alteration along axis. Published hypotheses for focused solid or liquid upwelling beneath ridge segments make specific predictions regarding the spatial variation of mantle lineation or the distribution of melt migration features.

## **Interpretation of Ductile Flow Fabrics in Mantle Peridotites**

Models of focused solid upwelling require ridge-parallel, subhorizontal flow of residual mantle peridotites from segment centers to segment ends (Fig. F6A) (Barnouin-Jha et al., 1997; Buck and Su, 1989; Crane, 1985; Jha et al., 1994; Parmentier and Phipps Morgan, 1990; Rabinowicz et al., 1984, 1987; Schouten et al., 1985; Sparks and Parmentier, 1993; Sparks et al., 1993; Su and Buck, 1993; Whitehead et al., 1984). Futhermore, because focused mantle upwelling must be faster than plate spreading, these models predict zones of substantial shear strain at the top of the upwelling "fountain" of mantle peridotite, through which all the upwelling solid material must pass. These theories are substantiated to some extent by patterns of mantle flow inferred from ductile fabrics in residual peridotites in the Oman ophiolite (Fig. F6B) (Ceuleneer, 1991; Ceuleneer et al., 1988; Ceuleneer and Rabinowicz, 1992; Jousselin et al., 1998; Nicolas and Boudier, 1995; Nicolas and Rabinowicz, 1984; Nicolas and Violette, 1982), although as already noted in "Really Focused, Sort of Focused, Unfocused, Blurry: Terms for Mantle Upwelling,"

the scale of focused upwelling in Oman (~10 km) is different from that in current 3-D models of mantle diapirism (~100 km). In Oman and other ophiolite massifs, mantle flow direction can be determined by measurement of spinel shape fabrics (lineation at high strain is parallel to ductile flow), measurement of the orientation of olivine crystal shape fabrics relative to subgrain boundaries (subgrain boundaries are oblique to the long sides of elongate crystals, indicating the sense of shear), and measurement of olivine crystal lattice preferred orientation (olivine a-axes are aligned parallel to ductile flow directions at high strain).

Cores from a series of drill holes in mantle peridotites along a slow-spreading ridge axis can, in principle, be used to test the prediction that shallow ductile flow of residual mantle at the ends of segments is ridge parallel and subhorizontal. There are two problems with this approach: (1) the core must be restored to a geographical reference frame and (2) tectonic rotations of the peridotite that postdate ductile flow must be considered before the orientation of ductile fabrics can be interpreted in terms of large-scale mantle flow. Work on cores of partially serpentinized mantle peridotite from the East Pacific (Boudier et al., 1996) and the Atlantic (Ceuleneer and Cannat, 1997) has shown that they can be reoriented into the geographical reference frame using remanent magnetization, provided that tectonic rotations were minor or that their effects can be removed (Hurst et al., 1997; Kelso et al., 1996; Kikawa et al., 1996; Lawrence et al., 1997; Richter et al., 1996).

There are several assumptions involved in the reorientation process, namely

- 1. The remanence in individual samples accurately records the geomagnetic field direction (there is little magnetic anisotropy);
- 2. The average remanence in a given hole or at a given site reflects the time-averaged field direction (magnetization is slow enough that paleosecular variation is averaged;
- 3. The type of remanence and the timing of remanence acquisition must be known (the remanence need not be primary, so that, for example, a late viscous remanence would be adequate for geographic reorientation
- 4. The polarity of the remanence must be known; and
- 5. Independent constraints on the rotation axis—if any—must be available.

It is not clear whether all these assumptions are actually valid in all previous studies that attempted reorientation of core from ODP drilling, but all of them are implicit in the reorientation process.

It is noteworthy that there are two distinct types of reorientation studies. In the first, one simply reorients all the remanence directions to a common azimuth to look at the clustering of the structural features. For convenience, this common azimuth may be chosen as 360° or 180°, depending on the polarity of the remanence. During drilling, individual core pieces are rotated to different extents around a near-vertical axis, and this process restores them all to a common orientation, presuming that all had a common remanence azimuth prior to drilling. This process may also be interpreted as crudely placing structural features in a geographical reference frame. However, this interpretation is only valid if the remanence is a relatively recent one (e.g., as at ODP Site 920) or if the amount of rotation is sufficiently small or about an axis such that little change in declination has occurred.

A second reorientation process is needed when the amount of remanence deviation from the expected dipole direction is large, or if rotations occurred about axes that will substantially change both the inclination and declination of the remanence (as is generally the case). This reorientation requires selecting a plausible rotation axis (on geological grounds) and calculating the amount of deviation in both inclination and declination. For specific examples of this type of process, with a quantification of the

effect of different rotation axes on both the declination and inclination of the remanence direction, see the "Paleomagnetism" sections in the "Site 1268" and "Site 1270" summaries below.

After "undoing" tectonic rotations prior to drilling, the improved declination can, in principle, be used for the common azimuth in reorientation to yield something closer to a geographical reference frame. One could go further and undo the full rotation of the remanence vector to provide the attitude of structural features at the acquisition.

Where the magnetic inclination in the core after horizontal rotation is not parallel to the inferred magnetic inclination at the time of lithospheric formation, tectonic rotations may be inferred and then "removed." However, an important caveat is that the remanent magnetization in partially serpentinized peridotites is hosted in magnetite that is produced during serpentinization, so tectonic rotations of the peridotite prior to serpentinization cannot be detected.

Accounting fully for possible tectonic rotations of exposed mantle peridotite is a daunting prospect, but there was hope for a definitive result for the following reasons. Tectonic rotations resulting from normal faults are likely to occur mainly around axes parallel to the ridge axis. Thus, subhorizontal, ridge-parallel flow lineation is likely to be affected very little, if at all. Furthermore, rotations are likely to be away from the ridge axis, increasing the angle between lineations and the ridge axis. Thus, if ridge-parallel lineations had been consistently observed, this could have been taken as good evidence that shallow ductile flow of the mantle was parallel to the ridge. In the best case, observation of systematically varying ductile flow lineations in mantle peridotites, ranging from nearly ridge-perpendicular lineation near segment centers to ridge-parallel lineations near segment ends would have constituted evidence that focused mantle upwelling did occur near segment centers.

## **Interpretation of Chemical Variation in Mantle Peridotites**

Models of focused crustal accretion predict different patterns of mantle depletion due to melt extraction as a function of distance from magmatic segment centers. For strongly focused 3-D mantle flow, there should be no variation in the degree of mantle depletion along axis, since all of the shallow mantle peridotites originate within a narrow, pipelike upwelling zone. For purely passive corner flow, with no other factors considered, again there should be no variation in depletion along axis. However, when passive flow is coupled with cooling of the ends of ridge segments against a fracture zone wall, then the degree of melting is predicted to decrease along axis away from segment centers. This has been termed the "transform edge effect" (Ghose et al., 1996; Langmuir and Bender, 1984; Magde et al., 1997; Phipps Morgan and Forsyth, 1988). Provided that melt extraction is equally efficient throughout the melting region, this variation in melt production should be observed in shallow mantle samples. If partial crystallization of melt migrating into conductively cooled mantle lithosphere occurs, forming "impregnated peridotites" (e.g., Ceuleneer et al., 1988; Ceuleneer and Rabinowicz, 1992; Dick, 1989; Elthon et al., 1992; Seyler and Bonatti, 1997), then this should occur primarily near fracture zones, enhancing the chemical signal of the transform edge effect in mantle peridotites. Furthermore, impregnated peridotites often preserve structural relationships indicative of the nature of melt migration. Impregnated peridotite samples from the western ridge/transform intersection (RTI) of the Kane Fracture Zone (Ishizuka et al., 1995) show evidence for migration of melts into localized ductile shear zones, suggesting that melt migration extended into the active transform fault.

In general, geochemists have searched for the transform edge effect in lavas, which is complicated by the difficulties of seeing through variations in crustal differentiation processes and mantle source composition. Detailed analysis of our suite of peridotite samples, collected from a two ridge segments at

various distances from a fracture zone, will provide an independent evaluation of the presence and importance of the transform edge effect.

## **Interpretation of Melt Transport Features in Mantle Peridotites**

Models of focused melt migration toward ridge segment centers predict various different spatial distributions and orientations of melt transport features. Before discussing the various predictions, we will introduce some of the melt transport features that can be recognized in mantle peridotite samples. For reviews of the literature on these features, please see papers by Nicolas (1986, 1990) and Kelemen et al. (1995a, 1997a). Melt transport features include the following:

- 1. Dunites are rocks composed almost entirely of the mineral olivine, with minor spinel; pyroxene generally forms <1% of these rocks. Dunites occur in tabular to cylindrical bodies in ophiolite peridotites. Few, if any, are tabular dikes filled entirely with magmatic olivine. Instead, most or all form by dissolution of pyroxene and crystallization of a smaller amount of olivine in olivine-saturated melt migrating by porous flow. Some have an origin entirely via focused porous flow, either in dissolution channels or within ductile shear zones, whereas others form in porous reaction zones around cracks. The relative importance of entirely porous- vs. fracture-related origins for dunites is controversial, but is not crucial to this report. The main point to be made here is that dunites commonly form in the region of adiabatic mantle upwelling beneath spreading ridges, though they also form within the region of transition between adiabatic upwelling and conductively cooled lithosphere.</p>
- 2. Pyroxenite and gabbro mantle dikes are highly elongate, generally parallel-sided features that almost certainly form as fracture-filling magmatic rocks. Their compositions, where they have been studied in detail, are indicative of crystal fractionation from magma that was cooling within conductive "lithosphere." However, this is debated, and Nicolas and coworkers have interpreted them to be representative of melt-filled fractures that form within the adiabatically upwelling mantle.
- 3. Large gabbroic plutons, perhaps generally with high aspect ratios but distinguished from dikes by having horizontal extents of tens to thousands of meters, may intrude mantle peridotite. These are abundant in the "crust–mantle transition zone" of the Oman ophiolite (Boudier and Nicolas, 1995; Boudier et al., 1996; Kelemen et al., 1997b; Korenega and Kelemen, 1997), where they are interpreted as "ponds" of melt accumulated beneath a permeability barrier created by the onset of crystallization from cooling magma entering the thermal boundary layer (Kelemen and Aharonov, 1998). At slow-spreading ridges, such plutons might form at much greater depth, perhaps as deep as 20 km, since thermal models and metrological data suggest that the thermal boundary layer is that thick at half-spreading rates of ~10 mm/yr (Sleep, 1975; Reid and Jackson, 1981; Braun et al., 2000; Michael and Chase, 1987; Meurer et al., 2001; Grove et al., 1992; C. Xia et al., unpubl. data).

We now consider predictions of spatial distribution and orientation of melt migration features, with an emphasis on dunites formed within the adiabatically upwelling mantle. Most models predict that such dunites are transposed into a subhorizontal orientation in the shallow mantle, at least by 2-D corner flow and perhaps also by 3-D diapiric flow. (Dunites that are not subhorizontal may have formed in the region of transition from adiabatically upwelling mantle to conductively cooled lithosphere).

- If melt migration and crustal accretion are focused mainly because of diapirism, as proposed by Nicolas (1990), then no systematic variation in dunite abundance along the ridge axis is predicted. Futhermore, if melt-filled fractures form within mantle diapirs and these are represented by mantle dikes (Nicolas, 1990), then mantle dikes may be nearly vertical near segment centers and progressively transposed into a horizontal orientation toward segment ends.
- 2. If melt migration and crustal accretion are focused mainly because of melt migration beneath permeability barriers parallel to the base of the lithosphere, as proposed by Sparks and coworkers (Magde et al., 1997; Sparks and Parmentier, 1991, 1994) and Spiegelman (1993), then dunites should be shallowest (and most commonly sampled by drilling) near the centers of segments.
- 3. If melt migration and crustal accretion are focused mainly as a result of coalescing porous flow within the upwelling mantle, as proposed by Phipps Morgan (1987), Spiegelman and McKenzie (1987), Kelemen and coworkers (Aharonov et al., 1995; Kelemen et al., 1995a, 1995b, 2000), and Daines, Zimmerman, and Kohlstedt (Daines and Kohlstedt, 1997; Kohlstedt and Zimmerman, 1996), then dunite abundance in the shallow mantle should increase toward segment centers. Thus if porous flow mechanisms predominate in producing focused crustal accretion, then dunite abundance should increase toward segment centers, whereas if diapiric upwelling is the predominant reason for focused crustal accretion, then dunite abundance should be relatively constant along axis.

On a smaller scale, the detailed size/frequency and spatial distribution statistics of a large number of dunite veins in outcrops of mantle peridotite can be used as indicators of the geometry of melt extraction conduits (Kelemen et al., 2000; Braun and Kelemen, 2002). Dunites in mantle outcrops in the Ingalls and Oman ophiolites show a negative power-law relationship between size and abundance, with many small dunites and only a few large ones. This is consistent with the hypothesis that dunites form an interconnected channel network in which many small conduits feed a few large ones. The systematics of the spatial distribution can be used to distinguish between dunites that originate as reaction zones around cracks and dunites that form entirely as a result of porous flow mechanisms.

## MANTLE TEMPERATURE AND COMPOSITION

Along the Mid-Atlantic Ridge near Iceland and the Azores, major element indices of the degree of mantle melting (Na/Mg in lavas and pyroxene content in peridotites) suggest an unusually high degree of melting, if one assumes constant source composition. In contrast, trace element indices (high La/Sm and K/Ti) from the same regions, interpreted in the same way, indicate a small degree of melting. This apparent paradox is easily resolved; the mantle source composition is not constant along the ridge (e.g., Schilling, 1973). This is borne out by radiogenic isotope ratios, which indicate a long-term enrichment in incompatible elements (such as La and K) in the mantle source where the degree of melting is large (e.g., Hart et al., 1973). Enriched areas with apparent high degrees of melting areas have been interpreted as "hotspots" in accord with the notion that high temperature and chemical enrichment is poorly understood and may vary from place to place, there is debate over their relative importance in controlling igneous crustal thickness, crustal composition, axial depth, and geoid height.

Work in the 14° to 16°N region provides constraints for deconvolving the effects of temperature and composition on mantle melting. There is a substantial gradient over 150 km along the ridge, from geochemically "normal" MORB in the north (moderately high Na/Mg and low La/Sm) to strongly

"enriched" MORB in the south (low Na/Mg and high La/Sm) (Fig. F3), and there appears to be a large gradient in crustal thickness, based on interpretation of gravity data, increasing away from the fracture zone. One hypothesis holds that "enriched" basalts are derived by partial melting of veins that compose a few percent of the volume of the source region. The volumetric proportion of veins in peridotite drill core, and future isotope measurements on these veins, will place constraints on the original proportion and composition of these veins prior to decompression melting.

## **HYDROTHERMAL ALTERATION OF PERIDOTITE**

Another goal of drilling was characterization of hydrothermal alteration of mantle peridotite and plutonic rocks to quantify chemical changes at a variety of temperatures. Systematic geochemical studies of samples with different extents and types of alteration will be necessary to discriminate between major and trace element features retained from igneous processes vs. those that are dominantly imposed during open system alteration. It is now recognized that a large proportion of slow-spreading lithosphere is composed of serpentinized peridotite, which is eventually subducted, but the composition of this geochemical reservoir is poorly characterized and understood. As for melt transport veins, discussed above in **"Interpretation of Melt Transport Features in Mantle Peridotites**," continuous core was used for detailed studies of the size/frequency and spatial distribution statistics of alteration veins. Postcruise analysis of these data will provide important information on the mechanisms of vein formation and fluid transport (e.g., Kelemen et al., 2000; Magde et al., 1995).

## **GABBRO PLUTONS IN PERIDOTITE**

A variety of recent observations on slow-spreading ridges, including the Mid-Atlantic Ridge, suggests that the crust in these settings is a complicated mixture of gabbroic plutons and partially serpentinized peridotite (review in Cannat, 1996). Mantle peridotite is known to crop out along both flanks of the Mid-Atlantic Ridge from at least 14°40′ to 15°40′N (Fig. F2). In some cases, lava flows lie directly over mantle peridotite without intervening gabbroic "lower crust." Thus this region has been interpreted as "magma starved," an end-member compared to the "robust" East Pacific Rise.

Surprisingly, seismic surveys of regions of slow-spreading ridges with abundant peridotite outcrops generally yield significant crustal thicknesses, if crust is defined as material with a seismic *P*-wave velocity of <8 km/s. This is true, for example, for the Mid-Atlantic Ridge just north of the 15°20' Fracture Zone, within the Leg 209 drilling area (Fig. F4) (Detrick and Collins, pers. comm., 1998). In general, seismic data have been used to determine an average crustal thickness of 6 to 7 km for oceanic crust formed far from mantle hotspots, independent of spreading rate (e.g., White et al., 1992). This paradox represents a first-order problem in studies of the global ridge system.

If possible, it will be very important to develop a geophysical technique for distinguishing between partially serpentinized peridotite and plutonic gabbroic rocks, even where these have the same seismic velocity and density (e.g., Christensen and Salisbury, 1975; Miller and Christensen, 1997). Obtaining extensive drill core of altered mantle peridotite from well below the surface weathering horizon in the 15°N area, together with prior geophysical characterization of this area and downhole logging, was a first step in resolving this problem. Physical properties of the samples measured in the laboratory (remanent magnetization, density, seismic velocities and attenuation, and electrical conductivity) can be compared with geophysical data in order to calibrate the large-scale surface techniques used worldwide. As postcruise data become available, a combination of lithologic observations on core and geophysical

measurements made at true seismic wavelengths will be used to seek out features in the geophysical signals that are characteristic of partially serpentinized peridotite and truly measurable in the field.

## NATURE AND SOURCE OF MAGNETIZATION IN SERPENTINIZED PERIDOTITES

Although serpentinized peridotite may compose a significant proportion of slow-spreading lithosphere, extending up to the seafloor, regional geophysical surveys show a systematic alternation of normally and reversely magnetized seafloor correlated with crustal age, just as in fast-spreading volcanic Pacific crust. Although we did not focus on this problem during Leg 209, we obtained substantial data on the magnetic properties of serpentinized peridotite, which will aid in interpretation of magnetic data for crust formed at slow-spreading ridges.

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## AGENDUM 15 ICDP report

ICDP report

## International Continental Scientific Drilling Program: Current Projects and Plans

ICDP is currently funding four active drilling projects:

- 1. CCSDP in Donghai, Eastern China, where Ultrahigh-Pressure metamorphic rocks of the Dabie-Sulu Orogenic Belt are being cored to investigate subduction and exhumation mechanisms through a depth profile of currently more than 4300 m.
- 2. The Lake Bosumtwi Drilling Project investigates a well-preserved 10 km wide meteorite impact structure of about one million years old. The lake contains continuously deposited post-impact, annually laminated sediments that are very sensitive recorders of tropical paleoenvironmental changes. Up to 2 km cumulative core length have been recovered from six sites during July and August this year. The cores covering a one million year time span will allow to examine tropical climate linkages over a variety of time scales
- 3. The San Andreas Fault Observatory at Depth (SAFOD) addresses fundamental questions of earthquake nucleation and rupture propagation by in-situ observation of fault zone properties, deformation and fluid activity. In a first step a 2 km deep pilot well was drilled in 2002. This year, the deviated main borehole is being drilled (currently 2400 m), which will truncate the active fault zone at about 3.5 km vertical depth to allow for measurements and long-term monitoring in the seismic zone.
- 4. The Taiwan Chelungpu Fault Drilling Project aims at similar scientific goals but is drilling a 2 km deep well into an active thrust fault zone. The Chelungpu Fault ruptured in a large earthquake four years ago. The current state of stress, fluid behaviour and physical conditions will be monitored through the drill hole.

The Unzen Scientific Drilling Project has just finished a deviated directional well which truncated the volcanic feeder dyke area of the Unzen Volcano in Southern Japan. The project successfully cored samples of fresh lavas allowing to shed new light on the degassing mechanism and eruptive behaviour of dacitic volcanoes.

ICDPs Operational Support Group provides e.g. basic downhole logging services for these projects and maintains a readily web-accessible data base and information management allowing on-line access to samples and data gained on-site and in the laboratory phase.

The ICDP Drilling Information System (DIS) is now also being used during the IODP Arctic Coring Expedition at Lomonosov Ridge. Based on the existing DIS, an OffshoreDIS has been worked out for offshore conditions using compact and mobile data acquisition systems. A data model has been set up according to the standards of IODP, the Bremen Core Repository and PANGAEA, and the LacCore in Minneapolis. According to the specific on-board workflow this data model, data pumps and user interfaces have been adapted for the ACEX-OffshoreDIS. On the drill ship Vidar Viking the cores are documented and petrophysically logged, on the science lab ship Oden further initial measurements and lithological descriptions are made and samples are registered in a corresponding sample archive. The ACEX-OffshoreDIS uses a local area network and one DIS-server per ship synchronized by database replication; up to ten DIS-clients are used for the data acquisition in total. Additional to the on-board sampling, the ACEX-OffshoreDIS will be used for the sampling during the post-operation 'shore-party' in November 2004 at the Bremen Core Repository (BCR). An eXtended DIS (XDIS) Web interface which will allow controlled sample distribution (core curation, sub-sampling) as well as sharing of lab data (registration, up-& download). The

OffshoreDIS set-up will be of mutual benefit and long-term use for forthcoming lake projects and joint IODP-ICDP projects.

Currently further modifications are underway to adept the system for the sampling phase in the Bremen core repository. The adaptation of the DIS for ACEX and future uses in IODP is funded by ICDP upon a joint proposal of the Operational Support Group and the British Geological Survey.

ICDP's future projects comprise coring of lacustrine basins that are critical for the understanding of paleoenvironmental changes, e.g. in the Peten Itza in Guatemala or Lake Qinghai on the Tibetan Plateau. Impact cratering processes will be studied further in the Cheasapeake Bay in the US. ICDP is also preparing support for the Iceland Deep Drilling Project which will study supercritical fluids.

A review of achievements as well as a redefinition of future goals and long-term plans of ICDP will be discussed during a major ICDP Conference in late March in 2005 in Potsdam. It is planned to discuss key scientific questions for the future and summarize goals in a white paper. ICDP is planning to cooperate with IODP for this meeting in order to strengthen ties for forthcoming joint projects such as the New Jersey Coastal Plain drilling.

## AGENDUM 16 Other business

## **AGENDUM 17**

## **Future meetings**

- 17.1. Liaisons to other panels and programs
  17.2. 5<sup>th</sup> and 6<sup>th</sup> SPC meetings,
  17.2.1. 14-17 March 2005; Lisbon, Portugal Lisbon map
  - 17.2.2. xx-xx September or October 2005? Japan?

## 5<sup>th</sup> SPC meeting

Location: Lisbon, Portugal Date: 14 – 17 March 2005





## AGENDUM 18

Review of motions and consensus items

### Short Summary of the SPC#4 Meeting, 25-27 October, Corvallis, Portland (prepared by the ESSAC SPC members, Jeroen Kenter, Benoit Ildefonse, Hans Brumsack and Damon Teagle, November 12 2004).

SPC #4 was held in Corvallis following an OPCOM meeting in Washington, 31 August – 1 September, where several potential drilling schedules for FY05-06 were developed for review by SPC. As the SPC #3 in Yokohama, June, was a "ranking" meeting, SPC #4 in Corvallis was a "scheduling" meeting.

This summary highlights the most relevant issues for ECORD. Those are, besides the scheduling discussions: the temporarily replacement of Chris MacLeod as ESSAC Vice-Chair, the Conflict of Interest policy (COI), the review committee (REVCOM) report on ACEX, the SAS review reports by SPPOC and an SPC working group, and the nomination of co-chief scientists for the end of FY-05 expeditions.

As you may be aware, Chris MacLeod has fallen ill following a medical test for the upcoming Core Complex expedition. The medical test revealed that Chris had leukemia and needed urgent treatment, including chemotherapy. As you can imagine, we are all (still) very shocked but confident and supportive of Chris staying in touch with the ESSAC and returning as **Vice-Chair** as soon as he is recovered. The current suggestion is that Paul Wilson (SOC) will act as stand-in for Chris and assume responsibilities in the UK and those with respect to the European area while Julian Pearce (to be confirmed) will act as ECORD UK SPC member and attend international (non-European) meetings. ESSAC insisted that in that case both persons should attend the ESSAC meetings. A UK meeting (with Chris Franklin) on this topic will occur shortly to resolve these issues before the ESSAC meeting (where this is an agenda item). To collectively support Chris the following consensus motion was introduced by the ECORD SPC members:

**SPC Consensus 04-10-01:** The SPC was very recently informed of the tragic news that Chris MacLeod has fallen seriously ill and has withdrawn from sailing as co-chief on the first Atlantis Core Complex expedition. Not only was Chris instrumental during the preparations that led to the scheduling of these expeditions, he is also highly appreciated and valued as SPC member, Vice-Chair of ESSAC and as a colleague in science and science management. SPC hereby supports his continuing involvement in IODP science, including the Core Complex expeditions, and expresses, collectively and individually its most strongest support and best wishes for a quick and full recovery.

In addition, we collected signatures on a large postcard that was subsequently mailed to Chris's home address.

The **COI policy** was an urgent discussion item that led to heated debates. It affects any SAS panel with a direct interest in project proposals and expeditions, particularly SPC. As a consequence, ESSAC had serious problems finding alternates for two of its members. Jeroen Kenter was conflicted (Tahiti APL 650) and Damon Teagle (replacing Chris) was conflicted as well (584-Full2 TAG II Hydrothermal, 545-Full3 Juan de FucaII and 522-Full3 Superfast Spreading Crust). Fortunately, the situation was solved by the SPC Chair (Mike Coffin) by separating the scheduling discussions for MSP operations and non-riser expeditions. As a result, 3 voting ECORD SPC meeting the issue was raised for transparent voting at SPC. Discussions during the SPC meeting clearly showed that no consensus was possible to support this. It must be noted that also the Americans have serious problems with conflicted SPC members.

A review (including limited poll) of the **SAS panel structure** (SPC WG) revealed that most SPC members prefer to keep the current structure of panels but that concerns exist with respect to TAP and ILP, noted an overlap between SPC, IODP-MI and SPPOC as well as a dramatic problem with the gender balance in SAS panels and IODP in general. The
discussion showed surprise with respect to the roles of TAP and ILP, especially since those panels are still gearing up to speed.

The **REVCOM on ACEX**, presented by Tom Janecek, was subdued and aimed at restoring trust. The discussion focused on the lessons learned and what to do differently during next MSP expedition. The official report will hopefully become available for discussion during the upcoming ESSAC meeting. Informally, it must be noted that serious criticism exists from the on-board scientists as well general remarks with respect to the technological approach during the expedition. Nevertheless, it should be noted that, considering the short lead time and logistical and technological challenges, the results of ACEX are spectacular and novel.

The most important item was the **FY05-06 scheduling discussion**. On the basis of the allocated funding by NSF for FY05 (16.5 m\$; unknown for FY06) more than 6 options were developed by OPCOM during it previous meeting and watered down to 3 options during the provisional OPCOM meeting on Monday evening, 25 October. Discussions revolved around science objectives, cost, weather windows, and efficiency of drilling schedules. Projects that included CORKS and/or intense logging while drilling (LWD) were too expensive anyway and made little change. It must be noted that the FY05 schedules follow expedition 306, North Atlantic II. The FY05 options that were returned by SPC to OPCOM for further development were the following (in order of preference).

- Expedition 306; 573-Full2 Porcupine Basin Carbonate Mounds "light"; 589-Full3: Overpressure and Fluid Flow Processes in the Deepwater Gulf of Mexico (without CORKs and blue sands drilling); 522-Full3 Superfast Spreading Crust
- 2) Expedition 306; 477-Full4 Okhotsk/Bering Plio-Pleistocene ("two" expeditions)

The options for FY06 are variable and largely depending on NSF funding, weather windows and a February FY06 US port call requested by NSF that may affect a north vesus south decision. Possible scenarios could include (not necessarily in this order) 603A-Full2 NanTroSEIZE 1/2, 482-Full3 Wilkes Land Margin and 600-Full Canterbury Basin, the 2<sup>nd</sup> Juan de Fuca and 553-Full2 Cascadia Margin Hydrates. In case FY05 option 1 is selected then 477-Full4 Bering Plio-Pleistocene (excluding the Okhotsk part) would certainly be favored followed by NanTroSEIZE 1/2, possibly Monterey (engineering) and either Juan de Fuca 2 or Casacadia Margin. However, we first have to wait for the next update by OPCOM for FY05. If in FY06 the earlier mentioned project are drilled then nearly all seven highly ranked proposals (Yokohama) as well as Porcupine will have been drilled by the end of FY06; a very successful drilling schedule, especially for the European science community. Porcupine was "set up" in the right position during the Yokohama meeting and is exciting science with a heavy European involvement.

Last but not least, **co-chief nominations** were provided by SPC for those expeditions involved in the above schedules and the ECORD SPC members submitted the following names. The ESSAC Office is requesting summary CVs and returning those to the IO before the upcoming ESSAC meeting.

#### Porcupine Basin

Christian Betzler	(ECORD)
Jean-Paul Foucher	(ECORD)
Jean Pierre Henriet	(ECORD)
Kosaku Arai	(Japan)
Hirotaka Matsuda	(Japan)
Andre Droxler	(US)

#### GOM

Karin Andreassen (ECORD)

Jan Behrmann	(ECORD)
Andrew Whittle	(ECORD)
Sumito Morita	(Japan)
Noriyuki Suzuki	(Japan)
Brandon Dugan	(US)
Peter Flemings	(US)
Achim Kopf	(ECORD)
Alan Huffman	(US)

#### Superfast Spreading Crust

Pierre Agrinier	(ECORD)
Chris MacLeod	(ECORD)
Catherine Mevel	(ECORD)
Paola Tartarotti	(ECORD)
Damon Teagle	(ECORD)
Sumio Miyashita	(Japan)
Kyoko Okino	(Japan)
Susumu Umino	(Japan)
Jeff Alt	(US)
Wolfgang Bach	(US)
Bob Detrick	(US)
Dave Vanko	(US)

#### **Bering Sea**

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Ralf Tiedemann	(ECORD)
Makoto Okada	(Japan)
Tatsuhiko Sakamoto	(Japan)
Kozo Takahashi	(Japan)
David Scholl	(US)
Christina Ravelo	(US)

It must be noted that, Belgium not being currently a member of ECORD, Henriet's nomination is contingent on discussion and approval by the ECORD council.

Finally, a **National Office Meeting** was held on the 24<sup>th</sup> of October in Albany and ESSAC was represented by Benoit Ildefonse, Jeroen Kenter and the ESSAC Science Coordinator Valentina Zampetti, J-DESC by Kosaku Arai, Hidekazu Tokuyama and Hidekazu Tokuyama, USSAC by Gabriel Filippelli, USSSP by Holly Given and Zhifei Liu represented IODP China. The meeting was informal, very successful, not focused or limited by particular issues but very broad. Informal minutes were recorded by Valentina and will be made available. It was decided that many issues need to be coordinated between the various offices and practice of organization and activities are sometimes very different and should be tuned for matter of efficiency and integration.

#### **ECORD Data Base Meeting**

#### ECORD-net-Work Package 1 October 5, 2004, Paris

#### Agenda

Welcome and Introduction - 10.00

1)

ECORD data base - 10.00
1.1. Data base on information on cruise planning, participation and post-cruise results
Proposals submitted by European proponents
Participation of European scientists in cruises
1.2. Data base for scientific drilling projects (Eurocores)
Site surveys
Observatories
International drilling projects (ICDP, IMAGES, etc.)
1.3. Data base for science performance evaluation
Publications / Citations
Photos
Press-releases in different countries
Workshop reports
1.4. Data base for new types of data protocols (specific to MSPs)

2) Current databases in marine geosciences - 11.30

Michael Diepenbroeck, Pangaea and results form iSciMP Database working group (20') José Hipolito Monteiro - ASKME - a model to network knowledge (10 ') Carlos Laiginhas - e-GEO - Geoscientific information system of INETI - Portuguese Geological Survey (10 ') Célia Pata - EU-SEASED - Gateway to marine seismic and sediment data (10 ') Laurent d'Ouzouville, Eurocean (20') Olav Eldholm (10 minutes)

Lunch break - 13.00

3) ECORD data base development and maintenance procedures: host, software, sizing, architecture, personal... - 14.00

4) Coordination between the ECORD bodies (Council, EMA, ESO and ESSAC) through the database - 15.00

Discussion - 16.00

End of the meeting - 17.00

Annex 1 Some current data bases in Geosciences (web links)

#### Location:

Salle Noire located in the pyramid between tour 24 et 14 Institut de Physique du Globe de paris (IPGP), Campus Jussieu 4 Place Jussieu, Paris 5ème. http://www.ipgp.jussieu.fr/francais/bandeaux-f/bandeau-menumen/jussieuipg/ipg.html

#### List of participants

Teresa **Bingham-Muller**, ETH-Zürich Michael **Diepenbroek**, MARUM, Bremen University Olav **Eldholm**, University of Bergen Gudmundur O. **Friedleifson**, Iceland Geosurvey, Reykjavik Carlos **Laiginhas**, INETInovação -Lisbon Emanuel **Lodolo**, OGS-Trieste John **Ludden**, INSU-CNRS, Paris Patricia **Maruéjol**, EMA, Nancy David **McInroy**, ESO, BGS-Edinburgh Catherine **Mével**, EMA, Paris José Hipolito **Monteiro**, INETInovação, Lisbon Laurent **d'Ozouville**, EurOcean, Lisbon Célia **Pata**, INETInovação -Lisbon Valentina **Zampetti**, ESSAC, Amsterdam Svetlana **Zolotikova**, EMA, Paris

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#### **ECORD Data Base Meeting**

#### ECORD-net-Work Package 1 October 5, 2004, Paris

#### **DRAFT Report**

#### **Introduction and presentation of WP1**

**Catherine Mével** welcomed the participants, underlining that this meeting is very important to implement the ECORD database, the main deliverable of the WP1 ECORD-net.

The participants introduced themselves.

**John Ludden** gave a short presentation of a FP6 ERA-net coordination action, which is designed to provide funding for the coordination of national research programs. ERA-net proposals accepted and funded after the first call for proposals include the ECORD-net, BONUS-net (coordination of marine research in the Baltic), and Marine era-net (coordination of marine infrastructures).

The FP7, which is under preparation now, will probably include an "ERA-net plus" program which will be designed to strengthen the European Research area and may provide substantial grants into the existing successful projects.

Svetlana Zolotikova presented the ECORD-net Work Package 1 tasks and objectives.

Key objective: to create an accessible and highly visible data base to permit European scientists to efficiently exploit all aspects of scientific ocean drilling and managers to evaluate the impact of ocean drilling related science.

*Task 1.1.* Create an interactive data portals base for mutualisation of information for scientific drilling proposal preparation by European scientists. This will include producing meta-data base for site-survey information, results from pilot studies, making key industry data available.

*Task 1.2.* Develop management protocols for new types of data distribution and sampling protocols for post-cruise scientific activities in Europe (specifically related to the MSP operations to be run by Europe), but will involve all IODP activities.

*Task 1.3.* Develop a data-base for managers to assess the impact of Europe as part of IODP. National agencies require measures of the impact of IODP science completed in Europe.

#### 1) - Discussion on the content of the ECORD data base

#### 1.1. Data base on information on cruise planning, participation and post-cruise results Proposals submitted by European proponents Participation of European scientists in cruises

**Valentina Zampetti** (ESSAC) presented preliminary data collected by the ESSAC and related to the involvement of ECORD scientists in proposal preparation and participation in IODP expeditions.

She noted that ECORD scientists in general are well represented as co-proponents and cruise participants. However, the number of applications to sail from Spain, Denmark and Sweden is noted to be low relative to their respective contribution; these countries have been marked as "urgent" and their national agencies should encourage the scientific community to apply.

The future actions proposed by the ESSAC:

1) Detailed database of ECORD lead proponents and co-proponents (country/university/institutions)

2) Site survey data and required survey information for proposal preparation (EuroPRODS)

3) ECORD publications database (including ODP publications)

4) Scientists and institutions involved or interested in IODP (database via national offices)

After discussion it was agreed that ESSAC, in coordination with EMA, should be responsible for collecting the information on pre- and post-cruise activities, participation of ECORD scientists in cruises, and science performance evaluation (topics 1.1 and 1.3 of the meeting Agenda). The site survey data is not ESSAC's responsibility.

#### 1.2. Data base for scientific drilling projects Site surveys Observatories International drilling projects (ICDP, IMAGES, etc.)

Site-surveys databank is maintained by the IODP. The ECORD-net task is not to create a site survey data base, but to build up an information system (knowledge data bank) to help ECORD scientists/proponents to exchange information, to locate experts or institutions responsible for a particular geographic region or research topic, and to locate data owners. Thus it will not be a digital data base, but rather a "discovery data base".

It is important however to link and get access to the existing digital data bases and data bases created by other ERA-net projects.

ESSAC will identify hot topics (both geographic and thematic), which will be the basis of the proposed information system.

#### 1.3. Data base for science performance evaluation Publications / Citations Photos Press-releases in different countries Workshop reports

The information on publications is collected by ESSAC.

Photos and press related information (news items in the media and mass media publications) is archived by ESO and EMA.

Workshop reports are stored on the ECORD website; ESSAC compiles a list of all workshops.

#### **1.4. Data base for new types of data protocols (specific to MSPs)**

The need for developing new protocols for MSPs could be identified only after completing several MSP operations; therefore it is proposed to set this topic aside for now.

#### 2) - Current databases in marine geosciences

#### Michael Diepenbroeck: Pangaea/WDC and results form iSciMP database working group

PANGAEA is an information system rather than databank and is used by the World Data Centre since 1957-8.

Operated by: Centre for Marine Environmental Sciences (MARUM) at the Bremen University and the Alfred Wegener Institute for Polar and Marine Research (AWI).

The WDC aims at collecting, scrutinizing, and disseminating data related to global change in the fields of **environmental oceanography, marine geology, paleoceanography, and marine biology**. It focuses on georeferenced data using the information system PANGAEA.

The WDC stores and handles numeric, string, and image data. Users can retrieve data through the Internet via different gateways.

The WDC is present as 52 centres in 12 countries.

Services and characteristics:

long-term archiving facilities

Peer-review for scientific data

User-friendly and reliable systems for data retrievals

Fostering common standards and protocols

Resources:

AWI and MARUM (tech/ sci) and data managers Database servers and webserver & application server

Presentation of the iSCIMP database WG June 03 results (see the attached report):

Structure of IODP information services as a distributed network system with a clearing house group and a coordination function are related to IOs riser, non riser, MSP and legagy data

a- Producers are IODP projects (non-riser, riser and MSPs), post cruise data and drilling information system

b- Data exchange formats

c- Central archiving & publishing faciities

d- Dissemination through the IODP-ISC portal

#### In this IODP setup, PANGEA is responsible for the MSP database (ESO subcontract).

#### José Hipolito Monteiro

#### ASKME - a model to network knowledge

A non-scientific data base built by a commercial company, { **HYPERLINK** "http://www.askme.com/" \t "\_blank" }, as an example of Employee Knowledge Network. The costs (fees and licences) amount at 305 000 USD.

Example of Knocom, an ASKME type database located in Netherlands. <u>{ HYPERLINK</u> "http://www.knocom.com" }

The costs are about 43 000 Euro, assuming there is a dedicated internet server available.

Most of the meeting participants expressed their disapproval to the use of a commercial product.

#### **Carlos Laiginhas**

e-GEO - Geoscientific information system of INETI - Portuguese Geological Survey The System is created to

- Integrate, manage and disseminate geological information from Portuguese territory
- Publicize the Portuguese geology, facilitating public access to data almost unknown by the citizens

Serves two basic profiles of users:

Database users (those who just need online access to the databases)

GIS users (those who want to see the "databases" displayed in a map)

This geoinformation system was included and described as an example in the Intergraph's white paper "Open Interoperability: From Conception to Realization", published in July 2003

({ HYPERLINK "http://imgs.intergraph.com/freebies/whitepapers.asp?programs=interop" \t "\_blank" })

A short demo is available on line:

{ HYPERLINK "http://www.igm.ineti.pt/e-geo" \t "\_blank" }

## Célia Pata - EU-SEASED - Gateway to marine seismic and sediment data { HYPERLINK "http://www.eu-seased.net/" \t "\_blank" }

Example of a data base created by partners of EU projects (EUMARSIN/EUROCORE and EUROSEISMIC), allowing for data search on core samples and seismic studies.

#### Laurent d'Ouzouville, EurOcean www.eurocean.org

EurOcean, a joint Portuguese and French initiative, is dealing with information on marine science and technology (not a scientific data base). EurOcean develops its activities through networks with support of its Member organisations (from Belgium, France, Ireland, Poland and Portugal).

The EurOcean internet portal, opened in March 2003, provides information about and links to networks, projects and databases, as well as relevant publications related to

- Marine research infrastructures (including research vessels, testing facilities, satellites etc.)
- National RTD information
- European RTD information (including EU supported infrastructures).

#### **Olav Eldholm from University of Bergen**

Building up a marine geological and geophysical database at Bergen University from seismic point and lines data.

#### Discussion

It is proposed to focus on an information system rather than a digital data base. The infosystem should act as a basis for planning scientific projects, providing the information for scientists about research teams, experts, institutions, data bases, etc. In future it will evolve into an information system for managers and funding agencies that will be able to use the information system to assess scientific impact of the European/national component in the IODP.

To achieve this, an inventory of existing data bases is needed.

ESSAC/EMA will continue collect data for ECORD science performance evaluation.

#### Lunch break

#### 3) - Conclusion and strategy

Four different topics for the data base were listed in the agenda :

1.1. Data base on information on cruise planning, participation and post-cruise results

Proposals submitted by European proponents

Participation of European scientists in cruises

1.2. Data base for scientific drilling projects (Eurocores)

Site surveys Observatories

International drilling projects (ICDP, IMAGES, etc.)

- 1.3. Data base for science performance evaluation
  - Publications / Citations
  - Photos

Press-releases in different countries

- Workshop reports
- 1.4. Data base for new types of data protocols (specific to MSPs)

Following the discussions, four different tasks are identified :

1) The ESO database on MSP activities, subcontracted to Pangea, is part of ECORD. Therefore it can be considered as a deliverable of WP1.

2) The collecting and archiving of information related to planning, participation and post-cruise results and publications as well as references to IODP/ECORD in medias topics 1.1 and 1.3 of the Agenda) is already in progress (ESSAC/EMA/ESO task)

3) A Scientific Planning database should be developped to help European scientists develop proposals. It should not include real data, but only help to locate them.

This can be done in two steps :

- First phase : meta-meta database : build an inventory by identifying relevant institutions and contacting them them, locating the data, building webpages

index associated with search engine

- Second phase : develop an integrated network between institutions, build a catalog, build a description of the data

OGS (Trieste, Italy) has already the responsibility of a database for peri-Antarctic seas as well as the Mediterranean. Bergen is collecting data from the North Atlantic margin, and is in contact with Industry. Bergen could help linking scientists with industry to have access to the industry data.

The priority should be given to "hot spots" defined by ESSAC, that could be either geographic (e.g. the Mediterranean) or thematic (e.g. the Deep biosphere). The definition of these hospots should be an agenda item for the next ESSAC meeting.

4) Data base for new types of data protocols (specific to MSPs). This activity is postponed until ACEX is completed.

#### 4) - Management report

It is reminded by Svetlana that a management report is needed by December on the activities of the work packages. *Jose to send this report to Svetlana*.

Jonas Bjorck,, as the leader of WP2, has the task of producing a brochure to advertise the activities of the ERAnet. *Each WP leader to send the relevant information to Jonas*.

#### End of the meeting

#### .....

#### ACTIONS for the next 6-8 months

- Inventory of existing geological and geophysical data for scientific planning leader = Jose Monteiro together with Olav Eldholm and Emmanuel Lodolo (OGS)
  - 1. Portugal **within 1 month** (November 5, 2004) hires someone to set up the structure of a scientific planning database. This draft structure is circulated among the interested parties (Norway, Italy, ...
  - 2. Once this structure is agreed (April 5, 2005), the inventory is compiled within six months. Norway is responsible for North Atlantic and Arctic regions. Portugal is responsible for Southern North Atlantic and Mediterranean region, with the help of Italy (through subcontracting).
  - 3. A meeting of WP1 is organised (April 2005) with the assistance of PANGEA to discuss how to implement an indexing system and a search engine .
- Geobiodatabase leader : Teresa Bingham-Muller : the level of knowledge is much lower and some thinking still needs to be done.

Switzerland volunteers to organize this action

- 1. At the coming ESSAC meeting (November 2004) to identify the key individuals who will organize a workshop
- 2. Organise a workshop early next year to discuss the contents of the database (feb-march 2005)
- 3. Start the inventory (should be completed by sept 2005)

It is recommended to establish links with the Norwegian ECORD-net participant – contact R. Pedersen in Bergen (rolf.pedersen@geol.uib.no).

- Information on items 1.1 and 1.3 of the agenda leader EMA (Patricia) together with ESSAC (Valentina)
  - 1. ESSAC/EMA continue collecting the information
  - 2. Contact Pangea (within 6 months) for advice on indexing and search engines.
- Identify a Host of the inventory (ECORD website?)

#### Some current databases in Geosciences

**Pangaea** - Network for geological and environmental data - http://www.pangaea.de/ Search engine: Panga vista Projects: webpages related to different research projects

**EurOcean** - European Center for Information on marine science and technology : http://www.eurocean.org/

**EarthRef** - Earth Reference and Models : http://earthref.org/ See also MagIC: Magnetics Information Consortium GERM - Geochemical Earth reference model

**InterRidge** - International cooperation in ridge-crest studies: http://interridge.org/

#### **IODP-ODP-DSDP:**

Core data and log data: {HYPERLINK "http://iodp.tamu.edu/database"} Downhole log data: http://iodp.ldeo.columbia.edu/DATA/index.html

## ECORD-net WP-2 Meeting in Stockholm, Sweden September 16, 2004

## **Opening ECORD to other countries**

## **List of ACTIONS**

ACTION : All news clips and/or articles to send to Andy Kingdon, who keeps the news archive

ACTION WP2: Send a team (Jonas Björck, Catherine Mével + a scientist involved in collaboration with Poland) to the BONUS Network steering committee meeting to be held on 13 December in Poland

ACTION ESSAC: Find out who of ECORD scientists also works on BONUS and/or collaborates with NAS countries.

ACTION Jonas Björck: Organise an invitation to the BONUS meeting.

ACTION Eve Arnold: Provide information on who is involved in the preparation of the MSP proposal in the Baltic and what is the status of the proposal.

ACTION EMA: Prepare information package for the meeting in Poland.

ACTION: To ensure that BONUS participants are aware of the ESF EuroCores initiative.

ACTION ESSAC: Identify scientific fields where such joint proposals can be prepared.

ACTION: Consider at the next ECORD Council meeting the possible ways of using ACEX photo materials

ACTION EMA: Contact Kathy Gillis and find out her opinion on whether sending a team to Canada would be useful.

ACTION Jonas Björck: determine if there are other ERA-net projects relevant to the ECORD-net.

ACTION Jonas Björck: Collect information from ECORD-net Work Package leaders for the preparation of the ECORD-net brochure.

ACTION Svetlana Zolotikova: Find out if the coordinator and Work Package leaders are available on 5 or 7 February for an ECORD-net meeting.

## ECORD-net WP-2 Meeting in Stockholm, Sweden September 16, 2004 Opening ECORD to other countries REPORT

The meeting was held in VR, from 9:00 to 17:00

## 1. Participants

- 1. Eve Arnold (Stockholm University, Sweden)
- 2. Teresa Bingham (ETH Zentrum, Switzerland)
- 3. Jonas Björck (The Swedish Research Council)
- 4. Chris Franklin (NERC, United Kingdom)
- 5. Andy **Kingdon** (BGS/ESO, United Kingdom)
- 6. Marcel Kullin (Swiss National Science Foundation)
- 7. Catherine Mével (EMA, France)
- 8. Valentina Zampetti (ESSAC Science Coordinator)
- 9. Svetlana Zolotikova (EMA, France)

## 2. AGENDA

- 1. Welcome and practical information (J.B.)
- 2. Adoption of the agenda
- 3. Short report on ACEX (A.K.)
- 4. WP-2 overview (J.B.)

5. Task 2.1. Prepare and disseminate information package on ECORD for new partners (VR) (S.Z., C.M.)

6. Task 2.2. Make contacts with leading scientific management organisations in NAS, Russia and other interested countries (VR) (J.B.)
7. Task 2.3. Investigate means for involving scientists from NIS, Russia etc.

in the preparation of joint research projects (NWO) and in technological developments for drilling and core sampling (NERC) (C.F.)

8. Task 2.4. Investigate and establish outreach programmes, in particular to schools and universities, in order to link the scientific base in the NAS to ECORD (VR and CNRS)

/Andy (PR and outreach), Eve (education), Catherine?

## 9. Strategies for the coming two years

Create a broad two year plan (man power, money)

Who is going to do what when?

What kind of money do people need (budget)?

## **10. Korean participation**

## **11. Any Other Business**

Annex 1. List of contact addresses

Annex 2. ECORD-ICDP Education & Outreach Workshop, Bremen, March 17, 2004

Annex 3. GIFT Workshop at EGU General Assembly

emarnold@geo.su.se bingham@etchz.erdw.ch Jonas.Bjorck@vr.se cfr@nerc.ac.uk aki@bgs.ac.uk mkullin@snf.ch mevel@ipgp.jussieu.fr essac.amsterdam@falw.vu.nl zoloti@ipgp.jussieu.fr

## 3. Arctic Coring Expedition (ACEX) Report.

Thanks to the ACEX outreach team led by Andy Kingdon, the expedition was very well covered by the mass media worldwide (at least in 33 countries in 20 languages).

## 3.1. BBC Movie

A movie was made by a BBC environmental reporter when the ship arrived in Tromsoe. The movie was on the BBC world web site and on a German web site on the 14 of September, and is now available through the European Broadcasting Union (<u>www.ebu.ch</u>). It was also shown on the 14th of September on the BBC, and by coincidence Tony Blair's speech on Climate Change was broadcast the same day. Thanks to the involvement of the BBC, a much wider audience was covered, millions of people learned about the Expedition from TV, in addition to those who have seen numerous newspaper reports.

## 3.2. Expedition Report

The ACEX fleet consisted of 3 vessels - two icebreakers: Sovetsky Soyuz used for upstream protection and ice testing and Oden – for close protection, communications and as a science centre, and a drill ship: Vidar Viking, which was refitted during the mobilisation stage and equipped with a moonpool, R100 SeaCore rig.

A press conference was organised in the portcall, Tromsoe, after which the ship started its transit north and met with the other vessels on the way to the coring site. The preferred drill site was located on the Lomonosov Ridge (water depth 1124).

During the drilling stage, the Vidar Viking had to hold station in difficult ice conditions. GPS beacons were installed on ice floes to trace ice position and movement and to coordinate the work of the icebreakers. A seismic survey was conducted. When the ice became unmanageable, the drill ship was pushed off site 1, and then again it had to change the site, after 5 days of drilling. There were periods when all the equipment was iced up and got stuck at it was all frozen up. Minor problems with mud pipes were also encountered at the beginning of drilling. Despite the difficulties, unique core samples were delivered, and scientists were able to work though some of the samples already onboard. Preliminary science results

- Coring of Tertiary succession from seabed to base Tertiary
- 430 m penetration, around 70% recovery
- 278 m of logs (GR, Sonic, FMS)
- Complete Neogene succession
- Palaeocene Eocene Thermal Maximum 55Ma
- Pre-Tertiary: Campanian sandstone 80Ma
- Some high resolution piston cored intervals
- Drillsites 233-238 km from North Pole
- Short seismic line

#### Outreach and education activities:

- IODP Launch in UK, 3<sup>rd</sup> June, was attended by 100 people and resulted in Radio and TV presentation and newspaper article.
- ACEX launch in Tromsoe, 6<sup>th</sup> August, was covered by the UK and German Radio, Scandinavian newspapers
- Teacher participation
- Web logs

#### Result: ACEX has been reported on an unprecedented scale worldwide

So far we have logged well over 150 mentions of ACEX in the newspapers and on the web.

**20** LANGUAGES: Catalan, Czech, Dutch, Danish, English, Estonian, French, German, Greek, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Slovakian, Spanish, Swedish, Turkish, Russian (+? Finnish)

**31 COUNTRIES**: Australia, Austria, Bangladesh, Brazil, Canada, China, Czech Republic, Denmark, Estonia, France, Germany, Greece, Iceland, India, Iran, Italy, Japan, Korea, Mexico, Netherlands, Norway, Poland, Portugal, Slovakia, South Africa, Spain, Sweden, Switzerland, Turkey, UK, USA, Russia (+? Finland)

#### Examples of international media that has covered ACEX:

New Civil Engineer, The Times, The Guardian, BBC News Online, Navhind Times, Narragansett Times, Scotsman, Boston Globe, International Herald Tribune, Calgary Herald, The Sunday Times, The Herald News, MA, Western Daily press, Toronto Globe and Mail, USA Today, Charlestone Post and Courier, Newsday, Independent (UK), Washington Times, Persian Journal, Times of India, Metro (London), Sydney Morning Herald, The Daily Star (Bangladesh), Le Monde, Le Point, De Standard, Vista Verde, Deutschlandfunk , Die Zeit, Tages Anzeiger, Bayerischer Rundfunk, Fedrelandsvennen, Aftenposten, Nordlys (Tromso) , Bladet Tromsö Gazeta prawna (poland), Publico, Popular (Brazil), Todito(Spain), HELSINGBORGS DAGBLAD , Svenska Dagbladet, Yeniasya (Turkey), Dagbladet, Nature Online, Science Magazine (in press), La Recherche, BBC Radio 4, BBC Radio 5, BBC World Service, BBC Radio Scotland, Nottingham Evening Post, Popular Mechanics

#### **TV and Radio**

ACEX expedition videos were shot by ESO for ECORD; Shown in UK (BBC) and Germany 14 September and internationally on BBC World; Should have been shown on 15 September in: Sweden, Norway, Denmark, Iceland, France, Netherlands

#### Next stage - Onshore Science Party

To be held in the new Bremen Core Repository, starting 1st November. Duration dependent on amount of core collected Will use existing facilities in repository, with additional space

More press activity is planned

## **DISCUSSION**

The participants agreed that the outreach activities were a success.

ACTION : all news clips and/or articles to send to Andy Kingdon, who keeps the news archive

## 4. Work Package 2 Overview (Jonas Björck)

## **Opening ECORD to other countries** Co-ordination, Partner 4 (VR)

#### **Description of Work**

Task 2.1. Prepare and disseminate information package on ECORD for new partners (VR). Task 2.2. Make contacts with leading scientific management organisations in NAS, Russia and other interested countries (VR).

Task 2.3. Investigate means for involving scientists from NIS, Russia etc. in the preparation of joint research projects (NWO) and in technological developments for drilling and core sampling (NERC).

Task 2.4. Investigate and establish outreach programmes, in particular to schools and universities, in order to link the scientific base in the NAS to ECORD (VR & CNRS-INSU).

- ECORD-net brochure and www information for NAS, Russia and other countries

- Interactive www links for outreach activities to general scientific public

- Quarterly newsletter on ECORD scientific and management activities

#### Milestones and expected result

M5 Decision on inclusion of new members in the ECORD consortium (Month 24)

Partners /Person months

1 France/10	
2 Germany/2	
3 UK/8	
4 Sweden/12	
5 Netherlands/8	
6 Portugal/1	
7 Iceland/1	
8 Norway/1	
9 Switzerland/1	
Total: 44 person months	
Duration	
WP-2 starts month 6, year 1 i.e. July 1st, 2004 and	l ends month 24, year 2 i.e. January 31st, 2006 (1,5
year)	
Budget	
Personnel cost based on 44 person months	216 939 Euro
Travel 40 trips	61 410 Euro
Other costs (Publications, meeting logistics etc)	15 990 Euro
Subcontracts	0
Total:	290 934 Euro (1,950 MSEK)

**Key objective of WP2** : to include the NAS and other European States in ECORD, by developing strategies for involving scientists in joint IODP proposals and joint research programmes in strategic areas in European and Russian waters.

## 5. Task 2.1.: Prepare and disseminate information package on ECORD for new partners (Catherine Mével, Svetlana Zolotikova)

An "ECORD file" prepared by EMA was sent to Russia (Moscow and St. Petersburg), Korea, and also disseminated in France with a Preamble in French. The file consists of:

- Preamble and structure of ECORD
- Initial signatories and an updated list of ECORD-member countries
- ECORD MoU
- ECORD-net Publication of the European Commission
- MoU among NSF, MEXT and EMA
- Publications

Publications Sections included copies of *Figaro* and *Le Monde* articles (for French audience), copies of articles on ACEX in *Science (vol. 302, 12 December 2003, News of the Week Dennis Normile : Arctic is Fist call for New Global Programme) and <i>Nature (4 December 2003, vol. 426, pp. 492 – 494, News Feature by D.Cyranoski, R.Dalton : Digging In.), and ECORD and ACEX brochures.* 

Existing brochures prepared by EMA and ESO:

ECORD 6-page brochure (prepared by JEODI) ECORD Newsletter #1 ECORD Newsletter #2 ECORD A4 reproduction of the poster "A European Research Consortium as part of IODP" ACEX – Arctic Coring Expedition ACEX – Pole Position

In preparation: ECORD Newsletter #3 (planned for October 2004), will include Science section ECORD Brochure of smaller format ACEX Achievement brochure

## **DISCUSSION:**

How ECORD can better present itself in publicity material?

IODP identity material is being prepared and will be used in the future. The existing ECORD logo is used on all documents.

Do we need a permanent booth stand to be used for conferences and meetings? Shall ESSAC publish its own Newsletter?

## **RECOMMENDATIONS to EMA**

- ECORD and ESSAC newsletter should be one publication (e.g. an ESSAC edition of the Newsletter).
- To show ECORD identity in the form of the logo on all documents and to make it more visible. All ECORD documents should have a more uniform layout (corporate identity) following also the rules of IODP.
- To change the colour of the background so that the brochures become more eye catching
- To give information on "how to apply" to the programme
- To scan and publish on the ECORD web-site first page of all brochures so that it would be clear what material exists already (not necessarily downloadable)
- To publish password protected "**timeline activities**" on the ECORD web-site, so that partners could be informed on what is happening (on coming meetings, newsletters and brochures in preparation) and who is responsible
- To explore the possibility of printing ECORD tee-shirts, pens or plastic covers

## **RECOMMENDATION to ESSAC**

• To modify the ESSAC web site in accordance with the ECORD site format

## **DISCUSSION:**

ACEX Achievements brochure to be published for the press event to be held in Bremen 17-18, in conjunction with the ACEX Science meeting

## **RECOMMENDATION to ESO**

• To target the brochure not to the general public but to interested scientific community

# 6. Task 2.2.: Make contacts with leading scientific management organisations in NAS, Russia and other interested countries (Jonas Björck)

The ECORD MoU was signed by 14 countries in December 2003. Since then, two more countries have joined, Austria and Canada.

## *i) The European Community*

• Austria joined ECORD

MoU signed by the Austrian Science Fund and the Academy of Sciences early September 2004, for FY 2005

Contacts made with (See Annex I for the addresses):

- Greece (problems with reorganization of the research structure). A proposal for founding a Conference in Athens promoting the participation of Greece is still active.
- Ireland (Still interested, although no decision taken yet. Ireland needs to slowly build up interest. An Irish representative was present at the EUROCORE meeting and expressed interest).

## *ii) The Newly Associated States*

## NAS Countries are:

- Bulgaria, Republic of Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia and Slovenia, collectively referred to as 'Newly Associated States' or 'NAS'.
- However, since May 1, 2004, Estonia, Latvia, Lithuania, Hungary, Poland, Czech Republic, Slovakia, Slovenia, Cyprus and Malta are EU members

## Contacts

IODP-Germany sent information on IODP to Poland (Geological Institute in Gdansk) and Lithuania (Institute of Geology, Vilnius).

Possible contacts to develop:

• Polish Academy of Sciences, **Division VII Earth and Mining Sciences** Division Chairman: Professor **Bogdan Ney**, Full Member of the Academy Deputies: Professor **Jan Andrzej Ciołkosz &** Professor **Ryszard Marcinowski** This Division covers earth sciences and mining sciences, in particular geology, geophysics, oceanography, geodesy, geography, environmental engineering, mining sciences, and oceanology.

• Institute for Oceanology in Sopot with the director Prof. Jerzy Dera who also is a member of the ESF Marine Board

## **Baltic States**

Baltic States and Poland have a tradition in ocean research; Jonas Björck (VR) contacted

- Anu Huovinen (Finland's ECORD-council delegate) and Kaisa Kononen (leader of BONUS ERA-net) as suggested by Raymond Schorno. No Reply so far.
- Dr Tiit Hang, University of Tartu, Estonia for advise. No reply so far.

BONUS partners can be contacted for further advice (The Baltic States and Swedish EPA as well as FORMAS are partners of BONUS).

## iii) Other European States

## Contacts in Russia:

• Academy of Sciences: Academician Laverov Was visited by John Ludden and Manik Talwani.

• P.P. Shirshov Institute of Oceanology of the Russian Academy of Sciences Prof. S. Lappo, Director. *Lappo is ECORDs official Russian contact for IODP appointed by the Russian Academy of Sciences*; Prof. Evgeny Kontar, Head of Experimental Methods Laboratory, of the same institute, *participated in the IODP Council meeting in Paris* 

Prof. Leopold Lobkovsky, Deputy Director, *is trying to do something about Russian participation in IODP* 

• VNII Okeangeologia (Research Institute of the Ministry), Director V.Kaminsky Alexey Krylov - *Russian Scientist on ACEX – is from this Institute* 

"ECORD file" was sent to S.Lappo (Moscow) and V.Kaminsky (St.Petersbourg).

## **Contact in Turkey**

Dr Yilmaz is regularly invited to ECORD Council meetings, although has never come yet.

## iv) Canada

Canada (NSERC, National Sciences and Engineering Council) joined ECORD as a provisional member for FY 2004. Matching funds have to be found to extend the membership.

## **DISCUSSUION**

How do we approach target countries? What to present to them?

## **RECOMMENDATIONS**

- Focus on target countries (Poland, Greece, Russia, Turkey, Baltic States)
- Approach (a) via BONUS era-net, and (b) through scientists involved in preparation of a MSP proposal in the Baltic.
- Encourage (invite) scientists / managers from target countries to attend the EGU General Assembly in April 2005 and the IODP related sessions.

ACTION WP2: Send a team (Jonas Björck, Catherine Mével + a scientist involved in collaboration with Poland) to the BONUS Network steering committee meeting to be held on 13 December in Poland

(announced at <u>www.bonusportal.org</u>)

ACTION ESSAC: Find out who of ECORD scientists also works on BONUS and/or collaborates with NAS countries.

ACTION Jonas Björck: Organise an invitation to the BONUS meeting.

ACTION Eve Arnold: Provide information on who is involved in the preparation of the MSP proposal in the Baltic and what is the status of the proposal.

ACTION EMA: Prepare information package for the meeting in Poland.

7. Task 2.3. Investigate means for involving scientists from NIS, Russia etc. in the preparation of joint research projects (NWO) and in technological developments for drilling and core sampling (NERC) (Chris Franklin)

## **DISCUSSION**

## A joint research project – EUROCORES

The draft proposal was discussed on September 2 in Amsterdam by all ECORD countries, and is now submitted to the ESF. The proposal will focus on funding survey work for

proposals preparation. Two types of proposals should be considered: proposal that are already in the IODP system and need survey, and those not yet submitted to the IODP.

Under the EUROCORES scheme the countries will have to sign up initially to put money into the ESF. Thus, joining EUROCORES is not a mechanism to join ECORD. The Draft of the proposal will be sent out by the ESF to all ESF community, and here we should make sure that the draft is received by the right people.

ACTION: to ensure that BONUS participants are aware of the ESF EuroCores initiative

## Tahiti Proposal

Tender for Tahiti is going on. For this proposal, engineering level contacts were made with Russia, as well as with Turkey (?).

**Contacting engineering departments** of universities or individual scientists in target countries is possible, but this does not really help to involve funding agencies, as our experience shows (a Russian ice-breaker and a Russian scientist took part in ACEX).

Strategically wise would be to involve scientists in the proposal preparation stage.

## **RECOMMENDATIONS**

- Continue to contact both the scientific community and management structures.
- Propose to ECORD Council to give mandate to ESSAC to start a new open call for ideas.

## ACTION ESSAC: Identify scientific fields where such joint proposals can be prepared.

ESSAC will organize workshops to promote the development and to identify promising new scientific objectives and research opportunities. These workshops will encourage a wider scientific community involvement (particularly the target countries) to bring a broader and multidisciplinary approach to standing hypotheses and to explore new directions for research.

# 8. Task 2.4. Investigate and establish outreach programmes, in particular to schools and universities, in order to link the scientific base in the NAS to ECORD (VR and CNRS)

## 8.1. ESO outreach activities (Andy Kingdon)

ESO is responsible for publicising the operations conducted. The ESO team consists of:

- Albert Gerdes, DFG Research Centre, Bremen, Germany
- Swedish Polar Secretariat
- Andy Kingdon, ESO External Communication & Scientific Liaison, BGS

Several publications were prepared in different languages and the expedition log posted on the web.

ESO's task is to make materials available. It is the responsibility of WP 2 to ensure that the materials produced are sent to the interested people, including schools and universities. ESO will create a DVD (ACEX footage) lasting approximately 5 minutes. This will not be an educational DVD.

## DISCUSSION

#### **Distribution list**

ESO materials are distributed to ECORD and ESSAC members and observers, who are responsible for further distribution.

Perhaps it would be possible to create an e-mail list server where people would volunteer with their mailing addresses?

## 8.2. ESSAC outreach and education activities (Eve Arnold)

The ESSAC Education and Outreach Subcommittee consists of:

- Eve Arnold, Stockholm University, Sweden
- Fernando Barriga, Universidade de Lisboa, Portugal
- Andrew Kingdon, ESO External Communication & Scientific Liaison, BGS
- Catherine Mével, EMA Director

#### **Activity Report**

- With IODP-MI participated and produced a report from the Workshop on Education and Outreach, February 2004, Austin Texas;

- Participated in E&O task force meetings, in May 2004, and October 2004, in Washington, DC.

- ECORD-ICDP Education & Outreach Workshop, Bremen, March 17, 2004

(See Annex 2 for talks given in Bremen)

The outcome of the meeting in Bremen:

#### Ideas

-	Pan-European teacher workshop
-	PhD student exchange
-	Undergraduate school camps
-	Science results publications in teacher journals
-	Development of earth science teaching and curricula material
-	Development of a museum display
-	IODP/ICDP
-	Scientists
-	Pedagogues
-	Public Relation/Communication specialists
-	Teacher organisations

- Professional organizations

#### **Funding possibilities**

Pan-European

**Partnerships** 

- ECORD-ERA net
- EU-financing
- ESF

National level

- National Science foundations
- Universities
- Foundations

- An Outreach and education workshop (GIFT, the GEOPHYSICAL INFORMATION FOR TEACHERS) was organised in conjunction with the General Assembly of the EGU in 2004 and was attended by 50 teachers from various countries (Annex 3).

The European Geosciences Union Committee on Education currently includes:

France:	Germany:
Carlo Laj	Friedrich Barnikel
Jean-Luc Berenguer	Martin Cepec
Jean-Louis Dufresne	Elmar Uherek
Jean Virieux	
Great Britain:	Sweden:
Phil Smith	Eve Arnold
Italy:	
Angelo Camerlenghi,	Concetta Nostro, Aldo Winkler

Other members from Eastern European Countries to be defined at the Meeting of the Committee on September 17-18, 2004, France

The EGU Committee will also discuss:

- Expanding CE activities
- Planning for GIFT-2005 (in Vienna, Austria)

#### **SPRS/IODP Teachers at Sea - Summer 2004**

The Swedish Polar Research Secretariat (SPRS) together with the Integrated Ocean Drilling Program (IODP) sailed 2 teachers (1 USA, 1 Sweden) on the ACEX expedition to the Arctic Ocean in the summer of 2004.

For European teachers, financial and educational support is provided by the ECORD (European Consortium for Ocean Research Drilling) and ESSAC (ECORD Science Support and Advisory Committee) committees, respectively.

The teachers will produce websites and educational materials based on their seagoing experience. These materials will be publicly available to teachers everywhere.

#### **Future Activities**

- Teacher's workshop on Arctic Ocean Science proposed for Spring 2005, possibly in Bremen or on icebreaker ODEN
- Development of educational materials based on teacher sea going experiences
- Continued collaboration with EGU and international IODP partners

## **DISCUSSION**

#### Teachers Workshop – support to teachers for travel

As it is not possible to use ERA-net money as a travel grant for teachers, other sources of funding should be sought (IODP). However, the ERA-net can cover all organizational expenses related to the Workshop. Another possibility is to include Training activities into the ECORD-net project. Training activities can be supported by the ERA-net, although they were not foreseen in the present Contract.

## **RECOMMENDATION to Project Coordinator**

• Inform the Commission of a management problem with this E&O activity.

#### **Teachers at Sea**

The material produced by the teachers based on their sea going experiences can be put on the ECORD website;

A museum display (a small mobile exposition) using teachers materials can be set up.

#### **ACEX photos**

With the help of an artist who was on board, a set of photos will be prepared. They can also be used as a mobile exposition material.

ACTION: Consider at the next ECORD Council meeting the possible ways of using ACEX photo materials

## 8.3. ECORD Education & Outreach activities (Catherine Mével)

Following the recommendations of the E&O workshop (Austin), it is clear that ECORD needs to have its own funding for some of the activities.



## Education and outreach

## • Outreach associated with MSP operations

#### ESO, funded by IODP-MI (SOCs)

For the ACEX expeditions, ESO prepared Leaflets, Press releases, Video coverage, Expedition website

In the future, ESO is recommended to ensure coordination with:

- IODP-MI communication person (Nancy Light)
- EMA

Press offices at the national level were not sufficiently involved - more formal ties should be developed.

#### • IODP Outreach

EMA/ESSAC, funded by IODP-MI + ECORD/countries

Activities:

IODP booths staffing at conferences in Europe

Communications about IODP in ECORD member countries, using material produced by IODP-MI, the IOs and EMA/ESSAC.

#### • Education

EMA/ESSAC, should be funded by ECORD/Countries Possible activities: *For students, university level*: Lecture series/packages jointly prepared by IODP-MI + EMA + ESSAC (in English) *School teachers* Courses : ex Nice meeting organized by EGU (English...?) At the country level ? Schools In local language - How can we help?

## Outreach materiel of two types

(1) *publicity material to distribute* ECORD : leaflets, Newsletter, Posters, others ? (T-shirts, mugs.....) IODP-MI : leaflets, Initial Science Plan, posters, ...

Other IOs

(2) web sites

• ECORD web site

\* Information about MSP operations : Key images/diagrams/text to be produced jointly with the science party
\* PowerPoint presentations
\* ECORD publications to download

• IODP and other IOs

## 9. Strategies for the coming two years

## **DISCUSSION**

Specific actions were discussed for target countries, and a general strategy of opening ECORD to other countries was developed.

## 9.1. Actions for Canada, Russia, Turkey, Poland and the Baltic States

Negotiations with these countries have reached different stages, so different steps are required. Canada is a member for FY 2004. Among the NAS countries, the priorities are stated in the ECORD-contract, i.e.:

- 1. Poland
- 2. Russia
- 3. Greece and Turkey

## Canada

The objective is to help Canada maintain their membership in ECORD. To help Canada obtain matching funds, WP2 proposed (i) to send ECORD + IODP materials and (ii) put pressure on management structures by sending a team of representatives of ECORD funding agencies.

ACTION EMA: Contact Kathy Gillis and find out her opinion on whether sending a team to Canada would be useful.

## Poland (and the Baltic States)

WP2 will approach Poland and the Baltic States through BONUS era-net. A team consisting of WP2 coordinator, EMA director and a scientists (to be determined – Action ESSAC) will participate in the meeting of BONUS steering committee to be held in Poland. In general, in case of NAS countries, our way in is through other ERA-nets.

ACTION Jonas Björck: determine if there are other ERA-net projects relevant to the ECORDnet.

## Russia

For Russia the benefits of participation in the program are the opportunity for Russian scientists to conduct high-quality research on international level. The strategy is to approach scientists (by sending a team/organising a meeting to present ECORD and ACEX) and ask them to invite representatives of their funding agencies (ideally, both from the Academy of Sciences and from the Ministry).

## Greece and Turkey

Continue dialogue: send information, contact ODP scientists and find out whether they are interested and what assistance can be expected from WP2 to help convince the funding agencies to participate.

## 9.2. Method of approaching countries regarding ECORD membership

Although different countries have reached different stages (Turkey -1, Baltic States -2, Greece, Russia and Poland -3, Canada -4), a common strategy is applicable to them.

STEP 1. Mail shot to database of scientific publication contacts

Determine a list of scientists and send an information letter asking them to contact EMA in case they are interested. When managers are involved, send copies of MoUs.

## STEP 2. Search EC routes via:

- 2.1. ERA Nets (starting with BONUS Net) (Jonas)
- 2.2. Publication Database
- 2.3. ESF (Chris, Valentina)

## STEP 3. Outreach Team (WP2 Coordinator, EMA director + 1 relevant scientist)

- 3.1. Poland December 2004
- 3.2. Russia March 2005 ?
- 3.3 Greece ?

The relevant scientist is to be identified by ESSAC. He/she will ensure that the IODP / ECORD material presented by the team will take into consideration the research interests of the country.

## STEP 4. Raise funding agency interest

Invite to ECORD council, workshops, send a team from IODP-MI. A tailored approach is required.

## STEP 5. High-level ECORD Council & IODP delegates e.g. Canada

## 9.3. WP2 deliverables

1. ECORD-net brochure and www information for NAS, Russia and other countries An ECORD-net brochure will be prepared by the VR, explaining how Europe will benefit in future with the help of the ECORD-net project.

ACTION Jonas Björck: Collect information from ECORD-net Work Package leaders for the preparation of the brochure.

EMA is responsible for the web site and information package.

2. Interactive www links for outreach activities to general scientific public These are maintained at the ECORD web site

3. Quarterly newsletter on ECORD scientific and management activities ECORD newsletter is biannual for the moment; regular updates are posted on the website.

## 9.4. Budget breakdown

Producing of the ECORD Brochure: VR ECORD web site: EMA (INSU-CNRS) Travel: VR.

## 10. Korean participation

A representative from Korea, *Dr. Dae Choul Kim* (for contact address see Annex 3), was present at the IODP Council meeting held in Paris on 10 July 2004. In his talk with ECORD executive Dr. Kim explained that Korea does not have enough resource to join the IODP independently and that Korea would like to join ECORD. Later in Florence, during the IGC-32, *Dr Young-Joo LEE*, Korea-IODP Project Manager (see Annex 3) contacted John Ludden and mentioned possible contribution of USD 300 000. Korea was informally invited to attend the ECORD Council meeting in Bonn.

## DISCUSSION

## Points of concern:

(i) Political friction between Korea and Japan. Apparently Korea does not want to talk to Japan for political reasons. If we accept Korea, would it not bring frictions between ECORD and Japan?

(ii) How large should ECORD become? This is a question to the Council. At this stage accepting new members diminishes the rights of others. However, in future an enormous number of spaces will be available on board of Chikyu.

(iii) ECORD is a European Consortium and this argument is used to approach Brussels and get more money. What if other non-European countries wish to join (e.g. Australia)?

## Conclusion

The new memberships should be considered on a case-by-case basis, and the added value of each new entry should be identified before the decision is taken.

## RECOMMENDATION

WP2 should not consider Korea as a potential target for its activities. It is up to the ECORD Council to discuss the actual approach by Korea and consider the application.

## 11. Any Other business

A general meeting of the ECORD-net participants is needed.

Action Svetlana Zolotikova: Find out if the coordinator and Work Package leaders are available on 5 or 7 February for an ECORD-net meeting.

## **ANNEX 1. List of contacts**

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## ANNEX 2

## ECORD-ICDP Education & Outreach Workshop, Bremen, March 17, 2004

#### Eve Arnold, Stockholm University and Martin Cepek, University of Bremen

International IODP Education & Outreach workshop in Austin/TX, 20-23 February Overview of IODP Management International responsibilities regarding future initiatives in Education and Outreach within IODP

#### Thomas Wöhrl, GFZ Potsdam

Education & Outreach activities and initiatives of ICDP ICDP Training Courses, GFZ ICDP Summer School, ICDP Newsletter and Information Network

#### Walter Hale, University of Bremen

Bremen ODP core repository, activities for different audiences (schools, higher education, open house, journalists, politicians). Examples on how to expand graduate education opportunities

#### Martin Cepek

Examples of Education & Outreach activities at Bremen University, year of geoscience 2002, travelling exhibition Geoship, school laboratory, comprehensible science publications

#### Eve Arnold

Education & Outreach initiatives at Stockholm University, PhD. Students, Distance learning & Evening courses, School visiting program, "Geology Day", "Earth Fun", Geoforum website, Advertising

#### Sylke Hlawatsch, IPN-Leibniz Institute on Science Education

Developing and Promoting Science Education through Research at the Leibniz-Institute for Science Education (IPN) in Kiel, German Project "System Earth": Concepts and Teaching Materials for Science and Geography School Education within a Geoscience Context, PISA (Programme for International Student Assessment), Benchmarks in Education, Didactics.

#### ANNEX 3. GIFT Workshop (EGU 2004)

The (GIFT) WORKSHOP wa	as attended by teachers from
Czech Republic	2
France	14
Germany	4
Great Britain	4
Hungary	1
Italy	5
Norway	1
Poland	2
Portugal	4
Roumania	1
Sweden	
Total	47 (+ 3)

#### Workshop program

WELCOME ADDRESS Arne Richter, Executive Secretary of EGU

PRESENTATION OF THE WORKSHOP Carlo Laj and Jean-Luc Berenguer, Co-Organisers of GIFT 2004

A SATELLITE VIEW OF THE OCEAN Anny Cazenave (LEGOS, CNES, Tulouse, France)

INITIATED IN THE NORTH ATLANTIC: THE MODERN OCEAN CIRCULATION Barbara Donner (University of Bremen, Germany)

MACROSCOPIC LIFE AROUND HYDROTHERMAL VENTS Martin Cepec (University of Bremen (Germany)

THE INTEGRATED OCEAN DRILLING PROGRAM (IODP) Eve Arnold (University of Stockholm, Sweden)

THE IMAGES PROGRAM **Ralph Schneider** (IMAGES and Univerity of Bordeaux, France) THE OCEAN IN THE CLASSROOM (Teachers speak to teachers): 20,000 SCHOOLS OVER THE SEA (Parti I)

ANIMATIONS **Michael Gschnaidner and Friedrich Barnikel** (Gymnasium Grafing and University of Munich Germany) OCEAN/ATMOSPHERE INTERACTIONS IN THE NORTH ATLANTIC **Eystein Jansen** (University of Bergen, Norway)

THE "EL NINO" SOUTHERN OSCILLATION (ENSO) Pascale Delecluse (LSCE, Gif-sur-Yvette, France)

SEA LEVEL CHANGES **Kurt Lambeck** (National Australian University, Camberra, Australia)

ABRUPT CLIMATIC CHANGES AND DEEP WATER CIRCULATION IN THE NORTH ATLANTIC Carlo Laj and Catherine Kissel (LSCE, Gif-sur-Yvette, France)

THE MEDITERRANEAN SEA: AN INDICATOR FOR CLIMATE CHANGES? **Renzo Mosetti** (OGS, Trieste Italy)

## ESSAC/ECORD scientists and TARGET NAS countries

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2) Annakaisa Korja, Finnish alternate for ESSAC and SciMp-panelist involved in a preparation of an IODP-proposal for the Baltic Sea. This group has members from all of the Baltic States as well as Poland and of course Sweden, Denmark and Finland. The group will have a short discussiontomorrow in Tartu, Estonia in connection with the Baltic Sea conference.

See e-mails below.

Date: Tue, 26 Oct 2004 09:50:57 +0300 (EEST) From: Annakaisa Korja <korja@seismo.helsinki.fi> X-Sender: korja@lito To: essac.amsterdam@falw.vu.nl cc: kari.strand@oulu.fi, Annakaisa Korja <korja@seismo.helsinki.fi> Subject: ESSAC/IODP (fwd) X-Spam-Checker-Version: SpamAssassin 2.63 (2004-01-11) on sheba X-Spam-Level: X-Spam-Status: No, hits=0.0 required=5.0 tests=none autolearn=no version=2.63

Dear office staff,

I wrote you already once that I was attending an IODP proposal planning meeting at Tartu. In that meeting I asked the Estonians and Lithuanians who the ESSAC should contact in the Baltic state membership problem. Here is the contact and his address in Lithuania.

The Baltic states are not fully aware of the program at its organizational level. They are of course very concerned over the money which they obviously don't have too much and the number of scientists intrested in the ocean sciences is even more limited. Only the Polish have larger resources in both science and money. You must also remeber that the population of the countries (exept Poland) is also very small.

I wish you good luck with the negotiations!

Annakaisa

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tel: +358-9-191 51606, mobile:+358-50-4674144 fax: +358-9-191 51626

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------ Forwarded message ------Date: Wed, 6 Oct 2004 13:20:40 +0300 From: Robert.Mokrik@gf.vu.lt To: Annakaisa.Korja@seismo.helsinki.fi Subject: ESSAEC/IODP

Dear Annakaisa!

Lithuanian participation in the ESSAEC/IODP can be Ministery of Education and Science (Ugne Stadnike are contact person; e-mail: ugne@mokslas.lt ) or Lithuanian Geological Survey (contact person Jonas Satkunas, vice director; e-mail:jonas.satkunas@lgt.lt ).This organizations may be are the best partitipants in ECORD or ESSAEC from Lithuanian officials. Good candidate can be too Gediminas Motuza from Vilnius university;( e-mail Gediminas.motuza@gf.vu.lt). Best regards Robert Mokrik

X-Security: MIME headers sanitized on sheba See { HYPERLINK "http://www.wolfenet.com/~jhardin/procmail-security.html" } for details. \$Revision: 1.104 \$Date: 2000-05-10 08:51:15-07 Subject: AW: Promoting IODP and ECORD to NAS countries Date: Fri, 8 Oct 2004 08:35:43 +0200 X-MS-Has-Attach: X-MS-TNEF-Correlator: Thread-Topic: Promoting IODP and ECORD to NAS countries Thread-Index: AcShkDfkHNzXMRLhTa22EN6B+fI81QLb9tzw From: "Dürr, Sören" <Soeren.Duerr@dfg.de> To: "ESSAC Amsterdam" <essac.amsterdam@falw.vu.nl> X-OriginalArrivalTime: 08 Oct 2004 06:35:43.0427 (UTC) FILETIME=[09353130:01C4AD01] X-Spam-Checker-Version: SpamAssassin 2.63 (2004-01-11) on sheba X-Spam-Level: X-Spam-Status: No, hits=0.6 required=5.0 tests=HTML 20 30,HTML FONTCOLOR BLUE, HTML MESSAGE autolearn=no version=2.63

Valentina,

I have contacts with doc. dr hab. Szczepan Porebski, Instytut Nauk Geologicznych PAN, Osrodek Badawczy w Krakowie, Senacka 1, PL-31-002 Krakow, tel.: (12) 4228920, (12) 4221910, fax.:(12) 4221609, **{** HYPERLINK "mailto:ndporebs@cyf-kr.edu.pl" **}**. This address means he is sedimentologust at the Krakow institut of geology of the Polish Academy, has international reputation and experience in the oil industry.

Best wishes,

Sören

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Ihr Zeichen, Ihre Nachricht vom

Mein Zeichen (Bei Antwort angeben)

#### Betreff List of participants

Im Auftrage - on behalf of Mr Kudrase

Dear Valentina,

attached you will find the list of participants ...

Best regards.

Gabriele Herok

**Telefax** 

Durchwahi (05 11) 6 43 -3709 E-Mali

2004/11/02

Hannover

6 Selten Inklusive Deckblatt

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13:44

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#### Olivia Till

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#### Endre Törös (represent of EAGE) Eötvös Lorànd Geophysical Institute of Hungary Columbus u. 17-23 H-1145 Budapest Hungary toros@elgi.hu

#### Algis Egidijus Trimonis Institute of Geography and Geology T.Shevchenkos 13, LT 2600 Vilnius Lithuania trimonis@geo.lt

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#### Jüri Vassiljev

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Department of Marine Geology, Institute of Oceanography, Gdańsk University Pilsudskiego 46, 81-378 Gdynia Poland tycjan@sat.ocean.univ.gda.pl

#### Joanna Zachowicz

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hilah@sat.ocean.univ.gda.pl

# Sail Applications and Balance version 6 November 23 2004)

Member	Contribution	2-yrs berths	#545	#533	#572-I	#512-I	#512-II	#543-II	Slots #	Slots %	Slots %
codes			301	302	303	304	305	306			
Notes below		(1)		(2)							
France	24.0%	26.9	1.0	2.0	1.0	3.0	3.0	1.0	11.0	23.40%	27.5%
Germany	26.1%	29.2	3.0	2.0	2.0	2.0	2.0	1.0	12.0	25.53%	30.0%
UK	24.0%	26.9	1.0	2.0	2.0	3.0	1.0	2.0	11.0	23.40%	27.5%
Sum	74.1%	83.0							34.0	72.34%	212.5%
Austria	0.6%	0.7							0.0	0.00%	0.0%
Canada**	1.3%	1.5			1.0				1.0	2.13%	2.5%
Denmark	4.2%	4.7			1.0				1.0	2.13%	2.5%
Finland	0.6%	0.7							0.0	0.00%	0.0%
Iceland	0.3%	0.3							0.0	0.00%	0.0%
Italy#	1.2%	1.3		1.0					1.0	2.13%	2.5%
The Netherlands	1.9%	2.1		1.0					1.0	2.13%	2.5%
Norway	4.8%	5.4	1.0	1.0			1.0	1.0	4.0	8.51%	10.0%
Portugal	0.8%	0.9						1.0	1.0	2.13%	2.5%
Spain*	2.4%	2.7						1.0	1.0	2.13%	2.5%
Sweden	5.6%	6.3		1.0					1.0	2.13%	2.5%
Switzerland	2.4%	2.7			1.0		1.0		2.0	4.26%	5.0%
Sum	26.1%	29.2							13.0	27.7%	81.3%

" ECORD Contributions 2003-2007 average (3 years) \*money moved forward from FY05, or in kind contribution \*\* Canada funding is not secure #Italy is trying to increase the funding Total if full staffing (40 for 5 projects)

Real

Shipboard Staffing balance EXPEDITION #301-#306



## Tahiti proposal #519

[	Name	First	Country (work)	Nationality	E-mail	Institute	Field of Expertise
1	Bassett*	Sophie E.	UK	UK	s.e.bassett@dur.ac.uk	University of Durham	geophysicist
2	Braga	Juan C.	Spian	Spain	jbraga@ugr.es	Universidad de Grenada	sedimentologist, paleontologist (coralline red algae)
3	Cabioch	Guy	France	New Caledonia	cabioch@noumea.ird.nc	IRD	sedimentologist
4	Chappel*	Alexander	UK	UK	alexander.chappel@liverpool.ac.uk	University of Liverpool	geophysicist
5	Clarke	Leon John	UK	UK	I.Clarke@bangor.ac.uk	University of Wales Bangor	inorganic geochemist, physical properties specialist, sedimentologist, stratigraphic correlator
6	Colombie	Claude	France	France	claude.colombie@univ-lyon1.fr	University of Lyon	sedimentologist/stratigraphic correlator
7	Della Porta	Giovanna	Germany	Italy	della.porta@geo.uni-potsdam.de	Institut fuer Geowissenschaften	sedimentologist, coral reef specialist
8	Deschamps	Pierre	France	France	deschamps@cerege.fr	CEREGE	inorganic geochemist
9	Dinares-Turel	Jaume	Italy	Spain	dinares@ingv.it	INGV	logging scientist, paleomagnetist, downhole measurements
10	Dittmers*	Klaus Hauke	Germany	Germany	kdittmers@awi-bremenhaven.de	University of Bremen	logging scientist, geophysicist, physical prop.specialist, sedimentologist
11	Eisenhaur	Anton	Germany	Germany	aeisenhaur@ifm-geomar.de	Geomar	inorganic geochemist
12	Felis	Thomas	Germany	Germany	tfelis@allgeo.uni-bremen.de	University of Bremen	inorganic geochemist, paleontologist (megafossil)
13	Gischler	Eberhard	Germany	Germany	gischler@em.uni-frankfurt.de	Geologisch_Palaontologisches Institute	paleontologist (Foraminifer-Benthic)-paleontologist (Megafossil)- sedimentologist
14	Hart	Malcolm	UK	UK	mhart@plymouth.ac.uk	University of Plymouth	foraminifer and pteropods paleontoligist, stratigraphic correlator
15	Hathorne*	Edmund	UK	USA	E.C.Hathorne@open.ac.uk	Open University	inorganic geochemist
16	Kindler	Pascal	Switzerland	Switzerland	Pascal.Kindler@terre.unige.ch	University of Geneve	petrologist, sedimentologist
17	Kunhert	Henning	Germany	Germany	hkunhert@uni-bremen.de	University of Bremen	inorganic geochemist, sedimentologist
18	Lericolais	Gilles	France	DZA	Gilles.Lericolais@ifremer.fr	IFREMER	geophysicist, sedimentologist
19	Reijmer	John J.G.	France	The Netherlands	jreijmar@ifm-geomar.de	University of Marseilles	oceanographer, sedimentologist, stratigraphic correlator
20	Samankassou	Elias	Switzerland	Cameroon	elias.samankassou@unifr.ch	University of Fribourg	sedimentologist
21	Schmid	Susanne	UK	Germany	susaschimd@yahoo.de	University of Liverpool	Inorganic geochemist, petrologist, sedimentologist
22	Schulz	Hartmut	Germany	Germany	hartmut.schulz@uni-tueb.de	University of Tubingen	paleontologist foraminifer-benthic-planktonic), physical properties specialist, sedimentologist
23	Thomas*	Alexander	UK	UK	alexander.thomas@earth.ox.ac.uk	University of Oxford	inorganic geochemist
24	Thouveny	Nicolas	France	France	thouveny@cerege.fr	CEREGE	paleogmanetist, physical properties specialist
25	Tudhope	Alexander W.	UK	UK	sandy.tudhope@ed.ac.uk	Edinburgh University	sedimentologist, coral reef scientist, palaeoclimatologist, palaeooceanographer
26	Vasconcelos de Olivera	Crisogono	Switzerland	Brazil	cris.vasconcelos@erdw.ethz.ch	Swiss Federal Institute of Technology	microbiologist, inorganic geochemist, sedimentologist
27	Veres*	Daniel	Sweden	Romania	daniel.veres@natgeo.su.se	University of Stocholm	sedimentologist, paleomagnetism, organic geochemist
28	Verwer*	Klaas	The Netherlands	The Netherlands	klaas.verwer@falw.vu.nl	Vrije Universiteit Amsterdam	physical propertiies specialist
29	Westphal	Hildegard	Germany	Germany	westphal@pal.uni-erlanger.de	University of Erlangen-Nurnberg	physical propertiles specialist, sedimentologist
30	Wilson	Moyra E. J.	UK	UK	moyra.wilson@durham.ac.uk	University of Durham	paleontologist(megafossil), sedimentologist, petrologist, stratigraphic correlator
31	Zinke	Jens	The Netherlands	Germany	zinj@geo.vu.nl	Vrije Universiteit Amsterdam	oceanographer, geochemist, foraminifer plaeontologist.sedimentologist

\* PhD student shorebased

received after 10th of November

# ECORD Application form for membership in IODP expedition scientific parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following information)					
Name (first, middle, last)					
Institution UNIVERSITY OF DURHAM					
Department DEPARTMENT OF EARTH SCIENCES					
Institution					
Address SCIENCE LABORATORIES SOUTH ROAD DURHAM DHI 30E					
Telephone (Work)+4469913362300(Home)+446)1913709334 (Fax)(+64) (0)191 2301					
Email Address S.E. BASSETTO DUR, AC. UK					
Present Title MISS Country of Citizenship U.K					
Place of Birth Date of Birth Gender 18 101976 FENALE					
Passport No. 070016852 Place Issued GBR Date Issued 7/11/00 Exp. Date 7/11/10					
Education (Highest degree - PhD., M.S., or B.S.) R. Sc. Date: 2000					
Are you currently a student? YES (If yes, see note below)					
II. EXPEDITION INFORMATION					
Expeditions of Interest (please limit selection to no more than three):					
Expedition Number: 5)9 Title TAHITI SEA - LEVEL					
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*					
Expedition Number: Title					
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*					
Expedition Number: Title:					
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*					
(* provide detail of proposed participation in an accompanying letter)					
Reason(s) for Interest (if necessary, expand in letter)					
Personal and/or scientific references (name and address) DR G.A. MILLINE, PROF. R.E.					
HOLDSWORTH DEPT. EARTH SCIENCES DURHAM UNNUBBITY SOUTH RD.					
Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased					
participant, etc.)					

ECORD Application form for membership in IODP expedition scientific parties, Page 1 of 3

#### **III. ATTACHMENTS**

1. Attach curriculum vitae which includes a publication history

2. Please fill out the attached "Field of Expertise" form

Note: Applications from graduate students should include a letter from their primary advisor, documenting the student's scientific experience and detailing how participation on the cruise would fit into their graduate degree program.

Staffing decisions are made in consultation with co-chief scientists and take into account nominations from partner countries; final responsibility for ECORD staffing rests with ESSAC. Please submit all application materials both in **digital format** (preferable PDF format) and **paper copy** to (please contact the ESSAC Office when having problems providing us with the above asked materials in both formats): ESSAC Science Coordinator Faculty of Earth & Life Sciences - Vrije Universiteit De Boelelaan1085 1081 HV Amsterdam - The Netherlands Phone: +31 20 4447272 Fax: +31 20 4449941 E-mail: essac.amsterdam@falw.vu.nl

With a copy to the national ESSAC delegate (see http://www.geo.vu.nl/~essac/ ESSAC button).

Nominations (with copies of their applications) will be forwarded from that office to the Implementation Organizations (IOs). Eligibility as a ECORD participant is limited to scientists or engineers (professors, research scientists, technologists, graduate students, etc.) at a ECORD member institution (e.g. German academic institutions, government labs, ECORD member-based corporations, etc.). Non-ECORD affiliated personnel from other IODP member countries should apply for IODP participation through their country's national program office. Undergraduate students do not qualify as Shipboard Participants, and should not apply to sail using this form. Undergraduates interested in sailing on a IODP expedition should instead contact ECORD for information about the Undergraduate Student Trainee Program.

### FIELD OF EXPERTISE

Biologist

- Microbiologist
- Inorganic Geochemist
- Organic Geochemist
- Geophysicist
- \_\_\_\_ Hydrologist
- Logging Scientist
- \_\_\_\_ Oceanographer
- Paleomagnetist
- Paleontologist (Diatom)
- Paleontologist (Dinoflagellate)
- Paleontologist (Foraminifer Benthic)
- Paleontologist (Foraminifer Planktonic)
- Paleontologist (Megafossil)
- Paleontologist (Nannofossil)
- \_\_\_\_ Paleontologist (Phytoplankton)
- Paleontologist (Radiolaria)
- Paleontologist (Silicoflagellate)
- \_\_\_\_ Palynologist
- \_\_\_\_ Petroleum Geologist
- \_\_\_\_ Petrologist
- \_\_\_\_ Igneous Petrologist
- \_\_\_\_ Metamorphic Petrologist
- \_\_\_\_ Physical Properties Specialist
- \_\_\_\_ Sedimentologist
- \_\_\_\_ Seismologist
- \_\_\_\_ Stratigrapic Correlator
- \_\_\_\_ Structural Geologist
- \_\_\_\_ Downhole Measurements

ECORD Application form for membership in IODP expedition scientific parties, Page 3 of 3

Department of Earth Sciences University of Durham Science Laboratories South Road Durham DH1 3LE

> Department Office Direct line Fax Email



s.e.bassett@durham.ac.uk

09 November 2004

ESSAC Science Coordinator Faculty of Earth and Life Sciences Vrije Universiteit De Boelelaan 1085 1081 HV Amsterdam The Netherlands

Dear Sir or Madam:

I am writing to apply to participate in the **Tahiti sea-level expedition number 519.** I am very interested in becoming involved in this project, particularly from the perspective of modelling sea-level changes associated with Earth glaciation. For the past three years I have been studying æ a Ph.D. student at the University of Durham supervised by Dr. Glenn Milne. My work has focussed on constraining the source geometry and magnitude of meltwater pulse IA (mwp-IA) by considering sea-level data from sites far from the major glaciation centres (e.g. Barbados, Tahiti, Huon Peninsula and Sunda Shelf) and from sites in Antarctica.

My results for the far-field data suggest that a good fit to these observations can be obtained if a dominant contribution to mwp-IA is sourced from the Antarctic ice sheet. These results have been submitted in a manuscript to Science which has also been sent to Dr Camoin by Glenn Milne. My modelling results also indicate that the fit at these far-field sites can be significantly improved by not including the later (~11.5 cal. kyr BP), smaller magnitude, meltwater pulse IB in our model.

I am currently modelling sea-level observations from Antarctica to test whether these data are consistent with a large melt event from the Antarctic ice sheet at the time of mwp-IA ( $\sim$ 14 cal. kyr BP). Preliminary results indicate that a  $\sim$  15 m (eustatic) contribution from the West Antarctic is not ruled out by the data.

An extended sea-level curve from Tahiti encompassing mwp-IA and last glacial maximum (LGM) sea levels would provide important additional constraints on existing GIA models and thus advance our knowledge of the causes and consequences of climate-induced sea-level change. For example, my current best-fit model reconciles LGM data at Barbados and the Bonaparte Gulf, but not at Sunda Shelf. New LGM data from Tahiti would therefore provide an important independent measure to further test the validity of our current model and the accuracy of the LGM data from the Sunda Shelf. Also, the predicted magnitude of mwp-IA at Tahiti given a Western Antarctic source is less than that obtained when a dominant Laurentide source is considered by ~5 m

(Clark et al. 2002). New data from Tahiti that encompasses the mwp-IA event will therefore provide key additional constraints with which to argue for or against one of these two different source scenarios.

The model I have calibrated to fit the currently available far-field data could be used as a predictive tool to aid data acquisition at Tahiti. For example, the model can predict relative sea levels at the time of the LGM and the onset of the mwp-IA event. Please do not hesitate to contact me if you wish to make use of the model in the manner suggested.

Sincerely yours,

Ms Sophie Bassett

# **Personal Details**

Date of Birth:	18 October 1976
Nationality:	British
Home Address:	9 Kepier Crescent
	Gilesgate Moor
	Durham, DH1 1PG
	England, UK
Home Phone:	+44-(0)191-370-9334
Office Address:	Department of Earth Sciences
	University of Durham
	Durham, DH1 3LE
	England, UK
FAX:	+44-(0)191-332-2301
E-mail::	s.e.bassett@dur.ac.uk
Driving License:	Clean, held for 10 years.

## Education

2002-	Studying for a <b>Ph.D.</b> at the Department of Earth Science, University of Durham under the title of "Modelling Near and Far-Field Sea-Level Data to Infer the Source of Meltwater Pulse IA".
2000-2002	Involved in a research project at Department of Earth Sciences, University of Durham to examine the interaction between major earthquakes and the triggering of volcanic earthquakes and eruptions. This included a 3 month stay in California working with the US geological survey.
1996-2000	Edinburgh University, <b>B.Sc. (Hons) Geophysics</b> (first class) Final year projects: "Sub-Critical Crack Growth" and "Micromagnetic Interactions"
Employment	
2000-	Teaching Assistant. Department of Earth Sciences, University of Durham
Awards	
2000-2003	NERC studentship

# Publications

Milne, G.A., A.J. Long and S.E. Bassett, "Modelling Holocene Relative Sea-Level Observations from the Caribbean and South America", *Quat. Sci. Rev.*, in press, 2004

# **Manuscripts Under Review**

**Bassett, S.E.,** G.A.Milne, J.X. Mitrovica and P.U.Clark, "Enigmatic Trends in Lateglacial Far-Field Histories Reconciled by a Revised Model of Glacial Isostatic Adjustment", *Science*, submitted June 2004.

## **Contributions to Conferences**

Bassett, S.E., G.A. Milne, J.X. Mitrovica, P.U. Clark, M.J. Bentley and P. Huybrechts, "Modelling Near and Far-Field Sea-Level Data to Infer the Source of Meltwater Pulse IA", *International Geological Correlation Program* 495, *Maine*, October, 2004.

Bassett, S.E., G.A. Milne, J.X. Mitrovica and P.U. Clark, "Modelling Far-Field Sea-Level Data to Infer the Source of Meltwater Pulse IA", *American Geophysical Union Spring Meeting, Montreal*, May, 2004.

