

**11th Meeting of the
Ecord Science Support & Advisory Committee
(ESSAC)**

26th – 27th October 2008
Fürstenzimmer, Hotel am Schloss,
Tuebingen, Germany



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10.1.2 Ocean Drilling for Seismic Hazard in European Geosystems

10.1.3 Lithospheric heterogeneities, hydrothermal regimes, and links between abiotic and biotic processes at slow spreading ridges

10.2 Upcoming conferences and workshops

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8. Full Magellan Workshop Report Seismic Hazards
9. WHOI open letter

Agenda of the 11th ESSAC Meeting

27th – 28th October 2008,

Fürstenzimmer, Hotel am Schloss,

Tuebingen, Germany

Sunday 26th October 2008 (full day) - Field trip

Jurassic strata along the Swabian Alb. Spectacular Triassic-Jurassic boundary section, famous *Posidonia* Shales and Oxfordian to Kimmeridgian *Porifera* reefs.

Monday 27th October 2008, 9:00 am – 5:15 pm

1. Introduction

- 1.1 Call to order, introductions (Camoin) (5')
- 1.2 Welcome and meeting logistics (Erbacher, Stein) (5')
- 1.3 Discussion and approval of the Agenda (Camoin) (5')
- 1.4 Items since the 10th ESSAC Meeting (Wolff-Boenisch) (10')
- 1.5 ESSAC 09 budget (Camoin) (10')
- 1.6 ESSAC Office news (Wolff-Boenisch) (20')

2. IODP News

- 2.1 Lead Agencies and Implementing Organizations (Mével) (20')
- 2.2 SAS Executive Committee – SASEC - (Mével) (20')
- 2.3 Science Steering Evaluation Panel – SSEP - (Camoin) (30')
- 2.4 Science Planning Committee – SPC – and Operations Task Force – OTF - (Camoin) (40')

Lunch

3. ECORD News

- 3.1 EMA - ECORD Council (Mével) (20')
- 3.2 ESO (McInroy) (20')
- 3.3 ESO-EMA-ESSAC Meeting (Maruéjol) (10')
- 3.4 ESSAC representatives and National Office reports (ESSAC Delegates) (20')

4. ESSAC highlights on ECORD proposals

- IODP Proposal #672-Full2 Baltic Sea Paleoenvironment (Harff) (30')

5. ESSAC highlights on IODP expedition planning

- DPG Monsoon (Clift) (45')

6. Breakout sessions (ESSAC subcommittees) (60')

Social event

6:00 pm:

Icebreaker in "Paleontological Museum" (Paleontological collection) with a guided tour.

Tuesday 28th October 2008, 9:00 am – 6:00 pm

7. Nominations and Staffing

7.1 Staffing	
7.1.1 Quotas (Camoin)	(10')
7.1.2 EqPac expeditions (Camoin)	(5')
7.1.3 Canterbury and Wilkes Land Expeditions (Camoin)	(10')
7.1.4 Great Barrier Reef (Lourens)	(10')
7.1.5 NanTroSEIZE riser expeditions (Camoin)	(10')
7.2 SAS panel nominations (Camoin)	(20')
7.2.1 SPC	
7.2.2 SSEP	
7.2.3 STP	
7.2.4 SSP	
7.2.5 EDP	

8. Education and outreach

8.1 Summer Schools	
8.1.1 Past Global Change Reconstruction and Modelling Techniques Summer School, Urbino, July 2008 (Lourens)	(15')
8.1.2 ECORD Summer School on Deep Subseafloor Biosphere, Bremen, September 2008 (Stein)	(15')
8.1.3 ESF Magellan Integrated Courses on Ocean Drilling Science (McKenzie)	(10')
8.2 Distinguished Lecturer Programme FY 08-09 (Wolff-Boenisch)	(15')
8.3 ECORD Publications	
8.3.1 ECORD Newsletter #11 (Maruéjol)	(10')
8.4 Subcommittee report, discussion and future actions (McConnell)	(45')

Lunch

9. ESSAC highlights on ESF Programs

ESF-EuroMARC (Hauglustaine)	(30')
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10. Workshops, communication and vision