Bassett, S.E. G.A. Milne, J.X. Mitrovica and P.U. Clark, "Modelling Far-Field Sea-Level Data to Infer the Source of Meltwater Pulse IA", *European Geosciences Union and American Geophysical Union Meeting*, *Nice*, April 2003

# ECORD Application form for membership in IODP expedition scientific parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following information)					
Name (first, middle, last)					
Institution_UNIVERSIDAD DE GRANADA					
DepartmentESTRATIGRAFIA Y PALEONTOLOGIA					
Institution					
Address CAMPUS FUENTENUEVA 18002 GRANADA, SPAIN					
Telephone (Work) _++34958248332 (Home)++34958536221(Fax) _++34958248528					
Email Address _ jbraga@ugr.es					
Present Title PROFESSOR Country of Citizenship SPAIN					
Place of Birth Date of Birth Gender05/11/1955 MALE					
Passport No. A0454274800 Place Issued GRANADA Date Issued 18/03/02 Exp. Date 18/03/12					
Education (Highest degree - PhD., M.S., or B.S.) PhD Date: NOVEMBER 1982					
Are you currently a student? NO (If yes, see note below)					
II. EXPEDITION INFORMATION					
Expeditions of Interest (please limit selection to no more than three):					
Expedition Number:TitleTAHITI					
Platform: Riser Non-riser MSP Participation: Full Expedition Packat Stoce Dased*					
Expedition Number:					
Expedition Number:					
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*					
(* provide detail of proposed participation in an accompanying letter)					
Reason(s) for Interest (if necessary, expand in letter) I AM INTERESTED IN CORALGAL FACIES					
AND QUATERNARY EVOLUTION OF PACIFIC REEFS					
Personal and/or scientific references (name and address) G. CAMOIN (CEREGE, FRANCE) AND					
PETER J. DAVIES (SCHOOL OF GEOSCIENCES, UNIVERSITY OF SYDNEY, NSW 2006 AUSTRALIA)					
Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased					
participant, etc.) SHOREBASED PARTICIPANT IN LEGS 133 AND 161, AUTHOR OF FOUR PAPERS					
PUBLISHED IN THE ODP PROCEEDINGS					

ECORD Application form for membership in IODP expedition scientific parties, Page 1 of 3

## **III. ATTACHMENTS**

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Note: Applications from graduate students should include a letter from their primary advisor, documenting the student's scientific experience and detailing how participation on the cruise would fit into their graduate degree program.

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With a copy to the national ESSAC delegate (see http://www.geo.vu.nl/~essac/ ESSAC button).

Nominations (with copies of their applications) will be forwarded from that office to the Implementation Organizations (IOs). Eligibility as a ECORD participant is limited to scientists or engineers (professors, research scientists, technologists, graduate students, etc.) at a ECORD member institution (e.g. German academic institutions, government labs, ECORD member-based corporations, etc.). Non-ECORD affiliated personnel from other IODP member countries should apply for IODP participation through their country's national program office. Undergraduate students do not qualify as Shipboard Participants, and should not apply to sail using this form. Undergraduates interested in sailing on a IODP expedition should instead contact ECORD for information about the Undergraduate Student Trainee Program.

## FIELD OF EXPERTISE

- \_\_\_\_ Biologist
- \_\_\_\_ Microbiologist
- \_\_\_\_ Inorganic Geochemist
- \_\_\_\_ Organic Geochemist
- \_\_\_\_ Geophysicist
- \_\_\_\_ Hydrologist
- Logging Scientist
- Oceanographer
- \_\_\_\_ Paleomagnetist
- \_\_\_\_ Paleontologist (Diatom)
- \_\_\_\_ Paleontologist (Dinoflagellate)
- \_\_\_\_ Paleontologist (Foraminifer Benthic)
- \_\_\_\_ Paleontologist (Foraminifer Planktonic)
- \_\_\_\_ Paleontologist (Megafossil)
- \_\_\_\_ Paleontologist (Nannofossil)
- Paleontologist (Phytoplankton)
- \_\_\_\_ Paleontologist (Radiolaria)
- \_\_\_\_ Paleontologist (Silicoflagellate)
- \_\_\_\_ Palynologist
- \_\_\_\_ Petroleum Geologist
- \_\_\_\_ Petrologist
- \_\_\_\_ Igneous Petrologist
- \_\_\_\_ Metamorphic Petrologist
- \_\_\_\_ Physical Properties Specialist
- X Sedimentologist
- \_\_\_\_ Seismologist
- \_\_\_\_ Stratigrapic Correlator
- \_\_\_\_ Structural Geologist
- \_\_\_\_ Downhole Measurements
- --X-- PALEONTOLOGIST (CORALLINE RED ALGAE)

Name: **Juan C.** Surname: **Braga** Date of birth: November 5, 1955.

# Academic qualifications:

PhD degree in Geology, University of Granada, Spain, 1982.

# Academic position:

Professor of Palaeontology at University of Granada, Spain since 1994.

Current teaching activities: Palaeontology. Short course on carbonate sedimentology

# Research

- Taxonomy, palaeoecology and evolution of coralline red algae
- Neogene carbonates in the western Mediterranean
- Neogene evolution of the western Mediterranean
- Quaternary reefs and algal buildups in NE Australia

# **Related Publications (last ten years)**:

- Braga, J.C., Martín J.M. and Riding, R. 1995. Controls on microbial dome fabric development along a carbonate-siliciclastic shelf-basin transect, Miocene, SE Spain, *Palaios*, 10: 347-361.
- Braga, J.C. and Aguirre, J. 1995. Taxonomy of fossil coralline algae species: Neogene Lithophylloideae (Rhodophyta, Corallinaceae) from southern Spain. *Rev. Palaeobotany and Palynology*, 86: 265-285
- Martín, J.M., Braga, J.C., Betzler, C. and Brachert, T. 1996. Sedimentary model and high-frequency cyclicity in a Mediterranean, shallow-shelf, temperate-carbonate environment (uppermost Miocene, Agua Amarga Basin, Southern Spain). *Sedimentology*, 43: 263-277
- Braga, J.C., Martín, J.M. and Riding, R. 1996. Internal structure of segment reefs: *Halimeda* algal mounds in the Mediterranean Miocene. *Geology*, 24: 35-38.
- Aguirre, J., Braga, J.C., Jiménez, A.P. and Rivas, P. 1996. Substrate-related changes in pectinid fossil assemblages. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 126: 291-308.
- Braga, J.C. and Martín, J.M. 1996. Geometries of reef advance in response to relative sea-level changes in a Messinian (uppermost Miocene) fringing reef (Cariatiz reef, Sorbas Basin, SE Spain). *Sedimentary Geology*, 107: 61-81.

- Braga, J.C., Jimenez, A.P., Martín, J.M. & Rivas. P. 1996. Middle Miocene, coraloyster reefs (Murchas, Granada, southern Spain). In: E. Franseen, M. Esteban, B. Ward & J.M. Rouchy (Editors). *Models for Carbonate Stratigraphy from Miocene Reef Complexes of the Mediterranean Regions. SEPM, Concepts in Sedimentology and Paleontology Series 5*, Tulsa, Oklahoma, p. 131-139.
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- Braga, J.C. and Aguirre, J. Coralline algae indicate Pleistocene evolution from deep open platform to outer barrier reef environments in the northern Great Barrier Reef margin. *Coral Reefs* (in press)
- Davies, P.J., Braga, J.C., Lund, M. and Webster, J. Holocene Deep Water Algal Buildups on the Eastern Australian Shelf. *Palaios* (in press).

# ECORD Application form for membership in IODP expedition scientific parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following information) Name (first, middle, last) : CABIOCH Guy Institution : IRD (Institut de Recherche pour le Développement) Department : Research Unit " Paleotropique " Institution : Institut de Recherche pour le Développement (French Institute) Address : IRD, B.P. A5, 98848 Nouméa CEDEX, New Caledonia Telephone (Work) : (687) 26 10 00 (Fax): (687) 26 43 26 (Home) : / Email Address : cabioch@noumea.ird.nc Present Title Country of Citizenship : New Caledonia Place of Birth : Aix en Provence (France) Date of Birth : 18 July 1961 Passport No. \_\_\_\_ Place Issued \_\_\_\_ Date Issued \_\_\_\_ Exp. Date Education (Highest degree - PhD., M.S., or B.S.) : PhD Date : 1988 Are you currently a student? No (If yes, see note below)

## **II. EXPEDITION INFORMATION**

Expeditions of Interest (please limit selection to no more than three):

 Expedition Number: 519
 Title : Last Deglacial Sea-Level Rise in the South Pacific: Offshore Drilling in Tahiti"

 Platform: Riser Non-riser MSP Participation: Full Expedition Partial\* Shorebased\*

 Expedition Number:
 Title

 Platform: Riser Non-riser MSP Participation: Full Expedition Partial\* Shorebased\*

 Expedition Number:
 Title

 Platform: Riser Non-riser MSP Participation: Full Expedition Partial\* Shorebased\*

 Expedition Number:
 Title;

 Platform: Riser Non-riser MSP Participation: Full Expedition Partial\* Shorebased\*

 (\* provide detail of proposed participation in an accompanying letter)

 Reason(s) for Interest (if necessary, expand in letter) : study of the reef growth pattern (see letter)

Personal and/or scientific references (name and address) : Professor Lucien Montaggioni, Centre de Sédimentologie et de paléontologie, Université de Procence, 3 pl. Victor Hugo, 13331 Marseille CEDEX, France

Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased

participant, etc.) : No

## **FIELD OF EXPERTISE**

- \_\_\_\_ Biologist
- \_\_\_\_ Microbiologist
- \_\_\_\_ Inorganic Geochemist
- \_\_\_\_ Organic Geochemist
- \_\_\_\_ Geophysicist
- \_\_\_\_ Hydrologist
- Logging Scientist
- Oceanographer
- \_\_\_\_ Paleomagnetist
- \_\_\_\_ Paleontologist (Diatom)
- \_\_\_\_ Paleontologist (Dinoflagellate)
- \_\_\_\_ Paleontologist (Foraminifer Benthic)
- \_\_\_\_ Paleontologist (Foraminifer Planktonic)
- \_\_\_\_ Paleontologist (Megafossil)
- \_\_\_\_ Paleontologist (Nannofossil)
- \_\_\_\_ Paleontologist (Phytoplankton)
- \_\_\_\_ Paleontologist (Radiolaria)
- \_\_\_\_ Paleontologist (Silicoflagellate)
- Palynologist
- \_\_\_\_ Petroleum Geologist
- \_\_\_\_ Petrologist
- \_\_\_\_ Igneous Petrologist
- \_\_\_\_ Metamorphic Petrologist
- \_\_\_\_ Physical Properties Specialist

# \_\_\_\_ Sedimentologist

- \_\_\_\_ Seismologist
- \_\_\_\_ Stratigrapic Correlator
- \_\_\_\_ Structural Geologist
- \_\_\_\_ Downhole Measurements



Institut de recherche pour le développement



Centre IRD de Nouméa

Dr Guy Cabioch to ESSAC Science Coordinator Faculty of Earth & Life Sciences Vrije Universiteit De Boelelaan1085 1081 HV Amsterdam The Netherlands

Nouméa, November 9, 2004

## Dear Sir,

The main goals of my research at IRD (French Scientific Institute) are centered around the reefal paleoenvironmental studies comprising paleoecological, sedimentological and relative sea level variation analyses. The studies I performed concerned sites located in New Caledonia, Vanuatu and French Polynesia (South-west and Central Pacific) in the time span of the last 125 kyrs and particularly of the last 20 kyrs (see relevant publications).

I particularly studied several cores drilled through the fringing and barrier reefs of New Caledonia; my colleagues and I have obtained significative results concerning initiation, edification and internal structure of these fringing and barrier reefs (Pleistocene to Holocene in age) including diagenesis analysis and environmental succession.

I also take part in research programs on coral reefs in Vanuatu (South-West Pacific) in collaboration with colleagues from the Universities of Texas at Austin, University of Tucson in Arizona and University of Minnesota. We performed and studied several cores drilled through uplifetd fringing reefs.

In collaboration with colleagues from French Universities and French Research Institutes, I studied the reef growth evolution of the barrier reef in Tahiti of the last 14 kyrs in a French program.

Thus, the objectives of the IODP proposal 519 ("Last Deglacial Sea-Level Rise in the South Pacific: Offshore Drilling in Tahiti and on the Australian Great Barrier Reef" proposed by Camoin et al.) particularly interest me. I am particularly interested to continue the studies of the growth patterns of the coral reefs of the central Pacific during the last deglacial sea level rise.

Please, enclosed find my *Curriculum Vitae* and my relevant publications giving most details on my experience on these topics.

Sincerely yours.

Guy Cabioch

Dr Guy CABIOCH

Research Unit « Paléotropique » IRD (Institut de Recherche pour le Développement) B.P. A 5 98.848 Nouméa CEDEX Nouvelle-Calédonie

Ph. : (687) 26 07 39 / Fax : (687) 26 43 26 / e-mail : cabioch@ccrv.obs-vlfr.fr

Born the 18th July 1961 in Aix en Provence (Bouches du Rhône, France).

# **Present position**

Scientist (Directeur de Recherche), IRD (Institut de Recherche pour le Développement), in the Research Unit "Paléotropique" (Paléoenvironnements tropicaux et variabilité climatique) and in charge of the group of this unit working in the South-West Pacific.

Professional address : IRD Center, B.P. A5, 98848 Nouméa CEDEX, New Caledonia.

# **Employment**

2004-onwards : Senior Research Scientist (Directeur de Recherche), IRD (Institut de Recherche pour le Développement).

1992-2003: Research Scientist, (chargé de Recherche) ORSTOM-IRD ("Institut Français de Recherche Scientifique pour le Développement en Coopération" now called "Institut de Recherche pour le Développement").

# **Education**

**1988** : Doctorate Thesis (equivalent to PhD) (in Earth Sciences) : University of Provence (Marseille, France) *Title : Récifs frangeants de Nouvelle-Calédonie (Pacifique sudouest). Structure interne et influences de l'eustatisme et de la néotectonique.* (Fringing reefs in New Caledonia (South-West Pacific). Internal structure and influence of eustatism and neotectonic).

**1984** : **Diplôme d'Etudes Approfondies (equivalent to Master)** (in Earth Sciences), Faculty of Sciences of Aix-Marseille.

1982 and 1983 : Licence and Maîtrise (Earth Sciences) Faculty of Sciences of Aix-Marseille.

# **Research fields**

Coral reefs, Sedimentology, carbonate petrography, paleoecology, tropical, sea-level, paleoenvironments, paleoceanography, geochronology.

# **Memberships**

SEPM Société Géologique de France. International Society for Reef Studies (ISRS) International Association of Sedimentologists (IAS)

# **Relevant Publications**

- Bard E., Hamelin B., Arnold M., Montaggioni L.F., Cabioch G., Faure G. & Rougerie F. (1996) Deglacial sea level record from Tahiti corals and the timing of global meltwater discharge. *Nature*, **382** : 241-244.
- Beck J.W., Récy J., Taylor F.W., Edwards R.L. & Cabioch G. (1997) Abrupt changes in early Holocene tropical sea surface temperature from coral Sr/Ca thermometry. *Nature*, **385** : 705-707.
- Cabioch G., Montaggioni L.F. & Faure G. (1995) Holocene initiation and development of New Caledonian fringing reefs, South-West Pacific. *Coral Reefs*, **14** : 131-140.
- Cabioch G., Taylor F.W., Récy J., Lawrence-Edwards R., Gray S.C., Faure G., Burr G. & Corrège Th. (1998) Environmental and tectonic influence on growth and internal structure of a fringing reef at Tasmaloum (SW Espiritu Santo, New Hebrides Island Arc, SW Pacific). *In* : Camoin G. & Davies P.J. (ed.): *Reefs and carbonate platforms of the Pacific and Indian Ocean*. Int. Ass.Sediment., Spec. Publ., **25** : 261-277.
- Cabioch G., Camoin G. & Montaggioni L. F. (1999) Post glacial growth history of a French Polynesian barrier reef tract, Tahiti, central Pacific. *Sedimentology*, **46** : 985-1000.
- Cabioch G., Montaggioni L.F., Faure G. & Laurenti A. (1999) Reef coralgal assemblages as recorders of paleobathymetry and sea level changes in the Indo-Pacific province. *Quaternary Science Reviews*, **18** : 1681-1695.
- Cabioch G. & Ayliffe L. (2001) Raised coral terraces at Malakula, Vanuatu, Southwest Pacific, indicate high sea level during isotope stage 3. *Quaternary Research*, **56(3)** : 357-365.
- Cabioch G. (2003) Postglacial reef development in the South-West Pacific : case studies from New Caledonia and Vanuatu. *Sedimentary Geology*, **159** : 43-59.
- Cabioch G., Banks-Cutler K., Beck W.J., Burr G.S., Corrège T., Edwards R.L. & Taylor F.W. (2003) Continuous reef growth during the last 23 ka in a tectonically active zone (Vanuatu, SouthWest Pacific). *Quaternary Science Reviews*, 22 : 1771–1786.
- Camoin G., Gautret P., Montaggioni L.F. & Cabioch G. (1999) Nature and environmental significance of microbialites in Quaternary reefs: the Tahiti paradox. *Sedimentary Geology*, **126** : 271-304.
- Corrège Th., Delcroix Th., Récy J., Beck W., Cabioch G. & Le Cornec F. (2000) Evidence for stronger El Niño-Southern Oscillation (ENSO) events in a mid-Holocene massive coral. *Paleoceanography*, 15 : 465-470.
- Corrège T., Gagan M.K., Beck J.W., Burr G.S., Cabioch G. & Le Cornec F. (2004) Interdecadal variation in the extent of south tropical waters during the Younger Dryas event. *Nature*, **428** : 927-929.
- Montaggioni L.F., Cabioch G., Camoin G. F., Bard E., Ribaud-Laurenti A., Faure G., Déjardin P. & Récy J. (1997) Continuous record of reef growth over the past 14 k.y. on the mid-Pacific island of Tahiti. *Geology*, 25 : 555-558.
- Paterne M., Ayliffe L.K., Arnold M., Cabioch G., Tisnérat-Laborde N., Hatté C., Douville E. & Bard E. (2004) Paired <sup>14</sup>C and <sup>230</sup>Th/U dating of surface corals from the Marquesas and Vanuatu (sub-equatorial Pacific) in the 3,000 CAL yr to 15,000 CAL yr. *Radiocarbon*, **46** : 551-566.

Payri C.E. & Cabioch G. (2004) The significance of coralline red algae in the rhodolith unit in Amédée 4 drill core (New-Caledonia). *Palaeogeography, Palaeoclimatology, Palaeoecology*, **204** : 187-208.

# ECORD Application form for membership in IODP expedition scientific parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following information)

Name (first, middle, last) Alexander Robert Chappell

Institution University of Liverpool

Department Earth and Ocean Sciences

Institution University of Liverpool

Address University of Liverpool, Department of Earth and Ocean Sciences, Jane Herdman Laboratories, 4 Brownlow Street, Liverpool, L69 3GP

Telephone (Work) 0151 7945160 (Home) 07887 903145 (Fax) 0151 7945146

Email Address { HYPERLINK "mailto:alexander.chappell@liverpool.ac.uk" }

Present Title Mr

Country of Citizenship UK

Place of Birth Sheffield

Date of Birth 04/11/1975

Gender Male

Passport No.103653814

Place Issued UK

Date Issued 19 June 2002

Exp. Date 19 June 2012

Education (Highest degree - PhD., M.S., or B.S.) MSc Geophysics, Durham

Date: Are you currently a student? Yes, PhD Student. Marine Geophysics

(If yes, see note below)

## **II. EXPEDITION INFORMATION**

Expeditions of Interest. I am interested in sailing on the **Tahiti 2005 (#519)** expedition, and any other which are relevant to my field.

Reason(s) for Interest (if necessary, expand in letter) See attached letter.

Personal and/or scientific references (name and address)

Professor Neil Goulty, Department of Earth Sciences, University of Durham Science Labs, Durham, DH1 3LE

Professor Nick Kusznir, Department of Earth and Ocean Science, Jane Herdman Laboratories, 4 Brownlow Street, Liverpool, L69 3GP

Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased

participant, etc.) None

ECORD Application form for membership in IODP expedition scientific parties, Page 1 of 3

## III. ATTAC HMENTS

1. 1. Attach curriculum vitae which includes a publication history

2. 2. Please fill out the attached "Field of Expertise" form

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Note: Applications from graduate students should include a letter from their primary advisor, documenting

the student's scientific experience and detailing how participation on the cruise would fit into their graduate degree program.

Staffing decisions are made in consultation with co-chief scientists and take into account nominations from partner countries; final responsibility for ECORD staffing rests with ESSAC. Please submit all application materials both in **digital format** (preferable PDF format) and **paper copy** to (please contact the ESSAC Office when having problems providing us with the above asked materials in both formats):

ESSAC Science Coordinator Faculty of Earth & Life Sciences - Vrije Universiteit De Boelelaan1085 1081 HV Amsterdam - The Netherlands 
 Phone:
 +31 20 4447272

 Fax:
 +31 20 4449941

 E-mail:
 essac.amsterdam@falw.vu.nl

With a copy to the national ESSAC delegate (see http://www.geo.vu.nl/~essac/ ESSAC button).

Nominations (with copies of their applications) will be forwarded from that office to the Implementation Organizations (IOs). Eligibility as a ECORD participant is limited to scientists or engineers (professors, research scientists, technologists, graduate students, etc.) at a ECORD member institution (e.g. German academic institutions, government labs, ECORD member-based corporations, etc.). Non-ECORD affiliated personnel from other IODP member countries should apply for IODP participation through their country's national program office. Undergraduate students do not qualify as Shipboard Participants, and should not apply to sail using this form. Undergraduates interested in sailing on a IODP expedition should instead contact ECORD for information about the Undergraduate Student Trainee Program.

ECORD Application form for membership in IODP expedition scientific parties, Page 2 of 3

## FIELD OF EXPERTISE

\_\_\_\_Biologist \_\_\_\_Microbiologist \_\_\_\_Inorganic Geochemist \_\_\_\_Organic Geochemist \_\_\_\_ Geophysicist \_\_\_\_Hydrologist \_\_\_Logging Scientist \_\_\_Oceanographer \_\_\_Paleomagnetist \_\_\_\_ Paleontologist (Diatom) \_\_\_\_Paleontologist (Dinoflagellate) \_\_\_\_Paleontologist (Foraminifer - Benthic) \_\_\_\_Paleontologist (Foraminifer - Planktonic) \_\_\_\_Paleontologist (Megafossil) \_\_\_\_Paleontologist (Nannofossil) \_\_\_\_Paleontologist (Phytoplankton) \_\_\_\_Paleontologist (Radiolaria) \_\_\_\_Paleontologist (Silicoflagellate) \_\_\_\_Palynologist \_\_\_\_Petroleum Geologist \_\_\_\_Petrologist \_\_\_\_Igneous Petrologist \_\_\_\_\_Metamorphic Petrologist \_\_\_\_Physical Properties Specialist \_\_\_\_Sedimentologist \_\_\_\_\_Seismologist \_\_\_\_\_Stratigrapic Correlator \_\_\_\_Structural Geologist \_\_\_\_\_Downhole Measurements

University of Liverpool, Department of Earth and Ocean Science, Jane Herdman Laboratories, 4 Brownlow Street, Liverpool. L69 3GP United Kingdom 8 November 2004.

ESSAC Science Coordinator, Faculty of Earth & Life Sciences Vrije Universiteit De Boelelaan 1085 1081 HV Amsterdam The Netherlands

## Dear Sir,

I am interested in the Tahiti expedition in 2005 because it encompasses the geophysics I am interested in. I am currently a PhD student working on joint inversion of seismic and gravity data. Although I am working on much larger scale problems, I think much of what I am looking at is applicable to smaller scales such as reefs. On the Tahiti expedition, both methods are going to be used to constrain the thickness of the reefs. With the down-hole measurements to constrain density and velocities there is the possibility of accurately interpolating the reef sections between boreholes. In the scheme of things this would be immensely valuable. As a important part of my PhD is going to be finding the relationship between density and seismic velocity, the borehole logging part of the cruise will also be valuable experience.

I have experience of working at sea as I participated in a Woods-Hole organised seismic-cruise in the Atlantic in 2003 and also of working in tropical Northern Queensland as I did my undergraduate mapping at James Cook University in Townsville. I think I have learned a lot when I have put theory into practice and by seeing how other scientists approach the same problems is very constructive. My PhD does not have any planned fieldwork, or cruises, so an opportunity to participate on a cruise would be immensely valuable to me in terms of experience.

I look forward to hearing from you about this exciting opportunity. Yours sincerely,

Alex Chappell

# **Alexander Chappell**

University of Liverpool, Department of Earth and Ocean Sciences, Jane Herdman Laboratories, 4 Brownlow Street Liverpool, L69 3GP, UK.

07887 903145 alexander.chappell@liverpool.ac.uk

## Education

# **Current PhD University of Liverpool** (NERC-iSIMM award)

"Rifted continental margin structure from joint geophysical inversion of wide-angle gravity and seismic data." Current research includes 3D gravity inversion and modelling of crustal structure on the European Atlantic margin.

# **2002-2003 MSc Geophysics** University of Durham (NERC award)

Taught course: Theory and application of seismic methods, time-sequence analysis, advanced mathematics for geoscientists, potential field and electrical methods, seismic and well-log interpretation, global geodynamics, basin studies and petroleum geology. Extensive fieldwork and processing of data collected.

Dissertation project: Analysis of faulting and reactivation in the Porcupine Basin. Used Geoquest and Traptester software to interpret a 3D seismic volume to investigate how large basement faults reactivate at low strain and how these faults interact with layer-bound, non-extensional, faults present in the basin-fill. An analysis of seismic resolution from fault statistics.

Poster "*Reactivation of normal faults in extensional basins: insights from 3-D seismic*" at 6<sup>th</sup> Petroleum Geology Conference: Northwest Europe & Global Perspectives, October 2003.

# 02/1997-10/1999 BSc (Honours) (Open) (2.1) The Open University

Taken with the Open University because of the range of Earth Science subjects and useful mathematical subjects it was possible to study by taking courses entirely at higher level (CATS 2 and 3).

# Earth Science (major) courses

Understanding the Continents: Tectonic and Thermal Processes of the Lithosphere (Distinction)

Oceanography How the Earth Works: The Earth's Interior (Distinction) Geology Earth and Life Physical resources and Environment Science Matters

**Mathematics Courses:** 

Elements of Statistics Applications of Probability Linear Statistical Modelling

# Fieldwork

# 02/04 Chicxulub 2 experiment, Mexico (Cambridge/Imperial/UTIG/UNAM)

Joined the land party for recovery of seismometers.

# 10/03-11/03 STAG cruise, Mid Atlantic Ridge (Woods-Hole)

Stood watches, deployed and recovered OBS on a wide-angle seismic experiment, aboard the RV Maurice Ewing, to image crustal structure at the TAG mound hydrothermal system.

# 6/01-7/01 Fieldwork training (Distinction) James Cook University, Australia

Intensive 5 week summer-school course taken to supplement undergraduate fieldwork. Completed a dissertation-length mapping assignment in an area of complex deformation and mineralization (Mt Isa block, Queensland). Excellent experience of practical Structural Geology.

Professional Affiliations-Fellow of the Geological Society since 1999

# Work Experience

# 10/99-6/02 Waterstone's Booksellers Bookseller

Retail bookselling. Experience of dealing with the public and suppliers. Managed my time to be an effective member of a team. Responsible for buying for the shop, training, negotiating returns. Key-holder and supervisor of up to 6 staff. Reviewed new titles for newspapers and magazines and for company websites and publications.

# **Additional Skills**

IT skills: Extensive knowledge of MS Office, Corel Draw and GENSTAT for windows. Experience of UNIX, processing with ProMAX, Using Geoquest and Traptester for interpreting 3D seismic and programming in C++. Clean Driving Licence.

# Interests

**Gliding -** Achieved FAI Silver C certificate and held an Instructor rating. **Sport -**Enthusiastic runner, cyclist and hill-walker. **Music –** Guitar.

# ECORD Application form for membership in IODP expedition scientific parties, Page 1 of 3 ECORD Application form for membership in IODP expedition scientific parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following information)

Institution	University of Wales Bangor
Department	School of Ocean Sciences
Institution	Askew Street, Menai Bridge
Address	Isle of Anglesey, Wales, LL59 5AB, U.K
Telephone (Work) (Home) (Fax)	44-(0)1248-382858 (work)
	44-(0)1248-716367 (work fax)
Email Address	l.clarke@bangor.ac.uk
Present Title	Dr
Country of Citizenship	United Kingdom
Place of Birth	Honiton, Devon, U.K.
Date of Birth	13 April 1972
Gender	Male
Passport No. Place Issued Date Issued Exp. Date Education (Highest degree - PhD., M.S., or B.S.) Date:	034936246; U.K.; 28/02/99; 28/02/09 D.Phil., University of Oxford, 2001
Are you currently a student? (If yes, see note below)	Νο

### **II. EXPEDITION INFORMATION**

Expeditions of Interest (please limit selection to no more than three): Expedition Number: Title **Tahiti Sea Level Expedition** Platform: Riser Non-riser **MSP** Participation: **Full Expedition** Partial\* Shorebased\*

Expedition Number: Title Platform: Riser Non-riser MSP Participation: Full Expedition Partial\* Shorebased\*

Expedition Number: Title: Platform: Riser Non-riser MSP Participation: Full Expedition Partial\* Shorebased\*

(\* provide detail of proposed participation in an accompanying letter)

Reason(s) for Interest (if necessary, expand in letter) Application of coral stable-isotope and element/Ca ratios in order to facilitate high temporal resolution palaeoceanographic reconstructions. Specifically, application of coral Sr/Ca ratios to decouple the temperature and 'salinity/ice-volume' components of the marine oxygen-isotope record.

Personal and/or scientific references (name and address) Dr Hugh Jenkyns, Department of Earth Sciences, University of Oxford, Parks Road, Oxford OX1 3PR, U.K.

Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased participant, etc.)

Shorebased research completed during D.Phil. research programme (including sample requests #14458 and #15192). Sailed as shipboard scientist (Physical Properties specialist) on ODP Legs 171B (Blake Nose) and 198 (Shatsky Rise).

ECORD Application form for membership in IODP expedition scientific parties, Page 2 of 3

### **III. ATTACHMENTS**

Attach curriculum vitae which includes a publication history
 Please fill out the attached "Field of Expertise" form

Note: Applications from graduate students should include a letter from their primary advisor, documenting the student's scientific experience and detailing how participation on the cruise would fit into their graduate degree program.

Staffing decisions are made in consultation with co-chief scientists and take into account nominations from partner countries; final responsibility for ECORD staffing rests with ESSAC. Please submit all application materials to:

ESSAC Science Coordinator Faculty of Earth & Life Sciences - Vrije Universiteit De Boelelaan1085 1081 HV Amsterdam - The Netherlands Phone: +31 20 4447272 Fax: +31 20 4449941 E-mail: essac.amsterdam@falw.vu.nl

Eligibility as a ECORD participant is limited to scientists or engineers (professors, research scientists, technologists, graduate students, etc.) at a ECORD member institution (e.g. German academic institutions, government labs, ECORD member-based corporations, etc.). Non-ECORD affiliated personnel from other IODP member countries should apply for IODP participation through their country's national program office. Undergraduate students do not qualify as Shipboard Participants, and should not apply to sail using this form. Undergraduates interested in sailing on a IODP expedition should instead contact ECORD for information about the Undergraduate Student Trainee Program.

ECORD Application form for membership in IODP expedition scientific parties, Page 3 of 3

## FIELD OF EXPERTISE

- \_\_\_\_ Biologist
- Microbiologist
- ✓ Inorganic Ğeochemist Organic Geochemist
- \_\_\_\_ Organic Geoche \_\_\_\_ Geophysicist
- \_\_\_\_ Geophysicisi \_\_\_\_ Hydrologist
- Logging Scientist
- \_\_\_\_ Oceanographer
- \_\_\_\_ Paleomagnetist
- Paleontologist (Diatom)
- Paleontologist (Dinoflagellate)
- Paleontologist (Foraminifer Benthic)
- Paleontologist (Foraminifer Planktonic)
- Paleontologist (Megafossil)
- Paleontologist (Nannofossil)
- Paleontologist (Phytoplankton)
- Paleontologist (Radiolaria)
- Paleontologist (Silicoflagellate)
- Palynologist
- Petroleum Geologist
- Petrologist
- Igneous Petrologist
- Metamorphic Petrologist
- Physical Properties Specialist
- ✓ Sedimentologist
- Seismologist
- Stratigraphic Correlator
- \_\_\_\_ Structural Geologist
- \_\_\_\_ Downhole Measurements
Ysgol Gwyddorau Eigion

Prifysgol Cymru, Bangor Porthaethwy Ynys Môn LL59 5AB

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## **School of Ocean Sciences**

University of Wales, Bangor Menai Bridge Anglesey LL59 5AB

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Direct tel. line: +44(0) 1248 382858 E-mail: l.clarke@bangor.ac.uk

9<sup>th</sup> November 2004

Dear Sirs,

I am writing in support of my application to participate as an expedition scientist on the IODP expedition: **Tahiti Sea Level**. An application form and CV are attached.

Previously, in addition to shore-based work with ODP samples, I have participated as a physical properties specialist on two Ocean Drilling Program Legs of a palaeoceanographic nature: 171B (Blake Nose palaeoceanographic transect – 1997) and 198 (Depth transect on Shatsky Rise, central Pacific – 2001). More recently, I sailed on a *Marion Dufresne* cruise during summer 2003 to giant-piston core Niger, Ogooué and Congo fan sediments, during which I completed core sedimentological descriptions. Therefore, with my past sea-going experience and palaeoceanographic research interests, I believe strongly that I am well suited to fill the **physical properties specialist**, **sedimentologist**, **inorganic geochemist**, or **stratigraphic correlation** positions on the Tahiti expedition.

My main research interests involve geochemical analysis of palaeoceanographic archives in order to facilitate reconstructions and investigation of Earth's oceans across a variety of geological timescales. I most often utilise stable-isotope and element/Ca ratio geochemical proxies from biogenic carbonates, e.g. foraminifera and molluscs, and it is this aspect of my research portfolio that will be of most use to fulfilling the stated Tahiti Sea Level expedition objectives. I am particularly interested in applying integrated coral element/Ca, i.e. Sr/Ca, and oxygen-isotope ratios to decouple the temperature and 'salinity/ice-volume' components of the marine oxygen-isotope record. Although much of my previous work has focused on the greenhouse-climate regimes of the mid-Cretaceous to early Palaeogene world, I am extremely keen to develop further my interests to span the icehouse-climate regimes of the latest Cenozoic. Indeed, recent involvement on the above-described *Marion Dufresne* cruise has enhanced this objective, and recently I also co-convened the conference *Annually Banded Records in the Quaternary*, held at my home institution, the University of Wales Bangor, U.K.

I look forward to learning the outcome of my application.

Yours faithfully,

Dr Leon J. Clarke (Lecturer in Sediment Geochemistry)

Personal	Details	

Name:	Leon John Clarke	<b>Date of Birth</b> : 13 <sup>th</sup> April 1972	
Address:	32 High Street Menai Bridge Isle of Anglesey Wales, LL59 5EF U.K.	<b>Age</b> : 32	
		Place of Birth: Honiton, Devon, U.K	ζ.
		Nationality: British	

Tel: +44 (0)1248 716939

# **Employment History**

April 2000–present Lecturer in Sediment Geochemistry, School of Ocean Sciences, University of Wales Bangor, Askew Street, Menai Bridge, Isle of Anglesey, Wales, LL59 5AB, U.K.

Tel: +44 (0)1248 382858, Fax: +44 (0)1248 716367 E-mail: l.clarke@bangor.ac.uk

- Sept 1999–April 2000 Non-Stipendiary Visiting Fellow, School of Environmental Sciences, University of East Anglia, Norwich, Norfolk, U.K.
- Sept 1997–August 1999 Research Associate, NERC ICP-MS Facility, Imperial College at Silwood Park, Ascot, Berkshire, U.K.

## Qualifications

- 2001–present Postgraduate Certificate in 'Teaching in Higher Education'.
- 2001 D.Phil. Earth Sciences, Department of Earth Sciences, University of Oxford, U.K.

Thesis entitled: 'Stable-isotopic evidence for long-term mid- to Late Cretaceous oceanographic and climatic change'.

1993BSc (Hons.) Upper Second Class, Environmental Sciences,<br/>School of Environmental Sciences, University of East Anglia, U.K.

# **Professional Affiliations**

I am a Fellow of the Geological Society of London and a member of the American Geophysical Union, Geological Society of America and European Union of Geosciences.

I am a committee member of the Geological Society of London 'Marine Studies Group' and was elected Vice-Chairperson of this group during November 2002.

Since November 2003, I am a member of the steering committee for the U.K. Natural Environment Research Council (NERC) IODP directed programme. I am also now a member of the NERC Peer Review College.

# **Research Profile**

# Synopsis

I am a sea-going palaeoceanographer and low-temperature sediment geochemist, whose research interests primarily have focused on investigation of the past greenhouse-climate intervals of the mid- to Late Cretaceous and early Palaeogene. These times during Earth history are important potential analogues for an improved understanding of the operation of the ocean-climate system under any future anthropogenically-forced greenhouse climate change. More recently, I have extended my research to include investigations of the Late Cenozoic icehouse-climate interval, as well as studies of processes controlling stable-isotope and element/Ca ratios in extant calcifying organisms. My interests in soft-rock geology and 'Earth System Science' topics initially arose during completion of an 'Environmental Sciences' first degree and were established during attainment of a subsequent 'Earth Sciences' D.Phil. qualification, the latter received from the University of Oxford, U.K.

During my research I apply a variety of geochemical proxies, including stable-isotope and element/Ca ratios in marine microfossils, to enable the reconstruction of physical and chemical oceanographic parameters during Earth history. I am keen to apply state-of-the-art and novel analytical instrumentation and techniques, including stable-isotope-ratio mass spectrometry (SIRMS), Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES) and Inductively Coupled Plasma Mass Spectrometry (ICP-MS) and laser-ablation ICP-MS (LA-ICP-MS), as well as multiple collector ICP-MS (MC-ICP-MS), to address extant questions in the field of palaeoceanography. I have also a growing interest in the development, ground-truthing and application of novel biogeochemical proxies that can be utilised in palaeoceanographic studies. In order to support research studies of these types, I recently have set-up a micropalaeontological and geochemical-preparation laboratory within the School of Ocean Sciences.

I have direct experience of the utilisation, management and maintenance of complex analytical instrumentation through my doctoral research programme and past employment at the NERC ICP-MS Facility. In the latter position I was responsible for the maintenance and operation of three ICP-MS instruments and two laser-ablation sample-introduction systems, as well as the training of all laboratory users. My duties also included the day-to-day running of the laboratory.

Recent development of novel geochemical palaeoceanographic proxies, often requiring state-of-the-art analytical instrumentation, promises to help address many of the fundamental outstanding questions that relate to the operation of Earth's ocean–climate system and that now exist in the field of palaeoceanography. I believe strongly that my analytical background and diverse research interests best place myself in a position where such exciting developments can be exploited fully.

Considering the now understood limitations of the conventional and oft-applied oxygenisotope palaeothermometry technique, I am interested in investigating the usefulness of and applying recently-developed palaeoceanographic proxies, e.g. Mg/Ca and calcium-isotope palaeothermometry, for gaining an improved understanding of the prevailing ocean–climate system conditions during past geological intervals. Hitherto, such proxies generally have been utilised to investigate those palaeoceanographic problems that exist for more recent geological intervals. To this end, a NERC New Investigators Grant has been funded to apply the novel Mg/Ca palaeothermometry proxy to an assessment of the hypothesised operation of a glacioeustatic mechanism for two discrete time intervals during the mid- to Late Cretaceous greenhouse world. Access has been granted also to the NERC ICP-MS Facility, to support the application of novel geochemical proxies to Cretaceous palaeoceanographic

studies. The recent receipt of Royal Society grants and access granted to the NERC Isotope Geosciences Laboratory also has supported research in this area of palaeoceanography.

Since leaving the University of Oxford, I have sailed as a shipboard scientist on two cruises of the international Ocean Drilling Program; Leg 171B (Blake Nose Palaeoceanographic Transect) during 1997 and Leg 198 (Shatsky Rise) during the summer of 2001. My current research activities are focused on using the geochemical analysis of fine-fraction/bulk (predominantly nannofossil) carbonate and planktonic and benthonic foraminifera, recovered from deep-sea sediments cored during ODP Leg 198, to reconstruct the palaeohydrographic structure of the Late Cretaceous (Campanian-Maastrichtian) (sub-)equatorial Pacific Ocean. My Leg 198 post-cruise research programme has been supported, in part, by access to the Faculty of Geosciences, University of Bremen, stable-isotope-ratio mass spectrometry facility. This latter support was provided through the 'Paleostudies Initiative' of the EU Access to Research Infrastructure Activity of the Human Potential Programme of the European Community. The Bremen analytical research support enabled the isotopic analysis of monospecific Late Cretaceous (Campanian) benthonic foraminifera recovered from Shatsky Rise. During August 2003 I participated also in an R/V Marion Dufresne cruise to core the Niger, Ogooué and Congo fans to investigate equatorial terrestrial and oceanic changes during the last glacial-Holocene transition, and through related post-cruise research am extending my palaeoceanographic interests to the youngest parts of the geological column.

I am a keen advocate of the Ocean Drilling Program and recently have participated in U.K. and European discussion meetings concerning the successor Integrated Ocean Drilling Program (IODP). I intend to remain active in both ODP and IODP, as indicated by my membership of the NERC UK-IODP steering committee. I have obtained seismic-reflection profiles from Dr Neville Exon (Australian Geological Survey Organisation), so that an IODP proposal to drill a Cretaceous–Palaeogene palaeodepth transect on the Exmouth Plateau (east Indian Ocean) can be investigated. Additional investigations also are underway to formulate a drilling proposal for the Cretaceous equatorial Pacific Ocean.

In addition to investigations of past greenhouse- and icehouse-climate intervals, I have a developing interest in the generation of high temporal resolution palaeoceanographic records by the geochemical analysis of growth bands secreted by marine molluscs, such as the long-lived (>200 years!) ocean quahog *Arctica Islandica*. I am particularly interested in testing the veracity of these potentially important archives of palaeoceanographic change, through the geochemical analysis of living and Recent specimens that can be tied reliably and accurately to instrumental records of physical and chemical oceanographic parameters. An alternative approach is to culture mollusc specimens under controlled conditions, thereby facilitating direct comparison of geochemical data with ambient physical and chemical properties at the time of shell secretion; such a methodology should allow also an estimation of any errors that are associated with the available geochemical proxies. An ultimate aim of this research topic will be to reconstruct the magnitude of high temporal frequency North Atlantic palaeoceanographic variability on timescales of 10s–1000s of years.

In April 2003 I convened, in collaboration with Dr Hugh Jenkyns (University of Oxford, U.K.), a session at the EGS-AGU-EUG Joint Assembly held in Nice, France, entitled 'Marine and Terrestrial Biogeochemical Records of the Cretaceous Ocean–Climate System'. In January 2004 I co-convened a Quaternary Research Association and Geological Society of London Marine Studies Group sponsored conference, 'Annually Banded Records in the Quaternary', held at the University of Wales Bangor, U.K. I am also co-convenor of the session 'Climate variability during past greenhouse episodes', due to be held at the 1<sup>st</sup> General Assembly of the European Geosciences Union, Nice, France, April 2004. Following a successful 2002 meeting, I have volunteered to help organise the next international workshop on 'Cretaceous Climate and Ocean Dynamics', most likely sometime during 2007.

# **Research/Travel Grants and Analytical Facility Applications**

- Pending Nuffield Foundation Undergraduate Research Bursary, "Ocean-climate system perturbations during the critical Eocene-Oligocene transition: multiproxy geochemical records from deep-sea sediments" – £1,650 requested.
- Pending NERC Capital Equipment competition, "*Trace-element and stable-isotope ratio proxies in biogenic carbonates: from process studies to palaeoceanographic reconstructions*" £299,730 requested.
- Dec 2003 NERC Isotope Geosciences Laboratory, "Secular variation in the temperature and composition of Cretaceous oceans" support equivalent to ca £44,000 awarded, Grade  $\alpha$ 4 low.
- April 2003 Royal Society Conference Award, attendance at the April 2003 "EGS-AGU-EUG Joint Assembly, Nice, France" – £630.
- Nov 2002 NERC Isotope Geosciences Laboratory, "*Strontium-isotope stratigraphy* (dating and correlation) of deep-sea cores recovered by the Ocean Drilling Program to facilitate Cretaceous palaeoceanographic studies" support equivalent to ca. £10,000 awarded. Grade: α3 high.
- June 2002 NERC ICP-MS Facility, "Application of novel palaeoceanographic proxies to Cretaceous palaeoceanographic studies" – no assigned monetary value. Grade:  $\alpha$ 5; Priority: high; Committee comment: "Very exciting project with a multitude of uses for the data. At the forefront of palaeo-climate research."
- May 2002 NERC New Investigators Competition, "Did a glacioeustatic mechanism operate during the mid- to Late Cretaceous 'super-greenhouse'?" £27,075 awarded.
- April 2002 NERC UK-ODP Thematic Programme, travel and subsistence funding to support attendance and oral presentation "Globally synchronous long-term climate changes during the mid- to Late Cretaceous?" at the "4<sup>th</sup> European ODP Forum" £1,280.
- April 2002 Royal Society Conference Award, attendance at the July 2002 "Workshop on Cretaceous Climate and Ocean Dynamics" – £1,220.
- Feb 2002 EU Access to Research Infrastructure Activity of the Human Potential Programme of the European Community, 'Paleostudies Initiative', Faculty of Geosciences, University of Bremen, "Testing multiple deep-water sources and transient ocean–climate system events during the Late Cretaceous (Campanian): a palaeohydrographic reconstruction of the (sub-)tropical Pacific Ocean (ODP Leg 198 – Shatsky Rise)" – award of 2.5 weeks stableisotope-ratio analytical support.
- Nov 2001 NERC UK-ODP Thematic Programme, Rapid Response Grant, "Highresolution Late Cretaceous palaeoceanographic study: Shatsky Rise (Leg 198)" – £2,000.
- Nov 2001 NERC UK-ODP Thematic Programme, "ODP Leg 198 cruise participation travel and subsistence support funding" £875.
- Aug 2001 Royal Society Research Grant, "Reassessing Cretaceous greenhouse temperatures" £9,905.

- May 2001 NERC UK-ODP Thematic Programme, travel funding to attend European APLACON workshop £600.
- 1997 NERC UK-ODP Thematic Programme, Rapid Response Grant, "Porewater study of samples from Leg 171B" £1,990 (in collaboration with Dr Julian Andrews and Paul Dennis, UEA).
- 1997 NERC UK-ODP Thematic Programme, "ODP Leg 171B cruise participation travel and subsistence support funding".

# Collaborations

With Dr Hugh Jenkyns (University of Oxford, U.K.) I am in the process of generating a detailed Cretaceous–Cenozoic stable-isotope stratigraphy using deep-sea sediment samples recovered by the ODP from the Exmouth Plateau (east Indian Ocean). This record ultimately will document the last 120 Million years of Earth's ocean–climate system history. We are also collaborating on a separate study of mid-Cretaceous carbon-isotope records and oceanic anoxic, using DSDP samples recovered from the central Pacific Ocean.

At present, I am developing also research collaborations with a number of international scientists. Following my participation on Ocean Drilling Program Leg 198, I am working with Dr Tracy Frank (University of Nebraska, U.S.A.) and Prof Mike Arthur (Penn State University, U.S.A.) on a high temporal resolution palaeoceanographic reconstruction of the Late Cretaceous (Campanian–Maastrichtian) (sub-)equatorial Pacific Ocean, using stable-isotope analyses of bulk (predominantly nannofossil) carbonate. I am working also with Prof Mark Leckie (University of Massachusetts, U.S.A.) on planktonic foraminiferal taxonomy and stable-isotope-ratio palaeodepth-habitat reconstructions for some mid- to Late Cretaceous planktonic foraminifera recovered during ODP Leg 198. In addition, I am involved also in a collaborative research theme with Leg 198 colleagues that will focus on a detailed geochemical and palaeontological study of the Eocene–Oligocene boundary interval cored during ODP Leg 198, which documents Earth's most recent transition from greenhouse to icehouse conditions.

With Dr Elisabetta Erba (Dipartimento di Scienze della Terra, Milano, Italy) and Prof Mark Leckie I am investigating the mid- to Late Cretaceous palaeoceanographic history recorded in DSDP Site 463 sediments. Drs Erba and Leckie will revise the calcareous nannofossil and planktonic foraminiferal biostratigraphy of this classical hole, respectively, prior to publication of the long-term mid- to Late Cretaceous stable-isotope-ratio and geochemical records generated during my doctoral research programme.

In the future, I hope to redevelop collaborative research on mid-Cretaceous black shales with Dr Francisca Martinez-Ruiz (Granada, Spain), specifically as assessment of the applicability of the Ba-productivity proxy to gaining an improved understanding of the genesis of the enigmatic Oceanic Anoxic Events.

# **Peer-reviewed publications**

For future publication:

Clarke, L.J., *Glacial episode during the Late Cretaceous greenhouse*? To be submitted to <u>Nature</u>.

Clarke, L. J. & Reeves, E., *Major deglaciation event during the mid-Cretaceous (Aptian– Albian transition) hothouse?*, To be submitted to <u>Nature</u> or <u>Geology</u>.

Currently in preparation:

Clarke, L.J., Ogle, N., & Darbyshire, F., Oxygen-isotope evidence for Campanian (Late Cretaceous) glacioeustacy, to be submitted to <u>Geology</u>.

Clarke, L.J., Jenkyns, H.C., & Erba, E., *Long-term evolution of mid- to Late Cretaceous (sub-)equatorial temperatures: DSDP Site 463, Mid-Pacific Mountains (Pacific Ocean)*, to be submitted to <u>Palaeoceanography</u>.

Clarke, L.J., & Jenkyns, H.C., *Globally synchronous long-term climate changes during the mid- to Late Cretaceous (Aptian–Maastrichtian): temperature records and possible forcing mechanisms*, to be submitted to <u>Earth and Planetary Science Letters</u>.

Clarke, L.J., & Jenkyns, H.C., *Relative timing of mid-Cretaceous (Aptian–Albian) oceanic anoxic events: a case study from the Pacific Ocean*, to be submitted to <u>Geology</u>.

Clarke, L.J., & Jenkyns, H.C., Long-term evolution of mid- to Late Cretaceous oceanographic and climatic conditions: stable-isotope and geochemical data from the Exmouth Plateau, eastern Indian Ocean (ODP Holes 761B/C, 762C, 763B, 765C and 766A), for submission to Palaeogeography, Palaeoclimatology, Palaeoecology.

Published articles/volumes:

Brassell, S.C., et al., (inc. Clarke, L.J.), 2004, Recognition of alkenones in a lower Aptian porcellanite from the west-central Pacific, <u>Organic Geochemistry</u>, 35, 181-188.

Bralower, T.J., Premoli Silva, I., Malone, M.J., et al. (inc. Clarke, L.J.), 2003, <u>Proceedings of the Ocean Drilling Program, Initial Reports</u>, Vol. 198, College Station, Texas, U.S.A. (Ocean Drilling Program).

Robinson, S., Bown, P. & Clarke, L.J., 2002, Leg 198: records of extreme warmth in the mid-Cretaceous and Paleogene from drilling on Shatsky Rise, west-central Pacific, <u>UK-ODP</u> <u>Newsletter</u>, 28, 8–11.

Bralower, T.J., Premoli Silva, I., Malone, M.J., & Scientific Participants of Leg 198 (inc. Clarke, L.J.), 2002. New evidence for abrupt climate change in the Cretaceous and Paleogene: an Ocean Drilling Program expedition to Shatsky Rise, northwest Pacific. <u>GSA</u> <u>Today</u>, 12, pp. 4–10.

Bralower, T.J., Premoli Silva, I., Malone, M.J., & the Leg 198 Scientific Party, 2002. ODP Leg 198: new evidence for rapid climate change in the Cretaceous and Paleogene from the Shatsky Rise, northwest Pacific Ocean, <u>JOIDES Journal</u>, 28(2), pp. 13–17.

Craig, C.-A., Jarvis, K. E. & Clarke, L. J., 2000, An assessment of calibration strategies for the quantitative and semi-quantitative analysis of calcium carbonate matrices by laserablation inductively coupled plasma-mass spectrometry (LA-ICP-MS), Journal of Analytical Atomic Spectrometry, 15, pp. 1001–1008.

Richaud, R., Lachas, H., Lazaro, M.-J., Clarke, L. J., Jarvis, K. E., Herod, A. A., Gibb, T. C., Kandiyoti, R., 2000, *Trace elements in coal derived liquids: analysis by ICP-MS and Mössbauer spectroscopy*, <u>Fuel</u>, 79, pp. 57–67.

Clarke, L. J., & Jenkyns, H. C., 1999, *New oxygen-isotope evidence for long-term Cretaceous climatic change in the Southern Hemisphere*, <u>Geology</u>, 27(8), pp. 699–702.

Norris, R. D., Kroon, D., Klaus, A., & The Shipboard Scientific Party, 1998, <u>Proceedings of the Ocean Drilling Program, Initial Reports</u>, Vol. 171B, College Station, Texas, U.S.A. (Ocean Drilling Program).

Price, G. D., Sellwood, B. W., Corfield, R. M., Clarke, L., & Cartlidge, J., 1998, *Isotopic evidence for palaeotemperatures and depth stratification of Middle Cretaceous planktonic foraminifera from the Pacific Ocean*, <u>Geological Magazine</u>, 135(2), pp. 183–191.

Bellier, J.-P., et al. (including Clarke, L. J.), 1997, *The Blake Nose Cretaceous–Paleogene (Florida Atlantic margin, ODP Leg 171B): an exemplar record of the Maastrichtian–Danian transition*, <u>Comptes Rendu de la Academie des Sciences de Paris</u>, 325, pp. 499–504.

# **Conference Presentations and Talks**

Freitas, P.S., Clarke, L.J. & Kennedy, H.A., 2004, Intra-annual elemental (Mg/Ca, Sr/Ca and Mn/Ca) and stable isotope ( $\delta^{18}$ O and  $\delta^{13}$ C) records from *Pecten maximus* (Bivalvia) shells. Poster presentation at "Annually banded records in the Quaternary" meeting, University of Wales Bangor, U.K.

Clarke, L.J., 2003, Isotopic studies of Campanian (sub)equatorial Pacific bottom waters. Oral presentation at ODP Leg 198 Post-cruise meeting, Florrisant, Colorado, U.S.A.

Clarke, L.J., 2003, *Relative timing of Aptian to early Albian (mid-Cretaceous) oceanic anoxia: a case study from the Pacific Ocean.* Poster presentation at the "EGS-AGU-EUG Joint Assembly", Nice, France.

Robinson, S., Bown, P. & Clarke, L., 2002, *Records of extreme warmth in the mid-Cretaceous and Paleogene: shipboard results from Ocean Drilling Program Leg 198 (Shatsky Rise, west-central Pacific)*. Poster presentation at the "Organic-carbon burial, climate change and ocean chemistry (Mesozoic–Paleogene)" conference, Geological Society of London.

Clarke, 2002, *Aspects of Cretaceous Palaeoceanography*, Invited talk given at the Faculty of Geosciences, University of Bremen.

Clarke, L.J., 2002, *Globally synchronous long-term climate changes during the mid- to Late Cretaceous?* Poster presentation at the international "Workshop on Cretaceous Climate and Ocean Dynamics", Florissant, Colorado, U.S.A.

Clarke, L. J., 2002, *Globally synchronous climate changes during the mid- to Late Cretaceous greenhouse?* Oral presentation at the 4<sup>th</sup> European ODP Forum, Tromsø, Norway.

Clarke, L. J., & Jenkyns, H. C., 1999, *New stable-isotopic evidence for long-term oceanographic and climatic change*, Poster presentation at the European Union of Geosciences meeting, Strasbourg, France.

Clarke, L. J., Andrews, J. E., & Dennis, P. F., 1998, *Origin, evolution, and alteration of a mid-Cretaceous (Albian) black shale*, Poster presentation at the VI International Conference on Palaeoceanography, Lisbon, Portugal.

Clarke, L. J., & Dennis, P. F., 1998, *Hydrogen isotope analysis of Leg 171B interstitial waters*, Poster presentation at Leg 171B post-cruise meeting, Granada, Spain.

Clarke, L. J., Andrews, J. E., & Dennis, P. F., 1998, *Geochemical studies of an early Albian organic-rich black shale (Oceanic Anoxic Event 1b); Ocean Drilling Program Leg 171B, Hole 1049A*, Poster presentation at Leg 171B post-cruise meeting, Granada, Spain.

Jarvis, K. E., Mason, P. R. D., Clarke L. J., & Downes, H., 1998, *Critical evaluation of laser microprobe ICP-MS for evaluating heterogeneity in silicate minerals and carbonate matrices – calibration issues and data quality*, Oral presentation at Microbeam Techniques in the Geosciences meeting, London.

Nakai, M., Ussler, W., & Clarke, L. J., 1997, *Magnetic parameters of Cretaceous– Palaeogene sediments from Blake Nose, western Atlantic*, Presentation at American Geophysical Union meeting.

Clarke, L. J., Jenkyns, H. C., & Brasier, M. D., 1995, *Stable carbon- and oxygen-isotope analysis of Cretaceous sediments recovered by the DSDP and ODP*, Poster presentation at the V International Conference on Palaeoceanography, Halifax, Canada.

Clarke, L. J., Corfield, R. M., Spicer, R. A., Cartlidge, J. E., & Wonders, A. A. H., 1994, *Stable carbon- and oxygen-isotope evidence for a Late Cretaceous cooling episode induced by increased surface-ocean productivity?*, Poster presentation at the Geological Society of America annual meeting, Seattle, U. S. A.

Clarke, L. J., Corfield, R. M., Spicer, R. A., Cartlidge, J. E., & Wonders, A. A. H., 1994, Stable carbon isotope, oxygen isotope and atmospheric carbon dioxide ( $_pCO_2$ ) change during Late Albian to Maastrichtian (Cretaceous) time: preliminary results obtained from ODP Leg 122, Hole 762C, Poster presentation at the ODP and the Marine Biosphere International Conference, Aberystwyth, U. K.,

# Journal editorial work

Peer-review for Geological Magazine and Journal of the Geological Society of London.

# Referees

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# ECORD Application form for membership in IODP expedition scientific parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following information)				
Name (first, middle, last)Claude Colombié				
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Email Address claude.colombie@univ-lyon1.fr				
Present Title Dr Country of Citizenship France				
Place of Birth Montélimar (France) Date of Birth Gender 20.2.74				
Passport No. 00AE98947 Place Issued Bern Date Issued 5.02 Exp. Date 5.12				
Education (Highest degree - PhD., M.S., or B.S.) PhD Date: 6.02				
Are you currently a student? <u>No</u> (If yes, see note below)				
II. EXPEDITION INFORMATION				
Expeditions of Interest (please limit selection to no more than three):				
Expedition Number: 519 Title Tahiti Sea Level				
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*				
Expedition Number: Title				
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*				
Expedition Number: Title:				
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*				
(* provide detail of proposed participation in an accompanying letter)				
Reason(s) for Interest (if necessary, expand in letter) This leg is an excellent opportunity to integrate				
different approaches in viewto quantify carbonate production and accumulation on continental shelves.				
Personal and/or scientific references (name and address) Prof. André Strasser				
University of Fribourg, Geology and Palaeontology, Pérolles, 1700 Fribourg, Switzerland				
Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased				
participant, etc.) None				

#### **III. ATTACHMENTS**

1. Attach curriculum vitae which includes a publication history

2. Please fill out the attached "Field of Expertise" form

Note: Applications from graduate students should include a letter from their primary advisor, documenting the student's scientific experience and detailing how participation on the cruise would fit into their graduate degree program.

Staffing decisions are made in consultation with co-chief scientists and take into account nominations from partner countries; final responsibility for ECORD staffing rests with ESSAC. Please submit all application materials both in **digital format** (preferable PDF format) and **paper copy** to (please contact the ESSAC Office when having problems providing us with the above asked materials in both formats): ESSAC Science Coordinator Faculty of Earth & Life Sciences - Vrije Universiteit De Boelelaan1085 1081 HV Amsterdam - The Netherlands Phone: +31 20 4447272 Fax: +31 20 4449941 E-mail: essac.amsterdam@falw.vu.nl

With a copy to the national ESSAC delegate (see http://www.geo.vu.nl/~essac/ ESSAC button).

Nominations (with copies of their applications) will be forwarded from that office to the Implementation Organizations (IOs). Eligibility as a ECORD participant is limited to scientists or engineers (professors, research scientists, technologists, graduate students, etc.) at a ECORD member institution (e.g. German academic institutions, government labs, ECORD member-based corporations, etc.). Non-ECORD affiliated personnel from other IODP member countries should apply for IODP participation through their country's national program office. Undergraduate students do not qualify as Shipboard Participants, and should not apply to sail using this form. Undergraduates interested in sailing on a IODP expedition should instead contact ECORD for information about the Undergraduate Student Trainee Program.

### FIELD OF EXPERTISE

- \_\_\_\_ Biologist
- \_\_\_\_ Microbiologist
- \_\_\_\_ Inorganic Geochemist
- \_\_\_\_ Organic Geochemist
- \_\_\_\_ Geophysicist
- \_\_\_\_ Hydrologist
- Logging Scientist
- \_\_\_\_ Oceanographer
- \_\_\_\_ Paleomagnetist
- \_\_\_\_ Paleontologist (Diatom)
- \_\_\_\_ Paleontologist (Dinoflagellate)
- \_\_\_\_ Paleontologist (Foraminifer Benthic)
- \_\_\_\_ Paleontologist (Foraminifer Planktonic)
- \_\_\_\_ Paleontologist (Megafossil)
- \_\_\_\_ Paleontologist (Nannofossil)
- \_\_\_\_ Paleontologist (Phytoplankton)
- \_\_\_\_ Paleontologist (Radiolaria)
- \_\_\_\_ Paleontologist (Silicoflagellate)
- \_\_\_\_ Palynologist
- \_\_\_\_ Petroleum Geologist
- \_\_\_\_ Petrologist
- \_\_\_\_ Igneous Petrologist
- \_\_\_\_ Metamorphic Petrologist
- \_\_\_\_ Physical Properties Specialist
- X Sedimentologist
- \_\_\_\_ Seismologist
- X Stratigrapic Correlator
- \_\_\_\_ Structural Geologist
- \_\_\_\_ Downhole Measurements

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> ESSAC Science Coordinator Faculty of Earth & Life Sciences -Vrije Universiteit De Boelelaan1085 1081 HV Amsterdam - The Netherlands

# Subject: application to Leg 519

Please find enclosed my application to Leg 519 "The last deglacial sea level rise in the South Pacific: offshore drilling in Tahiti (French Polynesia) and on the Australian Great Barrier Reef", which includes an application form, a curriculum vitae and the research proposal entitled "Neritic carbonate production and  $\delta^{13}$ C of sea water and carbonate deposits" that I would like to develop.

The objective of proposal 519 is to define the fluctuations of sea level and physico-chemical parameters during the last 20 ka in Tahiti and on the Great Barrier Reef. My specific knowledge in carbonate sedimentology and high-resolution sequence stratigraphy would help in resolving a part of the questions relative to this proposal.

Moreover, I'm highly interested in participating to this leg because it represents an exceptional opportunity to integrate different approaches and to combine an important number of data in order to quantify carbonate production and accumulation on continental shelves. These sedimentation rates remain difficult to assess even if they are important to achieve a better understanding of the global carbonate system. One of my plans is to develop this kind of study on a Late Jurassic platform-to-basin transect in North Africa (Morocco or Algeria). However, the lack of age constraints for correlation and estimation of production and accumulation rates makes the task difficult. On Leg 519, radiocarbon dating on foraminifera tests will provide guidelines for correlation and absolute ages for the calculation of sedimentation rates. Moreover, geometry and biology of reefs, which is one of the objectives of this leg, are essential for the estimation of the effective reefal carbonate production.

Lastly, working in a multidisciplinary team is a major opportunity for a young researcher at the beginning of her carrier to develop new collaborations for future research.

Thanks in advance for considering my application.

Kind regards,

Claude Colombié

# Dr. Claude Colombié

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## **PERSONAL DETAILS**

Born on February 20th 1974 in Montélimar (France) French Single

## **EDUCATION AND QUALIFICATION**

- 2003 Maître de conférences, UMR 5125, UFR Sciences de la Terre, Université Claude Bernard, Lyon (France)
- 2002-2003 Postdoctoral research training, Department of Earth Sciences, University of Oxford (Great Britain)
- 2002 PhD, Department of Geosciences, Geology and Palaeontology, University of Fribourg (Switzerland)

## SCIENTIFIC EXPERTISE

- Shallow- and deep-water carbonate sedimentology
- Sequence- and cyclostratigraphy
- Geochemistry of carbonate deposits (trace elements, carbon and oxygen isotopes)

## **RESEARCH INTERESTS**

- Dynamics of shallow-water carbonate systems
- Sediment transport between shallow- and deep-water environments
- Carbon- and oxygen-isotopic composition of shallow-water carbonates

## PUBLICATIONS

- Colombié, C., Strasser A. Facies evolution, sequence stratigraphy, and cyclostratigraphy of the Kimmeridgian in the Swiss Jura: evidences for a keep up transgressice systems tract on a shallow carbonate platform. *Sedimentology*, accepté en août 2003.
- Colombié, C. & Strasser A. (2003) Depositional sequences in the Kimmeridgian of the Vocontian Basin (France) controlled by carbonate export from shallow-water platform. *Geobios* 36, 675-683.

Merzeraud, G., Colombié, C. (1999) Evolution morphologique des profils de dépôts dans le Sinémurien de la marge cévenole (région de Lodève). *C. R. Acad. Sci. Paris, Sciences de la Terre et des Planètes / Earth & Planetary Sciences* 329, 779-78.

## ABSTRACTS

- Colombié, C. (2004) Tethyan-to-boreal sequence-stratigraphic correlation in the Kimmeridgian (Vocontian Basin, Swiss Jura, northern France and southern England). Abstr. 12th Meeting of Swiss Sedimentologists, Fribourg, Switzerland, 14-15.
- Colombié, C., Hug, W.A., Mora, R., Rameil, N. & Strasser, A. (2004) High-resolution correlations in peritidal environments of the Jura Mountains' Upper Kimmeridgian using a multidisciplinary approach. Abstr. 12th Meeting of Swiss Sedimentologists, Fribourg, Switzerland, 16-17.
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- Colombié, C. (2003) Carbonate production and  $\delta^{13}$ C fluctuations in shallow-water platform deposits (Kimmeridgian, Swiss Jura). Abstr. 12th Bathurst Meeting International Conference of Carbonate Sedimentologists, Durham, United Kingdom, 23.
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- Colombié, C., Strasser, A., Emmanuel, L. (2001) Contribution of trace-element geochemistry to high-resolution sequence stratigraphy of the Kimmeridgian in the Jura Mountains. 8<sup>ème</sup> Congrès Français de Sédimentologie Livre des résumés, Publ. ASF, Paris, 36, 77.
- Colombié, C., Strasser, A. (2001) High-resolution platform-to-basin correlation in the Kimmeridgian (Swiss Jura to Vocontian Trough). Abstr. 21st Regional European Meeting of Sedimentology, Davos, Switzerland, 69.
- Colombié, C., Strasser, A. (2000) A keep-up transgressive systems tract in the Lower Kimmeridgian of the Swiss Jura. Abstr. 8th Meeting of Swiss sedimentologists, Fribourg, Switzerland, 13.
- Colombié, C. (1999) The Kimmeridgian of the Swiss Jura: facies and timing. Abstr. 19th Regional European Meeting of Sedimentology, Copenhagen, Denmark, 62.
- Merzeraud, G., Colombié, C. (1997) Sedimentary analysis and changes in depositional profile from the Sinemurian deposits of the Cévenole Margin (SE Basin France). 6<sup>ème</sup> Congrès Français de Sédimentologie Livre des résumés, Publ. ASF, Paris, 27, 193.

# NERITIC CARBONATE PRODUCTION AND $\delta^{13}\mathrm{C}$ OF SEA WATER AND CARBONATE DEPOSITS

Neritic carbonate production is important to evaluate the ocean's role in the global carbon cycle but remains difficult to assess (Milliman & Droxler, 1996; Vecsei, 2001). Until now, studies on neritic carbonate production consider sedimentological or mineralogical and geochemical angles but rarely both at the same time. The leg 519 is the opportunity to combine these two approaches.

The first objective of this proposal is to determine the environmental controls on sedimentation rates and composition of neritic carbonates during the last 20 ka. Then, measurements of carbon isotopic composition of back-reef sediments will allow a better understanding of the connection between neritic carbonate production (changes in sedimentation rates and composition) and carbon isotopic composition of sea water (via selected foraminifera species) and carbonate sediments.

Carbonate platforms change in size and shape during their normal growth period, mainly by progradation, aggradation and retrogradation of the platform margin. These changes reflect the balance between sea level, controlling the accommodation space, and environmental factors, controlling the production, accumulation and export of carbonate sediments (Schlager, 1991; Schlager, 1993; Zinke et al., 2001). However, there are several examples in the geological record where sediment supply can be shown to override sea-level effects (Colombié, 2002; Colombié & Strasser, 2003). The underlying questions of that would be: what are environmental controls on the platform growth? What is their impact on the sedimentation rates of neritic carbonates?

Moreover, the composition of neritic carbonates changes through space and time according to controls on biotic and/or abiotic carbonate production. That raises the following questions: what is the composition of the carbonate sediments which accumulate on the platform? How does this composition change through space and time? What are controls on the sediment composition?

Lastly, seawater  $\sum CO_2$  from modern carbonate platforms is depleted in <sup>13</sup>C by as much as 4‰ relative to open-ocean water. Depletion in <sup>13</sup>C is related to changes in water chemistry driven by evaporation, freshwater discharge, and CaCO<sub>3</sub> withdrawal (Patterson & Walter, 1994). Moreover, overall favourable conditions for carbonate buildup development during the Late Jurassic may explain why the high organic carbon burial rates could have been balanced by accelerated carbonate pumping as recorded in the low-amplitude C-isotope curve of the Kimmeridgian and Early Tithonian (Weissert & Mohr, 1996; Colombié 2002). Increase in carbonate withdrawal could have impacts on the carbon isotopic composition of seawater as well as on that of carbonate sediments. However, the major controls on the carbon isotopic composition of sea water and neritic carbonates are still poorly known. Consequently, we could work on the following problems: is there a connection between neritic production and  $\delta^{13}C$  of sea water and carbonate sediments? What are controls on this connection? What is notably the role of neritic sediment composition?

The proposal can be subdivided into three parts:

### DISTRIBUTION OF SEDIMENT VOLUMES AND QUANTIFICATION OF NERITIC PRODUCTION

Correlation will be realized on the basis of high-resolution seismic reflection profiles and analyses of microfacies. Guide lines will be provided by radiocarbon dating on foraminifera tests. The five cores which form each transect will be correlated in order to filter out local effects such as platform topography and water dynamics. Correlation from one transect to the other will lead to a better understanding of the platform evolution during the last 20 ka and to the definition of the environmental controls on its development. For each stage of the platform growth, the transect correlation also will result in the calculation of the sediment volumes which are redistributed over the platform or exported to the deep sea. The addition of these volumes will allow the quantification of neritic carbonate production for each stage of the platform development. This production rates will be discussed according to the environmental controls on the platform evolution during the last 20 ka.

## **EVOLUTION TROUGH SPACE AND TIME OF CARBONATE COMPOSITION**

The carbonate content will be obtained by acidification. Then, the abundance of different carbonate phases in sediments will be assessed with Sr concentrations, because corals and algae precipitate Sr-rich aragonite whereas mollucs and foraminifera precipitate Sr-poor calcite (Heap et al., 2001). The Sr-rich aragonite is termed "reefal" and the Sr-poor calcite is termed "non-reefal". The multiplication of the abundance of each carbonate phase by the volume of sediments which accumulate on the platform will give the amount of reefal and non-reefal carbonates.

Microfacies analyses of deep-water carbonates will be used to quantify the sediment input from shallow-water platform (Reijmer, 1991; Everts et al., 1999; Reuning et al., 2002). Assuming that the ratio of reefal carbonates to non-reefal carbonates of the sediments which are transported into deep-water environments corresponds to that of the sediments which accumulate on the platform, the amount of the reefal- and non-reefal sediments which are exported will be assessed.

The addition of the amounts of the reefal carbonates which accumulate on the platform and of those which are transported to deep-water environments will give reefal carbonate production.

However, physicochemical or biochemical precipitation of carbonates also leads to aragonite and high-Mg calcite. Reefal carbonates, therefore, include an abiotic (or inorganic) component.

The geometry and biology of the reef will allow the estimation of effective reefal production. The difference between the reefal production calculated before and effective reefal production will give the amount of the inorganic carbonates which accumulate on the platform.

Changes in neritic carbonate composition will be discussed according to controls on the platform growth during the last 20 ka.

## NERITIC PRODUCTION AND $\delta^{13}$ C of sea water and carbonate deposits

Analyses of carbon isotopic composition on benthic foraminifera tests will provide  $\delta^{13}C$  of sea water. Foraminifera species which are ubiquitous on a local scale, have been present since 20 ka, and whose the carbon isotopic composition is known for being poorly influenced by kinetic fractionation and metabolic effects will be selected (Auclair et al., 2003). Besides, analyses of  $\delta^{13}C$  will be performed on carbonate deposits. Then, the evolution of  $\delta^{13}C$  of sea water through each stage of the platform growth will be compared to  $\delta^{13}C$  of carbonates. Given controls on changes of carbonate production and composition, potential controls on variations of  $\delta^{13}C$  of sea water and carbonate sediments will be discussed.

#### REFERENCES

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- Zinke, J., Reijmer, J.J.G., Thomassin, B.A. (2001) Seismic architecture and sediment distribution within the Holocene barrier reef-lagoon complex of Mayotte (Comoro archipelago, SW Indian Ocean). Palaeogeography, Palaeoclimatology, Palaeoecology 175, 343-368.

# ECORD Application form for membership in IODP expedition scientific parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following information)
Name (first, middle, last) Giovanna, Paola, Della Porta
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Department Institut fuer Geowissenschaften
Institution
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Email Address della.porta@ geo.uni-potsdam.de
Present Title Postdoc Country of Citizenship Italy
Place of Birth Avellino Date of Birth Gender 19/01/72 Female
Passport No. Y058240 Place Issued Pisa Date Issued Exp. Date31/03/09
Education (Highest degree - PhD., M.S., or B.S.) PhDDate: 20/11/03
Are you currently a student? No (If yes, see note below)
II. EXPEDITION INFORMATION
Expeditions of Interest (please limit selection to no more than three):
Expedition Number:         # 519         Title         Tahiti (French Polynesia) and on the Australian Great Barrier Reef
Platform: R iser Non-riser MSP Participation Full Expedition Partial* S horebased*
Expedition Number:Title
Platform: R iser Non-riser MSP Participation: Full Expedition Partial* S horebased*
Expedition Number:Title:
Platform: R iser Non-riser MSP Participation: Full Expedition Partial* S horebased*
(* provide detail of proposed participation in an accompanying letter)
Reason(s) for Interest (if necessary, expand in letter) Please see attached letter

Personal and/or scientific references (name and address) Prof. Dr. Maria Mutti, mmutti@geo.uni-potsdam.de; Universitaet Potsdam, Institut fuer Geowissenschaften, Postfach 6 01553, 14415 Potsdam, Germany. Dr. Jeroen Kenter, jeroen.kenter@ falw.vu.nl; Vrije Universiteit, Earth Sciences, De Boelelaan 1085,

1081 HV Amsterdam, The Netherlands Previous DS DP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased

participant, etc.) \_\_\_\_\_none

in

#### **III. ATTACHMENTS**

1. Attach curriculum vitae which includes a publication history

2. Please fill out the attached "Field of Expertise" form

\*\*\*\*\*

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With a copy to the national ESSAC delegate (see http://www.geo.vu.nl/~essac/ ESSAC button).

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#### **FIELD OF EXPERTISE**

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- \_\_\_\_ Microbiologist
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- \_\_\_\_ Petrologist
- \_\_\_\_ Igneous Petrologist
- \_\_\_\_ Metamorphic Petrologist
- \_\_\_\_ Physical Properties Specialist
- 🔀 Sedimentologist
- \_\_\_\_ Seismologist
- \_\_\_\_ Stratigrapic Correlator
- \_\_\_\_ Structural Geologist
- \_\_\_\_ Downhole Measurements

From: Dr. Giovanna Della Porta Postal address: Universität Potsdam Institut für Geowissenschaften, Postfach 60 15 53, 14415 Potsdam Germany Office location: Karl-Liebknecht-Strasse 24-25, 14476 Golm, Germany Tel: 0049-331-977 2909 Fax: 0049-331-977 5060 E-mail: della.porta@geo.uni-potsdam.de

To: Dr. Hermann-Rudolf Kudrass IODP-Koordinationbüro ESSAC Alternate Delegate Bundesanstalt für Geowissenschaften und Rohstoffe Stilleweg 2 D-30655 Hannover Germany e-mail: iodp@bgr.de

To Dr. Hans Brumsack ESSAC Delegate Carl von Ossietzky Universität Oldenburg Institut für Chemie und Biologie des Meeres (ICBM) Carl-von-Ossietzky-Str. 9-11 26111 Oldenburg, Germany

To: Dr. Jeroen Kenter and Drs. Valentina Zampetti ESSAC Science Coordinator Faculty of Earth and Life Sciences Vrije Universiteit De Boelelaan 1085 1081 HV Amsterdam The Netherlands

Potsdam, 04/08/2004

Dear Dr. Kudrass, Dr. Hans Brumsack, Dr. Kenter and Drs. Zampetti,

I would like to confirm my strong interest in participating in the MSP project # 519 entitled "The last deglacial sea-level rise in the South Pacific: offshore drilling in Tahiti (French Polynesia) and on the Australian Great Barrier Reef" by G.F. Camoin, P.J. Davies, E. Bard and B. Hamelin.

For the time interval 1999-2003 I have worked on my PhD project at the Vrije Universiteit (Amsterdam). The research theme focused on facies characteristics and architecture of Carboniferous high-relief carbonate platforms. Particular attention was directed to the factors that control the depositional geometry and accumulation rates of Upper Paleozoic carbonate depositional systems with steep slopes dominated by microbialites. During these years, I have developed specialized expertise in the sedimentology, stratigraphy, geometry, petrography, microfacies analysis and paleoecology of carbonate deposits not only of the late Paleozoic but also of Cenozoic and Recent settings. In particular, I have participated in a workshop and field trip on the late Pleistocene and the present-day carbonate accumulations of South Florida (Miami, Florida Keys and Bay) and Bahamas (Andros Island).

Since March 2004, I have a position for research and teaching assistance at the Potsdam Universität in the Sedimentology group of Prof. Dr. Maria Mutti. I have been working on the development of a long-term (3-5 years) study about Pleistocene to present-day shallow-water carbonate facies in the Caribbean area. In particular, the aim of the research is

to investigate ooidal shoal and adjacent facies accumulations that were deposited between South Florida and Bahamas during the late Pleistocene and Holocene time. The investigation of accumulation patterns and rates will provide significant results to improve the understanding of shallow-water carbonate systems under the influence of high-frequency, high-amplitude sea-level fluctuations (such as those of the late Pleistocene glacial-interglacial intervals) associated with climatic and atmospheric carbon dioxide variations and consequent changes in the saturation state of marine waters with respect to carbonate minerals. The study will include facies mapping, petrography, microfacies, SEM and geochemical analysis, radiometric dating with AMS <sup>14</sup>C and U/Th methodologies.

For this reason, participating in the MSP # 519 would be a unique opportunity to contrast and compare Pleistocene-Holocene data about carbonate facies, accumulation rates, geochemical signature and sea level in both the Atlantic (Caribbean) and Pacific settings and for both ooidal shoal facies and coral reefs, respectively. The integration of data about the Caribbean area and Tahiti and the Great Barrier Reef would permit: a) to work on both the Northern and Southern Hemisphere and compare the rates and patterns of the Holocene sealevel rise being ooidal shoals indicators of deposition within a restricted range of water depth (0-10 m); b) to compare the accumulation rates of different types of shallow-water facies (ooidal shoals and coral reefs); c) to compare how ooidal shoals and coral reefs were affected by changes of global sea level, seawater surface temperature (SST) and atmospheric  $CO_2$ ; d) to compare the shallow-water carbonate deposition between the Pacific and Atlantic areas during the late Pleistocene and Holocene.

I would be able to provide the scientific party with my direct and extended experience in carbonate sedimentology, petrographic and microfacies analyses. The knowledge in progress about geochemistry and radiometric dating, SEM investigations and facies analyses of carbonates deposited during the late Pleistocene-Holocene time interval can represent an important contribution to the project #519.

I would be very interested and motivated to participate in this international high-quality program by following the whole expedition from the drilling to the study and interpretation of the data in the laboratory and to collaborate with other scientists within an international team. Following the drilling I would be keen to work specifically on core analyses and description from hand specimens to thin sections, on geochemical and radiometric measurements.

I have sent electronic and paper copies of my completed application form, curriculum vitae and publication list. Thank you for considering my interest.

Yours sincerely,

Giovanna Della Porta

### CURRICULUM VITAE

Surname: Della Porta Forename: Giovanna Paola Place of Birth: Avellino (Italy). DOB: 19/01/1972 Address: Postal address: Universität Potsdam, Institut für Geowissenschaften, Postfach 601553, 14415 Potsdam, Germany. Office location: Universität Potsdam, Institut für Geowissenschaften, Karl-Liebknecht-Strasse 24-25, 14476 Golm (Potsdam), Germany. Tel: 0049-331-977 2909. Fax: 0049-331-977 5060 E-mail: <u>della.porta@geo.uni-potsdam.de</u>

#### Education

- **2003** (20/11/2003) PhD Degree (Earth Science, Vrije Universiteit, Amsterdam, The Netherlands). Thesis: "Depositional anatomy of a Carboniferous high-rising carbonate platform (Cantabrian Mountains, NW Spain). Promoter: Prof. W. Schlager. Co-promoter: Dr. J.A.M. Kenter.
- **1998** (23/10/98) Honours degree (Laurea: B.S. and M.S. equivalent) in Geological Sciences at Università degli Studi di Pisa (Italy). Final mark: 110/110 *cum laude*. Degree thesis. "Stratigraphic evolution of the north-western Maiella (Abruzzo) from the upper Maastrichtian to lower Messinian." Supervisors: Prof. Etta Patacca and Paolo Scandone.
- **1991** Final high school diploma (maturità scientifica) *Liceo Scientifico* "U.Dini" Pisa. Final mark: 58/60.

Professional experience

- 2004 to present Position as 'Wissenchaftliche mitarbeiter' (post-doc research and teaching assistant) by the Universität Potsdam, Institut für Geowissenschaften, Potsdam, Germany.
- Aug.-Dec. 2003 Teaching Position as "Docent" by Vrije Universiteit, Amsterdam for the course "Sedimentary Systems in time and space" (2<sup>nd</sup> year).

Teaching experience

- 31/10-9/11/2000 Teaching assistance microfacies and petrographic analysis of carbonate rocks. Course Sedimentologie II (3<sup>rd</sup> year course), Vrije Universiteit, Amsterdam.
- April 2001 Teaching assistance microfacies and petrographic analysis of carbonate rocks. Course Sedimentologie III (4<sup>th</sup> year course), Vrije Universiteit, Amsterdam.
- Sept.-Oct. 2001/02 Teaching assistance sedimentary rocks (siliciclastic and carbonate) determination. Course Rock Determination (1<sup>st</sup> year course), Vrije Universiteit, Amsterdam.
- Sept.-Dec. 2003. Docent Course Sedimentary Systems in time and space (2<sup>nd</sup> year) and teaching assistance in 1<sup>st</sup> year Course (Rock determination) and fieldwork and mapping in the Ardennes, Belgium (26/09/03-3/10/03).
- April-July 2004. Teaching assistance course "Sedimentologie II Stratigraphy and rock correlation" held by Prof. Maria Mutti at Universität Potsdam.

### Attended Course and Seminars

- 26-29/04/1999 Course "Diagenesis and Geochemistry of Marine Carbonates. Including a short introduction to the diagenesis of siliciclastic and siliceous rocks" by Dr. Adrian Immenhauser, Vrije Universiteit, Amsterdam.
- June 2000 Course "Sequence stratigraphy, application and theory" by Prof. P. Vail, Dr. F. Grandstein, Prof. De Boer, Dr. G. Postma; organized by NSG (Netherlands Research School of Sedimentary Geology), Vrije Universiteit, Amsterdam.
- 25-28/01/2000 Course "Laboratory experiments of subduction with application to the Mediterranean region" by Dr. C. Facenna, Universita' Roma Tre, Roma

(Italy); organized by NSG (Netherlands Research School of Sedimentary Geology), Vrije Universiteit, Amsterdam.

- 26-27/06/2000 Workshop "Paleontology, systematic and biostratigraphy of Fusulinacea of the Late Carboniferous-Early Permian in the Cantabrian Mountains" by Prof. E. Villa, Universidad de Oviedo, Oviedo, Spain.
- 20-21/03/2001 Course "Recent advancements in paleoceanography" by Dr. J. Wilson, Dr. T. van Weering, Dr. J. Adkins and Dr. Maureen Conte. Dr. John Wilson (Royal Holloway University of London): "Deep-water corals - present knowledge and future prospects". Dr. Tjeerd van Weering (NIOZ): "Coldwater coral covered carbonate mounds in the Rockal Trough". Dr. Jesse Adkins (CALTECH) "Rapid climate changes in the deep ocean, "vital effects" and the record from deep-sea corals"; organized by NSG (Netherlands Research School of Sedimentary Geology), Vrije Universiteit, Amsterdam.
- Oct. 2001 Course "Writing Scientific Publication and Presentation" organized by NSG (Netherlands Research School of Sedimentary Geology), Vrije Universiteit, Amsterdam.

#### Main Geological Excursion

- 3-12/09/1999 Field trip to the Northern Calcareous Alps and Southern Alps guided by Prof. W. Schlager and Dr. G. Bertotti, Vrije Universiteit, Amsterdam.
- 25/10–12/11/1999 Analysis of Serpukhovian-Bashkirian (Lower-Upper Carboniferous) in Tengiz Field, Kazakhstan. Continuous well cores of platform interior (T220 and T5050), of outer platform (T8) and slope facies (T463).
- 12-16/02/2000 Excursion to Mississippian carbonate ramp outcrops in Southern Wales (Gully Oolite) guided by Prof. P. Wright, Cardiff University, UK.
- 17-19/05/2000 Post-conference field trip of Carboniferous-Permian Carbonate Platform and Reefs Conference sponsored by SEPM-IAS, El Paso, Texas, May 2000. "Hueco and Guadalupe Mountains (Permian Capitan Reef): Permian Platforms and Reefs in the Guadalupe and Hueco Mountains, W Texas and SE New Mexico, U.S.A.". Leaders: M. Harris, T. Simo, G. Whalman. Field trip to the Sacramento Mountains: Dry Canyon (Yucca mound and mixed siliciclastic and carbonate platform cycles) and Muleshoe mounds.
- 2-7/09/2000 Field trip to Belgian Frasnian carbonate mounds within "International Workshop Palaeoceanography of carbonate mud mounds" IGCP 380 Biosedimentology of microbial buildups organized by Dr. Fritz Neuweiler and Frederic Boulvain, Universite' de Liege, Belgium.
- 12/09/2000 Pre-conference field trip IAS 20<sup>th</sup> Regional Meeting 2000, Dublin, Ireland. "Waulsortian facies: a core workshop and field localities in the Dublin area". Leaders: Alan Lees, John Miller, and Michael Philcox. Aspects of Lower Carboniferous mud-mound complexes were examined in drill core and thin sections held by the Geological Survey of Ireland. Field exposures in Feltrim Quarry, north of Dublin Ireland.
- 7-17/10/2001 Workshop on "Quaternary carbonates of South Florida and the Bahamas (Andros Island)" sponsored by International Association of Sedimentologists in collaboration with "The Ocean research and Education foundation" and the University of Miami's Rosenstiel School of Marine and Atmospheric Sciences (RSMAS)". Leader: Prof. Robert Ginsburg.
- 4-11/06/2003 Carbonate platform outcrops of Miocene ramp and prograding platforms in Mallorca (Spain) within research project by Dr. Jeroen Kenter.

#### Guided Excursions

- May 2001 Field trip to Carboniferous and Devonian carbonate platform outcrops in Asturias: "Contrast-comparison of anatomy and lithofacies between Tengiz/Korolev (Pricaspian Basin, Kazakhstan) and outcrop analogs in Asturias (Spain)" Leaders: Jeroen A.M. Kenter, Giovanna Della Porta, Juan R. Bahamonde; prepared for TCO/TengizChevroil, Kazakhstan.
- 16-20/09/03 Field trip to Carboniferous carbonate platform outcrop in Asturias: "Precaspian basin carbonate analogs in the Pennsylvanian of Northern Spain (Cantabrian Mountains)". Leaders: Jeroen A.M. Kenter, Giovanna

Della Porta, Juan R. Bahamonde Pre-conference field trip #1 within the AAPG International Conference, Barcelona, Spain 21-24/09/03.

Professional Membership

Society of Sedimentary Geology (SEPM) American Association of Petroleum Geology (AAPG) Geological Society of America (GSA) International Association of Sedimentology (IAS)

Languages

Italian (native), English (fluent, spoken and written), German (good, spoken and written), Spanish (good, spoken), Dutch (sufficient, spoken and written).

Software Packages

Operating system: Windows NT, basics UNIX and Linux.

Software: Microsoft Office, Canvas, Adobe Illustrator, Photoshop, Corel Draw, Adobe Acrobat, End Note.

STRATA-forward modeling of sedimentary system, CARBONATE 3D (carbonate platform forward modeling), basics Scion Image.

#### Publications

#### 2004

Bahamonde, J.R., Kenter, J.A.M., Della Porta, G., Keim, L., Immenhauser, A. and Reijmer, J.J.G., 2004. Lithofacies and depositional processes on a high, steep-margined Carboniferous (Bashkirian–Moscovian) carbonate platform slope, Sierra del Cuera, NW Spain. Sedimentary Geology, 166: 145-156.

Della Porta, G., Kenter, J.A.M. and Bahamonde, J.R., 2004. Depositional facies and stratal geometry of an Upper Carboniferous prograding and aggrading high-relief carbonate platform (Cantabrian Mountains, NW Spain). Sedimentology, 51: 267-295.

Della Porta, G., Villa, E. and Kenter, J.A.M. (submitted). Facies distribution of Fusulinina in a Bashkirian-Moscovian carbonate-platform top (Cantabrian Mts., NW Spain). Journal of Foraminiferal Research.

Della Porta, G., Mamet, B. and Préat, A., 2004 (submitted). Bacterial mediation in the formation of red limestones, Upper Carboniferous, Cantabrian Mountains, Spain. Proceedings of the XVth International Congress on Carboniferous and Permian Stratigraphy. Royal Netherland Academu of Art and Sciences, Utrecht, The Netherlands.

Kenter, J.A.M., Harris, P.M., and Della Porta, G. (submitted). Steep microbial boundstone dominated platform margins – examples and implications. Special Volume.

Verwer, K., Kenter, J.A.M., Maathuis, B. and Della Porta, G., 2004 in press. Stratal patterns and lithofacies of an intact seismic-scale Carboniferous carbonate platform (Asturias, NW Spain): A virtual outcrop model. In: A. Curtis and R. Wood (Editors), Geological Prior Information. Geological Society London.

#### 2003

Della Porta, G., 2003. Depositional anatomy of a Carboniferous high-rising carbonate platform (Cantabrian Mountains, NW Spain). Published Ph.D. Thesis, Vrije Universiteit, Amsterdam, The Netherlands, 250 p.

Della Porta, G., Kenter, J.A.M., Bahamonde, J.R., Immenhauser, A. and Villa, E., 2003. Microbial boundstone dominated carbonate slope (Upper Carboniferous, N Spain): microfacies, lithofacies distribution and stratal geometry. Facies, 49: 175-208.

Immenhauser, A., Della Porta, G., Kenter, J.A.M. and Bahamonde, J.R., 2003. An alternative model for positive shifts in shallow marine carbonate  $\delta^{13}C$  and  $\delta^{18}O$ . Sedimentology, 50: 953-960.

#### 2002

Della Porta, G., Kenter, J.A.M. and Bahamonde, J.R., 2002. Microfacies and paleoenvironment of *Donezella* accumulations across an Upper Carboniferous high-rising carbonate platform (Asturias, NW Spain). Facies, 46: 159-168.

Della Porta, G., Kenter, J.A.M., Immenhauser, A. and Bahamonde, J.R., 2002. Lithofacies character and architecture across a Pennsylvanian inner-platform transect (Sierra de Cuera, Asturias, Spain). Journal of Sedimentary Research, 72: 898-916.

#### Abstracts

#### 2004

"Investigating controls on Carboniferous high-relief carbonate platform margin (Cantabrian Mountains, N Spain) using a forward stratigraphic modeling program (Carbonate 3D)" Della Porta G., Warrlich G. and Kenter J.A.M. Presented at 32<sup>nd</sup> International Geological Congress, Florence 20-28/08/2004.

"Microbial and cement boundstone dominated flanks (and reservoirs) of an isolated carbonate platform" Jeroen A.M. Kenter, Paul (Mitch) Harris, Giovanna Della Porta, Dennis Fischer, and L. James Weber. Presented at AAPG Annual Convention; Dallas, Texas, U.S.A., April 2004.

"Facies and depositional architecture of an Upper Carboniferous high-relief carbonate platform margin (Cantabrian Mountains, NW Spain)". Giovanna Della Porta, Jeroen A.M. Kenter and Juan R. Bahamonde. Presented at Sediment 2004 Meeting, Aachen, Germany, 2-4/06/04.

#### 2003

"Depositional Architectures and Lithofacies of a Pennsylvanian High-rising Carbonate Platform (Sierra del Cuera, Cantabrian Mountains, N Spain)" Giovanna Della Porta, Jeroen A.M. Kenter, Juan R. Bahamonde, and Klaas Verwer. Presented (SEPM Student Poster Award) at AAPG Annual Convention; Salt Lake City, Utah, U.S.A., 10-14/05/03.

"Bacterial mediation in the formation of red limestones, Upper Carboniferous, Cantabrian Mountains, Spain" Giovanna Della Porta, Bernard Mamet, and Alain Préat (2003) Abstract Volume, p. 120. Presented at XVth International Conference on Carboniferous and Permian Stratigraphy, Utrecht, The Netherlands, 10-16 August 2003.

#### 2002

"Prograding vs. Aggrading Slope to Platform Transitions in a Steep and High Relief Carbonate Platform Margin (Pennsylvanian, northern Spain)" Della Porta, G., Kenter, J.A.M., and Bahamonde, J.R. Presented at AAPG Annual Convention, Houston, Texas, U.S.A., 10-13/03/02.

#### 2001

"Depositional Carbonate Slopes: many questions and few answers" Kenter, J.A.M., Della Porta, G., Adams, E. W. and Bahamonde, J.R. presented at GSA Annual Meeting, Boston, U.S.A., 11/2001.

#### 2000

"Contrast-comparison of Pennsylvanian platform cycles in the Pricaspian subsurface (Tengiz) with outcrop analogs from N Spain" Kenter, J.A.M., Immenhauser, A., Della Porta, G., and Spillekom I. Presented at AAPG/SEPM Joint Annual Meeting, New Orleans, Louisiana, U.S.A., 16-19/04/2000.

"Anatomy and lithofacies distribution across a Pennsylvanian inner platform transect (Sra. de Cuera, Asturias, Spain)" Kenter, J.A.M., Della Porta, G., Immenhauser, A. and Bahamonde, J.R. Poster presentation at Permo-Carboniferous Carbonate Platforms and Reefs SEPM/IAS Research Conference, El Paso, Texas, U.S.A., 15-16/05/2000.

"Relationship between carbonate mud, early marine cement and slope angle in a Pennsylvanian platform margin (Sierra de Cuera, Asturias, Spain)" G. Della Porta, J.A.M

Kenter, J.R. Bahamonde and A. Immenhauser. Poster presentation at IAS 20<sup>th</sup> Regional Meeting, Dublin, Ireland, 13-15/09/2000.

#### **Reports**

"Stratal patterns and lithofacies of an intact, seismic-scale Carboniferous carbonate platform (Asturias, NW Spain): a 3D GIS Model" Jeroen A.M. Kenter, Klaas Verwer, and Giovanna Della Porta, Vrije Universiteit; prepared for TotalFinaElf, France, December 2002, 11 p.

"Architecture and composition of algal mounds: Serpukhovian to Moscovian, S.ra de Cuera and surrounding area, Northern Spain" Frans van Hoeflaken, Jeroen A.M. Kenter, and Giovanna Della Porta, Vrije Universiteit; prepared for TotalFinaElf, France, December 2002, 50 p.

"Anatomy and lithofacies distribution across a Pennsylvanian outer platform transect (Sra. de Cuera, Asturias, Spain)" Jeroen A.M. Kenter, Giovanna Della Porta, Juan R. Bahamonde, and Adrian Immenhauser, Vrije Universiteit; prepared for TCO/ Tengizchevroil, Kazakhstan, January 2001; 40 p.

"Anatomy and Lithofacies distribution across a Pennsylvanian Inner Platform Transect (Sra. de Cuera, Asturias, Spain). Jeroen A.M. Kenter, Adrian Immenhauser, Giovanna Della Porta, and Juan R. Bahamonde, Vrije Universiteit; prepared for TCO/Tengizchevroil, Kazakhstan, January 2000; 40 p.

# ECORD Application form for membership in IODP expedition scientific parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following information) Name (first, middle, last) Pierre DESCHAMPS CEREGE Institution Department UMR 6635, CNRS Institution Address Europole Méditerranéen de l'Arbois, BP80, 13545 Aix-en-Provence, France Telephone (Work) +33 4 42971511 (Home) +33 6 30333128 (Fax) +33 4 42971595 deschamps@cerege.fr Email Address Post-Doc Present Title Country of Citizenship France Place of Birth Chamalieres Date of Birth Gender 21/03/1971 Male Passport No. 95 AP 01506 Place Issued Orleans Date Issued 21/07/95 Exp. Date 09/08/05 Date: 28/11/2003 Education (Highest degree - PhD., M.S., or B.S.) PhD Are you currently a student? no (If yes, see note below) **II. EXPEDITION INFORMATION** Expeditions of Interest (please limit selection to no more than three): 307 Tahiti Sea Level Expedition Number: Title Platform: Riser Non-riser MSP Participation: Full Expedition Partial\* Shorebased\* Expedition Number:\_\_\_\_\_\_ Title\_ Platform: Riser Non-riser MSP Participation: Full Expedition Partial\* Shorebased\* Expedition Number; \_\_\_\_\_ Title: Platform: Riser Non-riser MSP Participation: Full Expedition Partial\* Shorebased\* (\* provide detail of proposed participation in an accompanying letter) Reason(s) for Interest (if necessary, expand in letter) U-series and <sup>14</sup>C dating of offshore coral cores for reconstruction of the last deglacial sea-level rise in south Pacific (see jointed letter) Personal and/or scientific references (name and address) Claude Hillaire-Marcel GEOTOP, UQAM, CP 8888, Succ. Centre-Ville, Montréal (QC), Canada, H3C 3P8 Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased

participant, etc.)

#### **III. ATTACHMENTS**

1. Attach curriculum vitae which includes a publication history

2. Please fill out the attached "Field of Expertise" form

Note: Applications from graduate students should include a letter from their primary advisor, documenting the student's scientific experience and detailing how participation on the cruise would fit into their graduate degree program.

Staffing decisions are made in consultation with co-chief scientists and take into account nominations from partner countries; final responsibility for ECORD staffing rests with ESSAC. Please submit all application materials both in **digital format** (preferable PDF format) and **paper copy** to (please contact the ESSAC Office when having problems providing us with the above asked materials in both formats): ESSAC Science Coordinator Faculty of Earth & Life Sciences - Vrije Universiteit De Boelelaan1085 1081 HV Amsterdam - The Netherlands Phone: +31 20 4447272 Fax: +31 20 4449941 E-mail: essac.amsterdam@falw.vu.nl

With a copy to the national ESSAC delegate (see http://www.geo.vu.nl/~essac/ ESSAC button).

Nominations (with copies of their applications) will be forwarded from that office to the Implementation Organizations (IOs). Eligibility as a ECORD participant is limited to scientists or engineers (professors, research scientists, technologists, graduate students, etc.) at a ECORD member institution (e.g. German academic institutions, government labs, ECORD member-based corporations, etc.). Non-ECORD affiliated personnel from other IODP member countries should apply for IODP participation through their country's national program office. Undergraduate students do not qualify as Shipboard Participants, and should not apply to sail using this form. Undergraduates interested in sailing on a IODP expedition should instead contact ECORD for information about the Undergraduate Student Trainee Program.

#### FIELD OF EXPERTISE

- \_\_\_\_ Biologist
- \_\_\_\_ Microbiologist
- \_X\_ Inorganic Geochemist
- \_\_\_\_ Organic Geochemist
- \_\_\_\_ Geophysicist
- \_\_\_\_ Hydrologist
- Logging Scientist
- Oceanographer
- \_\_\_\_ Paleomagnetist
- \_\_\_\_ Paleontologist (Diatom)
- \_\_\_\_ Paleontologist (Dinoflagellate)
- \_\_\_\_ Paleontologist (Foraminifer Benthic)
- \_\_\_\_ Paleontologist (Foraminifer Planktonic)
- \_\_\_\_ Paleontologist (Megafossil)
- \_\_\_\_ Paleontologist (Nannofossil)
- \_\_\_\_ Paleontologist (Phytoplankton)
- \_\_\_\_ Paleontologist (Radiolaria)
- \_\_\_\_ Paleontologist (Silicoflagellate)
- \_\_\_\_ Palynologist
- \_\_\_\_ Petroleum Geologist
- \_\_\_\_ Petrologist
- \_\_\_\_ Igneous Petrologist
- \_\_\_\_ Metamorphic Petrologist
- \_\_\_\_ Physical Properties Specialist
- \_\_\_\_ Sedimentologist
- \_\_\_\_ Seismologist
- \_\_\_\_ Stratigrapic Correlator
- \_\_\_\_ Structural Geologist
- \_\_\_\_ Downhole Measurements

# Timing of the last deglacial sea-level rise in south Pacific: U-series and <sup>14</sup>C dating of offshore coral cores

Proponent: Pierre Deschamps

in collaboration with: Edouard Bard, Bruno Hamelin and Gilbert Camoin UMR 6635 CNRS, CEREGE, BP 80, 13 545 Aix-en-Provence, Cedex 04, France

The timing of sea-level variations associated with the last deglaciation is of prime interest to decipher the dynamics of large ice sheets, their effects on Earth's isostasy as well as the complex relationship between freshwater fluxes to the ocean, thermohaline circulation and, hence, Earth climate during the Late Pleistocene to Holocene. So far, the only sea-level record that encompasses the entire deglaciation is based on offshore drilling of Barbados coral reefs which overlie an active subduction zone, thereby implying that the apparent sea-level record may be biased by tectonic uplift (Fairbanks, 1989, Nature 342, p. 637; Bard et al., 1990a, Nature 346, p. 456; Bard et al., 1990b, Nature 345, p. 405). In particular, such regional records are essential to validate reconstruction models of isostatic sea level fluctuations during Quaternary (e.g. Lambeck et al., 2001, Science 292, p. 679).

The upcoming Tahiti Sea Level expedition (IODP proposal #519) will seek to provide a rare complete stratigraphy of the Late Pleistocene to Holocene postglacial carbonate depositional sequence in Pacific. This coral reef is located in tectonically inactive area far away from glaciated regions to avoid direct and large isostatic rebound effects. The objectives of this study will be to give a high accurate and precise time constraints of this record in order to reconstruct the deglaciation curve for the period 20,000 to 10,000 cal-yr-BP. This will permit us to establish the minimum sea-level during the Last Glacial Maximum (LGM) and to assess the validity, the timing and amplitude of MeltWater Pulses (so-called MWP-1A and MWP-1B events; ca. 14,000 and 11,300 cal-yr-BP) which are thought to have disturbed the general thermohaline oceanic circulation and, hence, global climate. This information is crucial to test sea-level simulations based on geophysical models, in particular to identify the ice sources responsible for the meltwater pulses (see for example Clark et al., 2002, Science 295, p. 2438).

U-Th data carried out by the CEREGE team on two onshore vertical drilling cores (P6 and P7) provided a first highly consistent and robust deglacial sea level record for the Tahiti barrier reef (Bard et al. 1996, Nature 382, p. 241) for the period 14,000 to 8000 cal-yr-BP. The oldest U-Th date yields an age of 13,850 ± 40 cal-yr-BP just above a clear hiatus at about 90 m in depth with evidence of subaerial exposure of the underlying carbonate unit. In order to improve the existing deglacial sea level record of Tahiti, more than 70 new coral samples from three 30° deviated drill cores (P8, P9 and P10) were analyzed at CEREGE (Delhange, 2002, PhD Thesis, 203 p.). The sedimentology of these deviated drill cores have been used to reconstruct the structure of the Tahiti barrier reef. The new U-Th data are in good agreement with the previous ages obtained on the P6 and P7 cores between 2000 and 14,000 cal-yr-BP, thereby improving the resolution of our previous sea level record published in 1996. These new cores also confirmed the occurrence of the unconformity previously observed on the P7 drill core. The ubiquity of this hiatus suggests a major event that must have occurred slightly before 13,900 yr BP. This sea-level jump appears coeval with the first meltwater pulse (MWP- 1A) deduced from the Barbados data (Bard et al., 1990a) and brings new support to its importance (Bard et al., 1996a).

Originally, we used a 2D numerical model simulating the reef building, in order to study the effect of sea level jumps on the reef geometry. Our study indicated that only offshore drilling could allow the recovery of corals that were living during the period between the LGM and MWP-1A (Bard et al., 1996a). An up-to-date 3D model confirmed this first hypothesis (Delhange, 2002). The occurrence of reef deposits related to the LGM and early deglacial stages in continuous drill holes with seaward deviations of 30 to 45°, 300 m in length, carried out on the Mururoa atoll, French Polynesia, supports these reef building simulations (Camoin et al., 2001, Pal. Pal., Vol:175, p. 325). The Mururoa results demonstrated the feasibility of our planned investigations of the Tahiti slopes. The IODP expedition should provide a continuous record between the LGM and MWP-1A in a tectonically stable area. First, it will allow the determination of paleo- sea levels during marine isotopic stage 2. These results will be compared with recent data obtained by Yokoyama et al. (2000, Nature 406, p. 713) in the Bonaparte Gulf, off Australia, that seem to indicate that the LGM lowstand occurred earlier and deeper than thought previously (in particular at Barbados for which the deepest Acropora palmata sample is dated at 19,000 cal-yr-BP; Bard et al., 1990a,b). Secondly, it will permit us to precisely document the history of meltwater discharge during the Bølling, Allerød, Younger-Dryas periods and decipher its relationship with global climate.

This new record should also allow to address the question of the MWP-1B event. Previous U-Th data obtained by Bard et al. (1996) in the onshore Tahiti core P7 allowed to document a small change in sea level rise between 11,500 and 11,000 cal yr BP, which is consistent with the meltwater pulse (MWP-1B) observed in the sea level curves at Barbados (Fairbanks, 1989) and New Guinea (Edwards et al., 1993, Science 260, p. 962). However, the amplitude of this step is at least 2-3 times smaller than the one deduced from the Barbados data. New ages obtained on the other Tahiti onshore cores do not indicate any clear discontinuity in this time window, suggesting either that MWP-1B may correspond to an artefact resulting from local topographic irregularities between two of the different cores previously studied at Barbados, or that the MWP-1B, if real, was smaller than previously thought, or that it was variable spatially.

#### **Sampling and Analytical Methods**

#### Samples

Following our previous studies (Bard et al., 1996; Montaggioni et al., 1997, Geology 25, p. 862; Montaggioni et Bard, 1998, Geology 26, p. 479; Cabioch et al., 1999, Sedimentology 46, p. 985), the reconstruction of the sea-level curve will be based on a biological association including *Acropora gr. robusta-danai*, *Pocillopora cf. verrucosa*, and *Hydrolithon (Porolithon) onkodes* (thereafter, APH association), which is typical of the immediate subsurface habitat in Polynesia. Systematic observations, including direct investigation at Tahiti (Cabioch et al., 1999, Montaggioni et al., 1997) have shown that the reef front is composed of widespread colonies of *A. gr. robusta-danai* and *P. verrucosa* locally capped by Hydroliton onkodes crusts, generally less than 5 cm thick. This algo-coral assemblage disappears below 5-6 m water depth and is replaced by a community dominated by *P. eydouxi*, *P. damicornis*, *Porites lobata*, *A. clathrata* and other tabular acroporids and various faviids, overtopped by mm-thick coralline veneers. Consequently, the "APH" community has clearly a common habitat depth-range of 0-6 m at Tahiti, making it a sea level indicator analogous to *A. palmata* usually used in Caribbean studies.

## U-Th Analyses and Coral Criteria for U-Th dating

<sup>230</sup>Th/<sup>234</sup>U ages will be determined with a VG-54-30 thermal ionization mass spectrometrer (TIMS) at CEREGE using established chemical procedures described elsewhere (Bard et al., 1990c, Nuclear

Instr. Meth. Phys. Res. B-52, p. 461, Bard et al., 1996b, GRL 23, p. 1473; Deschamps et al., 2004, Hydrology and Earth System Sciences 8, p. 35). The 2σ precision of the <sup>230</sup>Th ages ranges from 30 to 60 yr for ages between 8000 and 14,000 cal-yr-BP (Bard et al., 1996a).

Strict screening criteria will be applied in order to avoid any post-mortem diagenetic alteration of the skeleton. X-ray diffraction measurements will be performed systematically before U-Th analyses. Only samples showing less than 1% of calcite (as a check against secondary calcite) will be considered. The U concentration of fossil corals should be within the range of living/modern samples taking into account differences between coral species and the natural variability expected from sea surface temperature (SST) changes. In the same way,  $\delta^{234}U_{initial}$  should verify the new screening criteria proposed by Hughen et al. (2004, Radiocarbon, in press). These up-to-date criteria take into account probable fluctuations of  $\delta^{234}U$  of seawater through time.

Following Bard et al. (1996a; 1998, Radiocarbon 40, p. 1085), replicates of different parts of the same coral sample will be measured as often as possible to derive an estimate of external reproducibility, which will be reported with the results. This will provide an overall assessment on the reproducibility of U-Th ages as well as further required constraints on closed system behaviour with respect to U-Series. Analyses of <sup>226</sup>Ra will also be performed on key samples in order to validate the closure of the carbonate system (Ghaleb et al., 2004, Journal of Analytical Atomic Spectrometry 19, p. 906). Collaborations with associated laboratories (IPG Paris, France, and GEOTOP, Montreal, Canada) are planned for complementary U-Th analyses by MC-ICP-MS. The reliability achieved with these mass spectrometers (see for example Deschamps et al., 2003, Chem. Geol. 201, p. 141) will provide a robust external validation of the accuracy of our results. Measurements of <sup>231</sup>Pa by mass spectrometry on coral samples will be undertaken in collaboration with the IPG in Paris. Protactinium measurement will be performed on selected samples that may have been exposed subaerially in the past. Concordance between <sup>231</sup>Pa-<sup>235</sup>U ages and <sup>230</sup>Th-<sup>234</sup>U-<sup>238</sup>U ages will provide a useful validation of the record chronology.

# AMS <sup>14</sup>C Analyses

<sup>14</sup>C analyses will be performed in pair with U-Th analyses to improve the <sup>14</sup>C calibration record. <sup>14</sup>C analyses will be performed by accelerator mass spectrometry (AMS) at the National Facility Artemis installed at Saclay, France, following the chemical procedure previously described by Bard et al. (1990c). AMS-<sup>14</sup>C coral samples need to be physically separated and subjected to partial dissolution on the order of 30-50% with the degree of leaching necessary to be determined by
experiment. Background correction must be applied and background errors included in the error analysis. As done previously (Bard et al., 1993, 1998, 2004), we will perform external replicates in order to strengthen the radiocarbon record.

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# **Current Activity**

- **Post-doctoral fellow** at **CEREGE** (European Centre of Research and Teaching in Environmental Sciences) financially supported by ANDRA (the French Agency for Nuclear Waste management) within the scope of the FORPRO Research Group (CNRS) investigations.
  - **Project**: U-Th and U-Pb dating of secondary carbonated minerals (fracture and cavity carbonate infillings) from the Bure experimental site, ANDRA. Chronological constraints on fluid circulation events.

# Education

- **Ph. D.** and french **Doctorate** (2003) under the co-supervision of Pr. C. Hillaire-Marcel, GEOTOP, Québec, and Dr. J-L Michelot, France, within the framework of a cooperative agreement between University of Québec in Montréal (UQAM), Canada, and Université Paris-Sud, France.
  - **Topic**: Mobility of natural radionuclides in deep sedimentary formation as inferred by (<sup>234</sup>U/<sup>238</sup>U) radioactive disequilibria: Assessment of the suitability of deep sedimentary reservoirs for radioactive waste disposal.
- **M. Sc.** (1998) at GEOTOP, Department of Earth Sciences, UQAM, under the supervision of Pr. C. Hillaire-Marcel. Academic distinction.

**Topic**: Modelling of depth-distribution of <sup>228</sup>Th/<sup>232</sup>Th disequilibria at the water/sediment interface - Example from the estuary and gulf of St. Lawrence.

**M. Sc. in Engineering** (1995) at ESEM (École Supérieure de l'Énergie et des Matériaux, France). Fields of expertise: Hydrology, Environment and Water Sciences.

Preparatory classes for engineering schools, majoring in Mathematics (1989-92).

Fields of scienti	fic expertise
Geochemistry:	U-series geochemistry, isotopic geochemistry (Sr, Pb, $\delta^{18}$ O), hydrogeochemistry, geochronology.
Analytical skills:	<ul> <li>development of isotopic analyses (U, Th, Pb) by MC-ICP-MS.</li> <li>isotopic analyses of U, Th, Ra and Pb by TIMS.</li> <li>isotopic analyses of U, Th and <sup>210</sup>Pb by alpha spectrometry.</li> <li>chemical preparation in class 100 clean lab.</li> </ul>
<b>Modelling</b> :	Development of numerical models dealing with radionuclide behaviour in natural systems (mass balance, transfer). Computer languages: Matlab, Fortran.

### Work Experiences

2000-03 In charge of a project dealing with "Characterisation of naturally occurring radionuclides within the Callovo-Oxfordian argillite target layer and the embedding carbonate formations, Bure experimental site. Study of U-series disequilibria". Financial support by ANDRA: Budget: 120 k€.

# Work Experiences (continuation)

- 1995-99 Research Assistant at the GEOTOP centre: isotopic analyses of U, Th and Ra by Thermal Ionisation Mass Spectrometry (TIMS) in fluids and carbonate matrix (corals, speleothems...).
- 1995 Research projects (6 months) at the Department of Geochemistry and Physico-chemistry of the BRGM (French Geological Survey) as end part of Master Education:
  - Geochemical studies (major and trace elements, <sup>87</sup>Sr/<sup>86</sup>Sr) of tributaries of the Loire Basin, France (waters, soils, sediments): quantification of natural and anthropogenic fluxes, weathering and erosion phenomenon. Under the supervision of Dr. P. Négrel.
  - Involvement in the "Hot Dry Rock" project of deep geothermy at Soultz-sous-Forêt, France (sampling, *in situ* analyses) under the supervision of Dr. L. Aquilina.
- 1995 Engineering Project for ANTEA (4 months): hydrologic and geologic study of a small tributary of the Loire river, La Bonnée, France.
- 1994 Training (3 months) at the Region Centre Geological Survey. Study of the Cenomanian aquifer, Touraine, France: management of water resources.
- 1994 Project (5 months) for the Departmental Direction of Agriculture, Loiret, France. Hydrogeologic study related to the settling of a drinking water supply in the Saint Brisson-sur-Loire district (Loiret, France).
- 1992-93 Involvement in a project for "Ingénieurs Sans Frontières": Supplying of drinking water in a subtropical area (Senegal): improvement and management of a market gardening area.

# **Teaching and Supervising Activities**

- 200 Co-superviser of the research project of an ungraduate student (Bachelor degree) in Earth Sciences, UQAM, Canada: modelling of depth-distribution of short-period radionuclides in sediments (<sup>210</sup>Pb, <sup>228</sup>Th/<sup>232</sup>Th).
- 2002 Superviser of a research project of a graduate student (Master degree) in Environmental Sciences, UQAM, Canada: development of <sup>231</sup>Pa analysis by TIMS.
- 2001 Assistant Professor for the course of Geochemistry (SCT-3110, 45 hours), bachelor degree at UQAM.
- 1998-00 Teaching Assistant for the courses of Isotopic Geochemistry and Geochronoly, UQAM.

# Award and Excellence Scholarship

YSOPP (Young Scientist Outstanding Poster Paper) award winner delivered by the American Geophysical Union and the European Geophysical Society, Hydrological Sciences Section, EGS-EGU-AGU joint Assembly, 2003, Nice, France.

www.copernicus.org/EGS/egsga/nice03/ysopp.htm

Recipient of a Grant of the Ministère des Affaires Etrangères (French Foreign Office) for PhD student mobility (2001-2003).

High academic honours of the Master Program of Earth Sciences, UQAM, Canada.

Recipient of PAFARC scholarships delivered by UQAM: 1997, 1998 and 1999.

# **Publications**

- **Deschamps P.**, C. Hillaire-Marcel, J-L. Michelot, R. Doucelance, B. Ghaleb and S. Buschaert (2004): <sup>234</sup>U/<sup>238</sup>U Disequilibrium along stylolitic discontinuities in deep Mesozoic limestone formations of the Eastern Paris basin: Evidence for discrete uranium mobility over the last 1-2 million years. Young Scientist Outstanding Poster Paper, *Hydrology and Earth System Sciences*, 8(1), 35-46.
- Ghaleb, B, E. Pons and **P. Deschamps** (2004): Improved method for Radium extraction from environmental samples and its analysis by Thermal Ionisation Mass Spectrometry. *Journal of Analytical Atomic Spectrometry*, 19, 906-910.
- **Deschamps P.**, R. Doucelance, B. Ghaleb and J-L. Michelot (2003): Further investigations on optimized tail correction and high-precision measurement of Uranium isotopic ratios using Multi-Collector ICP-MS. *Chemical Geology*, 201 (1-2), 141-160.
- Negrel, Ph. and **P. Deschamps** (1996): Natural and anthropogenic budgets of a small watershed in the Massif Central (France): Chemical and strontium isotopic characterization in water and sediments, *Aquatic Geochemistry*, 2, 1-27.
- **Deschamps P.**, C. Hillaire-Marcel, J-L. Michelot, R. Doucelance, B. Ghaleb and S. Buschaert: Active uranium relocation process in the last 2 Ma along pressure dissolution surfaces, in deep Mesozoic limestone formations, as inferred by <sup>234</sup>U/<sup>238</sup>U disequilibria. Submitted to *Geochimica Cosmochimica Acta*.
- Pons-Branchu, E, C. Hillaire-Marcel, P. Deschamps, B. Ghaleb and D. Sinclair: Early diagenesis impact on precise U-series dating of Deep-Sea corals. Example of a 100-200 years old *Lophelia Pertusa* sample from NE Atlantic. Submitted to *Geochimica Cosmochimica Acta*.

# Lectures, Workshop

- Invited lecturer at the "Forum on the Determination of Uranium in Environmental and Biomedical Samples by Mass Spectrometric Techniques" organized by the British Geological Survey: Highly precise measurements of <sup>234</sup>U/<sup>238</sup>U activity ratio by MC-ICP-MS and the investigation of uranium migration in deep geological formations. Nottingham, UK, 1-2 Avril 2004.
- Lecture at the University of Paris Sud: Mobility of natural radionuclides in deep sedimentary formations as inferred by (<sup>234</sup>U/<sup>238</sup>U) radioactive disequilibria: application to the Mesozoic formations of the eastern part of the Paris. Orsay, 4 Mars 2004.

### Thesis

Deschamps P. (2003): Mobility of natural radionuclides in deep sedimentary formations as inferred by (<sup>234</sup>U/<sup>238</sup>U) radioactive disequilibria: application to the Mesozoic formations of the eastern part of the Paris Basin. PhD Thesis. UQAM and Université Paris Sud, 480 p.

Available in pdf format at: http://tel.ccsd.cnrs.fr/

Deschamps P. (1998): Modelling of behaviour of the <sup>232</sup>Th-series radionuclides (<sup>228</sup>Ra, <sup>228</sup>Th) at the water sediment interface. The case of the Gulf of Saint Laurent sediments. Master Thesis. UQAM. 80 p.

#### Reports

- **Deschamps P.** et Hillaire-Marcel C. (1999): Isotopic behaviour of uranium in solution and the potential chronological applications of the <sup>234</sup>U/<sup>238</sup>U ratio. A review. ANDRA Report (D RP 0 UNQ 99-001), 97 p (+ Annexes 28 p).
- Aquilina L, H. Pauwells, M. Brach et P. Deschamps (1996): Geochemical studies: 1994-1995 period, CEE project JOR3-CT95-0054 Soultz-sous-Forêt.
- Aquilina L, M. Brach, **P. Deschamps** et C. Cotiche (1995): Geochemical monitoring of the summer 1995 circulation tests at the Soultz-sous-Forêts Hot Dry Rock site, BRGM int. Report.

### Scientific Communications with published abstracts

- **Deschamps P.**, C. Hillaire-Marcel, J-L. Michelot, R. Doucelance, B. Ghaleb et S. Buschaert (2004): Hydrological implications of 234U/238U disequilibria observed along pressure dissolution structures within deep Mesozoic limestone formations of the Eastern Paris basin, *International Workshop on the Application of Isotope Techniques in Hydrological and Environmental Studies, UNESCO*, Paris, France.
- **Deschamps P.**, C. Hillaire-Marcel, J-L. Michelot et S. Buschaert (2004): Traçage de la mobilité des radionucléides naturels à l'aide des déséquilibres radioactifs (<sup>234</sup>U/<sup>238</sup>U): cas des formations sédimentaires profondes du site expérimental ANDRA de Meuse/Haute-Marne, *Réunion des Sciences de la Terre*, Strasbourg, France.
- **Deschamps P.** (2004): Apports de contraintes chronologiques sur les paléocirculations fluides et les phénomènes d'interaction eau/roche, site MHM: Datation par les méthodes U-Th et U-Pb des minéraux carbonatés et études des déséquilibres U-Th au niveau des discontinuités, *Journée ANDRA*, Paris, France.
- **Deschamps P.**, C. Hillaire-Marcel, J-L. Michelot, R. Doucelance, B. Ghaleb et S. Buschaert (2004): Hydrological implications of <sup>234</sup>U/<sup>238</sup>U disequilibria observed along pressure dissolution discontinuities in deep Mesozoic limestone formations of the Eastern Paris basin. *AGU CGU Joint Assembly*, Montréal, Canada.
- Ghaleb B., E. Pons, **P. Deschamps** et C. Hillaire-Marcel (2003): Improved method for radium extraction from environmental samples for determination by thermal mass spectrometry, 13<sup>th</sup> Annual V.M. Goldschmidt Conference, Kurashiki, Japon, Geochimica et Cosmochimica Acta, Supplement Spécial.
- Deschamps P., C. Hillaire-Marcel, J-L. Michelot, R. Doucelance et B. Ghaleb (2003): <sup>234</sup>U/<sup>238</sup>U Disequilibria along sedimentary discontinuities in a deep formation: late diagenetic U-relocation processes vs. large scale fluid circulation evidence?, EGS AGU EUG Joint Assembly, Nice, France, Geophysical Research Abstracts, Volume 5. <u>http://www.copernicus.org/EGS/egsga/nice03/ysopp.htm</u>
- **Deschamps P.**, R. Doucelance, B. Ghaleb C. Hillaire-Marcel et J-L. Michelot (2002): Evidence for micro-scale Umobility along sedimentary discontinuities in a deep limestone formation as inferred by <sup>234</sup>U/<sup>238</sup>U disequilibria, 12<sup>th</sup> Annual V.M. Goldschmidt Conference, Davos, Suisse, Geochimica et Cosmochimica Acta, Supplement Spécial.
- **Deschamps P.** (1999): Comportement des isotopes de l'uranium en milieu réduit et possibilities d'utilisation des déséquilibres <sup>234</sup>U/<sup>238</sup>U pour une estimation du temps de residence des eaux au contact des roches, *Journée ANDRA des doctorants*, 24 juin 1999, Paris.
- Aquilina L, H. Pauwells, C. Fouillac, M. Brach, **P. Deschamps** et Ph. Elsass (1998): Geochemical studies at the Soultz Hot Dry Rock geothermal site, Proceedings WRI.
- **Deschamps P.** et C. Hillaire-Marcel (1997): Modelling of depth-distributions of <sup>228</sup>Th/<sup>232</sup>Th disequilibria in sediments: a powerfull tool in the characterization of sedimentation and bioturbation processes, *AGU*, San Fransisco, Californie.
- **Deschamps P.** et C. Hillaire-Marcel (1997): Mathematical Modelling of depth-distributions of <sup>228</sup>Th/<sup>232</sup>Th disequilibria in sediments from aquatic systems Example from the estuary and gulf of St. Lawrence, 27<sup>th</sup> Artic Workshop, Ottawa, Ontario.
- Ghaleb B, C. Hillaire-Marcel, **P. Deschamps**, P. Lauriol et I. Clark (1997): U-Th Systematics in high latitude interglacial/interstidal fissure calcrete (Endostromatolites) Exemple from Bear Cave Mountain (Yukon), 27<sup>th</sup> Arctic Workshop, Ottawa, Ontario.
- Hillaire-Marcel C., Ghaleb B, P. Deschamps, P. Lauriol et I. Clark (1997): U-Th Systematics in high latitude interglacial/interstidal fissure calcretes (Endostromatolites) - Exemple from Bear Cave Mountain (Yukon), 8<sup>th</sup> Biennal Meeting of Canadian Quaternary Association, Montréal, Québec.
- Hillaire-Marcel C., Ghaleb B, **P. Deschamps**, P. Lauriol et I. Clark (1997): U-Th Systematics in high latitude interglacial/interstidal fissure calcretes (Endostromatolites) Exemple from Bear Cave Mountain (Yukon), 23<sup>rd</sup> Meeting of Canadian Geophysical Union, Banff, Alberta.
- Aquilina L, H. Pauwells, C. Fouillac, M. Brach et **P. Deschamps** (1997): Geochemical studies at the Soultz Hot Dry Rock geothermal site, *Proceedings Geofluids*, Belfast, Hendry J. et al. Eds.
- Aquilina L, R. Jung, **P. Deschamps** et M. Brach (1996): Geochemical monitoring of injections tests at the Soultz geothermal site, *Hot Dry Rock Forum*, Santa Fe, USA.
- Négrel, Ph. et **P. Deschamps** (1996): Bilan des apports naturels et anthropiques sur un petit bassin versant (Massif Central): Caractérisation chimique et isotopique (<sup>87</sup>Sr/<sup>86</sup>Sr) des eaux et sédiments, *Colloque Formations Superficielles et Géomorphologie*, Rouen.

# ECORD Application form for membership in IODP expedition scientific parties

### I. CONTACT INFORMATION (Please keep us informed of any changes in the following information)

Name (first, middle, last) Jaume DINARES-TURELL

Institution Istituto Nazionale di Geofisica e Vulcanologia (INGV)

Address Via di Vigna Murata, 605, 00143 Rome (Italy)

Telephone (Work) +39-06-51860387 (Fax) +39-06-51860397 Email Address dinares@ingv.it

Present Title Dr. Country of Citizenship Spain

Place of Birth Olesa de Montserrat (Barcelona) Spain Date of Birth 30 June 1963 Gender: male

Passport No. 39163790 Place Issued Barcelona Date Issued 3/6/1994 Exp. Date 2/6/2004

Education (Highest degree - PhD., M.S., or B.S.) PhD. Date: February 1992

Are you currently a student? NO

### **II. EXPEDITION INFORMATION**

Expeditions of Interest (please limit selection to no more than three):

Expedition Number: tbd Title <u>Tahiti Sea Level Expedition</u>

Platform: Mission Specific Platform Participation: Full Expedition

Reason(s) for Interest (if necessary, expand in letter)

Scientific challenging.

Personal and/or scientific references (name and address)

1- Prof. Andrew P. Roberts, School of Ocean and Earth Science, University of Southampton, Southampton Oceanography Centre, European Way, Southampton SO14 3Z, U.K. (e-mail: arob@mail.soc.soton.ac.uk)

2- Dr. Mark Dekkers, Paleomagnetic Laboratory 'Fort Hoofddijk', Faculty of Earth Sciences, Utrecht University, Budapestlaan 17, 3584 CD Utrecht, The Netherlands

Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased participant, etc.) Shorebased work on ODP Site 963

ECORD Application form for membership in IODP expedition scientific parties, Page 1 of 3

#### III. ATTACHMENTS

1. 1. Attach curriculum vitae which includes a publication history

2. 2. Please fill out the attached "Field of Expertise"

Staffing decisions are made in consultation with co-chief scientists and take into account nominations from partner countries; final responsibility for ECORD staffing rests with ESSAC. Please submit all application materials to:

ESSAC Science Coordinator Faculty of Earth & Life Sciences - Vrije Universiteit De Boelelaan1085 1081 HV Amsterdam - The Netherlands

 Phone:
 +31 20 4447272

 Fax:
 +31 20 4449941

 E-mail:
 essac.amsterdam@falw.vu.nl

With a copy to the national ESSAC delegate (see http://www.geo.vu.nl/~essac/ ESSAC button).

Nominations (with copies of their applications) will be forwarded from that office to the Implementation Organizations (IOs). Eligibility as a ECORD participant is limited to scientists or engineers (professors, research scientists, technologists, graduate students, etc.) at a ECORD member institution (e.g. German academic institutions, government labs, ECORD member-based corporations, etc.). Non-ECORD affiliated personnel from other IODP member countries should apply for IODP participation through their country's national program office. Undergraduate students do not qualify as Shipboard Participants, and should not apply to sail using this form. Undergraduates interested in sailing on a IODP expedition should instead contact ECORD for information about the Undergraduate Student Trainee Program.

ECORD Application form for membership in IODP expedition scientific parties, Page 2 of 3

#### FIELD OF EXPERTISE

Logging Scientist X Paleomagnetist X Downhole Measurements X

# **CURRICULUM VITAE**

Jaume DINARÈS TURELL

Istituto Nazionale di Geofisica e Vulcanologia Via di Vigna Murata, 605 00143 Rome, Italy

> tel. +39-06-51860321 FAX +39-06-5041181 E-mail: dinares@ingv.it

> > November 2004

## I) PERSONAL

- . Born: June 30, 1963, Olesa de Montserrat (Barcelona), Spain
- **. Passport No.:** 39.163.790-B
- . Sex: Male

# **II) ACADEMIC DIPLOMAS**

**B.Sc.** in Geology, Facultat de Geologia, University of Barcelona, 1986

**Pedagogic Competence Diploma in Natural Sciences**. (C.A.P), Institut de Ciències de l'Educació (I.C.E.). Technical University of Catalonia. June 1987

**M.Sc.** Thesis: Extensional faulting analysis south of the Linking Zone between the Iberian Range and The Catalan Coastal Range. Dept. Geologia Dinàmica, Geofísica i Paleontologia, University. of Barcelona, December 1987. Supervisor: Prof. P. Santanach (University. of Barcelona).

**Ph.D.** Thesis: Paleomagnetic study of the Southpyrenean Upper Thrust Sheets: tectonic implications. Dept. Geologia Dinàmica, Geofísica i Paleontologia, Univ. of Barcelona, February. 1992. Supervisors: Dr. E. McClelland (University. of Oxford) and Prof. P. Santanach (University. of Barcelona) (grade: Cum Laude).

# **III) PROFESSIONAL EXPERIENCE**

**Sept. 1987 to Aug. 1991** Post-Graduate Research. Earth Sciences Department, University of Oxford, Oxford (UK).

Feb. 1992 to Aug. 1992 Senior Geologist. Geotecnia, S.L., Terrassa (Spain).

Sept. 1992 to Aug. 1995 Postdoctoral Research Scientist. Institute of Earth Sciences J. Almera, (CSIC), Barcelona (Spain).

**Sept. 1995 to Oct. 1996** EU/network postdoctoral fellowship. Paleomagnetic Laboratory Fort Hoofddijk, University of Utrecht, Utrecht (The Netherlands).

**Nov. 1996 to Nov. 1998** EU/Marie Curie postdoctoral fellowship. Paleomagnetic Laboratory Fort Hoofddijk, University of Utrecht, Utrecht (The Netherlands).

**Feb. 1999 to May 1999** Alexander Von Humboltd Stiftung research fellowship. Institut für Allgemeine und Angewandte Geophysik, Ludwig- Maximilians-Universität München (Germany).

**June 1999 to Dec. 2002** EU/network postdoctoral fellowship (Ricercatore, art. 36). Istituto Nazionale di Geofisica e Vulcanologia, Rome (Italy).

January 2002 to May 2002 "Scientist/Ricercatore (art. 36)". Istituto Nazionale di Geofisica e Vulcanologia, Rome (Italy).

June 2002"Senior Scientist/Primo Ricercatore". Istituto Nazionale di Geofisica e Vulcanologia,Rome (Italy).

## **IV) PUBLICATIONS AND ABSTRACTS**

#### **IV.1 Publications**

JOURNALS	PUBLISHED	IN PRESS	SUBMITTED
International (38)	31	0	7
National (16)	16	0	0
TOTAL (54)	47	0	7

#### 1991

- 1) DINARÈS TURELL, J. & McCLELLAND, E. (1991). A cautionary tale for palaeomagnetists: a spurious apparent single component remanence due to overlap of blocking temperature spectra of two components. *Geophysical Research Letters*, 18, 7, 1297-1300.
- DINARÈS TURELL, J., McCLELLAND, E. & SANTANACH, P. (1991). Magnetic fabric significance of several sedimentary rocks from the southern Pyrenees. *Rev. Soc. geol. España*, 4, (1-2), 179-186. (in Spanish)

#### 1992

- 3) DINARÈS TURELL, J., McCLELLAND, E. & SANTANACH, P. (1992). Contrasting Rotations within Thrust Sheets and Kinematics of Thrust-Tectonics as derived from Palaeomagnetic data: an example from the southern Pyrenees. *In*: K. R. McClay (Ed.), *Thrust Tectonics*, Chapman & Hall, London, 255-265.
- DINARÈS TURELL, J. & PARÉS, J. M. (1992). The use of AMS to determine the petrofabric in weakly deformed rocks: a case study from the Eocene in the Ainsa Basin (Central Pyrenees). *Geogaceta*, 12, 22-25 (in Spanish).

#### 1993

5) PARÉS, J. M. & DINARÈS TURELL, J. (1993). Magnetic fabric in two sedimentary rock-types from the southern Pyrenees, *J. Geomag. Geoelectr*, 45, 2, 193-205.

### 1994

- 6) DINARÈS TURELL, J. (1994). Remagnetizations associated to diagenesis and their relationship with thrust sheet emplacement in the Southern Pyrenees. *Geogaceta*, 15, 105-108 (in Spanish).
- 7) PARÉS, J. M. & DINARÈS TURELL, J. (1994). Iberian Triassic paleomagnetism revisited: intraplate block rotations versus polar wandering. *Geophys. Res. Lett.*, 21, 19, 2155-2158.

#### 1995

- 8) DINARÈS TURELL, J. & PARÉS, J. M. (1995). The Triassic from the Iberian peninsula: New paleomagnetic results. *Cuadernos Geología Ibérica*, 20, 367-384 (in Spanish).
- 9) DINARÈS TURELL, J., ALFARO, P. & SORIA, J. (1995). A deformed Plio-Quaternary alluvial and red paleosol succession in the eastern Betics: paleomagnetic, rock-magnetic and sedimentologic study. *Studia Geophy. Geod.*, 39, 405-419
- PUJALTE, V., BACETA, J. I., DINARÈS-TURELL, J., ORUE-ETXEBARRIA, X., PARÉS, J. M. & PAIROS. A. (1995). Biostratigraphic and magnetostratigraphic intercalibration of late Maastrichtian and Paleocene depositional sequences from the deep-water Basque basin, W Pyrenees, Spain. *Earth Planet. Sci. Lett.*, 136, 17-30.

11) SERRA-KIEL, J., CANUDO, J. I., DINARÈS J., MOLINA, E., ORTIZ, N., PASCUAL, J. O., SAMSO, J. M. & TOSQUELLA, J. (1995). Geocrhonology of the lower Tertiary marine sediments from the Tremp-Graus Basin (Southern Pyrenees). *Rev. Soc. geol. España*, 7 (3-4), 273-297 (in Spanish).

#### 1996

- 12) CRUZ, J., PUEYO, E., DEL VALLE, J., MILLÁN, H., PARÉS, J.M., POCOVI, A. & DINARÈS-TURELL, J. (1996). Magnetotectonic data from the Eocene from the Jaca-Pamplona Basin: initial results. *Geogaceta*, 20 (5), 1058-1061 (in Spanish).
- 13) OMS, O., DINARÈS-TURELL, J. & PARES J. M. (1996). Preliminary paleomagnetic results from the Fuente Nueva Plio-Pleistocene section (Guadix-Baza Basin, Bétic Cordillera). *Rev. Soc. geol. España*, 9, (1-2), 89-95 (in Spanish).
- 14) ORUE-ETXEBARRIA, X., APELLANIZ, E., BACETA, J. I., COCCIONI, R., DILEO, R., DINARÈS TURELL, J., GALEOTTI, S., MONECHI, S, NÚÑEZ-BETELU, K., PARÈS, J. M., PAYROS, A., PUJALTE, V., SAMSO, J. M., SERRA-KIEL, J & TOSQUELLA, J. (1996). Physical and biostratrigraphic analysis of two prospective Paleocene-Eocene boundary stratotypes from the deep water Basque basin, western Pyrenees: The Trabakua Pass and Ermua sections. N. J. Geol. Palaeont. Abh., 200, 1

#### 1997

- 15) PARÉS, J. M. & DINARÈS TURELL, J. (1997). Present state of the palaeomagnetic research in the Guadix-Baza Basin (Betic Cordillera). *Geogaceta*, 22, 137-139 95 (in Spanish).
- 16) COPONS, R., PARÉS, J. M., DINARÈS TURELL, J. & BORDONAU J. (1997). Sampling induced AMS in soft sediments: a case study in Holocene glaciolacustrine rhythmites from Lake Barrancs (Central Pyrenees, Spain). *Phys. Chemist Earth*, 22, 1-2, 137-141.

#### 1998

- 17) ROUCHY, J. M, C. TABERNER, M. M. BLANC-VALLERON, R. SPROVIERI, M. RUSSELL C. PIERRE, E. DI STEFANO, J. J. PUEYO, A. CARUSO, J. DINARÈS-TURRELL, J. GRIMALT, E. GOMIS-COLL, G. CESPUGLIO, G. WOLFF, P. DITCHFIELD, S. PESTREA, J. MARSHALL, N. COMBOURIEU-NEBOUT & C. SANTISTEBAN. (1998). Sedimentary and diagenetic markers of the restriction in a marine basin: the Lorca basin (SE Spain) during the Messinian. *Sedimentary Geology*, 121, 23-55.
- 18) GALLARDO-MILLÁN, J.L., GOMIS-COLL, E., DINARÈS-TURELL, J. & PÉREZ-GONZÁLEZ, A. (1998). Relations between paleomagnetic polarities and radiometric ages from the Campo de Calatrava volcanism (Ciudad Real, Spain). *Geogaceta*, 23, 55-58.

#### 1999

- 19) DINARÈS-TURELL, J. & DEKKERS, M. (1999). Inferred multistage diagenetic pathway for the Early Pliocene Trubi marls at Punta di Maiata (southern Sicily): paleomagnetic and rock-magnetic observations. In: D.H. Tarling and P.Turner (Ed.), "Palaeomagnetism and Diagenesis in Sediments", Geol.soc. London Spec. Pub., 15, 53-69.
- 20) OMS, O., DINARÈS-TURELL, J. AGUSTÍ, J. & PARES J. M. (1999). Magnetostratigraphic constraints of the Pliocene continental biozones in the Zújar section (Guadix-Baza basin, Spain). *Quaternary Res*, 51, 94-103.
- 21) TABERNER, C., DINARÈS-TURELL, J., GIMÉNEZ & J. DOCHERTY, J.I. (1999). Basin infill architecture and evolution from magnetostratigraphic cross-basin correlations in the southeastern Pyrenean foreland basin. *Bull. Geol. Soc. Am.*, 111, 8, 1155-1174.

- 22) PLAYÀ, E., DINARÈS-TURELL, J., ORTÍ, F., GOMIS, E. & ROSSELL, L. Magnetostratigraphy of the evaporitic formations from the Neogene Fortuna Basin (Múrcia, Spain). *Geogaceta*, 25, 163-166.
- 23) PARÉS, J. M., VAN DER PLUIJM, B. & DINARÈS-TURELL, J. Evolution of Magnetic Fabrics during incipient deformation of poorly lithified mudrocks (Pyrenees, N Spain). *Tectonophysics*, 307, 1-14.
- 24) DINARÈS-TURELL, J., ORTÍ, F., PLAYÀ, E. & ROSELL, L. Paleomagnetic chronology of the evaporitic sedimentation in the Neogene Fortuna basin (SE Spain): early restriction preceding the Messinian `salinity crisis´. Palaeogeography, Palaeoclimatology, Palaeocology, 154, 161-178.
- 25) PARÉS, J. M. & DINARÈS TURELL, J. Palaeomagnetic data from the Livingston Island basement (Antartic Peninsula): Tectonic constraints on Neogene evolution. *Acta Geol. Hispanica*, 34, 4, 339-351.
- 26) PARÉS, J. M., DINARÈS-TURELL, J. & GARCÉS, M. (Eds.) (1997, Pub. 1999). Tertiary Basins of Spain: Paleomagnetic framework. *Acta Geol. Hispanica*, 32, 3/4, 123-261.
- 27) DINARÈS-TURELL, J., SPROVIERI, R., CARUSSO, A., DI ESTEFANO, E., GOMIS-COLL, E., PUEYO, J.J., ROUCHY, J.M. & TABERNER, C. (1997) (Pub. 1999). Preliminary integrated magnetostratigraphic and biostratigraphic correlation in the Miocene Lorca basin, (Múrcia, SE Spain). Acta Geol. Hispanica, 32, 3/4, 161-170.

#### 2000

- 28) DINARÈS-TURELL, J. & GARCIA-SENZ, J. The remagnetization of lower Cretaceous limestones from the southern Pyrenees and its bearing to the Iberian plate geodynamic evolution.. J. Geophys. Res, 105, B8, 19,405-19,418.
- 29) TAIT, J. A., BACHTADSE, V., & DINARÈS-TURELL, J. (2000). Paleomagnetism of Siluro-Devonian sequences, NE Spain. J. Geophys. Res. 105, B10, 23,595-.23,604.
- 30) BABAULT, J., REMACHA, E., ROUBY, D., OMS, O., DE URREIZTIETA, M., DINARÈS-TURELL, J., EICHENSEER, H. & NALPAS, T. (2000). 3D Restoration of Ilerdian to Cuisian features across the Central Pyrenees (Campoi-Ainsa area): implications on the Graus-Tremp basin tectono-stratigraphic evolution. *Geotemas* 1(2), 33-36.
- 31) BACETA, J.I., PUJALTE, V., DINARÈS-TURELL, J., PAYROS, A., ORUE-ETXEBARRIA, X. & BERNAOLA, G. (2000). The Paleocene/Eocene boundary interval in the Zumaia section (Gipuzkoa, Basque basin): Magnetostratigraphy and high-resolution lithostratigraphy. *Rev.*. Soc. Geol. Esp., 13, 2, 375-391.

#### 2001

32) NÚÑEZ-BETELU, K., ORUE-ETXEBARRIA, X., APELLANIZ, E., PAYROS, A., PUJALTE, V., BACETA, J. I., COCCIONI, R., DILEO, R., DINARÈS-TURELL, J., PARÈS, J. M., GALEOTTI, S., MONECHI, S., SAMSO, J. M., SERRA-KIEL, J., TOSQUELLA, J & SCHMITZ, B. (2001). Integration of sequenze stratigraphy and biostratigraphy at the Paleocene/Eocene boundary in the sediments of intermediate and deep water from the Pasque Basin, Western Pyrenees. *In*: Goodman, D.K. and Clarke, K.T. (eds.), *Proceedings of the IX International Palynological Congress, Houston, Texas, U.S.A., 1996*. American Association of Stratigraphyc Palynologist Foundation, 243-251.

#### 2002

33) DINARÈS-TURELL, J., SAGNOTTI, L. & ROBERTS, A.P. (2002). Relative geomagnetic paleointensity from the Jaramillo subchron to the Matuyama/Brunhes boundary as recorded in a Mediterranean piston core. *Earth Planet. Sci. Letters*, 194, 327-341.

- 34) DI STEFANO, E., BONOMO, S., CARUSO, A., DINARÉS-TURELL, J., FORESI, L, SALVATORINI, G & SPROVIERI, R .(2002). Calcareous plankton bio-events in the Case Pelacani section (South-Eastern Sicily, Italy). *Riv. Ital. di Paleont. e Stratigrafia*. 108, 2, 307-323.
- 35) DINARÈS-TURELL, J, BACETA, J.I., PUJALTE, V., ORUE-ETXEBARRIA, X & BERNAOLA, G.(2002). Magnetostratigraphic and cyclostratigraphic calibration of a prospective Palaeocene/Eocene stratotype at Zumaia (Basque basin, Northern Spain). *Terra Nova.*, 14, 5, 371-378.
- 36) LANGEREIS, C.G., DINARÈS-TURELL, J. & KRIJGSMAN, W. (2002). Milankovitch cyclicity in late Neogene marine successions on Sicily: astrochronological tool and paleoclimate indicator. Excursion Guide, Symposium on Fundamental rock magnetism and environmental applications, Erice (Italy), 106 pp.

#### 2003

- 37) DINARÈS-TURELL, J., HOOGAKKER, B., ROBERTS, A. P., ROHLING E.J.& SAGNOTTI, L. (2003) The Pleistocene Climatic Fingerprint at two Mediterranean Environmental Settings: High-Resolution Rock Magnetic Proxy Data. *Palaeogeography, Palaeoclimatology, Palaeocology*. 190, 195-209.
- 38) DINARÈS-TURELL, J, BACETA, J.I., PUJALTE, V., ORUE-ETXEBARRIA, X, BERNAOLA, G. & LORITO, S. (2003). Untangling the Paleocene climate: an astronomically calibrated Lower Paleocene magnetostratigraphy and biostratigraphy at Zumaia (Basque basin, Northern Spain). *Earth Planet. Sci. Lett.*, 216, 4, 483-500.
- 39) TABERNER, C., DINARÈS-TURELL, J., GIMÉNEZ & J. DOCHERTY, J.I. (2003). Basin infill architecture and evolution from magnetostratigraphic cross-basin correlations in the southeastern Pyrenean foreland basin. Replay. Bull. Geol. Soc. Am., 115, 2, 253-256.
- 40) OMS, O., DINARÈS-TURELL, J.& REMACHA, E. (2003). Magnetic stratigraphy from deep clastic turbidites: anexample from the Eocene Hecho Group (Southern Pyrenees). *Studia Geophys Geod.*, 47, 275-278.
- 41) PUJALTE, V., DINARÈS-TURELL, J, BACETA, J.I., BERNAOLA, G A & PAYROS, A. (2003). Reappraisal of the position of Chron C25n in the Campo section (Huesca province, southcentral Pyrenees). *Geogaceta*, 34, 155-158.
- 42) MORENO, E., SAGNOTTI, L., DINARÈS-TURELL, J., WINKLER, A. & CASCELLA, A. (2003). Biomonitoring of traffic air pollution in Rome using magnetic properties of tree leaves. *Atmospheric Environment.* 37, 21, 2967-2977.
- 43) SAGNOTTI, L., ROCHETTE, P., JACKSON<sup>,</sup> M., VADEBOIN<sup>,</sup> F., DINARÈS-TURELL, J., WINKLER<sup>,</sup> A. & "MAG-NET" SCIENCE TEAM (2003). Inter-laboratory calibration of low field (K) and anhysteretic (K<sub>a</sub>) susceptibility measurements. *Phys Earth Planet. Int.*, 138, 25-38.
- 44) FLORINDO, F., CLAPS, M., NIESSEN, F. & DINARÈS-TURELL, J. (2003). Spectral analysis of physical property periodicities in fine-grained sediments from the CRP-3 drillhole, Ross Sea, Antarctica. *Terra Antarctica*, 10, 1, 17-26.

#### 2004

- 45) SUSSMAN, A.J, BUTLER, R.F., DINARÈS-TURELL, J. & VERGÉS, J. (2004). Vertical-axis rotation of a foreland fold and implications for orogenic curvature: an example from the Southern Pyrenees, Spain. *Earth Planet. Sci. Lett.*, 218, 3-4, 435-449.
- 46) IORIO, M., SAGNOTTI L., ANGELINO A., BUDILLON F., D'ARGENIO B., DINARÈS TURELL. J., MACRÌ P. & MARSELLA E. (2004). High resolution integrated Petrophysical-Palaeomagnetic study on Late Holocene Shelf Sediments of the Southern Tyrrhenian Sea. *The Holocene*, 14, 3, 433-442.

- page 7/18
- 47) JOVANE, L., FLORINDO, F. & DINARÈS-TURELL, J. (2004). Environmental magnetic record of paleoclimate change: from the Eocene-Oligocene stratotype section, Massignano, Italy. *Geophys. Res. Lett.* 31, L15601, doi:10.1029/2004GL020554.

#### **In-press**

#### Submitted

- 48) HOOGAKKER, B.A.A., RHOLING, E.J., PALMER, M.R., ROTHWELL, G. & DINARÈS-TURELL J. (submitted). Pleistocene long-term fluctuations in the global carbon cycle. *Earth Planet. Sci. Lett.*.
- 49) ORUE-ETXEBARRIA, X.; BERNAOLA, G.; BACETA, J.I; ANGORI; E., CABALLERO, F., MONECHI, S., PUJALTE, V., DINARÈS-TURELL, J., APELLANIZ, E., & PAYROS, A. (submitted). New constraints on evolution of planktic foraminifers and calcareous nannofossils across the Paleocene-Eocene boundary interval: the Zumaia section revisited (Basque Basin, western Pyrenees). N. J. Geol. Palaeont. Abh.
- 50) DINARÈS-TURELL, J, DIEZ, B., REY, D. & ARNAL, I. (submitted). . "Buntsandstein" magnetostratigraphy and biostratigraphic reappraisal from Eastern Iberia: Early and Middle Triassic stage boundary definitions through correlation to Tethyan sections. *Palaeogeography, Palaeoclimatology, Palaeoclogy.*
- 51) MACRÍ, P., SAGNOTTI, L. DINARÈS-TURELL, J. & CABURLOTTO, A. (submitted). A composite record of Late Pleistocene relative geomagnetic paleointensity from the Wilkes Land Basin (Antarctica). *Phys. Earth Planet. Int.*
- 52) SÁNCHEZ-ALMAZO, I.M., BRAGA, J.C, DINARÈS-TURELL, J., MARTÍN, J.M., & SPIRO, B. (submitted). Palaeoceanographic controls on reef deposition: the Messinian Cariatiz reef (Sorbas Basin, Almería, SE Spain). *Sedimentology*.
- 53) DINARÈS-TURELL, J., SAGNOTTI, L. & ROBERTS, A.P (to be submitted). An upper Pleistocene (0-350 ka) relative geomagnetic field intensity and directional behaviour from Mediterranean sediments. *Phys. Earth. Planet. Int.*
- 54) DI STEFANO, E, INCARBONA, A., SPROVIERI, R. & DINARÈS-TURELL, J. (to be submitted). Palaeocological remarks on calcareous nannofossils in core LC07 (Central Mediterranean Sea) during the late Quaternary: a multidisciplinary investigation. *Mar. Geol.*

#### **IV.2 ABSTRACTS**

ABSTRACTS	INTERNATIONAL	NATIONAL	TOTAL
	61	6	67

- 1) DINARÈS TURELL, J. (1988). The structure of the South Pyrenean Central unit: a palaeomagnetic approach. Abstracts for the Tectonic Studies Group (T.S.G.) Annual Meeting, Cambridge (UK).
- 2) DINARÈS TURELL, J. (1989). Palaeomagnetic evidence for non-rotational thrusting in the South Pyrenean Central Unit. Abstracts of (I.A.G.A), Exeter (UK).
- DINARÈS TURELL, J. (1990). Contrasting rotations within thrust sheets and kinematics of thrust tectonics as derived from palaeomagnetic data: an example from the Southern Pyrenees. Abstracts for the Thust Tectonics Meeting, Egham (UK).
- 4) DINARÈS, J. & McCLELLAND, E. (1990). The use of sedimentary rocks in Palaoemagnetism: an example from a magnetotectonic study on allocthonous Mesozoic cover rocks from the southern Pyrenees. Abstracts for the Fourteenth UK Geophysical Assembly. Polytechnic South West, Plymouth (UK), p. 285.
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### **V) PARTICIPATION IN FUNDED RESEARCH PROJECTS**

Financial Organization: C.I.R.I.T (Generalitat de Catalunya)

**Project title:** Relación de la fábrica magnética y del elipsoide de deformación en estructuras plegadas y cabalgantes.

Date: 1990

**Financial Organization:** D.G.I.C.Y.T (Spain) PB91-0096 **Project title:** Mesozoic and Tertiary apparent polar wander path for the Iberian Plate. **Date:** 1992-1995

#### Financial Organization: C.S.I.C (Spain)

**Project title:** 1) Paleomagnetismo de los materiales vulcanosedimentarios del margen SO de la cuenca del Paratethis (Bulgaria); 2) Estudio paleomagnético de localidades arqueológicas en Spain **Date:** 1993-1994

Financial Organization: E. U../HUMAN CAPITAL AND MOBILITY CHRX-CT93-0315 Project title: Rock magnetic evaluation of paleomagnetic signals (CHRX-CT93-0315) Date: 1993-1995

Financial Organization: C.I.C.Y.T (Spain) ANT93-1418-E Project title: Paleomagnetic study of the Livingston Island (South Shetland, Antarctica) Date: 1993-1994

**Financial Organization:** Programa de cooperación con Iberoamérica (MEC, Spain) **Project title:** Desarrollo y calibración de un método para la predicción de las direcciones de fracturación en rocas a partir del estudio de la anisotropía de la susceptibilidad magnética. **Date:** 1994-1995

**Financial Organization:** E. U./HUMAN CAPITAL AND MOBILITY. ERBCH RXCT 930309 **Project title**: Natural environmental markers in present day and fossil restricted marine environments. **Date**:1993-1996 Financial Organization: E. U./ALAMED program CI1\*-CT94-0114 Project title: Paleomagnetic constraints and structural block rotations in orogenic zones from Mexico and Spain Date:1995-1997

Financial Organization: U.E./TMR (Marie Curie). ERB4001GT956999 Project title: Multidisciplinary evaluation of the diagenetic and weathering signature on the paleomagnetic record from Neogene to Recent sediments. Date:1996-1998

**Financial Organization:** Alexander Von Humboldt Stiftung (Germany) **Project title**: Late Permian/Early Triassic magnetostratigraphy and latitudinal drift as recorded by the Buntsandstein redbeds from the NE margin of Iberia. **Date**:1999

Financial Organization: ELF-Exploration Production (France) ELF-EP#11890 Project title: Sobrarbe Project Date:1999-2000

Financial Organization: U.E./HUMAN CAPITAL AND MOBILITY.

MAGNET network (<u>www.geo.uu.nl/~magnet</u>), ERBFMRXCT98-0247 **Project title**: European network for mineral magnetic studies of environmental problems **Date**:1999-2001

#### Financial Organization: MURST (Italy).

**Project title**: La chiusura miocenica delle connessioni tra le provincie Mediterranea e Indo-Pacifica e conseguente impatto sulle masse d'acqua Mediterranee: nuove evidenze micropaleontologiche e geochimiche sulla base di una stratigrafia integrata ad alta risoluzione **Date**:2000-2001

#### Financial Organization MCyT. (Spain)

Project title: Paleoenvironmental and paleogeographic controls in the Neogene temperate carbonate formation in SE Spain BTE2001-3023 Date:2002-2004

#### Financial Organization MCyT. (Spain)

Project title Paleoenvironmental and paleoclimatic changes in the Cretaceous/Terciary boundary in the Southpyrenean Central Unit. BTE2002-01430 Date:2003-2005

#### Financial Organization MCyT. (Spain)

Project title: Characterization and origin of widespread remagnetizations affecting Mesozoic sediments from Iberia (Betic Cordillera and Iberian Range): tectonic implication/. BTE2002-00854
Date:2003-2005

**Financial Organization** ALW-NWO (Netherlands) **Project title**: "NRM remagnetization and fluid flow" **Date**:2004-2006

#### Financial Organization MURST- COFIN 2004

**Project title**: "Ricostruzione ad alta risoluzione dell'evolucione paleoclimatica, paleoceanografica ed eco-biostratigrafica del bacino Mediterraneo nel tardo quaternario (0-450 ka) in base all'analisi di traccianti faunistici, floristici, chimici e isotopici.

Date:2004-2006

## **V) COLLABORATION IN FUNDED RESEARCH PROJECTS**

**Financial Organization** MCyT & Universidad del Pais Vasco (Spain) **Project title**: "Evolución biológica y cambios ambientales en los medios marinos (sub)tropicales del Pirineo Occidental durante el Paleógeno inferior" BTE2002-03806 & 9/UPV00121.310-14455/2002 **Date**:2002-2004

#### Financial Organization MCyT (Spain)

**Project title**: "Estratigrafia del Messiniense y Plioceno en la Cuenca del Bajo Segura y en la plataforma marina de Alicante: expresiàon de la crisis de salinidad del Mediterraneo" BTE2003-05047 **Date**:2004-2006

### **PROJECTS UNDER EVALUATION**

**Financial Organization** CNR\_Agenzia 2001 (Italy) CNRC01FBB\_002 **Project title**: Le mineralizzazioni a ossidati di Zn e Pb in ambiente carbonatico: a) caratterizzazione geo-giacimentologica e minero-petrografica, b) geochimica dei fluidi, c) cronologia dei processi di alterazione. **Date**:2002-2004

**Financial Organization** CNR\_Agenzia 2001 (Italy) **Project title**: "Evoluzione paleoclimatica del'ultima deglaciazione nel Canale di Sicilia". **Date**:2002-2004

**Financial Organization** NSF (USA) NSF-0125951 (to be resubmitted Dec 2004) **Project title**: "Vertical Axis Rotations in the Southern Pyrenees: Three-Dimensional Tectonic Evolution of a Fold-Thrust Belt Salient" **Date**:2005-2007

# **Financial Organization** NATO (Cooperative Linkage Grant) **Project title**: "Integrated multistratigraphic correlation of key Paleocene sections in Bulgaria, Italy and Spain" **Date**:2004-2005

Financial Organization MIUR Programa Galileo

**Project title**: "Correlazione astrocronologica, ricostruzione paleoclimatica e paleoceanografica dei sedimenti pelagici del Maastrichtiano (Cretaceo superiore)-Thanetiano (Paleocene superiore) affioranti nella successione di Cala Rossa (Sicilia, Italia)" **Date**:2005-2006

### **VI) INTERNATIONAL SCIENTIFIC STAYS**

Institution: Dept. of Earth Sciences, University of Oxford (Oxford).					
Country: United Kingdom	<b>Year</b> : 1987	Period: 4 years			
Subject: Paleomagnetism in the South Pyrenean thrust sheets.					

Institution: Geophysical Institute, Slovak	Academy of Sciences (Bratislava).	
Country: Slovak Republic	<b>Year</b> : 1992	Period: 1 week
Subject: Rock magnetic measurements.		

Institution: Geophysical Institute, Slovak	Academy of Sciences (Bratislava).	
Country: Slovak Republic	<b>Year</b> : 1993	Period: 2 weeks
Subject: Rock magnetic measurements.		

Institution: Institut für Allgemeine und Angewandte Geophysik Ludwig- Maximilians-Universität München, (Munich).

Country:	y: Germany		<b>Year</b> : 1994				<b>Period</b> : 2 weeks			
Subject:	Rock	magnetic	measurements.	Paleomagnetism	and	the	geodynamic	evolution	of	the
Hercinian	Range	2								

Institution: Paleomagnetic la	aboratory "Fort Hoofddijk", Utrecht	University
Country: The Netherlands	<b>Year</b> : 1995	Period: 38 months
Subject: Multidisciplinary re	esearch on remanence acquisition p	processes (remagnetization, diagenesis)
in sediments.		

Institution:	Institut	für	Allgemeine	und	Angewandte	Geophysik	Ludwig-	Maximilians-Universität
München (M	lunich)							
Country Ge	rmany				<b>Year</b> : 1999			Period: 5 months
Subject: Per	mo-Trias	sic	magnetostrat	igrap	hy in NE Iber	ria		

Institution: CEREGE, University of Aix-	Marseille 3 (Aix en Provence)	
Country France	<b>Year</b> : 2002	Period: 1 month
Subject: Environmental magnetism		

Institution: Istituto Nazionale di Geofisica e Vulcanologia (INGV), RomeCountry: ItalyYear: 1999-2004Period: 4 yearsSubject:Environmental magnetism, magnetochronology of sedimentary and tectonic events.

### VII) LANGUAGES

- Catalan (mother tongue)
- Fluent in Spanish
- Fluent in English.
- Fluent in Italian.
- Knowledge of French.

### **VIII) PRIZES AND OTHER RELEVANT INFORMATION**

- "Geodak Prize" from the Joint Association for Geophysicists to the best Applied Geophysics in the UKGA-14 Meeting, Polytechnic South-West, Plymouth, (United Kingdom), April 1990.
- Organizing Committee of the "Workshop": Palaeomagnetism of the Iberian Peninsula. Servei Geològic de Catalunya. Platja d'Aro (Girona, Spain), October 1987.
- Attendance to **course**: "Sea-level and climate as forcing factors for sedimentary systems with a focus on river, delta and shelf" (The Netherlands Research School of Sedimentary Geology, NSG), Amsterdam (The Netherlands), 1996.
- Attendance to **Workshop**: "Mathematical modeling of stratigraphic systems". International Association for Mathemathical Geology (MMES-IAMG), Barcelona, 1997.
- Attendance to **course**: "Paleoceanography: theory and field evidences" (IAMC Geomare, CNR), Naples (Italy), 2003.
- **Co-convenor** session SE34-06 "Paleomagnetism and tectonic evolution of the Mediterranean area", European Geophysical Society XXIII General Assembly, Nice (France), April 1998.
- **Co-convenor** session SE14.03 "Magnetism: Palaeomagnetism and magnetic anisotropy applied to geodynamics and tectonics", European Geophysical Society XXVI General Assembly, Nice (France), Mars, 2001
- **Co-convenor** session SE6.01 "Magnetism: Open poster session on palaeo, rock and environmental magnetism" de la European Geophysical Society XXVII General Assembly, Nica (France), April, 2002.

- **Co-leader of the field-trip**: "Sedimentary and diagenetic processes related to organic-rich deposits and evaporites in marine to continental restricted environments, Lorca Basin, SE Spain" 15<sup>th</sup> International Sedimentological Congress, Alicante (Spain), April 1998.
- **Co-editor** of Geodinamica Acta special issue: *Tertiary basins of Spain: paleomagnetic framework*, 1998.
- Member of **doctoral boards:** University of Zaragoza (Spain), October 2000; CEREGE. Univ. Aix-Marseille 3 (France), June 2002; Universidad Complutense (Madrid, Spain), June 2004.
- Editor of the MAGazine Newsletter (<u>www.geo.uu.nl/~magnet</u>)
- **Invited lectures** at University of Oxford (UK), University of Alicante (Spain), Academy os Sciences Bratislava (Slovak Republic), University of Coimbra (Portugal), University Aix-Marseille 3 (France).
- Scientific reviews in: Science, Phys Chemist Earth, Acta Geol. Hisp., Geol. Minjb., Rev. Soc. Geol. Argentina, Earth Planet. Sci. Lett., Phys. Earth Planet. Int., Studia Geophys Geod, Annals Geophys.
- **Convenor** session MPR4 "Time series of magnetic events" first meeting of the European Geosciences Union (EGU), April 2004., Nica (France).

# ECORD Application Form for Membership in IODP Expedition Scientific Parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following information) Name (first, middle, last)\_\_\_\_ Klaus Hauke Dittmers \_\_\_\_\_\_\_ Institution\_\_\_Alfred Wegener Institute for Polar and Marine Research\_\_\_\_\_\_ Department\_\_\_Geosciences (Paleoenvironment from Marine Sediments) Institution Address\_\_\_Columbusstrasse, 27568 Bremerhaven, Germany\_\_\_\_\_\_ Telephone (Work) \_+49-471-4831-1572\_(Home) \_+49-471-3501238 (Fax)\_+49-471-4831-1580 Email Address\_\_kdittmers@awi-bremerhaven.de\_\_\_\_\_\_ Present Position \_\_\_\_Scientist\_\_\_\_\_Country of Citizenship \_\_\_Germany\_\_\_\_\_ Place of Birth\_\_Freiburg, Germany\_\_\_\_\_Date of Birth \_\_\_Nov 02, 1971\_\_\_Sex\_\_M\_\_ Passport No. \_\_D1254042417\_\_\_Place Issued \_\_Trittau, Germany\_\_\_\_ Date Issued \_\_09.08.1999\_\_\_\_Exp. Date \_\_08.08.2009\_\_ Social Security Number (U.S. applicants only)\_\_\_\_\_\_

Education (Highest degree - PhD., M.S., or B.S.) \_\_M.S\_\_\_ Date: \_\_1999\_\_\_ Are you currently a student? \_\_No\_\_\_\_\_ (If yes, see note below)

# **II. EXPEDITION INFORMATION**

Cruises of Interest (please limit selection to no more than three):

Leg Number: \_ # 519 1. priority

"The last deglacial sea-level rise in the south Pacific : offshore drilling in Tahiti

(French Polynesia) and on the Australian Great Barrier Reef"

proposed by: Gilbert F. Camoin, Peter J. Davies, Edouard Bard and Bruno Hamelin

Reason(s) for Interest (if necessary, expand in letter).

\_\_to study the sedimentary manifestation of the global sea level late Quaternary / Holocene and evaluate its world wide impact; future sea level prognosis (methods are grain size analysis, physical properties of obtained cores  $\rightarrow$  system stratigraphic interpretation)\_\_\_\_\_

Personal and/or Scientific References (name and address)\_

\_\_Prof. Ruediger Stein, Alfred-Wegener-Institute, Bremerhaven, Germany (rstein@awi-bremerhaven.de)\_\_\_

\_\_\_Prof. Jan Behrmann, Albert Ludwigs University of Freiburg, Germany (jan.behrmann@geologie.uni-freiburg.de)

Previous DSDP/ODP Involvement and Nature of Involvement (cruise participant, shore-based participant, etc.) NO\_\_\_\_\_

### **III. ATTACHMENTS**

1. Attach curriculum vitae which includes a publication history

2. Please fill out the attached "Field of Expertise" form

Klaus Dittmers Institute for Polar and Marine Research Columbusstraße D-27515 Bremerhaven Germany Tel. +49-471 4831- 1572 Fax: +49-471 4831- 1580 kdittmers@awi-bremerhaven.de

### **Curriculum Vitae**

1993-1999	Studies of Geology at the Albert-Ludwigs-University, Freiburg
	(Germany)
1994	"Vordiplom" in Geology (equivalent to B.Sc.)
1996 - 1997	Studies of Geology at the "University of Glasgow"; fieldwork for
	diploma mapping"
1999	Diploma in Geology (equivalent to M.Sc.) at the Albert-Ludwigs-
	University, Freiburg (supervisor: Prof. Dr. J. Behrmann and Prof. Dr. R.
	Maas). <b>Thesis</b> : "Structural geological investigations of the metamorphic
	zone of the Ballantrae Ophiolith complex, SW Scotland"
1999 - 2000	Participation in Course: "Mathematical Models and Methods for
	Scientists." FU Berlin, Germany.
2000 - present	PhD student at the Alfred Wegener Institute for Polar and Marine
1	Research /Bremerhaven (University of Bremen, Germany)
expected date of d	efence: February 2005

born 02.1.1 1971 in Freiburg (Breisgau)

**Expertise:** Marine Geophysics/Geologist

### Major research interests:

- physical properties of sediments
- sedimentology
- high resolution sediment echosounding (acquisition/interpretation)
- paleoenvironmental reconstruction based on sequence-stratigraphic evaluation of acoustic data combined with sedimentological evidence of a digital bathymetric map of the Kara See on the basis of echosounding data

### Participant of other (non-DSDP/ODP) international expeditions:

- Akademik Boris Petrov Cruise 2000 (Kara Sea)
- Akademik Boris Petrov Cruise 2001 (Kara Sea)
- Akademik Boris Petrov Cruise 2003 (Kara Sea)

### **Publication list:**

see separate sheet: Publications\_Dittmers.pdf

#### **III. FIELD OF EXPERTISE**

Please check appropriate field(s):

- \_\_\_\_ Biologist
- \_\_\_\_ Microbiologist
- \_\_\_\_ Inorganic Geochemist
- \_\_\_\_ Organic Geochemist
- XX Geophysicist
- \_\_\_\_ Hydrologist
- XXX Logging Scientist
- \_\_\_ Oceanographer
- \_\_\_\_ Paleomagnetist
- \_\_\_\_ Paleontologist (Diatom)
- \_\_\_\_ Paleontologist (Dinoflagellate)
- \_\_\_\_ Paleontologist (Foraminifer Benthic)
- \_\_\_\_ Paleontologist (Foraminifer Planktonic)
- \_\_\_\_ Paleontologist (Megafossil)
- \_\_\_\_ Paleontologist (Nannofossil)
- \_\_\_\_ Paleontologist (Phytoplankton)
- \_\_\_\_ Paleontologist (Radiolaria)
- \_\_\_\_ Paleontologist (Silicoflagellate)
- \_\_\_\_ Palynologist
- \_\_\_\_ Petroleum Geologist
- \_\_\_\_ Petrologist
- \_\_\_\_ Igneous Petrologist
- \_\_\_\_ Metamorphic Petrologist
- XXX Physical Properties Specialist
- XX Sedimentologist
- \_\_\_\_ Seismologist
- XX Stratigrapic Correlator
- X Structural Geologist
- \_\_\_\_ Downhole Measurements

**Topic of my PhD Thesis:** *"Late Weichselian sedimentation in the inner Kara Sea: Qualification and Quantification of processes."* 

**Papers** (either published, submitted or in preparation):

1. **Dittmers, K**., Niessen, F. and Stein, R. (in prep.). Pathways and Sedimentation of recent Surface Sediments in the Kara Sea.

2 **Dittmers, K.,** Niessen, F. and Stein, R. (2003). Holocene sediment budget and Sedimentary History for the Ob and Yenisei Estuaries. In: Stein, R., Fahl, K., Fütterer, D.K. and Galimov, E. M. (Eds.). Siberian River Run-off in the Kara Sea: Characterisation, Quantification, Variability, and Environmental Significance. Proceedings in Marine Sciences, Elsevier, Amsterdam, 457-484.

3 **Dittmers, K.,** Niessen, F. and Stein, R. (in prep.). Seismic facies types and distribution on the inner Kara Sea Shelf and budget

4 **Dittmers, K.**, Niessen, F. and Stein, R. (submitted). Late Quaternary Channel evolution on the Kara Sea Shelf. *Global and Planetary Change*.

# **Publications and talks**

# **Peer-reviewed (AWI Publications)**

# 2004

Stein, R., Dittmers, K., Fahl, K., Kraus, M., Matthiessen, J., Niessen, F., Pirrung, M., Polyakova, Ye., Schoster, F., Steinke, T. and Fütterer, D. K. (in press). Terrigenous sediment supply and paleoenvironment of the Holocene Kara Sea (Arctic Ocean), Quaternary Science Reviews.

# 2003

- **Dittmers, K.,** Niessen, F., and Stein, R. (2003). Holocene sediment budget and sedimentary history of the Ob and Yenisei estuaries. In: Stein, R., Fahl, K., Fütterer, D.K. and Galimov, E. M. (Eds.) Siberian River Run-off in the Kara Sea: Characterisation, Quantification, Variability, and Environmental Significance. Proceedings in Marine Sciences, Elsevier, Amsterdam, 457-484.
- Stein, R., Dittmers, K., Fahl, K., Kraus, M., Matthiessen, J., Niessen, F., Pirrung, M., Polyakova, Ye., Schoster, F., Steinke, T. and Fütterer, D. K. (in press). Terrigenous sediment supply and paleoenvironment of the Holocene Kara Sea (Arctic Ocean), Quaternary Science Reviews.
- Stein, R., Fahl, K., Dittmers, K., Niessen, F., and Stepanets, O. (2003). Holocene siliciclastic and organic carbon fluxes in the Ob and Yenisei estuaries and the adjacent inner Kara Sea: Quantification, variability, and paleoenvironmental implications, Proceedings in Marine Sciences, Vol. 6, Elsevier Amsterdam, p. 401-434.

# 2002

Stein, R., Niessen, F., Dittmers, D., Levitan, M., Schoster, F., Simstich, J., Steinke, T. and Stepanets, O.V. (2002). Siberian River Run-Off and Late Quaternary Glaciation in the Southern Kara Sea, Arctic Ocean: Preliminary Results, Polar Research, 21, 315-322.

# Not peer-reviewed (AWI publications)

# 2004

**Dittmers, K.** and Schoster, F. (in press). Acoustic Facies in the southern Kara Sea: new results by PARASOUND echosounding. Reports on Polar and Marine Research 479, 55-71.

# 2002

- **Dittmers, K.** and Niessen, F. (2002). Physical properties of sediment cores. Reports on Polar and Marine Research, 419, 74-80.
- Niessen, F. and **Dittmers, K.** (2002). GeoChirp and ELAC sediment echograph profiling. Reports on Polar and Marine Research, 419, 64-74.

# 2001

- **Dittmers, K.** and Stein, R. (2001). 3.5 kHz and ELAC sediment echograph profiling. Reports on Polar and Marine Research, 393, 83-88.
- **Dittmers, K.,** Steinke, T. and Stein, R. (2001). Core Logging: Magnetic susceptibility. Reports on Polar and Marine Research, 393, 89-91.
- Schoster, F., Dittmers, K., Ivanova, E., Kriwanek, S., Levitan, M., Simstich, J., Stein, R. and Steinke, T. (2001). Sediment Sampling Program. Reports on Polar and Marine Research, 393, 79-83.

# <u>Talks</u>

# 2003

- **Dittmers, K.,** Niessen F. and Stein, R. (2003). Late Quaternary fluvial history of the southern Kara Sea, 21. Internationale Polartagung, 17. 22. März 2003 Kiel.
- **Dittmers, K.,** Niessen, F. and Stein, R. (2003). Late Quaternary fluvial dynamics of an ice sheet proximal shelf environment in the southern Kara Sea, West Siberia, S E D I M E N T 2 0 0 3 Wilhelmshaven, Germany \* 10.06. 14.06.2003.
- Schoster, F., **Dittmers, K.,** Kraus, M., Steinke, T. and Stein, R. (2003). Flooding history of the southern Kara Sea during the last 12.000 years, Sediment 2003 Wilhelmshaven, 10.06. 14.06.2003.
- Schoster, F., Dittmers, K., Fahl, K., Kraus, M., Steinke, T., Stein, R. and Fütterer, D.K. (2003). Siberian River Run-Off (SIRRO): Sedimentological variations during the last sea-level rise in the southern Kara Sea, 21. Internationale Polartagung, Kiel, Germany, 17.03. - 22.03.2003.

# 2002

Dittmers, K., Niessen F. and Stein, R. (2002). Holocene sediment budget and sedimentary

history for the Ob and Yenisei Estuaries., Moscow, Russia: 3rd Workshop "Siberian River Run-off (SIRRO)", 12.-16.05.2002.

Stein, R., Dittmers, K., Fahl, K., Niessen, F. and Stepanets, O. (2002). Siberian river run-off: Environmental significance and variability through Holocene times, ASLO 2002 Summer Meeting, Victoria, Canada, June 10-14, 2002.

# 2001

- Schoster, F., Dittmers, K., Fahl, K., Kraus, M., Matthießen, J., Niessen, F., Polyakova, Ye., Stein, R., Steinke, T. and Fütterer, D.K. (2001). Variability of Siberian River Run-off into the Kara Sea during the Holocene, International Conference on Marine Geology, November 03-06, Moscow, Russia.
- Stein, R., Dittmers, K., Fahl, K., Kraus, M., Matthießen, J. and Fütterer, D.K. (2001). "Siberian River Run-off (SIRRO)": Fluviatiler Sedimenteintrag und Paläo-Umweltbedingungen in der Kara-See (Arktischer Ozean)., 20. Internationale Polartagung, March 26 -30, Dresden, Germany.Terra Nostra 01/1.

# **Poster**

# 2003

- **Dittmers, K.,** Niessen, F. and Stein, R. (2003). Sedimentary evolution of the Ob and Yenisei estuaries in the Holocene, 4th International Workshop on the Russian-German Project "Siberian River Run-Off (SIRRO)" Vernadsky Institute of Geochemistry and Analytical Chemistry, Moscow.
- **Dittmers, K.,** Niessen, F. and Stein, R. (2003). A detailed bathymetric model of the Kara Sea based on echosoundings and nautical charts, 4th International Workshop on the Russian-German Project "Siberian River Run-Off (SIRRO)" Vernadsky Institute of Geochemistry and Analytical Chemistry, Moscow.
- Schoster, F., Bourtman, M., Dittmers, K., Levitan, M., Steinke, T. and Stein, R. (2003). Recent sedimentation processes and transport pathways of terrigenous material in the Kara Sea and the adjacent Arctic Ocean, SEARCH Open Science Meeting, 27-30 October, Seattle, Washington, USA.
- Stein, R., Dittmers, K., Niessen, F. and Matthiessen, J. (2003). Short-term variability of river discharge in the Kara Sea (Arctic Ocean) and environmental significance., First SEARCH Open Science Meeting, October 27-30, 2003, Seattle, Washington, USA.

# 2002

- **Dittmers, K.** Niessen, F. and Stein, R. (2002). Late Quaternary sedimentation on the Kara Sea shelf, GEO 2002, Würzburg, Germany, 01.-05.10.2002.
- **Dittmers, K.** Niessen, F. and Stein, R. (2002). Holocene sediment budget and late Quaternary sedimentary history of the Ob and Yenisei estuaries, Spiez, Switzerland: Quaternary Environment of the Eurasian North (QUEEN), 6th QUEEN Workshop, 24.-28.05.2002.
- Schoster, F., Bourtman, M., Dittmers, K., Levitan, M., Niessen, F., Steinke, T. and Stein, R. (2002). Siberian River Run-Off: Transport pathways of terrigenous material from Ob and Yenisei rivers into the Kara Sea, Climate Drivers of the North, GEOMAR, Kiel, Germany, 08.-11.05.2002.

- **Dittmers, K.,** Niessen, F. and Stein, R. (2001). Physical property data and lithostratigraphy of sedimentary records from the Southern Kara Sea: First results of the "Akademik Boris Petrov" 2000 Expedition., 20. Internationale Polartagung, Dresden, 26. -30.März 2001.
- **Dittmers, K.,** Niessen, F. and Stein, R. (2001). 3.5 kHz echosounding of the Eastern Part of the Kara Sea: first implications for the paleoenvironment, EUG STRAßBOURG: 08.04.01.
- **Dittmers, K.,** Niessen, F. and Stein, R. (2001). A sediment budget of the Ob and Yenisei estuaries., Margins Meeting, Kiel, 02.-06.October, 2001.
- Stein, R., Niessen, F., Dittmers, K., Levitan, M., Schoster, F., Simstich, J., Steinke, T. and Stepanets, O. (2001). Late Quaternary history of river discharge und glaciation in the southern Kara Sea, Arctic Ocean: Preliminary results, AGU Fall Meeting, San Francisco, December 10-14, 2001.

# ECORD Application form for membership in IODP expedition scientific parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following information)

Name (first, middle, last) :Anton Eisenhauer

Institution : Leibniz Institut für Meereswissenschaften (IfM-GEOMAR)

Department : **FB2, Geobiochemie** 

### Address : Dienstgebäude Ostufer, Wischhofstr. 1-3, 24148 Kiel, Germany

Telephone (Work: 49-431-6002282) (Home: 49-431-2580401) (Fax: 49-431-6002928)

### Email Address: aeisenhauer@ifm-geomar.de

Present Title: Prof. for Marine Geology Country of Citizenship: Germany Place of Birth: Röttingen

(Ufr.), Germany Date of Birth: 15.08.1959 Gender Passport No.: 1133058108; Place Issued:

Heikendorf Date Issued: 06.06.2000; Exp. Date: 05.06.2000 Education (Highest degree - PhD.); Date:

Are you currently a student? (No)

### **II. EXPEDITION INFORMATION**

Expeditions of Interest (please limit selection to no more than three): Expedition Number: not known

Title: **Tahiti Sealevel** Reason(s) for Interest (if necessary, expand in letter) **see attached letter of interest!** 

Personal and/or scientific references (name and address)

Prof. P. Stoffers (Olshausenstr. 40, 24118 Kiel, e-mail: e-mail: pst@gpi.uni-kiel.de)
Prof. G. Bohrmann (Research Center Ocean Margins, University Bremen, Postfach 330 440, D-28334 Bremen, Germany)
Prof. J.: Thiede(Alfred-Wegener Institut f. Meereskunde, PO Box 120161, 27515 Bremerhaven, Germany, e-mail: jthiede@awi-bremerhaven.de
Prof. G. Camoin (CEREGE CNRS UMR 6635, Europole Mediterraneen de l'Arbois, B.P. 80, 13545 Aix-en-Provence cedex 4 (France), e-mail: gcamoin@cerege.fr
Prof. H.J. Brumsack (ICBM, Microbiogeochemistry, P.O. Box 2503, D-26111 Oldenburg, Germany, e-mail: brumsack@icbm.de)

Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased

participant, etc.) None
#### ECORD Application form for membership in IODP expedition scientific parties, Page 1 of 3

#### **III. ATTACHMENTS**

- 1. 1. Attach curriculum vitae which includes a publication history
- 2. 2. Please fill out the attached "Field of Expertise" form

Note: Applications from graduate students should include a letter from their primary advisor, documenting the student's scientific experience and detailing how participation on the cruise would fit into their graduate degree program.

Staffing decisions are made in consultation with co-chief scientists and take into account nominations from partner countries; final responsibility for ECORD staffing rests with ESSAC. Please submit all application materials both in **digital format** (preferable PDF format) and **paper copy** to (please contact the ESSAC Office when having problems providing us with the above asked materials in both formats): ESSAC Science Coordinator Faculty of Earth & Life Sciences - Vrije Universiteit De Boelelaan1085 1081 HV Amsterdam - The Netherlands

 Phone:
 +31 20 4447272

 Fax:
 +31 20 4449941

 E-mail:
 essac.amsterdam@falw.vu.nl

With a copy to the national ESSAC delegate (see http://www.geo.vu.nl/~essac/ ESSAC button).

Nominations (with copies of their applications) will be forwarded from that office to the Implementation Organizations (IOs). Eligibility as a ECORD participant is limited to scientists or engineers (professors, research scientists, technologists, graduate students, etc.) at a ECORD member institution (e.g. German academic institutions, government labs, ECORD member-based corporations, etc.). Non-ECORD affiliated personnel from other IODP member countries should apply for IODP participation through their country's national program office. Undergraduate students do not qualify as Shipboard Participants, and should not apply to sail using this form. Undergraduates interested in sailing on a IODP expedition should instead contact ECORD for information about the Undergraduate Student Trainee Program.

#### FIELD OF EXPERTISE

\_\_\_\_Biologist \_\_\_\_Microbiologist \_X\_\_ Inorganic Geochemist \_\_\_Organic Geochemist \_\_\_ Geophysicist \_\_\_\_ Hydrologist \_\_\_ Logging Scientist \_\_\_ Oceanographer \_\_\_ Paleomagnetist \_\_\_ Paleontologist (Diatom) \_\_\_\_ Paleontologist (Dinoflagellate) \_\_\_ Paleontologist (Foraminifer - Benthic) \_\_\_ Paleontologist (Foraminifer -Planktonic) \_\_\_ Paleontologist (Megafossil) \_\_\_ Paleontologist (Nannofossil) \_\_\_ Paleontologist (Phytoplankton) \_\_\_ Paleontologist (Radiolaria) \_\_\_ Paleontologist (Silicoflagellate) \_\_\_ Palynologist \_\_\_ Petroleum Geologist \_\_ Petrologist \_\_ Igneous Petrologist \_\_\_ Metamorphic Petrologist \_\_ Physical Properties Specialist \_\_ Sedimentologist \_\_\_ Seismologist \_\_\_ Stratigrapic Correlator \_\_ Structural Geologist Downhole Measurements

ECORD Application form for membership in IODP expedition scientific parties, Page 3 of 3

## 3. Statement for Interest in IODP 2nd MSP Tahiti Sea Level

The height of the sealevel and sea surface temperature (SST) influences important climate factors like the strength of the thermohaline circulation, the concentration of greenhouse gases and the patterns of precipitation and evaporation. Therefore the precise constraints on past sealevel changes and their associated SST variations related to short term paleo-climatic and paleo-oceanographic changes during the last deglaciation are among the main objectives of the upcoming IODP leg off Tahiti.

We are interested in dating the coral material sampled during the drilling in order to establish a precise core chronology and to link its proxy records (e.g. sea surface temperature, SST) to the climate evolution during glacial/interglacial transitions. The importance of accurate and precise sealevel data records covering the last glacial/interglacial transition is increasing allowing a direct comparison with other precisely dated climate archives.

# A. U-series and <sup>14</sup>C Dating of the Tahiti Fossil Coral Record

<u>In this context we are interested</u> to unravel the chronology of sequence of the meltwater pulses, associated climatic events and related paleo-environmental changes. In particular, for the reconstruction of the deglaciation curve for the period 20,000 to 10,000 yrs BP <sup>14</sup>C and U-series dating (e.g. <sup>230</sup>Th/<sup>234</sup>U and <sup>231</sup>Pa/<sup>235</sup>U) are the most suitable methods. The combination of both methods will allow to establish the minimum sealevel during the Last Glacial maximum and to precisely constrain the age of the two meltwater pulses as intended by this IODP project.

Recent investigations indicate that the <sup>234</sup>U/<sup>238</sup>U activity ratio of corals from glacial periods tend to be at least 10 ‰ lower than the present day value of about 145±5 ‰. Being not caused by any alteration process latter variations would have major consequences for the interpretation of glacial/interglacial changes in continental weathering and erosion. Validation of the observation is possible by the precise determination of the <sup>234</sup>U/<sup>238</sup>U ratio on well dated Last Glacial corals throughout the course of this project.

In order to establish a precise chronology we will apply the most sophisticated massspectrometer technique (MC-ICPMS, in a multi-multiplier approach) which guarantees a factor of at least 2 higher precision than previously reached by TIMS. Although corals from the anticipated time interval are less affected by diagentic alteration, sample material will be monitored by state-of-the-art methods (computer tomography, densiometry, etc.) prior to the measurements in order to exclude any chemical alteration. This will guarantee the most reliable dating results. Finally, U/Th and 14C-ages will be compared to better constrain their geochronological calibration.

# B. Establishing the Sea Surface Temperature (SST) variations

In the context of the proposed Tahiti drilling project we are interested to establish SST proxy records mainly from stable isotopes ( $\delta^{18}$ O). In addition, although biased as pure SST-proxy trace element records like Sr/Ca and Ba/Ca will provide additional information about SST and the local upwelling regime which has been of major influence on the development of the Tahiti coral reef system. In particular, the combined proxies applied to well-preserved coral fragments will allow the reconstruction of seasonally resolved SST variations in an area influenced by ENSO variability. With that we can reconstruct inter-annual (ENSO) and possibly decadal (IPO, Inter-decadal Pacific Oscillation) variability in the anticipated time interval from 20.000 to 10.000 years BP.

Stable isotopes as well as trace metals will be measured by state-of-the-art equipment in the mass-spectrometer facilities of the Leibniz-Institut for Marine Sciences.

# Curriculum Vitae of Anton Eisenhauer,

**Anton Eisenhauer** is a physisist and professor for marine environmental geology at the Leibniz-Institute for Marine Sciences. Since several years A. Eisenhauer applies radioactive (e.g. U-Series) and radiogenic isotopes to problems of marine geology and geochemistry. In particular, he is interested in development of new isotope and trace element techniques (currently Ra, Ca, Sr/Ca, Mg/Ca, etc.) in order to reconstruct present and past marine geochemical cylces.

Personal data	
Data of hirth	15 August 1050 in Desttingen Bayeria
Date of birth	15. August 1959 III Roellingen, bavana
Citizenship	German
Military Service	1979 - 1981
Education	1986 Masters in Physics and Mathematics, University Heidelberg
	1989 Ph.D. in physics, University Heidelberg
	1998 "Habilitation" in Geochemsitry at University of Goettingen

## **Professional experience**

11-1986 - 12-1989	Postdoc at the "Institut for Environmental Physics" Univ. Heidelberg
01-1990 - 06-1991	Postdoc at the "HeidelbergAkademy of Science"
06-1991 - 07-1992	Research Fellow in Geochemistry
	at the California Inst. of Technology, Pasadena, U.S.A
07-1992 - 12-1994	Postdoc at the "HeidelbergAkademy of Science"
01-1995 - 01-1999	Assistant Professor (C1) at "Institute for Geochemistry" Univ.
	Goettingen
since 01-1999	Full Professor for Marine Environmental Geology

Publication Record:

## 2004

N. Gussone, **A. Eisenhauer**, G. Haug, A. Heuser, A. Müller and R. Tiedemann, (2004) Carribean Sea Surface Temperature and Salinity Fluctuations During the Pliocene Closure of the Central-Americal Gateway (4.6 and 4.0 Ma) A Comparison of  $\delta^{44}$ Ca- and Mg/Ca Thermometry, Earth Planet Sci Lett, 227, 201-214.

- K.S. Lackschewitz, C.W. Devey, P. Stoffers, R. Botz, **A. Eisenhauer**, M. Kummetz, M. Schmidt and A. Singer (2004) Mineralogical, geochemical and isotopic characteristics of hydrothermal alteration processes in the active submarine, felsic-hosted PACMANUS field, Manus Basin, Papua New Guinea, Geochimica et Cosmochimica Acta, 68, 4405-4427, 2004.
- S. Purkl and **A. Eisenhauer**, (2004) Determination of Radium Isotopes and <sup>222</sup>Rn in a groundwater affected coastal area of the Baltic Sea and the underlying sub-sea floor aquifer, *Marine Chemistry* 87, 137-149.
- MacDonald, I.R., G. Bohrmann, E. Escobar, F. Abegg, P. Blanchon, V. Blinova, W. Brückmann, M. Drews, A. Eisenhauer, X. Han, K. Heeschen, F. Meier, C. Mortera, T. Naehr, B. Orcutt, B. Bernard, J. Brooks and M.D. Farago, (2004) Asphalt volcanism and chemosynthetic life, Campeche Knoll, Gulf of Mexico, *Science 304*, 999-1002.
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- Fietzke, J., A. Eisenhauer, N. Gussone, B. Bock, V. Liebetrau, T.F. Nägler, H.J. Spero, J. Bijma and C. Dullo, (2004) Direct Measurement of <sup>44</sup>Ca/<sup>40</sup>Ca Ratios by MC-ICP-MS Using the Cool-Plasma-Technique, *Chemical Geology* 206(1-2), 11-20.
- **Eisenhauer**, **A.** T.F. Nägler, P. Stille, J. Kramers, N. Gussone, B. Bock, J. Fietzke, D. Hippler and A.-D. Schmitt (2004) Proposal for International Agreement on Ca Notation Resulting from Discussion at Workshops on Stable Isotope Measurements Held in Davos (Goldschmidt 2002) and Nice (EGS-AGU-EUG 2003), Geostandards and Geoanalytical Research 28(1), 149-151, 2004.

# Articles in Press in 2004:

- B. Bock, V. Liebetrau, **A. Eisenhauer**, R. Frei and T. Leipe, (<u>in press</u>) The Nd Isotope Signature of Holocene Baltic Mn/Fe Precipitates as Monitor of Limate Change during the Little Ice Age, Geochem Cosmochem Acta,.
- Heuser A., **Eisenhauer A**., Pearson P.N., Böhm F., Gussone N. and Nägler Th.F. (<u>in press</u>)  $\delta^{44}$ Ca Variations of Planktonic Foraminifer from the Western Equatorial Pacific and the Southern Indian Ocean, Paleoceanography
- Zinke J., von Storch H., Müller B., Zorita E., Rein B., Mieding B., Miller H., Lücke A., Schleser G.
   H., Schwab M. J., Negendank J. F. W., Kienel U., Gonzáles-Ruoco J. F., Dullo W.-Chr. and
   Eisenhauer A. (in press): Evidence for the climate during the Late Mounder Minimum from proxy data and model simulations available within KIHZ (Springer Book)

- Purkl S. and Eisenhauer A. (2003) Solid-Phase Extraction Using EmporeTM Radium Rad Disks to Separate Radium from Thorium. *Journal of Radioanalytical and Nuclear Chemistry* 256(3), 473-480.
- Purkl S. and **A. Eisenhauer**, A Rapid Method for the a-spectrometric analysis of Radium isotopes in Natural waters using Ion-selective Membrane Technology, *Int. J. Appl. Radiat. Isot.*, 38, 875-878, 2003.
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- Nägler, T.F., A. Eisenhauer, A. Müller, C. Hemleben and J. Kramers. ∂<sup>44</sup>Ca-Temperature Calibration on Fossil and Cultured Globigerinoides sacculifer: New Tool for Reconstruction of Past Sea Surface Temperatures. *Geochemistry, Geophysics, Geosystems*, Vol.1, Paper No.: 2000gC000091.

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- M. Frank, J.D. Eckhardt, A. Eisenhauer, P.W. Kubik, B. Dittrich-Hannen, M. Segl and A. Mangini. Beryllium-10, thorium-231, and protactinium-231 in Galapagos Microplate Sediments: implications of hydrothermal activity and paleoproductivity changes during the last 100,000 years. Paleoceanography, Vol. 9, No. 4, 559-578, 1994.
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- **Eisenhauer A**., Z.R. Zhu, L.B. Collins, K.H. Wyrwoll, and R. Eichstätter. The Last Interglacial Sea Level - New Evidences from the Abrolhos Islands, West Australia. Geologische Rundschau, 85, 606-614, 1996.
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#### 1995

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### 1994

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**Eisenhauer A**, K. Gögen, E. Pernicka and A. Mangini; The Influence of Climate on the Growth Rates of Mn-crusts during Late Quaternary; Earth Planet. Sci. Lett., 109, pp25-36, 1992

## 1991

Mangini, **A. Eisenhauer** and P. Walter. A spike of CO<sub>2</sub> in the atmosphere at glacial-interglacial boundaries induced by rapid deposition of manganese in the oceans. Tellus, 43B, 97-105, 1991.

- Mangini, **A. Eisenhauer**, and P. Walter: Response of Manganese in the Ocean to the Climatic Cycles in the Quaternary; Paleoceanography, Vol. 5., No. 5., 811-821, 1990.
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## 1987

**Eisenhauer**, Mangini, A., Segl, M., Beer, J., Bonani, G., Suter, M. and Wölfli, W.; High Resolution <sup>10</sup>Be and <sup>230</sup>Th Profiles in DSDP Site 580, in: Nuclear Instruments and Methods in Physics Research, B29, pp326-331, 1987.

# ECORD Application Form for Membership in IODP Expedition Scientific Parties

## I. CONTACT INFORMATION

(Please keep us informed of any changes in the following information)

Name (first, middle, last):	Thomas Felis
Institution:	University of Bremen
Department:	DFG-Research Center Ocean Margins
Institution Address:	POB 330440, 28334 Bremen, Germany
Phone: work: + 49 (0) <u>421</u> / <u>7</u>	769 b) home: + 49 (0) <u>421</u> / <u>703104</u>
Fax: + 49 (0) <u>421</u> / <u>3116</u>	email:tfelis@allgeo.uni-bremen.de
Present Title: <u>Dr.</u>	Country of Citizenship: <u>Germany</u>
Date of Birth: <u>11.04.1967</u> (DD	0.MM.YYYY) Place of Birth: <u>Bremen</u> Gender: M
Passport No.: <u>9542218227</u>	Place Issued: Bremen
Date Issued: 26.05.1999	Exp. Date: 25.05.2009
Education (Highest degree – PhD., I	M.S., or B.S.): <u>Dr. rer. nat (PhD)</u> Date: <u>17.03.1999</u>
Are you currently a student? No	If yes, see note on last page.

## **II. EXPEDITION INFORMATION**

Expeditions of Interest (please limit selection to no more than three):

1. Expedition Number:	2nd IODP MSP Exp.	Title:	Tahiti Sea Level	
Platform: MSP	Partici	pation:	Full Expedition / Partial* / Shorebased*	

- 2. Expedition Number: \_\_\_\_\_ Title: \_\_\_\_\_ Platform: Riser / Non-riser / MSP Participation: Full Expedition / Partial\* / Shorebased\*
- 3. Expedition Number:
   Title:

   Platform: Riser / Non-riser / MSP
   Participation: Full Expedition / Partial\* / Shorebased\*

(\* Provide detail of proposed participation in an accompanying letter)

Reason(s) for Interest (if necessary, expand in letter): <u>subseasonally resolved reconstructions of variations</u> in sea surface temperature, hydrologic balance, insolation, and the El Niño-Southern Oscillation during <u>specific time windows of the last deglaciation based on stable isotopes and trace elements in massive corals</u>

Personal and/or scientific references (name / address) <u>Gerold Wefer (*Germany*), Gerald Haug (*Germany*), Lucien Montaggioni (*France*), Terrence Quinn (*USA*), Pinxian Wang (*China*)</u>

Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased participant, etc.) \_\_\_\_\_\_\_

# **III. FIELD OF EXPERTISE**

Please check appropriate field(s):

- \_\_\_\_ Biologist
- \_\_\_\_ Microbiologist
- <u>X</u> Inorganic Geochemist
- \_\_\_\_ Organic Geochemist
- \_\_\_\_ Geophysicist
- \_\_\_\_ Hydrologist
- \_\_\_\_ Logging Scientist
- \_\_\_\_ Oceanographer
- \_\_\_\_ Paleomagnetist
- \_\_\_\_ Paleontologist (Diatom)
- \_\_\_\_ Paleontologist (Dinoflagellate)
- \_\_\_\_ Paleontologist (Foraminifer Benthic)
- \_\_\_\_ Paleontologist (Foraminifer Planktonic)
- X Paleontologist (Megafossil)
- \_\_\_\_ Paleontologist (Nannofossil)
- \_\_\_\_ Paleontologist (Phytoplankton)
- \_\_\_\_ Paleontologist (Radiolaria)
- \_\_\_\_ Paleontologist (Silicoflagellate)
- \_\_\_\_ Palynologist
- \_\_\_\_ Petroleum Geologist
- \_\_\_\_ Petrologist
- \_\_\_\_ Igneous Petrologist
- \_\_\_\_ Metamorphic Petrologist
- \_\_\_\_ Physical Properties Specialist
- \_\_\_\_ Sedimentologist
- \_\_\_\_ Seismologist
- \_\_\_\_ Stratigrapic Correlator
- \_\_\_\_ Structural Geologist
- \_\_\_\_ Downhole Measurements

I

## **IV. ATTACHMENTS**

In English!

- 1. Curriculum Vitae
- 2. Publication History

## V. Note for Students

Applications from **graduate students** should include a letter from their primary advisor, documenting the student's scientific experience and detailing how participation on the cruise would fit into their graduate degree program.

**Undergraduate students** do not qualify as Shipboard Participants, and should not apply to sail using this form. Undergraduates interested in sailing on an IODP expedition should instead contact ECORD for information about the Undergraduate Student Trainee Program.

# VI. Eligibility as ECORD participant

Scientists or engineers: professors, research scientists, technologists, graduate students, etc. at ECORD member institutions such as German academic institutions, government labs, ECORD member-based corporations, etc..

Non-ECORD affiliated personnel from IODP member countries can also apply for IODP participation through the country's national program office.

Please submit all application material in PDF format via email to iodp@bgr.de.

Nominations will be forwarded to the ESSAC Science Coordinator, NL, and from there to the Implementation Organizations (IOs).

**Staffing decisions** are made in consultation with co-chief scientists and take into account nominations from partner countries. Final responsibility for ECORD staffing rests with ESSAC.

BGR IODP Koordination Stilleweg 2 30655 Hannover Phone: 0511 / 643-2785

ECORD Application Form for Membership in IODP Expedition Scientific Parties, Page 3 of 3

# ATTACHMENTS

- 1. Reasons for Interest
- 2. Personal and/or scientific references
- 3. Curriculum Vitae
- 4. Publication History

# 1. Reasons for Interest – Thomas Felis

I am working since 1995 in the field of coral-based paleoclimatology, with a focus on reconstructing sea surface conditions such as temperature at subseasonal resolution based on **stable isotope and trace element analyses of massive corals**.

I am using high-resolution reconstructions based on **modern and fossil corals** to improve our understanding of **seasonal, interannual and decadal climate variability** during the **Holocene and Pleistocene**, with a focus on climate phenomena such as the North Atlantic Oscillation (NAO) and the **El Niño-Southern Oscillation (ENSO)**.

I recently introduced a method for more robust estimates of past mean climates from oxygen isotopes in fossil corals (Felis et al., *Coral Reefs*, 2003), and I combined northern Red Sea coral records with climate model simulations to reveal a role for the NAO in last interglacial temperature seasonality (Felis et al., *Nature*, 2004). More recent work focuses on **Holocene ENSO variability**, based on **fossil corals from the western tropical Pacific** (Seiter et al., *Geochemistry, Geophysics, Geosystems*, submitted).

Due to several expeditions to the modern, Holocene and last interglacial reefs of the northern Red Sea I have some expertise in the **identification of fossil Indo-Pacific corals and giant clams** in the field, such as **Porites** and **Tridacna**.

I would be happy to contribute to the 'IODP Mission Specific Platform Expedition – Tahiti Sea Level' as a **coral specialist** and/or **inorganic geochemist**, or in any related field of expertise, **offshore** <u>and/or</u> **onshore**.

In particular I would like to

- support the Science Party in selecting massive corals and giant clams (such as *Porites* and *Tridacna*) suitable for high-resolution paleoclimatic reconstructions
- generate subseasonally resolved reconstructions of sea surface temperature, hydrologic balance, and/or insolation variations based on stable isotope ( $\delta^{18}O$ ,  $\delta^{13}C$ ) and/or trace element (Sr/Ca, U/Ca) analyses of massive corals, in close coordination/cooperation with the Science Party
- study variations in sea surface temperature, hydrologic balance, insolation and/or the El Niño-Southern Oscillation during specific time windows of the last deglaciation (and/or Holocene), in close coordination/cooperation with the Science Party

# 2. Personal and/or scientific references – Thomas Felis

## Professor Dr. Gerold Wefer

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## Professor Dr. Terrence M. Quinn

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# Professor Dr. Gerald Haug

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# Professor Dr. Pinxian Wang

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e-mail: pxwang@mail.tongji.edu.cn e-mail: pxwang@online.sh.cn

# Professor Dr. Lucien F. Montaggioni

Department of Earth and Environmental Sciences Universite de Provence Place Victor Hugo 13331 Marseille cedex 3 FRANCE e-mail: Lucien.Montaggioni@up.univ-mrs.fr

# 3. Curriculum Vitae – Thomas Felis

## Education

Dr. rer. nat.	1999	Faculty of Geosciences, University of Bremen, Germany Dissertation: <i>'Climate and ocean variability reconstructed from stable isotope</i> <i>records of modern subtropical corals (Northern Red Sea)'</i>
Diplom (Geology)	1995	Faculty of Geosciences, University of Bremen, Germany
Vordiplom (Geology)	1991	Faculty of Geosciences, University of Bremen, Germany

## **Professional History**

2003 – present	Post-Doctoral Investigator, DFG-Research Center Ocean Margins, University of Bremen, Germany
1999 – 2003	Post-Doctoral Investigator, Faculty of Geosciences, University of Bremen, Germany
1995 – 1999	Research Assistant, Faculty of Geosciences, University of Bremen, Germany

#### **Research Interests**

- Paleoclimatic and paleoceanographic reconstructions with subseasonal resolution using stable isotopes and trace elements in annually banded reef corals
- Seasonal, interannual and decadal climate variability during the Holocene and Pleistocene
- Variability of the Arctic Oscillation/North Atlantic Oscillation and the El Niño-Southern Oscillation during the Holocene and Pleistocene

## Field Experience

- Shorebased expedition, Northern Red Sea, Holocene reefs (Aqaba), 2004 - in charge of expedition -
- Shorebased expedition, Northern Red Sea, Holocene reefs (Aqaba), 2000
   in charge of expedition -
- Shorebased expedition, Northern Red Sea, last interglacial reef terraces (Aqaba), 1999 *in charge of expedition* -
- 'RV METEOR' Cruise M44/3, Northern Red Sea/Eastern Mediterranean Sea, 1999
- Shorebased expedition, Northern Red Sea, Holocene reefs (Sinai), 1998

- Shorebased expedition, Northern Red Sea, modern reefs (Sinai), 1996
- Shorebased expedition, Northern Red Sea, Holocene/last interglacial reefs (Sinai), 1996
- 'RV METEOR' Cruises M16/1, M16/2, Central/South Atlantic Ocean, 1991

### Talks

- 10th International Coral Reef Symposium, Okinawa (Japan), 2004.
- European Science Foundation-HOLIVAR Workshop "Holocene palaeodata integration and analysis", Bremen (Germany), 2004.
- Workshop on global carbon cycle and related mapping based on satellite imagery and climate change, Tsukuba (Japan), 2004. *invited*
- 6. Deutsche Klimatagung, Potsdam (Germany), 2003.
- EGS-AGU-EUG Joint Assembly 2003, Nice (France), 2003. *invited*
- Jahrestagung der wissenschaftlichen Gesellschaften der festen Erde, GEO 2002, Würzburg (Germany), 2002.
- 1st Sino-German Youth Workshop on Western Pacific Marginal Seas, Shanghai (China), 2002.
- European Meeting of the International Society for Reef Studies, Cambridge (United Kingdom), 2002.
- 27th General Assembly of the European Geophysical Union, Nice (France), 2002.
- 1st Workshop of the DEKLIM EEM Project, Leipzig (Germany), 2002.
- 1st ARTS/PAGES Open Science Meeting, Nouméa (New Caledonia), 2001.

## **Invited Posters**

• 9th German-American Frontiers of Science Symposium (Alexander von Humboldt Foundation / US National Academy of Sciences), Irvine CA (USA), 2003.

## Teaching

- European Science Foundation-HOLIVAR Training Course "Quantitative climate reconstruction and data-model comparisons", Ghent (Belgium), 2004.
- European Science Foundation-HOLIVAR Training Course "Quantitative climate reconstruction and data-model comparisons", London (United Kingdom), 2003.
- Helmert Summerschool "Natural climate variability from 10,000 years to the present day", Potsdam (Germany), 2002.
- Winter School "Marine and Climate Research", Delmenhorst (Germany), 2001.
- KIHZ Sommerschule "Holozäne Klimavariabilität: Synthese von Proxydaten und Klimamodellen", Wilhelmshaven (Germany), 2001.

# 4. Publication History – Thomas Felis

- Felis, T., G. Lohmann, H. Kuhnert, S. J. Lorenz, D. Scholz, J. Pätzold, S. A. Al-Rousan, S. M. Al-Moghrabi, Increased seasonality in Middle East temperatures during the last interglacial period, *Nature*, *429*, 164-168, 2004.
- Maier, C., T. Felis, J. Pätzold, R. P. M. Bak, Effect of skeletal growth and lack of species effects in the skeletal oxygen isotope climate signal within the coral genus *Porites*, *Marine Geology*, 207, 193-208, 2004.
- Felis, T., J. Pätzold, Climate reconstructions from annually banded corals, in *Global environmental change in the ocean and on land*, M. Shiyomi, H. Kawahata, H. Koizumi, A. Tsuda, Y. Awaya (Editoren), 205-227, Terrapub, Tokyo, 2004.
- Felis, T., J. Pätzold, Corals as climate archive, in *The climate in historical times: Towards a synthesis of Holocene proxy data and climate models*, H. Fischer, T. Kumke, G. Lohmann, G. Flöser, H. Miller, H. v. Storch, J. F. W. Negendank (Editoren), 91-108, Springer-Verlag, Berlin, 2004.
- Rimbu, N., G. Lohmann, T. Felis, J. Pätzold, Detection of climate modes as recorded in a seasonalresolution coral record covering the last 250 years, in *The climate in historical times: Towards a synthesis of Holocene proxy data and climate models*, H. Fischer, T. Kumke, G. Lohmann, G. Flöser, H. Miller, H. v. Storch, J. F. W. Negendank (Editoren), 281-292, Springer-Verlag, Berlin, 2004.
- Scholz, D., A. Mangini, **T. Felis**, U-series dating of diagenetically altered fossil reef corals, *Earth* and *Planetary Science Letters*, *218*, 163-178, 2004.
- Felis, T., J. Pätzold, Y. Loya, Mean oxygen-isotope signatures in *Porites* spp. corals: Inter-colony variability and correction for extension-rate effects, *Coral Reefs*, 22, 328-336, 2003.
- Felis, T., J. Pätzold, Climate records from corals, in *Marine Science Frontiers for Europe*, G. Wefer, F. Lamy, F. Mantoura (Editoren), 11-27, Springer-Verlag, Berlin, 2003.
- Rimbu, N., G. Lohmann, **T. Felis**, J. Pätzold, Shift in ENSO teleconnections recorded by a northern Red Sea coral, *Journal of Climate*, *16*, 1414-1422, 2003.
- Rimbu, N., G. Lohmann, **T. Felis**, J. Pätzold, Arctic Oscillation signature in a Red Sea coral, *Geophysical Research Letters*, *28*, 2959-2962, 2001.
- Felis, T., J. Pätzold, Y. Loya, M. Fine, A. H. Nawar, G. Wefer, A coral oxygen isotope record from the northern Red Sea documenting NAO, ENSO, and North Pacific teleconnections on Middle East climate variability since the year 1750, *Paleoceanography*, *15*, 679-694, 2000.
- Felis, T., J. Pätzold, Y. Loya, G. Wefer, Vertical water mass mixing and plankton blooms recorded in skeletal stable carbon isotopes of a Red Sea coral, *Journal of Geophysical Research*, *103*, 30731-30739, 1998.
- Felis, T., J. Pätzold, G. Wefer, M. Fine, Y. Loya, A. H. Nawar, First results of a coral-based history of recent climate in the northern Red Sea, *Zentralblatt für Geologie und Paläontologie Teil I*, 1997, 197-207, 1998.
- Schulz, H. D., T. Felis, C. Hagedorn, R. v. Lührte, C. Reiners, H. Sander, R. Schneider, J. Schubert, H. Schulz, Holozäne Küstenlinie am Unterlauf des Río Guadalquivir zwischen Sevilla und der Mündung in den Atlantik, *Madrider Mitteilungen (Deutsches Archäologisches Institut Abteilung Madrid)*, 36, 219-232, 1995.

### Manuscripts submitted

- Dima, M., **T. Felis**, G. Lohmann, N. Rimbu, Distinct modes of bidecadal and multidecadal variability in a climate reconstruction of the last centuries from a South Pacific coral, *Climate Dynamics*, submitted.
- Seiter, C. G., **T. Felis**, H. Kuhnert, J. Pätzold, Coral records of early- to mid-Holocene ENSO variability from the Philippines, *Geochemistry, Geophysics, Geosystems*, submitted.
- Brachert, T. C., M. Reuter, **T. Felis**, K. F. Kroeger, G. Lohmann, A. Micheels, C. Fassoulas, Icelandic Low controls interannual climate during the Late Miocene, *Geology*, submitted.
- Rimbu, N., G. Lohmann, **T. Felis**, J. Pätzold, Seasonal dependence of sea level pressure, temperature and precipitation patterns associated with interannual to decadal variability in a Red Sea coral record, *The Holocene*, submitted.
- Yu, K.-F., J.-X. Zhao, G.-J. Wei, X.-R. Cheng, T.-G. Chen, T. Felis, P.-X. Wang, T.-S. Liu, δ<sup>18</sup>O, Sr/Ca and Mg/Ca records of *Porites lutea* corals from Leizhou Peninsula, northern South China Sea and their applicability as paleoclimatic indicators, *Palaeogeography, Palaeoclimatology, Palaeoecology*, in revision.

# ECORD Application Form for Membership in IODP Expedition Scientific Parties

## I. CONTACT INFORMATION

(Please keep us informed of any changes in the following information)

Name (first, middle, last): Eberhard Gischler Institution: Johann Wolfgang Goethe-Universität Department: Geologisch-Paläontologisches Institut Institution Address: Senckenberganlage 32, 60054 Frankfurt am Main, Germany Phone: work: + 49 (0) 69 / 798-25136 b) home: + 49 (0) 69 / 70795433 Fax: + 49 (0) 69 / 798-22958 email: gischler@em.uni-frankfurt.de Present Title: PD Dr. Country of Citizenship: Germany Date of Birth: 20.07.1963 (DD.MM.YYYY) Place of Birth: Helmarshausen, Hesse Gender: M Passport No.: 1412093141 Place Issued: Göttingen Date Issued: 19.06.1995 Exp. Date: 18.06.2005 Education (Highest degree – PhD., M.S., or B.S.): Ph.D. Universität Göttingen Date: 08.02.1991 Are you currently a student? No If yes, see note on last page.

# **II. EXPEDITION INFORMATION**

Expeditions of Interest (please limit selection to no more than three):

1. Expedition Number: 2 Title: Tahiti Sea Level Platform: MSP Participation: Full Expedition

- 2. Expedition Number: \_\_\_\_\_ Title: \_\_\_\_\_
  Platform: Riser / Non-riser / MSP Participation: Full Expedition / Partial\* / Shorebased\*
- 3. Expedition Number: \_\_\_\_\_ Title: \_\_\_\_\_ Platform: Riser / Non-riser / MSP Participation: Full Expedition / Partial\*

(\* Provide detail of proposed participation in an accompanying letter)

Reason(s) for Interest (if necessary, expand in letter): The late Quaternary development of reefs including the reconstruction of sea-level from reef drill core records, and the use of coral skeletons as archives of climate proxy data is the focus of my research since several years. I also have comprehensive experience in drilling modern reefs and in on-site logging of cores from these settings.

Personal and/or scientific references (name / address)

Professor Robert N. Ginsburg, University of Miami, Rosenstiel School of Marine and Atmospheric Science, Div. Marine Geology & Geophysics, 4600 Rickenbacker Causeway, Miami, FL 33149, USA,

e-mail: rginsburg@rsmas.miami.edu

Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant,

shorebased participant, etc.) none

# **Curriculum Vitae**

Name	Gischler, Eberhard, PrivDoz., Dr. rer. nat., DiplGeol.		
Present position	University lecturer (Hochschuldozent, C2) at the Geologisch-Paläontologisches Institut, J.W. Goethe-Universität Senckenberganlage 32, 60054 Frankfurt am Main, Germany		
Home address	Konrad-Broßwitz-Strasse 26 D-60487 Frankfurt am Main, Germany		
Citizenship	German		
Birthdate	20 July 1963		
Birthplace	Helmarshausen, state of Hesse		
Parents	Dr. Dr. Eberhard Gischler, surgeon Regina Gischler, née Garkisch		
School	1969-1972 1972-1973 1973-1979 1979-1982 25.05.1982	Grundschule Helmarshausen (primary school) Grundschule Bad Karlshafen (primary school) Gesamtschule Bad Karlshafen (comprehensive school) Albert-Schweitzer-Schule Hofgeismar (secondary school) Abitur (graduation, qualification for university studies)	
Studies	1982-1988	Geology/Paleontology, University Göttingen	
Exams	25.10.1984 26.04.1988 08.02.1991 15.05.2000	Prediploma, University Göttingen Diploma in Geology/Paleontology, University Göttingen Dr. rer. nat., University Göttingen Habilitation <sup>#</sup> in Geology und Paleontology, University Frankfurt am Main	
Positions	03/89-12/90 09/91-12/92 04/93-03/94 07/94-06/95 07/95-03/96 04/96-09/98 10/98 03/02 since 04/02	Research Associate, University Göttingen Research Associate, University Tübingen Research fellowship, University of Miami Research fellowship, University of Miami Postdoctoral Associate, University of Miami Assistant professor (Assistent), University Tübingen Assistant professor, (Assistent) University Frankfurt am Main University lecturer (Hochschuldozent), University Frankfurt am Main; not permanent	

# Scientific career:

1982-1988	Academic studies in geology and paleontology, Georg-August-Universität Göttingen; major interests during my university studies were in the fields of sedimentology and invertebrate paleontology
Oct. 1984	Vordiplom (pre-diploma), exams in geology and paleontology, mineralogy, zoology, and inorganic chemistry; grade: good*
1986-1988	Work for my diploma thesis entitled <i>The western margin of the Göttingen</i> <i>Graben near Elliehausen and Lenglern (1988)</i> ; this work included mapping of Mesozoic strata that were faulted due to the vicinity of the Göttingen Graben and to halotectonics, as well as sedimentologic studies in the middle Triassic Muschelkalk; thesis supervisor by Prof. D. Meischner
April 1988	Diplom-Geologe (diploma in geology and paleontology; exams in geology and paleontology, mineralogy, and zoology; grade: good*)
1988-1991	Wissenschaftlicher Mitarbeiter (research associate) at the Institut und Museum für Geologie und Paläontologie of the Universität Göttingen; work for my dissertation entitled <i>The Devonian Iberg Atoll Reef (Harz Mts.)</i> <i>after termination of reef growth (1991)</i> ; this work was a reconstruction of anatomy and history of a drowned Devonian atoll that developed into a seamount during the Famennian and Mississippian, utilzing microfacies analysis and conodont and goniatite biostratigraphy; thesis-supervisor: Prof. D. Meischner
Feb. 1991	Dr. rer. nat. (Dr. of Sciences), exams in geology, historical geology, paleontology, and mineralogy, grades for thesis and exam: magna cum laude**
1991-1992	Wissenschaftlicher Mitarbeiter (research associate) at the Institut für Geologie und Paläontologie of the Eberhard-Karls-Universität Tübingen; project together with Prof. J. Wiedmann on sedimentology and sequence stratigraphy of Late Cretaceous foramol-type limestones in northern Spain
1993-1996	DFG-(German Research Foundation)-Scholar and research associate at R.N. Ginsburg's Comparative Sedimentology Laboratory at the Rosenstiel School of Marine and Atmospheric Science, University of Miami, Florida; research projects on several topics of reef and shallow water carbonate sedimentology in south Florida, Belize, and the eastern Caribbean
1006-1008	Wissenschaftlicher Assistent C1 (assistant professor) at the Institut für

1996-1998 Wissenschaftlicher Assistent C1 (assistant professor) at the Institut für Geologie und Paläontologie of the Universität Tübingen; continuation of

work in Belize with focus on late Quaternary reef development; work on Triassic and Jurassic synchronous black shale and platform drowning events, projects A1/A3 in the Sonderforschungsbereich (SFB 275): Klimagekoppelte Prozesse in meso- und känozoischen Geoökosystemen (Climate-controlled processes in Mesozoic and Cenozoic geo-ecosystems)

1998-2002 Wissenschaftlicher Assistent C1 (assistant professor) at the Geologisch-Paläontologisches Institut of the J.W. Goethe-Universität Frankfurt am Main; continuation of work in Belize with focus on late Quaternary reef development, habilitation-thesis *Late Quaternary reef development:* carbonate platforms in Belize and SE-Mexico, Central America (1999); project on development of the Pleistocene Key Largo Formation in south Florida; historical climate variation based on sclerochronology and isotope geochemistry of corals (Belize); investigation of fossil (Devonian-Carboniferous) cold seeps, Harz Mts. (Germany)

- May 2000 Habilitation<sup>#</sup> (qualification as independent university lecturer: Privatdozent) in geology and paleontology; topic of test lecture: *Closure of the Strait of Panama: a significant climatic and paleobiogeographic event*
- since Hochschuldozent C2 (university lecturer, not permanent) at the April 2002 Geologisch-Paläontologisches Institut of the Goethe-Universität, Frankfurt am Main, continuation of work on sedimentology, facies, and ecology of modern carbonate depositional environments in Belize, Florida, and Mexico, project investigating the sedimentology of a modern mixed carbonate-siliciclastic ramp, southern Kuwait; sclerochronology and isotope geochemistry of corals from Belize and Kuwait; facies studies of Devonian reef limestones in cores from Harz Mts., Germany; in review/in the planning: platform drowning Maldives; IODP (mission specific platforms) Belize; late Quaternary sea-level Campeche Bank, Yucatan, Mexico
- June 2002 Associate Editor of the international journal PALAIOS

# explanations:

- \* *diploma-grades:* sehr gut (very good), gut (good), befriedigend (satisfactory), ausreichend (sufficient)
- \*\* *dissertation grades:* summa cum laude (with highest praise), magna cum laude (with great praise), cum laude (with praise), rite (with a pass)
- # *habilitation:* includes an evaluation of research and teaching activities, submission of a thesis (or publications), a test lecture with a topic outside applicant's specialty area, and an inaugural lecture

**Courses taught** (SS = summer semester; WS = winter semester; h/w = hours per week)

Field-trips

- Field-course, Carboniferous of the Eastern Rheinisches Schiefergebirge (with D. Meischner), 2 days, SS 1990
- Stratigraphic field-course, Cretaceous of the Teutoburger Wald, 5 days, SS 1992
- Field-trip to U.S.A. (Mid-West and south Florida), 3 weeks, (with W. Oschmann,
   F. Fürsich, M. Aberhan), SS 1996
- Field-trip, Harz Mountains (with W. Oschmann), 6 days, SS 1998, 1999, 2001, 2003
- Field-seminar, Isolated platforms of Belize (with A.J. Lomando), for petroleum geologists, 7 days, March 1996, August 1997, September 1998, April 2000, Oktober 2000
- Field-seminar: Holocene carbonate ramp of southern Kuwait (with A.J. Lomando), for petroleum geologists, 5 days, April 2002
- Reef organisms in buildings of Frankfurt, walk, 1 day, WS 2001/2002, 2002/2003, 2003/2004
- Field-seminar, Elba: Marine habitat and depositional environments, modern fossil (with W. Oschmann), 10 days, SS 2002
- Field-trip Tertiary of the Mainzer Becken (with W. Oschmann), 1 day, SS 2003
- Field-trip Modern and ancient carbonates of south Florida, 9 days, SS 2004

Lectures, seminars, labs

- Reef ecosystems in earth history (lecture), (with Z. Belka, H. Hüßner), 2 h/w, WS 1996/97, 1997/98, SS 1999, SS 2000, SS 2001, SS 2003
- Paleontology and biology of reef organisms (lecture), 2 h/w, WS 1998/99, 1999/00, 2000/01, 2001/02, 2002/03
- Carbonate platforms (lecture), (with H. Hüßner), 2 h/w, SS 2000, SS 2002
- Marine geology and paleoceanography (lecture), (with W. Oschmann), 2 h/w, SS 2001, 2002, 2004
- Regional geology of Central America and the Caribbean (lecture), 1 h/w, SS 1999, 2000, 2003
- Geology of the Harz Mountains (lecture), 1 h/w, SS 1999
- Seminar on coral reefs (assisted R.N. Ginsburg), 2 h/w, SS 1995
- Seminar on the geology of marginal seas (with W. Oschmann), 2 h/w, WS 1997/98, 1998/99, 2001/02, 2003/04
- Seminar on controversies in carbonate sedimentology (with C. Betzler), 2 h/w, WS 1999/00
- Seminar on climate and cycles in earth history (with W. Oschmann), 2 h/w, WS 1999/00, 2002/03
- Lab-course on invertebrate paleontology (with J. Wendt, W. Oschmann), 4 h/w, SS 1996, 1997, 1998, 2001, 2002, 2003, 2004

# Supervision of diploma-theses and dissertations

- (1) Hauser, Ilona: Distribution of benthic foraminifera on Turneffe Islands, Belize; diploma-thesis, November 1999 - November 2001
- (2) Hauser, Ilona: Mollusc faunas on isolated carbonate platforms of Belize; dissertation, since September 2002
- (3) Heinrich, Kerstin: Distribution of benthic foraminifera on Glovers Reef, Belize; diploma-thesis, since November 1999
- Höhne, Stephan: Sclerochronology and isotope-geochemistry of corals in Belize; dissertation, August 2001 – July 2003
- (5) Scheitel, Ulrike: Distribution of benthic foraminifera on Lighthouse Reef, Belize;
   diploma-thesis, since November 2000-December 2002
   Thesis was awarded the Procter & Gambe Environmental Price
- (6) Spresny, Kai-Uwe: Mollusc faunas on isolated carbonate platforms of Belize; dissertation, March 2000 – March 2002
- Zingeler, Daniel: The origin of carbonate mud, a casestudy in Belize; diploma-thesis, March 1999 - June 2001
- Möder, Andrea: Distribution of benthic foraminifera on Banco Chinchorro, Mexico; diploma-thesis, since August 2003
- (9) Hübscher, Sandra: Physical parameters of Devonian "Lahnmarmor", Lahn Syncline, Germany; diploma-thesis, since August 2003
- (10) Lode, Stefanie: Facies and stratigraphy of the borehole 99/04 through the forereef of the Iberg Reef, Harz Mts., Germany; diploma thesis, since August 2003
- (11) Scheitel, Ulrike: Spatial and temporal distribution, diversity, and climate-relations of benthic foraminifera in Holocene lagoons; dissertation, start October 2004

# Habilitation thesis

Reviewer of the habilitation-thesis of B.R. Schöne: Climate proxies in mollusk shells, January 2004

# **Research projects**

Completed projects

- Reef cavity-dwellers (coelobites) in reefs of Belize and Florida, DFG\*-Project Gi 222/1
- The atoll Glovers Reef (Belize): Holocene reef development, early diagenesis, and reef hydrology, DFG-Project Gi 222/2
- Sediment distribution on modern carbonate platforms of Belize, sponsored by Chevron Overseas Petroleum Inc.
- The origin of carbonate mud, a case study in Belize, DFG-Project Gi 222/3
- Holocene development of lagoons, Belize, C.A., DFG-Project Gi 222/4
- Mesozoic oxygen-depleted environments in carbonate and clastic systems,
   DFG-Project A1/A3 of the SFB 275 in Tübingen (Climate-controlled processes in Mesozoic and Cenozoic geo-eco-systems) (with W. Oschmann)
- Facies and sedimentary history of the Pleistocene Key Largo Formation, south Florida, USA, sponsored by NSF (with H.G. Multer, New York, USA)

Current projects

- Geochemistry of carbonate sediments, Belize, sponsored by Chevron Overseas
- Petroleum Inc. (with A.J. Lomando, San Ramon, USA; P.K. Swart, Miami, USA)
- Distribution of molluscs in isolated carbonate platforms of Belize, DFG-Project Os 85/9 (with W. Oschmann)
- Historical climate variation based on sclerochronology and isotope geochemistry of corals from Belize, Central America, DFG-Project Gi 222/5 (with W. Oschmann)
- Late Quaternary development of the Belize Barrier Reef, DFG-Project Gi 222/6 and Gi 222/8 (in review)
- Sedimentology of the mixed carbonate-siliciclastic ramp of northern Kuwait, sponsored by Kuwait Oil Company (with A.J. Lomando)
- Environmental records in coral skeletons of Kuwait, cooperation with Kuwait Institute of Marine Science
- Development of modern stromatolites in the Bacalar lagoon system, Mexico,
- cooperation with M. Gibson, University of Tennessee
- Spatial and temporal distribution, diversity, and climate-relations of foraminifera in lagoons, Belize, DFG-Project Gi 222/9

Projects in review/in the planning

- Platform drowning in the Maldives, Indian Ocean, with E.G. Purdy, U.K., Chr. Hübscher, Hamburg (in review; RV SONNE ship-time)
- Quaternary development of the Belize Barrier Reef, for IODP,
   cooperation with A. Droxler, Rice University; G.P. Eberli, University of Miami;
   G.F. Camoin, Universite de Provence), to be submitted on Oct. 1, 2004
- Late Quaternary sea-level, Campeche Bank, Yucatan, Mexico, cooperation with
   A. Eisenhauer, Kiel; P. Blanchon, Cancun, submitted to DFG
- \*DFG, Deutsche Forschungsgemeinschaft = German Research Foundation

# Activities as referee

Journals:	Coral Reefs			
	Facies			
	Geologische Rundschau			
	Journal of Sedimentary Research			
	Marine Biology			
	Marine Ecology Progress Series (staff referee)			
	Marine Geology			
	Palaeogeography Palaeoclimatology Palaeoecology			
	Palaios (associate editor)			
	Paläontologische Zeitschrift			
	Quaternary Research			
	Sedimentary Geology			
	Sedimentology			
Institutions:	Deutsche Forschungsgemeinschaft (German Research Foundation)			
	American Chemical Society, Petroleum Research Fund			
	Fonds zur Förderung der wissenschaftlichen Forschung (Austrian Science Foundation)			
	Natural Sciences and Engineering Research Council of Canada			
	The Israel Science Foundation			

# **Administrative Positions**

October 1996- September 1998	Member of the commission for studies of the Faculty of Geosciences at the University of Tübingen
since April 1997	Member of the Subkommission for Carboniferous Stratigraphy in Germany
since October 2001	Member of the directorate of the Geologisch-Paläontologisches Institut, University of Frankfurt
since July 2001	Organization of the colloquium of the geologic and mineralogic institutes, University of Frankfurt
since 2002	Student advisor geology/paleontology
since June 2002	Associate Editor of the journal PALAIOS

# Memberships

since 1987	International Association of Sedimentologists (IAS)
since 1992	International Society for Reef Studies (ISRS)
since 1992	The Pander Society
since 1993	Society of Sedimentary Geology (SEPM)
since 1996	Paläontologische Gesellschaft
since 1996	Geologische Vereinigung (GV)

# **Invited lectures**

- Technical University Darmstadt, lecture during interview for a research associate position at the Geologisch-Paläontologischen Institut, 03 May 1991 Title: "Das devonische Atoll von Iberg und Winterberg im Harz nach Ende des Riffwachstums"
- SHELL, Den Haag, Talk during Assessment Center, 13 September 1991 Title: "The Iberg Reef - a drowned Devonian atoll"
- Universität Freiburg, lecture during interview for an assistant professorship at the Geologisches Institut, 16 October 1992 Title: "Das devonische Atoll von Iberg und Winterberg im Harz: ein Pegel für Meeresspiegel-Schwankungen?"
- (4) Free University Berlin, lecture during interview for an assistant professorship at the Institut für Paläontologie, 9 May 1994 Title: "Kryptische Organismen in modernen Rifen vor der Küste von Belize"
- (5) Universität Tübingen, lecture during interview for an assistant professorship at the Institut für Geologie und Paläontologie, November 1995
- Universität Göttingen, Seminar of the geologic institutes, 21 November 1996
   Title: "Holozäne Entwicklung von drei atlantischen Atollen"
- Universität Würzburg, Kolloquium of the Paläontologisches Institut, 21 January 1997

Title: "Holozäne Riffentwicklung in Belize"

- (8) Universität Halle-Wittenberg, Special-Kolloquium on the 60th anniversary of the death of Johannes Walther, 12 May 1997 Title: "Johannes Walther und die moderne Riff-Forschung"
- (9) Universität Erlangen-Nürnberg, lecture during interview for a professorship at the Paläontologisches Institut (position of E. Flügel), 4 May 2001 Title: "Die Riffe von Belize (Zentralamerika) im apäten Quartär: Ökologie, Fazies und Steuerfaktoren"
- (10) Albert-Schweitzer-Schule Hofgeismar, Public Lecture during the German "Year of the Geosciences" Jahres, 01.11.2002
   Title: "Korallenriffe auf dem Zeugenstand: was erzählen sie uns über Klima- und Umweltveränderungen?"
- (11) Imperial College, London, lecture during interview for a lectureship at the Department of Earth Science and Engineering, 30 January 2003
   Title: "The reefs of Belize, Central America: facies, development, and significance "

Name (first, middle, last): Eberhard Gischler

# **III. FIELD OF EXPERTISE**

Please check appropriate field(s):

- \_\_\_ Biologist
- \_\_\_\_ Microbiologist
- \_\_\_\_ Inorganic Geochemist
- \_\_\_\_ Organic Geochemist
- \_\_\_\_ Geophysicist
- \_\_\_\_ Hydrologist
- \_\_\_\_ Logging Scientist
- \_\_\_\_ Oceanographer
- \_\_\_\_ Paleomagnetist
- \_\_\_\_ Paleontologist (Diatom)
- \_\_\_\_ Paleontologist (Dinoflagellate)
- X Paleontologist (Foraminifer Benthic)
- \_\_\_\_ Paleontologist (Foraminifer Planktonic)
- X Paleontologist (Megafossil)
- \_\_\_\_ Paleontologist (Nannofossil)
- \_\_\_\_ Paleontologist (Phytoplankton)
- \_\_\_\_ Paleontologist (Radiolaria)
- \_\_\_\_ Paleontologist (Silicoflagellate)
- \_\_\_\_ Palynologist
- \_\_\_\_ Petroleum Geologist
- \_\_\_\_ Petrologist
- \_\_\_\_ Igneous Petrologist
- \_\_\_\_ Metamorphic Petrologist
- \_\_\_\_ Physical Properties Specialist
- X Sedimentologist
- \_\_\_\_ Seismologist
- \_\_\_\_ Stratigrapic Correlator
- \_\_\_\_ Structural Geologist
- \_\_\_\_ Downhole Measurements

# **IV. ATTACHMENTS**

## In English!

- 1. Curriculum Vitae
- 2. Publication History

# V. Note for Students

Applications from **graduate students** should include a letter from their primary advisor, documenting the student's scientific experience and detailing how participation on the cruise would fit into their graduate degree program.

**Undergraduate students** do not qualify as Shipboard Participants, and should not apply to sail using this form. Undergraduates interested in sailing on an IODP expedition should instead contact ECORD for information about the Undergraduate Student Trainee Program.

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# VI. Eligibility as ECORD participant

Scientists or engineers: professors, research scientists, technologists, graduate students, etc. at ECORD member institutions such as German academic institutions, government labs, ECORD member-based corporations, etc..

Non-ECORD affiliated personnel from IODP member countries can also apply for IODP participation through the country's national program office.

Please submit all application material in **PDF format** via email to **iodp@bgr.de**.

Nominations will be forwarded to the ESSAC Science Coordinator, NL, and from there to the Implementation Organizations (IOs).

**Staffing decisions** are made in consultation with co-chief scientists and take into account nominations from partner countries. Final responsibility for ECORD staffing rests with ESSAC.

BGR IODP Koordination Stilleweg 2 30655 Hannover Phone: 0511 / 643-2785

# **Publications**

Publications in journals and books

- (1) Gischler, E. (1992): Das devonische Atoll von Iberg und Winterberg im Harz nach Ende des Riffwachstums.- Geologisches Jahrbuch, A 129: 3-195.
- (2) Gischler, E. & Korn, D. (1992): Goniatiten des Oberviseums aus Decksedimenten des Iberger Riffes, Oberharz.- Neues Jahrbuch f
  ür Geologie und Pal
  äontologie Abhandlungen, 185 (3): 271-288.
- (3) Gischler, E. (1994a): A new occurrence of "Spirifer" macrogaster F.A. ROEMER 1852 (Brachiopoda) in lower Carboniferous limestones on top of the Iberg Reef, Germany.- Neues Jahrbuch für Geologie und Paläontologie Monatshefte, 1994 (6): 321-328.
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# ECORD Application form for membership in IODP expedition scientific parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following information)
Name (first, middle, last) Malcolm Barrie Hart
InstitutionUniversity of Plymouth
Department School of earth, Ocean & Env. Sciences
Institution University of Plymouth
Address Drake Circus Plymouth PL4 8AA, UK
Telephone (Work) <u>+44-1752-233122 (Home) +44-1752-709415 (F</u> ax) + <u>441752 233117</u>
Email Address mhart@plymouth.ac.uk
Present Title Prefessor Country of Citizenship British
Place of Birth Uk, Newcastle Date of Birth Gender 06-02-45 male
Passport No 201082122 Place Issued uk Date Issued 02-00 Exp. Date 02-10
Education (Highest degree - PhD., M.S., or B.S.) PhD/DSc Date: 1970/1993
Are you currently a student? no (If yes, see note below)
II. EXPEDITION INFORMATION
Expeditions of Interest (please limit selection to no more than three):
Expedition Number: #519 TitleTahiti sea level to be part of expanded team
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*
Expedition Number: Title
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*
Expedition Number: Title:
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*
(* provide detail of proposed participation in an accompanying letter)
Reason(s) for Interest (if necessary, expand in letter)recently working carribean cores through last 300.00ys
using isotopes, foraminifera and pteropods
Personal and/or scientific references (name and address) Prof. J.W. Murray
Southampton Oceanography Centre, UK
Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased
participant, etc.) shipboard Leg 195 + shorebased research on many DSDP/ODP/IODP samples

#### **III. ATTACHMENTS**

1. Attach curriculum vitae which includes a publication history

2. Please fill out the attached "Field of Expertise" form

Note: Applications from graduate students should include a letter from their primary advisor, documenting the student's scientific experience and detailing how participation on the cruise would fit into their graduate degree program.

Staffing decisions are made in consultation with co-chief scientists and take into account nominations from partner countries; final responsibility for ECORD staffing rests with ESSAC. Please submit all application materials both in **digital format** (preferable PDF format) and **paper copy** to (please contact the ESSAC Office when having problems providing us with the above asked materials in both formats): ESSAC Science Coordinator Faculty of Earth & Life Sciences - Vrije Universiteit De Boelelaan1085 1081 HV Amsterdam - The Netherlands Phone: +31 20 4447272 Fax: +31 20 4449941 E-mail: essac.amsterdam@falw.vu.nl

With a copy to the national ESSAC delegate (see http://www.geo.vu.nl/~essac/ ESSAC button).

Nominations (with copies of their applications) will be forwarded from that office to the Implementation Organizations (IOs). Eligibility as a ECORD participant is limited to scientists or engineers (professors, research scientists, technologists, graduate students, etc.) at a ECORD member institution (e.g. German academic institutions, government labs, ECORD member-based corporations, etc.). Non-ECORD affiliated personnel from other IODP member countries should apply for IODP participation through their country's national program office. Undergraduate students do not qualify as Shipboard Participants, and should not apply to sail using this form. Undergraduates interested in sailing on a IODP expedition should instead contact ECORD for information about the Undergraduate Student Trainee Program.

#### FIELD OF EXPERTISE

- \_\_\_\_ Biologist
- \_\_\_\_ Microbiologist
- \_ Inorganic Geochemist
- \_ Organic Geochemist
- \_\_\_\_ Geophysicist
- \_\_\_\_ Hydrologist
- Logging Scientist
- \_ Oceanographer
- \_\_\_\_ Paleomagnetist
- \_\_\_\_ Paleontologist (Diatom)
- \_\_\_\_ Paleontologist (Dinoflagellate)
- X\_Paleontologist (Foraminifer Benthic)
- X\_ Paleontologist (Foraminifer Planktonic)
- \_X\_ Paleontologist (Megafossil) pteropods
- \_\_\_\_ Paleontologist (Nannofossil)
- Paleontologist (Phytoplankton)
- \_\_\_\_ Paleontologist (Radiolaria)
- \_\_\_\_ Paleontologist (Silicoflagellate)
- \_\_\_\_ Palynologist
- \_\_\_\_ Petroleum Geologist
- \_\_\_\_ Petrologist
- \_\_\_\_ Igneous Petrologist
- \_\_\_\_ Metamorphic Petrologist
- \_\_\_\_ Physical Properties Specialist
- \_\_\_\_ Sedimentologist
- \_\_\_\_ Seismologist
- \_X\_\_ Stratigrapic Correlator
- \_\_\_\_ Structural Geologist
- \_\_\_\_ Downhole Measurements

#### Case for Inclusion in Scientific Team - Tahiti Platform

Dr Christopher Smart, Dr Gregory Price and I have worked on a number of DSDP/ODP/IODP projects over the past 20 years. While much of my work has been on material from the Cenozoic and Mesozoic, Dr Smart has always worked on Neogene and Quaternary successions. In the last 10 months I have also been working on the Pleistocene of the Caribbean Sea, using stable isotope stratigraphy, foraminifera and pteropods in order to develop a precise chronology that can be used in tephrochronology. While this involved sediments deposited in the last 330,000 years our detailed record covers the last glacial and de-glacial period. The Tahiti Project appears to offer an opportunity to further develop this work using the microfossil groups with which we have some expertise. Both Dr Smart (Leg 174) and Prof. Hart (Leg 95) have been part of a shipboard party and are fully aware of the responsibilities that this carries. Neither of us are available for the cruise (I already have a cruise in the Caribbean earlier in the summer 2005 collecting more cores for our tephrochronology work around the island of Montserrat) but wish to be part of the "extended " scientific party for this project.

Malcolm Hart

Professor of Micropalaeontology School of Earth, Ocean & Environmental Sciences University of Plymouth Drake Circus Plymouth PL4 8AA Tel. xx44-(0)1752-233122 Fax. xx44-(0)1752-233117 Secretary Tel. xx44-(0)1752-233100 www.plymouth.ac.uk

## **CURRICULUM VITAE**

Malcolm Barrie HART, B.Sc., Ph.D., D.Sc., A.R.C.S., D.I.C., F.G.S., C.Geol.

6 February 1945
Newcastle-on-Tyne, England
British
Married, with three children
Anglican

\*\*\*\*\*\*

## **HIGHER EDUCATION**

B.Sc. (Hons) Geology - Imperial College, London University (1966)

A.R.C.S (Associate of the Royal College of Science) (1966)

Ph.D. Micropalaeontology - Imperial College, London University (1970)

D.I.C. (Diploma of Imperial College) (1970)

D.Sc. - London University (1993)

F.G.S. (Fellow of the Geological Society) (1969)

C.Geol. (Chartered Geologist) (1990 - first available date for the award).

Awarded the Judd Prize for Geological Research by Imperial College (1969).

## **MEMBERSHIP OF LEARNED SOCIETIES and other BODIES**

## Fellow of the Geological Society

Member of Council (2001 - 2004) Member of External Relations Committee (2001 - 2004) Member of the Stratigraphical Committee (1984-1986)

Features Editor - *Geoscientist* (1997-2001) *Geoscientist* Editorial Board (1997-2001) Accreditation Committee (1997 on) Geological Forum (1997 – 1999) Joint Earth Sciences Education Committee (1996 – 1999)

## Member of the Geologists' Association

**Member of the Palaeontological Association** Council Member (1978-1980)

### Member of the British Micropalaeontological Society

Treasurer (1971-1976) Committee Member (1971-1976; 1981-1983; 1989-1992; 1997- on) Chairman of the Foraminifera Group (1981-1983) Chairman of the Society (1989-1992) Member of the Joint Council for Palaeontology (1989-1992) Chairman of the Joint Council for Palaeontology (1991) Editor of the Journal of Micropalaeontology (1997-2003) Special Publications Editor (1997 on) *Ex-Officio* (as Editor) Member of the Committee (1997 on )

### Member of the Ussher Society

Committee Member (1973-1980) Secretary (1974-1980) Vice-Chairman (1991) Chairman (1992-1993) Vice-Chairman (1994)

#### Member of SEPM

Member of Twenhofel medal Nominations Committee (2004)

#### Member of the European Geological Union

#### Member of the European Palaeontological Association

UK National Correspondent to Europal (1992 - on) UK Representative on Council (1995 - on) Vice- President (1998 - 2001) President (2001 - on)

## Fellow of the Cushman Foundation for Foraminiferal Research

#### Member of the Devonshire Association

Chairman of the Geology Section (1980-1981) Council Member of the Association (1980-1982) Member of the Geology Section Committee (1978 - on) President-elect of the Association for 2005-2006

#### Additionally

English Nature - Member of Council (2001 - on)

An appointment made for an initial period of three years by the Secretary of State for the Environment. English Nature is the government's advisors on wildlife and geology in England and provides statutory protection of all geological sites in England.

**Dorset and East Devon World Heritage Site** – Member of the Science and Conservation Advisory group (2002 – on). Member of the team working on the submission document (1999-2001) that was presented to UNESCO.

## **International Work on Stratigraphy**

Corresponding Member of the International Sub-Commission on Cretaceous Stratigraphy (1986 - on). Chairman of the Working Group on the Albian Stage (1993 - on).

Member of the Sinemurian Working Group of the International Sub-Commission on Jurassic Stratigraphy (1996 – 1998). *The proposal for the GSSP on the North Somerset Coast has now been ratified by the IUGS.* 

Member of the Pliensbachian Working Group of the International Sub-Commission on Jurassic Stratigraphy (1996 – 2002). *The proposal for the GSSP on the Yorkshire Coast has now been submitted to a formal vote prior to approval.* 

Member of the Oxfordian Working Group of the International Sub-Commission on Jurassic Stratigraphy (2002 – on)

Member of the Toarcian Working Group of the International Subcommission on Jurassic Stratigraphy (2002 – on)

Member of the Microfossils Working Group of the International Sub-Commission on Jurassic Stratigraphy (1996 – on).

Member of the Sequence Stratigraphy Working Group of the International Sub-Commission on Jurassic Stratigraphy (1996 – on).

Member of IGCP Project No 58 - Mid-Cretaceous Events (completed) Member of IGCP Project No 216 - Global Bioevents (completed) Member of IGCP Project No 262 - Tethyan Correlation (completed) Member of IGCP Project No 335 - Biotic Recovery from Mass Extinction (completed) Member of IGCP Project No.381 – South Atlantic Mesozoic Correlations (1995 – on)

## **Other Editorial Work**

On Editorial Board of *Cretaceous Research* On Editorial Board of *Revue de Paléobiologie* Active reviewer for a wide range of international journals

## **Other External Activities**

Member of PCFC Committee of Enquiry on Research (1989-1990) Member of the CNAA Physical Sciences Research Degrees Committee (1985-1990) Member of NERC Geological Sciences TAC (1980-1982) Member of the UK Deep Sea Drilling Project Committee (various dates) Member of the Committee of Heads of Polytechnic & College Geoscience Departments (1986-1991)

Member of the Committee of Heads of University Geoscience Departments (1991-2000)

[Chairman 1996-1999] [Vice-Chairman 1999-2000] [Member of Executive Committee - (1994-2000)] [Member of Working Party on Professional Accreditation (1995-1996)]

## EMPLOYMENT

1966-1967	Demonstrator, Kingston Polytechnic
1969-1972	Junior Lecturer, University of Newcastle-upon-Tyne
1972-1978	Senior Lecturer, Plymouth Polytechnic
1978-1980	Principal Lecturer, Plymouth Polytechnic
1980-1984	Reader in Micropalaeontology, Plymouth Polytechnic

## 1981 awarded personal title of "Professor of Micropalaeontology"

1980-1986 Polytechnic Research Co-ordinator
1986-1995 Head of Department of Geological Sciences
1995-1996 University Director of Research
1997-2000 University Dean of Research
2000-2001 Pro Vice-Chancellor (Research & Enterprise)
2002 – on Professor of Micropalaeontology, Department of Geology

## **COURSE DEVELOPMENT**

While at the University of Newcastle-Upon-Tyne I was involved in a complete restructuring of the BSc/BSc (Hons) Geology degree programmes.

On arrival in Plymouth it was during the transition from BSc London External degrees to those validated by the Council for National Academic Awards. The programmes in which I had an involvement were:-

BSc Environmental Sciences: BSc Geography: BSc Modular (Science/Social Science):

BSc Combined Sciences: BSc Applied Geology: BSc Environmental Geology: BSc Geological Sciences: BEng Civil Engineering: BEd Science Pathways (Rolle College)

The majority of these have undergone subsequent Progress Reviews and, in some cases, Re-Validation following major changes.

I have been the External Advisor on Degree Programme Validation at:-

University of Derby: University of Glamorgan: Cheltenham & Gloucester CHE

As Director/Dean of Research/Pro Vice-Chancellor I had responsibility for the validation/scrutiny of all postgraduate programmes in the University with a view to adding "Graduate Studies" to my responsibility. Act as Chair to the majority of postgraduate developments, including M.Res. Key role in the development of Modular Masters structure in the Postgraduate Medical School. In present role I am still acting as Chair to Postgraduate Validation Events.

## **EXAMINATION EXPERIENCE**

Served on Examination Boards in the University of Plymouth for the following courses:-

BSc Environmental Science: BSc Applied Geology: BSc Earth Science: BSc Environmental Geology: BSc Geological Sciences: MSc Applied Marine Science<sup>.</sup>

BSc Combined Science.

Have served as External Examiner at the Cheltenham & Gloucester CHE:

BSc Geography & Geology BSc Modular Science [Earth Resources pathway]

Have served as External Examiner at the University of Southampton:

MSc Micropalaeontology

Have served as External Examiner to M.Sc. thesis (by research) in the following University:

University of Greenwich

Have served as External Examiner to PhD theses in the following Universities:

Hull, Newcastle-on-Tyne; Uppsala; Halifax (Canada); IIT Kharagpur, India; Kingston University; Aberdeen University; University of Madras, India; Univérsité Pierre et Marie Curie, Paris.

Have served as External Examiner to DSc submissions in the following Universities

University of Adelaide, Australia University of Exeter, U.K. University of Wales, U.K.

## SERVICE TO EDUCATION & TEACHER TRAINING

Served on the Devon & Cornwall CATE Committee for just over three years, accrediting courses at the School of Education (Exeter), the University of Plymouth (Rolle) and The College of St Mark & St John.

Involved in the development of Science Modules which are a part of the current B.Ed. programme at Rolle.

Elected as a Parent Governor of Estover Community College in 1988 following the Education Reform Act. Elected Chairman from 1990-1997. Closely involved in the development of Community Education and the "in-school" training of PGCE students (from the University of the West of England and The College of St Mark & St John) in Mathematics and Humanities.

## GENERAL

Nationally and internationally acknowledged authority on Micropaleontology and Biostratigraphy. Author of over 145 research papers (list attached) and Editor of six books, including the definitive work on the Engineering and Geology of the Channel Tunnel. Author of over 30 consultancy reports on oil exploration, the site of the Thames Barrier and the route of the Channel Tunnel. Have presented work and/or given invited lectures to over 150 UK-based meetings/symposia/conferences. Have been appointed Vice-President for two international Conferences in Pau and Geneva. Have presented research papers all over the world, including:-

Uppsala, Hamburg, Dijon, Grenoble, Geneva, Halifax, Washington DC, Philadelphia, Boulder (Colorado), San Diego, Amsterdam, Paris, Basle, Berne, Zurich, Los Angeles, Fribourg, Leiden, Maastricht, Munster, Copenhagen, Vienna, Warsaw, Krakow, Mons, Caravaca, Palermo, Rouen, Bordeaux, Rio de Janeiro, Aracaju, Salvador (Brazil), Bombay, Pune, Madras, Tiruchchirapalli (India), Goa (India), Vancouver (Canada), Perth (Australia), Lisbon, Tübingen, Prague, and Kiel.

I have successfully supervised a total of 32 PhD theses and 2 MPhil theses. I am currently supervising 4 research students [of whom three are close to completion].

Funding for my research has come from The Royal Society, The British Council, The Leverhulme Trust, NERC, NAB, UNOCAL, AMOCO, Petrobras, Amerada Hess plc., the British Geological Survey and other commercial concerns (e.g. ECC, Engineering Geology Ltd, etc.).

Field work has been undertaken in 19 overseas countries, including Australia, Middle East, Brazil, Greece, Scandinavia and SE India. I also served as ship-board Scientist on "Glomar Challenger" in 1983. Since that time have worked on core materials from many DSDP/ODP/IODP sites in many of the world's oceans.

I have also given a large number of lectures to local groups, societies and local schools. The topics range from careers in geology to general interest lectures and talks on current environmental issues. Active participation in SET weeks.

In the 1992 Research Selectivity Exercise of the HEFCE I was involved in a submission generated by the Environmental Scientists, Chemists, Marine Scientists and Geologists. This was ranked '4' and was the highest ranked assessment area in the University of Plymouth. In the 1996 RAE, PERC was rated as 3A. In the 2001 RAE PERC was again rated as '4'.

In October 1994 the Department of Geological Sciences was visited as a part of the Quality Assessment of English Geoscience Departments. We had made a submission for 'Excellence' and this was upheld by the visiting panel. The report of the visit, when it was published, was a very positive document on the management, teaching and student support available in my Department. This was the very first 'excellent' awarded to a subject area in the University of Plymouth (beating Geography by 30 minutes!).

## ECORD Application form for membership in IODP expedition scientific parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following

information)

Name (first, middle, last) Ed (Edmund) Charles Hathorne

Institution The Open University

Department Department of Earth Sciences

Institution The Open University

Address Walton Hall, Milton Keynes, MK7 6AA, United Kingdom

Telephone (Work) +44 (0)1908 659781 (Home) +44 (0)7790 011798 (Fax) +44 (0)1908 655151

Email Address E.C.Hathorne@open.ac.uk

Present Title (Dr.) Research Assistant Country of Citizenship United States of America

Place of Birth Washington D.C. Date of Birth Gender 14<sup>th</sup> July 1978 Male

Passport No.702084812 Place Issued US Embassy London Issued 10 Aug 2001 Expires 9 Aug 2011

Education (Highest degree - PhD., M.S., or B.S.) PhD. Date: Viva 21-6-2004 Thesis accepted

Are you currently a student? (If yes, see note below) No

#### **II. EXPEDITION INFORMATION**

Expeditions of Interest (please limit selection to no more than three):

Expedition Number: **519** Title **Tahiti** Platform: Riser Non-riser **MSP Participation: Full Expedition Partial\* Shorebased\*** Expedition Number: Title Platform: Riser Non-riser MSP Participation: Full Expedition Partial\* Shorebased\* Expedition Number: Title: Platform: Riser Non-riser MSP Participation: Full Expedition Partial\* Shorebased\* (\* provide detail of proposed participation in an accompanying letter) Reason(s) for Interest (if necessary, expand in letter) Please see letter Personal and/or scientific references (name and address) **Prof. Kevin Burton and Dr. Rachael James Dept. of Earth Sciences, The Open University, Walton Hall, Milton Keynes, MK7 6AA, U.K.** Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased participant, etc.) **Shipboard Inorganic Geochemist on ODP Leg 208, Leg 208 IR Editing Meeting** 

ECORD Application form for membership in IODP expedition scientific parties, Page 1 of 3

### FIELD OF EXPERTISE

- \_\_\_\_ Biologist
- \_\_\_\_ Microbiologist
- \_X\_ Inorganic Geochemist
- Organic Geochemist
- \_\_\_\_ Geophysicist
- \_\_\_\_ Hydrologist
- \_\_\_\_ Logging Scientist
- Oceanographer
- \_\_\_\_ Paleomagnetist
- \_\_\_\_ Paleontologist (Diatom)
- \_\_\_\_ Paleontologist (Dinoflagellate)
- \_\_\_\_ Paleontologist (Foraminifer Benthic)
- \_\_\_\_ Paleontologist (Foraminifer Planktonic)
- \_\_\_\_ Paleontologist (Megafossil)
- \_\_\_\_ Paleontologist (Nannofossil)
- \_\_\_\_ Paleontologist (Phytoplankton)
- \_\_\_\_ Paleontologist (Radiolaria)
- \_\_\_\_ Paleontologist (Silicoflagellate)
- \_\_\_\_ Palynologist
- \_\_\_\_ Petroleum Geologist
- \_\_\_\_ Petrologist
- \_\_\_\_ Igneous Petrologist
- \_\_\_\_ Metamorphic Petrologist
- \_\_\_\_ Physical Properties Specialist
- \_\_\_\_ Sedimentologist
- \_\_\_\_ Seismologist
- \_\_\_\_ Stratigrapic Correlator
- \_\_\_\_ Structural Geologist
- \_\_\_\_ Downhole Measurements

Dr. Ed Hathorne Department of Earth Sciences, The Open University, Walton Hall, Milton Keynes, MK7 6AA

E.C.Hathorne@open.ac.uk

8<sup>th</sup> November 2004

Dear ESSAC Science Coordinator,

Please find attached my application to be involved with the MSP Tahiti expedition 519. As an "Inorganic Geochemist" I would enjoy the opportunity to be involved with pore water sample collection during drilling activities. However, I would settle for shore based involvement as I feel that the possibilities to do great science with the Tahiti drilling samples will be numerous.

My primary reason for participating is to obtain samples of massive coral colonies to extract records of seawater chemistry (trace metal/Ca ratios) at sub-seasonal resolution using laser ablation (LA) ICP-MS and micro-drilled samples analysed by conventional solution ICP-MS. I have been developing LA-ICP-MS techniques for the high spatial resolution (30µm spot) analysis of biogenic carbonates for a couple of years (Hathorne et al. [2003] G3 Vol. 4, No. 12, 10.1029). Recently I have been working on aragonite standards to calibrate LA-ICP-MS measurements of many trace elements in coral skeletons and would use my experience of laser ablation and conventional ICP-MS to ensure all measurements were of the highest possible quality. Sr/Ca and Mg/Ca would be used for SST reconstruction, ratios such as Ba/Ca and Cd/Ca could provide information about nutrient status while tracers such as Li/Ca and Nd/Ca would detail changes in global and local continental runoff. Additionally, my institution presently hosts the NERC U-series dating facility for the U.K. community and myself and my colleagues at The Open University are very willing to undertake some coral dating.

My approach to extracting past seawater chemistry from biogenic marine carbonates is such that I have a great interest in biomineralization and diagenesis. I think it is vital to study the chemistry of pore waters from the drill holes as pore water chemistry can be much more sensitive to reactions such as re-crystallisation than the chemistry of the carbonates themselves. I would like to find out how endo-upwelling can affect the diagenesis of corals, and how groundwater seepage and nutrient pulses are related to microbialite growth and coral encrusting. I find the abundant microbialites at Tahiti fascinating and would like to conduct some high resolution LA-ICP-MS analyses on microbialite samples with the aim of relating differences in carbonate chemistry to biomineralization processes.

As an experienced ODP geochemist I would like to be involved with planning and conducting pore water sampling during drilling operations. I would suggest down hole sampling like previously employed at Tahiti (Andrié et al., 1998. GCA 62, pp2809-2822), but if sediments are sufficiently lithified, to also use the ODP titanium

squeezing technique to obtain pore water samples. In addition to the standard physiochemical parameters that have been measured on Tahiti in the past, I would like to filter and acidify pore water samples on-site so a full suite of major and trace elements could be determined "on shore".

I have learnt a lot from participating in ODP in the past and thrived on the spirit of collaboration that I experienced. I would very much view participating in the Tahiti drilling as a chance to learn. As such I would like to contribute in any way possible, including attending editing meetings and organising data archiving.

Thank you for your consideration and I look forward to hearing from you. Yours sincerely,

Ed Hathorne

Department of Earth Sciences The Open University Walton Hall Milton Keynes MK7 6AA U.K. Phone +44 (0)1908 659781 E-mail E.C.hathorne@open.ac.uk

## **Edmund Charles Hathome**

Personal Details	Born: 14 <sup>th</sup> July 1978 Nationality: American (Resident in U.K. since 1986)
Education	October 2000 – June 2004 Natural Environment Research Council Funded Ph.D. at the Department of Earth Sciences, The Open University, Walton Hall, Milton Keynes <b>Ph.D. in Geochemistry: "The Trace Element and Lithium Isotope Composition of</b> <b>Planktonic Foraminifera"</b>
	September 1996 – June 1999
	University of Wales, Aberystwyth, Ceredigion, SY23 3DB
	B.Sc. Geography 2:1
	Apart from the compulsory tutorial, practical geography skills, fieldwork and dissertation modules, my degree consisted of the following modular components:
	Year One: Cell Biology, Culture and Society, Population and Economy, Rural and Urban Change, Atmosphere and Oceans, The Dynamic Earth, Ecology and Evolution, Global Ecology and Soil Systems, Earth Surface Processes and The Earth in Time and Space
	Year Two: Global Water Resources, Fluvial Geomorphology, Reading the Ice Age Record, Physical Glaciology, Atmospheric Change, Volcanic Activity and Environmental Change and Environmental History of the last 18,000 Years
	Year Three: Hydrological Processes and Modelling, Protected Landscapes, Remote Sensing and Geographic Information Systems, Quatemary Dating Methods, Geochemical Records of Quatemary Environmental Change, Dynamic Biogeography and Ice and Snow: Water Quality and Hydrology
	September 1994 – June 1996 Stourbridge College, Hagley Road, Stourbridge, West Midlands A-Level Art:E, Biology:C, Geography:C
Research Experience	I have been a postdoctoral research assistant at The Open University since July 2004 working on the inorganic precipitation of calcium carbonate from seawater like solutions and Laser Ablation ICP-MS analyses of trace elements in foraminiferal calcite and coralline aragonite.
	Geochemistry:
	I have substantial experience of the chemical analysis of foraminiferal calcite involving cleaning, chemical separation, ICP-MS elemental analysis and MC-ICP-MS and TIMS analysis to obtain isotope ratios. I have unique experience of laser ablation ICP-MS analysis of foraminiferal calcite after performing substantial application development during my PhD. I am also experienced in electron microprobe analysis of foraminiferal calcite.
	Palaeoceanography:
	During March-May 2003 I sailed on Ocean Drilling Programme Leg 208 to Walvis Ridge in the South Atlantic. During the 2 months at sea I learnt many skills including sediment pore water extrusion, various titration techniques, coulometer operation, ICP-AES analysis and lithostratigraphy.
	Micropalaeontology:
	I frequently prepare marine sediment samples for foraminifera test (foram) picking. I am familiar with the biostratigraphy of planktonic forams over the last 60 Ma and I have picked large (10mg = $\sim$ 300 tests) samples from high to low latitudes from both the Atlantic and Pacific oceans. I am skilled in light microscope photography and SEM

imaging.

	Palaeoecology:	
	For my undergraduate dissertation Lake" I travelled to Kenya where I u vegetation survey. Back in the lab sediment analysis, diatom analysis	"A Diatom Stratigraphy from an Ethiopian Crater indertook lake sediment coring and assisted with a I gained experience of sediment core sampling, and transfer functions.
Teaching Experience	I have demonstrated at The Open Un of the British Isles" for a whole week hours in a secondary school as part o research councils.	iversity summer school course "The geological history ( for the past three years. I have also taught for 20 of the researcher in residence scheme funded by the
Publications	Hathorne, E.C. (2004). <i>The Trac</i> <i>Planktonic Foraminifera.</i> PhD Thesi	e <i>Element and Lithium Isotope Composition of</i> s The Open University.
	Hathorne, E.C., Alard, O., James, intratest variability of trace eleme coupled plasma-mass spectrometry No. 12, 10.1029.	R.H., and Rogers, N.W. (2003). <i>Determination of</i> <i>ints in foraminifera by laser ablation inductively</i> <i>v.</i> Geochemistry, Geophysics, Geosystems <b>Vol. 4</b> ,
International	Hathome E.C. and lames $R H$ (2004) The Li	isotone record of Neorene seawater ICP8 Biarritz 2004 Abstract
Conference	natione, E.C., and James K.H. (2004) The Lisotope record of Neogene Seawater. ICP's Biamtz 2004 Abstract.	
Abstracts	Hathorne, E.C., James, R.H., and Harris N. ( 2003 AGU Abstract	(2003) The Li isotope composition of planktonic foraminifera. Fall
	Hathorne, E.C., James, R.H., Alard, O., and I elements in foraminifera by laser ablation induc	Rogers, N.W (2003). Determination of intra-test variability of trace tively coupled plasma-mass spectrometry. EUG 2003 Abstract.
	Hathorne, E.C., James, R.H., Alard, O., and F elements in foraminifera by laser ablation in Abstract.	Rogers, N.W (2002). Determination of intra-test variability of trace nductively coupled plasma-mass spectrometry. Fall 2002 AGU
Interests	I practice the martial art Aikido and en	joy sailing, swimming, socialising and travelling.
References	Dr. Rachael James	Prof. Kevin Burton
	Department of Earth Sciences	Dept. of Earth Sciences
	The Open University	The Open University
	Walton Hall, Milton Keynes,	
	MK7 6AA U.K.	
	Tel: +44 (0)1908 654296	Tel: +44 (0)1908 653989
	Fax: +44 (0)1908 655151	Fax: +44 (0)1908 655151
	Email: r.h.james@open.ac.uk	Email: k.w.burton@open.ac.uk



## ECORD Application form for membership in IODP expedition scientific parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following information)
Name (first, middle, last) : Pascal, François, KINDLER
Institution : University of Geneva
Department : Department of Geology and Paleontology
Institution : University of Geneva
Address : 13, rue des Maraîchers, 1205 Geneva, SWITZERLAND
Telephone (Work) : +4122 379 6649 (Home) : +4122 796 8515 (Fax) : +4122 379 3210
Email Address : Pascal.Kindler@terre.unige.ch
Present Title : Professor Country of Citizenship : SWITZERLAND
Place of Birth : Morges Date of Birth : April 9<sup>th</sup>, 1953 Gender : male
Passport No. : F0841671 Place Issued : Geneva Date Issued : 03/16/2004 Exp. Date : 03/15/2014
Education (Highest degree - PhD., M.S., or B.S.) Date : 1988
Are you currently a student? (If yes, see note below) : no

#### **II. EXPEDITION INFORMATION**

Expeditions of Interest (please limit selection to no more than three): Expedition Number : MSP 519 Title : The last deglacial sea-level rise in the south Pacific (Tahiti and Australia)

Platform: Riser Non-riser <u>MSP</u> Participation: Full Expedition Partial\* Shorebased\* (\* provide detail of proposed participation in an accompanying letter) Reason(s) for Interest (if necessary, expand in letter) : see letter

Personal and/or scientific references (name and address) : **Prof. André STRASSER, Department of Geology, University of Fribourg, Pérolles, 1700 Fribourg, Switzerland** 

Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased participant, etc.) : sedimentologist on ODP Leg # 194; January – March 2001

ECORD Application form for membership in IODP expedition scientific parties, Page 1 of 3

#### **III. ATTACHMENTS**

1. 1. Attach curriculum vitae which includes a publication history

2. 2. Please fill out the attached "Field of Expertise" form

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Note: Applications from graduate students should include a letter from their primary advisor, documenting the student's scientific experience and detailing how participation on the cruise would fit into their graduate degree program.

Staffing decisions are made in consultation with co-chief scientists and take into account nominations from partner countries; final responsibility for ECORD staffing rests with ESSAC. Please submit all application materials both in **digital format** (preferable PDF format) and **paper copy** to (please contact the ESSAC Office when having problems providing us with the above asked materials in both formats): ESSAC Science Coordinator Faculty of Earth & Life Sciences - Vrije Universiteit De Boelelaan1085 1081 HV Amsterdam - The Netherlands

 Phone:
 +31 20 4447272

 Fax:
 +31 20 4449941

 E-mail:
 essac.amsterdam@falw.vu.nl

With a copy to the national ESSAC delegate (see http://www.geo.vu.nl/~essac/ ESSAC button).

Nominations (with copies of their applications) will be forwarded from that office to the Implementation Organizations (IOs). Eligibility as a ECORD participant is limited to scientists or engineers (professors, research scientists, technologists, graduate students, etc.) at a ECORD member institution (e.g. German academic institutions, government labs, ECORD member-based corporations, etc.). Non-ECORD affiliated personnel from other IODP member countries should apply for IODP participation through their country's national program office. Undergraduate students do not qualify as Shipboard Participants, and should not apply to sail using this form. Undergraduates interested in sailing on a IODP expedition should instead contact ECORD for information about the Undergraduate Student Trainee Program.

#### FIELD OF EXPERTISE

- \_\_\_\_ Biologist
- \_\_\_\_ Microbiologist
- \_\_\_\_ Inorganic Geochemist
- \_\_\_\_ Organic Geochemist
- \_\_\_\_ Geophysicist
- \_\_\_\_ Hydrologist
- Logging Scientist
- \_\_\_\_ Oceanographer
- \_\_\_\_ Paleomagnetist
- \_\_\_\_ Paleontologist (Diatom)
- \_\_\_\_ Paleontologist (Dinoflagellate)
- \_\_\_\_ Paleontologist (Foraminifer Benthic)
- \_\_\_\_ Paleontologist (Foraminifer Planktonic)
- \_\_\_\_ Paleontologist (Megafossil)
- \_\_\_\_ Paleontologist (Nannofossil)
- \_\_\_\_ Paleontologist (Phytoplankton)
- \_\_\_\_ Paleontologist (Radiolaria)
- \_\_\_\_ Paleontologist (Silicoflagellate)
- \_\_\_\_ Palynologist
- \_\_\_\_ Petroleum Geologist

## X Petrologist (sedimentary)

- \_\_\_\_ Igneous Petrologist
- \_\_\_\_ Metamorphic Petrologist
- \_\_\_\_ Physical Properties Specialist

## X Sedimentologist

- \_\_\_\_ Seismologist
- \_\_\_\_ Stratigrapic Correlator
- \_\_\_\_ Structural Geologist
- \_\_\_\_ Downhole Measurements

**ECORD Application form for membership in IODP expedition** scientific parties, Page 3 of 3

## FACULTÉ DES SCIENCES

SECTION DES SCIENCES DE LA TERRE DÉPARTEMENT DE GEOLOGIE ET PALEONTOLOGIE 13, rue des Maraîchers | CH-1205 Genève 4 Tél. ++41 22 379 61 11 | Fax ++41 22 379-3210

Pascal KINDLER Professeur Adjoint

Ligne directe : ++41 22 379 66 49 | 379 66 19 E-mail: Pascal.Kindler @terre.unige.ch ESSAC Science Coordinator Faculty of Earth & Life Sciences Vrije Universiteit De Boelelaan 1085 1081 HV Amsterdam The Netherlands

Geneva, November 2<sup>nd</sup>, 2004

Dear All,

I would like to reconfirm my strong interest in participating to the MSP project # 519 entitled "The last deglacial sea-level rise in the south Pacific : offshore drilling in Tahiti (French Polynesia) and on the Australian Great Barrier Reef" by Gilbert Camoin and collaborators.

For the past 15 years, I have been working on reconstructing the Holocene and Late Pleistocene sealevel and climate history based on shallow-marine and reefal carbonates mostly in the Bahamas, but also in Bermuda, in the Mediterranean Sea, and in Hawaii. Participating to this MSP project would be for me a unique opportunity to work in the Southern Hemisphere and to correlate the data collected there with the data I have collected so far in the northern half of our planet.

In addition, recent work on Miocene carbonates retrieved during ODP Leg 194 drew my attention to the diagenesis of drowning surfaces. It appears that these surfaces can display features very similar to those produced during meteoric diagenesis, which can lead to confusions when interpreting the stratigraphic record. I believe that this mission will also be an opportunity to study such drowning surfaces and refine models of submarine diagenesis and its distinction from that affecting the meteoric realm.

I am flexible about my participation to this mission. Going to Tahiti would of course be a great experience, but participating to the Onshore Party would be equally interesting.

Thank you for considering my interest.

Sincerely,

Pascal Kindler

Enclosed : curriculum vitae publication list ECORD application form

#### PASCAL KINDLER

#### **CURRICULUM VITAE**

#### **GENERAL INFORMATION**

Date of birth Country of citizenship Marital status Private address Telephone (home) Professional address Telephone (work) *e-mail*  April 9th, 1953 Switzerland Divorced, no children 51, ch. des Platières, 1219 Aïre (+4122) 796 85 15 13, rue des Maraîchers, 1211 Geneva (+4122) 379 6649 Pascal.Kindler@terre.unige.ch



#### **EDUCATION**

- 1974 B.S. in Earth Sciences
- 1976 M.S. in Earth Sciences
- 1978 Degree in Physical Education
- 1987 Ph.D. in Earth Sciences

University of Geneva University of Geneva University of Geneva University of Geneva

*Languages*: French (mother tongue), English (fluent), German (average) *Computing skills*: WORD, EXCEL, Corel-DRAW, Power Point

#### **Special courses**

- 1984 Advanced micropaleontology
- 1988 Physical stratigraphy1989 Scientific writing
- Cyclostratigraphy Quaternary climates
- 1990 Sedimentology of deep-water deposits
- 1991 Geology of the Alps
- 1992 Carbonate sequence stratigraphy Continental climates
- 1993 Oil and sedimentary basins Trace fossils
- 1994 Geology of the Prealps Sedimentary basin analysis
- 1995 Sequence stratigraphy (siliciclastics) Carbonates and cyclostratigraphy
- 1997 Sequence stratigraphy

#### **Field workshops**

- 1981 Sedimentology of modern siliciclastic deposits
- 1984 Sedimentology of modern carbonates and evaporites
- 1986 Tectonics and sedimentation Sedimentology of siliciclastic rocks
- 1989 Sedimentology of modern carbonates
- 1990 Sedimentology of modern carbonates Sedimentology of siliciclastic rocks
- 1991 Sedimentology of modern carbonates Comparative sedimentology of modern and ancient coastal deposits (carbonates, siliciclastics, evaporites)
- 1996 Ecology, sedimentology and diagenesis of modern and Pleistocene reefs
- 1998 Sedimentology of modern siliciclastic deposits
- 2000 Geological events and crisis
- 2003 An introduction the geology of Sardinia
- 2004 Pleistocene and Holocene carbonate environments

University of Geneva University of Fribourg University of Geneva University of Geneva Saint Louis, USA San Francisco, USA University of Lausanne University of Stuttgart University of Fribourg University of Besançon University of Fribourg University of Lausanne University of Bern University of Geneva Saint Petersburg, USA University of The Balearic Islands

Germany Tunisia France Spain Florida (USA) and Bahamas Mexico (Yucatan) Utah (USA) Belize Tunisia

Egypt

Germany Tunisia Sardinia Eleuthera, Bahamas

	Swiss Confederation Summer 1972	Uranium prospecting in Walliser Alps
	<i>Mineralogy Department, Univ. Geneva</i> 10/74 - 09/75	Assistant (undergraduate) - demonstrating in geophysics
	<i>Geology Department, Univ. Geneva</i> 05/75 - 09/79	Assistant (graduate) - demonstrating in geology and sedimentary petrography
	<i>Junior High School, Geneva</i> 09/77 - 06/89	Physical education teacher
	University of Miami (Florida)	Visiting scientist
	07/89 - 09/91	- Swiss National Science Funds (SNSF) project $n^{\circ}$ 8220-28458
	<i>Geology Department, Univ. Geneva</i> 10/91 - 09/99	Scientific collaborator - collaborating on several SNSF projects - demonstrating in geology (mapping) and petrology
	<i>Geology Department, Univ. Geneva</i> 10/93 - 09/99	"Chargé de cours" (lecturer) - introductory geology - supervising M.S. and Ph.D. students
	<i>Dept. of Geology, EPF Lausanne</i> 10/94 - 09/98	"Chargé de cours" (lecturer) - sedimentology for engineers
	<i>Geological Institute, Univ. Lausanne</i> 10/99 - 03/00	Substitute Professor - sedimentology and sedimentary petrography
	<i>Geology Department, Univ. Geneva</i> 10/99 - 09/01	Substitute Professor introductory geology, regional geology, geologic mapping
	<b>Ocean Drilling Program (ODP)</b> 01/01 - 03/01	Sedimentologist - sailed on Leg 194 and participated to two post-cruise meetings
	<i>Geology Department, Univ. Geneva</i> 10/01 - ongoing	<ul><li>"Professeur adjoint"</li><li>regional geology, carbonate sedimentology, global change</li></ul>
	<b>Université Louis Pasteur, Strasbourg</b> 10/03 – 09/04	Invited Professor - introduction to sedimentology
ACTIVI	TIES WITH THE SWISS NATIONAL SCIENCE F	UNDS
	1988 - 1989	- collaborating on project n° 2000.5-322, applicant E. Davaud
	1990 - 1991	- applicant, project n° 8220-028458
	1991 - 1994	- working on project n° 20-29917.90, applicant E. Davaud
	1992 - 1993 1994 - 1996	- collaborating on project n° 2100-037335-93 appl R Wernli
	1994 - 1997	- working on project n° 20-40638.94, applicant Prof. E. Davaud
	1995 - 1998	- co-applicant, project n° 20-43118.95
	1997 - 1999	- working on project n° 20-37089.96, applicant J. Charollais
	1998 - 1999	- co-applicant, project n° 2000-053524.98
	2002 - 2002	- applicant, project n° 21-67139.01
GEOLO	GICAL MEETINGS (WITH PRESENTATION)	TT
GLULU	1987 Lucerne, Switzerland	Swiss Geological Society
	Chambéry, France	Association of the Geologists from SE France
	1990 San Salvador, Bahamas Dallas, USA	5th Symposium on the Geology of the Bahamas Geological Society of America

EXPERIENCE

#### GEOLOGICAL MEETINGS (WITH PRESENTATION, CONTINUED)

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1991	Baltimore, USA	Geological Society of America
	Tallahassee, USA	Society for Sedimentary Geology (SEPM)
1992	Stuttgart, Germany	German Geological Society
	San Salvador, Bahamas	6th Symposium on the Geology of the Bahamas
	Basel, Switzerland	Swiss Geological Society
1993	Fribourg, Switzerland	First Meeting of Swiss Sedimentologists
	Tallahassee, USA	Geological Society of America
	Marrakech, Morocco	International Association of Sedimentologists
	State College, USA	Society for Sedimentary Geology (SEPM)
1994	Fribourg, Switzerland	Second Meeting of Swiss Sedimentologists
	Toulouse, France	First French Congress on Stratigraphy
1995	Fribourg, Switzerland	Third Meeting of Swiss Sedimentologists
	Aix-les-Bains, France	International Association of Sedimentologists
	St Petersburg, USA	Society for Sedimentary Geology (SEPM)
1996	Fribourg, Switzerland	Fourth meeting of Swiss Sedimentologists
	Wildhaus, Switzerland	Society for Sedimentary Geology (SEPM)
1997	Fribourg, Switzerland	Fifth meeting of Swiss Sedimentologists
	Heidelberg, Germany	International Association of Sedimentologists
1998	Alicante, Spain	International Association of Sedimentologists
1999	Fribourg, Switzerland	Seventh meeting of Swiss Sedimentologists
	Aix-en-Provence, France	International Symposium on Reefs
2000	Fribourg, Switzerland	Eighth meeting of Swiss Sedimentologists
2001	Davos, Switzerland	International Association of Sedimentologists
	San Francisco, USA	American Geophysical Union
2002	Fribourg, Switzerland	Joint SwissSed/COL Symposium
	Johannesburg , RSA	International Association of Sedimentologists
2003	Fribourg, Switzerland	Eleventh meeting of Swiss Sedimentologists
	Durham, Great-Britain	Twelfth Bathurst Meeting
	Bordeaux, France	Ninth Congress of French Sedimentologists
	Basel, Switzerland	First Swiss Geoscience Meeting
2004	Fribourg, Switzerland	Twelfth meeting of Swiss Sedimentologists
	Florence, Italy	32 <sup>nd</sup> IGC Meeting
2005	Muscat, Oman	Twenty fourth IAS Meeting

#### FIELD WORK

TIEED WORK	
1974	30 days on Elba Island (Italy), (M.S. field work)
1979-1985	200 days in the French Prealps, (Ph.D. field work)
1988	10 days in the Platé Massif (France), (post-doc research)
1988-1989	15 days in Sardinia (SNSF project n°2000.5-322)
1989-2000	250 days in the Bahamas (several SNSF projects)
1993	10 days in southern Morocco
1994 - 1995	40 days in Cyprus and Tunisia (SNSF project n°20-40638.94)
1995 - 1998	30 days in the French Prealps (SNSF project n° 20-43118.95)
1999	10 days in Bermuda (personal research)
1999	15 days in Hawaii (personal research)
2001	ODP Leg 194
2002 - 2004	20 days in Sicily (SNSF project n° 21-67139.01)
MISCELLANEOUS	
Societies	Swiss Geological Society, Geological Society of America, SEPM, Swiss Sed, Society of Physics and Natural Sciences (Geneva), Swiss Committee of IUGS, Commission Romande en Sciences de la Terre
Hobbies	jogging, skiing, swimming, basketball, gardening, traveling
Distinction	Schläfli Award, 1994

#### REFERENCES

Prof. Georges GORIN	Département de Géologie de l'Université de Genève, Maraîchers 13 1211 Genève 4 Phone. +41 22 379 6607 <i>e-mail: Georges.Gorin@terre.unige.ch</i>
Prof. Robert N. GINSBURG	RSMAS/MGG, University of Miami, 4600 Rickenbacker Causeway Miami, FL 33149, USA Phone. +1 305 361 4875 <i>e-mail: rginsburg@rsmas.miami.edu</i>
Prof. André STRASSER	Institut de Géologie de l'Université de Fribourg, Boulevard Pérolles 1700 Fribourg. Phone. +41 26 300 8978 <i>e-mail: Andreas.Strasser@unifr.ch</i>

#### **PUBLICATION LIST**

#### ABSTRACTS

- (1) Kindler, P. (1987): Les wildflyschs du secteur entre l'Arve et le Giffre (Haute-Savoie). *Résumés de la séance annuelle SGG/SGS*.
- (2) Kindler, P. (1987): Les wildflyschs du secteur entre l'Arve et le Giffre (Haute-Savoie, France). Résumés du 2<sup>ème</sup> Colloque sur le détritisme dans le SE de la France, Ass. des Géologues du SE, Univ. de Savoie, Chambéry, p. 35.
- (3) Kindler, P. (1987): Découverte de calcaires sublithographiques paléocènes dans le secteur entre l'Arve et le Giffre (Haute-Savoie, France). *Résumés du 2<sup>ème</sup> Colloque sur le détritisme dans le SE de la France, Ass. des Géologues du SE, Univ. de Savoie, Chambéry*, p. 36.
- (4) Strasser, A., Davaud, E., Kindler, P., and Martini, R. (1989): Transgressive-regressive depositional sequences in Upper Pleistocene (Tyrrhenian) coastal deposits of Sardinia, Italy. *Abstracts 10th IAS Regional Meeting, Budapest.*
- (5) Kindler, P. (1990): Rainfall as a mechanism of keystone vugs formation ? New evidence in Pleistocene eolianites from Eleuthera, Bahamas. *Abstracts and Programs, Fifth Symposium on the Geology of the Bahamas, Bahamian Field Station, Fort Lauderdale, FL*, p. 13.
- (6) Kindler, P. (1990): Megapores (keystone vugs, fenestrae) subtidal, intertidal or supratidal ? Bahamian Quaternary evidences. *Geological Society of America Annual Meeting, Abstracts with Programs*, vol. 22/7, p. 131.
- (7) Kindler, P. (1991): Holocene stratigraphy of Lee Stocking Island, Bahamas New interpretation with respect to sea-level history. *Geological Society of America Regional Meeting, Abstracts with Programs*, vol. 23/1, p. 53.
- (8) Kindler, P. (1991): Episodic coastal sedimentation during the Holocene. An example from Lee Stocking Island, Bahamas. *Programs and Abstracts, Research conference on Quaternary coastal evolution SEPM/IGCP 274, Tallahassee, FL.*
- (9) Hearty, P.J., and Kindler, P. (1991): The geological evolution of San Salvador Island, Bahamas. *Geological Society of America Annual Meeting, Abstracts with Programs*, vol. 23/5, p. 225.
- (10) Kindler, P., and Bain, R.J. (1992): Submerged late Holocene beachrock on San Salvador, Bahamas. Implications for recent sea-level history. *Profil, Band 1, Sea-level changes - Processes and products*, p. 26.
- (11) Bain, R.J., and Kindler, P. (1992): High-frequency, low-amplitude fluctuations during the late Holocene sea-level rise: new data from the French Bay beachrock, San Salvador, Bahamas. *Abstracts and Programs, Sixth Symposium on the Geology of the Bahamas, Bahamian Field Station, Fort Lauderdale, FL*, p. 7.
- (12) Hearty, P.J., and Kindler, P. (1992): The geological evolution of San Salvador Island, Bahamas. *Abstracts and Programs, Sixth Symposium on the Geology of the Bahamas, Bahamian Field Station, Fort Lauderdale, FL*, p. 11-12.
- (13) Kindler, P., and Hearty, P.J. (1992): Pre-Sangamonian eolianites in the Bahamas? New evidence from sedimentological and amino-acid analysis. *Abstracts and Programs, Sixth Symposium on the Geology of the Bahamas, Bahamian Field Station, Fort Lauderdale, FL*, p. 12.
- (14) Kindler, P., and Hearty, P.J. (1992): Petrography of San Salvador eolianites: a key to the understanding of Quaternary climatic and sea-level changes. *Abstracts and Programs, Sixth Symposium on the Geology of the Bahamas, Bahamian Field Station, Fort Lauderdale, FL*, p. 23-24.
- (15) Kindler, P., Ujetz, B., Charollais, J., and Wernli, R. (1992): Paleocene recycling of Cretaceous limestones: new evidence from Ultrahelvetic units, Haute Savoie, France. *Résumés de la séance annuelle SGG/SGS*, p. 14-15.
- (16) Kindler, P., and Hearty, P.J. (1992): Petrography of Bahamian eolianites. A key to understanding Quaternary climatic and sea-level changes. *Résumés de la séance annuelle SGG/SGS*, p. 14.
- (17) Ujetz, B., and Kindler, P. (1993): New foraminiferal evidence for the paleoecology and age of the Val d'Illiez Formation, Haute-Savoie, France. *Abstracts, First meeting of Swiss sedimentologists*, p. 29.
- (18) Kindler, P., and Hearty, P.J. (1993): Sea-level control of limestone composition: new data from Quaternary carbonates in the Bahamas. *Geological Society of America Regional Meeting, Abstracts with Programs*, vol. 25/3, p. 27.

- (19) Hearty, P.J., and Kindler, P. (1993): Quaternary sea-level history from Bermuda and the Bahamas. *Geological Society of America Regional Meeting, Abstracts with Programs*, vol. 25/3, p. 22.
- (20) Kindler, P., and Hearty, P.J. (1993): Carbonate petrography as an indicator of climate and sea-level changes. New data from Bahamian Quaternary units. *Abstracts 14th IAS Regional Meeting, Marrakech*, p. 214.
- (21) Kindler, P., Davaud, E., Martini, R., and Strasser, A. (1993): Climate control on sediment composition. New evidence from Late Pleistocene coastal deposits (Sardinia, Italy). *SEPM Annual meeting, Abstracts*, p. 40-41.
- (22) Kindler, P., Charollais, J., Ujetz, B., and Wernli, R. (1994): Middle-Eocene contourites from the Ultrahelvetic Prealps of Haute-Savoie, France. A case of mimic recycling. *Abstracts, Second meeting of Swiss sedimentologists*, p. 22.
- (23) Kindler, P., Charollais, J., Ujetz, B., and Wernli, R. (1994): Middle-Eocene bottom-current deposits from the Ultrahelvetic Prealps of Haute-Savoie, France. A case of mimic recycling. *Abstr. First Int. Meet. on Perimediterranean Carbonate Platforms*, p. 87-89.
- (24) Kindler, P., Charollais, J., Ujetz, B., and Wernli, R. (1994): Eocene contourites from the Ultrahelvetic Prealps (Haute-Savoie, France): a case of mimic recycling. *Strata*, v. 6, p. 155.
- (25) Ujetz, B., and Kindler, P. (1994): New biostratigraphic results on the Gurnigel nappe in the Haute-Savoie, France: important paleogeographic implications. *Strata*, v. 6, p. 169.
- (26) Piguet, B.V., Morend, D., Kindler, P., and Wernli, R. (1995): The Lower Ultrahelvetic Melange from the Dérochoir area (Platé Massif, Haute Savoie, France): a well-ordered flysch succession. *Abstracts, Third meeting of Swiss sedimentologists*, p. 29.
- (27) Morend, D., Piguet, B.V., Kindler, P., and Wernli, R. (1995): The Lower Ultrahelvetic Melange from the Dérochoir area (Platé Massif, Haute Savoie, France): a well-ordered flysch succession. *Abstracts 16th IAS Regional Meeting, Aix-les-Bains*, p. 108.
- (28) Kindler, P., Davaud, E., and Strasser, A. (1995): Complex climate and sea-level forcing mechanisms revealed by the petrographic composition of late Pleistocene coastal deposits. Examples from Sardinia (Italy) and Tunisia. *Abstracts 16th IAS Regional Meeting, Aix-les-Bains*, p. 86.
- (29) Kindler, P., Davaud, E., and Mangini, A. (1995): New climatic, tectonic and eustatic data from the late Pleistocene marine terraces of Western Cyprus. *Abstracts First SEPM Congress on Sedimentary Geology*, p. 76.
- (30) Hearty, P.J., Neumann, A.C., and Kindler, P. (1995): Eleuthera island, Bahamas: a rosetta stone of stratigraphy and interglacial sea level. *Abstracts First SEPM Congress on Sedimentary Geology*, p. 68.
- (31) Piguet, B.V., and Kindler, P. (1996): Dépôts de slumps et de coulées de débris dans le mélange suprahelvétique inférieur, Massif de Platé (Haute-Savoie, France). *Abstracts, Fourth meeting of Swiss sedimentologists*, p. 19.
- (32) Ujetz, B., and Kindler, P. (1996): The Voirons Sandstones: flysch or molasse ? Abstracts, Fourth meeting of Swiss sedimentologists, p. 26-27.
- (33) Kindler, P., Hearty, P.J., and Davaud, E. (1996): Warmer than present interglacials during the middle Pleistocene ? Petrographic and sedimentologic evidence from coastal carbonates, Cyprus and the Bahamas. *Abstracts SEPM/IAS Research Conference, Wildhaus*, p. 84-85.
- (34) Kindler, P., Davaud, E., and Hillgärtner, H. (1997): Lower Cretaceous eolianites in the Chambotte Formation, Salève Chain, France ? Petrological evidences and geological implications. *Abstracts, Fifth meeting of Swiss sedimentologists*, p. 81.
- (35) Hearty, P.J., and Kindler, P. (1997): Direct sea-level evidence of Antarctic ice collapse during the Middle Pleistocene (stage 11 ?) from Bermuda and the Bahamas. *Abstracts AGU Spring Meeting*, p. S180.
- (36) Kindler, P., and Hearty, P.J. (1997): Elevated marine terraces in northern Eleuthera, Bahamas. Local tectonic uplift or major global deglaciation during the Middle Pleistocene ? *Abstracts 18th IAS Regional Meeting, Heidelberg*, p. 199.
- (37) Kindler, P., Davaud, E., and Hillgärtner, H. (1997): Sedimentological, petrological and diagenetic evidence for greenhouse eolianites in the Lower Cretaceous Chambotte Formation, Salève Chain, France. *Abstracts 18th IAS Regional Meeting, Heidelberg*, p. 198.
- (38) Piguet, B.V., and Kindler, P. (1997): Sheared olistostromes in the Lower Ultrahelvetic melange from Haute-Savoie (Western Alps, France). *Abstracts 18th IAS Regional Meeting, Heidelberg*, p. 274.

- (39) Hearty, P.J., Cheng, H., Edwards, R.L., and Kindler, P. (1997): U/Th dating of a +20m Pleistocene sea-level stand. *Abstracts AGU Fall Meeting*, p. T240.
- (40) Massera, M., and Kindler, P. (1998): Sandstone-filled fluvial channel in inner-platform carbonates (Urgonian limestones, Chambotte Quarry, Haute-Savoie, France). Evidence of a tectonically induced sea-level change during the early Aptian. *Abstracts, 15th IAS International Meeting, Alicante*, p. 543.
- (41) Piguet, B., and Kindler, P. (1998): Emplacement of the Nantbellet Unit (Ultrahelvetics of the Sulens Klippe, Haute-Savoie, France). *Terra Nostra*, Heft 98/1, p. 70.
- (42) Kindler, P., Reyss, J-L., and Strasser, A. (1998): Emerged reefal terrace of isotope stage 7 age from Inagua, Bahamas: regional tectonic uplift or higher than present sea level during the late middle Pleistocene. *Abstr.*, *15th IAS International Meeting, Alicante*, p. 470-1.
- (43) Kindler, P., Mattioli, E., Piguet, B., and Gorin, G.E. (1999): Sedimentological and biostratigraphic evidence for a Subbriançonnais thrust slice in the Internal Prealps from Haute-Savoie, France. *Abstracts, Seventh meeting of Swiss sedimentologists*, p. 26.
- (44) Kindler, P., and Mazzolini, D. (1999): Can pure carbonate sands be reworked during subaerial exposure? Evidence from dredged deposits, Stocking Island, Bahamas. *Abstracts, Seventh meeting of Swiss sedimentologists*, p. 27.
- (45) Piguet, B., and Kindler, P. (1999): Formation and emplacement of the lower supra-Helvetic mélange, Platé massif, Haute-Savoie, France. *Abstracts, Seventh meeting of Swiss sedimentologists*, p. 35.
- (46) Nawratil, C., Kindler, P., and Cojan, I. (1999): Equable climates during Late Pleistocene episodes of paleosol formation in the Bahamas? Preliminary data from Eleuthera Island. *Abstracts, Seventh meeting of Swiss sedimentologists*, p. 30.
- (47) Massera, M., and Kindler, P. (1999): Fluvial sandstones in Urgonian Limestones ? Evidence from La Chambotte Quarry (Haute-Savoie, France). Abstracts, Seventh meeting of Swiss sedimentologists, p. 28.
- (48) Kindler, P., Gorin, G.E., Mattioli, E., and Piguet, B. (1999). Resolving tectonic complexes with comparative sedimentology: the Internal Prealps of Haute-Savoie, France. *Abstracts 19th IAS Regional Meeting, Copenhagen*, p. 137-138.
- (49) Kindler, P., and Mazzolini, D. (1999). Sedimentology and diagenesis of dredged carbonate sands, Stocking Island, Bahamas: implications for eolianite formation and sequence stratigraphy. *Abstracts Int. Symp. on Paleoceanology of reefs and carbonate platforms: Miocene to Modern, Aix en Provence*, p. 123-124.
- (50) Kindler, P., and Strasser, A. (1999). Palaeoclimatic significance of co-occurring wind- and waterinduced sedimentary structures in last-interglacial coastal deposits from Bermuda and the Bahamas. *Abstracts Int. Symp. on Paleoceanology of reefs and carbonate platforms: Miocene to Modern, Aix en Provence*, p. 125-126.
- (51) Nawratil, C., Kindler, P., and Cojan, I. (1999). Bahamian paleosols: a tool for resolving late Pleistocene climates? Preliminary data from Eleuthera. *Abstracts Int. Symp. on Paleoceanology of reefs and carbonate platforms: Miocene to Modern, Aix en Provence*, p. 151-152.
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- (54) Kindler, P., Strasser, A. and Kaufman, D.S. (2000) High-frequency sea-level changes during isotopic substage 5e recorded in coastal deposits from Great Inagua, Bahamas. *Abstracts, Eighth meeting of Swiss sedimentologists*, p. 29-30.
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- (56) Kindler, P., Anselmetti, F.S., Isern, A.R., and Karner, G.D. (2001). An example of carbonate edifice nucleation in a topographic depression : the MP3 platform from the Marion Plateau, NE Australia. *Abstracts and Programme, IAS 21st Meeting, Davos*, p. 189.
- (57) Kindler, P. (2001). High-frequency sea-level changes during the late Holocene revealed by coastal sediments from Ohiki-Lolo, western Oahu, Hawaii. *Abstracts and Programme, IAS 21st Meeting, Davos*, p. 94.

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- (59) Nawratil De Bono, C., and Kindler, P. (2001). Sedimentological and micromorphological evidence for high-frequency sea-level changes during isotopic stage 11 from a polygenetic paleosol (Eleuthera Island, Bahamas). *Abstracts and Programme, IAS 21st Meeting, Davos*, p. 96.
- (60) Kindler, P., Reyss, J.-L., and Cazala, C. (2001). Radiometric evidence for a composite reefal terrace of MIS 7 and MIS 5e age in Great Inagua Island, Bahamas. Abstracts AGU Fall Meeting, p. F777.
- (61) Kindler, P., and Leg 194 Shipboard Scientific Party (2002). Birth and death of carbonate platforms: the contribution of ODP Leg 194 (Marion Plateau, NE Australia). *Joint SwissSed/Col Symposium Abstract Volume*, p. 19.
- (62) Kindler, P., Ruchonnet, C., and Anselmetti, F.S. (2002). How do carbonate platforms die ? The contribution of ODP Leg 194 (Marion Plateau, NE Australia). *16th International Sedimentological Congress Abstract Volume*, p. 194.
- (63) Ruchonnet, C., and Kindler, P. (2003) The mid-Miocene climatic transition: the record from shallowwater carbonates. Preliminary results from the Ragusa carbonate ramp, SE Sicily. *Abstracts, Eleventh meeting of Swiss sedimentologists*, p. 61-62.
- (64) Kindler, P., Strasser, A., and Kaufman, D.S. (2003) Sedimentological and aminostratigraphic evidence for high-frequency sea-level changes during the last interglacial from fossil coastal ridges, Great Inagua Island, Bahamas. *Programme and abstracts, 12th Bathurst Meeting*, Durham, p. 57.
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- (3) Wernli, R., and Kindler, P. (1986): Les "Protoglobigérines" du Callovo-Oxfordien de Châtillon sur Cluses (Préalpes internes, Haute-Savoie, France). *Eclogae geol. Helv.*, vol. 79/1, p. 137-147.
- (4) Kindler, P. (1987): Découverte de calcaires "sublithographiques" paléocènes dans l'Ultrahelvéti-que de Haute-Savoie (France). Conséquences sédi-mentologiques, stratigraphiques et paléogéographiques. *C.R. Acad. Sci. Paris*, t. 304, n° 19, p. 1201-1204.
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- (2) Kindler, P. (1991): Introduction à la géologie du système solaire. Schooling Department, State of Geneva, 116 p.
- (3) Kindler, P. (1991): Tentative field guide to the geology of North Eleuthera. University of Miami, internal report, 15 p.
- (4) Kindler, P. (1994): Carbonate petrography as an indicator of climate and sea-level changes: new data from Bahamian Quaternary units. *Swiss Academy of Science*, 40 p. Schläfli Award 1994.
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#### **GEOLOGICAL MAPS**

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# ECORD Application Form for Membership in IODP Expedition Scientific Parties

### I. CONTACT INFORMATION

(Please keep us informed of any changes in the following information)

Name (first, middle, last): <u>Henning Kuhnert</u>
Institution: Universität Bremen
Department: Fachbereich Geowissenschaften
Institution Address: Postfach 330440, 28215 Bremen
Phone: work: + 49 (0) 421 / 218 7769 b) home: + 49 (0) 421 / 2238515
Fax: + 49 (0) 421 / 218 3116 email: hkuhnert@uni-bremen.de
Present Title: _Dr. rer. nat Country of Citizenship: _German
Date of Birth: 13.03.1967 (DD.MM.YYYY) Place of Birth: Berlin Gender: M
Passport No.: _9543100981 Place Issued: Bremen
Date Issued: _30.01.1995 Exp. Date: <u>29.01.2005</u>
Education (Highest degree – PhD., M.S., or B.S.): _PhD Date: 1998
Are you currently a student? No If yes, see note on last page.
Expeditions of Interest (please limit selection to no more than three): 1. Expedition Number: Title: Tahiti Sea Level
Platform: MSP Participation: Full Expedition / Shorebased*
2. Expedition Number: Title:
Platform: Riser / Non-riser / MSP Participation: Full Expedition / Partial* / Shorebased*
3. Expedition Number: Title:
Platform: Riser / Non-riser / MSP Participation: Full Expedition / Partial* / Shorebased*
(* Provide detail of proposed participation in an accompanying letter)
Reason(s) for Interest (if necessary, expand in letter): <u>See attachment</u>
Personal and/or scientific references (name / address). See attachment

Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant,

shorebased participant, etc.) none

### **III. FIELD OF EXPERTISE**

Please check appropriate field(s):

- \_\_\_\_ Biologist
- \_\_\_\_ Microbiologist
- \_x\_\_ Inorganic Geochemist
- \_\_\_\_ Organic Geochemist
- \_\_\_\_ Geophysicist
- \_\_\_\_ Hydrologist
- \_\_\_\_ Logging Scientist
- \_\_\_\_ Oceanographer
- \_\_\_\_ Paleomagnetist
- \_\_\_\_ Paleontologist (Diatom)
- \_\_\_\_ Paleontologist (Dinoflagellate)
- \_\_\_\_ Paleontologist (Foraminifer Benthic)
- \_\_\_\_ Paleontologist (Foraminifer Planktonic)
- \_\_\_\_ Paleontologist (Megafossil)
- \_\_\_\_ Paleontologist (Nannofossil)
- \_\_\_\_ Paleontologist (Phytoplankton)
- \_\_\_\_ Paleontologist (Radiolaria)
- \_\_\_\_ Paleontologist (Silicoflagellate)
- \_\_\_\_ Palynologist
- \_\_\_\_ Petroleum Geologist
- \_\_\_\_ Petrologist
- \_\_\_\_ Igneous Petrologist
- \_\_\_\_ Metamorphic Petrologist
- \_\_\_\_ Physical Properties Specialist
- \_x\_\_ Sedimentologist
- \_\_\_\_ Seismologist
- \_\_\_\_ Stratigrapic Correlator
- \_\_\_\_ Structural Geologist
- \_\_\_\_ Downhole Measurements

### **IV. ATTACHMENTS**

In English!

- 1. Curriculum Vitae
- 2. Publication History

### V. Note for Students

Applications from **graduate students** should include a letter from their primary advisor, documenting the student's scientific experience and detailing how participation on the cruise would fit into their graduate degree program.

**Undergraduate students** do not qualify as Shipboard Participants, and should not apply to sail using this form. Undergraduates interested in sailing on an IODP expedition should instead contact ECORD for information about the Undergraduate Student Trainee Program.

### VI. Eligibility as ECORD participant

Scientists or engineers: professors, research scientists, technologists, graduate students, etc. at ECORD member institutions such as German academic institutions, government labs, ECORD member-based corporations, etc..

Non-ECORD affiliated personnel from IODP member countries can also apply for IODP participation through the country's national program office.

Please submit all application material in PDF format via email to iodp@bgr.de.

Nominations will be forwarded to the ESSAC Science Coordinator, NL, and from there to the Implementation Organizations (IOs).

**Staffing decisions** are made in consultation with co-chief scientists and take into account nominations from partner countries. Final responsibility for ECORD staffing rests with ESSAC.

BGR IODP Koordination Stilleweg 2 30655 Hannover Phone: 0511 / 643-2785

ECORD Application Form for Membership in IODP Expedition Scientific Parties, Page 3 of 3

# **REASONS FOR INTEREST**

My research focuses on the geochemical and stable isotopic composition of calcareous marine organisms. Specifically, I am currently working on Sr/Ca, U/Ca and  $\delta^{18}$ O in corals to reconstruct high-frequency climate variability during historical to Pleistocene times. Corals routinely yield time series of bimonthly or monthly temporal resolution and are suited to reconstruct paleoclimate seasonality as well.

My field of expertise also includes the sedimentology, facies and diagenesis of marine sediments, particularly reef carbonates.

In the framework of the upcoming MSP expedition to Tahiti I would like to investigate the geochemistry of corals and other annually banded organisms (if available), such as bivalves, to:

- Reconstruct the interannual to multidecadal variability of water temperature and salinity during the Pleistocene and Holocene,
- Reconstruct the development of the seasonal temperature amplitude as function of changes in insolation and climate teleconnection patterns,
- Identify diagenetic alterations and investigate their potential influence on the climate proxy signal.

Based on my experience of previous field and laboratory work I would like to apply for the position as sedimentologist or as inorganic geochemist. While I would prefer to participate in the full expedition, a restriction to the onshore party will be acceptable as well.

# **CURRICULUM VITAE**

### Dr. HENNING KUHNERT

born 13 March 1967 in Berlin, Germany

Education	
Abitur	1985
Dreilinden-Oberschule, Berlin	
Diplom (Geology)	1993
Technische Universität Berlin	
Title of thesis: "Diagenesis in corals from Miocene clastic rift sediment	ets
from Jebel Abu Imama (Northeast Sudan)"	
Ph.D. (Geology)	1998
Universität Bremen	
Title of thesis: "Climate reconstruction off Western Australia using stab isotopes in corals"	le
Positions	
Research Assistant Jan-Ju	un 1994
Technische Universität Berlin, Department of Geoscience	
Diagenesis, stratigraphy, and microfacies of Sudanese Miocene	
Sediments	
Research Assistant (Ph.D. student) 199	94-1997
Universität Bremen, Department of Geoscience	
Climate reconstruction using stable isotopes in corals	
Post Doctoral Research Assistant sine	ce 1998
Universität Bremen, Department of Geoscience	
Isotopic and geochemical studies of calcareous organisms,	
development of analytical techniques using ICPMS and laser	
ablation	

# Field work

Sudanese coastal plain, special research program DFG-SFB 69	1990
Stratigraphy, sedimentology	
Ningaloo Reef, Western Australia, DFG project "West Australian coral cores" Sedimentology, paleontology	1995
Meteor cruise M34/3, south Atlantic (Namibia-Brazil) Sedimentology	1996

### PUBLICATIONS

- **Kuhnert, H** (1993) Diagenesis of corals in Miocene clastics of the Sudanese Red Sea coast. In: Thorweihe, U and Schandelmeier, H (Eds.) Geoscientific research in Northeast Africa. Balkema, Rotterdam, 459-464
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- Schroeder, J H, Toleikis, R, Wunderlich, H and Kuhnert, H (1998) Miocene isolated platform and shallow-water carbonates in the Red Sea coastal plain, north-east Sudan.
  In: Purser, B H und Bosence, D W J (Eds.) Sedimentation and tectonics in rift basins.
  Red Sea Gulf of Aden. Chapman and Hall, London, 190-210
- **Kuhnert, H**, Pätzold, J, Hatcher, B G, Wyrwoll, K-H, Eisenhauer, A, Collins, L B, Zhu, Z R and Wefer G (1999) A 200-year coral stable oxygen isotope record from a high-latitude reef off Western Australia. *Coral Reefs*, 18, 1-12
- **Kuhnert, H**, Pätzold, J, Wyrwoll, K-H and Wefer G (2000) Monitoring climate variability over the past 116 years in coral oxygen isotopes from Ningaloo Reef, Western Australia. *Int. J. Earth Sci.*, 88, 725-732
- **Kuhnert, H**, Pätzold, J, Schnetger, B and Wefer G (2002) Sea-surface temperature variability in the 16th century at Bermuda inferred from coral records. *Palaeogeogr., Palaeoclim., Palaeoecol.*, 179, 159-171
- Felis, T, Lohmann, G, Kuhnert, H, Lorenz, S J, Scholz, D, Pätzold, J, Al-Rousan, S A and Al-Moghrabi, S M (2004) Increased seasonality in Middle Eastern temperatures during the last interglacial period. *Nature*, 429, 164-168
- Rathmann, S, Hess, S, **Kuhnert, H** and Mulitza, S (in press) Mg/Ca ratios of the benthic foraminifera Oridorsalis umbonatus obtained by laser ablation from core top sediments: Relationship to bottom water temperature. *Geochem., Geophys., Geosys.*
- **Kuhnert, H**, Crüger, T and Pätzold, J (submitted) NAO signature in a Bermuda coral Sr/Ca record. *Geochem., Geophys., Geosys.*

### **PROPOSED REFEREES**

Prof. Dr. Gerold Wefer Research Center for Ocean Margins (RCOM) Bremen University Postfach 330440 28334 Bremen Germany E-mail: gwefer@rcom-bremen.de

Prof. Dr. Anton Eisenhauer IFM-GEOMAR Kiel University Wischhofstraße 1-3 24148 Kiel Germany E-mail: aeisenhauer@ifm-geomar.de

Dr. Hubertus Fischer AWI Bremerhaven Columbusstraße 27568 Bremerhaven Germany E-mail: hufischer@awi-bremerhaven.de

# ECORD Application form for membership in IODP expedition scientific parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following information)
Name (first, middle, last)Gilles Lericolais
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Institution IFREMER centre de Brest
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Telephone (Work) <u>+33 298 224248 (H</u> ome) +33 298 035 888 (Fax) +33 298 224570
Email Address Gilles.Lericolais@ifremer.fr
Present Title Dr Country of Citizenship France
Place of Birth Kolea DZA Date of Birth Gender 2/8/1959 M
Passport No. 02ZH93272 Place Issued Brest Date Issued7/5/2002 Exp. Date 7/5/2007
Education (Highest degree - PhD., M.S., or B.S.) PhD Date:4/7/1997
Are you currently a student? <u>NO</u> (If yes, see note below)
II. EXPEDITION INFORMATION
Expeditions of Interest (please limit selection to no more than three):
Expedition Number:519-Add2 Title The last deglacial sea-level rise in south Pacific
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*
Expedition Number: Title
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*
Expedition Number: Title:
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*
(* provide detail of proposed participation in an accompanying letter)
Reason(s) for Interest (if necessary, expand in letter)
Personal and/or scientific references (name and address)
Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased
participant, etc.) <u>none</u>

ECORD Application form for membership in IODP expedition scientific parties, Page 1 of 3

#### **III. ATTACHMENTS**

1. Attach curriculum vitae which includes a publication history

2. Please fill out the attached "Field of Expertise" form

Note: Applications from graduate students should include a letter from their primary advisor, documenting the student's scientific experience and detailing how participation on the cruise would fit into their graduate degree program.

Staffing decisions are made in consultation with co-chief scientists and take into account nominations from partner countries; final responsibility for ECORD staffing rests with ESSAC. Please submit all application materials both in **digital format** (preferable PDF format) and **paper copy** to (please contact the ESSAC Office when having problems providing us with the above asked materials in both formats): ESSAC Science Coordinator Faculty of Earth & Life Sciences - Vrije Universiteit De Boelelaan1085 1081 HV Amsterdam - The Netherlands Phone: +31 20 4447272 Fax: +31 20 4449941 E-mail: essac.amsterdam@falw.vu.nl

With a copy to the national ESSAC delegate (see http://www.geo.vu.nl/~essac/ ESSAC button).

Nominations (with copies of their applications) will be forwarded from that office to the Implementation Organizations (IOs). Eligibility as a ECORD participant is limited to scientists or engineers (professors, research scientists, technologists, graduate students, etc.) at a ECORD member institution (e.g. German academic institutions, government labs, ECORD member-based corporations, etc.). Non-ECORD affiliated personnel from other IODP member countries should apply for IODP participation through their country's national program office. Undergraduate students do not qualify as Shipboard Participants, and should not apply to sail using this form. Undergraduates interested in sailing on a IODP expedition should instead contact ECORD for information about the Undergraduate Student Trainee Program.

#### FIELD OF EXPERTISE

- \_\_\_\_ Biologist
- \_\_\_\_ Microbiologist
- \_\_\_\_ Inorganic Geochemist
- \_\_\_\_ Organic Geochemist
- X\_Geophysicist
- \_\_\_\_ Hydrologist
- Logging Scientist
- Oceanographer
- \_\_\_\_ Paleomagnetist
- \_\_\_\_ Paleontologist (Diatom)
- \_\_\_\_ Paleontologist (Dinoflagellate)
- \_\_\_\_ Paleontologist (Foraminifer Benthic)
- \_\_\_\_ Paleontologist (Foraminifer Planktonic)
- \_\_\_\_ Paleontologist (Megafossil)
- \_\_\_\_ Paleontologist (Nannofossil)
- \_\_\_\_ Paleontologist (Phytoplankton)
- \_\_\_\_ Paleontologist (Radiolaria)
- \_\_\_\_ Paleontologist (Silicoflagellate)
- \_\_\_\_ Palynologist
- \_\_\_\_ Petroleum Geologist
- \_\_\_\_ Petrologist
- \_\_\_\_ Igneous Petrologist
- \_\_\_\_ Metamorphic Petrologist
- \_\_\_\_ Physical Properties Specialist
- \_X\_\_ Sedimentologist
- \_\_\_\_ Seismologist
- \_\_\_\_ Stratigrapic Correlator
- \_\_\_\_ Structural Geologist
- \_\_\_\_ Downhole Measurements



# CURRICULUM VITAE

**LERICOLAIS** Gilles

Date of birth: 02.08.1959 Koléa (Algeria) Status: French citizen, married, 2 children IFREMER, DRO/GM, BP 70, 29280 Plouzané cedex.France Tel: +33 298 22 42 48 – Fax: +33 298 22 45 70 – email: Gilles.lericolais@ifremer.fr

### **QUALIFICATIONS**

*1978-1981* : Classes préparatoires Biologie-Mathématiques Supérieures et Spéciales; lycée Montaigne (Bordeaux).

**1981-1984** : Graduate Ingeneer from École Supérieure de l'Énergie et des Matériaux (ESEM) of Orléans (speciality: "Ressources et Matériaux Minéraux")

**1984** : DEA Diploma (Orléans University in Raw materials and Energy ressources)

**1997 :** PhD Marine geologist Bordeaux University with jury's congratulations. (Thesis: Evolution Plio-Quaternaire du fleuve Manche: Stratigraphie et Géomorphologie d'une Plate-forme Continentale en Régime Périglaciaire).

#### **PROFESSIONAL EXPERIENCE**

**1984-1989 : Ifremer -** Research manager, in charge of very high resolution seismic (VHRS) project SITHERE for IFREMER.

**1990-1992 : Elf Aquitaine** - Expertise for Elf Aquitaine Oil company in use of VHRS for offshore rig assessment. Client representative in Norway, Western Africa, and South-East Asia

*1992-present* : **Ifremer** – Research manager, member of the Laboratory for Sedimentary Environment Studies. Skill in sedimentology and sequence stratigraphy. Use of geophysical techniques.

*1997-present :* **Ifremer** – Research manager in charge of the Black Sea project. Bi-lateral collaboration with Romania and co-ordinator of the Black Sea European project: ASSSEMBLAGE (2003-2006).

#### **RESEARCH CRUISE EXPERIENCE**

1984-1989 : Numerous surveys on IFREMER and INSU coastal research vessels

RV Jean Charcot : South China Sea NANHAI CAMPAIGN

RV Cryos, RV Le Suroît, RV Le Noroît as geophysicist specialised in VHRS acquisition and Sedimentology

**1990-1992**: Client supervisor for Elf Aquitaine for Offshore rig assessment, specialised in VHRS acquisition and processing. Risk assessment for gas and stability. Several surveys in Africa, Noth Sea and South China Sea

**1992-1997 :** Chief scientist on board RV Le Thalia PLABAS, PLACETA, BASECREOU campaigns, and on board RV Le Suroît for SEDIMANCHE 2 campaign.

RV Atalante, participation to SEDIMANCHE, DONG HAÏ and ZONECO 4 research campaigns.

Etablissement public à caractère industriel et commercial

#### IFREMER

Centre de Brest Technopole de Brest-Iroise B.P. 70 29280 Plouzané France

téléphone 33 (0)2 98 22 40 40 télécopie 33 (0)2 98 22 45 45 http://www.ifremer.fr

 Gilles Lericolais

 téléphone
 33 (0)2 98 22 42 48

 télécopie
 33 (0)2 98 22 45 70

 Email
 Gilles.Lericolais@ifremer.fr



**1998-2002**: In Charge of the French-Romanian BLASON research project in the Black Sea. Chief Scientist on board RV Le Suroit in 1998 (BLASON1 survey and 2002 BLASON2 survey).

Participation to other surveys (MARION, ITSAS..). 2003-2004 : In Charge of the ASSEMBLAGE European project; chief scientist on board RV Mrion Dufresne 2

#### TEACHING ACTIVITIES

Brest, Lille, Bordeaux and Perpignan (1993, 3h), to DEA classes Supervisor for DEA (Bordeaux 1, Brest), DESS (Bordeaux) et l'ENSPM ingeneers

Tutor et co-director for 4 PhD thesis (Irina Popescu, Claudia Streche, Corina Furtuna, (Romania), and Hervé Gillet, UBO)

#### **PROFESSIONAL ORGANISATIONS**

Member of the French IGCP Steering Committee (UNESCO, IUGS) Member he Excellence Centre EuroGeoCenter (Romania; EC) French representative and Leader of the Stratigraphic Group of the IGCP 464

project

Member of different association AAPG, ASF Editorial Board of QUATERNAIRE journal

#### **EXTRA-PROFESSIONAL ORGANISATIONS**

Member of the Administrative Committee of "Côte Ouest" Association in charge of the Organisation of the Brest short-cut Festival.

Ex Ifremer Scuba diving club President.

#### MEDIA VALORISATION

Press :

- Libération June 2 1998 "Dix mille ans sous la mer Noire"
- Science et Vie November 1998
- New York Times January 5, 1999, "Plumbing Black Sea for Proof of the Deluge"
- San Jose Mercury News January 12, 1999
- Libération March 9 1999 -"Il voit le Déluge dans une carotte"
- Le Télégramme June 4 1999, "Mission en Mer noire: la carotte remonte au déluge"
- La Recherche January 2000, "Gilles Lericolais est géologue au laboratoire de Géosciences marine à L'IFREMER"
- Cosinus, June 2000, n°7, p. 2, "Des traces du Déluge en Mer Noire ? "
- Libération September 28 2000, "Et du déluge naquit la mer Noire"
- Science et Vie Junior November 2000 Inondation "Sur la piste de Noé"
- Science et Vie Hors série n° 213 December 2000 "Sur les traces du déluge"
- National Geographic, French version May 2001
- L'histoire N° 251 March 2001- La Bible et la science. Le Déluge a-t-il eu lieu ?
- Le Point n°1495 May 11 2001 "Déluge: Mythe et réalité"
- Pour La Science n° 284 June 2001 "La Catastrophe du Bosphore"
- Le Figaro October 15 2001 La mer Noire hantée par le Déluge
- UNISCOPE n° 433 (Suisse)- November 20 2001 Le déluge a-t-il existé ? -
- Ouest-France February 23 2002 "Le Géologue n'attend pas le déluge, il le traque"
- Die Welt March 8 2002 Eine Flut wie von 10 000 Niagara-Fällen –
- L'histoire N° 251 2002 La Bible et la science. Le Déluge a-t-il eu lieu ?



- Aventures de l'Histoire 2002- N°9 Déluge : la Bible disait vrai !
- Science et Vie May 2002 n° 1016 Et si la Bible disait vrai... Les dix plaies d'Egypte expliquée par la science.
- Cahiers de Science et Vie n° 72 December 2002 Le déluge -
- Progrès Courrier 12 December 2002 Quand la science confirme les textes bibliques.
- La Recherche Hors série n°11 (2003) La terre

#### **Television Documentaries:**

TF1 - Le Journal de 20h00, January 23 1999

LCI

France 5

- Emission "La cinquième rencontre" January 25 2001, "La vie de la Terre"
- Emission "La cinquième rencontre" March 22 2001, "Les marées de terre et de mer"
- Emission "Pi=3,14" "La mer Noire, fille du Déluge", April 14 and 26 2001
- France 2

• Emission **''Les grandes énigmes de la science''** François de Closets, September 8 2001, *Arte* 

- Emission "arte Archimède" Le déluge December 11 2001
- Emission "arte Archimède" Les carottes December 18 2001 Frnace 3
- Emission "**Thalassa**" Special Documentary on the Bosphorus Strait February 2003 *Radio*

France Info (1998)

France Culture (1999) - Les Mythes fondateurs, de Marie-Odile Monchicourt Europe 2

France Inter (April 21 2002) - Histoires possibles et Impossibles : Le Deluge"

#### **10 MOST REPRESENTATIVE PUBLICATIONS**

- Pautot G., Rangin C., Briais A., Tapponier P., Beuzart P., Lericolais G., Mathieux X., Wu Y., Han S., Li Y., Zhao J. (1986): Spreading direction in the central south China sea. *NATURE*, 321, pp 150-154.
- Lericolais, G., Berné, S., Hamzah, Y., Lallier, S., Mulyadi, W., Robach, F. et Sujitno, S., (1987): High resolution seismic and magnetic exploration for tin deposits in Bangka, Indonesia. Mar. Mining, 6, 9-21.
- Lericolais G., Allénou J.P., Berné S., Morvan P. (1990): A new system for acquisition and processing of very high resolution seismic reflection data - *Geophysics*, vol. 55, n°8, pp 1036 - 1046.
- Lericolais G., Guennoc P., Auffret J.P., Bourillet J.F. et Berné S., (1996): Detailed survey of the western end of the Hurd Deep (English Channel): New facts for a tectonic origin *in* M. De Batist and P. E. Jacobs Eds., Geology of Siliciclastic Shelf Seas., <u>Geological Society Special Publication</u>, 203-215.
- Berné S., Lericolais G., Marsset T., Reynaud J.Y., Bourillet J.F., Tessier B. & De Batist M., (1998).- Erosional offshore sand ridges and lowstand shorefaces : examples from tide and wave dominated environments of France. *Journal of Sedimentary Research*,: vol 68, n°4 540-555
- Lericolais, G., Berné, S. et Féniès, H., (2001): Seaward pinching out and internal stratigraphy of the Gironde incised valley on the shelf (Bay of Biscay) - <u>Mar. Geol.</u>, 175, 183-197.
- Lericolais, G., (2001): La catastrophe du Bosphore Pour la Science, 284, 30-37.
- Lericolais, G., (2001): Nouvelles données sur l'évolution de la mer Noire in E. Universalis Eds., Universalia 2001, Sciences de la Terre, Encyclopaedia Universalis, 233-237 p.



- Popescu, I., Lericolais, G., Panin, N., Wong, H. K. et Droz, L., (2002): Late Quaternary channel avulsions on the Danube deep-sea fan *Mar. Geol.*, 179, 25-37.
- Lericolais, G., Auffret, J.-P. et Bourillet, J.-F., (2003): The Quaternary Channel River : seismic stratigraphy of its palaeo-valleys and deeps JQS, 18, 245-260.
- Popescu, I., Lericolais, G., Panin, N., Normand, A., Dinu, C. et Le Drezen, E., (2004): The Danube Submarine Canyon (Black Sea): morphology and sedimentary processes *Marine Geol.*, 206, 249-265.
- Other publications available on the website: <u>http://www.ifremer.fr/drogm/Perso/lericolais/Biblio.htm</u>
- ٠

# ECORD Application Form for Membership in IODP Expedition Scientific Parties

#### I. CONTACT INFORMATION

(Please keep us informed of any changes in the following information)

Name (first, middle, last): John J.G. Reijmer

Institution: IFM-GEOMAR, Leibniz-Institut fuer Meereswissenschaften (until 31.12.2004) and as of 01.01.2005 Laboratoire de Sédimentologie-Paléontologie Université de Provence (Aix-Marseille 1) **Bâtiment de Sciences Naturelles** 3, Place Victor Hugo F-13331 Marseille Cédex 3. France Department: see above Institution Address: Wischhofstr. 1-3, 24148 Kiel Phone: work: + 49 (0) 431 / 6002827 b) home: + 49 (0) 431 / 7164460 Fax: + 49 (0) 431 / 6002941 email: jreijmer@ifm-geomar Present Title: Prof.Dr. Country of Citizenship: Netherlands Date of Birth: 13.03.1956 Place of Birth: Tiel Gender: M /F Passport No.: M04374426 Place Issued: Hamburg Date Issued: 26.01.2001 Exp. Date: 26.01.2006 Education (Highest degree - PhD., M.S., or B.S.): Prof. Date: As of 01.01.2005 Are you currently a student? Yes / No If yes, see note on last page.

#### **II. EXPEDITION INFORMATION**

Expeditions of Interest (please limit selection to no more than three):

1. Expedition Number: <b>ODP Leg 166</b>	Title: Bahama Transect
Platform: Riser / Non-riser / MSP	Participation: Full Expedition / Partial* / Shorebased*

- 2. Expedition Number: \_\_\_\_\_x \_\_\_\_ Title: \_\_\_\_\_\_x
  Platform: Riser / Non-riser / MSP Participation: Full Expedition / Partial\* / Shorebased\*
- 3. Expedition Number:
   x

   Platform: Riser / Non-riser / MSP
   Participation: Full Expedition / Partial\* / Shorebased\*

(\* Provide detail of proposed participation in an accompanying letter)

Reason(s) for Interest (if necessary, expand in letter): Sedimentation patterns in upper slope deposits related to sea-level fluctuations. What variations are registered and how do these fluctuations affect the living communities in these upper slope sedimentary environments. The second objective will be to analyse the diagenetic patterns in these deposits.

Personal and/or scientific references (name / address) See curriculum vitae

Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant,

shorebased participant, etc.) Participant ODP Leg 166.

### **III. FIELD OF EXPERTISE**

Please check appropriate field(s):

- \_\_\_ Biologist
- \_\_\_\_ Microbiologist
- \_\_\_\_ Inorganic Geochemist
- \_\_\_\_ Organic Geochemist
- \_\_\_\_ Geophysicist
- \_\_\_\_ Hydrologist
- \_\_\_\_ Logging Scientist
- \_x\_ Oceanographer
- \_\_\_\_ Paleomagnetist
- \_\_\_\_ Paleontologist (Diatom)
- \_\_\_\_ Paleontologist (Dinoflagellate)
- \_\_\_\_ Paleontologist (Foraminifer Benthic)
- \_\_\_\_ Paleontologist (Foraminifer Planktonic)
- \_\_\_\_ Paleontologist (Megafossil)
- \_\_\_\_ Paleontologist (Nannofossil)
- \_\_\_\_ Paleontologist (Phytoplankton)
- \_\_\_\_ Paleontologist (Radiolaria)
- \_\_\_\_ Paleontologist (Silicoflagellate)
- \_\_\_\_ Palynologist
- \_\_\_\_ Petroleum Geologist
- \_\_\_\_ Petrologist
- \_\_\_\_ Igneous Petrologist
- \_\_\_\_ Metamorphic Petrologist
- \_\_\_\_ Physical Properties Specialist
- \_x\_\_ Sedimentologist
- \_\_\_\_ Seismologist
- \_x\_ Stratigrapic Correlator
- \_\_\_\_ Structural Geologist
- \_\_\_\_ Downhole Measurements

### **IV. ATTACHMENTS**

### In English!

- 1. Curriculum Vitae (includes publication history))
- 2. Publication History (attached to CV)

\*\*\*\*\*\*

### V. Note for Students

Applications from **graduate students** should include a letter from their primary advisor, documenting the student's scientific experience and detailing how participation on the cruise would fit into their graduate degree program.

**Undergraduate students** do not qualify as Shipboard Participants, and should not apply to sail using this form. Undergraduates interested in sailing on an IODP expedition should instead contact ECORD for information about the Undergraduate Student Trainee Program.

### VI. Eligibility as ECORD participant

Scientists or engineers: professors, research scientists, technologists, graduate students, etc. at ECORD member institutions such as German academic institutions, government labs, ECORD member-based corporations, etc..

Non-ECORD affiliated personnel from IODP member countries can also apply for IODP participation through the country's national program office.

Please submit all application material in **PDF format** via email to **iodp@bgr.de**.

Nominations will be forwarded to the ESSAC Science Coordinator, NL, and from there to the Implementation Organizations (IOs).

**Staffing decisions** are made in consultation with co-chief scientists and take into account nominations from partner countries. Final responsibility for ECORD staffing rests with ESSAC.

BGR IODP Koordination Stilleweg 2 30655 Hannover Phone: 0511 / 643-2785

# Enclosure 1

# CURRICULUM VITAE PD DR. J.J.G. REIJMER

Name in full	Johannes (John) Jozef Gerardus Reijmer
Address	IFM-GEOMAR, Leibniz-Institut für Meereswissenschaften,
	Carbonate Sedimentology Group, Wischhofstraße 1-3,
	Dienstgebäude Ostufer, Gebäude 4, D-24148 Kiel, Germany
Telephone	+ (49) 431 600 2827 (work) or + (49) 431 716 4460 (home)
Fax	+ (49) 431 600 2941
E-mail	jreijmer@ifm-geomar.de
Web	www.geomar.de/sci_dpmt/paloz/csg/english/staff/johne.htm

### ACADEMIC EDUCATION AND PROFESSIONAL EXPERIENCE

2004-present	Professor Université de Provence (Aix-Marseille-I), Marseille, France
2003-2004	Assoc. Professor, IFM-GEOMAR, Kiel, Germany
2003	Habilitation Christian-Albrechts-University (CAU), Kiel, Germany
1998-2003	Assist. Professor, GEOMAR, Kiel, Germany
1992-1998	Post-doc, GEOMAR, Kiel, Germany (tenure track)
1991-1992	Post-doc Vrije Universiteit, Amsterdam, The Netherlands
1986-1991	Ph.D. Vrije Universiteit, Amsterdam, The Netherlands
1984-1986	Fieldwork-training and teaching assistent, B.Sc. and M.Sc. Courses,
	University of Amsterdam, The Netherlands
1984/1980	M.Sc. and B.Sc. Stratigraphy/Sedimentology, University of
	Amsterdam, The Netherlands

### SELECTED PROFESSIONAL SERVICE

2003-	Co-editor special volume Sedimentary Geology "Sedimentology in
	the 21st Century - A Tribute to Wolfgang Schlager"
2001-2003	Co-editor special volume International Journal of Earth Sciences
	"New perspectives in carbonate geology"
2001	Symposium Co-convenor, New perspectives in carbonate geology,
	MARGINS Meeting, Annual Meeting of Deutsche Geologische
	Gesellschaft (DGG) and Geologische Vereinigung (GV), Kiel,
	Germany
2001	APLACON Planning Workshop (Joint European Ocean Drilling
	Initiative), Lisbon, Portugal
1999-present	Treasurer of the Paleoceanography Department
1999-2002	Editor special volume Marine Geology "Carbonate margin
	development (Bahama transect, ODP Leg 166)"
1999	Symposium Convenor, ODP Leg 166, Paleoceanology of reefs and
	carbonate platforms: Miocene to Recent, International Symposium,
	Aix-en-Provence, France
1998-present	Member of Sedimentary Geology Editorial Board
1993-1998	Coordinator of the Socrates-Erasmus European Student Exchange
	Programme "Mercator (Marine Geosciences)"

### **RESEARCH EXPERIENCE**

### Future Projects - See also extended Project Overview

Working area, age interval, project abbreviation Project title; funding agency, funding duration, and level of funding granted Co-workers Post-Docs, Ph.D. and M.Sc. students

### 1. Mayotte Island (Indian Ocean; Holocene), CABAMAY, Re1051/17

Holocene high-resolution sedimentation cycles in carbonate slope sediments. European Union (RV *Marion Dufresne;* 7 days ship time and 4 cores) and DFG project (science project). Planned project start: December 2004.

### 2. Seychelles, Re1051/16

Holocene high-resolution sedimentation cycles in carbonate slope sediments DFG project (science project). Planned project start: January 2005.

### Current Projects - See also extended Project Overview

 Bahamas (Holocene), KLIBANK - Re1051/9 IMAGES Cruise, Holocene high-resolution sedimentation cycles in carbonate slope sediments. DFG project 2002-2004, Euro 314.000 Post-Doc: Dr. A. Müller, Ph.D.: S. Roth (finished 2003), M.Sc.: H. Lantzsch

### 2. Bahamas-Maldives (Pliocene), EPSTAB - Re1051/11

ODP Legs 115, 133, 166 and 182, Early Pliocene start-up of carbonate platform systems: a comparison of the Bahamas and the Maldives. DFG project, 2001-2004, Euro 118.400 Project together with Prof. C. Betzler (Hamburg/Cambridge) Ph.D.: L. Reuning, M.Sc.: Th. Bauch

### 3. Cantabrian Mountains (Asturias, Spain; Carboniferous) - Scha355/17

Interaction of carbonate- and siliciclastic sedimentation on a basin wide scale. DFG project, 1998-2004, Euro 124.300 Co-workers: Prof. P. Schäfer (Kiel), and Prof. A. Schäfer (Bonn); Cooperation with research groups of the the University of Oviedo (Spain), and the Universities of Hamburg, Heidelberg and Erlangen (all Germany) Post-Doc: Dr. H.J. Wallrabe-Adams, M.Sc.: 23 students

### 4. Panama & Costa Rica (Pacific coast, Pliocene-Holocene), Scha355/24

Sediment carbonate facies variations in upwelling and non-upwelling areas. DFG (German Science Foundation), 2003-2005, Euro 276.200 Co-workers: Prof. P. Schäfer (Kiel), and Dr. B. Bader (Kiel) Ph.D.: Thorsten Bauch, Kerstin Schirmer

### **5. Great Bahama Bank mapping project (Holocene), LITHOCHEM** Sedimentological and geochemical variations along Great Bahama Bank. GEOMAR project, 2002-2004, Euro 45.000 Co-worker: Peter Swart (RSMAS, Miami) M.Sc.: Astrid Ryba

### **Selected Past Projects**

### **1. Jbel Bou Dahar (Morocco; Jurassic), Re1051/1** Carbonate slope sedimentation and diagenesis DFG project, 1993-1998, Euro 108.590

Project together with Dr. J. Kenter (Amsterdam, Netherlands). Ph.D.: D. Blomeier (finished 1997), M.Sc.: 3 students

- 2. Bahamas (Plio-Pleistocene), CLINO Re1051/3 Slope sediments, input and diagenesis (CLINO core). DFG project, 1994-1998, Euro 81.640 Project together with Prof. R. Ginsburg and Prof. G. Eberli (Miami, USA) Ph.D.: H. Westphal (finished 1997)
- **3. Bahamas (Pleistocene-Holocene), DISHAB Re1051/4** Carbonate slope sedimentation (ODP Leg 166, Bahama Transect) DFG project, 1996-2000, Euro 115.600 Ph.D.: R.H. Rendle (finished 2000), M.Sc.: Ben De Mol (1997)
- **4. Bahamas (Miocene), ZAMBA Re1051/8** ODP Leg 166 (Bahama Transect), Miocene sedimentation patterns. DFG (German Science Foundation), 1999-2002, Euro 37.800 Co-worker: Prof. C. Betzler (Hamburg/Cambridge) M.Sc.: Lars Reuning
- **5. Sanganeb Atoll (Red Sea; Pleistocene Holocene), KAPROM Du129/10** Carbonate sedimentation cycles. DFG-R.V. Meteor, 1995-2000, Euro 146.300 Project together with Prof. W.-C. Dullo (Kiel) Ph.D.: P. Emmermann (finished 2000)

### 6. Pedro Bank (Caribbean; Pleistocene-Holocene) - Du129/11

Periplatform sedimentation cycles. DFG, 1996-2001, Euro 184.000 Project together with Prof. W.-C. Dullo (Kiel), and Prof. A. Droxler (Houston, USA) Ph.D.: N. Andresen (finished 2000)

### 7. Mayotte, Indian Ocean (Holocene), KARLMAY - Du129/14

Sea level variations and cycle development in the lagoon of Mayotte. DFG, 1997-2000, Euro 114.500 Project with Prof. W.C. Dullo (Kiel) Ph.D.: J. Zinke (finished 2000)

### 8. Cantabrian Mountains (Asturias, Spain; Carboniferous)

An integrated study of Carboniferous platform and platform-to-basin sediments in the Sra. de Cuera (Asturias, Spain) Industrial project: Shell Kazachstan Consortium, 1997-1998; Tengiz-Chevron, 1998-1999

Project together with Dr.J. Kenter (projectleader; Amsterdam, Netherlands), Dr. A. Immenhauser (Amsterdam, Netherlands) and Dr. J. Bahamonde (Oviedo, Spain).

### 9. Seceda Platform (Western Dolomites, Italy; Triassic)

The distribution of calciturbidites near a prograding carbonate platform. Project: Vrije Universiteit-Amsterdam, 1999-2003 Project together with Prof. Schlager (Projectleader; Amsterdam, Netherlands) Ph.D.: F. Maurer (finished 2003)

### 10. Southern Galala Mountains (Egypt; Cretaceous), PALOALTO - Ku642/19

The transition from a rimmed carbonate platform to a carbonate ramp. Project together with Prof. J. Kuss and Dr. R. Speijer (Bremen) DFG Project, 2000-2003, Euro 190.800 Post-Doc: Dr. C. Scheibner

### FIELDWORK EXPERIENCE

1992-present Fieldwork in Costa Rica, Jordan, Egypt, France, Italy, Morocco, Panamà, Sudan, Spain; M.Sc. student fieldwork training courses in Spain (Cantabrian Mountains).

1979-1992 (1) Ph.D. fieldwork in Austria, France, and Italy; (2) Fieldwork training courses of M.Sc. and B.Sc. students in Belgium, England, Germany, and Spain; (3) M.Sc. fieldwork: (A) facies development Paleogene and Neogene (SE Spain); (B) siliciclastic tidal deposits (Roggeplaat, Oosterschelde, The Netherlands)

### **SEA-GOING EXPERIENCE**

2004	<i>RV Marion Dufresne</i> , VIGO MD/136, LaRéunion-Mayotte
2003	RV Bellows, Great Bahama Bank
2002	RV Bellows, Great Bahama Bank
1999	<i>RV Marion Dufresne</i> , IMAGES-GINNA, Leg 1, Martinique-Norfolk (Tobago Basin / Bahamas / Chesapeake Bay)
1998	RV Sonne, SO-136 TASQWA Research Cruise, Tasman Sea, New
	Zealand
1996	DV Joides Resolution, ODP Leg 166 (Bahama Transect)
1995	RV Meteor. M 31/2 Research Cruise, Red Sea (Abington Atoll,
	Sanganeb Atoll and Wingate Reef)
1993	<i>RV Abu Saleh</i> , Red Sed Research Cruise, Sanganeb Atoll, Sudan
1992	RV Tyro, Dutch Indian Ocean Program, Cruise C-1: Djibouti-
	Seychelles (Gulf of Aden, Indian Ocean)
1992	<i>RV Abu Saleh</i> , Red Sed Research Cruise, Hurghada, Egypt

1992 *KV Abu Sulen,* Ked Sed Research Cruise, Hurghada, Egypt

### **TEACHING EXPERIENCE - Part 1: Courses, Seminars, Excursions, Field Mapping Courses and Seminars** (E=in English, G=in German, D=in Dutch)

2003	POMOR Programme St. Petersburg (Russian-German cooperation,
	Module "Non-living resources", Theme "Logging methods"
1998	Short Course "Paleoceanography and climate", Socrates
	Programme, Geomar, Kiel, Germany (E)
1994-present	Literature discussion seminar for Ph.D. Students and Postdocs (G)
1992-present	M.Sc. courses Christian-Albrechts-University, Kiel, Germany:
*	(1) Stratigraphy (G)
	(2) Sequence stratigraphy incl. seismostratigraphy and logging (G)
	(3) Carbonate sedimentology (G)
1986-1991	B.Sc. and M.Sc. courses Vrije Universiteit, Amsterdam, Netherlands:
	(1) Paleoceanography and deep sea sediments (including core
	discription, smear slides) (E)
	(2) Carbonate petrology and microfacies (E)
	(3) Diagenesis of carbonate rocks (E)

- (4) Classification of sedimentary rocks (D) B.Sc. And M.Sc. courses Universiteit van Amsterdam: 1980-1986
  - (1) Classification of sedimentary rocks (D)
    - (2) Microfacies of carbonate rocks (D)

### **Excursions and Field Mapping**

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### **TEACHING EXPERIENCE - Part 2: Advisor and Thesis Committee Advisor Ph.D. Projects**

### 1. Current Ph.D. Projects

2003-2006	Thorsten Bauch: Impact of gateway closure on carbonate ecosystems
	diversifications
2001-2004	Lars Reuning: The origin of sub-Milankovitch cycles in Early
	Pliocene carbonate platform sediment: Bahamas vs. Maldives

### 2. Completed Ph.D. Projects (all at CAU, Kiel, Germany)

2. Completed I	n.D. Projects (all at CAU, Kiel, Germany)
2003	Sven Roth: Holocene climate variations recorded on the western
	flank of Great Bahama Bank
2000	Nils Andresen: Sediment composition of periplatform sediments and calciturbidites around Pedro Bank, southwestern Caribbean Sea
2000	Peter Emmermann: Mineralogy, geochemistry, and microfacies of late Quaternary periplatform sediments: Carbonate export and secondary processes - Sanganeb Atoll and Abington Reef, Sudan, Central Red Sea
2000	Rebecca Rendle: Quaternary slope development and sedimentology of the western, leeward margin of Great Bahama Bank (ODP Leg 166)
2000	Jens Zinke: Development of the lagoon of Mayotte during the Holocene (Comoro Archipelago, SW Indian Ocean)
1997	Hildegard Westphal: Sediment input and diagenesis of periplatform carbonates on a leeward slope of Great Bahama Bank
1997	Dierk Blomeier: The evolution of Lower Jurassic carbonate platform: Sequence stratigraphy and sedimentation patterns (Jbel Bou Dahar, High Atlas, Morocco)

### 3. Committee Member of the following Ph.D. Students

Florian Maurer (Ph.D. completed at Vrije Universiteit, Amsterdam): Bedding rhythms in Triassic basins of the Southern Alps
Ewan Campbell (Ph.D. completed at Vrije Universiteit, Amsterdam): Unconformities in seismic records and outcrops
Antoinette Sprenger (Ph.D. completed at Vrije Universiteit, Amsterdam), and Warner ten Kate (Ph.D. completed at Vrije Universiteit, Amsterdam): Rhythmicity in deep-water sediments,

documentation and interpretation by pattern and spectral analysis

### Advisor M.Sc. Projects

### 1. Current M.Sc. Projects (Laboratory Analysis)

- 2003-2004 Astrid Ryba, CAU-Kiel: Mineralogical and sedimentological variations on Great Bahama Bank
- 2003-2004 Hendrik Lantzsch, Freiberg University & CAU-Kiel: Mineralogical and sedimentological variations on the north-western slope of Little Bahama Bank

### 2. Completed M.Sc. Projects (Laboratory Analysis)

- 2003 Thorsten Bauch, CAU-Kiel: Sedimentation cycles on the slope of a Lower Pliocene carbonate platform system (Bahamas, ODP Leg 166)
- 2000 Lars Reuning, Geomar, Kiel/Marburg University: Sedimentation cycles on the slope of a Miocene carbonate ramp system (Bahamas, ODP Leg 166)
- 1999 Sven Roth, CAU-Kiel: Mineralogy, sedimentology and physical properties of two sediment cores from the Southern Tasman Sea (SW Pacific Sector)
- 1997 Andrea Perl, CAU-Kiel: Quantitative und qualitative Sediment-Analyse an Saumriffhängen im Golf von Aqaba (Jordanien -Nördliches Rotes Meer)

### 3. Socrates/Mercator European Exchange Projects (M.Sc. Thesis Projects)

1999 Terry Mills, University of Wales at Bangor: Physical properties and sedimentology of core SO136-164GC (South Tasman Rise, Tasman Sea).
1998 Johanna Suhonen, University of Helsinki: Mineralogy, sedimentology and physical properties of core MD 972108 (South Tasman Rise, Tasman Sea)
1997 Ben De Mol, University of Gent: ODP Leg 166, Hole 1005A: Carbonate sedimentology and mineralogy.
1996 Rebecca Rendle, University of Wales at Bangor: Analysis of the ODP Site 912A core on the Yermak Plateau, Arctic Ocean proper

### 4. Current M.Sc. Mapping Projects, Cantabrian Mountains, Spain

2003-2004 Gerrit Gnad, Bonn University Raphael Jendrüsch, Bonn University Manuel Kunz, Bonn University Robert Rambela, Bonn University Michael Sarvan, Bonn University

## 5. Completed M.Sc. Mapping Projects, Cantabrian Mountains, Spain

2002	Thorsten Bauch, CAU-Kiel
	Sigrid Schulze, Bremen
	Bernadette Sari, Bremen
2000	Karen Hansen, CAU-Kiel
	Katharina Pahnke, CAU-Kiel
	Andres Rüggeberg, CAU-Kiel
1999	Ronja Düffel, CAŬ-Kiel
	Katharina Ebert, CAU-Kiel
	Sven Roth, CAU-Kiel
	Alex Schimanski, CAU-Kiel
1998	Dagmar Fraude, CAU-Kiel
	Frederike Klinge, CAU-Kiel
	Gesa Kuhlmann, CAU-Kiel
	Dirk Lein, CAU-Kiel
	Verena Meyer Stumborg, CAU-Kiel
	Enno Schefuß, CAU-Kiel
	Simon Sorge, CAU-Kiel
	Karin Teichert, CAU-Kiel

### 6. Completed M.Sc. Mapping Projects, Jbel Bou Dahar, Morocco

1996	Ingo Gläser, ČAU-Kiel
1995	Christian Scheibner, CAU-Kiel
	Abdelhadi Sadiki, CAU-Kiel

### MEMBERSHIP SCIENTIFIC AND PROFESSIONAL SOCIETIES

American Association of Petroleum Geologists Geological Society of America Geologische Vereinigung International Association of Sedimentologists KNGMG (Royal Geological and Mining Society of the Netherlands) SEPM Society for Sedimentary Geology

### LANGUAGES

German English Spanish French Dutch (mother language)

### **REFERENCES** (ALPHABETICAL ORDER)

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2. Prof. Dr. A.W. Droxler Rice University Dept. of Geology and Geophysics MS-126 6100 Main Street Houston, TX 77005-1892 U.S.A. Tel.: + (1) 713 527-4885 Fax: + (1) 713 285-5214 E-mail: andre@rice.edu

3. Prof. Dr. G.P. Eberli RSMAS-MGG University of Miami 4600 Rickenbacker Cswy. Miami, FL 33149 U.S.A. Tel.: ++ (1) 305 361 4678 Fax: ++ (1) 305 361 4632 E-mail: geberli@rsmas.miami.edu 4.Prof. Dr. P. Schäfer Institut für Geowissenschaften der Universität Kiel Olshausenstraße 40 24118 Kiel Germany Tel.: ++ (49) 431 880 2855 Fax: ++ (49) 431 880 4376 E-mail: ps@gpi.uni-kiel.de

5. Prof. Dr. W. Schlager Department of Earth and Life Sciences Vrije Universiteit De Boelelaan 1085 1081 HV Amsterdam The Netherlands Tel.: ++ (31) 20 444 7328 Fax: ++ (31) 20 646 2457 E-mail: wolfgang.schlager@falw.vu.nl

### PUBLICATIONS 2004-1979

#### In Press

Rendle, R.H. and **Reijmer, J.J.G.** 

Effects of Quaternary sea-level fluctuations on the mineralogy and grain-size characteristics of periplatform sediments (western, leeward margin of Great Bahama Bank). Sedimentology. Roth, S. and **Reijmer, J.J.G**.

Holocene millennial to centennial carbonate cyclicity recorded in slope sediments of the Great Bahama Bank and its climatic implications. Sedimentology.

Zinke, J., Reijmer, J. J. G., Taviani, M., Dullo, W.-Chr. and Thomassin, B. A.

Faunal response to the Holocene transgression in the lagoon of Mayotte (Comoro Archipelago, SW Indian Ocean). Facies.

#### Submitted

Andresen, N. and Reijmer, J.J.G.

Mineralogy and grain-size variations along a bank-to-basin transect (downcurrent Pedro Bank, Northern Nicaragua Rise). Journal of Sedimentary Research.

- **Reijmer, J.J.G.**, Schäfer, P., Wallrabe-Adams H.-J., Schäfer, A. and Fernandez, L.P. Mixed siliciclastic-carbonatic distal shelf facies at the southern margin of the Cantabrian Zone: sealevel controlled sedimentation in an orogenic foreland basin (Upper Carboniferous, NW Spain). Subm. to Sedimentology.
- Rendle-Bühring, R.H. and Reijmer, J.J.G.

Controls on grain-size distribution patterns in periplatform carbonates: marginal setting vs. glacioeustacy. Subm. to Sedimentary Geology Wolfgang Schlager special volume.

Reuning, L., **Reijmer, J.J.G.**, Betzler, C., Timmermann, A. and Steph, S.

The semiannual cycle of sea surface temperature (SST) as a modern analogue for the generation of semiprecessional cycles in the early Pliocene. Subm. to Paleoceanography.

Reuning, L., Reijmer, J.J.G., Betzler, C., Swart, P.K. and Bauch, Th.

The use of paleoceanographic proxies in carbonate platform settings - opportunities and pitfalls. Subm. to Sedimentary Geology Wolfgang Schlager special volume.

Reuning, L., Reijmer, J.J.G. and Mattioli E.

Emerging Cycles: Diagenesis caught in the act. Subm. to Sedimentology.

Roth, S. and Reijmer, J.J.G.

Concurrent evolution of Bahamian sea-surface temperatures and bottom-water temperatures for the past 7,230 years: Evidence for increased influence of South Atlantic water masses. Subm. to Geology.

#### 2004

Bahamonde, J.R., Kenter, J.A.M., Della Porta, G., Keim, L., Immenhauser, A. and Reijmer, J.J.G. Lithofacies and depositional processes on a high, steep-margined Carboniferous (Bashkirian-Moscovian) carbonate platform slope, Sierra del Cuera, NW Spain. Sedimentary Geology, 166, 1/2, 145-156.

Roth, S. and **Reijmer, J.J.G.** 

Holocene Atlantic climate variations deduced from carbonate peri-platform sediments (leeward margin, Great Bahama Bank). Paleoceanography, Vol. 19, No. 1, PA1003 10.1029/2003PA000885, 22 January 2004

#### 2003

Andresen, N., Reijmer, J.J.G. and Droxler, A.W.

Timing and distribution of calciturbidites around a deeply submerged carbonate platform in a seismically active setting (Pedro Bank, Northern Nicaragua Rise, Caribbean Sea). Int. J. of Earth Sc. - Geol. Rundschau, 92 (4), 573-592.

Brachert, T.C., Forst, M.H., Pais, J.J., Legoinha, P. and Reijmer, J.J.G.

Lowstand carbonates, highstand sandstones? Sedimentary Geology, 155, 1-12.

Maurer, F., Reijmer, J.J.G., and Schlager, W.

Quantification of input and compositional variations of calciturbidites in a Middle Triassic pelagic succession (Seceda, Western Dolomites, Southern Alps). Int. J. of Earth Sc. - Geol. Rundschau, 92 (4), 593-609.

Reijmer, J.J.G.

Sedimentation patterns of low-latitude carbonate platforms. Unpublished Habilitation-Dissertation (Habilitationsschrift), Christian-Albrechts-Universität zu Kiel, Germany, 83 pp + appendix (reprints of 20 manuscripts).

Reijmer, J.J.G., Betzler, C., and Mutti, M. (Eds.)

Editing International Journal of Earth Sciences - Geologische Rundschau "Special Issue: New perspectives in carbonate sedimentology", 92 (4), 441-660.

Reijmer, J.J.G., Betzler, C., and Mutti, M.

DGG & GV 2001 MARGINS Meeting (Kiel, Germany) - New perspectives in carbonate sedimentology (Editorial). Int. J. of Earth Sc. - Geol. Rundschau, 92 (4), 441-444.

Scheibner, C., Reijmer, J.J.G., Marzouk, A.M., Speijer, R.P., and Kuss, J.

Tectono-sedimentary evolution of a Paleogene carbonate margin (Eastern Desert, Egypt). Int. J. of Earth Sc. - Geol. Rundschau, 92 (4), 624-640.

Zinke, J., Reijmer, J.J.G., Thomassin, B.A., Dullo, W.C., Grootes, P.M. and Erlenkeuser, H.

Postglacial flooding history of Mayotte lagoon (Comoro archipelago, southwest Indian Ocean). Marine Geology, 194, 181-196.

Zinke, J., Reijmer, J.J.G. and Thomassin, B.A.

Systems tracts sedimentology in the lagoon of Mayotte associated with the Holocene transgression. Sedimentary Geology, 160, 57-79.

#### 2002

Blomeier, D. and Reijmer, J.J.G.

Facies architecture of an Early Jurassic carbonate platform slope (Jbel Bou Dahar, High Atlas, Morocco). Journal of Sedimentary Research, 72 (4), 463-476.

Reijmer, J.J.G., Betzler, C., Kroon D., Tiedemann, R. and Eberli, G.P.

Bahamian carbonate platform development in response to paleoceanographic changes. International Journal of Earth Sciences - Geologische Rundschau, 91, 482-489.

DOI 10.1007/s00531-001-0235-x. http://link.springer.de/link/service/journals/00531/contents/01/00235/

#### Reijmer, J.J.G. (Ed.)

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#### Rendle, R.H. and Reijmer, J.J.G.

Evolutionary slope development on the western, leeward margin of Great Bahama Bank during the Quaternary. In: Reijmer, J.J.G. (Ed.), Marine Geology special issue "Carbonate margin development (Bahama transect, ODP Leg 166)", 185, 143-164.

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Sedimentation cycles and their diagenesis on the slope of a Miocene carbonate ramp system (Bahamas, ODP Leg 166). In: Reijmer, J.J.G. (Ed.), Marine Geology special issue "Carbonate margin development (Bahama transect, ODP Leg 166)", 185, 121-142.

#### 2001

Munnecke, A., Westphal, H., Elrick, M. and Reijmer, J.J.G.

The mineralogical composition of precursor sediments of calcareous rhythmites: a new approach. International Journal of Earth Sciences - Geologische Rundschau, 90, 795-812.

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Seismic architecture and sediment distribution within the Holocene barrier reef-lagoon complex of Mayotte (Comoro Archipelago, SW Indian Ocean). In: Camoin, G. (Ed.), Palaeo-3 special volume "PRCP Conference", 175, 343-368.

#### 2000

Betzler, C., Kroon, D. and Reijmer, J.J.G.

Synchroneity of major late Neogene sea-level fluctuations and paleoceanographic controlled changes as recorded by two carbonate platforms. Paleoceanography, 15/6, 722-730.

Henderson, G.M., Rendle, R.H., Slowey, N.C. and Reijmer, J.J.G.

U-Th dating and diagenesis of Pleistocene highstand sediments from the Bahamas slope. In: Swart, P.K., Eberli, G.P., Malone, M.J. and Sarg, J.F. (Eds.), Proceedings of the Ocean Drilling Program, Scientific Results, 166, 23-31.

Kroon, D., Reijmer, J.J.G. and Rendle, R.H.

Mid- to Late-Quaternary variations in the oxygen isotope signature of *Globigerinoides ruber* at Site 1006 in the western subtropical Atlantic. In: Swart, P.K., Eberli, G.P., Malone, M.J. and Sarg, J.F. (Eds.), Proceedings of the Ocean Drilling Program, Scientific Results, 166, 13-22.

Rendle, R.H., Reijmer, J.J.G., Kroon, D. and Henderson, G.M.

Mineralogy and sedimentology of the Pleistocene to Holocene on the leeward margin of Great

Bahama Bank. In: Swart, P.K., Eberli, G.P., Malone, M.J. and Sarg, J.F. (Eds.), Proceedings of the Ocean Drilling Program, Scientific Results, 166, 61-76.

- Zinke, J., **Reijmer, J.J.G.**, Dullo, W.-C. and Thomassin, B.A.
- Paleoenvironmental changes in the lagoon of Mayotte associated with the Holocene transgression. GeoLines, 11, 150-153. Pages 2000, Prague Meeting

#### 1999

Betzler, C., Reijmer, J.J.G., Bernet, K., Eberli, G.P. and Anselmetti, F.S.

Sedimentary patterns and geometries of the Bahamian outer carbonate ramp (Miocene and lower Pliocene, Great Bahama Bank). Sedimentology, 46/6, 1127-1144.

Blomeier, D. and Reijmer, J.J.G.

Drowning of a Lower Jurassic carbonate platform: Jbel Bou Dahar, High Atlas, Morocco. Facies, 41, 81-110.

Everts, A.J.W., Schlager, W. and Reijmer, J.J.G.

Quantitative logs of sediment composition - a means for platform-to-basin correlation in carbonates. An example from the Vercors (France). Sedimentology, 46/2, 261-278.

Emmermann, P.P., Reijmer, J.J.G. and Andresen, N.

Sedimentation rates of Late Quaternary periplatform sediments based on aragonite/calcite ratios: Sudanese Red Sea vs. Pedro Bank (Caribbean). In: Bruns, P. and Hass, H.C. (Eds.), On the determination of sediment accumulation rates, Trans Tech Publications, Switzerland, GeoResearch Forum, 5, 67-86.

Heiss, G.A., Dullo, W.-Chr., Joachimski, M.M., Reijmer, J.J.G. and Schuhmacher, H.

Increased seasonality in the Gulf of Aqaba, Red Sea, Recorded in the oxygen isotope record of a *Porites lutea* coral. Senck. maritima, 30, 17-26.

Scheibner, C. and **Reijmer, J.J.G.** 

Facies patterns within a Lower Jurassic upper slope to inner platform transect (Jbel Bou Dahar, Morocco). Facies, 41, 55-80.

Westphal, H., Reijmer, J.J.G. and Head, M.J.

Sedimentary input and diagenesis on a carbonate slope (Bahamas): response to morphologic evolution of the carbonate platform and sea level fluctuations. In: Harris, P.M., Saller, A.H. and Simo, T. (Eds.), Advances in carbonate sequence stratigraphy - Application to reservoirs, outcrops, and models, SEPM Spec. Publ. v. 63. SEPM (Society for Sedimentary Geology), p. 247-274.

#### 1998

Reijmer, J.J.G.

Compositional variations during phases of progradation and retrogradation of a Triassic carbonate platform (Picco di Vallandro/Dürrenstein, Dolomites, Italy). Geologische Rundschau, 87/3, 436-448.

#### 1997

Dullo, W.-Chr., Reijmer, J.J.G., Andresen, N. und Emmermann, P.

Meeresspiegelschwankungen und ihre geologische Überlieferung im Karbonatsystem. Geowissenschaften, 15/9, 296-300.

Eberli, G.P., Swart, P., et al. (incl. **Reijmer, J.J.G.**)

Proc. ODP, Init. Repts., 166, College Station, TX (Ocean Drilling Program).

Munnecke, A., Westphal, H., **Reijmer, J.J.G.** and Samtleben, C.

The formation of microspar during early marine burial diagenesis: a comparison of Pliocene carbonates from the Bahamas with Silurian limestones from Gotland (Sweden). Sedimentology, 44/6, 977-990.

#### 1996

Dullo, W.-Chr., Reijmer, J.J.G., Schuhmacher, H., Eisenhauer, A., Hassan, M. and Heiss, G.A. Holocene reef growth and recent carbonate production in the Red Sea. In: Reitner, J., Neuweiler, F. and Gunkel, F. (Eds), Global and regional controls on biogenic sedimentation. I. Reef evolution. Research reports - Göttinger Arbeiten zur Geologie und Paläontologie, Göttingen, Sb 2, 13-17. Emmermann, P., Reijmer, J.J.G. and Brachert, Th.

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Emmermann, P., **Reijmer, J.J.G.** and Brachert, Th. Preliminary results - Marine Geoscience: Export of shallow water carbonates. In: Hemleben, Ch., Roether, W. and Stoffers, P. (Eds), Östliches Mittelmeer, Rotes Meer, Arabisches Meer - Cruise No. 31, 30 December 1994 - 22 March 1995. METEOR-Berichte, Universität Hamburg, 96–4, 99-110.

#### 1995

Everts, A.J.W. and Reijmer, J.J.G.

Clinoform composition and margin geometries of a Lower Cretaceous carbonate platform (Vercors, SE France). In: Philip, J. and Skelton, P.W. (Eds.), Thematic volume "Palaeoenvironmental models for the benthic associations of Cretaceous carbonate platforms", CRER Working Group 4. Palaeogeogr., Palaeoclimat., Palaeoecol., 119, 19-33.

Schuhmacher, H., Kiene, W., Dullo, W.-Chr., Gektidis, M., Golubic, S., Heiss, G.A., Kampmann, H., Kroll, D.K., Kuhrau, M.L., Radtke, G., **Reijmer, J.J.G.**, Reinicke, G.B., Schlichter, D. and Vogel, K.

Facies controlling Holocene reef growth: an interdisciplinary approach. Facies, 32, 145-188.

#### 1994

Reijmer, J.J.G., Sprenger, A., Ten Kate, W.G.H.Z., Schlager, W. and Krystyn, L.

Periodicities in the composition of Late Triassic calciturbidites (Eastern Alps, Austria). In: De Boer, P.L. and Smith D.G. (Eds.), Orbital forcing and cyclic sequences, IAS Spec. Publ., 19, Blackwell, London, 323-343.

Schlager, W., Reijmer, J.J.G. and Droxler, A.W.

Highstand shedding of carbonate platforms. Journal of Sedimentary Petrology, B64/3, 270-281.

Gasperini, L., Gensou, B., Philobbos, E., Purser, B., **Reijmer**, J.J.G., Rioual, M., Taviani, M. and Tesson, M.

Gulf of Suez seismic survey (Sept./Oct. 1992): A scientific report. Giornale di Geologia, Ser. 3-a, 56/2: 3-12.

#### 1993

Heiss, G., Dullo, W.-Ch. and Reijmer, J.J.G.

Short- and long-term growth history of massive *Porites* sp. from Aqaba (Red Sea). Senckenbergiana maritima, 23, 135-141.

#### 1992

Reijmer, J.J.G., Schlager, W. Bosscher, H., Beets, C.J. and McNeill, D.F.

Pliocene/Pleistocene platform facies transition recorded in calciturbidites (Exuma Sound, Bahamas). Sedimentary Geology, ExpresSed, 78, 171-179.

Campbell, A.E., Everts, A.J.W. and Reijmer, J.J.G.

Lithological and diagenetic variations across a Lower Jurassic drowning unconformity (Djebel Bou Dahar, Morocco). In: Campbell, A.E. (Ed.), Unconformities in seismic records and outcrop. Ph.D. Thesis, Vrije Universiteit, Amsterdam, The Netherlands, p. 91-111.

#### 1991

Reijmer, J.J.G., Ten Kate, W.G.H.Z., Sprenger, A. and Schlager, W.

Calciturbidite composition related to the exposure and flooding of a carbonate platform (Triassic, Eastern Alps). Sedimentology, 38, 1059-1074.

Glaser, K.G., Reijmer, J.J.G. and Droxler, A.W.

Turbidite occurrence in the Late Quaternary periplatform sediments on the Northeastern Nicaragua Rise. In: Glaser, K.G. (Ed.), Late Quaternary periplatform sediments and environments on the northeastern Nicaragua Rise, Caribbean Sea. Ph.D. Thesis, Rice University, Houston, Texas, U.S.A., p. 113-131.

Reijmer, J.J.G. and Everaars, J.S.L.

Carbonate platform facies reflected in calciturbidite composition (Triassic, Northern Calcareous Alps, Austria). Facies, 25, 253-278.

#### Reijmer, J.J.G.

Sea level and sedimentation on the flanks of carbonate platforms. Ph.D. Thesis, Vrije Universiteit, Amsterdam, The Netherlands, 162 pp.

#### 1990

Kenter, J.A.M., Reijmer, J.J.G., van der Straaten, H.C. and Peper, T.

Facies patterns and subsidence history of the Jumilla - Cieza region (SE Spain). Sedimentary Geology, 67, 263-281.

#### 1988

Boekschoten, G.J., van der Raad, A.C., Kenter, J.A.M. and Reijmer, J.J.G.

Note on a mid-Proterozoic stromatolite, south of Grythyttan, Bergslagen. Geologie en Mijnbouw, 67, 467-469, Bergslagen special.

**Reijmer, J.J.G.**, Schlager, W. and Droxler, A.W.

ODP Site 632: Pliocene-Pleistocene sedimentation cycles in a Bahamian Basin. In: Austin, J. A., Schlager, W., et al., 1988. Proceedings of the Ocean Drilling Program, Scientific Results, 101, Part B, 213-220.

#### 1984

#### Reijmer, J.J.G.

Geology of the Caramucel area, Jumilla-Cieza region, SE Spain. Unpublished M.Sc. Thesis, University of Amsterdam, The Netherlands, 160 pp.

#### 1979

Akkerman, J.H., Croese, I., Jagerman, M.P., Reijmer, J.J.G. and van der Valk, L.

Sedimentological characteristics of tidal deposits in the western part of the Oosterschelde, Zeeland, the Netherlands. Internal report University of Utrecht, 33 pp.

### **ABSTRACTS 2004-1998**

2004

Andresen, N., Reijmer, J.J.G., and Droxler, A.W.

Timing and distribution of calciturbidites around a deeply submerged carbonate platform in a seismically active setting (Pedro Bank, Northern Nicaragua Rise, Caribbean Sea). 32<sup>nd</sup> International Congress, Florence, Italy

- Lantzsch, H., Roth, S., and **Reijmer, J.J.G.** Sedimentation patterns on the NW slope of Little Bahama Bank – 150,000 years of climate history. Sediment-2004, Aachen, Germany. Schriftenr. DGG, 33, p. 89.
- **Reijmer, J.J.G.**, Schäfer, P., Schäfer, A., and Wallrabe-Adams H.-J.

Mixed siliciclastic-carbonate shelf facies at the southern margin of the Cantabrian Zone: sea-level controlled sedimentation in an orogenic foreland basin (Upper Carboniferous, NW Spain). AAPG Annual Meeting 2004, Dallas, U.S.A.

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Sea-level controlled sedimentation in an orogenic foreland basin (Upper Carboniferous, NW Spain). Sediment 2004, Aachen, Germany. Schriftenr. DGG, 33, p. 124.

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- 1985-1991

# ECORD Application form for membership in IODP expedition scientific parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following information)			
Name (first, middle, last)			
Institution University of Fribourg, Switzerland			
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Email Address elias.samankassou@unifr.ch			
Present Title Dr. Country of Citizenship Cameroon			
Place of Birth Yagoua (Cameroon) Date of Birth 1964-07-31 Gender Male			
Passport No. 422223 Place Issued Geneva, CH Date Issued 2001-05-23 Exp. Date 2006-05-22			
Education (Highest degree - PhD., M.S., or B.S.) PhD Date: 1997-07-16			
Are you currently a student? <b>No</b> (If yes, see note below)			
II. EXPEDITION INFORMATION			
Expeditions of Interest (please limit selection to no more than three):			
Expedition Number: Title			
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*			
Expedition Number: 519 <u>Title</u> The last deglacial sea-level rise in the south Pacific: Offshore drilling			
Platform: Riser Non-riser MSP Participation Full Expedition Partial* Shorebased*			
Expedition Number: Title:			
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*			
(* provide detail of proposed participation in an accompanying letter)			
Reason(s) for Interest (if necessary, expand in letter) SEE LETTER ATTACHED			
Personal and/or scientific references (name and address) <b>1) Prof. A. Strasser, University of Fribourg</b>			

Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased

participant, etc.) NO

#### LETTER OF INTEREST FOR IODP PROPOSALS 519

#### Elias Samankassou, University of Fribourg, Switzerland

#### 519 – TAHITI (Camoin et al.)

Most of the objectives of this proposal are very important for my current research topics. These include the relative timing of post-glacial climatic changes, the impact of sea level on reef growth, and the quantification of sedimentary processes. The following specific points outline my potential contribution to the proposed drilling and the importance of the results to be obtained by the IODP drilling for my current research.

(1) Short-term, high-resolution changes in paleoclimate and paleoceanographic circulation are expected from this project.

The record of glacial-interglacial intervals during the Carboniferous-Permian, the most pronounced glacial interval in the Phanerozoic, remains poorly constrained as to duration, timing, and mechanisms. The Tahiti drilling will provide a solid frame on timing and amplitude of sea-level fluctuations. Furthermore, the impact of meltwater pulses on thermohaline oceanic circulation and global climate are part of the parameters to be constrained. The estimation and mechanisms resulting from this site will thus help to improve models for the Carboniferous glacial-interglacial sedimentary record (cyclothems): e.g., drowning intervals linked to deglaciation (Samankassou, 1999), the impact of temperature and/or nutrient on the biotic associations (model in Samankassou, 2002), types of reefs in the different stages of sea-level fluctuations (Samankassou, 2003; Samankassou and West, 2003).

(2) In cooperation with my colleague Dr. Th. Nägler (Berne, Switzerland), I recently started measurement of Ca-isotopes as proxy for sea surface temperature (SST), using modern brachiopods. I plan to apply this method on the material from this drilling. This will allow testing the method on corals and comparing Ca-isotopes derived temperatures with those derived from the Ca/Mg ratio and O isotopes.

(3) Sedimentation rates in response to different sea-level situations.

Existing data on sedimentation rates based on low-resolution in stratigraphy. The high-resolution sedimentary record expected for this drilling will allow comparison to the Holocene rates obtained by our current research in Florida Bay and Florida Keys, The Bahamas (Andros), and Bermuda (Strasser and Samankassou, 2003).

Furthermore, other important processes in sequence stratigraphy and cyclostratigraphy can be quantified: e.g., evolution of accommodation, lag time, rates of drowning. Such data will help to better scale the models for older sequences (e.g., Jurassic and Cretaceous; Strasser and Samankassou, 2003; Tresch et al., 2003, 2004).

**Relevant papers** (see publication list in CV attached):

Samankassou (2002) Cool-water carbonates Samankassou (1999) Drowning Samankassou (2003) + Samankassou and West (2003) Carboniferous Reefs Strasser and Samankassou (2003) Sedimentation rates Tresch et al. (2003, 2004): Sequence stratigraphy

#### **III. ATTACHMENTS**

1. Attach curriculum vitae which includes a publication history

2. Please fill out the attached "Field of Expertise" form

Note: Applications from graduate students should include a letter from their primary advisor, documenting the student's scientific experience and detailing how participation on the cruise would fit into their graduate degree program.

Staffing decisions are made in consultation with co-chief scientists and take into account nominations from partner countries; final responsibility for ECORD staffing rests with ESSAC. Please submit all application materials to:

ESSAC Science Coordinator Faculty of Earth & Life Sciences - Vrije Universiteit De Boelelaan1085 1081 HV Amsterdam - The Netherlands Phone: +31 20 4447272 Fax: +31 20 4449941 E-mail: essac.amsterdam@falw.vu.nl

Eligibility as a ECORD participant is limited to scientists or engineers (professors, research scientists, technologists, graduate students, etc.) at a ECORD member institution (e.g. German academic institutions, government labs, ECORD member-based corporations, etc.). Non-ECORD affiliated personnel from other IODP member countries should apply for IODP participation through their country's national program office. Undergraduate students do not qualify as Shipboard Participants, and should not apply to sail using this form. Undergraduates interested in sailing on a IODP expedition should instead contact ECORD for information about the Undergraduate Student Trainee Program.

#### FIELD OF EXPERTISE

- \_\_\_\_ Biologist
- \_\_\_\_ Microbiologist
- \_\_\_\_ Inorganic Geochemist
- \_\_\_\_ Organic Geochemist
- \_\_\_\_ Geophysicist
- \_\_\_\_ Hydrologist
- \_\_\_\_ Logging Scientist
- \_\_\_\_ Oceanographer
- \_\_\_\_ Paleomagnetist
- \_\_\_\_ Paleontologist (Diatom)
- \_\_\_\_ Paleontologist (Dinoflagellate)
- \_\_\_\_ Paleontologist (Foraminifer Benthic)
- \_\_\_\_ Paleontologist (Foraminifer Planktonic)
- \_\_\_\_ Paleontologist (Megafossil)
- \_\_\_\_ Paleontologist (Nannofossil)
- \_\_\_\_ Paleontologist (Phytoplankton)
- \_\_\_\_ Paleontologist (Radiolaria)
- \_\_\_\_ Paleontologist (Silicoflagellate)
- \_\_\_\_ Palynologist
- \_\_\_\_ Petroleum Geologist
- \_\_\_\_ Petrologist
- \_\_\_\_ Igneous Petrologist
- \_\_\_\_ Metamorphic Petrologist
- \_\_\_\_ Physical Properties Specialist
- X \_ Sedimentologist
- \_\_\_\_ Seismologist
- \_\_\_\_ Stratigrapic Correlator
- \_\_\_\_ Structural Geologist
- \_\_\_\_ Downhole Measurements

# **CURRICULUM VITAE**

Dr. Elias Samankassou, Lecturer (Privat-docent)

<u>Professional address:</u> Département de Geosciences Géologie et Paléontologie Université de Fribourg, Pérolles CH-1700 Fribourg Switzerland

Tel. +41-26-300 89 76 Fax. +41-26-300 97 42 Email: elias.samankassou@unifr.ch

<u>Private address:</u> **Rue Gachoud 1 CH-1700 Fribourg, Switzerland** 

> Born July 31., 1964 In Yagoua, Cameroon

Citizenship: Cameroon Residence: Switzerland

# **KEY QUALIFICATIONS**

#### Habilitation 2003 University of Fribourg, Switzerland Award of Privat-Docent (venia legendi; lecturer) December 18., 2003

Thesis: "Growth modes and controlling factors of low-latitude Pennsylvanian and Lower Permian buildups", 119 p.

#### PhD 1997 University of Erlangen-Nürnberg, Germany

Thesis: "Patterns and controls of cyclic sedimentation in Late Paleozoic (Late Carboniferous-Early Permian) of the Carnic Alps, Austria: An integrated study", 397 p. (in German) Advisor: Prof. Dr. E. Flügel, Institute of Paleontology

#### MSc 1992 University of Erlangen-Nürnberg, Germany

Thesis: "Low-grade metamorphism of Permo-Triassic sequences from the Fassatal, Southern Alps, Northern Italy", 102 p. (in German) Advisor: Prof. Dr. W. Buggisch; Institute of Geology and Mineralogy

#### **Languages**: French, German, and English (fluent, oral and written) Spanish (basic knowledge)

# POSITIONS HOLD

#### 1993 - 1994

- Research Assistant, Institute of Paleontology, University of Erlangen-Nürnberg, Germany

#### 01.01.1994 - 31.08.1996

- Research Associate (Half-time), granted by the German Research Foundation (DFG); Topic: "Patterns and controls of cyclic sedimentation in the Late Paleozoic rocks of the Carnic Alps, Austria-Italy"
- Teaching Assistant at the Institute of Paleontology, University of Erlangen-Nürnberg, Germany

#### 01.01.1998-31.03.2000

- **Research Associate** (Postdoc, Full-time), granted by the German Research Foundation (DFG); Topic: "Late Triassic carbonate platform cycles: Case studies from the Dachstein Platform (Austria) and Kawr Platform (Oman Mountains)

- Lecturer at the Institute of Paleontology, University of Erlangen-Nürnberg, Germany

#### 01.04.2000 – present

- Assistant (Privat-docent, lecturer since December 2003) at the Department of Geosciences, University of Fribourg, Switzerland

#### 2004

- Temporary Professorship in Sedimentary Geology (Sabbatical replacement to Prof. A. Strasser)

# **CURRENT RESEARCH TOPICS**

- 1. Quantification of Sedimentary Processes: Accumulation rates of carbonate platforms, past versus modern
- 2. Late Paleozoic Reefs: Sedimentology, Paleoecology, Diagenesis, and Economic Potentials
- 3. Sedimentary Cycles and the Records of Past Climates: Greenhouse versus Icehouse Models
- 4. Currently developing and performing Ca-isotope Geochemistry (Proxy for Seawater Temperature) to combine with C-, and O-isotope Geochemistry

# TEACHING RECORD, STUDENTS ADVISED, GRANTS, SERVICE TO THE SCIENTIFIC COMMUNITY

### Teaching Experience

- Lecture: "Cyclic sedimentation" within the annual Microfacies-Course of Prof. E. Flügel in Erlangen (1993-2000)
- "Practice to Historical Geology Paleontological Part" (1994-2000)
- Lecture: "Sequence Stratigraphy" (Together with Prof. R. Koch and Dr. M. Keller) (1996-1999)
- Seminar: "Topics in Carbonate Sedimentology" (1999)
- Lecture: "Cool-water carbonates: Principles, Recognition, Interpretation" (1999/2000)
- Lecture: "Facies models of carbonate platforms" (2000)
- Lecture: "Petrography of Sedimentary Rocks" (2000-present, winter terms)
- International short course: "Quantification of sedimentary processes" (1 of 6 course leaders; 2002)
- Lecture: "Sedimentology and Sedimentary Petrography" (2004)
- Lecture: "Stratigraphy and Earth History" (together with Prof. A. Strasser and Prof. J.P. Berger) (2004)

Although titles are given in English, courses were variously given in German, French, or English. Student field excursions: Carnic Alps, Austria-Italy (1996-2000, Co-leader), Dolomites, Italy (2001, Leader E. Samankassou), Tunisia (2002, Leader A. Strasser), Cyprus (2003, Leader B. Grobéty).

## Students advised/co-advised

#### PhD theses

- Forke, Holger 2001 (PhD Thesis in Erlangen, Germany): Sedimentology and biostratigraphy (Fusulinids and conodonts) of Upper Carboniferous and lower Permian, Carnic Alps, Austria.
- Tresch, Jonas (in progress): History of a Lower Beriassian transgression (France, Switzerland, and Southern England).
- Védrine, Stéphanie (in progress): High-frequency palaeonenvironmental changes in mixed carbonatesiliciclastic sedimentary systems in the Upper Oxfordian (Switzerland, France, England, Spain).

#### MS theses

- Fritsch, Andreas 2000 (MS Thesis in Erlangen, Germany): Die Schulterkofelflora innerhalb der Auernig-Schichten aus dem Oberkarbon der Karnischen Alpen/Österreich, 75 p.
- Di Gioia, Eric 2001 (MS Thesis in Fribourg, Switzerland): Etude géologique de la région de Himmelried (Jura bâlois et soleurois, Suisse) avec analyse séquentielle dans l'Oxfordien supérieur. Diploma Thesis, Fribourg, 103 p.
- Rauber, Gaetan 2001 (MS Thesis in Fribourg, Switzerland): Géologie de la région de Bärschwil-Grindel (Jura soleurois, Suisse) avec analyse détaillée de l'Oxfordien supérieur. Diploma Thesis, Fribourg, 109 p.
- von Almen, Katja (in progress): Pennsylvanian buildups of the Lena Group, Central Asturian Coal Basin, northern Spain.

# **Undergraduate student projects** (seminars, part of BSc thesis since 2003/2004), all in Fribourg, Switzerland

- Hofer, Nico (2001/2002): Variations séculaires durant le Phanérozoïque: Influences sur la calcification et l'évolution des organismes.
- Hürzeler, Jean-Pierre (2001/2002): Variations séculaires durant le Phanérozoïque: Définition et évolution du concept.
- Baechler, Christophe (2002/2003): Extinction en masse de la limite Frasnien-Famennien, Devonien supérieur.
- von Almen, Katja (2003/2004): Himmlischer Treibhauseffekt: Bestimmt kosmische Strahlung das phanerozoïsche Klima? 22 p.
- Locher, Daniel (2003/2004): Ozean PH und atmosphärische CO<sub>2</sub>-Konzentration. 15 p.
- Moussa, Salah (2003/2004): L'origine de la boue carbonatée. 17 p.

# Administrative Experience and responsibilities

- Computer Network Administrator of the Institute in Erlangen, Germany (1994-2000), Fribourg, Switzerland (2001-present)

- Organization Committee of "Sediment 98" (Meeting of German-Speaking Sedimentologists 1998 in Erlangen, Germany)
- Coordinator for electronic material and devisers (GPS, portables computers, beamers, and digital cameras)(2001-present)
- Member of Department of Geosciences Committee (elected)(2001-2003)
- Member of the BeNeFri Committee (Common curriculum of the Universities of Berne, Neuchâtel and Fribourg)(2002-present)
- Member of the Faculty of Sciences Committee (elected)(2003-present)

#### Grants

- State of Cameroon: University Scholarship 1986-1992
- Deutsche Forschungsgemeinschaft (DFG, German Research Foundation):
  - 1- PhD Grant: Research Associate, Halftime: 1994-1996
  - 2- Postdoc Grant: Research Associate, Full-time 1998-2000
- Salzburger Landesregierung, Österreich (State Office of Salzburg, Austria): Partial Support for Lofer Study (Triassic platform cycles) in Austria 1998
- Swiss National Science Foundation (SNF)
  - 2000-2002: Climatic, eustatic, and biological controls on shallow carbonate-siliciclastic sedimentary systems: Quantifications (PI and project leader: A. Strasser)
     2002-2005: Palaeocliclimate, sea-level changes, and sediment fluxes in mixed carbonate
    - siliciclastic sedimentary systems (PI and project leader: A. Strasser)

#### Professional service

- 1996: Reviewer Facies
- 1997: Reviewer Facies (2)
- 1998: Reviewer Zentralblatt Geologie-Paläontologie
- 1999: Reviewer Sedimentology
- 2000: Reviewer Promotion of a Faculty member, Delaware (USA)
- 2002: Reviewer Geological Journal
- 2003: Reviewer Facies
- 2003: Reviewer Austrian Academy of Science Special Publication
- 2003: Reviewer Geologica Belgica
- 2003: Reviewer Sedimentary Geology
- 2004: Reviewer Revista Española de Paleontología
- 2004: Reviewer Geologica Belgica
- 2004: Reviewer Sedimentary Geology (3)
- 2004: Reviewer Bull. Inst. Royal Sci. Nat. Belgique

#### Membership in Professional Associations

- American Geophysical Union and European Geophysical Union
- American Association of Petroleum Geologists (AAPG)
- Canadian Society of Petroleum Geologists (CSPG)
- Geological Society of America (GSA)
- Geologische Vereinigung (GV)
- International Association of Sedimentologists (IAS)
- International Society of Coral Reef Studies (ISCRS)
- Palaeontological Association
- Paläontologische Gesellschaft
- Phycological Society of America (PSA)
- Societiá Española de Paleontología (SEP)
- Society of Économic Paleontologists and Mineralogists (SEPM)

Elias Samankassou

# LIST OF PUBLICATIONS

#### Papers

- Samankassou, E. (1995): Early Triassic (Scythian) conodonts from the Werfen Formation, Southern Alps, Italy.- Neues Jahrbuch Geologie Paläontologie Monathefte 1995 (4): 248-256.
- Samankassou, E. (1996): Conodont from the Ladinian Buchenstein Formation (Southern Alps, Italy).-Jahrbuch Geologische Bundesanstalt Wien 138: 523-531.
- Samankassou, E. (1997): Paleontological response to sea-level changes: the distribution of fauna and flora in the Lower Pseudoschwagerina Limestone, Upper Carboniferous, Carnic Alps, Austria.- Geobios 30, 6: 785-796.
- Samankassou, E. (1998): Skeletal framework mounds of dasycladalean alga *Anthracoporella*, Upper Paleozoic, Carnic Alps, Austria.- Palaios 13, 3: 297-300.
- Enos, P. and Samankassou, E. (1998): Lofer cyclothems revisited (Late Triassic, Northern Alps, Austria).- Facies 38: 207-228.
- Samankassou, E. (1999): Drowning of algal mounds: Records from the Lower Pseudoschwagerina Limestone, Upper Carboniferous, Carnic Alps, Austria.- Sedimentary Geology 127: 209-220.
- Forke, H.C. and Samankassou, E. (2000): Biostratigraphical correlation of Late Carboniferous (Kasimovian) sections in the Carnic Alps (Austria/Italy): Integrated paleontological data, facies, and discussion.- Facies 42: 171-204.
- Samankassou, E., Bernecker, M. and Flügel, E. (2001): Facies and small-scale geometries of Late Triassic Kawr Platform, Sultanate of Oman (extended abstract).- Géologie Méditerranéenne Tome XXVIII, n° 1-2, p. 155-157.
- Samankassou, E. (2001): Internal structure and depositional environment of Late Carboniferous mounds from the Cármenes Syncline, Cantabrian Mountains, Spain.- Sedimentary Geology 145(3-4), 235-252.
- Samankassou, E. (2002): Cool-water carbonates in a paleoequatorial shallow-water environment: The paradox of the Auernig cyclic sediments (Upper Pennsylvanian, Carnic Alps, Austria-Italy) and its implications.- Geology, 30(7), 655-658.
- Samankassou, E. and West, R.R. (2002): Construction versus accumulation in phylloid algal mounds: an example of a small constructed mound in the Pennsylvanian of Kansas, USA.-Palaeogeography Palaeoclimatology Palaeoecology, 185(3-4), 379-389.
- Strasser, A. and Samankassou, E. (2003): Sedimentation rates today and in the past: Holocene of Florida Bay, Bahamas, and Bermuda vs. Upper Jurassic and Lower Cretaceous of the Jura Mountains (Switzerland and France).- Geologica Croatica 56, p. 1-18.
- Samankassou, E., Strasser, A., Di Gioia, E., Rauber, G., & Dupraz, C. (2003): High-resolution record of lateral variations on a shallow carbonate platform (Upper Oxfordian, Swiss Jura Mountains).-Swiss Journal of Geosciences (Eclogae geologicae Helvetiae) 96, p. 425-440.
- Samankassou, E. (2003): Upper Carboniferous-Lower Permian buildups of the Carnic Alps, Austria-Italy.- In: Permo-Carboniferous Platforms and Reefs, SEPM Special Publication 787 and AAPG Memoir 83 (Ed. by W. M. Ahr, P. M. Harris, W. A. Morgan and I. D. Somerville), p. 201-217.
- Samankassou, E. & West, R. R. (2003): Constructional and accumulational modes of fabrics in selected Pennsylvanian algal-dominated buildups in eastern Kansas, Midcontinent, USA.- In: Permo-Carboniferous Platforms and Reefs, SEPM Special Publication 78 and AAPG Memoir 83 (Ed. by W. M. Ahr, P. M. Harris, W. A. Morgan and I. D. Somerville), p. 219-237.
- Fohrer, B. and Samankassou, E. (accepted): Paleoecological control of ostracode distribution in a Pennsylvanian Auernig cyclothem of the Carnic Alps, Austria. Palaeogeography Palaeoclimatology Palaeoecology.

#### Abstracts

- Samankassou, E. (1995a): Cyclic sedimentation patterns of the Lower Pseudoschwagerina Limestone (Latest Carboniferous, Carnic Alps).- XIII. International Congress on the Carboniferous-Permian, Abstract, p. 127; August 28th.-September 2nd., 1995, Kraków, Poland.
- Samankassou, E. (1995b): Paleontological response to sea-level change: Distribution of fauna and flora in the Lower Pseudoschwagerina Limestone cyclothems (Latest Carboniferous, Carnic Alps, Austria).- Fauna, Flora and Sequence Stratigraphy, International Meeting of APF-SGF, Abstract, p. 49; December 14.-15., 1995, Paris, France.
- Enos P. and Samankassou, E. (1996): Lofer cycles revisited.- Sediment' 96, Abstract, p. 30; May 9.-15., 1996 in Vienna, Austria.

- Samankassou, E. (1996): Muster und Steuerung der zyklischen Sedimentation in den Unteren Pseudoschwagerinen Kalken, Oberkarbon, Karnische Alpen, Österreich.- Sediment' 96, Abstract, p. 149; May 9.-15., 1996 in Vienna, Austria.
- Samankassou, E. (1997a.): Depositional setting of dasycladalean Anthracoporella mounds in the Lower Pseudoschwagerina Limestone (Latest Carboniferous, Carnic Alps, Austria)(Abstract).-Gaea heidelbergensis 3, 397-398. 18th International Regional IAS Meeting September 2.-4., 1997, Heidelberg, Germany.
- Samankassou, E. (1997b): Palökologie der dasycladalen Alge *Anthracoporella* PIA 1920. Daten aus dem Jungpaläozoikum der Karnischen Alpen, Österreich)(Abstract).- Terra Nostra, XX: 103-104. 67. Jahrestagung der Paläontologischen Gesellschaft, Sept. 21.-28., 1997 in Daun/Vulkaneifel, Germany.
- Samankassou, É. (1998): Drowning of algal mounds: Records from the Lower Pseudoschwagerina Limestone, Upper Carboniferous, Carnic Alps, Austria.- 15th International Sedimentological Congress, Abstract p. 691-692, April 12.-17., 1998, Alicante, Spain.
- Fohrer, B. and Samankassou, E. (1998): Palökologische und biostratigraphische Kontrolle der Ostracodenverteilung in den Zyklothemen der Auernigschichten, Oberkarbon, Karnische Alpen, Österreich.- Sediment'98, 13. Sedimentologentreffen, Erlanger Geologische Abhandlungen, Sonderband 2, Abstract, p. 21; Erlangen, Germany.
- Samankassou, E. (1999): Patterns and controls of cyclothems from the Upper Carboniferous Lower Pseudoschwagerina Limestone, Carnic Alps, Austria (Abstract).- XIV. International Congress on Carboniferous-Permian, Abstract p. 126, August 17.- 21., 1999, Calgary, Canada.
- Fohrer, B. and Samankassou, E. (1999): Paleoecological and biostratigraphic control of ostracode distribution in Upper Carboniferous Auernig cyclothems of the Carnic Alps, Austria (Abstract).- XIV. International Congress on Carboniferous-Permian, Abstract p. 38, August 17.- 21., 1999, Calgary, Canada.
- Samankassou, E. (2000a): Late Carboniferous-Early Permian buildups of the Carnic Alps, Austria-Italy (Abstract).- Carbonate Platforms & Reefs, SEPM/IAS Research and Field Conference, May 12-19, El Paso, USA.
- Samankassou, E. and West, R.R. (2000): Construction versus accumulation in phylloid algal mounds: Case study from the Pennsylvanian Frisbie Limestone Member, Kansas, U.S.A.. (Abstract).-Permo-Carboniferous Carbonate Platforms & Reefs, SEPM/IAS Research and Field Conference, May 12-19, El Paso, USA.
- Samankassou, E. (2000b): Late Paleozoic Algal Mounds: Carnic Alps, Austria; Cantabrian Mountains, Spain; Midcontinent, Eastern Kansas, USA (Abstract).- Workshop "Paleo-Oceanography of Carbonate Mud Mounds" IGCP 380, September 2-7., 2000, Liege, Belgium.
- Samankassou, E. (2000c): Drowning of algal mounds: Records from the Upper Carboniferous Lower Pseudoschwagerina Limestone, Carnic Alps, Austria/Italy (Abstract).- Workshop "Paleo-Oceanography of Carbonate Mud Mounds" IGCP 380, September 2-7., 2000, Liege, Belgium.
- Samankassou, E., Bernecker, M. and Flügel, E. (2001): The Late Triassic Kawr Platform, Sultanate of Oman: An analogue to the Dachstein Platform, Northern Calcareous Alps, Austria? (Abstract).– International Meeting: Geology of Oman, Abstract p. 77-78, January 12.-16., 2001, Muscat, Sultanate of Oman.
- Samankassou, E. and Strasser, A. (2001): Sedimentation rates for shallow-water, carbonate-dominated environments (Abstract).– 9. Meeting of Swiss Sedimentologists (SWISS SED), Abstract p. 38-39, January 27., 2001, Fribourg, Switzerland.
- Di Gioia, E., Rauber, G., Strasser, A. and Samankassou, E. (2001): High-resolution record of lateral facies variations on a shallow carbonate platform (Upper Oxfordian, Swiss Jura Mountains)(Abstract).– 9. Meeting of Swiss Sedimentologists (Swiss Sed), Abstract p. 16, January 27., 2001, Fribourg, Switzerland.
- Samankassou, E. (2001): Cool-water carbonates in a paleoequatorial shallow-water environment: The paradox of the Auernig cyclic sediments (Late Carboniferous, Carnic Alps, Austria) and its implications (Abstract).– 21. Regional IAS Meeting of Sedimentology, Abstract p. 186, September 2.-6., 2001, Davos, Switzerland.
- Enos P. and Samankassou, E. (2002): Lateral variations in Dachstein Limestone (Triassic, Austria) (Abstract).- 16. International IAS Meeting of Sedimentology, Abstract p. 88, July 8-12, 2002 Johannesburg, South Africa.
- Samankassou, E. and West, R. R. (2003): Constructional and accumulational modes of fabrics in selected Pennsylvanian algal-dominated buildups in eastern Kansas, Midcontinent, USA (Abstract).– 11. Meeting of Swiss Sedimentologists (Swiss Sed), Abstract p. 63-64, January 25., 2003, Fribourg, Switzerland.
- Samankassou, E. (2003): Review of Pennsylvanian and Permian reefs in the Carnic Alps (Abstract). First Austrian Reef Meeting, Abstract p. 38-39, May 30.-31., 2003 Vienna, Austria.

- Samankassou, E. and West, R.R. (2003) Microbial micrite within Pennsylvanian algal-dominated buildups (Eastern Kansas, USA) (Abstract). Bathurst Meeting, Abstract p. 94, July 8.-10., 2003, Durham, UK.
- Samankassou, E., Fohrer, B., Nemyrovska, T. and Ueno, K. (2003): Facies and depositional environment of the Izvarino section (Mid-Moscovian, Carboniferous), Donets Basin, Ukraine (Extended abstract). XV. International Congress on Carboniferous-Permian, Abstract p. 461-463, August 10.- 16., 2003, Utrecht, The Netherlands.
- Samankassou, E. (2003): Review of Upper Pennsylvanian and Lower Permian buildups of the Carnic Alps, Austria-Italy. 22. Regional IAS Meeting of Sedimentology, Abstract Book p. 184, September 17.-19., 2003, Opatija, Croatia.
- Strasser, A. and Samankassou, E. (2003): Sedimentation rates today and in the past (Keynote Lecture).
  22. Regional IAS Meeting of Sedimentology, Abstract Book p. 202, September 17.-19., 2003, Opatija, Croatia.
- Tresch, J., Strasser, A., and Samankassou, E. (2004): High-resolution correlation of Middle Berriasian sections in Dorset (southern England): A new approach. 12. Meeting of Swiss Sedimentologists (Swiss Sed), Abstract p. 58-59, January 31., 2004, Fribourg, Switzerland.
- Samankassou, E. (2004): Late Carboniferous mounds from the San Emiliano Formation, Cármenes Syncline, Cantabrian Mountains, Northern Spain. 23. Regional IAS Meeting of Sedimentology, Abstract Book p. 238, September 15.-17., 2004, Coimbra, Portugal.
- Tresch, J., Strasser, A. and Samankassou, E. (2004): History of a transgression in the Middle Berriasian (France, Switzerland and UK). 23. Regional IAS Meeting of Sedimentology, Abstract Book p. 267, September 15.-17., 2004, Coimbra, Portugal.

#### Field trips (International meetings)

- Flügel, E., Fohrer, B., Forke, H., Kraft, W. and Samankassou, E. (1994): Late Paleozoic and Triassic of the Carnic Alps (Austria/Italy): Biostratigraphy, Facies and Sedimentation Patterns. Fourth International Symposium on Shallow Tethys 4, September 8-11, 1994, Albrechtberg/Wien, Guidebook p. 49-85.
- Flügel, E., Fohrer, B., Forke, H., Krainer, K. and Samankassou, E. (1997): Cycles and mounds of the Upper Paleozoic of the Carnic Alps. Gaea heidelbergensis 4, 79-100. 18th International Regional IAS Meeting, September 5.-9., 1997, Heidelberg, Germany. Field Trip Guidebook.

#### Papers in revision, review or in preparation

- Nemyrovska, T. and Samankassou, E. (in review): Late Visean/Early Serpukhovian Triollo section, Palencia, Cantabrian Mountains, Spain: Sedimentology, conodonts biostratigraphy, and paleoecology. Scripta Geologica
- Fohrer, B., Nemyrovska, T., Samankassou, E. and Ueno, K. (subm.): Sedimentology, depositional environment, and biostratigraphy of the Izvarino section (Mid-Moscovian, Carboniferous), Donets Basin, Ukraine. Journal of Paleontology
- Samankassou, E., Fohrer, B., Nemyrovska, T., and Ueno, K., (subm.): Unique occurrence of Pennsylvanian Palaeoaplysina buildups in the Tethyan realm (Donets Basin, Ukraine): Driven by paleoceanography?: Sedimentary Geology.
- Samankassou, E. and West, R.R. (in prep.): Microbial micrite within Pennsylvanian algal-dominated buildups (Eastern Kansas, USA). Sedimentology
- Sawin, R.S., Samankassou, E. and West, R.R. (in prep.): Paleoecology of a Permian (Wolfcampian) phylloid alga (Calcipatera) from an *in situ* occurrence in Kansas, USA. Palaios

#### **Invited talks**

1999: Frankfurt, Germany: "Zyklenmuster in der oberen Trias"

- 2000: Fribourg, Switzerland: "Cycles sédimentaires de plate-formes du Triasique supérieur: Exemples des plate-formes de Dachstein en Autriche et de Kawr, en Oman"
- 2002: Lyon, France: "Paradoxe des carbonates tempérés en position équatoriale pendant le Carbonifère supérieur"

2002: Paris, France: "Taux de sédimentation de plate-forme: l'actuel et le fossile"

- 2002: Baton Rouge (Geological Society), USA (Enos and Samankassou): "Chasing tidal flats in the Austrian Alps"
- 2003: Vienna, Austria: "Review of Upper Pennsylvanian and Lower Permian buildups of the Carnic Alps, Austria-Italy"
- 2003: Opatija, Croatia (Strasser and Samankassou, Keynote Lecture at the 22. Regional IAS Meeting of Sedimentology): "Sedimentation rates today and in the past"

2003: Vienna, Austria: "Das Steinerne Meer in Österreich: Die Bahamas der Obertrias?"

# Stable isotopic composition of regolith carbonate cements in the Broken Hill region, Australia – implications for the interpretation of carbon and oxygen isotope signatures in redbed sediments

S. Schmid<sup>1</sup>, R.H. Worden<sup>1</sup>, Q.J. Fisher<sup>2</sup>

1 - Department of Earth and Ocean Sciences, Liverpool University, L69 3GP, UK

2 - Rock Deformation Research, School of Earth Sciences, University of Leeds, Leeds, LS2 9JT, UK

#### Abstract

The carbon and oxygen isotope data from calcretes of the Menindee catchment, Broken Hill region, Australia provide information about the climatic evolution during the Quaternary. Twenty two samples from seven depth-profiles were analysed for their inorganic and organic carbon contents and inorganic carbon and oxygen isotopes. The total organic carbon content is very low (from 0.06 to 0.31 wt%) while total inorganic carbon varies from very 0.00% to 3.89%. Both  $\delta^{13}$ C and  $\delta^{18}$ O become more positive closer to the surface. The carbon isotopes values vary from -5.5% to -8.5% PDB and the oxygen isotopes vary from -6‰ to -1.8‰ PDB. The depth-related  $\delta^{13}$ C and  $\delta^{18}$ O variations correlate over at least 15 km and show no significant variation along the flow path. The  $\delta^{13}$ C shift of 3‰ and the  $\delta^{18}$ O shift of 4‰ over a 1.40m thick soil profile is here interpreted to indicate an increasingly elevated air temperature, greater water stress and subsequently an aridification of the area through time. Previously published data also indicate increasing aridity during the Quaternary supporting the evidence and interpretation from geochemical signals stored in calcretes of the Menindee catchment near Broken Hill.

### Curriculum vitae – Susanne Schmid

postal address:

Neustädter Str. 25 07570 Weida Germany

e-mail: susaschmid@yahoo.de

#### Name: Susanne Schmid

Personal data: born 31.10.1975, German citizen

Education:	1994-1999	Course in geology and palaeontology on the Martin-Luther-University of Halle/Wittenberg, Germany (including courses in geography, maths, chemistry and botanic)
	1996	Vor-Diplom/Bachelor in geology and palaeontology
	2000	Diplom/MSc. in geology and palaeontology
		Analytical thesis: Geology and Genesis of the "Kandemwa" emerald deposit, SE-Zimbabwe and their presentation as an interactive CR-ROM, project by Andreas Schmidt-Mumm
		Field mapping: Field Mapping of sedimentary, volcanic and plutonic units - Basement rocks of the Naukluft-Nappe-Complex, Farm Nauzerus, Namibia, project by Gregor Borg
	2001-2004	PhD – Dept. of Earth Sciences, University of Liverpool, UK Thesis: Diagenesis in the Sherwood Sandstone (Corrib Field): spatial and stratigraphic variability and controls on reservoir quality project by Richard Worden, Quentin Fisher (sponsored by Enterprise Oil/Shell)

#### Experience & Skills:

#### Field work in:

- Sweden metamorphic crystalline rocks
- Austria folded tuffites and greywackes in the Northern Grauwacke Zone
- Germany northern front of the Harz Mountain, Permo-Triassic sediments
- Zimbabwe emeralds in pegmatites in the SE part of Zimbabwe (Proterozoic)
- Namibia volcanic, metasedimentary and crystalline basement rocks
- Kenya sedimentary facies Mapping in Triassic and Jurassic rocks in the coastal region
- France Mesozoic folded rocks of the Montagne Noire Mountains

Lab work:	SEM, Cathodoluminescence and Fluid Inclusions		
Computer work:	worked with GEOSEC, 3DMOVE, ARCINFO (using AML language) ARCVIEW		
Social work:	worked at more than five conferences in Earth Sciences Convenor – Mineralogy, Ore Geology and Mineral Resources, OS06, EUG XI, Strasbourg		

# ECORD Application form for membership in IODP expedition scientific parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following information)					
Name (first, middle, last) Susanne Schmid					
stitution currently University of Liverpool					
Department Earth and Ocean Science					
Institution					
Address 4 Brownlow Street, L69 3GP, Liverpool UK					
Telephone (Work) (Home) 00491735645524 (Fax)					
Email Address susaschmid@yahoo.de					
Present Title Country of Citizenship Germany					
Place of Birth Leipzig Date of Birth <u>31-10-75Gender F</u>					
Passport No. 9731052092 Place Issued Weida Date Issued 13-07-01 Exp. Date 12-07-06					
Education (Highest degree - PhD., M.S., or B.S.) PhD Date: thesis submitted					
Are you currently a student? (If yes, see note below)					
II. EXPEDITION INFORMATION					
Expeditions of Interest (please limit selection to no more than three):					
Expedition Number:519 Title Tahiti Sea Level					
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*					
Expedition Number: Title					
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*					
Expedition Number: Title:					
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*					
(* provide detail of proposed participation in an accompanying letter)					
Reason(s) for Interest (if necessary, expand in letter) I would like to grant for postdoc reasearch funds in order					
to investigate the stable isotopic composition of corals. I want to prove thepaleoclimate signal of stored					
inisotopes can be found in both marine and non-marine rocks. Ihave already studied isotopic of Australian Quat.	calcretes				
Personal and/or scientific references (name and address) Dr. R. Worden, Liverpool univ. r.worden@liv.ac.uk					
Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased					
participant, etc.)					

#### **III. ATTACHMENTS**

1. Attach curriculum vitae which includes a publication history

2. Please fill out the attached "Field of Expertise" form

Note: Applications from graduate students should include a letter from their primary advisor, documenting the student's scientific experience and detailing how participation on the cruise would fit into their graduate degree program.

Staffing decisions are made in consultation with co-chief scientists and take into account nominations from partner countries; final responsibility for ECORD staffing rests with ESSAC. Please submit all application materials both in **digital format** (preferable PDF format) and **paper copy** to (please contact the ESSAC Office when having problems providing us with the above asked materials in both formats): ESSAC Science Coordinator Faculty of Earth & Life Sciences - Vrije Universiteit De Boelelaan1085 1081 HV Amsterdam - The Netherlands Phone: +31 20 4447272 Fax: +31 20 4449941 E-mail: essac.amsterdam@falw.vu.nl

With a copy to the national ESSAC delegate (see http://www.geo.vu.nl/~essac/ ESSAC button).

Nominations (with copies of their applications) will be forwarded from that office to the Implementation Organizations (IOs). Eligibility as a ECORD participant is limited to scientists or engineers (professors, research scientists, technologists, graduate students, etc.) at a ECORD member institution (e.g. German academic institutions, government labs, ECORD member-based corporations, etc.). Non-ECORD affiliated personnel from other IODP member countries should apply for IODP participation through their country's national program office. Undergraduate students do not qualify as Shipboard Participants, and should not apply to sail using this form. Undergraduates interested in sailing on a IODP expedition should instead contact ECORD for information about the Undergraduate Student Trainee Program.

#### **FIELD OF EXPERTISE**

- \_\_\_\_ Biologist
- \_\_\_\_ Microbiologist
- \_X\_\_ Inorganic Geochemist
- \_\_\_\_ Organic Geochemist
- \_\_\_\_ Geophysicist
- \_\_\_\_ Hydrologist
- Logging Scientist
- \_\_\_\_ Oceanographer
- \_\_\_\_ Paleomagnetist
- \_\_\_\_ Paleontologist (Diatom)
- \_\_\_\_ Paleontologist (Dinoflagellate)
- \_\_\_\_ Paleontologist (Foraminifer Benthic)
- \_\_\_\_ Paleontologist (Foraminifer Planktonic)
- \_\_\_\_ Paleontologist (Megafossil)
- \_\_\_\_ Paleontologist (Nannofossil)
- \_\_\_\_ Paleontologist (Phytoplankton)
- \_\_\_\_ Paleontologist (Radiolaria)
- \_\_\_\_ Paleontologist (Silicoflagellate)
- Palynologist
- \_\_\_\_ Petroleum Geologist
- \_X\_\_ Petrologist
- \_\_\_\_ Igneous Petrologist
- \_\_\_\_ Metamorphic Petrologist
- \_\_\_\_ Physical Properties Specialist
- \_X\_\_ Sedimentologist
- \_\_\_\_ Seismologist
- \_\_\_\_ Stratigrapic Correlator
- \_\_\_\_ Structural Geologist
- \_\_\_\_ Downhole Measurements

#### Geological employment (part time):

- 1996 2000 research assistant (project title: StructURAL Structural Geology of the Bashkirian Anticlinorium, Southern Ural by Uwe Giese, Stefan Ladage)
- 1997 fossil digger, Grube Messel, Germany
- 1999 consultant (Anglo American plc.) Sedimentary Facies Mapping in the Mazeras - Kilifi Region, Coastal Kenya - focusing in base-metal mineralisation
- 2002 Scientist aboard the RV "Roger Revelle" (project title: Holocene Seismicity of the Northern San Andreas Fault Based on Precise Dating of the Turbidite Event Record by Chris Goldfinger, Hans Nelson)
- 2002 Scientist aboard the RV "Thomas Thompson" (project title: Lewis and Clark Legacy continues - Ocean Expedition by Bob Embley, Waldo Wakefield and Chris Goldfinger)

#### University activities:

1996 - 1997 - 1996 - 1998 -	student representative in the department examination commission student representative in the general department commission				
1996 – 1998 –	student representative in the university council				
1998 –	student representative in the commission for "basic changes of the university charter"				
2001-2003 -	teaching assistant in the following courses:				
	<ul> <li>introduction in structural geology,</li> </ul>				
	<ul> <li>introduction in geological maps,</li> </ul>				
	- geofluids,				
	<ul> <li>sedimentology and stratigraphy,</li> </ul>				
	<ul> <li>physical processes of sedimentation,</li> </ul>				
	- analysis of earth materials				
	field assistant:				
	<ul> <li>advanced field techniques – Pyrenees, Spain,</li> </ul>				
	<ul> <li>applied basin analysis – Wessex basin, UK,</li> </ul>				
	<ul> <li>introduction to field geology – Anglesey, Wales</li> </ul>				

#### Grant funding:

- 2002 European Science Foundation, conference grant 4<sup>th</sup> European ODP Forum
- 2002 Mineralogical Society of Great Britain conference grant IMA 18, Edinburgh/UK

#### Publications/extended abstracts:

<u>Schmid, S.</u>, Worden, R.H. & Fisher, Q. (2004):Diagenesis and reservoir quality of the Sherwood Sandstone (Triassic), Corrib Field, Slyne Basin, west of Ireland. Marine and Petroleum Geology 21, 299-315.

<u>Schmid, S.</u>, Worden, R.H. & Fisher, Q. (2003): The origin and regional distribution of dolomite cement in sandstones from a Triassic dry river system, Corrib Field, offshore west of Ireland. Journal of Geochemical Exploration, 78-79, 475-479.

Ladage, S., <u>Schmid. S.</u> & Giese, U. (2001): GIS supported analysis of geological maps - an example from the Bashkirian Anticlinorium, SW-Urals, Hallesches Jb

Ladage, S. Giese, U. & <u>Schmid, S.</u> (2000): Utilizing GIS for structural interpretation of geological maps, - 3rd Congress on regional Cartography and information Systems, Munich/Germany

<u>Schmid, S.</u> (1999): Summary report of sedimentary Facies Mapping in the Mazeras-Kilifi Region, SE-Kenya, AAPS internal report

<u>Schmid, S.</u> & Schmidt Mumm, A. (1999): Fluid inclusion investigations of "Kandemwa-Claims" emerald bearing pegmatites in southeastern Zimbabwe, Terra Nostra 99/6 - ECROFI, 255

#### Abstracts:

<u>Schmid, S.</u>, Worden, R.H. & Fisher, Q. (2003): The time has changed: Middle Triassic climate changes revealed by carbon isotopes, EGS-AGU-EUG Joint Assembly, Nice/France

<u>Schmid, S.</u>, Worden, R. & Fisher, Q. (2002): The relationship between early authigenic dolomite and stable isotope data. IMA 18, Edinburgh, UK

<u>Schmid, S.</u>, Worden, R. & Fisher, Q. (2002): Carbon isotopes – evidence of climate changes in the Triassic. EODP-Forum 4, Tromso/Norway

<u>Schmid, S.</u>, Worden, R. & Fisher, Q. (2002): Early diagenetic dolomite, evidence of climate changes in the Early Triassic, west of Ireland. AAPG, Houston/USA

<u>Schmid, S.</u>, Worden, R. & Fisher, Q. (2001): Mega-climate changes in the Early Triassic – evidence from carbon isotope data. BSRG, Plymouth/UK

<u>Schmid, S.</u> (2001): Geology and Genesis of the "Kandemwa" emerald deposit, Zimbabwe. EUG XI, Strasbourg/France

Meinhardt-Degen, J., von der Heyde, R., <u>Schmid, S.</u>, Schwenke, J. & Borg, G. (2001): New geological aspects of the base of the Naukluft-Nappe-Complex, Central Namibia. EUG XI, Strasbourg/France

Ladage, S., Giese, U., <u>Schmid, S.</u> & Puchkov, V. (2000): Basement influence on the development of the Foreland Fold-and-Thrust Belt of the Bashkirian Anticlinorium, SW-Urals: 2D and 3D restoration modelling. TSK 8, Freiburg/Germany

#### In process or submitted:

<u>Schmid, S.</u>, Worden, R.H. & Fisher, Q.: Carbon isotopes – a tool for stratigraphic correlation in Triassic redbed sandstones (Corrib Field, west of Ireland).

<u>Schmid, S.</u>, Worden, R.H. & Fisher, Q.: Stable isotopic composition of regolith carbonate cements in the Broken Hill region, Australia – implications for the interpretation of carbon and oxygen isotope signatures in redbed sediments.

<u>Schmid, S.</u>, Worden, R.H. & Fisher, Q.: Origin and sedimentology of dolocrete in the Lower Triassic Sherwood Sandstone Group: Corrib Field, west of Ireland.

#### Other interests and employments:

- Photographer (recently also as still photographer on film sets)
- Filmmaking (short films and documentaries) (film school in March/April 2004)
  Web designer (1996-2000 as part time job, now private purposes)

# ECORD Application form for membership in IODP expedition scientific parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following information)			
Name (first, middle, last) Hartmut Schulz			
Institution Justitule for Geosciences			
Department of Geobiology and Paleontology			
Institution Tubingen University			
Address Sigwartstraße 10 House			
Telephone (Work) 4970712972496 (1000) 487071295766 (100) 497071255199			
Email Address hartmut. Schuls @ uni-tuebingen. de			
Present Title Country of Citizenship Germany			
Place of Birth Vitzenhausen Date of Birth Gender 09-11-61 MALE			
Passport No 698715818 Place Issued Tubingen Date Issued 23.04 Exp. Date 28.02.2014			
Education (Highest degree - PhD., M.S., or B. <mark>S.) PhD Date: 1994</mark>			
Are you currently a student? (If yes, see note below)			
II. EXPEDITION INFORMATION			
Expeditions of Interest (please limit selection to no more than three):			
Expedition Number: Prop. 519 Title Tahiti Sea Level, Camoin et al			
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*			
Expedition Number: Title			
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*			
Expedition Number: Title:			
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*			
(* provide detail of proposed participation in an accompanying letter)			
Reason(s) for Interest (if necessary, expand in letter) See little affailed			
Personal and/or scientific references (name and address)			
Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased			
participant, etc.) Co - propohent of ODP Dicelling Proposal			
543, von Rad et al			

ECORD Application form for membership in IODP expedition scientific parties, Page 1 of 3

# Dr. Hatmat Schulz

#### FIELD OF EXPERTISE

- \_\_\_\_ Biologist
- \_\_\_\_ Microbiologist
- \_\_\_ Inorganic Geochemist
- \_\_\_ Organic Geochemist
- \_\_\_\_ Geophysicist
- \_\_\_\_ Hydrologist
- \_\_\_\_ Logging Scientist
- Oceanographer
- Paleomagnetist
- Paleontologist (Diatom)
- Paleontologist (Dinoflagellate)
- X Paleontologist (Foraminifer Benthic)
- X Paleontologist (Foraminifer Planktonic)
- Paleontologist (Megafossil)
- Paleontologist (Nannofossil)
- \_\_\_\_ Paleontologist (Phytoplankton)
- Paleontologist (Radiolaria)
- \_\_\_\_ Paleontologist (Silicoflagellate)
- Palynologist
- \_\_\_\_ Petroleum Geologist
- \_\_\_\_ Petrologist
- Igneous Petrologist
- Metamorphic Petrologist
- X Physical Properties Specialist
- X Sedimentologist
- \_\_\_\_ Seismologist
- \_\_\_\_ Stratigrapic Correlator
- Structural Geologist
- \_\_\_\_ Downhole Measurements

ECORD Application form for membership in IODP expedition scientific parties, Page 3 of 3

Dr. Hartmut Schulz Institut für Geowissenschaften Geobiologie and Paläontologie Universität Tübingen D-72076 Tübingen

Reason for Interest appending to my ECORD Application for a membership in IODP scientific parties

Expedition: Dr. Gilbert Camoin et al.,

# Tahiti Sea Level – The last deglacial sea-level rise in the South Pacific: offshore in Tahiti (French Polynesia) and on the Australian Great Barrier Reef

With the main goal of the expedition, i.e. reconstruction of the deglaciation curve and the establishment of general and short-term paleoceanographic changes in the Central to Western Pacific, there is a unique chance to also learn more about the regional paleoclimatic history at extremely high temporal resolution and precision, so far poorly investigated in that area.

From the Proposal, it stands out that highest priority is given on the recovery of overlapping, massive coral sequences. However, along with these transects, specific sites are planned to be complemented by sediment sequences from deeper waters to be placed in front of the reef walls. I was contacting Dr. Gilbert Camoin in advance asking if there would be a chance to recover continuous sections of soft sediments from these sites, as I wish to study at high-resolution the faunal changes in the planktic and benthic foraminiferal communities to better constrain the physical and biological environment going along with drastic sea-level shifts. My focus will be on the faunal and stable isotope signals of specific benthic shallow-water foraminiferal species and on the reconstruction of independent planktic foraminiferal faunal seasurface temperatures to add to the coral isotopic temperatures at lower resolution. I have worked on the glacial-interglacial climatic changes in the SW-Pacific and Coral Seas by using planktonic foraminiferal data and transfer-functions originally from the CLIMAP project, confirming that the SST-history in the specific area is still matter of some debate. Reconstructions from the proposed sites will help to precisely fix the glacial to interglacial SST changes and also the specific short-term temperature and productivity events at much higher stratigraphic resolution as "normal" sediments from the area with typically low accumulation rates of only a few cm per 1000 years could provide so far.

It is suggested that the schedule of the cruise is still flexible as is the proportion of the Science Party participating. It will not be possible for me to join the cruise before mid-July (end of teaching term). It would be a pleasure to participate in this leg, surely being among the most exciting ones of the decade. For more details see my CV and publication list.

Tübingen, 04.11.2004.

# **Dr. Hartmut Schulz**

Geobiology and Applied Paleontology

Institute for Geosciences (IFG)

University of Tübingen

# Sigwartstraße 10

# 72076 Tübingen, Germany

Tel. +49 (0)7071-29-72496

Fax. +49(0)7071-29-5766

Email: hartmut.schulz@uni-tuebingen.de

# Hartmut Friedrich Ernst SCHULZ,

Diplomgeologe (Kiel, 1989), Dr. rer. nat. (Kiel, 1994) Research Scientist (Akademischer Rat)

# **Education and studies**

1981 – 1985 Undergraduate level: University of Würzburg, Faculty of Geology 1982 – 1984 Civil Service

1985 – 1989 Graduate level: University of Kiel, Faculty of Geology

# Degrees

Diploma-Thesis (supervised by Prof. Michael Sarnthein):

Subjects:

High-resolution  $\delta^{18}$ O and  $\delta^{13}$ C-stratigraphy of the Early Pliocene, 3.4 - 4.6 Ma BP: ODP-Site 659, Subtropical North Atlantic (in German), unpublished.

Geology of the Ybbsitzer Klippenzone, NE Alps;

Schnabel, W., Sarnthein, M., Günther, R., and Schulz, H. (1988). Bericht 1987 über geologische Aufnahmen in den westlichen niederösterreichischen Voralpen auf Blatt 55 Obergrafendorf.- Jahrb. Geol. Bundesanstalt Wien, 131/3: 407-410.

Doctoral Thesis (supervised by Prof. Dr. M. Sarnthein):

Schulz, H., 1995. Sea-surface temperatures 10,000 years B.P.- Consequences of the Early Holocene Insolation Maximum.- Berichte-Reports, Geol.-Paläontol. Inst. Univ. Kiel, 73, 119pp (in German).

# **Scientific interest**

Marine Micropaleontology (Foraminifera)

Proxies in Paleoceanography - Applications to Stratigraphy, Sedimentology and Climate/Environmental Reconstruction

# Affiliations

# 1989 - 1993

Ph.D. student at the Geologisch-Paläontologisches Institut der Universität Kiel. Research Scientist within the German BMFT-Project "Marine Paläoklimatologie: Rapiden Klimawechseln auf der Spur" (Project Leader Prof. Dr. Michael Sarnthein).

# 1993 - 1997

Research Scientist at the Bundesanstalt für Geowissenschaften und Rohstoffe Hannover (BGR); Section of Marine Geology and Marine Natural Resources; External Projects: BMFT/BMBF-Projekte PAKOMIN, PAKOFLUX und PROFORAM (JGOFS-Indik, Projekt Leader Dr. Ulrich von Rad).

# 1998 - 2002

Research Scientist at the Institut für Ostseeforschung Warnemünde (Baltic Sea Research Institute), Marine Geology Section, Project Leader Prof. Dr. Kay Emeis External Projects: TEMPUS (EU-Project: Sea-Surface Temperature Evolution Mapping Project Based on UK'37-Stratigraphy), TASQUA (Quaternary Variability of Water Masses in the Tasman Sea, SW-Pacific Sector); MISAP (Mediterranean Sapropels), Skagerrak (Baltic Sea and North Atlantic Climate in historic times), IMAGES (International Marine Global Change Studies) Arabian Monsoon; 2000/2001 in charge of Inorganic Geochemistry Laboratory, Organisation of SS2002 IOW-Summer School.

Since 2003 Research Scientist at the Institute for Geosciences (IFG) Tübingen

# Teaching

IFG Tübingen:

<u>SS 2003</u> Geobiological Proxies Climatology I – Paleoclimatology (together with Prof. V. Mosbrugger) Laboratory Methods (together with Dr. R. Ashraf)

<u>WS 2003/2004</u> Micropaleontology I (Foraminifera)

<u>SS2004</u> Geobiological Proxies Climatology I – Paleoclimatology (together with Prof. V. Mosbrugger) Laboratory Methods (together with Dr. R. Ashraf) WS 2004/2005 Dynamics of the Earth Electron Microscopy (Lab Course Actual Issues in Biogeology (Seminar)

### Facilities

Scanning Electron Microscope (ESEM/EDX) Paleontological and Micropaleontological Collections Marine Core Repository Marine Core, Sedimentology and Micropaelontology Labs

### **Scientific Expeditions**

- 1988 "EQUAMARGE II", Dakar Abidjan Chief Scientist: Dr. J. Mascle, Villefranche-sur-Mer, Nice High-resolution bathymetric mapping of Romanche Fracture Zone and segments of the Guinean margin
- 1990 "PALEOCINAT I", Brest Azores Iceland Brest Chief Scientist: Dr. L. Labeyrie, Gif-sur-Yvette, Paris Shipboard survey measurements of TOC/CaCO<sub>3</sub> to determine stations of sediment coring
- 1992 "PALEOCINAT II" Brest Azores Toulon Chief Scientist: Dr. L. Labeyrie, Gif-sur-Yvette, Paris Sediment coring and identification of IRD-layers using sediment physical properties
- 1993 "SONNE 90" Karachi Karachi Chief Scientist: Dr. Ulrich von Rad, BGR Hannover Sediment sampling, high-resolution (color)-stratigraphy of laminated/bioturbated sediments
- 1995 "METEOR 32-2" Muskat Muskat Chief Scientist: Dr. Martin Wiesner, Universität Hamburg Sediment trap redeployment, in charge of sediment program
- 1997 "SONNE 119" Muskat Muskat Chief Scientist: Prof. Dr. Venugopalan Ittekkot, Universität Hamburg Responsible for survey and sediment coring
- 1998 "SONNE 136 " Wellington Hobart Chief Scientist: Prof. Dr. Jörn Thiede, GEOMAR Kiel Paleoceanography of the Deep Western Boundary Current, Micropaleontological investigations on current-induced foraminiferal sands and sedimentation
- 2000 "Marion Dufresne" IMAGES VI, Sri Lanka-Salalah Chief Scientist together with Dr. Catherine Kissel, Gif-sur-Yvette, Paris

Retrieval of ultra-long piston cores from the Arabian Sea open ocean and upwelling areas

Scheduled for October 2001: "Marion Dufresne" IMAGES CHAMAK-WINMO (Cancelled following the terror attacks in the USA)

- 2001 "METEOR 51/3" La Valetta/Malta Istanbul/Turkey Chief Scientist: Prof. Dr. Christoph Hemleben, Universität Tübingen Sediment program and coring
- 2004 "AHAB 5" Walvis Bay Walvis Bay/Namibia Chief Scientist: Prof. Dr. Kay Emeis, Universität Hamburg Sediment program and coring

Full ODP Drilling Proposal (Revised 530-Pre+558-Pre, 549 Full4, July 2003), OMZAR Group - Oxygen Minimum Zone Arabian Sea Group: Ulrich von Rad, Jan Willem Zachariasse, Shahid Amjad,Volkmar Damm, Jochen Erbacher, Notger Fechner, Frederick Hilgen, Lucas Lourens, Andreas Lückge, Gert-Jan Reichart, **Hartmut Schulz** and Muhammad Tahir, Monsoonal Variability and Oxygen Minimum Zone Intensity in the Northern Arabian Sea

# Abstracts, Scientific Reports, Conference Contributions and Varia

- Schnabel, W., Sarnthein, M., Günther, R. and H. Schulz (1988). Bericht über geologische Aufnahmen in den westlichen niederösterreichischen Voralpen auf Blatt 55 Obergrafendorf.- Jahrbuch Geologische Bundesanstalt Wien, <u>131/3</u>: 407-410.
- Schulz, H. and E. Vogelsang (1990). Preliminary report on C, CaCO<sub>3</sub> and water content in sediment.- Rapport Paleocinat I (Paleocirculation de l'Atlantique Nord), 29-31.
- Schulz, H., Pflaumann, U. and M. Sarnthein (1990): Globale Meeresoberflächentemperaturen im frühen Holozän: Erste Ergebnisse einer Rekonstruktion für 9000 Jahre vor heute.- DGG-Tagung an der Univ. Bremen, Ozeane und Randmeere im Känozoikum, 3.-6. Oktober, Nachr. Dt. Geol. Ges., <u>43</u>: 89 (Talk).
- Schulz, H. and F. Abrantes (1992). Report on sediment water content measurements: Stratigraphic and sedimentologic implications.- Rapport Preliminaire Paleocinat II, CNRS/INSU, 11pp.
- Schulz, H. and U. Pflaumann (1992). Sea Surface Temperatures in the North Atlantic during the Early Holocene Summer Insolation Maximum, 9000 years B.P.- ICP IV, Berichte-Reports, Geol.-Paläont. Inst. der Univ. Kiel, <u>57</u>: 256 (Poster).
- **Schulz, H.**, Pflaumann, U., and M. Sarnthein (1992). Atlantic SST, and Surface Circulation 9 ka (<sup>14</sup>C-Years) ago.- EC-EPOCH Seminar at Trins, Austria, 16-20 Dec. 1992 (Talk).

- Pflaumann, U., Donner, B., Hale, W., Le, J., Maslin, M., Ottens, J., Schulz, H., Simet, C., Spiegler, D., and J. Swallow (1992). "Taxonomy of Quaternary Planktonic Foraminifera - Towards a Common Ground in Application of Transfer-Techniques".- International Conference on Paleoceanography IV Workshop Kiel, 19-20. September 1992.
- von Rad, U., **Schulz, H.** and SONNE 90 Shipboard Party (1993). Laminated Sediments in the oxygen minimum zone off Pakistan: Productivity cycles during the past 50,000 years.- American Geophysical Union Fall Meeting, 5-9 Dec., San Francisco, EOS, Nov. 1, 1994, S.375 (Poster).
- Pflaumann, U., **Schulz, H.** and M. Sarnthein (1995). Mapping Atlantic SSTs at 10Ka as tracer of surface circulation during the Early Holocene insolation maximum.-International Conference on Paleoceanography V, S.58 (Poster).
- von Rad, U. and **H. Schulz** (1995). Sampling the oxygen minimum zone off Pakistan: Glacial/Interglacial variations of anoxia and productivity (PAKOMIN, SONNE 90).- Arabian Sea Workshop, Texel, 13-16 Feb., Progamme and Abstracts, Netherlands Institute for Sea Research-NIOZ, S.49 (Invited Talk).
- von Rad, U., **Schulz, H.**, Rivas-Koslowski, M. and SONNE-90 Scientific Party (1995). Laminated sediments in the oxygen minimum zone off Pakistan: Productivity, anoxia, monsoonal climate and terrigenous input.- Arabian Sea Workshop, Texel, 13-16 Feb., Progamme and Abstracts, Netherlands Institute for sea research-NIOZ, S.50 (Poster).
- Schulz, H., Pflaumann, U. and M. Sarnthein (1995). Reconstruction of Early Holocene sea-surface temperatures: Relationships to the northern hemisphere summer insolation maximum.- 85. Jahrestagung der Geologischen Vereinigung, 22-25 Feb., Schriften der Alfred-Wegener-Stiftung 1/95, S.79 (Poster).
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# ECORD Application form for membership in expedition scientific parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following information) Alexander Llewellyn Thomas Name (first, middle, last) University of Oxford Institution Department of Earth Science Department Institution Parks Road, Oxford, OX1 3PR, United Kingdom Address Telephone (Work) +44(0)1865 282112 (Home) +44(0)7989420622 (Fax) +44(0)1865 272072 Email Address alext@earth.ox.ac.uk Present Title Country of Citizenship United Kingdom of GB & NI Mr 31/12/1979 Male Place of Birth Birmingham, UK Date of Birth Gender Passport No. 025306021 Place Issued GBR Date Issued06/01/97 Exp. Date 06/01/07 Education (Highest degree - PhD., M.S., or B.S.) M.S. Date: August 2002 Are you currently a student? yes (If yes, see note below)

#### **II. EXPEDITION INFORMATION**

Expeditions of Interest (please limit selection to no more than three):

Expedition Number:	519 Title	Sea level rise in the south Pacific: Tahiti			
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*					
Expedition Number:	Title_				
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*					
Expedition Number:	Title:				
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*					
(* provide detail of proposed participation in an accompanying letter)					
Reason(s) for Interest (if necessary, expand in letter)					

Personal and/or scientific references (name and address) Gideon Henderson, Ros Rickaby

Both at: Department of Earth Science, Parks Road, Oxford, OX1 3PR, United Kingdom

Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased

participant, etc.) None
#### **FIELD OF EXPERTISE**

- \_\_\_\_ Biologist
- \_\_\_\_ Microbiologist
- Y\_ Inorganic Geochemist
- \_\_\_\_ Organic Geochemist
- \_\_\_\_ Geophysicist
- \_\_\_\_ Hydrologist
- Logging Scientist
- Oceanographer
- \_\_\_\_ Paleomagnetist
- \_\_\_\_ Paleontologist (Diatom)
- \_\_\_\_ Paleontologist (Dinoflagellate)
- \_\_\_\_ Paleontologist (Foraminifer Benthic)
- \_\_\_\_ Paleontologist (Foraminifer Planktonic)
- \_\_\_\_ Paleontologist (Megafossil)
- \_\_\_\_ Paleontologist (Nannofossil)
- \_\_\_\_ Paleontologist (Phytoplankton)
- \_\_\_\_ Paleontologist (Radiolaria)
- \_\_\_\_ Paleontologist (Silicoflagellate)
- \_\_\_\_ Palynologist
- \_\_\_\_ Petroleum Geologist
- \_\_\_\_ Petrologist
- \_\_\_\_ Igneous Petrologist
- \_\_\_\_ Metamorphic Petrologist
- \_\_\_\_ Physical Properties Specialist
- \_\_\_\_ Sedimentologist
- \_\_\_\_ Seismologist
- \_\_\_\_ Stratigrapic Correlator
- \_\_\_\_ Structural Geologist
- \_\_\_\_ Downhole Measurements

Alex Thomas, Department of Earth Science, Parks Road, Oxford, OX1 3PR, United Kingdom.

November 10, 2004

ESSAC Science Coordinator, Faculty of Earth and Life Sciences, Vriji Universiteit, De Boelelaan 1085, 1081 HV Amsterdam, The Netherlands.

Cc: Dr Paul Wilson (SOC); Dr Heather Stewart (Edinburgh).

## Application for membership of IODP expedition № 519: Sea level rise in the south Pacific: Tahiti.

Dear Sir or Madam:

Please could you consider my application to take part in the above IODP leg assessing sea level rise during the last deglaciation. I feel that I will bring valuable skills and expertise to the team and would be an asset to the scientific investigation.

My current work, towards a D.Phil at the University of Oxford, involves the use of U-series nuclides, specifically those of U, Th, and Pa, to investigate the Late Pleistocene paleoceanography of the Indian Ocean (see attached CV). I would be particularly interested in applying these skills to provide high-precision chronology for the carbonate material retrieved during Tahiti 519. This leg will address interesting and important questions posed to paleoclimatologists. These questions require accurate rate information which rely on accurate dating of cores. Accurate chronology is also important to tie records form this study with others from around the world.

The research group in which I work, led by Dr Gideon Henderson, has interests in a wide range of paleoclimate problems. My graduate and post-doctoral colleagues are involved in U-series chronology of carbonates, and in the study of a wide range of element and isotope proxies in carbonate media. A particular focus is the extraction of paleoclimate records with seasonal resolution from both marine and terrestrial carbonates. I am interested in expanding my research expertise into these areas and would be keen to be involved in high resolution trace metal and isotope proxy measurements on corals retrieved during Tahiti 519.

I feel this leg will allow me to apply the U-series skills I have learnt to key questions in the earth sciences, and to work in a team of experts studying the processes driving and controlling climate change in the past and into the future.

Sincerely,

Alex Thomas

## Alexander Llewellyn Thomas

### HOME

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## WORK

Department of Earth Science Parks Road Oxford OX1 3PR, UK. Tel: +44(0)1865 282112 Email: alext@earth.ox.ac.uk

## PERSONAL DETAILS

Age: 24 (DoB: 31-12-1979), Nationality: British.

## CURRENT POSITION

2003 - Hertford College, University of Oxford.

**D.Phil**: Variations in past and present ocean circulation assessed with U-series nuclides. Supervisor: Dr. Gideon Henderson.

## SCIENTIFIC INTERESTS

My research is focused on the application of U-series geochemistry to understanding the Pleistocene paleoceanography and sedimentology of the Western Indian Ocean. I am also interested more generally in the development of new proxies for climate change and in high resolution Quaternary climate records.

I have experience in sample preparation and element separation for a wide range of sample matrices including: volcanic glass, carbonate mud, and large volume seawater samples. I have also developed measurement techniques using MC-ICP-MS for Li, Pa, and Th isotopes.

### QUALIFICATIONS

1998 - 2002: University of Bristol.

**MSci** Geology, (1<sup>st</sup>)<u>Research Project</u>: 'The nature of an enriched mantle component at the East Pacific Rise: evidence from lithium isotopes, using a new high precision technique. Supervisor: Dr. Tim Elliott

1996 – 1998: King Edward VI Five Ways School, Birmingham.

A-Levels: Physics (A); Chemistry (A); Geology (A); General Studies (A).

## SCHOLARSHIPS AND AWARDS

2000 Faculty of Science Scholarship, for strong overall performance in exams. Mineralogical Society Prize, for best mineralogy/geochemistry results of the year, at Bristol University.

1998 **Geology Prize**, for best final year A-Level geologist, from King Edward VI Five Ways School, Birmingham.

## **OTHER RELEVANT EXPERIENCE**

- 2003 **NERC Summer School** (ES<sup>4</sup>). Run at the University of Reading, which taught Earth system science through key topics addressing interactions of different environments, and the dynamic processes that link their physical, chemical, biological and social components.
- 2003 U-Series Geochemistry. A two day short course run, to accompany publication of a Reviews in Mineralogy & Geochemistry, at IPGP, Jussieu, Paris
- 2003-4 **Charles Darwin Cruise** 154 (I. R. Hall & R. Zahn) participant on 28 day cruise from Durban to Cape Town, SA, collecting water samples and sediment cores.
- 2003-5 **Co-supervision of 4<sup>th</sup> year undergraduate projects**: Atkinson (U isotopes in the Black Sea); Cox (U/Th dating of MIS 9 in Bahamas sediments).

### **PUBLICATIONS**

#### Papers

- A. B. Jeffcoate, T Elliott, A.L. Thomas, & C. Bouman. Precise, Small Sample size Determinations of Lithium Isotopic Compositions of Geological reference materials and Modern Seawater by MC-ICP-MS. *Geostandards Newsletter*. Vol 28 No1. 2004.
- T Elliott, **A.L. Thomas** & A. B. Jeffcoate. The nature of an enriched mantle component at the East Pacific Rise: evidence from lithium isotopes. In Prep.
- G. M. Henderson, C. Atkinson, & A. L. Thomas. <sup>234</sup>U/<sup>238</sup>U variability in the Black Sea and Eastern Mediterranean. *Earth Planet. Sci. Lett.* In Prep
- **A.L. Thomas**, G. M. Henderson, & L. F. Robinson. Water column behaviour of Pa and Th isotopes in the south-western Indian Ocean: Implications for (<sup>231</sup>Pa<sub>xs</sub>/<sup>230</sup>Th<sub>xs</sub>)<sup>0</sup> use as a paleoproxy. *Earth Planet Sci. Lett.* In Prep.
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### **Conference** Abstracts

- \* A.L. Thomas, G.M. Henderson, & I. N. McCave. Controls on <sup>231</sup>Pa/<sup>230</sup>Th in the Indian Ocean: Circulation or Productivity? *Eos Trans. AGU, 85*(47), Fall Meet. Suppl., Abstract PP33A-0913m, 2004.
- \* A.L. Thomas, G.M. Henderson, & L.F. Robinson. <sup>231</sup>Pa/<sup>230</sup>Th as a tracer of ocean circulation in the Indian Ocean? *Goldschmidt Conference Abstracts, Geochimica et Comochimica Acta*. Vol **68** No**11 S1 A328**, 2004.
- \* **A.L. Thomas**, G.M. Henderson, & L.F. Robinson. <sup>231</sup>Pa/<sup>230</sup>Th as a proxy for ocean circulation in the western Indian Ocean? *GEOTRACES New Frontiers in Geochemical & Isotopic Cycles in the Oceans*, 2004.
- T Elliott, A.L. Thomas, A. B. Jeffcoate, & Y. Niu Li isotope composition of the upper mantle *Eos Trans. AGU, 84*(46), Fall Meet. Suppl., Abstract V51A-01, 2003.
- T. Elliott, A. L. Thomas, A. B. Jeffcoate, & Y. Niu. Li isotope variations in the upper mantle. *Goldschmidt Conference Abstracts, Geochimica et Comochimica Acta*, Vol. 66 No. S1, p. A214, 2002.
- \* A. L. Thomas as presenter at conference.

#### <u>REFERENCES</u>

Dr Gideon Henderson, Department of Earth Sciences, Parks Road, Oxford, OX1 3PR, <u>gideonh@earth.ox.ac.uk</u> Tel: +44 (0)1865 282123 Dr Ros Rickaby, Department of Earth Sciences, Parks Road, Oxford, OX1 3PR, *rosr@earth.ox.ac.uk* Tel: +44 (0)1865 272034



### UNIVERSITY OF OXFORD

## **DEPARTMENT OF EARTH SCIENCES**

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Dr. G.M. Henderson Lecturer in Environmental Earth Sciences Direct Line: (01865) 282123 Email: gideonh@earth.ox.ac.uk

10th November 2004

ESSAC Science Co-ordinator Faculty of Earth and Life Sciences Vriji Universiteit De Boelelann 1085 1081 HV Amsterdam The Netherlands

Dear Sir/Madam,

#### Supporting letter for Alex Thomas's application to IOPD Leg Tahiti 519

Alex Thomas is a NERC-funded graduate student now in his third year of study at the Oxford Earth Sciences Department. He has made good progress with his lab work and will complete this by Easter of 2005. I anticipate that he will finish his thesis within the 3 allotted years and certainly by Christmas of 2005. His involvement in Tahiti 519 would therefore represent post-doctoral work.

Alex's thesis research has focused on the use of Th and Pa isotopes as tracers of ocean circulation and productivity in the Indian Ocean. This work has involved a high level of analytical proficiency – an area in which Alex excels. He has developed new chemical and spectrometric technique for the accurate analysis of Pa and Th and is presently writing up these techniques for publication in *Int. J. Mass Spec.* Alex is an excellent analyst – extremely thorough and careful – and I have every confidence that he would produce accurate and reliable U-series age information for corals recovered during Tahiti-519. His particular expertise in Pa measurement would enable him to combine U/Th and U/Pa chronology to improve confidence, and he has also experience in <sup>226</sup>Ra measurement which might act as a useful check for closed-system behaviour in corals.

Alex has applied his Pa and Th techniques to problems of Pleistocene climate change and now has an impressive dataset from both waters and sediments. He is in the process of writing these datasets up as two papers, and as chapters for his thesis. During this research, Alex has developed a good understanding of the working of the climate system and of the major problems in paleoclimate. He has attended a NERC short course on the subject, several conferences, and a large number of lectures. He has also read widely and has sufficient confidence in his knowledge to frequently asks insightful questions after departmental seminars. It is clear that he would make a significant intellectual input to the science of Tahiti-519. Others in my group have been heavily involved in the development and measurement of trace metal and isotope proxies in carbonates (including inorganic carbonates, corals, forams, and speleothems). Recently this work has focused on the retrieval of high-resolution climate records from natural carbonates. Although Alex has not been directly involved in this work, he has shared labs with those who are, and has seen frequent presentations on the subject. I know that Alex is keen to widen his analytical expertise beyond the U-series and I am confident that he would easily turn his excellent analytical skills to the measurement of climate proxies in corals at high resolution. As a group we are well equipped for such work (e.g. Laser Ablation ICP, Ion probes, Micromill, SEM) with all the relevant experience and technical support to allow Alex to work productively with others from Tahiti 519 on this important area of research.

Alex is very much a team player. He has always been willing (even anxious) to help others in the lab and has been instrumental in helping masters students to achieve good data for their projects in the last two years (most recently a project on the U/Th dating of ODP core material from the Bahamas). He has also been involved in tutorial and class teaching in the department and is an able science communicator.

In summary, Alex has a range of skills which make him very well suited to participate in Tahiti 519. I give his application my fullest support.

Yours truly,

Criden Herden

Gideon Henderson.

Cc: Dr. Paul Wilson (Southampton) Dr. Heather Stewart (Edinburgh)

## ECORD Application form for membership in IODP expedition scientific parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following information) Name (first, middle, last) : NICOLAS THOUVENY Institution: CEREGE Department Geophysics and planetology Institution: CENTRE EUROPEEN DE RECHERCHE EN GEOSCIENCES DE L'ENVIRONNEMENT Address: EUROPOLE DE L'ARBOIS, BP 80 Telephone (Work): 04 42 97 15 58; (Home) 04 42 97 25 58 (Fax) : 04 42 97 15 90 Email Address: thouveny@cerege.fr Present Title : Professor Country of Citizenship : FRANCE Place of Birth: MARSEILLE Date of Birth 01. 04. 1957, Gender MALE Passport No. 01AD53822X: Place Issued: Marseille Date Issued: Nov 2001; Exp. Date: Dec. 2011 Education (Highest degree - PhD. April 1983; Habilitation : May 1990

## **II. EXPEDITION INFORMATION**

Expeditions of Interest (please limit selection to no more than three): Expedition Number: 307? Title: TAHITI SEA LEVEL Platform: Riser Non-riser MSP Participation: Shorebased\* (\* provide detail of proposed participation in an accompanying letter)

Reason(s) for Interest (if necessary, expand in letter):

Collaboration with geochemists and carbonate petrographers for establishing the chronology of the sequence by high-resolution paleomagnetism (recovery of reversals and excursions).

Personal and/or scientific references (name and address): Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased participant, etc.): NONE

## **ECORD Application form for membership in IODP expedition** scientific parties, Page 2 of 3

## **III. ATTACHMENTS**

1. Attach curriculum vitae which includes a publication history

2. Please fill out the attached "Field of Expertise" form

\*\*\*\*\*

Note: Applications from graduate students should include a letter from their primary advisor, documenting

the student's scientific experience and detailing how participation on the cruise would fit into their graduate

degree program.

Staffing decisions are made in consultation with co-chief scientists and take into account nominations from

partner countries; final responsibility for ECORD staffing rests with ESSAC. Please submit all application

materials both in **digital format** (preferable PDF format) and **paper copy** to (please contact the ESSAC

Office when having problems providing us with the above asked materials in both formats):

ESSAC Science Coordinator

Faculty of Earth & Life Sciences - Vrije Universiteit

De Boelelaan1085

1081 HV Amsterdam - The Netherlands

Phone: +31 20 4447272

Fax: +31 20 4449941

E-mail: essac.amsterdam@falw.vu.nl

With a copy to the natio nal ESSAC delegate (see http://www.geo.vu.nl/~essac/ ESSAC button).

Nominations (with copies of their applications) will be forwarded from that office to the Implementation

Organizations (IOs). Eligibility as a ECORD participant is limited to scientists or engineers (professors,

research scientists, technologists, graduate students, etc.) at a ECORD member institution (e.g. German

academic institutions, government labs, ECORD member-based corporations, etc.). Non-ECORD affiliated

personnel from other IODP member countries should apply for IODP participation through their country's

national program office. Undergraduate students do not qualify as Shipboard Participants, and should not

apply to sail using this form. Undergraduates interested in sailing on a IODP expedition should instead

contact ECORD for information about the Undergraduate Student Trainee Program.

**ECORD Application form for membership in IODP expedition** scientific parties, Page 3 of 3

## FIELD OF EXPERTISE

- \_\_\_ Biologist
- \_\_\_\_ Microbiologist
- Inorganic Geochemist
- \_\_\_\_ Organic Geochemist
- \_\_\_\_ Geophysicist
- \_\_\_\_ Hydrologist
- Logging Scientist
- Oceanographer
- \_X\_\_ Paleomagnetist
- Paleontologist (Diatom)
- \_\_\_\_ Paleontologist (Dinoflagellate)
- \_\_\_\_ Paleontologist (Foraminifer Benthic)
- \_\_\_\_ Paleontologist (Foraminifer Planktonic)
- Paleontologist (Megafossil)
- \_\_\_\_ Paleontologist (Nannofossil)
- \_\_\_\_ Paleontologist (Phytoplankton)
- \_\_\_\_ Paleontologist (Radiolaria)
- Paleontologist (Silicoflagellate)
- \_\_\_\_ Palynologist
- \_\_\_\_ Petroleum Geologist
- \_\_\_\_ Petrologist
- Igneous Petrologist
- Metamorphic Petrologist
- \_X\_ Physical Properties Specialist
- \_\_\_\_ Sedimentologist
- \_\_\_\_ Seismologist
- Stratigrapic Correlator
- Structural Geologist
- \_\_\_\_ Downhole Measurements

#### ECORD Application for membership in IODP expedition scientific parties

Applicant : Nicolas THOUVENY CEREGE Europole de l'ARBOIS BP 80 13545 Aix en Provence, France cedex 04 Tel : 33 4 42 97 15 58 Email : thouveny@cerege.fr

November 10th 2004

#### Accompanying Letter : Expression of Interest and Motivation

To whom it may concern:

I hereby present this application for participating to the ODP operation n°307, entitled "Tahiti Sea Level" in order to contribute 1) to setting of physical geochronometers based on high resolution and reversal magnetostratigraphy; 2) to reading of paleoclimate proxies contained in the rock magnetic properties of corals and cored sedimentary rocks.

As rock and paleomagnetist, since the early 80<sup>th</sup>, I successfully engaged a number of studies on quaternary sedimentary sequences (see publication list) which solved chronological issues, geomagnetic issues or paleoclimatic issues. I recently was involved in a study of coral sequences from New Caledonia with the group of the French Institute for Research and Development (IRD) and successfully defined Reversals boundary at 780 kyr and 0.9 Myr.

In the frame of the Tahiti project I **first** intend to perform beyond a classical approach (reversal magnetostratigraphy) a high resolution magnetostratigraphy (normalisation of the magnetization intensity in order to decipher geomagnetic relative paleointensity signals and eventually detect excursions and short events (such as Laschamp, Blake Icelandic basin...) and use them as complementary chronological tie points through the Brunhes and Matuyama epoch. **Second**, I will measure rock-magnetic properties (susceptibility, anhysteretic and isothermal remanences, hysteresis parameters, susceptibility at low and high  $T^{\circ}...$ ) of the coral/sediment material in order to track changes of the detrital particles settling regimes, authigenetic and/or biogenic synthesis in the deposition and reef growth and interpret paleoenvironmental and/or paleoclimatic changes.

If my application is retained, I will need a mid-resolution sampling (each 50 cm) in the first year and in the second year a higher resolution sampling (each 5 or 10 cm). Paleomagnetic samples must be at least 2 cm x 2 cm x 2 cm. Two or three samples /layer should be sufficient to get a representative result.

For further information on the Paleomagnetic laboratory at CEREGE please consult the following address: <u>http://www.cerege.fr/geophy/index\_geophy.htm</u>

I remain at disposition for any further information. Sincerely yours

Nicolas THOUVENY Professor at University of Aix-Marseille

## **CURRICULUM VITAE**

#### Nicolas THOUVENY,

Born on January 4th 1957, Marseille , France; French Nationality Married 2 childs : Thomas 15 y old and Amélie 13 old.
Personal adress : 19 Avenue BRUE, 13600 La Ciotat, France.
Tél: 33 4 42 08 19 82;
Professional address : C.E.R.E.G.E.,
Europôle de l'Arbois, BP 80, 13545, Aix en Provence cedex 04, France.
Tél : 33 4 42 97 15 58 (11 20) ; email: thouveny@cerege.fr
Professional adress (University): Centre d'Océanologie de Marseille
Case 901, Campus de Luminy, 13288 Marseille Cedex 09, France.
Tél 33 4 91 82 92 23. ; email : thouveny@com.univ-mrs.fr

## **University studies**

- Baccalauréat Scientifique (D) Académie d'Aix-Marseille:	1976
- D.E.U.G. B – (BSc) Université Aix-Marseille II	1978
- Licence de Sciences naturelles - Université Aix-Marseille I	1979
- Maîtrise de Sciences naturelles - Université Aix-Marseille I	1980
- DEA (Master) –Quaternaire- Université Aix-Marseille I.	1981
- Thèse de 3è cycle (PhD)- Université d'Aix-Marseille II	1983
- Habilitation à diriger les Recherches - Université Aix-Marseille II	1990

## **Professional Career :**

- Research associate ORSTOM	1984
- Researcher at the Centre National de la recherche Scientifique	1985-1997
20th section « Terre, Histoire, Structure et Dynamique externe » at the	
Laboratory of Quaternary Geology, Marseille.	
- Professor at the « Université de la Méditerranée » (Aix-Mars. II)	1997
36ème Sect. of the National council of the Universities	

## Teaching at Centre d'Océanologie de Marseille

Campus Luminy, Case 901, 13288 Marseille cedex 9 France.Web Site : http://www.com.univ-mrs.fr

- Professoral Lectures and Practical Lectures and Fieldwork : Level B. Sc , Master and Doctorate
- Administrative and pedagogic responsability diploma.
- Member of University Commissions of specialists
- Member and president of Jury of examination commissions for the Bs C. and Master degrees

**Research at CEREGE (Centre Européen de Géosciences de l'Environnement** UMR 6635, Europôle de l'Arbois. Aix en Provence) ; Team "Geophysics and Planetology" Web site : http://www.cerege.fr/geophy/index geophy.htm

#### Main topic : Paleomagnetic field and paleoclimate variations in Ouaternary times

Administrative Responsabilities : Member of the Directing committee of the (UPR CNRS n°1201) (1987-1995); Assistant Director of the Laboratoire de Géologie du Quaternaire (1995-1997); Member of the Direction Committee and Laboratory council of the CEREGE; Member of Recruiting Commissions of the 35 and 36<sup>th</sup> sections Universities A-M I, A-M II and Lyon I;

#### Scienfitic and Technical Responsabilities:

- Leader of the team « paleomagnetism » of the Laboratoire de Géologie du Quaternaire (90-97)
- Initiator and Leader of the Research Topic : « Geomagnetic field and Cosmogenic isotopes» (7 • researchers, 2000 - 2003).
- Member of the Internal Scientific Committee of the CEREGE (since 1999).
- Member of the Laboratory council of the CEREGE (elected in 2003) •
- Member of the Scientific Committee of IMAGES-France Program (IGBP-PAGES) (2000-2003).
- Leader of several Projects in Nationally funded Programs (INSU, France)

#### Main recent scientific results (see also CEREGE web page : permanent staff: thouveny):

- Paleomagnetic studies of sedimentary sequences [ Marine : Mediterranean Sea ; N.Atl; Indian and Pacific Ocean and lacustrine : French Maars (Bouchet, St Front...) and other lakes (Les Echets)] for detection of geomagnetic field variations and utilisation as i) tracers of the geomagnetic activity through the last million year ; ii) high resolution chronostratigraphic markers;
- Rock magnetic studies of marine and lacustrine sedimentary sequences (see above) for detection • of events of sedimentary dynamics and correlation with paleoclimatic variations.
- Initiating interdisciplinary studies of paleomagnetism and cosmogenic isotopes geochemistry • (with Prof. D. Bourlès) to better constrain the interrelation between the geomagnetic field intensity and the cosmic ray penetration in the Earth atmosphere.
- Rock and paleomagnetic studies of cores through corals of New Caledonia for paleoclimate and magnetostratigraphic purposes: detection of the Matumaya/Brunhes boundary and Jaramillo event in core Amedee (coll. IRD and Univ A-M I).

#### Fieldwork and Oceanic Coring cruise (particip. And /or leader

- Outcrop Fieldwork in South America, Africa and Europe (1982 1991).
- Coring campaign on lakes (France, Tanzania) (1987 1996)
- Oceanic coring Cruises : Labrador and Baffin Bay (1987); North Atl. (IMAGES 1, Marion-Dufresne II 1995); Indian Ocean (IMAGES, 1996); Australia, New Guinea and China (IMAGES III 1997), North Atl. and Mediterranean (IMAGES V, 1999, co-chief Scientist); Méditerranean and North Atlantic (Marion-Dufresne II, Geosciences, 2001)

#### Direction of research : PhD and Post Docs.

6 PhD thesis (1991, 1996, 1997, 2 en 2000, 2003)

1 PhD thesis currently prepared (end in 2005);

7 Master research work.

#### Publications and congres (1984-2004)

- 43 Articles in International Journals (13 as 1st author and 14 as 2<sup>nd</sup> author

- 20 Articles or Book chapter or thesis (9 as 1<sup>st</sup> author);

- 99 communication at congres (41 as 1st author).
- Co-editor of 2 special issues of scientific journals (1996).

Convenor of 3 sessions international congres (1992, 1994 and 1995).

Scientific Expertise : 5 - 6 manuscrits / year for the following journals : Nature, Science, Earth and planetary Science Letters, Geophysical Research Letters, Journal of Geophysical Research... Project evaluation for international organisations of research funding (3/year).

Jury commission member for PhD and Habilitation

Scientific Societies: European Geophysical Society (EGS), American Geophysical Union (AGU); International Union of Quaternary Sciences (INQUA).

#### Publication List [1984-2004]

#### 1. International Journals examined by Experts

1.1 Thouveny N., Bonifay E., 1984. New chronological data on European Plio-Pleistocene faunas and Hominid occupation sites. *Nature*, 308,355-358.

1.2 Thouveny N., Taieb M., 1986. Preliminary magnetostratigraphic record of Pleistocene deposits, Lake Natron Basin, Tanzania, *in* Frostick L.E. et al. (Eds). *Sedimentation in the African Rifts*. Geological Society, 25, 331-336.

1.3 Creer K.M., Smith G., Tucholka P., Bonifay E., Thouveny N., Truze E., 1986. A preliminary palaeomagnetic study of the Holocene and Late Würmian sediments of Lac du Bouchet (Hte Loire, France). *Geophys. J. Roy. astr. Soc.* 86, 943-964.

1.4 Thouveny N., 1987. Variations of the relative palaeointensity of the geomagnetic field in Western Europe in the interval 10-25 Kyr BP. as deduced from lake sediments analyses. *Geophys. J. Roy. astr. Soc.* 91, 123-142.

1.5 Thouveny N., Taieb M., 1987. Etude paléomagnétique des formations du Plio-Pleistocène de la région de la Peninj (Ouest du Lac Natron, Tanzanie): limites de l'interprétation magnétostratigraphique. *Bull. Sci. Geol. Strasbourg*, 40, 1-2, 57-70.

1.6 Thouveny N., 1988. High resolution study of Late Pleistocene sediments from Baffin Bay: first results. *Can. J. Earth Sci.*, 25, 833-843.

1.7 Thouveny N., Williamson D., 1988. Palaeomagnetic study of the Holocene and upper Pleistocene sediments from Lake Barombi Mbo, Cameroon: first results. *Phys. Earth planet. Int.*, 52, 193-206.

1.8 Tiercelin J.J., Mondeguer A., Gasse F., Hillaire-Marcel C., Hoffert M., Larque P., Ledee V., Marestang P., Ravenne C., Raynaud J.F., Thouveny N., Vincens A., Williamson D., 1988. 25 000 ans d'histoire hydrologique et sédimentaire du Lac Tanganyika, Rift Est Africain. *C.R. Acad. Sci., Paris.* 307, II, 1375-1382.

1.9 Thouveny N., Servant M., 1989. Palaeomagnetic stratigraphy of Pliocene continental deposits of the Bolivian altiplano. *Palaeogeogr, Palaeoclim., Palaeoecol.*, 70, 331-344.

1.10 Thouveny N., Creer K.M., Blunk I., 1990. Extension of the Lac du Bouchet palaeomagnetic record over the last 120.000 Years. *Earth Planet. Sci. Lett.*, 97, 140-161.

1.11 Creer K.M., Thouveny N., Blunk I., 1990. Climatic and Geomagnetic influences on the Lac du Bouchet palaeomagnetic SV record through the last 110 000 years. *Phys. Earth planet. Int.* 64, 314-341.

1.12 Maley J., Livingstone D., Giresse P., Thouveny N., Brenac P., Kelts K., Kling G., Stager C., Haag M., Fournier M., Bandet Y., Williamson D., Zogning A., 1990. Lithostratigraphy, volcanism, paleomagnetism and Palynology of Quaternary lacustrine deposits from Barombi Mbo. *J. Volcan. Geoth. Res.*, 42, 319-335.

1.13 Maley J., Livingstone D., Giresse P., Brenac P., Kling G., Stager C., Thouveny N., Kelts K., Haag M., Fournier M., Bandet Y., Williamson D., Zogning A., 1991. West Cameroon Quaternary lacustrine deposits: preliminary results. *J. Afri. Earth Sci.*, 12, 147-157.

1.14 Williamson D., Thouveny N., Hillaire-Marcel C., Mondeguer A., Taieb M., Tiercelin J.J., Vincens A., 1991. Chronological potential of palaeomagnetic oscillations recorded in Late Quaternary sediments from Lake Tanganyika. *Quat. Sci. Rev.*10,351-361.

1.15 Thouveny, N., Creer, K.M., 1992. Geomagnetic excursions in the last 60 thousand years: ephemeral secular variation features. *Geology*, 20, 399-402.

1.16 Quidelleur, X., Valet, J.P., Thouveny, N., 1992. Multicomponent magnetization in paleomagnetic records of reversals from continental sediments in Bolivia. *Earth and Planet. Sci. Lett.*, 111, 23-29.

1.17 Thouveny, N., Creer, K.M. 1992. On the duration of the Laschamp excursion. *Bull. Soc. Géol. Fr.*, 6, 771-780.

1.18 Thouveny, N., Creer K.M., Williamson D., 1993. Geomagnetic moment variations in the last 70000 years : impact on the production of cosmogenic isotopes. *Global Planet. Change*, 7, 157-172.

1.19 Williamson D., Taieb, M., Damnati, B., Icole M., Thouveny, N., 1993. Equatorial extension of the Younger Dryas event: rock magnetic evidence from Lake Magadi. *Global Planet. Change*, 7, 235-242.

1.20 Lallier-Vergès, E. Tribovillard, N., Bertrand P, Mongenot, T., Thouveny N., Disnar J.R., Guillet, B. 1993 Sensibilité de la sédimentation organique aux variations climatiques du Tardi-Würm et de l'Holocène - Le Lac du Bouchet (Haute Loire, France). *Bull. Soc. Géol. France* 164, 661-673.

1.21. Thouveny N., Beaulieu J.L., Bonifay E., Creer K.M., Guiot J., Icole M., Johnsen S., Jouzel J., Reille M., Williams, T., Williamson D., 1994. Climate variations in Europe over the past 140 ka deduced from rock magnetism. *Nature*, 371, 503-506.

1.22. Tamrat Endale M., Thouveny N., Taieb M., Opdyke N.D., 1995. Magnetostratigraphic study of the Plio-pleistocene sequence of the Olduvai gorge. *Palaeogeogr., Palaeoclim., Palaeoecol.* 114, 273-283.

1.23. Williams T., Thouveny N., Creer K.M., 1996. Paleoclimatic significance of the mineral magnetic record of Lac du Bouchet. 1996. *Quat. Sci. Rev.* 15, 223-236.

1.24. Tamrat Endale M., Thouveny N., Taieb M., 1996. Magnetostratigraphy of the lower member of the Hadar formation (Ethiopia): evidence for a new reversed event in the Gauss chron.*In* Evans M.E., Heller F., Thouveny N., (Eds). *Studia Geophysica Geodaetica*. 40, 313-336.

1.25. Vlag P., Thouveny N., Williamson D., Rochette P., Ben Atig F. 1996. Evidence for a geomagentic excursion recorded in the sediments of Lac St Front, France: A link with the Laschamp excursion. *Journal of Geophysical Research*., vol. 101, issue B12, pages 28,211-28,230, 1996.

1.26. Vlag P., Thouveny N., Rochette P. 1997. Synthetic and sedimentary records of geomagnetic excursions. *Geophysical Research Letters*, 24, 6, 723-726.

1.27. Vlag P., Thouveny N., Williamson D., Andrieu V., Icole M., Van Velzen A.V., 1997. The rock magnetic signal of climate change in the Maar lake sequence of Lac St Front (France). Geophysical Journal International, 131, 724-740.

1.28. Evans M.E., Heller F., Bloemendal I., Thouveny N., 1997. Natural magnetic archives of past global changes: review. Surveys in geophysics. vol 18, Iss 2-3, 183-196.

1.29. Williams T., Thouveny N., Creer K.M. 1998. A normalised intensity record from Lac du Bouchet: geomagnetic paleointensity for the last 300 ka? *Earth and planetary Science Letters*, 156, 33-46.

1.30. Roger S., Beaulieu J.L., Féraud G., Thouveny N., Reille M., Coulon C., Williams T., Andrieu V. 1999. Ar/Ar dating of tephra of the Velay Maars: implications for paleoclimatic land-sea correlation. *Earth and planetary Science Letters*, 170, 287-299.

1.31. Stockhausen H. and Thouveny N. 1999. Rock magnetic properties of Eemian sediments Maar lake sediments from Massif Central: a climatic signature? *Earth and planetary Science Letters*. 173, 299-313.

1.32.Williamson D., Jackson M.J., Banerjee S.K., Marvin J., Merdaci O., Thouveny N., Decobert M., Gibert-Massault E., Massault M., Mazaudier D., Taieb M. 1999. Magnetic signatures of hydrological changes in a tropical Maar lake (Lake Massoko, Tanzania):; preliminary results. *Physics and Chemistry of the Earth* 24,799-803.

1.33. Thouveny N., Moreno E., Delanghe D., Candon L., Lancelot Y., Shackleton N. 2000. Rock magnetic detection of distal ice-rafted debries: clue for the identification of Herinrich layers on the Portuguese margin. *Earth and Planetary Science letters*, 180, 61-75.

voir aussi Erratum à cet article dans Earth and Planetary Science letters 182, (2000) 197.

1.34. Roger S., Coulon C., Thouveny N., Féraud G., Van Velzen A., Fauquette S., Cochemé J.J., Prévôt M., Verosub K.L. 2000. Ar-40/Ar-39 dating of a tephra layer in the Pliocene Seneze Maar lacustrine sequence (French Massif Central):constraint on the age of the Réunion-Matuyama transition and implications on palaeoenvironmental archives. *Earth Planet. Sci. Lett.* 183(3-4) (2000) 431-440.

1.35. Roger S., Coulon C., Thouveny N., Féraud G., Van Velzen A., Fauquette S., Cochemé J.J., Prévôt M., Verosub K.L. 2001. Reply to the comment on :"Ar-40/Ar-39 dating of a tephra layer in the Pliocene Seneze Maar lacustrine sequence (French Massif Central):constraint on the age of the Réunion-Matuyama transition, implications on palaeoenvironmental archives". *Earth Planet. Sci. Lett.* 192 (2001) 629-630.

1.36. Moreno E., Thouveny N., Delanghe D, McCave I.N., Shackleton N.J., 2002. Climatic and oceanographic changes in the North –East Atlantic reflected by magnetic properties of sediments deposited on the Portuguese margin in the last 340 ka. *Earth Planet. Sci. Lett.* 202/2 (2002) 465-480.

1.37. Kukla G. J., Beaulieu J.L. de, Svobodova H., Andrieu-Ponel V., Thouveny N., Stockhausen H. 2002. Tentative correlation of the Last Interglacial at Grande Pile and Ribains with Marine isotope stages. *Quaternary Research* 58 (2002) 32-35.

1.38. Vincens A., Williamson D., Thévenon F., Taïeb M., Buchet G., Decobert M., Thouveny N. (2003) Pollen inferred vegetation chenges in Southern Tanzania during the last 4200 years: climate and/or human impact. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 198, 321-324.

1.39. Carcaillet J., Thouveny N., Bourlès D.L., 2003, Geomagnetic moment instability between 0.6 and 1.3 Ma from cosmonucleide evidence. *Geophys. Res. Lett.*, 30, 15, 1792, doi:10.1029/2003GL017550,2003.

1.40. Thouveny N., Carcaillet J., Moreno E., Leduc G., and Nérini D. Geomagnetic moment variation and paleomagnetic excursions during the past 400 ka: a stacked record from sedimentary cores of the Portuguese margin. *Earth Planet. Sci. Lett.*, 219, 377-396.

1.41. Carcaillet J., Bourlès D.L., Thouveny N., and Arnold M. An authigenic <sup>10</sup>Be/<sup>9</sup>Be record of the geomagnetic moment variations and excursions over the last 300 ka. *Earth Planet. Sci. Lett.*, 219, 397-412.

1.42. Carcaillet J., Bourlès D.L., Thouveny N. Geomagnetic dipole moment and <sup>10</sup>Be Production rate intercalibration from authigenic <sup>10</sup>Be/<sup>9</sup>Be for the last 1.3 Ma. *Geochem., Geophys. Geosyst.*, 5, Q05006, doi: 10.1029/2003/GC000641.

1.43. Blanchet C. Thouveny N., de Garidel-Thoron T. New evidences of geomagnetic moment lows between 30 and 45 ka BP from a sedimentary sequence of the west-Pacific. Quaternary Science Reviews. Submitted Avril 2004.

#### 2. Theses, Book Chapters and other articles

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3.76. Moreno E., Delanghe D. et Thouveny N., 1998. Magnetic signatures of Heinrich events since isotopic stage 7 along the Iberian margin. VI International Conference of paleoceanography. Lisbonne, Portugal, Aout 1998.

3.77. Carcaillet J., Bourlès D., Thouveny N., 2001. Quantification of cosmogenic nuclide production rate variations linked to geomagnetic field variations. Preliminary results from Be-10. EGS XXVI General Assembly, Nice, France, April 2001

3.78. Thouveny N. Moreno E. 2002. Périodicités de Milankovitch et événements climatiques abrupts aux confins de l'Europe occidentale et de l'Atlantique. Colloque INQUA France, Aix en Provence, Janvier 2002.

3.79. Carcaillet, J. Bourlès, D. L. Thouveny, N 2002. Surproduction de cosmonucléides lors de l'événement Laschamp (40 ka BP). Colloque INQUA France, Aix en Provence, Janvier 2002.

3.80. <u>Thouveny N.</u>, Moreno E., Carcaillet J.,et Bourlès D. 2002. A 350 kyr record of geomagnetic paleosecular variation and excursions from sedimentary cores collected off Portugal. EGS XXVII General Assembly, Nice, France, April 2002.

3.81. Carcaillet, J. ; Bourles, D. L. ; Thouveny, N. 2002. High-resolution authigenic <sup>10</sup>Be/<sup>9</sup>Be records : A proxy indicator of the past geomagnetic field variability. EGS XXVII General Assembly, Nice, France, April 2002.

3.82. <u>Thouveny N.</u>, Moreno E., Carcaillet J., Bourlès D., Leduc G. 2002. A 350 kyr record of geomagnetic paleosecular variation and excursions from sedimentary cores collected off Portugal. Erice Conference FUNDAMENTAL ROCK MAGNETISM AND ENVIRONMENTAL APPLICATIONS (EMCSC, Erice, Sicily, 26 June - 1 July, 2002).

3.83. Moreno E., Thouveny N., Paleoclimatic and paleoceanographic changes in the N. Atlantic and Western Europe during the last 300 ka deciphered by sedimentary magnetism. Erice Conference FUNDAMENTAL ROCK MAGNETISM AND ENVIRONMENTAL APPLICATIONS (EMCSC, Erice, Sicily, 26 June - 1 July, 2002).

3.84. Carcaillet, J. ; Bourles, D. L. ; Thouveny, N 2002 Quantification of cosmogenic nuclide production rate variations linked to geomagnetic field variations. Results from Be-10. Erice Conference FUNDAMENTAL ROCK MAGNETISM AND ENVIRONMENTAL APPLICATIONS (EMCSC, Erice, Sicily, 26 June - 1 July, 2002).

3.85. Carcaillet, J. ; Bourles, D. L. ; Thouveny, N 2002: Quantification of geomagnetic field variations by cosmogenic nuclide production rate variations. Goldschmit Conference, Davos, August 2002.

3.86. Arnaud F., Revel M., Chapron E., Desmet M., Thouveny N., Mélières M-A, Magand O., Tribovillard N., Lallier-Verges E., Disnar R., Paterne M., Argant J., Beck C. Révélations Géophysiques et Géochimiques sur les débordements du Rhône dans le Lac du Bourget. Colloque Programme ECLIPSE du CNRS, sept. 2002.

3.87. Cabioch G., Camoin G., Chazottes V., Dalmaso H., Frank N., Montagionni L., Payry C., Pichon M., Semah A.M., Thouveny N. Effets des variations climatiques sur la structuration des grands systèmes récifaux lors des derniesr stades interglaciaires du Quaternaire. L'exemple de la nouvelle Calédonie. Colloque Programme ECLIPSE du CNRS, 2002.

3.88. Thouveny N., Carcaillet J., Bourlès D.L., Moreno E., Geomagnetic moment variation and excursions since 400 ka BP: paleomagnetic and <sup>10</sup>Be/<sup>9</sup>Be sedimentary records from the Portuguese margin. American Geophysical Union, Chapmann Conference on TIMESCALES OF THE GEOMAGNETIC FIELD, March 2003, Gainesville, Florida. Abstract book page 20.

3.89. Carcaillet J., Thouveny N., Bourlès D.L. High resolution authigenic <sup>™</sup>Be/<sup>9</sup>Be records: a proxy indicator of the past geomagnetic field variability. European Geophysical Society XXVIII Assembly, Nice April 2003.

3.90. Thouveny N., Carcaillet J., and Bourlès D.L. Paleomagnetic and Authigenic <sup>10</sup>Be/<sup>9</sup>Be Records in sediments: implications for the use of geomagnetic moment lows and excursions as global correlation markers. XVI INQUA congress, Reno, USA, July 2003, Abstract book p. 90.

3.91. Shackleton N.J.S. L. De Abreu, P. Blumbach, H. Cheshire, M. Vautravers, J. Grimalt, B. Matrat, N. Thouveny, L. Thomas. Millienial scale variability : the replicability of marine records. XVI INQUA congress, Reno, USA, July 2003, Abstract book p.101.

3.92. Thouveny N. Carcaillet J., Bourlès D. Variations du moment géomagnétique et excursions au Quaternaire: contributions des études paléomagnétiques et géochimiques (cosmonucléides) sur les carottes IMAGES. 5è Journées de Paléocéanographie. Paris, Septembre 2003.

3.93. Thouveny N. Carcaillet J., Bourlès D. Geomagnetic moment variations and excursions over the past 400 ka: A correlation and dating tool for continuous quaternary prodelta sequences. Open conference on Comparing Mediterranean and Black sea prodeltas, Aix en Pce, October 2003.

3.94. Blanchet C., Thouveny N., De Garidel-Thoron T., Leduc G., Beaufort L., Bourlès D., New evidences for global excursions during the last 55 ka from a sedimentary sequence of new Guinea margin, Geophysical Research Abstracts, Vol. 6, 02550, 2004; SRef-ID: 1607-7962/gra/EGU04-A-02550 European Geosciences Union 2004

3.95. Thouveny N., Carcaillet J., Bourlès D.L., Saracco G. and Beaufort L. Geomagnetic dipole lows: a relationship with paleoclimate and a dominant 100 ka period? EGU Nice 2004. Geophysical Research Abstracts, Vol. 6, 04728, 2004. SRef-ID: 1607-7962/gra/EGU04-A-04728. European Geosciences Union 2004.

3.96. Andrieu Ponel V. et al. dont Thouveny N., 2004.Preliminary results of the multi-proxy data analysis of Les Echets (Ain, France). *XI International Palynological Congress*, 4-9 juillet 2004.

3.97. Thouveny N., Carcaillet J., Bourlès D.L., Saracco G. and Beaufort L. Geomagnetic dipole lows: a relationship with paleoclimate and a dominant 100 ka period? 8<sup>th</sup> International Conference on Paleoceanography, September 2004, Biarritz, France. Abstract book page 208.

3.98. Thouveny N., Carcaillet J., Bourlès D.L. and Saracco G. Was the Regime of Geomagnetic Dipole Lows and Excursions Influenced by the Pleistocene climate? AGU Fall Meeting Sanf Fransisco, December 2004.

3.99. Leduc G., Thouveny N., Bourles D., Blanchet C., and Carcaillet J. Authigenic 10Be/9Be recorded in Western Equatorial Pacific Sediments over the Laschamp and Mono lake excursions. Implication for the Cosmonucleide production rates.

# ECORD Application form for membership in IODP expedition scientific parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following information)	
Name (first, middle, last) ALXANDER WILLIAM TUD HOPE	
Institution EDINBURGH UNIVERSITY	
Department SCHOOL OF GEOSCIENCES, GRANT INSTITUTE	
Institution <u>EDINBUECH</u> UNIVERSITY	
Address WEST MAINS ROAD, EDINBURCH EH9 33W, SCOTLAND, VK	
Telephone (Work) 44 131 650 8503 (Home) 44 131 669 4819 (Fax) 44 131 668 318 4	
Email Address SANDY. TUDHOPE Q. ED. AL. UK	
Present Title DR Country of Citizenship BRITISH	
Place of Birth EDINBURCH, UK. Date of Birth Gender 14 AULUST 1958; MALE	
27 my by Passport No. 093068584 Place Issued CHSLOW Date Issued Exp. Date 27 Fos 14	
Education (Highest degree - PhD., M.S., or B.S.) <u> </u>	
Are you currently a student? NO (If yes, see note below)	
Expeditions of Interest (please limit selection to no more than three):	
Expedition Number: 519 Title THE LAST DECLACIAL SBA-LEVEL RISE TANHTI	
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*	6
Expedition Number: Title	
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*	
Expedition Number: Title:	
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*	
(* provide detail of proposed participation in an accompanying letter)	
Reason(s) for Interest (if necessary, expand in letter) <u>SEC ATTACHED</u>	
Personal and/or scientific references (name and address)	
Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased	
participant, etc.) A SAMPLOW DRILLING PROSECT PUMMNG CROUP	
MEMBER 1918-2001; CO-ORGANISER (WITH THEY QUINN) OF OBP-JOI	
ECORD Application form for membership in IODP expedition scientific parties, Page 1 of 3 らののにのため、 WORKLHOP のい SUBMSECED COMMUNE DEILLING , 2000.	

#### **III. ATTACHMENTS**

1. Attach curriculum vitae which includes a publication history

2. Please fill out the attached "Field of Expertise" form

Note: Applications from graduate students should include a letter from their primary advisor, documenting the student's scientific experience and detailing how participation on the cruise would fit into their graduate degree program.

Staffing decisions are made in consultation with co-chief scientists and take into account nominations from partner countries; final responsibility for ECORD staffing rests with ESSAC. Please submit all application materials both in **digital format** (preferable PDF format) and **paper copy** to (please contact the ESSAC Office when having problems providing us with the above asked materials in both formats):

ESSAC Science Coordinator

Faculty of Earth & Life Sciences - Vrije Universiteit

De Boelelaan1085

1081 HV Amsterdam - The Netherlands

Phone: +31 20 4447272

Fax: +31 20 4449941

E-mail: essac.amsterdam@falw.vu.nl

With a copy to the national ESSAC delegate (see http://www.geo.vu.nl/~essac/ ESSAC button).

Nominations (with copies of their applications) will be forwarded from that office to the Implementation Organizations (IOs). Eligibility as a ECORD participant is limited to scientists or engineers (professors, research scientists, technologists, graduate students, etc.) at a ECORD member institution (e.g. German academic institutions, government labs, ECORD member-based corporations, etc.). Non-ECORD affiliated personnel from other IODP member countries should apply for IODP participation through their country's national program office. Undergraduate students do not qualify as Shipboard Participants, and should not apply to sail using this form. Undergraduates interested in sailing on a IODP expedition should instead contact ECORD for information about the Undergraduate Student Trainee Program.

#### **FIELD OF EXPERTISE**

- \_\_\_\_ Biologist
- \_\_\_\_ Microbiologist
- \_\_\_\_ Inorganic Geochemist
- \_\_\_\_ Orgánic Geochemist
- \_\_\_\_ Geophysicist
- \_\_\_\_ Hydrologist
- \_\_\_\_ Logging Scientist
- \_\_\_\_ Oceanographer
- \_\_\_\_ Paleomagnetist
- \_\_\_\_ Paleontologist (Diatom)
- \_\_\_\_ Paleontologist (Dinoflagellate)
- \_\_\_\_ Paleontologist (Foraminifer Benthic)
- \_\_\_\_ Paleontologist (Foraminifer Planktonic)
- \_\_\_\_ Paleontologist (Megafossil)
- \_\_\_\_\_ Paleontologist (Nannofossil)
- \_\_\_\_ Paleontologist (Phytoplankton)
- \_\_\_\_ Paleontologist (Radiolaria)
- \_\_\_\_ Paleontologist (Silicoflagellate)
- \_\_\_\_ Palynologist
- \_\_\_\_ Petroleum Geologist
- \_\_\_\_ Petrologist
- \_\_\_\_ Igneous Petrologist
- \_\_\_\_ Metamorphic Petrologist
- \_\_\_\_ Physical Properties Specialist
- <u>Sedimentologist</u>
- \_\_\_\_ Seismologist
- \_\_\_\_ Stratigrapic Correlator
- \_\_\_\_ Structural Geologist
- <u>Downhole Measurements</u>
- ~ CORAL REEF SCIENTIST
- ~ PAREOCESNOWERRE
- ~ PRISEOCLIMATOLOGIST



#### **School of GeoSciences**

The University of Edinburgh Grant Institute West Mains Road Edinburgh EH9 3JW

Fax +44 (0)131 668 3184 Telephone +44 (0)131 650 8508 or (secretary) +44 (0)131 650 4842 e-mail sandy.tudhope@ed.ac.uk

9<sup>th</sup> November 2004

ESSAC Science Coordinator Faculty of Earth & Life Sciences - Vrije Universiteit De Boelelaan1085 1081 HV Amsterdam, The Netherlands

Dear Sir or Madam,

Please find attached an application to join the Scientific Party of Expedition 519 to Tahiti.

As you will see from my CV, I have over 20 years of research experience in working on the growth and structure of coral reefs, sea level rise, and reconstructing climate history from geochemical analysis of annually-banded living and fossil massive corals. In particular, I have extensive field and associated analytical experience on Pacific living and late Quaternary reefs. Therefore, the subject matter of expedition 519 falls directly within my main area of expertise and research interest.

In Edinburgh, I have built up a geochemical and coral preparation facility specifically geared towards stable isotope and trace element analysis of corals for palaeo-environmental reconstruction. Through my immediate collaborators, I also have access to <sup>14</sup>C and U-series dating facilities.

I would be keen to participate in the field shipboard part of the Expedition where I believe my extensive experience of reef coring and interpretation would be useful. However, my

participation in the fieldwork is dependent upon the precise dates of the trip as I have some other commitments. Even if I cannot participate in the shipboard party due to a clash of commitments, I would still like to be considered for the scientific party for follow up analyses.

I am going to be in the field (coral coring the western Pacific) from 16<sup>th</sup> November until 14<sup>th</sup> December.

I look forward to hearing from you.

Regards,

Aw. Tulye

Dr Sandy Tudhope

References:

**Prof. Graham B. Shimmield**, FIBiol, FRSE, Director Scottish Association for Marine Science Dunstaffnage Marine Laboratory Dunbeg Oban, Argyll PA37 1QA

*Telephone* 01631 559270 *Fax* 01631 565518 *Email* ...gbs@dml.ac.uk

Prof. Terry Quinn, College of Marine Science, University of South Florida, St. Petersburg, Florida 33701, USA

Tel: +1 (727) 553-1658 e-mail: <u>quinn@seas.marine.usf.edu</u>

## **Curriculum Vitae**

Alexander William Tudhope Date: October 2004

## A. PERSONAL DETAILS:

- Born: Edinburgh, 14th August 1958
- Nationality: British
- Married, no children. (Wife is U.S. citizen)

## **B. CONTACT DETAILS:**

School of GeoSciences, Grant Institute, Edinburgh University, West Mains Road, Edinburgh EH9 3JW, Scotland, U.K. *Tel:* +44 131 650 8508/4842 (work) +44 1368 850334 (home) *Fax:* +44 131 668 3184

e-mail: sandy.tudhope@ed.ac.uk

## C. EDUCATION:

- PhD: 1983, Edinburgh University (with 2.5 years based at Australian Institute of Marine Science, Townsville on SRC/NATO Scholarship). Thesis on processes of sedimentation and patch reef development on Davies Reef, Central Great Barrier Reef of Australia.
- BSc: 1979, 2.1 Honours in Geology, Department of Geology, Edinburgh University

## **D. CAREER:**

- Leader of "Global Change" Research Group, School of GeoSciences, Edinburgh University, 2003present
- Leader of "Marine and Environmental Geoscience" group, Department of Geology & Geophysics, Edinburgh University, 1996-2003.
- Senior Lecturer in Geology, Edinburgh University, 1997-present
- Visiting research scientist (on sabbatical), Australian Institute of Marine Science, 2000-2001
- Lecturer in Geology, Edinburgh University, 1988-1997
- Visiting Associate Researcher (on sabbatical), University of California Santa Barbara, 1993
- Lecturer in Geology, Aberdeen University, 1983-1988

## **E. ACTIVE RESEARCH AREAS:**

- the role of the tropics in global climate variability on interannual to glacial-interglacial (10<sup>5</sup> year) timescales
- using palaeoclimate data and coupled climate models to improve prediction of future climate
- understanding variability in the El Niño Southern Oscillation
- physical and biological processes that control the growth and structure of corals and coral reefs
- deep water corals: their occurrence and potential as environmental archives.
- developing techniques for reconstructing climatic, oceanographic and other environmental processes from geochemical and physical analysis of corals and other skeletal carbonates

- corals and coral reefs as recorders of eustatic and tectonically-induced sea-level change
- benthic environments, and the processes and rates of sedimentation in shelf seas

## F. RECENT EXTERNAL RESEARCH GRANTS (£5k-£3million)

(As first-named PI unless otherwise stated).

- "High-resolution records of rapid climate change: combining stable isotope and trace element tracers in carbonates", UK Natural Environmental Research Council Capital Equipment Competition, 2004, ~£253,855.
- "Improving our ability to predict rapid changes in the El Niño Southern Oscillation climatic phenomenon", UK Natural Environment Research Council, 2003-2006, £320,645 plus supercomputing time worth ~£30,000. (Split award: £187,000 for Edinburgh University, £134,000 for Reading University).
- 3. "Simulations, Observations and Palaeoclimate data: Climate variability over the last 500 years". Partner on a European Commission funded international project, co-ordinated by Keith Briffa at the Climate Research Unit, University of East Anglia; 2002-2005; final award of ~£772,000, of which we receive ~£15,000.
- 4. "Decadal climate variability and the El Niño Southern Oscillation: High resolution records of oceanatmosphere interactions from corals in the central South Pacific", UK Natural Environment Research Council, 1999-2002, £197,000.
- 5. "Edinburgh Materials and Micro-Analysis Centre, EMMAC", including funds for a new Cameca IMS 1270 Ion Microprobe, Joint Infrastructure Fund (JIF) of the Wellcome Trust and UK Office of Science and Technology, (one of 9 co-PIs after the first-named applicant: Ben Harte, Edinburgh University), 2000, £3,006,000.
- 6. "A multi-collector ICP-MS facility for the Earth and Environmental Sciences in Scotland", UK Natural Environment Research Council, (2nd-named PI after Rob Ellam, Scottish Universities Environmental Research Centre), 2000, £444,000.
- "A long-term paleoecological record of coral reef communities", named collaborator on a US National Science Foundation grant of \$214,000US (PI: John Pandolfi, Smithsonian Institution, Washington); 2001-2004. \$45,000US of the grant is to fund my contribution.
- 8. "Reconstruction of environmental change in the tropical wetlands of Belize", Leverhulme Trust, (4th-named PI), 1999-2001, **£56,000**.
- 9. "High-resolution records of low latitude climate through the last glacial-interglacial cycle from corals in Papua New Guinea", UK Natural Environment Research Council, 1995-1999, **£168,000**.
- 10. "Development of a stable isotope laboratory for palaeoenvironmental research from analysis of skeletal carbonates", Wolfson Foundation, (co-PI with Graham Shimmield), 1995, **£95,000**.
- 11. "A 2,000 year record of rainfall and ENSO events from stable isotopic and trace element analysis of annually-banded corals in Papua New Guinea", UK Natural Environment Research Council, 1992-1995, **£162,000.**
- 12. "Records of oceanic upwelling off Oman from living and fossil massive corals" UK Natural Environment Research Council, 1991-1993, **£10,000**.
- 13. "Records of volcanic eruptions in massive coral skeletons, Papua New Guinea" Royal Society of London, 1990-91, **£5,500**.

## Other funding and in-kind contributions for research, and grants for organisation of international meetings

- 1. Grants from World Climate Research Program, Past Global Changes program, US National Science Foundation and NOAA, and French IRD (Institute for Research and Development) to support Annual Record of Tropical Systems Open Science Meeting, 2001, 5 co-organisers; **\$43,000US.**
- 2. Australian Institute of Marine Science, 2000-2001, equivalent to ~ £8,000.

- 3. Grants from US National Science Foundation and Joint Oceanographic Institutions to support an International Workshop on the Science and Technology of Submerged Coral Drilling, 2000; 2 co-organisers; **\$30,000US**
- 4. "Decadal climate variability and the El Niño Southern Oscillation: High resolution records of oceanatmosphere interactions from corals in the central South Pacific", grant from Centre for Coastal and Marine Science (NERC),1999, **£20,000**.
- 5. "Decadal climate variability and the El Niño Southern Oscillation: High resolution records of oceanatmosphere interactions from corals in the central South Pacific" contribution of shiptime and microlight for research cruise, private donation (Steve Kafka), 1999, equivalent to ~£10,000.

## G. RECENT INVITED TALKS AT SYMPOSIA, CONGRESSES AND INTERNATIONAL WORKSHOPS

(Asterisks indicate a significant financial contribution towards travel and subsistence from the Meeting Organisers)

(*Acronyms used in sections 'G'-'I':* IGBP = International Geosphere Biosphere Program; PAGES = Past Global Changes strand of IGBP; WCRP = World Climate Research Program; CLIVAR = Climate Variability strand of WCRP; ARTS = Annual Records of Tropical Systems component of the CLIVAR and PAGES intersection).

- \* Invited lecturer at International Workshop on "Climate Variability in the Twentieth Century: Climate Variability studies in the Ocean", Abdus Salam International Centre for Theoretical Physics, Trieste, Italy, 26-30<sup>th</sup> April 2004.
- 2. Award Lecture on winning the 2003 Scottish Science Award of the Saltire Society in association with the Royal Society of Edinburgh. Talk entitled: "What can corals tell us about climate variability and change?"; Royal Society of Edinburgh, April 2004.
- \* Keynote Speaker at the Quaternary Research Association Annual Discussion Meeting, Bangor. Talk entitled: "Reconstructing tropical climate variability and change from annually-banded massive corals". 7-9<sup>th</sup> January 2004
- 4. \* Invited talk at the University of Washington, Seattle, USA. Talk entitled: "The past, present and future of the El Niño Southern Oscillation"; November 2003
- 5. \* Invited speaker as part of the Lamont Doherty Earth Science Colloquium Series, New York, USA. Talk entitled: "The past, present and future of the El Niño Southern Oscillation"; November 2003.
- 6. Invited lecturer, Royal Meteorological Society meeting on recent advances in research into El Niño. London, 15<sup>th</sup> October 2003.
- 7. \* Invited lecturer at Aosta international summer school entitled "Paleoclimate: combining observations and dynamics", Valle d'Aosta, Italian Alps, June 16-25, 2003. The School is organised and funded by the Istituto di Scienze dell'Atmosfera e del Clima (ISAC) CNR (Torino) and by the Laboratoire de Météorologie Dynamique, École Normale Supérieure (Paris).
- 8. \* Invited speaker to US NOAA-funded expert panel on the causes of abrupt climate change. Harriman, New York, 8-11 June 2003.
- 9. \* Invited speaker, 'The Hadley Circulation; Present, Past and Future' conference; funded by US NSF, NOAA, and IGBP-PAGES, Hawaii, November 2002.
- 10. \* Invited Plenary Speaker, International Society for Reef Studies European Meeting, Cambridge, September 2002.
- 11. \* Invited speaker, Leopodina Academy Symposium "Climate change prior to the impact of Man", Halle, Germany, October 2001.
- 12. (\*) Invited Plenary Speaker, International Conference on Paleoceanography, (ICP7), Sapporo, Japan, September 2001. [My participation had to be cancelled at short notice].
- 13. \* Invited participant, PAGES "HIHOL" Workshop on Holocene climate variability, Avignon, France, October 2000.
- 14. \* Invited participant, NOAA Office of Global Programs and NSF Climate Dynamics funded Workshop "El Niño: Past, Present and Future", Charleston, South Carolina, March 2000.

- 15. \* Invited participant, PAGES/CLIVAR Workshop on Climate of the Last Millennium, Venice, Italy, 1999.
- 16. \* Invited participant, PAGES/CLIVAR and PAGES PMAP Stream 1 workshop on Data Protocols, Boulder, USA, 1999.
- 17. \* Invited speaker, 'Triangle' International Symposium on Pacific and Indian Ocean dynamics and variability, Kyoto, Japan, 1998.
- 18. \* Invited speaker, Royal Meteorological Society meeting on El Niño and its Global Impacts, London, 1998.
- 19. American Geophysical Union, Fall Meeting, session co-chair, San Francisco, 1998.
- 20. \* Invited speaker, International Symposium on Quaternary Environmental Change in the Asia and Western Pacific Region, Tokyo, 1997.
- 21. \* Invited participant, PAGES Annual Records of Tropical Systems Workshop, Hawaii, 1996.
- 22. Invited speaker, 8th International Coral Reef Symposium, Panama, 1996.
- 23. Invited speaker, American Geophysical Union Fall Meeting, San Francisco, 1996.

## H. ORGANISATION OF INTERNATIONAL CONFERENCES AND WORKSHOPS:

- 1. Co-organiser of WCRP, NSF, NOAA and PAGES sponsored ARTS Open Science Meeting, Noumea, New Caledonia, November 2001.
- 2. Co-organiser of Ocean Drilling Program/Joint Oceanographic Institutions and NSF-funded workshop on submerged coral drilling, St Petersburg, Florida, September 2000.
- 3. Co-organiser of Geological Society of London sponsored meeting "The Tectonics, Sedimentation and Palaeoceanography of the North Atlantic Region" held in Edinburgh, 1995.

## I. MEMBERSHIP OF EXTERNAL COMMITTEES, DIRECTORSHIPS, EDITORSHIPS AND EXPERT REVIEW PANELS:

- Member of the Joint Research Grant Assessment Panel of the UK-Netherlands-Norway Rapid Climate Change Research programme, 2004. Budget of 4,000,000 Euro.
- Member of Council for, and a Director of, the Scottish Association for Marine Science (SAMS), 2001-.
   SAMS owns and operates the Dunstaffnage Marine Laboratory at Oban, which has 2 research boats, and an annual turnover of ~£6million.
- Member of the Interview and Appointments Panel for the Directorship of the new European Centre for Marine Biotechnology, 2002.
- Member of the Steering Group of the £20,000,000 UK Natural Environment Research Council (NERC) thematic research programme on "Rapid Climate Change" (RAPID), 2001-2006
- Member of the Steering Group of the NERC thematic research programme on "Paleoclimate Research and Earth System Modelling for Enhanced Climatic and Environmental Prediction" (PRESCIENT), 2000-2001 (programme then combined with another theme to form the RAPID programme)
- Member of the Ocean Drilling Program (ODP) Project Planning Group panel on "Shallow Drilling", 1998-2001.
- Member of the Scientific Steering Group for the "Annual Records of Tropical Systems" PAGES/CLIVAR initiative. 1996-
- Advisory Editor for "Coral Reefs", the journal of the International Society for Reef Studies.
- On the Expert Review Panel for Intergovernmental Panel on Climate Change (IPCC) Publications, 1992-

## J. AWARDS:

• Winner of the "Scottish Science Award" of the Saltire Society in association with the Royal Society of Edinburgh, 2003.

## **K. FIELD EXPERIENCE:**

- 2003: Participating-scientist on international 5 week research cruise to Gilbert Islands, equatorial West Pacific, for coral-climate research.
- 1999: Chief Scientist for 10-week coral-climate research cruise in the central Pacific (Cook Islands, Starbuck Island and Jarvis Island). [This work was filmed by an independent film-maker (Peta Carey, from New Zealand), and one version of the film was screened on BBC].
- 1991- 2002: Chief Scientist for nine field seasons (total ~ 11 months) investigating modern and Quaternary reefs in Papua New Guinea.
- 1991: 3 weeks onshore and marine fieldwork in Oman.
- 1986-1990: co-Chief Scientist in 6 field seasons (~ 9 months) of coral reef fieldwork in south Thailand.
- 1986: participant in Anglo-French submersible diving campaign CYAPORC to examine processes and rates of sedimentation in a submarine canyon and channel system, Porcupine Seabight, NE Atlantic.
- 1980-85: 50 days as Chief Scientist and 100 days as Participating Scientist in research cruises on Australian Great Barrier Reef /Queensland shelf.
- 1981: participant in Royal Society of London funded expedition to Cook Islands, Central Pacific

## L. PUBLICATIONS:

## Research articles in major journals and conference proceedings.

- 1. D'Arrigo, R., Wilson, R., Deser, C., Wiles, G., Cook, E., Villalba, R., Tudhope, A., Cole, J., and Linsley, B.. Tropical-North Pacific Climate Linkages Over the Past Four Centuries. submitted to *Journal of Climate*
- An, S.-I., Timmermann, A., Bejarano, L., Jin, F.-F., Justino, F., Liu, Z., and Tudhope, A.W., in press. Modeling evidence for enhanced ENSO variability during the Last Glacial Maximum. *Paleoceangraphy*
- Marriott, C.S., Henderson, G.M., Belshaw, N.S., and Tudhope, A.W., 2004. Temperature Dependence of δ<sup>7</sup>Li, δ<sup>44</sup>Ca and Li/Ca during growth of calcium carbonate. *Earth and Planetary Science Letters*, 222, 615-624.
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- 35. Tudhope, A.W., 1989. Shallowing-upwards sedimentation in a coral reef lagoon, Great Barrier Reef of Australia. *Jour. Sed. Petrol.*, 59, 1036-1051.
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- 41. Scoffin, T.P., and Tudhope, A.W., 1985. Sedimentary environments of the Central Region of the Great Barrier Reef of Australia. *Coral Reefs*, 4, 81-93.
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- 45. Tudhope, A.W., and Risk, M.J., 1985. Rate of dissolution of carbonate sediments by microboring organisms, Davies Reef Australia. *Jour. Sed. Petrol.*, 55, 440-447. (\*)
- 46. Tudhope, A.W., and Scoffin, T.P., 1984. The effects of *Callianassa* bioturbation on the preservation of carbonate grains in Davies Reef Lagoon, Great Barrier Reef, Australia. *Jour. Sed. Petrol.*, 54, 1091-1096.

Two other single-author papers by my research student, Nicky Allison, based on her PhD work:

- 47. Allison, N., 1996. Comparative determinations of trace and minor elements in coral aragonite by ion microprobe analysis, with preliminary results from Phuket, southern Thailand. *Geochimica et Cosmochimica Acta*, 60(18), 3457-3470.
- 48. Allison, N. 1996. Geochemical anomalies in coral skeletons and their possible implications for palaeoenvironmental analyses. *Marine Chemistry*, 55, 367-379.

#### Books and journal special volumes edited

- 49. Quinn, T.M., and Tudhope, A.W., 2001. Science and Technology of Submerged Coral Drilling: A Workshop Report. 82p, *Joint Oceanographic Institutions, Inc (JOI)*.
- 50. Dodge, R.E., Hopley, D., Tudhope, A.W., Swart, P.K., Grigg, R.W., and Scoffin, T.P., 1998. Holocene and Pleistocene Geology of Coral Reefs. *Coral Reefs, Special Issue*, 17-3, 203-327.
- 51. Scrutton, R.A., Stoker, M.S., Shimmield, G.B., and Tudhope, A.W., 1995. The Tectonics, Sedimentation and Palaeoceanography of the North Atlantic Region. *The Geological Society of London, Special Publication*, 90, 320pp.

#### Other publications with wide circulation (not refereed)

- Ellam, R.M., and Tudhope, A.W. 2003. Uranium and thorium isotope ratio measurements using multiple collector inductively coupled plasma mass spectrometry with multi-ion-counting detectors. In: G. Holland & S.D. Tanner (eds.) *Plasma Source Mass Spectrometry: Applications and Emerging Technologies*, The Royal Society of Chemistry, Cambridge, 391-403
- 53. Alverson, K., Bradley, R., Briffa, K., Cole, J., Hughes, M., Laroque, I., Pedersen, T., Thompson, L., and Tudhope, S., 2001. A Global Paleoclimate Observing System. Letter to *Science*, 293, 47-48.
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- 56. Tudhope, A.W., 1998. Coral indicators, climate change and the El Niño Southern Oscillation. *The Globe*, Publication of the UK Global Environmental Research (GER) Office, 41, 13-15, February 1998.
- 57. Tudhope, A.W., 1994. Extracting high-resolution climatic records from coral skeletons. *Geoscientist*, publication of the Geological Society of London, 4, 17-20.
- 58. Tudhope, A.W., 1991. Coral bleaching and climate change. Contribution to Section C of the *IPCC 1992 Supplement*, 12p; article also circulated to U.S. Congress.
- 59. Radke, B.M., and Tudhope, A.W., 1984. Great Barrier Reef surficial cover facies maps: Myrmidon and Davies Reefs. *Australian Bureau of Mineral Resources, Geology and Geophysics Publication*.

## M. PUBLIC UNDERSTANDING OF SCIENCE

Examples of recent publicity and communication to the public include:

- A television documentary on our climate and sea-level research in the Pacific. Shown on BBC and overseas (2000).
- Publicity via international media, including front page article in the *New York Times*, for a discovery on what controls variability in the El Niño Southern Oscillation climatic phenomenon (published in the Journal *Science*, February 2001

## N. RECENT AND CURRENT UNIVERSITY RESPONSIBILITIES:

Note that due to sabbatical leave 2000-2001, I stood down from all committees over this interval.

• Leader of "Global Change" Research Group, 2002- : Since 2002, I have been active in helping develop the research structures in the newly-formed School of GeoSciences. My main motivation has been to help break down existing structural barriers between the disciplines engaged in science related to understanding the Earth's surface environments. These discussions have led to the creation of the "Global Change" research group in the School, of which I am Head. This is the largest research group in the School, containing ~32 academic staff, plus associated post-doctoral and postgraduate students.

#### Alexander W. Tudhope Curriculum Vitae

In particular, we have existing, internationally competitive, research foci in atmosphere-biosphere interactions, landscape ecology, ecosystem modelling, the terrestrial carbon cycle, marine biogeochemical cycles, palaeoceanography, palaeoclimatology, ice-climate interactions and modelling, landscape evolution, modelling climate change and atmospheric composition, remote sensing, and human-environment interactions. The purpose of the group is to tackle the crucial issues surrounding Global Environmental Change: how have the oceans, atmosphere, land surface and biosphere interacted in the past, what are the current processes, and how will they interact in the future?

- Leader of the Marine and Environmental Geoscience Group, 1996-2002: I was the leader of the "Marine and Environmental Geoscience" group in the Department of Geology & Geophysics for 6 years. This period saw a major development and growth of the group, resulting in a new Honours degree programme and the appointment of four new academic staff. I took prime responsibility for making the cases for new academic appointments, and took the responsibility for mentoring new staff to help them develop successful research programmes whilst contributing to the delivery and development of undergraduate teaching.
- **Supervisor/co-supervisor** to 3 overseas postdoctoral students, 14 PhD students and 1 Masters student in past 10 years
- **Director of Studies, 2001-2004**. In this position, I acted as an academic advisor and provided broader support for 50-60 undergraduate students
- **Director of the Wolfson stable isotope laboratory, 1995-present.** Includes responsibility for funding of the facility from external grants, (including salary for post-doctoral level assistant).
- Director and Chairman of the Board of Examiners of new Honours degree programme "Environmental Geoscience", 1996-1999
- Chairman of Environmental Geoscience Degree Programme Review Committee, 1996-1999, 2001
- Chairman of Department Staff-Student Liaison Committee, 1995-1998

## **O. TEACHING**

Current Teaching: (year refers to level within our 4-year undergraduate Honours degree programmes).

- 1. 4th year course 'Global Environmental Change' (co-teacher)
- 2. 4th year course 'Environmental Problems and Issues' (co-teacher)
- 3. 3rd year course 'Techniques and Applications' (co-teacher)
- 4. 3rd year 'Carbonate Sedimentology' (sole teacher)
- 5. 3rd year course 'Quaternary Environmental Change' (co-teacher)
- 6. 2nd year course 'Sedimentology' (co-teacher)
- 7. 2nd year course 'Global Environmental Processes' (co-teacher)
- 8. Geological mapping fieldtrip to southern Spain (3rd year)
- 9. Marine environmental geoscience fieldtrip to Jamaica (3<sup>rd</sup> year)

#### Additional subjects taught previously:

10. wireline well logs (3rd year level)

11. applied carbonate sedimentology (Masters level at Aberdeen University)

# ECORD Application form for membership in IODP expedition scientific parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following information)
Name (first, middle, last) Crisogono de Oliveira Vasconcelos
Institution
Department Department of Earth Sciences
Institution Geological Institute
Address Sonneggstrasse 5, 8092 Zürich
Telephone (Work) +41 1 632 3673 (Home) +41 1 383 7828 (Fax) +41 1 632 10 80
Cris.Vasconcelos@erdw.ethz.ch Email Address
Present Title PhD Country of Citizenship Brazil
Place of Birth SE - Brazil Date of Birth Gender 26.06.1954, male
CF849918         NIG/RJ         10.10.1994         9.10.2004           Passport No.         Place Issued         Date Issued         Exp. Date
Education (Highest degree - PhD., M.S., or B.S.) PhD Date: 14.7.1994
Are you currently a student? <u>No</u> (If yes, see note below)
II. EXPEDITION INFORMATION
Expeditions of Interest (please limit selection to no more than three):
TRD Tahiti Sea Level Expedition
Platform: Riser Non-riser MSP Participation: KN K K K K K K K K K K K K K K K K K K
Expedition Number: Title
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*
Expedition Number: Title:
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*
(* provide detail of proposed participation in an accompanying letter)
My interest in the proposed drilling is to study the microbial mediated diagenesis in the reefs facies, as well as define the sub-surface microbial community and its distribution.
Personal and/or scientific references (name and address)
Prof. Judith A. McKenzie, Geological Institute, ETH-Zentrum, 8092 Zurich, Switzerland
Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased Shorebased Scientist (ODP Leg 201)
periolyarity of 0.7
#### **III. ATTACHMENTS**

1. Attach curriculum vitae which includes a publication history

2. Please fill out the attached "Field of Expertise" form

Note: Applications from graduate students should include a letter from their primary advisor, documenting the student's scientific experience and detailing how participation on the cruise would fit into their graduate degree program.

Staffing decisions are made in consultation with co-chief scientists and take into account nominations from partner countries; final responsibility for ECORD staffing rests with ESSAC. Please submit all application materials both in **digital format** (preferable PDF format) and **paper copy** to (please contact the ESSAC Office when having problems providing us with the above asked materials in both formats): ESSAC Science Coordinator Faculty of Earth & Life Sciences - Vrije Universiteit De Boelelaan1085 1081 HV Amsterdam - The Netherlands Phone: +31 20 4447272 Fax: +31 20 4449941 E-mail: essac.amsterdam@falw.vu.nl

With a copy to the national ESSAC delegate (see http://www.geo.vu.nl/~essac/ ESSAC button).

Nominations (with copies of their applications) will be forwarded from that office to the Implementation Organizations (IOs). Eligibility as a ECORD participant is limited to scientists or engineers (professors, research scientists, technologists, graduate students, etc.) at a ECORD member institution (e.g. German academic institutions, government labs, ECORD member-based corporations, etc.). Non-ECORD affiliated personnel from other IODP member countries should apply for IODP participation through their country's national program office. Undergraduate students do not qualify as Shipboard Participants, and should not apply to sail using this form. Undergraduates interested in sailing on a IODP expedition should instead contact ECORD for information about the Undergraduate Student Trainee Program.

#### FIELD OF EXPERTISE

\_\_\_\_ Biologist

- -X Microbiologist
- $\underline{X}$  Inorganic Geochemist
- Organic Geochemist
- Geophysicist
- \_\_\_\_ Hydrologist
- Logging Scientist
- Oceanographer
- Paleomagnetist
- Paleontologist (Diatom)
- Paleontologist (Dinoflagellate)
- Paleontologist (Foraminifer Benthic)
- Paleontologist (Foraminifer Planktonic)
- Paleontologist (Megafossil)
- Paleontologist (Nannofossil)
- Paleontologist (Phytoplankton)
- Paleontologist (Radiolaria)
- Paleontologist (Silicoflagellate)
- Palynologist
- Petroleum Geologist
- Petrologist
- \_\_\_\_ Igneous Petrologist
- Metamorphic Petrologist
- Physical Properties Specialist
- <u>Sedimentologist</u>
- \_\_\_\_ Seismologist
- <u>Stratigrapic Correlator</u>
- \_\_\_\_ Structural Geologist
- \_\_\_\_ Downhole Measurements



Eidgenössische Technische Hochschule Zürich Swiss Federal Institute of Technology Zurich

#### Geologisches Institut Departement Erdwissenschaften

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Crisogono Vasconcelos

Senior Research Scientist Tel. +41-1-632 36 73 Fax +41-1-632 10 30 cris.vasconcelos@erdw.ethz.ch http://www.geology.ethz.ch

ESSAC Science Coordinator Faculty of Earth & Life Sciences Vrije Universiteit De Boelelaan 1085 1081 HV Amsterdam The Netherlands

Dear ESSAC Science Coordinator,

With this application I am applying to sail as a platform-based geomicrobiologist on the MSP Tahiti Expedition in 2005. I am proposing to study the micriboial diagenesis in the reef structure that will be drilled on this Expedition. It is essential that I be involved in the core-taking operations because I will need to handle the samples as sooon as they are recovered. The required samples for my study need to be taken immediately in the field under the most sterile conditions possible. I also would propose that contamination studies should be undertaken during the drilling operation. In particular, fluorescent microspheres could be introduced in the drill hole during drilling to identify whether the samples have been contaminated by the drilling fluids. Also, in order to order to subsequently conduct microbial abundance and diversity experiments in my laboratory, I will need to fix the samples in the field with glycoaldehydes to preserve structure and freeze them for subsequent transport to my laboratory. It will be especially important to look for the presence of biofilms in reef cavities in the field using (1) a bionocular microscope and (2) a fluorescence microscope. In addition, I would propose to inoculate appropriate media with core samples in the field to begin culture experiments. All of these experiments require the presence of a person trained in geomicrobiological techniques.

Please find enclosed my completed application form as well as my c.v. I will look forward to learning of your evaluation of my application.

Sincerely yours,

Crisogono Vasconcelos

## CURRICULUM VITAE

### **Crisogono Vasconcelos**

ADDRESS	Geological Institute ETH-Zentrum 8092 Zurich Switzerland Tel: + 41-1-632 3673; Fax:: + 41-1-632 1030 E-mail: cris.vasconcelos@erdw.ethz.ch http://www.erdw.ethz.ch			
DATE OF BIRTH	June 26, 1954			
CITIZENSHIP	Brazilian			
CIVIL STATUS	Married, one child (June 16, 1991)			
EDUCATION	<b>Ph.D.</b> - Natural Sciences, Geological Institute, Swiss Federal Institute of Technology, ETH Zurich, Switzerland, June 1994. Thesis: Modern Dolomite Precipitation and Diagenesis in a Coastal Mixed Water System, (Lagoa Vermelha, Brazil): A Microbial Model for Dolomite Formation under Anoxic Conditions. Supervisor: Prof. Judith. A. McKenzie			
	<ul> <li>M.Sc Geochemistry, Universidade Federal Fluminense RJ, Brazil, 1987</li> <li>Thesis: Sedimentologia da Lagoa Vermelha – Um Exeplo de Formação e Diagenese de Carbonatos.</li> <li>Supervisor: Prof. Angela Rebello Wagner</li> <li>Special studies in Chemical Oceanography 1983/1984 – Universidade Federal Fluminense, Brazil</li> </ul>			
	B.S. – Geology, Universidade Rural do Rio de Janeiro, Brazil 1981.			
<b>RESEARCH INTERESTS</b> Geomicrobiology, biogeochemistry of sediments, biomineralization, formation of modern and ancient stromatolites and reefs, and Precambrian carbonates.				
RESEARCH EXPERIE	ENCE			
November 1997 - present	Geological Institute, Swiss Federal Institute of Technology, ETH-Zurich Senior Research Scientist, Head of the Geomicrobiology Laboratory, Earth System Science Group: Prof. J. A. McKenzie. Established Geomicrobiology Laboratory, Geological Institute, ETH			
June 15 - July 30 1997	Advanced Study Course – Microbial Diversity. Marine Biological Laboratory Woods Hole. Training in isolation and culturing for aerobes, facultative and strict anaerobes, PCR and DNA sequence.			
August 1997	Studies of Precambrian Biomineralized Fossil. Scanning Electronic Microscopy (SEM) studies of Archean dolomite. PIB/NASA. Supervisor: Dr. Holger Jannasch			
March 1996 – November 1997	LAGEMAR – Universidade Federal Fluminense Research Associate – Geochemistry			
March 1995 – February 1996	Geological Institute, Swiss Federal Institute of Technology, ETH. Post-Doctoral Position, European Community and Bundesamt für Bildung und Wissenschaft Project PALICLAS.			
August – September 1995	Field Assistant – Drilling on the Great Barrier Reef: A record of environmental change from a transect of bore holes in the Northern Great Barrier Reef			
June 1989 - July 1994	Geological Institute, Swiss Federal Institute of Technology, ETH-Zurich. Graduate Research and Teaching Assistant			

#### PUBLICATIONS

#### Peer-Reviewed:

- Vasconcelos, C., McKenzie, J.A., Bernasconi, S., Grujic, D., and Tien, A.J., 1995, Microbial mediation as a possible mechanism for natural dolomite formation at low temperatures, Nature, v. 377, p. 220-222.
- Vasconcelos, C and McKenzie, J., Ariztegui, D, Farrimond, P & Martinez Ruiz, F., 1996, Organic Molecular Marker Evidence of Bacterial Dolmite Precipitation. Memorial of 5th Latin American Congress on Organic Geochemistry. Mexico, Cancun, 348-350.
- Vasconcelos, C., and McKenzie, J.A., 1997, Microbial mediation of modern dolomite precipitation and diagenesis under anoxic conditions (Lagoa Vermelha, Rio de Janeiro, Brazil), Journal of Sedimentary Research, v. 67, p. 378-390.
- McKenzie, J.A., Andres, M.S., and Vasconcelos, C., 1997, Wie Bakterien Steine bauen. Vierteljahrsschrift der Naturforschenden Gesellschaft in Zürich, v. 142/3, p. 97-104.
- van Lith, Y., **Vasconcelos, C.**, McKenzie, J. A., Farrimond, P. & Ariztegui, D., 1998, New geochemical evidence for the bacterial origin of crystal-bound organic matter in recent dolomite from Lagoa Vermelha, Brasil. Congress on Organic Geochemistry (ALAGO), Margarita Island, Venezuela, CD-ROM.
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#### Submitted:

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#### ARTICLES

- McKenzie, J.A., Andres, M.S., and Vasconcelos, C., 1997, Wie Bakterien Steine bauen. Vierteljahrsschrift der Naturforschenden Gesellschaft in Zürich, v. 142/3, p. 97-104.
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# ECORD Application form for membership in IODP expedition scientific parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following information)
Name (first, middle, last):Daniel Stefan VERES
Institution: Stockholm University
Department of Physical geography and Quaternary geology
Institution
Address: Svante Arrhenius väg 8C, 106 91 Stockholm, SWEDEN
Telephone (Work): <u>+46 (0)8 674 7899</u> (Home:) - (Fax): +46 (0)8 16 48 18
Email Address: daniel.veres@natgeo.su.se
Present Title: Mr Country of Citizenship: Romania, (and temporary resident of Sweden)
Place of Birth Mociu (Romania) Date of Birth /Gender 05 September 1977 / Male
Passport No. <u>0699150</u> Place Issued: Cluj Napoca, Date Issued: <u>10 Jan 0</u> 3, Exp. Date: <u>10 Jan 0</u> 8,
Education (Highest degree - PhD., M.S., or B.S.) M.S. Date: Febr. 2002
Are you currently a student?PhD student (If yes, see note below)
II. EXPEDITION INFORMATION
Expeditions of Interest (please limit selection to no more than three):
Expedition Number: 519 Title: Tahiti Sea Level Expedition
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased* - (any of them)
Expedition Number: Title
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*
Expedition Number: Title:
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*
(* provide detail of proposed participation in an accompanying letter)
Reason(s) for Interest (if necessary, expand in letter) Please see "Rationale for participanting
in the IODP Tahiti Sea Level Expedition"
Personal and/or scientific references (name and address): Barbara WOHLFARTH, Dept. of Physical Geo-
graphy and Quaternary geology, Stockholm University, 10691-Stockholm, barbara@geo.su.se
Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased
participant, etc.) none

#### **III. ATTACHMENTS**

1. Attach curriculum vitae which includes a publication history

2. Please fill out the attached "Field of Expertise" form

Note: Applications from graduate students should include a letter from their primary advisor, documenting the student's scientific experience and detailing how participation on the cruise would fit into their graduate degree program.

Staffing decisions are made in consultation with co-chief scientists and take into account nominations from partner countries; final responsibility for ECORD staffing rests with ESSAC. Please submit all application materials both in **digital format** (preferable PDF format) and **paper copy** to (please contact the ESSAC Office when having problems providing us with the above asked materials in both formats): ESSAC Science Coordinator Faculty of Earth & Life Sciences - Vrije Universiteit De Boelelaan1085 1081 HV Amsterdam - The Netherlands Phone: +31 20 4447272 Fax: +31 20 4449941 E-mail: essac.amsterdam@falw.vu.nl

With a copy to the national ESSAC delegate (see http://www.geo.vu.nl/~essac/ ESSAC button).

Nominations (with copies of their applications) will be forwarded from that office to the Implementation Organizations (IOs). Eligibility as a ECORD participant is limited to scientists or engineers (professors, research scientists, technologists, graduate students, etc.) at a ECORD member institution (e.g. German academic institutions, government labs, ECORD member-based corporations, etc.). Non-ECORD affiliated personnel from other IODP member countries should apply for IODP participation through their country's national program office. Undergraduate students do not qualify as Shipboard Participants, and should not apply to sail using this form. Undergraduates interested in sailing on a IODP expedition should instead contact ECORD for information about the Undergraduate Student Trainee Program.

#### FIELD OF EXPERTISE

- \_\_\_\_ Biologist
- \_\_\_\_ Microbiologist
- \_4\_ Inorganic Geochemist
- \_3\_ Organic Geochemist
- \_\_\_\_ Geophysicist
- \_\_\_\_ Hydrologist
- \_6\_ Logging Scientist
- Oceanographer
- \_2\_ Paleomagnetist
- \_\_\_\_ Paleontologist (Diatom)
- \_\_\_\_ Paleontologist (Dinoflagellate)
- \_\_\_\_ Paleontologist (Foraminifer Benthic)
- \_\_\_\_ Paleontologist (Foraminifer Planktonic)
- \_\_\_\_ Paleontologist (Megafossil)
- \_\_\_\_ Paleontologist (Nannofossil)
- Paleontologist (Phytoplankton)
- \_\_\_\_ Paleontologist (Radiolaria)
- \_\_\_\_ Paleontologist (Silicoflagellate)
- \_\_\_\_ Palynologist
- \_\_\_\_ Petroleum Geologist
- \_\_\_\_ Petrologist
- \_\_\_\_ Igneous Petrologist
- \_\_\_\_ Metamorphic Petrologist
- \_\_\_\_ Physical Properties Specialist
- \_1\_ Sedimentologist
- \_\_\_\_ Seismologist
- \_5\_ Stratigrapic Correlator
- \_\_\_\_ Structural Geologist
- \_\_\_\_ Downhole Measurements

Please consider: I have numbered the appropriate expertise fields from 1 to 6, according to my capabilities and scientific knowledge (Daniel VERES, Stockholm University).



STOCKHOLM UNIVERSITY

#### **ESSAC Science Coordinator**

Faculty of Earth & Life Sciences Vrije Universiteit, The Netherlands

Stockholm, 2004-10-29

Dear Sirs,

As a PhD student in Quaternary Geology at the Department of Physical Geography and Quaternary Geology, Stockholm University, Sweden, I am hereby applying for full participation in the IODP 519-Tahiti Sea Level Expedition 2005.

My PhD project aims at deciphering, analyzing and interpreting the nature and magnitude of shortterm climatic changes (D/O cycles and Heinrich events) during OIS 3 and 2 based on a lacustrine sequence from Western Europe. The study involves multi-proxy and high-resolution sedimentological, geochemical and chronological approach, and aims at a direct correlation of terrestrial data with ice cores and marine records from the North Atlantic region.

Reading the IODP Proposal: "The last deglacial sea-level rise in the south Pacific: offshore drilling in Tahiti (French Polynesia) and on the Australian Great Barrier Reef", Camoin et al.,) has aroused my deep interest and enthusiasm. In my view, a significant part of the candidate requirements align perfectly well with my educational profile, past and current professional experiences as well as future research interests. In fact, from sedimentological and geochemical points of view, the advertised positions involve many of the tasks I am currently performing within my PhD research. I am therefore convinced that this, together with the solid background I have acquired in geological sciences and my strong motivation, can be turned to good account and make it worth considering this application.

More details concerning my main research interests, analytical experience and motivations for applying for this membership are provided in the Rationale for participating in the IODP Tahiti Sea Level expedition. In addition, I enclose a detailed Curriculum Vitae that I believe emphasizes my strengths and competence which I would definitely greatly appreciate to put at the profit of such a promising and challenging experience.

I look forward to hearing from you. Should you have any question, please contact me at your convenience.

Yours sincerely,

Enclosures:

- a. Completed application form
- b. Rationale for participating
- c. Curriculum Vitae d. Reference letter

Postal adress: Stockholm University Department of Physical Geography and Quaternary Geology 106 91 Stockholm, Sweden

Street adress: Geovetenskapens hus Svante Arrhenius väg 8 C www.geo.su.se http://130.237.175.32/index.php?group\_ID=951 Daniel S. VERES Signature

Phone: +46 (0)8 674 7899 **Fax:** +46 (0)8 16 48 18

E-mail: daniel.veres@natgeo.su.se

# Rationale for participating in the IODP Tahiti Sea Level expedition

#### Introduction

I am currently in the second year of my PhD research at the Department of Physical Geography and Quaternary Geology, University of Stockholm. I am supervised by Prof. Barbara WOHLFARTH (Stockholm University, SU), Prof. Svante BJÖRCK (Lund University) and Prof. Arjen STROEVEN (SU). The project is called "Terrestrial response to Dansgaard-Oeschger cycles and Heinrich events during OIS 3 and 2" and is funded by Stockholm University.

#### PhD research

The overall goal of the project is to employ a wide range of analytical methods to focus on the geochemical composition of new sediment cores available from Les Echets mire, France. The site is one of the few sedimentary records in Europe spanning the last glacial cycle. It lies at a low altitude and medium latitude in Europe and at a short distance from the Atlantic Ocean, making it suitable for recording climatic variations (e.g. D/O cycles and Heinrich events) driven by changes in the North Atlantic region. In addition, a very high sedimentation rate (~40m in ~50kyr; preliminary results) combined with a multi-proxy analytical approach may provide the basis for a very detailed high-resolution study over this time period, on of the few of this magnitude on land in Western Europe.

The project will provide information on: *i*) how this terrestrial ecosystem reacted to the intense environmental stresses produced by high-frequency centennial to millennial climate oscillations (D/O cycles, Heinrich events) that characterized OIS 3 and 2; *ii*) whether there is a synchronous or non-synchronous response to climate fluctuations already observed in the North Atlantic marine and ice-cores; *iii*) whether there is a different response in the inorganic versus organic data in terms of inferred environmental conditions and quantified climatic parameters giving the sharp onset and variable duration of D/O cycles during OIS 3 and 2; *iiii*) possibilities to check the causal mechanisms and the consistency of different model reconstructions of D/O stadial-interstadial changes using a coupled ocean-atmosphere-terrestrial modeling approach.

The research is concentrated at analyzing three main sediment parameters: lithostratigraphy, inorganic geochemistry and organic geochemistry (see Analytical Experience). The chronology will be achieved through AMS <sup>14</sup>C measurements, OSL dating and <sup>40</sup>Ar/<sup>39</sup>Ar dating of tephra layers. Supplementary age control will be based on wiggle-matching of absolute <sup>14</sup>C and OSL dates from Les Echets to standard calibration curves. Various core logs (magnetic susceptibility, gamma-ray density) will provide correlative tools to other terrestrial sites (e.g.: Bouchet, France; Monticchio, Italy). Fix points for comparing the different age models existing between terrestrial, marine and ice-cores will be obtained by calculating the paleomagnetic intensity changes. For example, the prominent geomagnetic excursions of Mono Lake (~34 kyr BP) and Laschamps (~40-42 kyr BP) are directly related to positive fluctuations in cosmogenic-nuclide records from marine and ice-cores.

#### Analytical experience (PhD level)

I have laboratory experience in most of the sedimentological and geochemical analytical methods that have applicability in paleoclimate research at present. As my project is directed towards a multi-proxy approach, a number of complementary methods (and subsequently derived parameters) are/will be employed. All the methods (or parameters) presented in the following lines are outlined in my PhD study plan and most analyses have already been completed.

*Lithostratigraphic parameters:* sediment stratigraphy and textural analysis (performed at SU), loss-on-ignition (SU) and thermogravimetric parameters (Free University), granulometry (Free University), dry density and gamma-ray density (SU), geomagnetism (magnetic susceptibility, remanent magnetizations, magnetic mineralogy and paleointensity variations, at CEREGE, Aix en Provence and Lund University).

*Inorganic geochemistry:* stable isotopes, bulk mineralogy (SU), clay mineral assemblages (SU and Babes-Bolyai University), and major, minor and trace elements (ICP-AMS analysis, at University of Orleans),

Organic geochemistry: organic matter stable isotopes (SU), hydrogen and oxygen indexes, organic petrography (University of Orleans).

#### Analytical experience (others)

Besides my recent PhD education in Quaternary Geology, I have acquired a solid background in petrology, mineralogy and tectonics during four years of undergraduate studies. This was followed by one and a half year of master courses at Babes-Bolyai University in Sequential Stratigraphy and Sedimentology of both clastic and carbonate systems. Geo-statistic models were used to simulate sedimentation and erosion dynamics, to classify different lithofacies according to their depositional environment and establish stratigraphic frames for reservoir heterogeneities. Sequence stratigraphic principles were also applied in interpreting beds and bedsets, recognizing parasequences, stacking patterns and parasequence sets, and for establishing the biostratigraphy of clastic deposits and carbonate platforms of different geological units.

Before moving to the Department of Physical Geography and Quaternary Geology (SU) I also had a position as well-logging geologist at Dafora SA Medias (Romania). Well logs and seismic data were used to build sequence stratigraphic models and interpret the depositional environment of gas-bearing geological units in the Transylvanian Basin. In parallel I have also worked with karst geomorphology, cave deposits and cave paleoclimatology.

#### Participating in the IODP cruise

I am enthusiastic about participating in the Tahiti Sea level expedition as this will be an extraordinary opportunity for me to practice my acquired expertise and to further my knowledge into the ocean science by taking part in such high-quality scientific investigation. The way my expertise can be helpful for the Tahiti Sea level science team is outlined by my broad analytical experience. Shortly, I would like to a use sedimentological, paleomagnetic and stable isotopes methods to reconstruct the regional paleooceanographic history, providing this way the basis for correlating the Tahiti sequence to other marine and terrestrial paleoclimatic sequences. If my application will be successful, a detailed study plan will be outlined.

Personally, immediate benefits from attending the Tahiti Sea Level Expedition will be to get a more understanding of the complex sequences of events that occurred during the last deglaciation that involved drastic sea-level changes. Those events, such as GS-1, GI 1a-e and GS-2 provoked marked fluctuations of the ice-cover on land and strong environmental stresses for the terrestrial ecosystems. Those climatic changes, well expressed in the northern hemisphere records as millennial to centennial scale climate variations were probably driven by either high-latitudinal and/or near-equatorial sea-surface perturbations.

Finding more about how those expressed in the equatorial areas far away from glaciated terrains and getting "in touch" with a new kind of proxies, such as coral reefs and other marine deposits will bring many benefits for my future research. Further, the inclusion in my curricula of participating in such a science team will definitely enlarge the perspectives of continuing my career within the field of quaternary geology and oceanography, shaping the way for a post-doctoral collaboration.



BARBARA WOHLFARTH PROFESSOR Department of Physical Geography and Quaternary Geology

> ESSAC Science Coordinator Faculty of Earth & Life Sciences Vrije Universiteit De Boelelaan 1085 1081 HV Amsterdam The Netherlands

> > Stockholm, 2004-11-03

### Daniel Veres' application to the Tahiti Sea Level Expedition

Daniel Veres is enrolled as PhD student in Quaternary Geology at the Department of Physical Geography and Quaternary Geology, Stockholm University. A Swedish PhD education extends over four years and includes one full year of courses. Daniel has completed almost half of his studies and will present his licentiate thesis in spring next year. The PhD defence is planned for April 2007.

Daniel's scientific experience, which stems from his undergraduate studies in geology in Romania, an ERASMUS exchange visit to Lund University (Quaternary Geology), his interest in caves and karstology, work experience and from the analytical work so far performed for his PhD studies, is in detail outlined in his CV.

Daniel has so far mainly worked with terrestrial records, but if he could participate in the planned cruise, the new experience of working onboard of a drilling ship, with a group of experienced scientists and possibly with different types of marine deposits would add a most valuable dimension to his education and scientific knowledge. Most important, he will be able to expand his theoretical knowledge on coral reefs and sea-level variations by hands-on experience. In the near future and for his postdoctoral studies such an experience could be of great importance.

The time spent onboard will be fully credited in his PhD education.

I very much hope that Daniel, who is a hard working and ambitious student, will have the possibility to join the cruise and I fully support his application.

Yours sincerely

Barbara Wohlfarth

Professor and Chair in Quaternary Geology

Visiting Address: Geovetenskapens hus Svante Arrhenius väg 8C www.geo.su.se Telephone: +46 (0) 8 - 16 48 83 Fax: +46 (0) 8 - 16 48 18 E-mail: Barbara.Wohlfarth@geo.su.se

#### CURRICULUM VITAE

Name: Daniel Stefan VERES

Date and Place of Birth: 05 September 1977, Mociu, Romania.

Citizenship: Romanian and temporary resident of Sweden (2001, 2003-2007)

#### **Certificates and Diplomas**

2002: Master of Science Degree in Geology, Babes-Bolyai University, Romania
2001: Master of Science Degree in Quaternary geology, Lund University, Sweden
2000: Certificate for Teacher's Training, Babes-Bolyai University, Romania
2000: B.Sc Degree in Geology-Geography from Babes-Bolyai University, Romania
1995: Baccalaureate Degree in Electrotechnics, Industrial High School, Dej, Romania

Expected: Licentiate Degree (by March 2005) and PhD degree by March 2007 from the Department of Physical Geography and Quaternary Geology, Stockholm University, Sweden.

#### Post High School Education in Geology/Geography

2000-2002: Master of Science courses and project in Geology at Babes-Bolyai University, Romania (total 150 university points).

**2001:** Master of Science courses and project in Quaternary geology at Lund University, Sweden (45 university points).

**1996-2000:** Undergraduate studies and project in geology and geography at Babes-Bolyai University, Romania (300 university points).

1996-2000: Teaching methods and practical teaching courses in geology and geography, Babes-Bolyai University, Romania.

#### PhD courses

2004: Scandinavian Quaternary Geology (SU); <> II Field course on the geomorphology and quaternary geology of Tierra del Fuego, Argentina; <> Organic matter geochemistry (SU); <> Reviewing and presenting scientific data (SU); <> GIS/Remote sensing course (SU)

2003: Pedagogy for PhD students: inquiry based learning techniques and science communication (Stockholm University, SU) <> AG-301 Arctic Terrestrial and Marine Quaternary Stratigraphy Excursion, UNIS, Svalbard, Norway; <> PhD excursion to Jämtland, mid-central Sweden (SU); <> Introduction to Chironomid paleoecology (SU)

#### Post High School Education, others

2004-present: Swedish language (Svenska för invandrare, SFI).
2003-2004: Swedish at Stockholm University (3 university points).
2003: University pedagogy at SU (5 university points, =1/4 semester).

#### Employments

2003-present: PhD student at the Department of Physical Geography and Quaternary geology, Stockholm University, Sweden.

2002-present (leave on absentia): Assistant researcher at "Emil Racovita" Institute of Speleology, Cluj, Romania.

2002: Geologist at Dafora SA Medias (Borehole drilling company), Romania 1997-2002: Part time industrial climber at 3UP SRL, Cluj, Romania.

#### Scholarships and Grants

2004: SSAG for performing analytical work; <> De Geer Scholarship for performing analytical work

2003: De Geer Scholarship (SU) for performing analytical work; <> NorFa Mobility Scholarship for attending a course; <> Wahlenberg Stipendium (SU) for attending a course; <> Mannerfelts Scholarship (SU) for attending a course; <> Ahlmanns Scholarship for performing analytical work

2002: Participant in CNCSIS grant no 1696, (Babes-Bolyai University, Romania); <> Erasmus-Socrates Scholarship at Eötvös Lorand University, Budapest, Hungary.

2001: Erasmus-Socrates Scholarship at Lund University, Sweden.

1996-2002: Study and excellence scholarships from Babes-Bolyai University, Romania.

#### **Publications**

#### Papers:

Veres, D.S., et al., Decadal to millennial-scale periodicities in Western Europe climate during the last 60 kyr BP: a new sedimentary record from Les Echets, France, (in prep.).

- **Veres, D.S.,** et al. *Mineral magnetic and geochemical records of OIS 3 and 2 climatic changes from two new long cores from Les Echets mire, France* (in prep.).
- Onac, B.P. and Veres, D. S., 2003. Deposition of secondary phosphates in a karst environment: evidence from Magurici Cave (Romania). European Journal of Mineralogy, Vol 15 (4), 741-745.
- Onac, B.P., Veres, D.S., Kearns, J., Chirienco, M., Minuţ, A. and Breban, R., 2003. Secondary sulfates found in an old adit from Roșia Montană, Romania. Studia Universitatis Babes-Bolyai, Geologia XLVIII (1), 29-44.
- Veres, D. S., 2002. A comparative study between loss on ignition and total carbon analyses on minerogenic sediments. Studia Universitatis Babes-Bolyai, Geologia, XLVII (2), 171-182.

#### Abstracts:

- Rabassa, J., Franzén, L., Carrera Gómez, P., Coronato, A., Acevedo, D., Veres, D.S., de Angelis, H., Valcárcel Díaz, M. and Pérez Alberti, A., 2004. Subglacially precipitated carbonate deposits at Alvear Este and Martial Glaciers, Andes of Tierra del Fuego, Argentina. Acta de Resumenes, X Reunion Argentina de Sedimentologia, 143-145.
- Onac, B.P. and Veres, D.S., 2003. Depositional environment of secondary phosphate minerals in Magurici Cave (Romania). Acta Mineralogica-Petrographica, Abstract Series 1, Szeged, Hungary, p. 80.
- Onac, B.P., Veres, D.S., Kearns, J., Chirienco, M., Minut, A., Breban, R., 2003. Secondary minerals found in old mine galleries from Rosia Montana, Romania. Acta Mineralogica-Petrographica, Abstract Series 1, Szeged, Hungary, p. 81.

#### Theses:

- Veres, D.S., 2001. A comparative study between loss on ignition and total carbon analysis on Late Glacial sediments from Atteköps mosse, southwestern Sweden and their tentative correlation with the GRIP event stratigraphy. MSc Project in Geology, Lund University, Quaternary Geology No 145, 28 p.
- Veres, D.S., 2000. The geomorphological and hydrological influences in the evolution of Rastoci-Mesteacan-Boiu Mare karst area. B.Sc in Geology, Babes-Bolyai University, Romania, 72 p.

#### Talks

#### Conferences:

2004: Centenary of *Typhlocirolana moraguesi* finding by Emile Racovitza in Coves del Drac, University of the Balearic Islands, Spain; <> 2003: The 2<sup>nd</sup> "Mineral Sciences in the Carpathians", University of Miskolc, Hungary: *Sequence of secondary phosphates in a karst environment* <> The 4<sup>th</sup> European Mineralogical Union School and Socrates/Erasmus Intensive Programme in "Energy modelling in Minerals", Eötvös Loránd University, Budapest, Hungary <> The XVIII<sup>th</sup> International Symposium on Theoretical and Applied Karstology, Baile Herculane, Romania: *The mineralogy of guano deposits from Rastoci Cave* <> 2001: The "National Karst Conference" hosted by "Emil Racovita" Institute of Speleology, Bucharest, Romania: *The influence of geology and hydrology in the evolution of Rastoci-Boiu Mare karst area* <> 2000: The IGCP-448 and Theoretical and Applied Karstology International Conference, Cluj Napoca, Romania.

<u>Departmental talks</u>: Babes-Bolyai University (Romania), Universities of Miskolc and Eötvös Lorand (Hungary), UNIS (Svalbard), CEREGE, Aix-en-Provence (France), Stockholm University (Sweden), Lund University (Sweden), Simon Fraser University (Canada), Vrije University (The Netherlands).

#### Scientific referees

Prof. Barbara WOHLFARTH, Department of Physical Geography and Quaternary Geology, Stockholm University, 106 91 Stockholm, Sweden, barbara@geo.su.se

Prof. Svante BJÖRCK, GeoBiosphere Science Centre, Quaternary Sciences, Lund University, Sweden, Svante.Bjorck@geol.lu.se

Prof. Arjen STROEVEN, Department of Physical Geography and Quaternary Geology, Stockholm University, 106 91 Stockholm, Sweden, Arjen.Stroeven@geo.su.se

#### Additional competences

Languages (along with Romanian): English (advanced-Alpha English Certificate from Faculty of Letters, Babes-Bolyai University and Toefl Certificate of Proficiency in English), French (good), Spanish (good), Swedish (average), Italian (average).

Computing: good working knowledge of MS Office, Matlab, Microsoft Excel, Golden Software Grapher etc.

#### **Correspondence address**

#### **Daniel VERES**

Department of Physical geography and Quaternary geology, Stockholm University Svante Arrhenius väg 8C, 106 91 Stockholm, Sweden Phone: +46 (0)8 674 7899 Fax: +46 (0)8 16 48 18 E-mail: <u>daniel.veres@natgeo.su.se</u> Web page: http://130.237.175.32/index.php?group\_ID=951

# ECORD Application form for membership in IODP expedition scientific parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following information)
Name (first, middle, last) Verwer, Klaas
Institution_Vrije Universiteit
Department Faculty of Earth- and Life Sciences
Institution Sedimentology and Marine Geology
Address De Boelelaan 1085, 1081 HV Amsterdam
Telephone (Work) <u>+31204447352</u> (Home) <u>+31625385697</u> (Fax) <u>+31204449941</u>
Email Address klaas.verwer@falw.vu.nl
Present Title M.Sc / Drs. Country of Citizenship The Netherlands
Place of Birth Alkmaar Date of Birth Gender 30/03/1980 - Male
Passport No. M02762796 Place Issued Alkmaar Date Issued 21/04/00 Exp. Date 21/04/05
Education (Highest degree - PhD., M.S., or B.S.) M.Sc Date: 04/05/03
Are you currently a student? No (If yes, see note below)
II. EXPEDITION INFORMATION
Expeditions of Interest (please limit selection to no more than three):
Expedition Number: # 519 Title The last deglacial sea-level rise in the south Pacific
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*
Expedition Number: Title
Expedition Number: Title:
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*
(* provide detail of proposed participation in an accompanying letter)
Reason(s) for Interest (if necessary, expand in letter) See cover letter
Personal and/or scientific references (name and address) Dr. Jeroen Kenter, Vrije Universiteit
Fac. Earth and Life Science, De Boelelaan 1085, 1081HV, Amsterdam, The Netherlands, jeroen.kenter@falw.vu.nl

Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased participant, etc.) Not relevant

#### **FIELD OF EXPERTISE**

- \_\_\_\_ Biologist
- \_\_\_\_ Microbiologist
- \_\_\_\_ Inorganic Geochemist
- \_\_\_\_ Organic Geochemist
- \_\_\_\_ Geophysicist
- \_\_\_\_ Hydrologist
- Logging Scientist
- \_\_\_\_ Oceanographer
- \_\_\_\_ Paleomagnetist
- \_\_\_\_ Paleontologist (Diatom)
- \_\_\_\_ Paleontologist (Dinoflagellate)
- \_\_\_\_ Paleontologist (Foraminifer Benthic)
- \_\_\_\_ Paleontologist (Foraminifer Planktonic)
- \_\_\_\_ Paleontologist (Megafossil)
- \_\_\_\_ Paleontologist (Nannofossil)
- \_\_\_\_ Paleontologist (Phytoplankton)
- \_\_\_\_ Paleontologist (Radiolaria)
- \_\_\_\_ Paleontologist (Silicoflagellate)
- Palynologist
- \_\_\_\_ Petroleum Geologist
- \_\_\_\_ Petrologist
- \_\_\_\_ Igneous Petrologist
- \_\_\_\_ Metamorphic Petrologist
- X Physical Properties Specialist
- \_\_\_\_ Sedimentologist
- \_\_\_\_ Seismologist
- \_\_\_\_ Stratigrapic Correlator
- \_\_\_\_ Structural Geologist
- \_\_\_\_ Downhole Measurements

Drs. Klaas Verwer Faculty of Earthand Life Sciences Vrije Universiteit De Boelelaan 1085/ E260 1081 HV Amsterdam Netherlands phone # fax # e-mail URL: +3120 4447352 (office) +316 25385697 (mobile) +3120 4449941 (office) klaas.verwer@falw.vu.nl http://www.geo.vu.nl/~vers



To: Drs. Valentina Zampetti ESSAC Science Coordinator Faculty of Earth- and Life Sciences Vrije Universiteit De Boelelaan 1085 1081 HV Amsterdam The Netherlands Dr. Jeroen Kenter ECORD Delegate The Netherlands Faculty of Earth- and Life Sciences Vrije Universiteit De Boelelaan 1085 1081 HV Amsterdam The Netherlands

Amsterdam, 14 September 2004

Dear Miss Zampetti and Dr Kenter,

With this letter I would like to confirm my strong interest in participating in the MSP project # 519 entitled "The last deglacial sea-level rise in the South Pacific: offshore drilling in Tahiti (French Polynesia) and on the Australian Great Barrier Reef" by G.F. Camoin, E. Bard, B. Hamelin, P. Pezard, P.J. Davies and W.C. Dullo.

From 1998-2003 I have followed an education at the Vrije Universiteit (Amsterdam), from which I received a masters degree in Sedimentary Geology and Marine Geology. During my MSc my research focused around several themes. It included sedimentological – geochemical work on Upper Cretaceous carbonates in Oman, petrophysical analysis of Upper Cretaceous lime-mudstones from Spain, fracture analysis in the Cretaceous of Croatia, DGPS-GIS analysis of Upper Carboniferous carbonates in Spain, and a literature study of styles of carbonate platforms in the Upper Devonian and Carboniferous. During these years, I have developed expertise in the sedimentology, geochemistry, anatomy and petrophysics of carbonate deposits in a variety of time spans and specific settings

Since May 2003, I have a Junior Researcher position at the Vrije Universiteit in the Sedimentology and Marine Geology group formerly headed by Prof. Dr. Wolgang Schlager. I am currently working on a mixed science foundation – industry funded project where we study a Miocene carbonate prograding reef system, which serves a natural observatory for the geophysical imaging of lateral facies changes. Terrestrial high-resolution 2D and 3D S-wave seismic data combined with fully cored and logged boreholes provide a link of geology through petrophysics to geophysics. To capture spatial information on the anatomy of bedding planes, DGPS outcrop survey of the cliff face along with measured geological sections, mini-cores drilled for petrophysical measurements, and measurements of spectral gamma ray confine the geological model of the observatory. Acoustic properties and porosity were measured in the boreholes using advanced monopole-dipole sonic probes and imaging logging tools and calibrated with the outcrop observations. Laboratory measurements provide physical groundthruth for this field dataset. The research is ongoing but provides a first model of the 3D spatial distribution of physical and geological properties and tests the link with the high-resolution seismic reflection data. The integration of geologic and geophysical information will generate a first hand understanding of the processes generating acoustic images as well as the limits of extracting geological information from reefal deposits.

Ancillary Program Letter (APL) # 650 entitled "3D High Resolution Seismic Transmission and Reflection Imaging of a Tahiti Pleistocene-Holocene Reef Margin (IODP Proposal 519)" by J. A.M. Kenter, G.G. Drijkoningen, H. Braaksma, K. Verwer, W. Spakman, G. Camoin, P. Pezard, J.P. Henriet, G. Lericolais, was developed to provide fundamental information on the geometric evolution of the reef system and its effect on sea-level reconstruction. Next, to that to advance the understanding the heterogeneity of the pore system and its associated acoustic properties. And finally, the physical interpretation of multi-component transmission and reflection seismic data in a highly porous Pleistocene-Holocene coralgal reef system.

As a co-author of this APL #650, participating in the MSP # 519 would be a unique opportunity to establish a physical and direct link between the two projects and to expand the scientific aims of characterizing and studying the acoustic behavior and heterogeneity of carbonate systems outside the physical area of APL #650 covering the full leg. Especially the role of pore types in carbonates on the physical properties but also the wide variety of scales of porosity in these complex systems is of primary interest to me. Next to that, the evolution of reef systems and their subsequent anatomy is one of my specific important interests. Furthermore, I think my expertise in carbonate sedimentology and petrophysical properties can add an important contribution to the project #519.

I am very interested and highly motivated to participate in the international Integrated Ocean Drilling Program both offshore acquisition as well as onshore interpretation following the expedition. The possibility to work together in an international high skilled IODP team is a second challenge to me. Finally, the Tahiti study does very well fit with the theme of my PhD-thesis and will be a great surcharge to the thesis. I would be most interested in acquisition and interpretation of the physical properties in combination with detailed sedimentology and the logging program of MSP #519 adequately adding up to the aims of APL #650.

I have attached electronic copies of the application form, my curriculum vitae with publication list, and placed paper copies of all these in the mail.

Thanks in advance,

Yours sincerely,

Drs. Klaas Verwer

# CURRICULUM VITAE

# KLAAS VERWER

#### CONTACT INFORMATION

Surname, first name: Verwer, Klaas

Adress: De Boelelaan 1085, 1081 HV, Amsterdam, The Netherlands

Tel. Nr.: +31625385697

E-mail: klaas.verwer@falw.vu.nl

Date of birth: 30 march 1980

Place of birth: Alkmaar

Nationality: Dutch

Sex: Male

#### EDUCATION

1992 - 1998 Secondary education at Murmellius Gymnasium, Alkmaar Degree in:

- Dutch
- English
- Ancient Greek
- Mathematics B
- Chemistry
- Physics
- Geography

1998 - 2003 Earth Science at Free University, Amsterdam Specialization: Sedimentary Geology

#### EXTRACURRICULAR ACTIVITIES

Student member search committee Chair Marine and Sedimentary Geology group, Free University Amsterdam

Vice-president daily board GeoVUsie, student society

Employee at European Geographical Society (EGS) Congress, Nice (Fr.)

#### PROFESSIONAL MEMBERSHIPS

KNGMG, Dutch geological society

IAS, International Association of Sedimentologists

AAPG, American Association of Petroleum Geologists

SEPM, Society for Sedimentary Geology

WORK EXPERIENCE

2000 – 2003 Student Assistant, Vrije Universiteit, Amsterdam, The Netherlands 2003 – Now Junior Researcher, Vrije Universiteit, Amsterdam, The

#### INTERESTS AND ACTIVITIES

Traveling Nature Reading Computers Running Soccer

Netherlands

LANGUAGES

Dutch [[Native]	
English [Fluent]	
German [Good]	
Spanish [Moderate]	
French [Basic]	

#### **RESEARCH INTERESTS**

Carbonate sedimentology

Quantitative sedimentology

Petrophysics

Geochemistry

#### RESEARCH/FIELD EXPERIENCE

1st year Fieldwork - Geologic mapping, Spain (Jumilla)

Bachelor Fieldwork - Geologic mapping, Spain (Sierra de Albarracin)

Masters Fieldwork - Sedimentologic/geochemic fieldwork, Oman

Masters Analysis - Structural analysis, Croatia (Brac)

PAGE 2 OF 3

Masters Analysis - Petrophysical analysis, Spain (Zumaia)

Masters Analysis - GIS analysis, Asturias (Spain)

Masters Analysis - Liturerature study on Devonian and Carboniferous carbonate platform architectures (VU, Amsterdam)

Field-trips - Sedimentology (Boulonnais, Fr.), Structural geology (Moezel, De.), Marine biology (Texel, Nl.), Structural/sedimentological (Alps, Au/It), Structural geology (Scotland).

Junior researcher - Sedimentology and petrophysics of Miocene prograding coralgal reef systems (Mallorca, Sp)

#### COMPUTER SKILLS

Broad knowledge of MS-DOS, MS Windows 98/NT/2000/XP and UNIX Operating systems

Experienced user of Microsoft Word, Excel and Powerpoint, Wordperfect, Kaleidograph, Canvas, Adobe Illustrator and Photoshop, Statistica, Ski Pro (Leica DGPS software), Erdas Imagine 8.5, ArcGIS, SeismicUnix, Kingdom. Moderate user of Matlab

#### REFERENCES

Dr. Jeroen A.M. Kenter (Assitent professor, Sedimentology and Marine Geology Group, Free University, Amsterdam) E-mail: jeroen.kenter@falw.vu.nl

Dr. A. Immenhauser (Assitent professor, Sedimentology and Marine Geology Group, Free University, Amsterdam) E-mail: adrian.immenhauser@falw.vu.nl

De Boelelaan 1085

1081 HV Amsterdam

The Netherlands

#### **PUBLICATIONS:**

#### 2004

Klaas Verwer, Jeroen A.M. Kenter, Ben Maathuis & Giovanna Della Porta - Stratal patterns and lithofacies of an intact seismic-scale Carboniferous carbonate platform (Asturias, NW Spain): A virtual outcrop model - Andre Curtis & Rachel Wood (eds), Geological Prior Information - Special Publication of the Geological Society, London, 2004

Adrian Immenhauser, Heiko Hillgärtner, Ute Sattler, Giovanni Bertotti, Pascal Schoepfer, Peter Homewood, Volker Vahrenkamp, Thomas Steuber, Jean-Pierre Masse, Henk H.J. Droste, José v. Koppen, Bram v/d. Kooij, Elisabeth C. v. Bentum, Klaas Verwer, Eilard Hoogerduijn-Strating, Wim Swinkels, Jeroen Peters, Ina Immenhauser-Potthast and Salim A.J. Al Maskery - Barremian-lower Aptian Qishn Formation, Haushi-Huqf area, Oman: a new outcrop analogue for the Kharaib/Shu'aiba reservoirs - GeoArabia, Vol. 9, No. 2, 2004

#### **ABSTRACTS:**

2004

Klaas Verwer, Jeroen A.M. Kenter, Ben Maathuis & Giovanna Della Porta - Stratal patterns and lithofacies of an intact seismic-scale Carboniferous carbonate platform (Asturias, NW Spain): A virtual outcrop model 32nd International Geological Congress, 20-28 August 2004, Florence.

Klaas Verwer, Jeroen A.M. Kenter, Guy Drijkoningen, Hendrik Braaksma & Aletta Filippidou - SGeology and geophysics: Groundtruthing through natural seismic observatories 32nd International Geological Congress, 20-28 August 2004, Florence.

Klaas Verwer, Jeroen A.M. Kenter, Guy Drijkoningen, Hendrik Braaksma & Aletta Filippidou - Geology and geophysics: Groundtruthing through natural seismic observatories European Geosciences Union, 1st General Assembly, 25-30 April 2004, Nice.

#### 2003

Jeroen A.M. Kenter, Guy G. Drijkoningen, Hendrik Braaksma, Klaas Verwer, N. Filippidou - Geology and Geophysics: Groundtruthing Through Natural Seismic Observatories - American Association of Petroleum Geologists International Conference & Exhibition, 21-24 September 2003, Barcelona.

Adrian Immenhauser & Klaas Verwer - Alternating burial and meteoric climate record of 22-kyr hydrothermal calcite crystals (Jabal Madar, North Oman) - 81 Jahrestagung der Deutschen Mineralogischen Gesellschaft, 22-25 September 2003, Bochum.

Giovanna Della Porta, Jeroen A.M. Kenter, Juan R. Bahamonde, and Klaas Verwer - Depositional Architectures and Lithofacies of a Pennsylvanian High-rising Carbonate Platform (Sierra del Cuera, Cantabrian Mountains, Spain)- American Association of Petroleum Geologists Annual Meeting, 11-14 May 2003, Salt Lake City Date 14 September, 2004 Your letter of Our subject Appendices Application IODP Tahiti cruise Your subject

Phone Fax (3120) 4447360 (+3120) 4449941 Mobile (+316) 20490933 E-mail jeroen.kenter@falw.vu.nl

Postal address: Faculty of Earth Sciences, De Boelelaan 1085, 1081 HV Amsterdam, the Netherlands

To: Drs. Valentina Zampetti ESSAC Science Coordinator Faculty of Earth- and Life Sciences Vrije Universiteit De Boelelaan 1085 1081 HV Amsterdam The Netherlands Dr. Jeroen Kenter ECORD Delegate The Netherlands Faculty of Earth- and Life Sciences Vrije Universiteit De Boelelaan 1085 1081 HV Amsterdam The Netherlands

## vrije Universiteit amsterdam

Dear ESSAC Science Coordinator,

Klaas Verwer is a PhD student at the faculty of Earth and Life Sciences at the Vrije Universiteit in Amsterdam and working under my direct supervision. The key theme of his research, he is now 2 years into his PhD, revolves around the heterogeneity of shallow water carbonate systems and their acoustic behavior. The first case study he undertook concerns a large operation on the island of Mallorca where he acted a the assistant project manager responsible for drilling and coring operations, wire line logging, core processing using a multi-sensor track and geological observation on the cliff. The approach taken is that of a so-called "natural observatory" that integrates geology, petrophysics and geophysics and is partially funded by the energy industry and the Dutch Science Foundation. Klaas worked together with specialists in those areas from the Technical University on Delft, Montpellier, Aix-en-Provence and other places.

It may easily be stated that he has become an expert in carbonate sedimentology and petrophysics and masters the technologies required to collect the various data sets like reflection geophysics, wire line logging, core scanning, etc.

Since the Mallorca project is running to an end early 2005 and Klaas is summarizing the results for publication. As a next step in his research we would like to participate in the Tahiti coring expedition. This cruise offers a set of closely spaced boreholes that will provide a unique acoustic data set that does not have an equivalent. up to date in industry or academia. Participation as a physical properties specialist will provide a sufficiently large data set for him (supported by the petrophysics lab in Amsterdam) to finish his thesis. When the existing APL-650 (approved by SPC), where Klaas is a co-proponent, will be funded by the industry and Science Foundation (the proposal was submitted this week), an even more exiting research opportunity will be created. This would combine non-standard and highly innovative transmission tomography with petrophysical and geological observations from core and borehole and provide new insights in the, problematic but essential, imaging of such shallow water carbonate systems. In addition, it will enforce the reconstruction of the sea level curve.

In conclusion, I warmly support Klaas's his application and consider him a highly qualified and experienced scientist and "technician". The Tahiti cruise science is one of the key themes in our research group and as such we guarantee the timely and professional expedition of cruise data and results. The group has a long standing history in carbonate sedimentology and petrophysics.

Best greetings,

Dr. Jeroen A.M. Kenter Assistant Professor Sedimentology and Petrophysics Present ECORD Science Support and Advisory Committee (ESSAC) Chairman and ECORD member on IODP SPC

# ECORD Application Form for Membership in IODP Expedition Scientific Parties

#### I. CONTACT INFORMATION

(Please keep us informed of any changes in the following information)

Name (first, middle, last):	Hildega	rd Westphal	
Institution:	Universi	tät Erlangen-Nürnberg	
Department:	Institut f	ür Paläontologie	
Institution Address:	Loewen	<u>ichstr. 28, 91054 Erlangen, Gei</u>	rmany
Phone: work: + 49 (0) 9131 / 8522	622	b) home: + 49 (0) 421 / 243645	5
Fax: + 49 (0) 9131 / 8522690		email: westphal@pal.uni-erlang	en.de
Present Title: PD Dr.		Country of Citizenship: Germany	y
Date of Birth: 10.05.1968		Place of Birth: Tübingen	Gender: F
Passport No.: 6986410529		Place Issued: Tübingen	
Date Issued: 07.01.1998		Exp. Date: 06.01.2008	
Education: Habilitation (PhD)		Date: 14.01.2004 (16.12.1997)	
Are you currently a student? No			

#### **II. EXPEDITION INFORMATION**

Expeditions of Interest (please limit selection to no more than three):

1. Expedition Number: 2<sup>nd</sup> MSP Title: Tahiti Sea Level

Platform: MSP Participation: Full Expedition

- 2. Expedition Number: \_\_\_\_\_ Title: \_\_\_\_\_ Platform: Riser / Non-riser / MSP Participation: Full Expedition / Partial\* / Shorebased\*
- 3. Expedition Number:
   Title:

   Platform: Riser / Non-riser / MSP
   Participation: Full Expedition / Partial\* / Shorebased\*

(\* Provide detail of proposed participation in an accompanying letter)

Reason(s) for Interest (if necessary, expand in letter): See attached statement of interest

Personal and/or scientific references (name / address)

- Prof. Dr. Christian Dullo, Leibniz-Institut für Meereswissenschaften IFM-GEOMAR, Wischhofstr 1-3, Geb. 4, 24148 Kiel, Germany, cdullo@ifm-geomar.de
- Prof. Dr. Gerold Wefer, Marum Zentrum für marine Umweltwissenschaften, der Universität Bremen, Klagenfurter Str., 28359 Bremen, Germany, gwefer@marum.de
- Prof. Dr. Jörn Thiede, Alfred-Wegener-Institut, Am Handelshafen 12, 27570 Bremerhaven, Germany, jthiede@awi-bremerhaven.de

Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant,

shorebased participant, etc.): None

#### **III. FIELD OF EXPERTISE**

Please check appropriate field(s):

- \_\_\_ Biologist
- \_\_\_\_ Microbiologist
- \_\_\_\_ Inorganic Geochemist
- \_\_\_\_ Organic Geochemist
- \_\_\_\_ Geophysicist
- \_\_\_\_ Hydrologist
- \_\_\_\_ Logging Scientist
- \_\_\_\_ Oceanographer
- \_\_\_\_ Paleomagnetist
- \_\_\_\_ Paleontologist (Diatom)
- \_\_\_\_ Paleontologist (Dinoflagellate)
- \_\_\_\_ Paleontologist (Foraminifer Benthic)
- \_\_\_\_ Paleontologist (Foraminifer Planktonic)
- \_\_\_\_ Paleontologist (Megafossil)
- \_\_\_\_ Paleontologist (Nannofossil)
- \_\_\_\_ Paleontologist (Phytoplankton)
- \_\_\_\_ Paleontologist (Radiolaria)
- \_\_\_\_ Paleontologist (Silicoflagellate)
- \_\_\_\_ Palynologist
- \_\_\_\_ Petroleum Geologist
- \_\_\_\_ Petrologist
- \_\_\_\_ Igneous Petrologist
- \_\_\_\_ Metamorphic Petrologist
- \_X\_ Physical Properties Specialist
- \_X\_ Sedimentologist
- \_\_\_\_ Seismologist
- \_\_\_\_ Stratigrapic Correlator
- \_\_\_\_ Structural Geologist
- \_\_\_\_ Downhole Measurements

#### **IV. ATTACHMENTS**

#### In English!

- 1. Curriculum Vitae
- 2. Publication History

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#### V. Note for Students

Applications from **graduate students** should include a letter from their primary advisor, documenting the student's scientific experience and detailing how participation on the cruise would fit into their graduate degree program.

**Undergraduate students** do not qualify as Shipboard Participants, and should not apply to sail using this form. Undergraduates interested in sailing on an IODP expedition should instead contact ECORD for information about the Undergraduate Student Trainee Program.

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#### VI. Eligibility as ECORD participant

Scientists or engineers: professors, research scientists, technologists, graduate students, etc. at ECORD member institutions such as German academic institutions, government labs, ECORD member-based corporations, etc..

Non-ECORD affiliated personnel from IODP member countries can also apply for IODP participation through the country's national program office.

Please submit all application material in **PDF format** via email to **iodp@bgr.de**.

Nominations will be forwarded to the ESSAC Science Coordinator, NL, and from there to the Implementation Organizations (IOs).

**Staffing decisions** are made in consultation with co-chief scientists and take into account nominations from partner countries. Final responsibility for ECORD staffing rests with ESSAC.

BGR IODP Koordination Stilleweg 2 30655 Hannover Phone: 0511 / 643-2785

#### Statement for Interest in IODP 2nd MSP Expedition "Tahiti Sea Level" Hildegard Westphal

Sea-surface temperature variations and the identification of short-term paleoclimatic and paleoceanographic changes associated with the last deglaciation are among the main objectives of this IODP expedition. In this context, numerous oceanographic properties besides sea-surface temperature will need to be addressed in order to reliably reconstruct environmental change. Carbonate sediments, which are widespread modern to ancient sediments on Tahiti, are sensitive archives of environmental change, however, not only temperature influences the composition of the largely biogenic sediments. To unravel the environmental history recorded in the sediment, the effects of temperature and other factors will have to be distinguished. Among those are parameters strongly influencing carbonate production, such as nutrient levels, water energy, but also (isostatic and tectonic as well as eustatic) sea-level change that influences light intensity and wave base levels. Especially for the 1st objective of the IODP expedition, reconstructing meltwater pulses for the period of 20 to 10 ka that are thought to have disturbed the theromohaline circulation, carbonate sediments are well suited as they potentially reflect such disturbance of ocean current systems by sensitively reacting to nutrient changes in the sea water. Nutrient level changes strongly influence the biotic composition of the carbonate secreting associations that are potentially preserved in the sediment as environmental archives.

The basis for reconstructing environmental change by looking at carbonate grain associations is the fact that biotic associations of carbonate secreting organisms are characteristic of environmental conditions. Present-day Tahiti is largely characterized by classical tropical carbonates (i.e. the chlorozoan association). However, on Tahiti there also are areas that are dominated by foramol-red algal associations rich in rhodoliths and microbial crusts. Such associations in many cases are thought to be characteristic of cool to cold-water settings. However, other environmental factors also can lead to a shift in carbonate associations formed in tropical waters, that are reminiscent of cool-water carbonates ("atypical tropical carbonates"). Elevated nutrient levels are an important factor suppressing the development of typical tropical carbonates with zooxanthellate corals and green algae. Another possible factor is extremely high water energy. Even though such basic relationships are known, a systematic examination of the factors influencing the type of carbonate sediment being deposited in the tropics is still lacking. This results in a lack of information and conceptual models for interpreting fossil atypical tropical carbonates, many occurrences of which assumably are not even recognized as such. Misinterpretation of tropical carbonates as non-tropical ones, however, results in misleading paleoclimatic and paleoenvironmental models.

In the case of Tahiti, a reason for the formation of modern atypical tropical carbonates is assumed to be local upwelling that increases nutrient levels. This illustrates the sensitivity of the Tahitian ecosystem to environmental change besides sea-surface temperature. The proposed project within the framework of the 2<sup>nd</sup> MSP is to record in a very detailed way the change in carbonate grain associations in the cores (especially the deeper water slope cores that will assumably yield large intervals of debris material from the shallow-water carbonate factory) and integrate those data with geochemical proxies in order to examine environmental trends related to sea-level and oceanographic changes caused by the post-LGM sea-level rise. A major focus will be nutrient level changes. Methods for this task will include the following:

- Sedimentological description of the cores to characterize temporal development of

environmental conditions (sedimentary structures, microfacies, petrography);

- Trace element analyses of benthic foraminifers for estimating phytoplankton productivity (Ba/Ca ratios is an upwelling indicator, Cd content covaries with phosphate contents in present-day oceans, Cd/Ca ratio is indicative of nutrient contents);
- Stable isotope studies of benthic and planktic foraminifers for assessing environmental change (temperature, salinity),  $\delta^{13}C$  of some benthic foraminifers correlates with phosphate contents of the water.

Another important indicator of high-nutrient conditions are microbial crusts that Gilbert Camoin will study (he has studied such crusts in numerous shallower cores from Tahiti and other areas). A close collaboration is planned to integrate the microfacies and geochemistry results with the microbial crust data. In particular it is planned to measure Ba/Ca and Cd/Ca ratios on corals coated with microbial crusts, in order obtain information on (increasing) nutrient level trends that finally led to the microbial overgrowth on the oligotrophic shallow-water corals. The final aim is to come to a comprehensive picture of nutrient level changes related to oceanographic changes of the transition from the LGM to present-day sea level.

## **Curriculum Vitae**

Oct.	2004
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PD Dr. Hildegard Westphal			
Name Hilde	gard Westphal		
Date of Birth	May 10, 1968		
Place of Birth	Tübingen, Germany		
Citizenship	German		
Marital Status	Married, two children		
Work Address	Institut für Paläontologie der Universität Erlangen		
	Loewenichstr. 28; 91054 Erlangen; Germany		
E-mail hildeg	ard.westphal@pal.uni-erlangen.de		
WWW http://	www.geol.uni-erlangen.de/pal/mitarbeiter/westphal/index.html		

# Education

14. Jan. 2004	Habilitation, venia legendi for Geology; title of thesis "Carbonate Diagenesis: Modification of Paleo-Environmental Archives and Petrophysical Properties"
Since 2003	At University of Erlangen, Department of Paleontology
1999 - 2003	Hochschulassistentin ("assistant professor") at University of Hannover, Germany, Department of Geology and Paleontology
1998 - 1999	Post-Doctoral Research Associate at University of Miami, USA, Rosenstiel School for Marine and Atmospheric Sciences
17 Dec. 1997	Completion of PhD degree; title of thesis: "Sediment Input and Diagenesis of Periplatform Carbonates on a Leeward Slope of Great Bahama Bank"; supervisor: WChr. Dullo.
1995-1997	PhD Student at GEOMAR Research Center for Marine Geosciences, Kiel/Germany
1995-1998	1992- 1994 Student at University of Tübingen/Germany, Diploma degree in Geology (including geophysics and petrology); title of thesis: "Seismic stratigraphy and subsurface geological mapping of the Barrow-Dampier Subbasin, Western Australia"; supervisor: T. Aigner
1991-1992	Student at University of Queensland, Brisbane/Australia (Geology, Geophysics)
1988-1991	Student at University of Tübingen/Germany (Geology)
1987	Abitur, Geschwister-Scholl-Schule Tübingen; grade: 1.5

#### Awards:

Hans-Cloos-Award 2003 of the Geological Society Germany (Geologische Vereinigung) Walter-Schall-Award 2003 of the Württemberg Society of Natural Sciences (Gesellschaft für Naturkunde in Württemberg)

Albert-Maucher-Award 2004 of the German Science Foundation (DFG)

#### Scholarships:

June 1991-Dec. 1994 Scholarship of the "Studienstiftung des deutschen Volkes"

July 1991-July 1992 Overseas scholarship of the "Studienstiftung des deutschen Volkes"

Jan. 1995-Dec. 1997 PhD Scholarship of the "Studienstiftung des deutschen Volkes"

July 2003-June 2004 Scholarship of the Higher Education and Science Program of Bavaria (Hochschul- und Wissenschaftsprogramm)

#### Research grants:

- German Science Foundation project 1999-2004 "differential diagenesis in carbonates and associated petrophysical properties"
- Baker Hughes INTEQ funded project 2001 "influence of pore type on NMR measurements examination of the application in carbonates"
- Vigoni-Project (European project with Italy) 2003/2004 "Palaeoclimatic significance of Miocene limestone-marl alternations (Ancona, Italy)".

#### Industry funded research for:

Saudi Aramco, Integrated Reservoir Characterization Group, Shell Research, Burlington Resources, Texaco North American Producing West, Texaco Upstream Technology, Chevron Research, Tom Brown Inc.

#### Referee for scientific articles:

Marine Geology, ODP Scientific Results, International Journal of Geology, Springer Verlag, FACIES, Geological Quaterly, Basin Research, Rivista Italiana di Paleontologia e Stratigrafia

#### Referee for funding proposals:

Petroleum Research Fund (American Chemical Society), European Science Foundation, German Science Foundation DFG

#### **Publications**

#### Articles in peer-reviewed journals, books, book chapters

- Munnecke, A. und **Westphal**, H. (submitted) Schwankende Umweltbedingungen in Kalk-Mergel-Wechselfolgen des Oberjura von Südwestdeutschland; Jahreshefte der Gesellschaft für Naturkunde in Württemberg – invited manuscript.
- Munnecke, A. und **Westphal**, H. (submitted) Environmental change recorded in fine-grained calcareous rhythmites of Cambrian to Jurassic age; Sedimentary Geology.
- Swart, P.K., Cantrell, D., Westphal, H., Handford, R. und Kendall, C. (accepted) Origin of Dolomite in the Arab-D Reservoir from the Ghawar Field, Saudi Arabia: Evidence from Petrographic and Geochemical Constraints; Journal of Sedimentary Research.
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- Mateu, G., Brandano, M. und Westphal, H. (in prep.) High-frequency sea-level fluctuations in a nutrientrich tropical carbonate ramp – the Upper Miocene of Menorca – zu Sedimentary Geology
- Westphal, H., U. Asprion, L. Pomar, M. Nieman (in prep.) Radar-based interpolation of depositional facies of a Miocene carbonate ramp (Menorca, Spain) zu Facies
- Westphal, H., Riegl, B. und Eberli, G.P. (Eds.) (in prep.) Assessing Dimensions and Controlling Parameters in Carbonate Depositional Systems The Bahamas, Belize, and the Persian Gulf – bei Springer-Verlag, Heidelberg,

with the following chapters (among others):

- Westphal, H., G.P. Eberli, und B. Riegl, B., Parameters controlling modern carbonate depositional environments – Approach
- Bergman, K.L, H. Westphal, X. Janson, A. Poiriez, und G.P. Eberli, Controlling parameters on facies geometries of the Bahamas, an isolated carbonate platform environment
- McNeill, D., X. Janson, H. Westphal, K.L. Bergman, A. Poiriez<sup>1</sup>, und G.P. Eberli<sup>\*</sup> Belize – a modern example of a mixed carbonate-siliciclastic shelf
- A. Poiriez, B. Riegl<sup>3</sup>, K.L. Bergman, H. Westphal, X. Janson, und G.P. Eberli, The Persian Gulf Facies belts, Physical and Chemical parameters of the Ocean
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# ECORD Application form for membership in IODP expedition scientific parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following information)
Name (first, middle, last) Moyra E. J. Wilson
Institution_University of Durham
Department Department of Earth Sciences
Institution Durham University
Address South Road, Durham DHI 3LE
Telephone (Work) <u>+441913342288</u> (Home) <u>+44191 3848082</u> (Fax <u>) +441913342300</u>
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Present Title DR-lecture sedimentology Country of Citizenship British
Place of Birth Raeding, UK Date of Birth 28-04-1970 Gender F
Passport No. 740079354 Place Issued Jakarta Date Issued25-07-1996 Exp. Date 25-07-2006
Education (Highest degree - PhD., M.S., or B.S.) PhD Date: 1995
Are you currently a student? NO (If yes, see note below)
II. EXPEDITION INFORMATION
Expeditions of Interest (please limit selection to no more than three):
Expedition Number:519 Title Tahiti sea level change
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*
Expedition Number: Title
Platform: Riser Non-riser MSP Participation: Full Expedition Partial*Shorebased*
Expedition Number: Title:
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*
(* provide detail of proposed participation in an accompanying letter)
Reason(s) for Interest (if necessary, expand in letter) see letter
Personal and/or scientific references (name and address) Prof M. Tucker and H. Armstrong Durham University

Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased participant, etc.)ODP Leg 190- Nankai Trough

ECORD Application form for membership in IODP expedition scientific parties, Page 1 of 3

## **III. ATTACHMENTS**

1. Attach curriculum vitae which includes a publication history

2. Please fill out the attached "Field of Expertise" form

Note: Applications from graduate students should include a letter from their primary advisor, documenting the student's scientific experience and detailing how participation on the cruise would fit into their graduate degree program.

Staffing decisions are made in consultation with co-chief scientists and take into account nominations from partner countries; final responsibility for ECORD staffing rests with ESSAC. Please submit all application materials both in **digital format** (preferable PDF format) and **paper copy** to (please contact the ESSAC Office when having problems providing us with the above asked materials in both formats): ESSAC Science Coordinator Faculty of Earth & Life Sciences - Vrije Universiteit De Boelelaan1085 1081 HV Amsterdam - The Netherlands Phone: +31 20 4447272 Fax: +31 20 4449941 E-mail: essac.amsterdam@falw.vu.nl

With a copy to the national ESSAC delegate (see http://www.geo.vu.nl/~essac/ ESSAC button).

Nominations (with copies of their applications) will be forwarded from that office to the Implementation Organizations (IOs). Eligibility as a ECORD participant is limited to scientists or engineers (professors, research scientists, technologists, graduate students, etc.) at a ECORD member institution (e.g. German academic institutions, government labs, ECORD member-based corporations, etc.). Non-ECORD affiliated personnel from other IODP member countries should apply for IODP participation through their country's national program office. Undergraduate students do not qualify as Shipboard Participants, and should not apply to sail using this form. Undergraduates interested in sailing on a IODP expedition should instead contact ECORD for information about the Undergraduate Student Trainee Program.

## **FIELD OF EXPERTISE**

- \_\_\_\_ Biologist
- \_\_\_\_ Microbiologist
- \_\_\_\_ Inorganic Geochemist
- \_\_\_\_ Organic Geochemist
- \_\_\_\_ Geophysicist
- \_\_\_\_ Hydrologist
- Logging Scientist
- \_\_\_\_ Oceanographer
- \_\_\_\_ Paleomagnetist
- \_\_\_\_ Paleontologist (Diatom)
- \_\_\_\_ Paleontologist (Dinoflagellate)
- \_X\_ Paleontologist (Foraminifer Benthic)
- \_\_\_\_ Paleontologist (Foraminifer Planktonic)
- \_\_\_\_ Paleontologist (Megafossil)
- \_\_\_\_ Paleontologist (Nannofossil)
- Paleontologist (Phytoplankton)
- \_\_\_\_ Paleontologist (Radiolaria)
- \_\_\_\_ Paleontologist (Silicoflagellate)
- Palynologist
- \_\_\_\_ Petroleum Geologist
- \_X\_ Petrologist
- \_\_\_\_ Igneous Petrologist
- \_\_\_\_ Metamorphic Petrologist
- \_\_\_\_ Physical Properties Specialist
- \_X\_ Sedimentologist
- \_\_\_\_ Seismologist
- X Stratigrapic Correlator
- \_\_\_\_ Structural Geologist
- \_\_\_\_ Downhole Measurements

Re. Moyra Wilson – Additional information in support of application for IODP Tahiti Sea Level research leg

It is widely recognised that warm water carbonate deposits have the potential to provide a detailed record of past environmental, climatic or oceanographic changes. Yet for many equatorial areas we lack fundamental baseline data on Modern and Quaternary carbonate producing biota and deposits to enable accurate evaluation of past equatorial change. My research focuses on the evolution of equatorial carbonates during the Cenozoic (see attached CV and publications list). Yet as I try to evaluate how major global changes, such as changes from a greenhouse to an icehouse world, or development of the East Asian Monsoon, have affected regional evolution of carbonates in the humid tropics this work is severely hampered by the lack of proxy data from comparable Holocene and modern deposits.

My interests in taking part in the Tahiti sea level change leg include:

Carbonate sediments associated with reefs have very distinct characteristics dependent on the local environmental conditions, such as water depth, temperature, energy and nutrients. Current research of mine on modern SE Asian reef associated sediments is revealing that these humid tropical deposits are very different from there better studied counterparts formed in warm, arid regions. Also these sediments from the humid tropics have distinctive grain assemblages, in which carbonate components and their preservation can be related to local environmental conditions. I have used this proxy data from modern sediments to interpret environmental change in the Quaternary of SE Asia. I would like to test whether this proxy approach to environmental interpretation has broader application to the Indo-Pacific region.

Among the grain assemblages there are particular components such as the larger benthic foraminifera and coralline algae that can be used as sensitive indicators of water depth. These components are extremely abundant in Cenozoic limestones throughout the IndoPacific and because many are calcitic they are less prone to alteration than the aragonitic corals. On a genera level many of the organisms, particularly the larger benthic foraminifera are temperature sensitive. Thus analysis of these groups could provide important additional information on temperature and sea level changes during glacials and interglacials. To date, empiracle temperature data has not been obtained from larger benthic foraminifera since there appears to be a vital effect associated with delta<sup>18</sup>O and delta<sup>13</sup>C during secretion of the test. However, to date independent isotopic techniques to obtain temperature data, such as Ca/Mg and Ca/Sr have not been applied to this group. The aim would be to obtain samples of different genera from the sediment surface (as a control) and down through the core, compare this with data from aragonitic molluscs and corals (likely to be obtained by others) and aim to provide additional independent data on temperature and relative sea level changes.

Detailed analysis of individual larger benthic foraminifera and molluscs have been used to infer seasonality in the past (Purton and Brasier, 1997;1999). Tahiti currently has distinct wet and drier seasons. One question to address is whether during meltwater pulses this seasonality would have still occur, or whether the magnitude of any seasonal Re. Moyra Wilson – Additional information in support of application for IODP Tahiti Sea Level research leg

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My interests in taking part in the Tahiti sea level change leg include:

Carbonate sediments associated with reefs have very distinct characteristics dependent on the local environmental conditions, such as water depth, temperature, energy and nutrients. Current research of mine on modern SE Asian reef associated sediments is revealing that these humid tropical deposits are very different from there better studied counterparts formed in warm, arid regions. Also these sediments from the humid tropics have distinctive grain assemblages, in which carbonate components and their preservation can be related to local environmental conditions. I have used this proxy data from modern sediments to interpret environmental change in the Quaternary of SE Asia. I would like to test whether this proxy approach to environmental interpretation has broader application to the Indo-Pacific region.

Among the grain assemblages there are particular components such as the larger benthic foraminifera and coralline algae that can be used as sensitive indicators of water depth. These components are extremely abundant in Cenozoic limestones throughout the IndoPacific and because many are calcitic they are less prone to alteration than the aragonitic corals. On a genera level many of the organisms, particularly the larger benthic foraminifera are temperature sensitive. Thus analysis of these groups could provide important additional information on temperature and sea level changes during glacials and interglacials. To date, empiracle temperature data has not been obtained from larger benthic foraminifera since there appears to be a vital effect associated with delta<sup>18</sup>O and delta<sup>13</sup>C during secretion of the test. However, to date independent isotopic techniques to obtain temperature data, such as Ca/Mg and Ca/Sr have not been applied to this group. The aim would be to obtain samples of different genera from the sediment surface (as a control) and down through the core, compare this with data from aragonitic molluscs and corals (likely to be obtained by others) and aim to provide additional independent data on temperature and relative sea level changes.

Detailed analysis of individual larger benthic foraminifera and molluscs have been used to infer seasonality in the past (Purton and Brasier, 1997;1999). Tahiti currently has distinct wet and drier seasons. One question to address is whether during meltwater pulses this seasonality would have still occur, or whether the magnitude of any seasonal variations would have been supressed. The proposal would be to test the degree of seasonality, seawater freshening or nutrient input using stable (O & C) and trace element anaylsis.

I hope this provides sufficient evidence of my interest to be involved in the IODP Tahiti Sea Level Change project, and that the research I propose would help to achieve the main overall aims of the project: that of reconstructing eustatic and climatic changes during meltwater pulses. Moreover, I hope I have shown that the proposed research has implications for evaluating major global change affecting the tropics during the Cenozoic. Please do not hesitate to contact me if more information or clarification is needed, and I hope to be one of the scientific team involved in the Tahiti sea level change research.

Yours sincerely,

Moyra Wilson Lecturer in Sedimentology, University of Durham

# Moyra Wilson –– Curriculum Vitae and Research Portfolio Lecturer in Sedimentology, Geological Sciences, Durham, UK

Personal record			
Full name:	Moyra Elizabeth Jane Wilson		
Address:	Department of Geological Sciences, S	outh Road, Durham, D	H1 3LE.
Tel/Fax:	44(0)191 3342282 / 3342300	Date of Birth:	28th April, 1970
E-mail:	moyra.wilson@durham.ac.uk	Nationality / Status:	British / Married

## **Employment history:**

1999-present Lecturer in Sedimentary Geology specializing in carbonates, Department of Geological Sciences, Durham University. For current research and teaching see below, and attached publications list.

1996-1999 Post-doctoral researcher with the SE Asia Research Group at Royal Holloway College, London
 1995-6 Post-doctoral researcher with the SE Asia Research Group at Birkbeck College, London
 During my post-doctoral research I initiated and undertook an industry supported regional study of SE
 Asian carbonates, researching their evolution, depositional environments, controls on sedimentation, sequence stratigraphy and evaluating their potential as hydrocarbon reservoirs.

## Higher Education:

 1991-1995 Ph.D. study: Royal Holloway College, London University: The Tonasa Limestone Formation, Sulawesi, Indonesia: Development of a Tertiary Carbonate Platform (Sponsored by BP)
 1988-91 St. John's College, Cambridge University, Geological Science - 2(1)

## **Research:**

My main area of research concentrates on the study of factors influencing the evolution of tropical marine systems during the Cenozoic. sedimentological, biotic and diagenetic studies of Cenozoic carbonates in equatorial regions. This has led to research into environmental influences on carbonate sedimentation, syntectonic sedimentation, clastic-carbonate interactions, biogeography, petroleum systems and plate tectonics of SE Asia. Research areas include Indonesia, Malaysia, the Philippines, Japan, Spain and the UK. Much of the research has been published in international journals, or presented at conferences (*see attached publications and abstract list*). Highlights of my ongoing research include:

- Evolution of equatorial carbonates during the Cenozoic, with implications for reservoir quality
- Syntectonic carbonate platform development and forward computer modeling studies of platforms
- Models of non-reefal large-scale platform development
- Reservoir evaluation of individual carbonate formations
- Clastic influence on carbonate producing biota and sequence development
- Modern sedimentolgy of reefal deposits
- Evaluation of Quaternary reef terrace development; implications for environmental change
- Origins of the Indo-West Pacific Centre of Maximum Diversity for reefal biota
- Biogeography, palaegeography and plate tectonics of SE Asia
- Syntectonic sedimentation and diagenesis of the Nankai Trough, Japan, ODP Leg 190

## **Teaching:**

I am responsible for teaching 1<sup>st</sup> and 2<sup>nd</sup> year undergraduate courses in sedimentology, earth history and biotic evolution. During the last three years I have co-supervised 5 Ph.D. students, 3 of whom successfully completed their thesis, and the others are continuing their research. Leader of fieldtrips/courses in UK and Indonesia.

## Other qualifications and academic membership:

Qualified PADI Open Water & Advanced Diver, Durham University Certificate in Higher Education, St. John's Ambulance Certificate in First Aid and Safety in the Workplace; City and Guilds Certificate in Photography; Clean drivers licence (since 1992), Member: BSRG, IAS and SEPM.

## Highlights of recent research grants awarded:

2003	£500
2002-	£6000
2002	£4250
2000/2	£3000
2000-	£2000
2000	£900
2000	£400
1999 ·	-£30000
1999	£22500
1999	£4000
1999	£150
	2003 2002- 2002 2000/2 2000- 2000 2000 1999 1999 1999

## Professional advisory or consultancy work:

2000-2
1998, 2003
2000
1997
1996
1992- present

## Offices held and other professional duties:

Co-organiser of 12<sup>th</sup> Bathurst Meeting for Carbonate Sedimentologists at Durham University Mini-symposium co-organiser for 9<sup>th</sup> International Coral Reefs Symposium Refereeing articles for Journal of Sedimentary Research, Marine and Petroleum Geology and Geological Society Invitations to speak at international conferences, universities and oil companies

## **Active Research Collaboration:**

SE Asia Research Group, London University, Pertamina, Indonesian National Oil Company Natural History Museum London & Leiden, LASMO Plc MAERSK Oil and Gas Geological Survey of Indonesia Scottish Universities Research and Reactor Centre Operation Wallacea, Unocal, VICO, Shell

## Administrative duties:

Member of board of studies and teaching and learning committee Involved in interviewing prospective undergraduates and postgraduates

## Publications List - Dr Moyra E.J. Wilson

#### Papers in refereed journals

- Wilson, M.E.J. & Vecsei, A. in press. The apparent paradox of abundant foramol facies in low latitudes: their environmental significance and affect on platform development. Earth Science Reviews.
- Wilson, M.E.J., in press. Equatorial delta-front patch reef development during the Neogene, Borneo. Journal of Sedimentary Research.
- Carnell, A. & Wilson, M.E.J., in press. Dolomites in Southeast Asia, (varied origins and implications for hydrocarbon exploration). Geological Society Special Publication.
- Wilson, M.E.J. 2003. Sedimentological and Petrographic characteristics of volcanic ashes and siliceous claystones (altered ashes) from Sites 1173, 1174 and 1177, Leg 190. Ocean Drilling Program, Leg 190 Scientific Results.
- Underwood, M.B., Taira, A., Moore, G., Wilson, M.E.J., Hirano, S., Fergusson, C.L. & Steurer, J. 2003. Sedimentary and tectonic evolution of a trench slope basin in the Nankai subduction zone of southwest Japan. Journal of Sedimentary Research, 73, 589-602.
- Hook, J. & Wilson, M.E.J. 2003. Stratigraphic relationships of a Miocene mixed carbonate-siliciclastic interval in the Badak field, East Kalimantan, Indonesia. Proceedings of the Indonesian Petroleum Association.
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- Rosen, B.R., Aillud, G.S., Boscellini, F.R., Clack, N.J., Insalaco, E., Valldeperas, F.X, Wilson, M.E.J. 2002. Platy coral assemblages: 200 million years of functional stability in response to the limiting effects of light and turbidity. Proceedings of the 9<sup>th</sup> International Coral Reefs Symposium, 255-264.
- Screaton, E., Saffer, D., Henry, P., Hunze, S., Moore, G.F., Taira, A., Klaus, A., Becker, K., Becker, L., Boeckel, B., Cragg, B.A., Dean, A., Fergusson, C.L., Hirano, S., Hisamitsu, T., Kastner, M., Maltman, A.J., Morgan, J.K., Murakami, Y., Sanchez-Gomez, M., Smith, D.C., Spivack, A.J., Steurer, J., Tobin, H.J., Ujiie, K., Underwood, M.B. & Wilson, M. 2002. Porosity loss within the underthrust sediments of the Nankai accretionary complex; implications for overpressusres. Geology 30, 19-22.
- Moore, G.F., Taira, A., Klaus, A., Becker, K., Becker, L., Boeckel, B., Cragg, B.A., Dean, A., Fergusson, C.L., Henry, P., Hirano, S., Hisamitsu, T., Hunze, S., Kastner, M., Maltman, A.J., Morgan, J.K., Murakami, Y., Saffer, D., Sanchez-Gomez, M., Screaton, E., Smith, D.C., Spivack, A.J., Steurer, J., Tobin, H.J., Ujiie, K., Underwood, M.B. & Wilson, M. 2002. New insights into deformation and fluid flow processes in the Nankai Trough accretionary prism; results of Ocean Drilling Program Leg 190. Geochemistry, Geophysics, Geosystems 22 p.
- Wilson, M.E.J. 2000. Tectonic and volcanic influences on the development and diachronous termination of a tropical carbonate platform. Journal of Sedimentary Research. 70, (2), 310-324.
- Wilson, M.E.J., Bosence, D.W.J. & Limbong, A. 2000. Tertiary syntectonic carbonate platform development in Indonesia. Sedimentology, 47, 395-419.
- Wilson, M.E.J. 1999. Prerift and synrift sedimentation during early fault segmentation of a Tertiary carbonate platform, Indonesia. Marine and Petroleum Geology. 16, (8), 825-848.
- Wilson, M.E.J. & Moss, S.J. 1999. Cenozoic evolution of Borneo-Sulawesi. Palaeogeography, Palaeoclimatology & Palaeoecology. 145, (4), p. 303-337.
- Wilson, M.E.J., Chambers, J.L.C, Evans, M.J., Moss, S.J. & Satria Nas, D. 1999. Cenozoic carbonates in Borneo: Case studies from Northeast Kalimantan. Journal of Asian Earth Science, 17, (1-2), p.183-201.
- Wilson, M.E.J. & Rosen, B.R.R. 1998. Implications of the paucity of corals in the Paleogene of SE Asia: plate tectonics or Centre of Origin. In: Hall, R. and Holloway, J.D. (eds.) Biogeography and Geological Evolution of SE Asia, Backhuys Publishers, Amsterdam, Netherlands, p. 165-195.
- Wilson, M.E.J., Ascaria, A., Coffield, D.Q. & Guritno, N. 1997. The Petroleum System of South Sulawesi. In: Howes, J.V.C. & Noble, R.A. (eds.). Proceedings of an International Conference on Petroleum Systems of SE Asia & Australasia. p. 561-567.
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- BouDagher-Fadel, M.K. & Wilson, M.E.J. 2000. A revision of some larger Foraminifera from the Miocene of East Kalimantan, Micropalaeontology. 46, (2), 153-165.
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- Ascaria, N.A., Harbury, N.A. & M.E.J. Wilson, 1997. Hydrocarbon Potential and development of Miocene knollreefs, South Sulawesi. In: Howes, J.V.C. & Noble, R.A. (eds.). Proceedings of an International Conference on Petroleum Systems of SE Asia & Australasia. p. 569-584.

#### **Papers submitted**

- Wilson, M.E.J., Chambers, J.L.C. & Donelly, T. submitted. Development of a low to moderate energy Tertiary Carbonate Platform, Borneo: Insights from sedimentology and diagenesis. Submitted to Journal of Sedimentary Research.
- Crabbe, M.J.C, Wilson, M.E.J. & Smith, D.J., submitted. Constraints on the growth rates of modern and Quaternary corals from reefs in the Wakatobi Marine National Park, SE Sulawesi, Indonesia. Coral Reefs.

#### **Other publications**

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- Wilson, M.E.J. & Ascaria, N.A. 2003. IPA Petroleum Systems of South Sulawesi. Indonesian Petroleum Association field guide, 77p.
- Wilson, M.E.J. 2000. Tuban Formation core analysis Mudi #13C.ST-1. Confidential report for Santa Fe / Robertsons Research, 18 p.
- Wilson, M.E.J., Lokier, S., & Baker, S.J. 1998. SE Asia Research Group report on limestones in Indonesia and their suitability for toothpaste manufacture. Confidential report for Unilever, 76p.
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- Wilson, M.E.J. & Vecsei, A. 2003. Low latitude carbonate platforms without coral dominance: an overlooked platform type?. British Sedimentology Research Group, Annual Meeting, Leeds.
- Carnell, A. & Wilson, M.E.J., 2003. Dolomites in Southeast Asia, (varied origins and implications for hydrocarbon exploration). Indonesian Petroleum Association, Jakarta.
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- Wilson, M.E.J. & Evans, M.J. 2002. Evolution and reservoir quality of fault-related dolomites, Borneo. The Geometry and petrogenesis of dolomite hydrocarbon reservoirs Geological Society, London.

- Wilson, M.E.J. & Lokier, S.J. 2002. Dynamic interactions between carbonates and silici/ volcaniclastics; Implications for the petroleum system. Economic Applications of Sedimentology, Geological Society, London.
- Wilson, M.E.J. & Lokier, S.J. 2002. Dynamic interactions between carbonates and silici/ volcaniclastics in equatorial areas. European Coral Reefs Meeting, Cambridge.
- Wilson, M.E.J. & Lokier, S.J. 2002. Dynamic interactions between carbonates and silici/ volcaniclastics in equatorial areas. Indonesian Petroleum Association.
- Wilson, M.E.J. & Lokier, S.J. 2001. Dynamic interactions between carbonates and silici/ volcaniclastics; Implications for the petroleum system. Indonesian Petroleum Association.
- Wilson, M.E.J. 2001. Diagenetic alteration of volcanic ashes from ODP Leg 190, Nankai Trough, Japan. British Sedimentology Research Group, Annual Meeting, Plymouth.
- Wilson, M.E.J. 2001. Influences on diagenesis of volcanic ashes from the Nankai Trough, Japan, ODP Leg 190. Ocean Drilling Program Scientific Meeting, Nottingham.
- Wilson, M.E.J. 2000. Tropical carbonate evolution during the Cenozoic in SE Asia: implications for hydrocarbon exploration. AAPG / IPA international meeting, Bali.
- Wilson, M.E.J. 2000. Evolution and controls on isolated Cenozoic carbonate platforms in SE Asia. AAPG / IPA international meeting, Bali.
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- Wilson, M.E.J. 2000. Accretionary prism and trench sedimentation, Nankai Trough, Japan: Initial results of ODP Leg 190. British Sedimentology Research Group, Annual Meeting, Loughborough.
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- Wilson, M.E.J. 1999. Miocene tropical carbonate development in SE Asia. International symposium on Paleoceanology of reefs and carbonate platforms: Miocene to modern.
- Wilson, M.E.J. 1999. New models for Cenozoic carbonate development? 11<sup>th</sup> Bathurst Meeting, Journal of Conference Abstracts, 4, (2), p. 981
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- Wilson, M.E.J. 1998. Tertiary Delta Front Reefs. 15th International Sedimentology Conference, Alicante
- Wilson, M.E.J. 1998. Outcrop studies of Tertiary carbonates in SE Asia: Implications for hydrocarbon exploration. Characterisation of Carbonate Reservoirs, Geological Society of London Meeting.
- Wilson, M.E.J., Evans, M.J. & Nas, D.S. 1998. Reservoir Characteristics of Tertiary Carbonates in Borneo: A Depositional and Diagenetic Evaluation. AAPG Annual Convention, Salt Lake City.
- Wilson, M.E.J. 1997. The epic struggle between carbonates and clastics in a deltaic setting. British Sedimentologists Annual Meeting, Liverpool.
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- Moss, S.J. & Wilson, M.E.J. 1996. Tertiary evolution of Sulawesi-Borneo: Implications for biogeography. Biogeography and geological evolution of SE Asia, Abstracts volume, p. 23.
- Wilson, M.E.J. 1995. Tectonic effects on and hydrocarbon potential of Tertiary carbonate platforms, Indonesia: A case study from South Sulawesi. Petroleum Geology of SE Asia, Geological Society and Petroleum Group Conference, Abstracts volume.
- Wilson, M.E.J. 1995. The demise of an Indonesian carbonate platform: Tectonics versus volcanics. British Sedimentological Research Group, Conference abstracts, Liverpool, p. 133.
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- Wilson, M.E.J. 1992. Redeposited facies of the Tonasa Limestone Formation. <u>South Sulawesi, Indo</u>nesia. British Sedimentological Research Group, Conference abstracts, Southampton.

# ECORD Application form for membership in IODP expedition scientific parties

I. CONTACT INFORMATION (Please keep us informed of any changes in the following information)
Name (first, middle, last) Jens Zinke
InstitutionVrije universiteiT Amsterdam
Department <u>FALW, Petrology</u>
Institution Petrology
Address De Boelelaan 1085, 1081 HV Amsterdam (NL)
Telephone (Work) +31-20-4447327 (Home) +31207701863 (Fax)
Email Address zinj@geo.vu.nl
Present Title PhD Country of Citizenship Germany
Place of Birth Wippra Date of Birth Gender 20-02-1970
Passport No 2414939215. Place Issued Berlin Date Issued 04-97 Fxp. Date 04-07
Education (Highest degree - PhD., M.S., or B.S.) PhD Date: 15-11-2000
Are you currently a student? no (If yes, see note below)
Expeditions of Interest (please limit selection to no more than three).
Expedition Number: #510 Title offebore drilling inTobiti
Platform: Disor Non ricor MSP Participation: Full Expedition Partial* Shorebased*
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*
Expedition Number: Title:
Platform: Riser Non-riser MSP Participation: Full Expedition Partial* Shorebased*
(* provide detail of proposed participation in an accompanying letter)
( provide detail of proposed participation in an accompanying letter)
Reason(s) for Interest (if necessary, expand in letter) see attached letter
Personal and/or scientific references (name and address) Prof. Dick Kroon Vrije Universiteit Amsterdar
רפוסטומו מוועיטו סכובותווב ובובובונכים (חמווב מווע מענובט) רוטו. שונא אוטטון אוון טוועפוטונפו אווטנפוטמו

Previous DSDP/ODP/IODP involvement and nature of involvement (expedition participant, shorebased participant, etc.) <u>NO</u>

ECORD Application form for membership in IODP expedition scientific parties, Page 1 of 3

## **III. ATTACHMENTS**

1. Attach curriculum vitae which includes a publication history

2. Please fill out the attached "Field of Expertise" form

Note: Applications from graduate students should include a letter from their primary advisor, documenting the student's scientific experience and detailing how participation on the cruise would fit into their graduate degree program.

Staffing decisions are made in consultation with co-chief scientists and take into account nominations from partner countries; final responsibility for ECORD staffing rests with ESSAC. Please submit all application materials both in **digital format** (preferable PDF format) and **paper copy** to (please contact the ESSAC Office when having problems providing us with the above asked materials in both formats): ESSAC Science Coordinator Faculty of Earth & Life Sciences - Vrije Universiteit De Boelelaan1085 1081 HV Amsterdam - The Netherlands Phone: +31 20 4447272 Fax: +31 20 4449941 E-mail: essac.amsterdam@falw.vu.nl

With a copy to the national ESSAC delegate (see http://www.geo.vu.nl/~essac/ ESSAC button).

Nominations (with copies of their applications) will be forwarded from that office to the Implementation Organizations (IOs). Eligibility as a ECORD participant is limited to scientists or engineers (professors, research scientists, technologists, graduate students, etc.) at a ECORD member institution (e.g. German academic institutions, government labs, ECORD member-based corporations, etc.). Non-ECORD affiliated personnel from other IODP member countries should apply for IODP participation through their country's national program office. Undergraduate students do not qualify as Shipboard Participants, and should not apply to sail using this form. Undergraduates interested in sailing on a IODP expedition should instead contact ECORD for information about the Undergraduate Student Trainee Program.

## FIELD OF EXPERTISE

\_\_\_\_ Biologist

- \_\_\_\_ Microbiologist
- \_X\_ Inorganic Geochemist
- \_X\_\_ Organic Geochemist
- \_\_\_\_ Geophysicist
- \_\_\_\_ Hydrologist
- Logging Scientist
- XX\_Oceanographer
- Paleomagnetist
- \_\_\_\_ Paleontologist (Diatom)
- \_\_\_\_ Paleontologist (Dinoflagellate)
- \_X\_ Paleontologist (Foraminifer Benthic)
- \_X Paleontologist (Foraminifer Planktonic)
- \_\_\_\_ Paleontologist (Megafossil)
- \_\_\_\_ Paleontologist (Nannofossil)
- Paleontologist (Phytoplankton)
- \_\_\_\_ Paleontologist (Radiolaria)
- \_\_\_\_ Paleontologist (Silicoflagellate)
- \_\_\_\_ Palynologist
- \_\_\_\_ Petroleum Geologist
- \_\_\_\_ Petrologist
- \_\_\_\_ Igneous Petrologist
- \_\_\_\_ Metamorphic Petrologist
- \_\_\_\_ Physical Properties Specialist
- \_X\_\_ Sedimentologist
- \_\_\_\_ Seismologist
- \_\_\_\_ Stratigrapic Correlator
- \_\_\_\_ Structural Geologist
- \_\_\_\_ Downhole Measurements

## Details of proposed participation: Jens Zinke

I am involved in the European research and training network "STOPFEN" as a Postdoc in the team at the Vrije Universiteit Amsterdam. I am focussing on modern and fossil corals covering the Holocene and Last Interglacial (*Porites, Diploastrea*) from the western Indian Ocean as palaeoclimatic indicators of sea-surface temperature and salinity. I aim to provide seasonally resolved records of past climate change under different climatic boundary conditions (isotopes and trace elements). U/Th dating is also part of my research.

Recently, I published a 336 year long coral record from southwest Madagascar that showed the great potential of western Indian Ocean corals in recording ENSO teleconnections and monsoon dynamics (Zinke et al. 2004a, b; Zinke et al. *in press*). Additionally, my colleagues from Kiel (IFM-GEOMAR) and me did a comparison between tropical and subtropical Indian Ocean corals and tropical Pacific coral records covering the last 300 years (Zinke et al. *in press*). We were able to unravel global climate shifts with a special emphasis on ENSO teleconnections (Zinke et al. *in press*). We also started a seawater monitoring programme on several Indian Ocean islands to properly calibrate the geochemical signatures in coral skeletons.

The Tahiti reef coring programme will provide new cores that cover the entire Postglacial and Holocene, and it will also include drilling into massive *Porites* colonies. Therefore, I am very interested in working on fossil Pacific corals for future comparison with the fossil Indian Ocean corals. It will allow to identify the strength of ENSO in both ocean basins under naturally changing climate conditions. Fossil corals from the Younger Dryas, the early Holocene and mid-Holocene are especially interesting.

Being aware that only a limited amount of scientist can take part in the cruise and drilling, I intend to work on the material that will be drilled at the Vrije Universiteit Amsterdam. However, participation in the coral drilling would be appreciated.

## JENS ZINKE Marine Geoscientist

Personal Details Name: Jens Zinke Work address: VU Amsterdam, De Boelelaan 1085, 1081 HV Amsterdam Home address: Nicolaas Berchemstraat 7-W, 1073 VR Amsterdam Telephone: +31 20 4447327 (work), +31 20 5721138 (home) Fax: +31 20 6462457 (work) E-mail: zinj@geo.vu.nl or jenszinke@hotmail.com Date of birth: February 20th, 1970 Martial Status: Single Nationality: German

Academic Achievements Degrees

1990-1996	Study of geology and paleontology, Freie Universität Berlin, Germany.
1996	Master of Science degree (Diplom-Geologe) FU Berlin Supervisor: Prof. B. Krebs, Prof. H. Keupp Subject: Small theropod teeth from the Upper Jurassic coal mine of Guimarota (Portugal) The Miocene/Pliocene sedimentation of western Crete (Greece)
2000:	PhD degree, Christian-Albrechts-University Kiel, Germany Supervisor: Prof. W.Ch- Dullo, Dr. John J.G. Reijmer Subject: Development of the lagoon of Mayotte during the Holocene (Comoro archipelago, SW Indian Ocean, 45°E, 13°S)

## **Employment**

1.8.1997-30.7.2000 Marine Geoscientist, GEOMAR Kiel, Germany A position within the carbonate sedimentology group. Organisation and doing field trips for sediment and coral reef coring on Mayotte and Reunion (Indian Ocean).

1.9.2000-31.3.2003 Marine Geoscientist, GEOMAR, Kiel, Germany A Postdoc within the coral paleoclimatology and carbonate sedimentology group. Organizing field campaigns for coral drilling and water sampling.

Since 1.5.2003 Marine Geoscientist, Vrije Universiteit Amsterdam, The Netherlands A Postdoc within the coral paleoclimatology and paleoecology group. Organizing field campaigns for coral drilling and water sampling.

## Work\_experience

## Fieldwork experience

- 1994 M.Sc. fieldwork, Galve, Spain: 1) vertebrate fossils, 2) facies development
- 1994 M.Sc. fieldwork, NW Crete: mapping of Neogene formations.

- 1998 Ph.D. fieldwork in Mayotte, Indian Ocean: 1) facies distribution within the lagoonal environment, 2) reefal architecture, 3) drilling of coral cores for palaeoclimatic research, 4) volcanic island geology. Cooperation with the University of Aix-Marseille.
- 1999 Mayotte, Indian Ocean: 1) Drilling through the fringing reefs, 2) biofilms and cyanobacterial colonies on reefal substrate (stromatolites), 3) carbonate crusts in a crater lake. Cooperation with the University of Aix-Marseille.
- 2000 Guadeloupe, Puerto Rico, Caribbean, Drilling operation into corals in cooperation with the University of Guadeloupe and Puerto Rico.
- 2001 La Réunion and Seychelles, 1) Water sampling in cooperation with RGS-IBG London, 2) collecting fossil corals for isotope analysis, 3) drilling into modern corals
- 2003 La Reunion, Seychelles and Mayotte, 1) Water sampling in cooperation with RGS-IBG London, 2) collecting fossil corals for isotope analysis, 3) drilling into modern corals
- 2004 Venezuela, 1) Water sampling in cooperation with UCV Caracas, 2) collecting fossil corals for isotope analysis, 3) drilling into modern corals

## Laboratory experience

ICP-AES, ICP-MS, TIMS, Mass Spectrometer, Thin section analysis, XRD-analysis, XRF-analysis, Scanning Electron Microscope, LECO analysis, Multi-Sensor-Core-logging, Core analysis, Isotope analysis, Palynology, Coral-core sampling and description

#### <u>References</u>

Gareth R. Davis, Prof., Vrije Universiteit Amsterdam, De Boelelaan 1085, 1081 HV Amsterdam, The Netherlands Tel.: (0031) 20 444 7327, Fax: (0031) 20 646 2457 email: <u>gareth.davies@falw.vu.nl</u>

Dick Kroon, Prof., Vrije Universiteit Amsterdam, De Boelelaan 1085, 1081 HV Amsterdam, The Netherlands Tel.: (0031) 20 444 73, Fax: (0031) 20 646 2457 email: kroo@geo.vu.nl

Wolf-Christian Dullo, Prof. Dr., GEOMAR, Wischhofstr. 1-3, 24148 Kiel, Germany Tel.: (0431) 600 2215, Fax.: (0431) 600 2925, email: <u>cdullo@geomar.de</u>

G. Hendersson, Dr., University of Oxford, Department of Earth Sciences, Parks Road, OX1 3PR Oxford, UK Tel. (0044) 1865 282123, Fax.: (0044) 1865 272072 email: Gideon.Henderson@earth.ox.ac.uk

John J.G. Reijmer, Dr., GEOMAR, Wischhofstr. 1-3, 24148 Kiel, Germany Tel.: (0431) 600 2827, Fax.: (0431) 600 2941, email: jreijmer@geomar.de

## **Conference Presentations**

#### 1998

Poster titled: Zinke, J., Reijmer, J.J.G., Dullo, W-Ch. & Thomassin, B.A.: Holozäne Sedimentationsmuster in der Lagune von Mayotte (Comoren, SW Indischer Ozean). Erlangener Geologische Abhandlungen, Sonderband 2, 118-119.

Poster titled: Zinke, J., Reijmer, J.J.G., Dullo, W-Ch. & Thomassin, B.A.: Holocene sedimentation patterns within the Mayotte barrier reef-lagoon complex (Comoro archipelago, SW Indian Ocean, 45°E, 13°S). Proceedings of the ISRS European Meeting Perpigna*n*, France, p.192.

## 1999

Poster titled: Zinke, J., Reijmer, J.J.G., Dullo, W-Ch. & Thomassin, B.A.: Variations in the sedimentological record within the lagoon of Mayotte during the Holocene (Comoro archipelago, SW Indian Ocean). 11th Bathurst Meeting Cambridge, England, Journal of Conferences, 4 (2), p. 985.

Poster titled: Zinke, J., Reijmer, J.J.G., Dullo, W-Ch. & Thomassin, B.A.: The response of the sedimentary environment within the lagoon of Mayotte to the postglacial sea-level rise. Abstract Book Paleoceanology of reefs and carbonate platforms: Miocene to modern, Aix-en-Provence, France, 225-226.

Poster titled: Zinke, J., Reijmer, J.J.G., Dullo, W-Ch. & Thomassin, B.A.: Holocene flooding history of the lagoon of Mayotte (Comoro archipelago, SW Indian Ocean): Sea level history and sedimentation rates. *EOS*, Transactions, AGU Volume 80 (46), p. F1032. San Francisco, USA.

## 2000

Lecture titled: Zinke, J., Reijmer, J.JG., Dullo, W-Ch. & Thomassin, B.A.: Paleoenvironmental changes in the lagoon of Mayotte associated with the Holocene transgression. PAGES conference, Prag. GeoLines, 11, 150-153.

Poster titled: Zinke, J., Reijmer, J.JG., Dullo, W-Ch. & Thomassin, B.A.: Infill of a mixed terrigenous-carbonate lagoon during the Holocene transgression (Mayotte, Comoro Archipelago, SW Indian Ocean). *EOS*, Transactions, AGU Volume, San Francisco, USA.

#### 2001

Lecture titled: Zinke, J., Heiss, G., Pfeiffer, M., Dullo, W.-Chr., Joachimski, M. M. & Eisenhauer, A. (2001) A 350 years coral oxygen isotope record off Madagascar: Interannual and interdecadal sea surface temperature variability. Geophysical Research Abstracts of the 26<sup>th</sup> General Assembly of the EGS, Volume 3, GRA3, p. 9286, Nice, France.

Poster titled: Zinke, J., Pfeiffer, M., Heiss, G., Dullo, W.-Chr., Joachimski, M. M. & Eisenhauer, A. (2001) A 338 year coral oxygen isotope record off Madagascar: Interannual and interdecadal seasurface temperature variability. Past Climate Variability through Europe and Africa, An International Conference, Abstracts, p. 163-164, Aix-en-Provence, France.

Lecture titled: Zinke, J., Reijmer, J.JG., Dullo, W-Ch. & Thomassin, B.A. (2001) Infill of a mixed terrigenous-carbonate lagoon during the Holocene transgression (Mayotte, Comoro Archipelago, SW Indian Ocean). Schriftenreihe der Deutschen Geologischen Gesellschaft, 14, Program and Abstracts, 2001 Margins Meeting, pp. 242-243, Kiel, Germany.

Lecture titled: Zinke, J., Pfeiffer, M., Dullo, W.-Chr. & Eisenhauer, A. (2001) A 338 year coral oxygen isotope record off Madagascar: Interannual and interdecadal sea-surface temperature variability. First ARTS Open Sciences Meeting, Abstracts, pp. 88-91, Noumea, New Caledonia.

## 2002

Poster titled: Zinke, J., Dullo, W.-Chr. & Eisenhauer, A. 2002. Late Maunder Minimum sea surface temperature variability recorded in a Madagascar coral record. Geophysical Research Abstracts of the 27<sup>th</sup> General Assembly of the EGS, Volume 4, p. 9286, Nice, France.

Invited lecture titled: Zinke, J., Dullo, W.-Chr. & Eisenhauer, A. 2002. Late Maunder Minimum sea surface temperature variability recorded in corals. EOS, Transactions, American Geophysical Union, Vol. 83 (19), pp. 131-132, Washington D. C., USA.

Lecture titled: Zinke, J., Dullo, W.-Chr. & Eisenhauer, A. 2002. Little Ice Age sea surface temperature variability recorded in a Madagascar coral record. ISRS European Meeting, Abstracts, p. 109, Cambridge, U.K.

Lecture titled: Zinke, J., Dullo, W.-Chr. & Eisenhauer, A. 2002. Late Maunder Minimum sea surface temperature variability recorded in a Madagascar coral record. Schriftenreihe der Deutschen Geologischen Gesellschaft, 21, p. 363.

Poster titled: Zinke, J., Dullo, W.-Chr. & Eisenhauer, A. 2002. Sea surface temperature and seawater oxygen isotope variability recorded in a Madagascar coral record. EOS, Transactions, American Geophysical Union, Vol., 83 (47) pp., San Francisco, USA.

## 2003

Poster titled: Zinke, J., Dullo, W.-Chr. & Eisenhauer, A.. Sea surface temperature and seawater oxygen isotope variability recorded in a Madagascar coral record. Geophysical Research Abstracts of the 28<sup>th</sup> General Assembly of the EGS, Nice, France.

## 2004

Invited lecture: Zinke, J., Pfeiffer, M., Timm, O., Dullo, W.-Chr. And Davies, G. R., Atmosphere-Ocean dynamics in the western Indian Ocean recorded in corals. Discussion Meeting on Atmosphereocean-ecology dynamics in the Western Indian Ocean, Royal Society, London, U.K.

Poster titled: Zinke, J., Dullo, W.-Chr. Timm, O. and Thomassin, B.A.. ENSO variability in corals from the Mozambique Channel. Geophysical Research Abstracts of the EGU General Assembly, Volume 6, Nice, France.

Poster titled: First evidence of mid-Holocene and Last Interglacial seasonality in the tropical Indian Ocean from corals. ICP 8, Abstracts, Biarritz, France.

## Literature Publications

## <u>Articles</u>

Zinke, J. & Rauhut, O. W. M. 1994. Small theropods (Dinosauria, Saurischia) from the Upper Jurassic and Lower Cretaceous of the Iberian Penninsula. Berliner geowissenschaftliche Abhandlungen, E 13, 163-177, Berlin.

Zinke, J. 1998. Small theropod teeth from the Upper Jurassic coal mine of Guimarota (Portugal). Paläontologische Zeitschrift, 72 (1/2), 179-189, Stuttgart.

Zinke, J., Reijmer, J.JG., Dullo, W-Ch. & Thomassin, B.A. 2000. Paleoenvironmental changes in the lagoon of Mayotte associated with the Holocene transgression. GeoLines, 11, 150-153.

Zinke, J. 2000. Sedimentological evolution of the lagoon of Mayotte (Comoro Archipelago, SW Indian Ocean, 13°S, 45°E) during the Holocene. PhD-Thesis, 204 p., Christian-Albrechts Universität Kiel, Germany.

Zinke, J., Reijmer, J.JG. & Thomassin, B. A. 2001. Seismic architecture and sediment distribution within the Holocene barrier reef-lagoon complex of Mayotte (Comoro archipelago, SW Indian Ocean). Palaeogeography, Palaeoclimatology, Palaeoecology, 175, 343-368.

Zinke, J., Reijmer, J. J. G., Thomassin, B. A., Dullo, W. Chr. 2003. Postglacial flooding history of Mayotte Lagoon (Comoro Archipelago, southwest Indian Ocean). Marine Geology, 194, 181-196.

Zinke, J., Reijmer, J. J. G. & Thomassin, B. A. 2003, Systems tracts sedimentology in the lagoon of Mayotte associated with the Holocene transgression. Sedimentary Geology, 160, 57-79.

KIHZ-Consortium: Zinke, J., von Storch, H., Mueller, B., Zorita, E., Rein, B., Mieding, B., Miller, H., Luecke, A., Schleser, G. H., Schwab, M., Negendank, J. F. W., Kienerl, U., Gonzalez-Rouco, J.-F., Dullo, W.-Chr. And Eisenhauer, A. 2004. Evidence for the climate during the Late Maunder Minimum from proxy data and model simulations available within KIHZ. In: von Storch, H., Raschke, E. and Floeser, G. (eds.) The Climate in Historical Times - Towards a synthesis of Holocene proxy data and climate models. Springer Verlag, Berlin-Heidelberg-New York,: 401-418.

Zinke, J., Dullo, W.-Chr., Heiss, G. A. & Eisenhauer, A. 2004. ENSO and subtropical dipole variability is recorded in a coral record off southwest Madagascar for the period 1659 to 1995. Earth and Planetary Science Letters 228 (1-2), 177-197.

Zinke, J., Pfeiffer, M., Timm, O., Dullo, W.-Chr. And Davies, G. R., (in press) Atmosphere-Ocean dynamics in the western Indian Ocean recorded in corals. Philosophical Transactions A: Mathematical, Physical and Engineering Sciences, Royal Society London, U.K.

Zinke, J., Dullo, W-Chr., Thomassin, B. A. in prep. ENSO variability in a 135 years coral record from Mayotte (southwestern Indian Ocean) using a coupled-proxy approach. (*Journal of Geophysical Research*)

Zinke, J., Dullo, W.-Chr. & Thomassin, B. A. in prep Reliability of Madagascar coral isotope records: A multi-core approach (*Geophysical Research Letters*)

Zinke, J., Pfeiffer, M., Dullo, W.-Chr. in prep. *In situ* calibration of stable isotopes and trace elements in western Indian Ocean corals (*Geochimica et Cosmochimica Acta*)

Zinke, J., Thomassin, B. A., Reijmer, J. J. G. & Dullo, W.-Chr. in prep, Faunal response to the Holocene transgression in the lagoon of Mayotte. (*Facies*)

## Enclosure 8

# Drilling Proposals in/for Europe

1)The mandate of these workshops (2-3 days) could be to

a) strengthen existing European IODP drilling proposals

b) support new proposals for the IODP initiatives for microbiology, seismology, gashydrates, etc.

c) enlarge the cooperation with ICDP and IMAGES (?) (e.g. Golf of Corinth)...

At the workshop's meeting the European role in

- microbiology

- uplift of the Himalaya (Indus, Bengal, Red River, Yangtze.....)

- Mediterranean / Black-Sea drilling (Golf of Corinth, Backstop at Crete, Africa-Iberia-Collision....)

- seismology

- and other topics

should be discussed among potential proponents. ESSAC should suggest and nominate for each workshop two coordinators (Hermann Kudraß, Germany)

**2)** ) POLAR MARGIN DRILLING, science and technology, building from the ANTOSTRAT (Legs 178 and 188) and ACEX experience. ACE (ANTOSTRAT has now been replaced by ACE, Antarctic climate Evolution) proposals for the Antarctic margins and future arctic drilling. (Angelo Carmenlenghi-Italy)

**3).** possible IODP targets in the Mediterranean area: (Angelo Carmenlenghi- Nevio Zitellini Italy)

a) Gulf of Cadiz area: This sector, even if not geographically Mediterranean, could be considered "Mediterranean" from a geological point of view because here is the seaward continuation of the Rif -Betic Cordillera and Rift Chains. A large scientific community is actually working here and three Euromargins project are presently active in the area: MvSeis, WestMed and SWIM, plus several nationally-funded projects. This sector should be already considered one of the "mature focus" for future drilling in the Mediterramean. As matter of fact three pre-proposal have been already submitted: "Lisbon seismogenic zone experiment: A proposal to drill the source region of the great 1755 earthquake in the Gulf of Cadiz" (proponent M.A. Gutscher) "Contourites and climate in the Gulf of Cadiz: environmental significance of the drift record and its global implications" (proponent F.Javier Hernandez-Molina, "source to sink sediment transport" (proponent Susana Lebreiro). Soon, the ESF will probably organize an Euromargins workshop entitled: Iberia Margin Paleoseismology and Active Tectonics (Impact) submitted by M.A. Gutscher. Concluding, I strongly suggest ESSAC to include the Gulf of Cadiz - Alboran

sea and one of the "focus" for future drilling in the Mediterranean, in addition ESSAC should get in touch with the ESF representative to coordinate the actions (the EFS representative at ECORD is Dr. Martina Hilger-Hildebrandt).

## b.1) Tyrrhenian sea:

Recent re-processing of the MCS data collected as site survey for the previous ODP leg 107 (sites 650-656) showed that probably most of the oceanic crust present in the central part of the Tyrrhenian is made of serpentinized mantle exumated during the rifting (for review of the data set see Sartori et al. 2004, Tectonophysiscs, 383, 171-192). In the Tyrrhenian basin tilted continental blocks could be compared to the "extensional allochthons" of the Iberia margin as well, the serpentinized peridotites, emplaced during Pliocene, drilled at ODP Site 651 may be analogous to the peridotite ridge observed off Iberia. But, differently from Iberia, the Tyrrhenian shows the large submarine volcanic crests, ridges, and edifices not related to spreading processes. In addition the Tyrrhenian shows some peculiarity that candidates itself as an ideal place to further proceed in the understanding of the mechanism of continental separation by low angle detachment faults: it is highly asymmetric, the conjugate margins are facing each other at less than 100 km, there is little sedimentary cover in the oceanized sector.

## b.2) Tyrrhenian sea:

Between Sardinia and Sicily (Sardinia channel) a 350 Km wide submarine collisional belt extends from Sardinia to the Pelagian foreland. Tectonically, this collisional belt id made up of continental crystalline nappes and thrust-sheets, mainly emplaced with S and SE vergence during Oligocene to Pliocene. The main regional tectonic features are two low-angle SE verging overthrusts. Since late Pliocene this area is reactivated in compression. It would be very interesting to penetrate through the thrust surface separating the upper crystalline units from the lower units of Kabylo-Calabrian type to determine the reological nature (brittle/ductile), the fluid character and the physiochemical rock parameters associated with it.

## c) Ionian Sea:

Old remnant of Tethys or Neotethys, oceanic crust or thinned continental crust? This is a very old issue, very relevant at global scale. Is should be one of the "main focus" for future drilling

## 4) Deep Biosphere or Life in Extreme Environments. (Judy McKenzie, Switzerland).

5) The Iceland insular margin and adjacent ridges as a future IODP drilling site

Being the largest subaerial part of the mid-ocean rift system and an arctic gateway Iceland provides a unique setting for research spanning many fields of the geosciences. The Iceland-hotspot/MAR system is among the largest active magmatic systems on Earth and has generated structural and compositional anomalies spanning a geographic area greater than any other plume/ridge system today. The Iceland region is thus a target for various researches related to the formation and evolution of the mid-oceanic rift system and plume-ridge interactions. A recent IODP proposal 646 (Murton et al.) aims to test several hypotheses for the origin and affects of the hotspot responsible for the formation of the Iceland plateau through its interaction with the adjacent, slow-spreading Reykjanes

Ridge in order to recover a record of Icelandic hotspot volcanism and its variability over the past 35 Ma. The proposal links to several decades of research into the Iceland phenomenon and its aims has been identified as a high priority in the Initial Science Plan for IODP. Study of the Iceland-Reykjanes Ridge couplet is also recognised as a type example of hotspot-ridge interaction by the InterRidge community. The proposed study will enhance scientific understanding of mantle hotspot dynamics, the causes of variation in composition and melting, and the steady-state plate tectonic cycle of the mid-ocean ridge system.

Extensive volcanism within the Iceland region is reflected in structurally and geochemically more complicated volcanic systems, both on land and offshore, than along the oceanic ridge system. Volcanic eruptions within this region are affected by highly variable environmental conditions, being subaerial, subglacial, and submarine. Monitoring of crustal deformation and seismic activity within recently active volcanic systems along the rift axes and near the center of the Iceland hot spot has greatly advanced our understanding of how volcanoes work. Modern day monitoring and surveying techniques draw on experience gained during seismic and volcanic crisis in the last three decades. At the same time the Icelandic nation is vulnerable to these natural hazards. High-temperature geothermal energy, one of the prime resources of Iceland, is maintained by migration of magma forming shallow intrusions or crustal magma chambers within the central volcanoes. Both high-temperature and low-temperature geothermal fields have recently been discovered offshore.

Use of fossil fuel resulting in the greenhouse effect calls for an increased understanding of global climate change. Iceland's location in the North Atlantic is ideal for various studies aimed at reconstructing the dynamics of past environmental and climatic variability in order to understand interactions between components of the global system. Iceland's glaciers, indicators of the response of the cryosphere to climate warming, are important analogues to warm-based Pleistocene ice sheets. Sedimentary sequences on land and offshore contain a detailed record of Tertiary and Quaternary palaeoenvironments including climatic variability and glaciation history. Marine sediments on Iceland's insular self, mostly unexplored, are likely to contain high resolution, (multi-proxy) paleoclimate records of past environmental changes necessary to identify and understand processes that may affect climate on Earth in the coming decades. Whereas major volcanic eruptions have had a temporary influence on global climate in the past, their tephra layers, preserved in sediments, provide age control on sedimentation rates.

The Iceland insular margin is a natural laboratory for the study of various important geological processes shaping our planet. An IODP leg across the Icelandic shelf will touch upon several key topics introduced in the IODP-science plan. We thus propose that Iceland's insular margin be nominated as a hotspot region within the ECORD-IODP science plan. Bryndís Brandsdóttir, on behalf of an IODP-proposal working group in Iceland

## 6) Towards a Baltic Sea IODP-drilling

Thomas Andrén, Gerhard Best, Tom Floden, Jan Harff, Annakaisa Korja, Aarno Kotilainen, Wolfram Lemke, Martin Meschede, Väino Puura

Since April 2002 a group of about 30 scientists from the countries around the Baltic Sea have been actively discussing and preparing a geological drilling programme for the Baltic Sea Basin within the frame of the IODP. The drilling initiative would address the core themes of the IODP science plan and answer to the following fundamental scientific questions related to the evolution of the Baltic Sea Basin and the preservation of climatic records.

1. How do Mesoproterozoic igneous rocks (Rapakivi Granites) and sediments (Jotnian Sandstone) in the central and northern Baltic Sea reflect early stages of continental breakup and basin formation?

2. Unique deltaic sediments in the graben structure southwest of the Island of Bornholm (within the Tornquist-Tesseyre Zone) can be investigated as documents of environmental change and sea level development during the Cretaceous.

3. Quaternary sediments from the Eemian to the Holocene provide an excellent and high resolution record of climate and environmental change for the last glacial cycle in an intracontinental setting.

The research programme will concentrate on topics as

- Evolution of the Mesoproterozoic Baltic-Bothnian intracratonic rift system and inherited basins (to be approached by the "Proterozoic group")

Questions to be answered:

What do the formation and evolution of the Mesoproterozoic basins tell about the breaking up of the supercontinents?

What are the relationships between mafic magmatism and sedimentary sequences during continental breakup? How do the continental basins evolve through time?

Do the redbeds within the Mesoproterozoic sequence reflect a climate change or just general paleo-latitudes?

- *Eustatic sea level change vs. crustal dynamics during the Cretaceous* ( to be approached by the "Cretaceaous Group")

Questions to be answered:

How did the sea level changes in Late Cretaceous times influence the sedimentary evolution of a marginal basin?

Can the climatically influenced eustatic change be separated from tectonically induced vertical crustal movement during the Late Cretaceous and what is the climate signal within the amplitude of sea level change?

Are correlation of anoxic events with other ODP-sites from the Northern Atlantic possible?

- *The growth and decay of the Last Scandinavian ice sheet* (to be approached be the "Quaternary group"):

Questions to be answered:

Are there differences in the climatic system between the last interglacial and the anthropogenically influences Holocene and how are they expressed in a high- resolution intracontinental sedimentary record?

Is it possible to refine palaeo-climatic reconstructions to an annual scale by studying thick deltaic deposits of large scale drainage systems in marginal seas?

A pre-proposal of a BALTIC IODP is planned to be submitted by October 1, 2004.

The proposed drilling sites are given in Figure 1.

These sites will be investigated by geophysical profiling and sediment sampling during a pre-site survey using the R/V "Maria S. Merian" in the fall 2005. (Kari Strand, Finland)

## 7) Drilling through an active caldera, offshore Campi Flegrei, South Italy

Proponents G. De Natale, INGV - Osservatorio Vesuviano – Naples (I) M. Sacchi, IAMC - CNR – Naples (I) P. De Natale, INOA-CNR – Naples (I) L. Burlini, ETHZ – Zurich (CH) P. Meredith – C. Kilburn, UCL – London (UK)

Candidate drilling site Continental shelf offshore the Campi Flegrei, South Italy Latitude 40.8°N; Longitude 14.1°E Water depth range (50-300) Summit elevation of the caldera onland: 458 m

Rationale

The Campi Flegrei represent a key example in the world of an active caldera entirely located within a densely populated continental margin. As it partially develops beneath the sea water, over the inner continental shelf of the Eastern Tyrrhenian Margin (South Italy), the Campi Flergrei is likely the most appropriate site to test the potential of joint Mission Specific Platform (MSP) activity of IODP and ICDP across a volcanically active continental margin.

Interest of the initiative, scientific impact and implications

<u>General</u>

- Establish an ECORD group working on active volcanic margins and calderas
- Build a first joint IODP-ICDP initiative in Europe
- Implement research-industry liaisons
- Implement IODP Mission Specific Platform activity on continental margins Specific
- Reconstruct the anatomy and structure of a caldera
- Understand the geothermal system and promote industry links
- Monitor the dynamics and chemistry of fluids circulation
- Implement new drilling technologies and materials under high geothermal gradients
- characterize bacterial activity and image the deep biosphere in volcanic contexts

## 8) North and South Atlantic records Fatima Abrantes (Portugal)

To investigate the linkages between North Atlantic records (IODP legs 303, 306, ODP 162), South Atlantic records (off Africa and Circumpolar Ocean sites) and Pacific records (Ontong-Java Plateau may be; Chilean and Peru margin) and Antarctic ice core records between MIS11 and 1 myr.

Similarities and discrepancies between ocean areas and between ocean and ice core sites (mainly EPICA Dome C and Dome Fuji); shifts of deep/ bottom water convection areas on glacial/ interglacial and higher frequency time scales; influence of sea level and amount of sea level lowering; carbon cycle/ productivity?; land-ocean interaction (dust, polllen?); weathering?

but also: find areas in oceans where records are needed (future IODP legs); specific proxies needed?

people to invite/ involve: marine community, ice core community, pollen people, modelers

## ECORD co-chief nominations (Corvallis 10/2004)

PROPOSAL	co-chiefs	country	e-mail	affiliation
# 573 Porcupine	Jean-Pierre Henriet	Belgium	jeanpierre.henriet@rug.ac.be	Ghent University
	Christian Betzler	Germany	betzler@geowiss.uni-hamburg.de	University of Hamburg
	Jean-Paul Foucher	France	Jean.Paul.Foucher@ifremer.fr	Ifremer
#589 GOM	Andrew J. Whittle	UK	ajwhittl@mit.edu	MIT Department of Civil and Environmental Engineering
	K. Andreassen	Norway	a.k.andreassen@studmed.uio.no	Univeristy of Oslo
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# VITA

## October 2004

# Jan H. Behrmann

Born at:	23.2.1953 in Ingolstadt (Bavaria, Germany)		
Addresses:	Geologisches Institut, Universität Freiburg Albertstr. 23 B, 79104 Freiburg, Germany		
	Tel.:       0761-2036495         Fax:       0641-2036496         E-mail:       behrmann@sun2.ruf.uni-freiburg.de         (work)		
	Zähringer Str. 379, D-79108 Freiburg, Germany		
	Tel.: 0761-5562011 (home)		
Education:	Abitur, Gymnasium Hersbruck (Bavaria), 1972.		
	Science Diploma in Geology, Universität Erlangen, 1978.		
	Doctor of Philosophy, University of Oxford, 1982.		
	Habilitation in Geology, Justus-Liebig-Universität Giessen, 1990.		
Professional	National Service, German Army, 1972-1974.		
experience:	Geologist in ore exploration, Esso Erz GmbH, Nürnberg, Germany, 1979.		
1982.	Teaching assistant, University of Oxford, England, 1979-		
	Project geologist in gold exploration, BP Minerals International plc, London, England 1982-1984.		
	Research Fellow, Universität Tübingen, Germany, 1984-1986.		
	Akademischer Rat, Justus-Liebig-Universität Giessen, Germany 1986-1995. 1990, venia legendi in Geology.		

Professional experience (ctd.)	Full Professor of Geology, Albert-Ludwigs-Universität Freiburg, Germany, from 1995
	Teaching contract in Tectonics, Philipps-Universität Marburg, Germany, 1987-1988.
committees	Served on numerous scientific advisory boards and
	(e.g. Ocean Drilling Program, Deutsche Forschungsgemein- schaft, German-Israeli Foundation, GFZ Potsdam, German Ministery of Education and Research, International Continental Drilling Program)
1991/92	Co-Chief-Scientist, Leg 141, Ocean Drilling Program,
<b>Dissertations</b> :	Petrographisch-gefügekundliche und tektonische Studien an Gesteinen des Penninikums und Unterostalpins um Gries am Brenner (Tirol, Österreich). Diplomarbeit, Erlangen 1978.
These	Structures and deformational processes in a zone of contact strain beneath a nappe, Sierra Alhamilla, Spain. D.Phil.
Thesis,	Oxford 1982.
	Zur Kinematik der Kontinentkollision in den Ostalpen. Habilitationsschrift, Giessen 1989.
Academic Awards:	Florey European Studentship, The Queen's College, Oxford. (1979-81). Albert-Maucher-Preis für Geowissenschaften. (1987).
Membership on Editorial Boards:	Geologische Rundschau (since 1994) Journal of Structural Geology (since 1996)
Publications:	see list of publications.
Invited talks und colloquia: (2000-2004)	Universität Jena, 2000 European Geophysical Society, Nice, 2000 GeoForschungsZentrum Potsdam, 2000 Technische Universität Clausthal, 2000 Universität Göttingen, 2001 Free University Berlin, 2002 BGR, Hannover, 2002 TRANSALP-Symposium, Trieste, 2003 EGU, Nice, 2003 Universität Basel, 2003 Universität Tübingen, 2003 TSK, Aachen, 2004 ENTEC, Vienna, 2004

## J.H. Behrmann

# **Research Experience and Publications relevant to ODP/IODP**

## **Research Experience, shipbased**

ODP Leg 110, Barbados Ridge Sailed as sedimentologist/structural geologist

ODP Leg 141, Chile Triple Junction Sailed as co-chief scientist

## **Research Experience shorebased**

ODP Leg 128, Japan Sea Shore-based study of rock fabric evolution and diagenesis

ODP Leg 131, Nankai Trough Shore-based study of texture development and sediment deformation

ODP Leg 146, Cascadia Shore-based study of diagenesis and isotope geochemistry

ODP Leg 160, Mediterranean Ridge Shore-based study of mud volcano dynamics

ODP Leg 180, Woodlark Basin Shore-based study of dynamics of detachment faulting, and rock-fluid interaction

ODP Leg 186, Japan Trench Shore-based study of geotechnical properties of forearc sediments

## Publications (full papers only, no abstracts)

Total number of publications of J.H. Behrmann, all topics: 146 ISI Web of Science citations given Numerous independent publication of members of my working group not listed here

## ODP Leg 110, Barbados Ridge

Mascle, A., Moore, J.C., Taylor, E., Andreieff, P., Alvarez, F., Barnes, R., Beck, C., Behrmann, J., Blanc, G., Brown, K., Clark, M., Dolan, J., Gieskes, J., Fisher, A., Hounslow, M., McLellan, P., Moran, K., Ogawa, Y., Sakai, T., Schoonmaker, J., Vrolijk, P., Wilkens, R. & Williams, C. , 1987. Accretionary complex penetrated, defined. - Geotimes, January **1987**, 13-16.

#### 9 HITS, ISI WEB OF SCIENCE

Mascle, A., Moore, J.C., Taylor, E., Andreieff, P., Alvarez, F., Barnes, R., Beck, C., Behrmann, J., Blanc, G., Brown, K., Clark, M., Dolan, J., Gieskes, J., Fisher, A., Hounslow, M., McLellan, P., Moran, K., Ogawa, Y., Sakai, T., Schoonmaker, J., Vrolijk, P., Wilkens, R. & Williams, C. , 1987. Preliminary-results of ODP Leg-110 drilling through the Barbados Ridge Accretionary complex. - Comptes Rendus de l'Aademie des Sciences Serie II, **305**, 1441-1444.

#### **1 HIT, ISI WEB OF SCIENCE**

Moore, J.C., Mascle, A., Taylor, E., Andreieff, P., Alvarez, F., Barnes, R., Beck, C., Behrmann, J., Blanc, G., Brown, K., Clark, M., Dolan, J., Gieskes, J., Fisher, A., Hounslow, M., McLellan, P., Moran, K., Ogawa, Y., Sakai, T., Schoonmaker, J., Vrolijk, P., Wilkens, R. & Williams, C. , 1987. Expulsion of deep-sourced fluids along subduction zone decollement, northern Barbados ridge. - Nature, **326**, 785-788.

#### 69 HITS, ISI WEB OF SCIENCE

Beck, C., Blanc, G. Mascle, A., Moore, J.C., Taylor, E., Alvarez, F., Andreieff, P., Barnes, R., Behrmann, J., Brown, K., Clark, M., Dolan, J., Fisher, A., Gieskes, J., Hounslow, M., McLellan, P., Moran, K., Ogawa, Y., Sakai, T., Schoonmaker, J., Vrolijk, P., Wilkens, R. & Williams, C., 1988. Anatomie et physiologie d'un prisme d'accrétion: premieres resultats des forages du complexe de la ride de Barbade, Leg 110 ODP. - Bull. Soc. Géol. France, **1988**, 129- 140.

## 11 HITS, ISI WEB OF SCIENCE

Mascle, A., Moore, J.C., Taylor, E., Andreieff, P., Alvarez, F., Barnes, R., Beck, C., Behrmann, J., Blanc, G., Brown, K., Clark, M., Dolan, J., Gieskes, J., Fisher, A., Hounslow, M., McLellan, P., Moran, K., Ogawa, Y., Sakai, T., Schoonmaker, J., Vrolijk, P., Wilkens, R. & Williams, C., 1988. Barbados Ridge. - Proc. ODP, Init. Repts. (Pt. A), **110**, 603 pp.

## 74 HITS, ISI WEB OF SCIENCE

Behrmann, J.H., Brown, K., Moore, J.C., Mascle, A., Taylor, E., Andreieff, P., Alvarez, F., Barnes, R., Beck, C., Blanc, G., Clark, M., Dolan, J., Gieskes, J., Fisher, A., Hounslow, M., McLellan, P., Moran, K., Ogawa, Y., Sakai, T., Schoonmaker, J., Vrolijk, P., Wilkens, R. & Williams, C., 1988. Evolution of structures and fabrics in the Barbados Accretionary Prism. Insights from Leg 110 of the Ocean Drilling Program. - J. Struct. Geol., **10**, 577-591.

## 31 HITS, ISI WEB OF SCIENCE

Blanc, G., Gieskes, J., Vrolijk, P., Mascle, A., Moore, J.C., Taylor, E., Alvarez, F., Andreieff, P., Barnes, R., Beck, C., Behrmann, J., Brown, K., Clark, M., Dolan, J., Fisher, A., Hounslow, M., McLellan, P., Moran, K., Ogawa, Y., Sakai, T., Schoonmaker, J., Wilkens, R. & Williams, C. Advection des fluides interstitiels dans les séries sédimentaires du complexe d'accrétion de la Barbade (Leg 110 ODP). - Bull. Soc. Géol. France, **1988**, 453-460.

## **19 HITS, ISI WEB OF SCIENCE**

Moore, J.C., Mascle, A., Taylor, E., Andreieff, P., Alvarez, F., Barnes, R., Beck, C., Behrmann, J., Blanc, G., Brown, K., Clark, M., Dolan, J., Gieskes, J., Fisher, A., Hounslow, M., McLellan, P., Moran, K., Ogawa, Y., Sakai, T., Schoonmaker, J., Vrolijk, P., Wilkens, R. & Williams, C., 1988. Tectonics and hydrogeology of the northern Barbados Ridge: results fom Leg 110 ODP. - Geol. Soc. Am. Bull., **100**, 1578-1593.

#### 107 HITS, ISI WEB OF SCIENCE

Agar, S.M., Prior, D.J. & Behrmann, J.H., 1989. Backscattered electron imagery of the tectonic fabrics of some fine grained sediments: Implications for fabric nomenclature and deformation processes. - Geology, **17**, 901-904.

#### 17 HITS, ISI WEB OF SCIENCE

Gieskes, J., Blanc, G., Vrolijk, P., Moore, J.C., Mascle, A., Taylor, E., Andreieff, P., Alvarez, F., Barnes, R., Beck, C., Behrmann, J., Brown, K., Clark, M., Dolan, J., Fisher, A., Hounslow, M., McLellan, P., Moran, K., Ogawa, Y., Sakai, T., Schoonmaker, J., Wilkens, R. & Williams, C., 1989. Hydrogeochemistry in the Barbados accretionary complex. - Paleogeogr. Paleoclimatol. Paleoecol., **71**, 83-96.

#### 19 HITS, ISI WEB OF SCIENCE

Prior, D.J. & Behrmann, J.H., 1990. Backscatter SEM imagery of fine-grained sediments from Site 671, ODP Leg 110 - preliminary results. - Proc. Ocean Drilling Program, Sci. Results, **110**, 245-255.

#### 7 HITS, ISI WEB OF SCIENCE

Brown, K.M., Mascle, A. & Behrmann, J.H., 1990. Mechanisms of accretion and subsequent thickening in the Barbados Ridge accretionary complex: balanced cross sections across the toe of the wedge. - Proc. Ocean Drilling Program, Sci. Results, **110**, 209-227.

#### 20 HITS, ISI WEB OF SCIENCE

Brown, K.M. & Behrmann, J.H., 1990. Genesis and evolution of small scale structures in the toe of the Barbados Ridge. - Proc. Ocean Drilling Program, Sci. Results, **110**, 229-244.

#### 25 HITS, ISI WEB OF SCIENCE

Prior, D.J. & Behrmann, J.H., 1990. Thrust-related mudstone fabrics from the Barbados forearc: a backscattered Scanning Electron Microscope study. - J. Geophys. Research, **95**, 9055-9067. **16 HITS, ISI WEB OF SCIENCE** 

#### ODP Leg 128, Japan Sea

Kopf, A. & Behrmann, J.H., 1997. Fabric evolution and mechanisms of diagenesis in fine grained sediments from the Kita-Yamato trough, Japan Sea. - J. Sedimentary Research, **67**, 604-614.

#### ODP Leg 131, Nankai Trough

Brückmann, W., Byrne, T., Behrmann, J.H. & Taylor, E., 1991. Structural control of convergence induced physical property anisotropies in Nankai Trough sediments (ODP Leg 131). - EOS,

Transactions Am. Geophys. Union, 72(44), 546.

Behrmann, J.H. & Kopf, A., 1993. Textures and microfabrics in fine grained muds and mudstones from ODP Site 808, Nankai accretionary prism. - Proc. Ocean Drilling Program, Sci. Results, **131**, 45-56. **5 HITS, ISI WEB OF SCIENCE** 

#### ODP Leg 141, Chile Triple Junction

Behrmann, J., Lewis, S. & Musgrave, R., 1991. Ocean Drilling Program Leg 141 Scientific Prospectus, Chile Triple Junction. - ODP, Scientific Prospectus, **41**, 1-46.

Behrmann, J.H., 1991. Conditions for hydrofracture and the fluid permeability of accretionary wedges. - Earth and Planet. Sci. Lett., **107**, 550-558. **31 HITS, ISI WEB OF SCIENCE** 

Behrmann, J., Lewis, S. & Musgrave, R., 1992. Leg 141 Preliminary Report, Chile Triple Junction. -Ocean Drilling Program, Preliminary Report, **41**, 1-45. **1 HIT, ISI WEB OF SCIENCE** 

Lewis, S.D., Behrmann, J.H., Musgrave, R., Bangs, N., Bodén, P., Brown, K., Collombat, H., Didenko, A.N., Didyk, B.M., Froelich, P.N., Golovchenko, X., Forsythe, R., Kurnosov, V., Lindsley-Griffin, N., Marsaglia, K., Osozawa, S., Prior, D., Sawyer, D., Scholl, D., Spiegler, D., Strand, K. Takahashi, K., Torres, M., Vega-Faundez, M., Vergara, H. & Waseda, A., 1992. ODP Leg 141 investigates the geology and Tectonics of the Chile Triple Junction. - EOS, Transactions Amer. Geophys. Union, **73(38)**, 404-410.

#### 4 HITS, ISI WEB OF SCIENCE

ODP Leg 141 Scientific Party (Behrmann, J.H., Lewis, S.D., Musgrave R. et al.), 1992. Ocean Drilling yields surprises at the Chile Triple Junction. - Geotimes, **September 1992**, 19-21.

Behrmann, J.H., Lewis, S.D., Musgrave, R., Bangs, N., Bodén, P., Brown, K., Collombat, H., Didenko, A.N., Didyk, B.M., Froelich, P.N., Golovchenko, X., Forsythe, R., Kurnosov, V., Lindsley-Griffin, N., Marsaglia, K., Osozawa, S., Prior, D., Sawyer, D., Scholl, D., Spiegler, D., Strand, K. Takahashi, K., Torres, M., Vega-Faundez, M., Vergara, H. & Waseda, A., 1992. Chile Triple Junction. - Proc. ODP, Init. Repts. (Pt. A), **141**, 1-708. **33 HITS, ISI WEB OF SCIENCE** 

Behrmann, J.H., Lewis, S.D., Musgrave, R., Bangs, N., Bodén, P., Brown, K., Collombat, H., Didenko, A.N., Didyk, B.M., Froelich, P.N., Golovchenko, X., Forsythe, R., Kurnosov, V., Lindsley-Griffin, N., Marsaglia, K., Osozawa, S., Prior, D., Sawyer, D., Scholl, D., Spiegler, D., Strand, K. Takahashi, K., Torres, M., Vega-Faundez, M., Vergara, H. & Waseda, A., 1993. Subduktion eines aktiven ozeanischen Spreizungsrückens vor der Küste von Südchile. - Die Geowissenschaften, **11**, 288-292. **1 HIT, ISI WEB OF SCIENCE** 

Lewis, S.D., Behrmann, J.H., Cande, S.C. & Musgrave, R.J., 1994. Tectonics of the Chile Margin Triple Junction from geophysical and scientific ocean drilling studies. - Actas 7° Congreso Géol. Chileno, **1**, 86-90.

Behrmann, J.H., Lewis, S.D., Cande, S. and ODP Leg 141 Scientific Party, 1994. Tectonics and geology of spreading ridge subduction at the Chile Triple Junction; a synthesis of results from Leg 141 of the Ocean Drilling Program. - Geol. Rundschau, **83**, 832-852. **18 HITS, ISI WEB OF SCIENCE** 

Lewis, S.D., Behrmann, J.H., Musgrave, R., Bangs, N., Bodén, P., Brown, K., Collombat, H., Didenko, A.N., Didyk, B.M., Froelich, P.N., Golovchenko, X., Forsythe, R., Kurnosov, V., Lindsley-Griffin, N., Marsaglia, K., Osozawa, S., Prior, D., Sawyer, D., Scholl, D., Spiegler, D., Strand, K. Takahashi, K., Torres, M., Vega-Faundez, M., Vergara, H. & Waseda, A., 1995. Chile Triple Junction. - Proc. ODP, Sci. Results., **141**, 1-499.

#### **3 HITS, ISI WEB OF SCIENCE**

Kilian, R. & Behrmann, J.H., 1997. Southern Chile trench sediments: Chemical and isotopic

constraints on their sources. - Actas 8° Congreso Géol. Chileno, **3**, 1661-1665. **2 HITS, ISI WEB OF SCIENCE** 

Behrmann, J.H. & Kopf, A., 2001. Balance of tectonically accreted and subducted sediment at the Chile Triple Junction. – Int. J. Earth Sciences (Geol. Rundsch.), **90**, 753-768. **4 HITS, ISI WEB OF SCIENCE** 

Kilian, R. & Behrmann, J.H., 2003. Geochemical constraints on the sources of continent-related deepsea sediments and their recycling in arc magmas of the Southern Andes. - J. Geol. Soc. Lond., **160**, 57-70.

1 HIT, ISI WEB OF SCIENCE

#### ODP Leg 146, Cascadia

Behrmann, J.H., Bauer, P. & Kopf, A., 1995. Data report: provenance analysis of quaternary sands and sandstones from Cascadia margin. - Proc. Ocean Drilling Program, Sci. Results, **146**, 425-429. **1 HIT, ISI WEB OF SCIENCE** 

Kopf, A., Sample, J.C., Bauer, P., Behrmann, J.H. & Erlenkeuser, H., 1995. Diagenetic carbonates from Cascadia margin: textures, chemical compositions, and oxygen and carbon stable isotopic signatures. - Proc. Ocean Drilling Program, Sci. Results, **146**, 117-136. **8 HITS, ISI WEB OF SCIENCE** 

#### ODP Leg 160, Mediterranean Ridge

Kopf, A., Flecker, R., Robertson, A.H.F, Woodside, J.M., Brumsack, H.-J., Cramp, A. & Behrmann, J.H., 1996. Mud volcanism on the Mediterranean Ridge; insights from the Milano and Napoli mud domes (ODP Leg 160). - Terra Nostra, **96-4**, 54-55.

Kopf, A., and Behrmann, J.H., 2000. Extrusion dynamics of mud volcanoes on the Mediterranean Ridge accretionary complex. In: Vendeville, B., Mart, Y. & Vigneresse, J.-L. (eds.), From the Arctic to the Mediterranean: Salt, shale, and igneous diapirs in and around Europe. - Geol. Soc. London, Spec. Publ., **174**, 169-204.

10 HITS, ISI WEB OF SCIENCE

#### ODP Leg 180, Woodlark Basin

Roller, S., Behrmann, J.H. & Kopf, A., 2001. Deformation fabrics of faulted rocks, and some syntectonic stress estimates from the active Woodlark Basin detachment zone. - Geol. Soc. London, Spec. Publ., **187**, 319-334.

Kopf, A., Behrmann, J.H., Deyhle, A., Roller, S. & Erlenkeuser H., 2003. Isotopic evidence (B, C, O) of deep fluid processes in fault rocks from the active Woodlark Basin detachment zone. – Earth Planet. Sci. Lett., **208**, 51-68. **1 HIT, ISI WEB OF SCIENCE** 

#### ODP Leg 186, Japan Trench

Roller, S., Pohl, C. & Behrmann, J.H., 2003. Data Report: Investigations on triaxial shear strength of sediments and sedimentary rocks from the Japan Trench – ODP Leg 186. – In: Suyehiro, K., Sacks, I.S., Acton, G.D. & Oda, M (eds.): Proc. ODP, Sci. Res., **186**, 1-19. **1 HIT, ISI WEB OF SCIENCE** 

## CHRISTIAN GUY BETZLER

Birthdate: Current Posit Civil Status:	<ul><li>September 20, 1958</li><li>on: Darwin Professor in Basin Analysis married, two children</li></ul>	
Address:	Geologisch-Paläontologisches Institut, Bundesstr. 55, 20146 Hamburg, Germa Phone: +49-40-42838 5011; Fax: +49-40-42838 5007	
and:	<ul> <li>e-mail: betzler@geowiss.uni-hamburg.de</li> <li>d: Department of Earth Sciences, University of Cambridge, Downing Street Cambridge CB2 3EQ, UK</li> </ul>	

## **Professional Experience:**

since April 2003: Vice-Dean of the Earth Science faculty at Hamburg University since Nov. 2002: Director of the Geological and Paleontological Institute, Hamburg University since 2000: Darwin Professor in Basin Analysis, Hamburg and Cambridge Universities 2000: Acting Chair, Department of Geology, Erlangen University 1998: Cruise, ODP Leg 182, Great Australian Bight 1997-2000: Heisenberg Fellow at Frankfurt University 1996: Cruise, ODP Leg 166, Great Bahama Bank 1996-2000: Associate Professor, Department of Geology, University of Frankfurt 1991, 1992: Field Campaign Malawi and Tanzania 1990: Cruise, ODP Leg 133, NE Australian Margin 1990-2000: Assistant Professor, Department of Geology, University of Frankfurt 1989-2000: Postdocteral Fellow, Department of Geology; University of Tuebingen 1989: Cruise, ODP Leg 124, Celebes and Sulu Sea 1986-1989: Graduate Research Assistant, Department of Geology, University of Tuebingen 1982-1985: Research Assistant to C. Hemleben, University of Tuebingen

## Academic Awards:

Heisenberg Fellowship of the DFG,

Award for the best Habilitation Thesis of the Science departments, Frankfurt University, DAAD Fellowship.

## **Research Interest:**

Carbonate sedimentology and sequence stratigraphy. Sedimentological-paleoceanographical links.

## **Professional Societies:**

Member AAPG, AGU, SEPM, Geologische Vereinigung, Sociedad Española de Geologia.

## Languages:

German, French, English, Spanish

## **Education:**

1996: Habilitation, Universität Frankfurt. Thesis: Der Einfluß von Klima- und Meeresspiegel auf die Bildung tertiärer Karbonate. Eine Fallstudie zum Queensland Plateaus (Nordostaustralien) mit ergänzenden Beispielen aus Südaustralien und Südspanien. ("Climate and sea-level control on formation of tertiary carbonates with examples from the Queensland Plateau, South Australia and Spain").

1989: Ph.D., Universität Tübingen. Thesis: The Upper Paleocene to Middle Eocene between the Rio Segre and the Rio Llobregat (Eastern South Pyrenees): Facies, stratigraphy and structural Evolution.

1984: Diploma, Universität Tuebingen. Thesis: Untersuchungen an Tiefseeforaminiferen aus Sedimenten des Akkretionsprismas östlich des Antillenbogens (Grenzbereich Mittel- Obereozän, Bath Cliff, Barbados).
#### Publications (1999-2004):

**subm.** Cuevas-Castell, J.M., **Betzler, C.,** Roessler, J.R., Hüssner, H.-M., Peinl, M. Integrating outcrop data and forward computer modeling to unravel the development of a Messinian carbonate platform in SE Spain (Sorbas Basin). Sedimentology.

**Betzler, C.,** Saxena, S., Swart, P.K., Isern, A., James, N.P. Cool-water carbonate sedimentology and eustasy; Pleistocene upper slope environments, Great Australian Bight. Sedimentary Geol.

- in Eberli, G.P., Anselmetti, F.S., **Betzler, C.**, Bernoulli, D., J.-H., Van Konijnenburg. Calibration of **press** Seismic Data from the Western Margin of Great Bahama Bank with Exposed Strata in the Maiella
- Mountains (Italy). AAPG Stud. Geol.
- 2004 James, N.P., Feary, D.A., Betzler, C., Bone, Y., Holbourn, A., Li, Q., Machiyama, H., Simo, T.J.A., Surlyk, F. Origin of Late Pleistocene bryozoan reef mounds; Great Australian Bight. J. Sed. Res., 74: 20-48.

Martin, J.M., Braga, J.C., Aguirre, J., **Betzler, C.** Contrasting models of temperate carbonatge sedimentation in a Pliocene, small Mediterranean Sea embayment (Carboneras Basin, SE Spain). J. Geol. Soc., 161: 387-399

**2003** Braga, J.C., **Betzler, C.**, Martin, J.M.M., Aguirre, J. Spit-platform temperate carbonates: landward downlapping beds at a basin margin (Lower Pliocene, Carboneras Basin, SE Spain). Sedimentology, 50: 553-563.

Martin, J.M.M., Braga, J.C., **Betzler, C.** Late Neogene uplift of the Cabo de Gata volcanic province, Almeria, SE Spain. Geomorphology, 50: 27-42.

Reijmer, J.J.G., Betzler, C., Mutti, M. DGG & GV 2001 MARGINS Meeting (Kiel, Germany) - New perspectives in carbonate sedimentology. Int. Journ. Earth Sci., 91: 441-444.

Saxena, S., **Betzler, C**. Genetic sequence stratigraphy and sediment volume Partitioning in cool water slope carbonates (Pleistocene Eucla Shelf, southern Australia). Int. Journ. Earth Sci., 92: 482-493

2002 Betzler, C. Sequenzstratigraphie. Lexikon d. Geowissenschaften, Spektrum Akadem. Verlag.
Gläser, I., Betzler, C. Facies partitioning and sequence stratigraphy of temperate water, mixed siliciclastic-carbonate sediments (Upper Miocene of the Guadalquivir domain, southern Spain). Int. Journ. Earth Sci., 91:1041-1053

Reijmer, J.J.G., **Betzler, C.,** Tiedeman, R., Kroon, D., Eberli, G.P. Bahamian carbonate platform development in response to sea level changes and the closure of the Isthmus of Panama. Int. Journ. Earth Sci., 91:482-489.

Reuning, L., Reijmer, J.J.G., **Betzler, C.** Sedimentation cycles on the slope of a Miocene carbonate ramp system (Bahamas, ODP Leg 166). Marine Geol., 185: 121-142.

2001 Hüssner, H., Roessler, J., Betzler, C., Petschick, R., Peinl, M. Testing 3-D computer simulation of carbonate platform growth with REPRO: The Miocene Llucmajor carbonate platform (Mallorca). Paleogeogr, Paleoclimatol., Paleoecol., 175:239-247
Martín, J.M., Braga, J.C., Betzler, C. The last Iberian Atlantic-Mediterranean gateway: The

Martín, J.M., Braga, J.C., **Betzler, C.** The last Iberian Atlantic-Mediterranean gateway: The Messinian Guadalhorce corridor. Terra Nova, 13:418-424.

**2000** Betzler, C., Kroon, D., Reijmer, J.J.G. Synchroneity of major late Neogene sea-level fluctuations and paleoceanographically controlled changes as recorded by two carbonate platforms. Paleoceanography, 15: 722-730.

**Betzler, C.,** Martín, J.M., Braga, J.C. Non-tropical carbonates related to rocky submarine cliffs (Miocene, Almeria, Southern Spain). Sedimentary Geol., 131:51-65.

**Betzler, C.,** Pfeiffer, M., Saxena, S. Shedding patterns and sedimentary cyclicities in periplatform deposits of a Neogene carbonate platform (Miocene, Great Bahama Bank). Geol. Rundschau, 89: 140-153.

James, N.P., Feary, D.A., Surlyk, F., Simo, T., **Betzler, C.**, Holbourn, A.E., Li, Q., Matsuda, H., Machiyama, H., Brooks, G.R., Andres, M.S., Hine, A.C., Malone, M.J., ODP Leg 182 Scientific Party, 2000. Quaternary bryozoan reef mounds in cool-water, upper slope environments: Great Australian Bight. Geology, 28: 647-650.

1999 Betzler, C., Reijmer, J.J.G., Bernet, K., Eberli, G.P., Anselmetti, F.S. Sedimentary patterns and geometries of the Bahamian outer carbonate ramp (Miocene and Lower Pliocene, Great Bahama Bank). Sedimentology, 46:1127-1146.
Hine, A.C., Feary, D.A., Malone, M.J., ODP Leg 166 Shipboard Scientific Party (incl. C. Betzler),

1999. Research in Great Australian Bight yields exciting early results. EOS, 80:525-526.

#### Curriculum vitae

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Ph. D.		Paleogeography, Moscow State University, Thesis: " Application of isotopic-oxygen method for Paleogeographical research
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Scientific Interests:

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Positions and Experience:

1. Engineer Experience:

Engineer, Scientific Research Institute of Experimental and Theoretical Physics, Arzamas-16, 1965-1968.

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Scientist, Pacific Institute of Geography, Far-Eastern Branch Academy of Sciense USSR, Vladivostok, 1972-1973.

Senior Scientist, Pacific Institute of Geography, 1973-1977.

Senior Scientist, Pacific Oceanological Institute, Far-Eastern Branch Russian Academy of Sciense, Vladivostok, 1977-1993.

Senior Scientist, Head of Paleooceanological Lab., Pacific Oceanological Institute, Vladivostok, 1993-present.

Quest Investigator, Woods Hole Oceanographic Institution, Woods Hole, MS, USA, March-May 1995, December 1996-May 1997.

3. Shipboard Experience:

1977 R/V Pervenets Cruise 29, coring, dredging and bathimetric survey, East-China and Japan seas. 1979 R/V Kallisto Cruise 11, coring, heat flux and bathimetric survey, Japan Sea.

1980 R/V Kallisto Cruise 13, coring, dredging and bathimetric survey, North Pacific.

1981 R/V Kallisto Cruise 15 coring, dredging and bathimetric survey, Okhotsk Sea, North West Pacific.

1984 R/V Akademic Aleksandr Nesmejanov, Cruise 4, coring, dredging, bathimetric survey, South West Pacific.

1988 R/V Akademic Aleksandr Nesmejanov, Cruise 17, coring, dredging bathimetric survey, West Pacific.

1991 R/V Akademic Aleksandr Vinogradov, Cruise 19, West Pacific, Bering Sea; coring, dredging, hydro station, sediment trap deployment.

1992 R/V Akademic Aleksandr Vinogradov, Cruise 23, East China, Japan Seas, coring, hydro station.

1993 Co-Chief Scientist Akademic Aleksandr Nesmejanov Cruise 25, Okhotsk Sea; coring, hydro station, WOCE leg.

1993 R/V Knorr Cruise 140, Leg. 2, Blake and Bahama Outer Ridges, surveying, piston coring and hydro stations.

1996 R/V Akademic Lavrenjev, Cruise 27, Okhotsk Sea, coring, hydro station,

1998 R/V Akademic Lavrenjev, Cruise 28, Okhotsk Sea, coring, hydro station,

#### LIST OF SOME PUBLICATIONS

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1993 Ph.D., Earth Sciences, University of Cambridge, UK.

1987 M.Sc (with Distinction), Geology, University of Otago, New Zealand

1985 B.Sc (Hons.), Geology, University of Otago, New Zealand

POSTS HELD

March 2004 to present: Reader, School of Ocean and Earth Science, University of Southampton 1999-2004 University Lecturer, School of Ocean and Earth Science, University of Southampton 1999-Adjunct Assistant Research Scientist, Dept. Geological Sciences, University of Michigan 1997-1999 Assistant Research Scientist, Dept. Geological Sciences, University of Michigan 1993-1997 Post-doctoral Research Fellow, Dept. Geological Sciences, University of Michigan

SCIENTIFIC OCEAN DRILLING EXPERIENCE/RESPONSIBILITIES:

2004 Lead proponent: "European Consortium for Ocean Drilling Enabling" European Collaborative Research Program (EuroCORES) to European Science Foundation. (UK-led proposal for multilateral cooperation on site survey operations for Ocean Drilling.)

2003 Lead Author IODP Proposal 522-Full3 – Return to Site 1256 Superfast Spreading Rate Crust.

- 2003 Project Leader, Australian Antarctic Division 56<sup>th</sup> Australian National Antarctic Research Expedition Project 2327 "Hydrothermal Alteration of the ocean crust exposed on Macquarie Island"
- 2002 2006 Co-Chief Scientist ODP Leg 206 Site 1256, Superfast Spread Crust
- 2000 present: UK/ECORD representative on the Science Steering Evaluation Panel for the Earth's Interior (ISSEP) for the Ocean Drilling Program, through the transition and now for the Integrated Ocean Drilling Program.
- 2000 present Steering Committee Member UK-NERC-ODP/IODP Directed Science Programme and peer-review committee
- 2001–2004 UK representative on InterRIDGE.
- 2001 Discussion Leader and sub-topic convener Frontiers in geochemistry and the Ocean Drilling Program, Nashua, New Hampshire 10/2000 (Workshop report published 2002; JOI, Washington)
- 1998-1999 Petrologist, ODP Leg 183, Kerguelen Plateau
- 1998 Host/convener ODP Leg 169 Post-cruise meeting Taupo/Wairakei/White Is. N.Z., 1998.
- 1996 Workshop on ODP sampling and curation to re-write sample distribution policy, 1996.
- 1996 Petrologist, ODP Leg 169, Sedimented Ridges II; Middle Valley/Escanaba Trough.

1995 Petrologist ODP Leg 163, SE Greenland Margin

- 1994 Shorebased Scientist, ODP Leg 158, TAG Hydrothermal Mound
- 1993 Petrologist, ODP Leg 148, Costa Rica Rift Hole 504B (+Hole 896A)

SELECTED RELEVANT RECENT PUBLICATIONS:

- Chan, L-H, Alt, J.C., Teagle, D.A.H., (2002) Lithium and lithium isotopic profiles through the upper oceanic crust: a study of seawater-basalt exchange at ODP Sites 504B and 896A. Earth Planet. Sci. Lett. 201:187-201.
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- Teagle, D.A.H., and Alt, J.C., (2004) Hydrothermal alteration of the basalts beneath the Bent Hill Massive Sulfide deposit, Middle Valley, Juan de Fuca Ridge, Economic Geology, 99:561-584.
- Teagle, D.A.H., Wilson, D.S., Acton, G.D, and the Leg 206 Shipboard Scientific Party (2004) The "Road to the MoHole" Four Decades On: Initiation of deep drilling at Site 1256. EOS – Trans. Am. Geophys. Union (In press).
- Paul, H., Gillis, K.M., Coggon, R.M., and Teagle, D.A.H., (2004) ODP Site 1224: A missing link in the investigation of seafloor weathering. Geochem. Geophys. Geosys. (In review).

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### A Primer for Planning IODP SAS Meetings

(v2.1: 1 October 2004)

#### Introduction

The IODP Science Advisory Structure (SAS) provides scientific advice and guidance to the IODP Management International, Inc. (IODP-MI). This document outlines the procedure for planning SAS meetings. Each SAS panel and committee generally meets twice per year, and all SAS meetings require advance authorization from the IODP-MI Sapporo Office, with approval by the chair of the Science Planning Committee (SPC) and the IODP-MI Vice President for Science Planning and Deliverables.

#### Procedure for planning a SAS meeting

- 1. Set dates and location. Panel and committee chairs should consult the IODP-MI Sapporo Office about acceptable meeting dates and locations as early as possible, preferably *at least twelve months in advance*. Meeting dates should not conflict with other SAS or IODP-MI meetings, with major international scientific meetings (e.g., American Geophysical Union, Asia-Oceania Geosciences Society, European Geosciences Union), with major national holidays of IODP members, or with busy local tourist seasons. Meeting locations should reflect the international balance of program membership and ideally should not require extensive ground travel from the nearest major airport.
- 2. **Identify meeting host.** When setting the meeting dates and location, panel and committee chairs should identify a suitable and willing meeting host, preferably someone who works at or near the meeting venue. The host cooperates with the IODP-MI Sapporo Office and the appropriate national or consortium program secretariat in preparing and executing the detailed meeting logistics.
- 3. Submit meeting request. Panel and committee chairs must submit a formal meeting request (see attached) to the IODP-MI Sapporo Office *at least four months in advance*. All meeting requests must specify the dates, location, and host, and present a detailed draft agenda and initial roster listing all proposed participants, including panel members, liaisons (*e.g.*, from other SAS panels and committees, program managers, and government agencies), guests, and observers. The meeting request and draft agenda should justify the need for a meeting and for inviting any special guests. Approval of the request also requires prior submission of the minutes or report from the previous meeting to the IODP-MI Sapporo Office.
- 4. **Approve meeting request.** The IODP-MI science coordinators consult with the SPC chair and IODP-MI Vice President for Science Planning and Deliverables for approval to authorize a requested meeting. The IODP-MI Sapporo Office then informs the corresponding chair about the decision by e-mail, with copies to the host and the national or consortium program secretariats.
- 5. Arrange logistics. The IODP-MI Sapporo Office contacts the host and the appropriate national or consortium program secretariat to confirm the arrangements for lodging, meeting facilities, ground transportation, catering, social events, field trips, and other related matters. The host country normally pays the costs associated directly with the meeting, such as meeting rooms, audio-visual equipment, coffee breaks, and perhaps working lunches.

- 6. Announce meeting. After authorizing a meeting, the IODP-MI Sapporo Office sends an initial meeting announcement and draft agenda to all invited participants and forwards this announcement to the national and consortium program secretariats and the funding agencies. This initial announcement may include the detailed information on travel and logistics, and it will explain that the participants must obtain approval from their national program secretariat for travel support. It will also instruct the participants to respond to the IODP-MI Sapporo Office as soon as possible if they cannot attend the meeting. The IODP-MI Sapporo Office, the chair, the host, and the national and consortium program secretariats should keep each other informed about attendance matters as they arise.
- 7. Announce logistics. The IODP-MI Sapporo Office distributes the travel and logistics information to all invited participants and forwards this information to the national and consortium program secretariats and the funding agencies. The travel and logistics information includes details about lodging, meeting venue, ground transportation, local contacts, local travel, field trips, and social events. It also instructs the participants whom to contact to reserve lodging, and to notify the host if they wish to participate on field trips or social events.
- 8. **Finalize agenda.** As meeting plans develop, the chair may send a revised agenda to the participants. The IODP-MI Sapporo Office forwards the revised agenda to the SPC chair, the national and consortium program secretariats, and the funding agencies.
- 9. **Coordinate logistics.** The host, chair, and IODP-MI science coordinator coordinate the on-site logistics during the meeting.

### **SAS Meeting Request Form**

- 1. Meeting name:
- 2. Dates & times:
- 3. Meeting venue (if undetermined please indicate preferred location):
- 4. Contact information of on-site host (include email):
- 5. Specify number and size of meeting rooms needed and preferred seating arrangement (*e.g.*, conference style, theater, classroom, or u-shape):
- 6. List all desired audiovisual and computer equipment (*e.g.*, flip chart, white board, overhead/slide/PC projector, VCR, computer, printer, Internet access, *etc.*):
- 7. Indicate any plans for a field trip or social events:
- 8. Status of minutes or report from previous meeting:
- 9. Draft agenda:
- **10. Meeting participants:**

Please return this form to: IODP Management International, Inc. CRIS Bldg. Rm 05-101, Hokkaido University, N21 W10 Kita-ku, Sapporo 001-0021, Japan Tel: +81-11-738-1075 / Fax: +81-11-738-3520 / E-mail: imi-sp@cris.hokudai.ac.jp

### **UPCOMING MEETINGS**

13-17 December 2004, AGU fall meeting: San Francisco, USA

23-25 January, 2005, Paleoceanography and Paleoclimatology of the Southern Ocean: A Synthesis of Three Decades of Scientific Ocean Drilling: Boulder,USA,

25-29 April 2004, EGU 2005: Vienna, Austria

19-22 June 2005, AAPG Annual Convention: Calgary, Canada

SAS PANELS

6-7 December 2004, EPSP #3: Chiba, Japan

11-12 December 2004, SPPOC #3: San Francisco, CA, USA

8-10 February 2005, SciMP #3: Hawaii, USA

21-23 February 2005, SSP #3: Durham, UK

25-27 February 2005, ILP #2: Shanghai, China

14-17 March 2005, SPC #5: Lisbon, Portugal

SAS Review Final Report

October 2004

SPC SAS Working Group Robert Duncan Benoît Ildefonse Yoshiyuki Tatsumi

#### 1. Introduction

**SPC Consensus 04-03-10:** The SPC establishes a working group to evaluate the current IODP Science Advisory Structure and recommend modifications in light of the IODP-MI requests issued on and after 2 October 2003. The modified IODP SAS should implement effectively the following functions: program evaluation and assessment, multi-platform and long-term science planning, interaction between the IODP-MI and the SAS, and integration with other international earth science programs. The working group of Duncan, Ildefonse, and Tatsumi should give a mid-term report at the June 2004 SPC meeting and a final report at the August 2004 SPC meeting. (*Note: the SPC subsequently postponed its August meeting until October 2004*)

**SPPOC Consensus 0407-10:** The SPPOC appreciates the efforts of the SPC working group in reviewing the IODP Science Advisory Structure. The SPPOC *ad hoc* committee on the Science Advisory Structure looks forward to continued interactions and discussions with this group as the *ad hoc* committee completes its review by early December 2004.

The SAS (Science Advisory Structure) was established for formulating IODP scientific and policy recommendations, and consists of one executive committee (SPPOC), a science planning committee (SPC), and seven panels (ISSEP, ESSEP, SciMP, SSP, EPSP, TAP, and ILP) that report to the SPC. The terms of reference for the SPPOC, the highest committee within the SAS, are approved by the IODP-MI Board of Governors, while those for SPC and panels are approved by the SPPOC. At present, a total of 162 individuals (58, 62, 35, and 7 from Japan, US, ECORD, and China, respectively) serve as SAS committee/panel members. SAS committees and panels meet two to three times a year with attendance of liaisons from other panels and guests and observers from funding agencies, IOs, IODP-MI, and other related organizations.

The current SAS follows the iSAS (interim Science Advisory Structure) model, with the exception of the Operations Committee (OPCOM), that was created during the interim period of IODP, and was established by the iPC (interim Planning Committee). However, since the IODP commenced on 1 October 2003, reconsideration of the current SAS seems warranted so that maximum performance can be achieved with finite human and financial resources. In particular, and following a request from IODP-MI, SPPOC and SPC recommended (SPPOC consensus 03-12-06 and SPC consensus 04-03-10) to evaluate the ability of the current structure to perform 1. effective program evaluation and assessment, 2. effective multi-platform and long-term science planning, 3. effective interaction between IODP-MI and the SAS, and 4. integration with other international earth science programs.

This report summarizes discussions among IODP communities in the US, Europe, and Japan about SAS organization, functions, composition, and reporting. A synthesis of a relatively quick survey of those communities is given in the appendix A. We also include input from discussions during the SPC meetings in Yokohama and Corvallis (June and October 2004) and the SPPOC meeting in Paris (July 2004). Our report will inform deliberations of the SPPOC SAS *ad hoc* committee, whose report will be finalized at the December 2004 SPPOC meeting.

This report is based on the current status of IODP/SAS. However, it should be viewed in the context of an evolving structure, with on-going activity devoted to the current SAS terms of reference and current IODP operations. A basic principle of this report is that the SAS structure should be as flexible as possible to maximize its efficiency and transparency, for the benefit of the IODP.

#### 2. SAS structure and position in IODP

The following diagrams are the formal representation of the SAS structure, the proposal pathway, and SAS position in the overall IODP organization, as currently available in the IODP web site (www.iodp.org).

#### 2.1. SAS structure



The Terms of Reference for each panel are described in the IODP-MI Sapporo office Web Site (<u>www.iodp-mi-sapporo.org</u>).

#### 2.2. Proposal path



2.3. IODP Organization



#### 3. Community survey on the SAS structure and functioning

In April-June 2004, the Working Group members conducted an electronic survey among the US (USSSP), Japan (J-DESC) and ECORD (ESSAC) panel member communities. We received answers from 22 Japanese, 7 US, and 6 ECORD community members. Japanese answers also include inputs from a J-DESC meeting (with 14 attendees) on the SAS structure.

The series of questions was :

- Is the mandate for each SAS panel clear?

- Is the number of panel members appropriate for the panel's activity?

- Should the apportionment of panel members (set by the MOUs at 7 US,7 Japan, 3+ 1 non voting ECORD ) be strictly observed for some panels (e.g., SciMP, PPSP, SSP, ILP, TAP)?

- Is panel leadership effective (i.e., chair, co-chair)?

- Is communication between panels effective?

- Is communication within panels clear and complete (i.e., any language problems)?

A summary of the answers is given in appendix A. Beyond the answers to specific questions, which are incorporated in the following paragraphs, a general comment is that all panel members have a good knowledge of what they do in their own panel and what is the role of this panel. However, a significant proportion has only a partial perception of how the overall structure functions, and how a given panel interacts with others for the benefit of the program. This observation is important; it probably reflects how complicated the IODP (and SAS) structure is for most people in the scientific community. Whatever the adopted structure, all possible efforts must be made to make it as visible and clear as possible to the entire community. For example, the fundamental differences between ODP and IODP (e.g. the respective roles of IODP-MI and SPPOC, see below) should be clarified. The implementation, last summer, of the single IODP portal on the internet is an important step toward a simplified and accessible image. The credibility of IODP depends on the science objectives and the quality of the scheduled scientific projects, but also depends on the visibility of the program structure, of the scientific evaluation of the projects, and of the expedition staffing (the SAS -SPC- is involved in the latter only through the co-chief nominations).

#### 3.1. Panel Functions

The committee and panel terms of reference are, in general, well received and supported among the IODP community, although there is a perception that actual functions of some panels may not be clear and in some cases may overlap. These perceived overlaps may be either real (in which case, we may want to modify the SAS) or imaginary (in which case, we must improve communication). Two examples of perceived overlap with other parts of the IODP structure (SAS and beyond) concern the ILP and the TAP. Another less-cited example involves possible overlap between the SSP and the EPSP (see paragraph 3.3 below).

*The ILP* (Industry Liaison Panel) was established during the iSAS phase and aims to foster communication between industry and the science community in order to share

industry technical and project management experience with the IODP. Outreach to and input from industry are undoubtedly important and valuable for achieving the scientific goals of IODP, as industry has valuable experience, and in the case of the hydrocarbon industry, a large database on site characterization for ocean drilling. However, most ILP activity could be handled differently in the future:

- 1) Technical and scientific input from industry for each expeditions will likely be received by the IODP-MI Project Scoping or Management Groups;
- 2) Issues involving economic geology, biotechnology, intellectual property rights, etc., for each expedition will be handled by the IOs;
- 3) Access to various industry data bases will be managed by IODP-MI (Information Services Center)
- 4) Outreach activity for industry will be done by IODP-MI as a part of Education and Outreach (E&O).

Whether ILP should be a SAS panel or have a different format (e.g., a shorter-term, ad-hoc committee, or a more flexible entity) should be discussed.

*The TAP* (Technology Advice Panel) continues from the iTAP (interim TAP) that was established for providing technical advice to proponents and other panels during the iSAS phase. Although such advice is important and essential in nurturing a proposal the TAP's functions could be assumed by an *ad hoc* consultative team rather than a permanent panel. This team could consist of several experts to provide appropriate advice in response to requests from proponents, other panels, project scoping groups, etc.

Note : Following the release of the preliminary report in June 04, the TAP chair sent a letter to further describe the current functions of the TAP. We enclose this letter, sent on behalf of the TAP members, in appendix B.

#### 3.2. Panel Members

*The total number of some panel members* could be reduced, in light of their mandated responsibilities. Furthermore, continuous nominations for all panel membership presents challenges for current and potential IODP member countries and consortia, and may soon exhaust the human resources required for some panels, considering that panel members have significant responsibilities and demands on their time. On the other hand, it should be noted that involving more people in SAS activities is probably a good way to attract new people to the IODP, people who may eventually develop IODP science.

A possible solution to the above challenges could be to reduce the number of panels, e.g., through transferring ILP and TAP expertise and responsibilities to IODP-MI as discussed. Alternatively, some panels could be composed of fewer core members and an advisory board or team. Members of advisory board would serve the panel by providing their comments on a particular problem via e-mail, and could attend periodic meetings if necessary.

The key for some panels is probably to allow them some flexibility, i.e. not necessarily meet on a regular basis, and invite people with the relevant expertise to contribute on a specific topic when needed.

The *nationality of members* is set by Memoranda at 7 US, 7 Japan, 3(+1) ECORD, and (1) China). It is felt that it should be strictly applied for the SPPOC, SPC and SSEPs. For other panels, however, a more flexible national representation would allow the expertise of a member to be the primary criterion for its appointment.

It is important to note that the memoranda only state entitlements to member numbers, not requirements. Therefore, any country or consortium is free to populate a committee or panel up to its maximum entitlement.

#### 3.3. Liaisons, guests and observers

Although this report, and many other IODP documents (e.g., panel mandates, meeting agenda) refer to the participation of "liaisons", "guests" and "observers" to panel meetings. However, these terms remains undefined. We propose the following definitions of "liaisons" and "observers".

- *Liaison* : A liaison attends panel/committee meetings regularly, and reports to and from another body (e.g., panel, committee, funding agency, implementing organization, affiliate program). A liaison speaks when invited by the chair(s) or whenever he/she feels his comment would be valuable, following the panel/committee Robert's rules.

- *Observer* : An observer is a non-regular participant to a panel/committee meeting, invited for its expertise on a given agenda item, or attending for information to report to another body.

Note : in the past, the term "observer" has been synonymous with "non-voting member" of a committee or panel. The designation "observer" should be restricted to the "observer" function defined above.

#### 3.4. Panel Management

*The co-chair system* applied in all panels except the EPSP seems to have worked well and contributed greatly to communication within a panel. However, quality of leadership depends on the persons in charge, not on a particular structure. To foster and encourage development of leadership skills, especially for non-US members, the chair-vice chair system could work well. (Note: The SPPOC Chair and SPC Chair/Vice-Chair system is defined in the MEXT-NSF Memorandum of Cooperation. The SPPOC Chair/Vice-Chair arrangement is defined in the SPPOC Terms of Reference.)

*Cultural and language challenges* were addressed seriously during the iSAS phase by the efforts of all iSAS members, resulting in significant improvements in iSAS and SAS activities. Much more effective discussions will be made possible during meetings if:

- 1) all background material is delivered to members at least one week before the meeting;
- 2) committee and panel chair(s) endeavor to ensure that the non-English-speaking members clearly understand arguments during discussions, particularly energetic ones.
- 3) the committees and panels split into smaller groups whenever possible, as now

practiced in the SSEPs. This seems to be very positive in terms of enhancing communication between members from different cultures speaking different languages.

*Communication between panels* needs to be improved significantly. The current liaison system is a reasonable solution to this problem, but forces heavy jobs on liaison members. Prompt deliver of complete minutes to all SAS committee/panel members may be one way to overcome this problem. Attendance at all SAS committee and panel meetings by IMI-Sapporo science coordinators is critical for overall SAS knowledge and memory.

An important communication issue to consider is between the SSEPs and SSP. The real gateway for a proposal is the SSEPs, where science is evaluated. But SSEPs evaluate some proposals more on a conceptual basis than on the basis of adequate site survey data. If site survey data gathered for a proposal are found not sufficient to demonstrate that an idea is more than just conceptual and scientific goals can be achieved in a given setting, then the SSP should be able to give its input to SSEPs before the proposal is forwarded to SPC. This cannot be done through the current proposal evaluation process. The SSP could have earlier access to proposals including data, and interact more directly with SSEPs in a consultative capacity, rather than acting mainly as a regulatory panel. Many goals of the IODP can be achieved only by drilling and logging based on good proposals with complete site survey data. On the other hand, it is also essential to restate the fundamental role of the SSEPs, that is to evaluate the scientific merits of the proposals. As site surveys are not carried out within IODP, the scientific merit of a proposal should not be strictly related to the progress of an affiliated site survey proposal. The two elements must be evaluated separately, and it is therefore important to maintain the existing difference between the SSEPs and the SSP.

The new program will present challenges for panels in the form of multi-platform, multi-year, complex drilling programs (multiple expeditions). A project management system approach will be required to follow the initial recommendation to begin operations with effective evaluation and assessment, long-term planning and corporate memory, and interaction between IODP-MI and SAS: IODP-MI is responsible for management, operational oversight, cost containment, while SAS must evaluate whether scientific objectives are being met. Thus, IODP must be prepared to make long-term commitments to funding, contracts, and planning to accomplish the ambitious science goals of the ISP. This will be accomplished by an iterative process of science evaluation/operations/post-expedition assessment between IODP-MI and SAS, publicized with an Expedition Prospectus, Expedition Reports, and Expedition Proceedings. This has begun with the formation of Project Scoping or Management Groups for highly ranked, complex drilling programs. A complementary function will be performed by technical (REVCOM, formed by IODP-MI) and scientific (conducted by SPC) Project Assessment Groups.

### 4. Program evaluation and assessment, multi-platform and long-term science planning, and effective interaction between IODP-MI and the SAS

Fundamental activities of the SAS are the evaluation, assessment, and planning of the science activity of the IODP.

The SSEPs and the SPC are primarily involved in the evaluation and review of individual drilling proposals, and the SAS (SPC; see appendix D) will also be involved in the post-cruise project assessment (assessment groups) carried on by IODP-MI.

Another important task of the SAS is the evaluation and assessment of the whole program. Referring to its Terms of Reference (see appendix E), this activity typically belongs to SPPOC.

Science planning, which will partly be based on the evaluation and assessment of conducted activities, is specifically mentioned in the Terms of Reference of both the SPC and the SPPOC (Appendices D and E).

The central management office of the IODP, IODP-MI, is an analog in the overall program structure to JOI in the ODP, but with additional responsibilities. The increased degree of complexity in IODP science operations, related to the simultaneous use of several drilling vessels/platforms, and to the long-term nature of some projects, makes necessary the existence of a central managing office, notably responsible for developing the annual program plan (see "IODP-MI tasks and responsibilities" in Appendix C) and linking the SAS with the implementing organizations. In this new scheme (see paragraph 2.2), does SPPOC have similar executive authority that EXCOM used to have in ODP? Is it different now? If so, what is the exact role of SPPOC? Interestingly, and although SPPOC is, quoting its Terms of Reference, the "highest-level committee of the SAS", it is represented in the IODP web site illustration of the SAS (see paragraph 2.1) as a single entity, partly disconnected from the SAS, and partly by-passed in the communication between the SAS and IODP-MI. The SPPOC Terms of Reference also include in its mandate "managerial and operational responsibilities for appropriate tasks". The IODP-Web site describes the SPPOC as the "executive committee of the SAS", approving the annual program plan submitted by IODP-MI, but, in another page, refers to the SAS being "led by SPC".

The exact role of SPPOC is indeed not clearly perceived by most of us, including the SPPOC members themselves (see SPPOC July04 meeting minutes). Before being able to establish an efficient interaction scheme between IODP-MI and the SAS, it seems urgent to clarify the role of SPPOC. What is its exact role in the IODP management for example?

During its last meeting (July 04, Paris), SPPOC has expressed the wish to assume responsibility for science planning, outreach, and assessment. Should long-term science planning be coordinated with SPC and IODP-MI (long-term Science planning is part of SPC mandate, see Appendix D), or be entirely driven by SPPOC and implemented by the IODP-MI ?

#### 5. Integration with other international earth science programs

The IODP is an ambitious multiyear international program of investigation of the earth system through drilling in the ocean basins. Its impact can be made even greater through integration with other international research efforts (e.g. InterRIDGE, InterMargins, PAGES, ICDP, seafloor observatories) to (1) expand the user base and contribution of proposals to IODP and (2) explore broader scientific questions through coordinated programs (e.g. off-shore/on-land drilling).

Scientific liaison to other scientific programs is important to the long-term success of IODP and is specifically mentioned in the SPPOC Terms of Reference (see appendix E).

Work toward a better integration is already done by the national organizations and consortia participating to the IODP, as nicely illustrated for example by the Japanese J-DESC, composed of an IODP section and an ICDP section. Appointment of liaisons is an effective way to share information, but exacts a toll on human resources and travel costs. We will need to evaluate, with our actual partners such as the ICDP, the efficiency of the liaison system, and identify alternative/complementary ways to prepare the future together. Possible mechanisms to better integrate international efforts are workshops and syntheses on specific themes, a journal on scientific drilling, and coordination through national committees that support the IODP. Ultimately, participation in the IODP will be driven by the strength and excitement of the science, expressed in the ISP and periodically revised long-range plans (e.g. deep biosphere, rapid climate change, seismogenic zone). The program will generate interest through publication of early results, discoveries and new questions.

#### 6. Recommendations

#### 6.1. Simplified structure of the IODP



#### 6.2. Role of SPPOC Program outreach and assessment, multi-platform and science planning

The SPPOC is the executive authority in the SAS. Its Terms of Reference were reviewed and amended in July 04 by the IMI-BOG (see appendix E). The SPPOC role includes the formulation of "scientific and policy recommendations", the conduct of "IODP planning, and evaluation and assessment of IODP", and the provision for "scientific liaison to other scientific programs"

The program outreach and assessment should be directed by the SPPOC, in coordination with SPC and other SAS panels.

The multi-platform & science planning should be directed by SPPOC, in coordination with SPC and other international programs/projects. This planning activity may include organization/promotion of workshops, creation of Program Planning Groups (PPGs), and coordination with working groups appointed by other programs (e.g., the Deep Earth Sampling Working Group recently set up by Interridge).

#### 6.3. Role and position of TAP and ILP

After discussion during the last SPC meeting (October 04), some SPC members felt that the ILP and TAP should remain in the SAS. Their activity needs more direction from SPC in light of recommendations from the SSEPs, SciMP, SSP, and EPSP regarding short & long-term technology, database needs, etc. Coordination with IODP-MI is also required. For example, the currently developed site survey database (IODP-MI) and seismic/well meta-database (ILP) should be ultimately coordinated/integrated.

TAP and ILP are different from other panels in the SAS in that they focus on long-term planning for engineering and technological developments (TAP), and development of communications and collaborations with industry (ILP) and do not, except when specifically asked (e.g. current joint review of the Monterey Bay Observatory project by the TAP and the SciMP), work on reviewed and/or scheduled proposals. This fundamental difference should be acknowledged and the TAP and ILP activity properly directed and coordinated by SPC and SPPOC, in coordination with IODP-MI. The ILP and TAP Terms of Reference may need further revision.

#### 6.4. Communication between panels

A better communication and closer collaboration between the panels involved in proposal evaluation (SSEPs, SSP, SciMP, EPSP) are required. The liaison system is probably not enough to achieve it. The various possible ways to establish this better communication/coordination include

1. Appointing liaisons between some panels which currently do not liaise (e.g., SSEPs and SciMP),

2. the prompt delivery of minutes/reports (see SPC consensus at its October 04 meeting),

3. the attendance at all meetings by IODP-MI science coordinators (they have the best knowledge and experience of the overall SAS activity),

4. electronic working groups on specific items with members of different panels, as needed,

5. regular joint meetings (this may be a heavy logistical challenge),

6. a proposal checklist forwarded to SPC from the SSEPs, through its evaluation pathway (identifying, for example, the necessary measurements to be made to achieve the proposed science). The SPC chair requested the SciMP to develop such a checklist, in consultation with the IODP-MI office in Sapporo.

## 6.5. Communication with international programs/projects, and public/scientific community

Integration with international programs/projects can be done within proposals, on a case by case basis. It is also essential for long-term multi-platform and science planning. Proposed actions include :

1. liaisons/Guests from and to other program committees, directed by the SPPOC (see SPPOC ToR, Appendix E), in consultation with the SPC,

2. common workshops & syntheses on specific themes,

3. ICDP : possibility of producing mutual reports, and sharing a common scientific peer-reviewed journal on scientific drilling.

The IODP-MI is in charge of developing the annual plan and the budget for education, outreach, and promotion (see Appendix C) Public outreach is commonly performed by the various national/consortia offices. Better coordination among the IODP-MI, the SAS, and the national/consortia offices is required. The ongoing

development of a single web portal entry to the IODP is a key element of the public visibility of the program.

#### 6.6. Communication with national/consortia offices

A first coordination meeting was held in Corvallis (October, 2004) ahead of the SPC meeting, attended by delegates of the national/consortia offices, and by the SAS science coordinators of the IODP-MI office in Sapporo. It will be meet regularly in the future, and could be the primary location for information sharing and effort coordination effort between the SAS and the national/coordination offices.

For example, the national consortia offices could take appropriate action to balance expertise deficits identified in SAS panels.

The SPC is concerned by the current gender balance in the SAS panels and committees (90% male, 10% female). SPC encourages IODP national and consortia offices to work to increase the participation of women scientists both in the SAS and in preparing IODP proposals (see consensus in Oct 04 executive summary).

#### 6.7. Panel/Committee functioning

The chair system in the various SAS bodies is currently not standardized. Each panel has defined its own system, and does not wish to change it. Some have a chair and a vice-chair (e.g., SPC), and others have co-chairs (e.g. SSEPs). EPSP has only one chair.

We recommend maintaining the current situation, which seems to work efficiently. However, when a co-chair leadership is used (e.g. SSEPs), it is important to identify at any moment which one of the co-chairs is the point of contact for the SPC and the IODP-MI Sapporo office. As the SSEPs co-chair traditionally rotate to chair the meetings, the decision could be made at the end of each meeting who will be the next chair and the point of contact until the next meeting.

Cultural and language problems are still perceived by part of our community. It seems clear however, that the communication and understanding between members of different nationalities have greatly improved since the beginning of the interim period between ODP and IODP. We recommend using Robert's Rules of order when conducting panel/committee meetings, as currently practiced in the SPC. This gives any member, native or non-native English speaker, the right and the ability to speak and participate to discussions. The SSEPs now meet together, and split into breakout sessions during part of their meeting, to deal with specific themes or agenda item. This practice has greatly improved communication between members of different nationalities, the smaller groups allowing easier participation of each. This practice could be extended to other panels when feasible and if time permits (e.g., working group meetings).

Timely minutes and agenda are also seen are essential to a good mutual understanding.

SAS committee and panel membership entitlements, as defined in the MOU's between NSF, MEXT, ECORD and MOST, apply to all panels. However, in those panels not directly evaluating the proposals or proposal-related data, the imposed membership entitlement is perceived as a lack of flexibility, where the essential criterion for appointing members is expertise.

An easy way to solve this problem is to invite liaisons and/or observers as needed.

#### Appendix A Survey of the panel member community (J-DESC, USSAC, ESSAC)

#### Synthesis

Blue : J-DESC. Japan (22 answers + input from a meeting with 14 participants) Red : USSAC. USA (7 answers) Green : ECORD (6 answers)

For consultation of all answers, please contact the Science Advisory Office (science@iodp-mi-sapporo.org).

#### 1) Is the mandate for each SAS panel clear?

The man date itself is clear. However, their functions in the following two panels (ILP, TAP, see also report) might have been already replaced by other structures. The abolishment of these panels may be considered.

Yes in general. Most people know only about their own panel. The general scheme is less clear. The existence of various websites (SAS, IMI, IODP) makes things harder to understand; a single portal will help to improve the communication.

SciMP covers a lot, more details would be helpful. Do we need a new panel dealing with these issues that really are not of a particularly scientific nature?

Most people equate SPPOC to EXCom and SPC to SciCom. If there is a substantive difference, then the community doesn't really understand what that difference is.

The function of SSP is unclear to several persons (see also report).

The answer is definitively yes on average. There is a recognition that the mandates are currently being reviewed and will be homogenized. There is some perceived overlap between SSP and EPSP.

**General comment :** on average, the mandates sound clear to most people. However, there is still progress to be made. Particular cases (e.g. SciMP, SSP) need further discussion. Ongoing evaluation of the mandates, and implementation of a single WEB site will ameliorate the general understanding of the panel mandates.

#### 2) Is the number of panel members appropriate for the panel's activity?

The total number of technical panel members may be reduced. Two possible ways : reduce the number of panels, and/or change their format (e.g. smaller number of core members and advisory board, consulted as needed). See report for details.

Generally yes. However, several persons do not see the need for that many members in some technical panels (e.g., TAP)

Yes on average. But there is no understanding why all the panels should have the same size (i.e. technical/service panels should be populated by expertise, not necessarily by MOU-based quotas). We recognize the growing complexity of the system, probably related to the growing complexity of operations in IODP, but so far, it appears to be manageable.

**General comment :** The general perception of the number of panel members is quite positive, especially for the "science" panels (SSEPs). For some people (not all), the membership of technical panels could be more flexible, primarily driven by expertise

(see also question 3 below), and not necessarily as large as the one of "science" panels.

# 3) Should the apportionment of panel members (set by the MOUs at 7 US,7 Japan, 3+ 1 non voting ECORD ) be strictly observed for technical panels (e.g., SciMP, PPSP, SSP, ILP)?

Nationality of members should be strictly applied for SPPOC, SPC and SSEPs. For technical panels, however, it should be more flexible: specialty of a member is much more essential.

No for everybody. It should be determined by a majority vote of the SPC. Expertise balance is the first-order priority; we need flexibility. We should keep open the possibility of inviting guests for a or a few meetings as needed.

No in general. In principle, it should primarily driven by expertise, for the maximum quality and efficiency of the program. Going to the 7/7/4 split (or any other partitioning that will be discussed in the future by the funding agencies) may eventually be the only fair way to ensure the long-term health of IODP. However, this causes problems to some service panels on the short term, who have started functioning during the interim period with different membership, purely based on members expertise. For the maximum efficiency of IODP, and for continuity in the work of these panels (e.g. ILP); it may be better to allow flexibility on this issue.

**General comment :** The answer is definitively no (consensus). The national balance should be taken into account if possible, but expertise should primarily drive the apportionment of panel members to the technical panels.

#### 4) Is panel leadership effective (i.e., chair, co-chair)?

Co-chair system applied in some panels seemed to have worked well and contributed greatly to mutual communication. In order to foster and encourage the leadership, the chair-vice chair system could also work well. Quality of leadership is dependent on the specific persons, not on a particular structure.

Yes. Selection of a chairperson by the panel itself is better than SPC intervening and appointing the person. As usual, much depends on the specific persons involved. One person considers that there is no need for co-chairs in the SAS structure. He instead advocates for a Chair, a chair elect, and an executive committee made up of representatives from each group (US, Japan, ECORD or equivalent).

Yes in general. The co-chair system is appreciated and thought to work well. Whatever the adopted system, quality of leadership is anyway more often associated with individual people, rather than a particular structure. The co-chair selection/nomination/election process is more important than the chosen system.

**General comment** : On average, the answer is yes, but it refers to being in a given panel, and therefore may apply to either the co-chair system or the chair/vice-chair system. Basically, most people are happy with the system they experienced. The quality of the people makes the difference, rather than the chosen system.

#### 5) Is communication between panels effective?

It needs to be improved significantly. The current liaison system has merit, but forces heavy jobs on liaison members. Prompt deliver of complete minutes to all SAS committee/panel members may overcome this problem.

Split opinions. One answers no. Another thinks that it depends on the panels, and that

individual panels probably need to evaluate which of the other panels they need to increasing communications with. Even when the answer is yes, it comes with comments smoothing it down. Delivery of the minutes in a timely fashion to the WEB will help. The role and efficiency of the liaisons is perceived in various ways. The reporting session at the beginning of panel meetings is a bit overkill sometimes—much of initial panel meeting time is devoted to reports that are not always relevant to the purposes of the panel. But there is no question that we need information flow from several sides, and the meetings themselves are probably the best and most effective place for this to occur.

Split opinions : yes, no opinion, or serious doubts. From the most negative comment : this is a major area for improvement. Is a lot a liaisons attending each meeting the best way to ensure communication? The large number of liaison is highly visible, but the efficiency of it is less clear.

**General comment** : There is no consensus on this issue. In general, most people foresee a potential improvement of communication between panels. The prompt delivery of the minutes is very important and should be the primary information channel throughout the entire structure. Do we need as many liaison as we currently have? Or more in specific cases? The discussion in open.

# 6) Is communication within panels clear and complete (i.e., any language problems)?

Cultural or language problems have been drastically improved during the interim period by the effort of all members. Much more effective discussions will be enabled during the meeting, if:

- all materials are delivered to the members at least one week before the meeting;

- panel chair(s) could endeavor to ensure that the non-English-speaking members clearly understand arguments during energetic discussions.

Not a big problem. In SSEPs, it has improved tremendously over the past two years.

One recognizes that "there are some language (and cultural) problems but not as many as there would be if the meetings were held in some language other than English."

No consensus. Yes, in the SSEPs after the changes which have been implemented (i.e., installation of small working groups where everybody has a chance to talk before everybody meets in the big plenum)

Fore others (not all), this is a problem area. Language is still perceived as a problem, but not only. It is also a cultural problem.

**General comment :** For many people, communication works well, and there is no obvious problem. However, some perception of language and/or cultural problem still exists in Japan and Europe. We need to be careful; neglecting this question would be a mistake.

#### 7) Is the SAS effective in nurturing proposals?

Mostly yes. The external review system currently operated in SSEPs might be reconsidered. Another possible way for nurturing proposals is, as is in the journal editing system, that proposals may be reviewed by external reviewers at an earlier stage. However, the purpose of review is quite different between journal and SAS. The external reviewers should understand the role of review in nurturing proposals.

Generally yes. The watchdog structure is good and the SSEPs do a good job evaluating

the science in proposals. There are still some processes embedded in the system that make the SAS less effective than it could be. Proponents do voice frustration with changes in opinions and arbitrary reviews that sometimes occur during the course of proposal nurturing at the SSEPs. It would be good (especially for getting more people involved in drilling) if the new program could try and direct people from a proposal into help with the ever more demanding request for site survey materials.

Perhaps they are sometimes too nurturing. There is a point with some proposals when it would be best to just say no.

Yes, it does it well (at least we hope so...). It needs to be faster though, as the process is very often perceived by the community to be too long, time-consuming.

One would recommend to find a fair exit strategy to return proposals that have been in the system too long with no foreseeable chance of reaching a reasonable high ranking status.

General comment : all believe that the nurturing of proposals is well done. There are still some critics though, mostly dealing with the efficiency of the system (keep the message clear over time to the proponents, optimize the evaluation time, rejecting proposals when necessary, etc.). We do good, but we can do better.

# 8) Is the SAS effective in overseeing the scientific objectives of scheduled programs?

Yes, doesn't know, or too early to tell in IODP. Enhance the communication between the SAS and the national/consortia committees to culture the best possible proposals and science?

Yes, or doesn't know. Could be more efficient in "integrative reporting" of the scientific results (post-expedition/project assessment)

**General comment :** It is a bit early to properly evaluate this in IODP. Post expedition/project assessment is expected to play a major role on this issue.

# 9) Should the SAS play an active role (which one?) in developing the interaction between IODP and other international earth science programs?

Yes.

The IODP community has hardly expanded from the ODP community (at least in Europe), and the latter was seen by many as an elite club that it was difficult to get into. In many ways, its up to us to do this sort of thing - these interactive things always work better at an informal level through personal enthusiasm than when some formal encouragement process is required.

We need better advertisement of its scientific/activities (scientific vision) to a broader community, SAS should encourage communication, cooperation and perhaps cross-program projects. Is the liaison system good enough for this? It is unclear. Do we need to be more pro-active?

Closer interaction with ICDP is essential; better collaboration with IMAGES is needed.

**General comment :** This question was asked only to the ECORD panel members. SAS should play a role, to be discussed, in developing stronger integration with other programs.

### Comment from Uli Harms (ICDP Liaison to several IODP panel/committee meetings)

• IODP & ICDP are natural partners, hence need to exchange liaisons

• Achievements to date comprise :

- important ODP support during the constitutional phase of ICDP and its Executive Committee

- drafting of Land-Sea-Transect projects

- planned funding from both ICDP and IODP for the New Jersey Project or other future joint projects

- important input from ICDP to MSP and the European IODP component due to ICDP expertise in MSP-like operations (e.g., use of ICDPs information system in the ACEX Lomonosov Ridge Project)

• Remaining problems for easy exchange and mutual benefit : different size and structure - ICDP has 3 panels (meeting once a year)

- only a few people in ICDP with the necessary corporate memory to be able to attend as liaison

- funds handled by one PI or a group; supported by ICDP by direct the project independantly

- coordinating dates for meeting

• ICDP & IODP need to continue the exchange

• SPC & EC need constant representation & report

• SSEPs & SAG should independantly review their need for exchange (one annual report from and to each ?)

• ICDP will be glad to here the results of our discussion and to respond accordingly through its panels

#### A general comment, from Harry Doust (ILP) :

A lot of the above will have to go hand-in-hand with the development of the Project Management System - which we all (we hope) see as a vehicle to improve the efficiency and consistency of the SAS evaluations. We see a period of evolution coming up.

#### Appendix B Response letter from TAP co-chair to the preliminary report of the working group

July 7, 2004 TO: SPC SAS Working Group

#### On Preliminary Report on SAS Structure and terms of reference to the TAP

Dear Dr. Benoit Ildefonse, Dr. Bob Duncan, Dr. Yoshiyuki Tatsumi,

I am sorry for sending this information just before the SPPOC#2 meeting. We hold TAP#1 meeting from June 29 – July 1 and seriously discussed the mandates of our panel. I think that these discussions were very frank and fruitful including opinions from new TAP members. I will summarize this discussion into the meeting minutes as soon as possible and explain the detail at the next SPC meeting (SPC #4 in October).

I know that you will report the terms of reference with your Preliminary Report on SAS Structure on the agenda item 9.1.5 at this SPPOC meeting. The terms of reference to each panel and Preliminary Report on SAS Structure were accepted at the last SPC meeting (SPC #3 in June), so I just inform you the results of our discussions.

#### 2. Comments on Panel Functions in Preliminary Report on SAS Structure

This report describes the TAP function as follows.

<u>The TAP</u> (Technology Advice Panel) continues from the iTAP (interim TAP) that was established for providing technical advice to proponents and other panels during the iSAS phase. Although such advice is important and essential in nurturing a proposal, alternatively the TAP's functions could be assumed by an *ad hoc* advice team rather than a permanent panel. This team could consist of several experts to provide appropriate advice in response to requests from proponents, other panels, project scoping groups, etc.

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Here, the expression of "the iTAP (interim TAP) that was established for providing technical advice to proponents and other panels during the iSAS phase" is not correct. One important role of TAP is to advice the SPC on matters related to the technological development necessary to meet the scientific objectives of the IODP Initial Science Plan. If the TAP only has a role to providing advice to proponents and other panels, this role can be replaced by an ad hoc advice team. But, the most importance is to define the technology developments necessary to achieve medium and long-term program goals. Our panel consists of many engineering experts from different area, so we can advice the SPC on what engineering development is necessary for the achievement of each scientific objective. Such an advice will not be possible by an ad hoc team. The actions like reviewing the report of technological success and failure by a standing panel can make this possible. I would like to ask you to reconsider the function of TAP in IODP

structure from the above points. This is not my personal opinion, but a request on behalf of TAP members. I think that TAP is the only panel that connecting science, engineering and drilling operation.

#### 3. <u>Terms of reference to the TAP</u>

From the discussion above, we concluded that the best actions of TAP would be the following.

- (1) Assure that existing technologies (including drilling, logging, downhole measurements, well design, and coring technologies) are used in the most economic and efficient way for the science of IODP.
- (2) Define the technology developments (including drilling, logging, downhole measurements, well design, and coring technologies) necessary to achieve medium and long-term program goals.
- (3) Assist in formulating and reviewing Request for Proposals (RFP) to achieve the program goals
- (4) Review ranked proposals and advise SPC of any technology concerns.
- (5) Review the report of technological success and failure submitted by IODP-MI.

Please find a separate attachment showing the revised terms of reference to TAP. The revised and added sentences are shown in red color. We will propose the reconsideration/revision of the TAP mandate at the next SPC meeting, but I would like to inform you this before discussion at SPPOC meeting.

I would very much appreciate to you if you accept my opinions and I hope these will be reflected in the discussion at the SPPOC meeting.

Sincerely, Yoshihiro Masuda, TAP co-chair

#### Appendix C

#### IODP-MI Tasks and responsibilities (from <u>www.iodp.org</u>, Oct. 2004) :

#### Develop:

Annual Program Plan

Budget plan for Science Operation Cost of the program

Budget plan for technical/engineering development

Downhole logging plan and budget

Annual publication and information service plan, budget, and guidelines for the Program Annual plan and budget for education, outreach, and promotion

#### Ensure the Efficiency of:

Detailed annual Science Operating Plan

Detailed annual Platform Operation Plan

Detailed Science Operation Costs

Detailed drilling plan prepared by IO and DPG

Platform Operation Cost of the Program

Detailed Pre-drilling site survey plan prepared by IO

#### Seek or Promote:

International cooperation to provide timely and useful site survey information for the proposed drill sites

Advice from the drilling industry on operational/technical solutions

New members for IODP

#### Conduct:

Promotion of the Program

#### Execute:

Contracts with IOs or IODP subcontractors for Science Operation Activities Contracts with IOs or IODP subcontractors for technical/engineering development Contract (or other agreement) with NSF/MEXT for science operations and management of IODP

Other contracts/agreements which may be required

#### Secure or Maintain:

Necessary funding for Science Operation of each platform

Financial controls for the Science Operation Cost of the Program

Necessary funding for publication and information services

Fiscal activities of CMO operations

Quality control for sample and data archives

#### Support or Assist:

Appropriate pre-drilling site survey standard for each platform to meet adequate HSE requirements

IO to secure drilling permit from the country of jurisdiction DPG and IO in creating detailed drilling plans

Support SAS ACTIVITIES and OPERATIONS:

SAS Support and Logistics

Proposal Administration

Publication and Outreach

#### Appendix D

#### The IODP Science Advisory Structure, Terms of Reference Approved by the SPPOC, July 2004

#### Science Planning Committee (SPC)

#### 1 General Purpose.

The Science Planning Committee (SPC) reports to the Science Policy and Planning Oversight Committee (SPPOC) and provides advice to Integrated Ocean Drilling Program (IODP) Management International (IODP-MI) and, through the IODP-MI, to the implementing organizations (IOs) on plans designed to optimize the scientific productivity and operational efficiency of the IODP.

The SPC is specifically responsible for: the custody and initial implementation of the IODP Initial Science Plan; ranking of mature drilling proposals (*i.e.*, those that have undergone external review, been grouped by the Science Steering and Evaluation Panels (SSEPs), and been judged as complete by the Science Advisory Structure (SAS)) that address the scientific themes and initiatives in the IODP Initial Science Plan; advising how these proposals might be most effectively mapped into a drilling plan based on the IODP multiple platform concept; carrying out long-term science planning; fostering communications among and between the general community, the SAS, the IODP-MI, and the IOs.

#### 2 Mandate.

The SPC encourages the international community to develop and submit drilling proposals for the IODP. The SPC can initiate and terminate temporary SAS groups as needed. The SPC reviews SAS membership with respect to disciplinary balance. The SPC recommends SAS meeting frequency and timing to the SPPOC. In addition, the SPC may assign special tasks to SAS committees, panels, and planning groups. The SPC approves the chairs of all SAS panels and planning groups. The SPC chair approves the meeting agendas for all SAS committees, panels, and planning groups other than the SPPOC. The SPC sponsors and convenes planning conferences at intervals determined by long-term science plans for IODP. The SPC assigns its own watchdogs to proposals that are forwarded from the SSEPs. The SPC ranks the scientific objectives of the proposals into final priority after they are reviewed by the SSEPs. The SPC approves by at least a two-thirds majority the annual drilling schedule as forwarded from the OPCOM. The SPC nominates chief scientists to the implementing organizations, who make the final selection.

The SPC periodically reviews the IODP SAS in light of developments in science and technology and recommends amendment of the SAS and its mandates to the SPPOC. Much of the work of the SPC is carried out by the commissioning of reports from other SAS panels, including both formal and *ad hoc* working groups, *ad hoc* subcommittees of its own membership, and by its chair or vice-chair.

#### 3 Structure.

The SPC is empowered to modify an infrastructure appropriate to the definition and accomplishment of tasks described in the annual program plan as approved by the SPPOC. Communication with the SAS panels and planning groups is maintained by having their chairs meet with the SPC annually and by assigning SPC members as non-voting liaisons to SAS panels and planning groups as necessary. Where counsel and communication are deemed important, other individuals may be asked to meet *ad hoc* with the committee or its panels.

#### 4 Meetings.

The SPC meets at least twice a year, normally in March and August. Robert's Rules of Order will govern its meetings and those of all of its subcommittees.

#### 5 Membership.

The SPC will consist of seven members from Japan, seven members from the U. S., four members (three voting and one non-voting) from the ECORD, and one member
## Appendix E

Approved by IMI BOG 09/09/03

## Mandate: Science Planning and Policy Oversight Committee (SPPOC) for the Integrated Ocean Drilling Program amended July 26, 2004

1. SPPOC is a committee created by the IMI in accordance with the terms and conditions of IMI's by-laws. This committee is the highest-level committee of Scientific Advisory Structure (SAS), and shall formulate scientific and policy recommendations with respect to the Integrated Ocean Drilling Program (IODP). It shall conduct IODP planning, as well as evaluation and assessment of the Program as to its accomplishments as compared to the goals and objectives which have been established. It may be assigned managerial and operational responsibilities for appropriate tasks, and will provide for scientific liaison to other scientific programs. The IMI Sapporo Office (IMI-J) will support the SPPOC's activity.

2. The SPPOC may establish subcommittees for cognizance of certain components of the Integrated Ocean Drilling Program. Areas of cognizance and the Terms of Reference for each subcommittee shall be defined by the SPPOC. In particular, a Science Planning Committee (SPC) shall be established. The SPPOC will determine the chair and vice-chair of SPC based on IODP member nominations. IMI BOG shall approve the SPC Chair nomination.

3. The SPPOC will review and approve the annual IODP program plan and budget prior to forwarding it to the IMI Board of Governors for corporate approval and contractual submission to the Lead Agencies.

4. The members of the SPPOC shall be representatives from oceanographic and marine research institutions or other organizations, which have a major interest in the study of the sea floor. Members will be selected based on recommendations from national committees from member nations **and have a term of two years**. In addition, the IMI BOG will appoint two of its members to the SPPOC, one from Japan and another from the US. In the event another Lead Agency joins IODP, the IMI BOG will appoint three members to SPPOC. The IMI Board of Governors will approve the membership of the SPPOC. The Board of Governors on the recommendation of the SPPOC or in the event of a country or consortium ceasing to have a valid Memorandum in existence may cancel membership of any member.

5. The SPPOC shall reach all its decisions by the affirmative vote of at least two-thirds of all members. A quorum shall constitute two-thirds of the Committee. If a member of the Committee is absent from a duly called meeting of the Committee, an alternate may be designated with full authority to act for them in their absence.

6. The Chair and Vice Chair of SPPOC will rotate initially between Japan and the United States each with a term of office of two years. The IMI Board of Governors based on IODP member nominations will determine the Chair and Vice Chair of SPPOC.

7. The Committee, and all subcommittees thereto, shall keep written records of their proceedings.

8. Members of this Committee, and members of subcommittees duly appointed thereby, while acting within the Terms of Reference, shall be indemnified, and held harmless by the corporation from and against any and all liabilities, damages and demands, losses, costs and expenses arising from acts or omission related to performance as committee members.

9. These Terms of Reference, upon ratification by the Board of Governors of IMI, will supersede all previous Terms of Reference.