10.1 Conference and workshop reports	
10.1.1 Acquiring high to ultra-high resolution geological records of past climate change by scientific drilling (TBD)	(15')
10.1.2 Ocean Drilling for Seismic Hazard in European Geosystems (Ask)	(15')
10.1.3 Lithospheric heterogeneities, hydrothermal regimes, and links between abiotic and biotic processes at slow spreading ridges (Mevel)	(15')
10.2 Upcoming conferences and workshops	
10.2.1 Arctic Ocean History: From Speculation to Reality (Stein)	(15')
10.2.2 Next Magellan workshops (Erbacher)	(15')
10.3 Beyond 2013 - The Future of European Ocean Drilling Research (Camoin, Stein)	(15')
10.4 Subcommittee report, discussion and future actions (Stein)	(45')
10.5 Open discussion on the current state of the IODP (ESSAC Delegates)	(45')

11. Review of consensus, motions and actions	(15')
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12. Next meetings

ESSAC #12, May 2009, location TBD

(5')

ESSAC #13, October 2009, location TBD

13. Any Other Business (Camoin)

Social event 7:30 pm: Dinner in "Weinstube Forelle", Tübingen

List of Participants

ESSAC Office

Gilbert Camoin (Chair)
Bonnie Wolff-Boenisch
Myrthyse Joanides

ESSAC Delegate France
ESSAC Science Coordinator
ESSAC Administration Manager

ESSAC Representatives

Fatima Abrantes
Maria Ask
Menchu Comas
Elisabetta Erba
Rachael James
Nalan Koc
Lucas Lourens
Brian McConnell
Judith McKenzie
Mike Riedel
Rüdiger Stein (vice-Chair, meeting host)
Kari Strand
Michael Wagreich

ESSAC Delegate Portugal
ESSAC Delegate Sweden
ESSAC Delegate Spain
ESSAC Delegate Italy
ESSAC Delegate UK
ESSAC Delegate Norway
ESSAC Delegate Netherlands
ESSAC Delegate Ireland
ESSAC Delegate Switzerland
ESSAC Delegate Canada
ESSAC Delegate Germany
ESSAC Delegate Finland
ESSAC Alternate Austria

Observers/Guests

Peter Clift
Jochen Erbacher (meeting host)
Didier Hauglustaine
Angela Michiko Hama
Jan Harff
Patricia Maruéjol
Catherine Mével
Dave McInroy

DL 08-09 and Monsoon DPG
ESF Magellan
ESF EuroMARC
EUROCORES Communications Officer
IOW/Warnemünde– IODP Proposal 672
EMA
EMA
ESO

Apologies

Bryndís Brandsdóttir
Werner Piller
Marit Solveig Seidenkrantz
Paul Knutz
Rudy Swennen
Jean-Pierre Henriët

ESSAC Delegate Iceland
ESSAC Delegate Austria
ESSAC Delegate Denmark
ESSAC Alternate Denmark
ESSAC Delegate Belgium
ESSAC Alternate Belgium

LIST OF CONSENSUS, MOTIONS AND ACTIONS
10th ESSAC MEETING
STOCKHOLM, MAY 15-16, 2008

Discussion and approval of the Agenda

ESSAC Consensus 0805-01: ESSAC approves the agenda of its 10th meeting on May 15th –16th , 2008, in Stockholm, Sweden.

IODP news

> ESSAC Action Item 0805-01: The ESSAC Office will send an email to H. C. Larsen suggesting that 1 or 2 persons from industry should be included in the scientific steering committee of the SASEC Conference that will be held in September 2009 in Bremen.

> ESSAC Action Item 0805-02: E. Arnold will contact Carlo Laj to seek information regarding funds available for the participation of an ECORD teacher to the School of Rocks.

ECORD news

> ESSAC Action Item 0805-03: C. Mével will send the list of the EU contact persons from the different ECORD countries so that the ESSAC delegates will be able to lobby for ECORD on a national level.

> ESSAC Action Item 0805-04: C. Mével will provide information regarding the internal ERA-Net evaluation of the ESF Magellan and ESF EUROMARC Program to better explain the aims of that evaluation.

> ESSAC Action Item 0805-05: The ESSAC Office will circulate in due time information about an EGU Session in April 2009 in Vienna, Austria, immediately followed by a workshop dealing with the future of the European scientific drilling (see also ESSAC Consensus 0805-10 and ESSAC Action Item 0805-22).

> ESSAC Action Item 0805-06: ESO will inform the ESSAC Office in due time concerning the current state of the staffing of the New Jersey Expedition to evaluate the need to issue a new short term call for applications to replace scientists who declined their invitation due to the rescheduling of the expedition.

Nominations and Staffing

ESSAC Consensus 0805-02: ESSAC confirms that the travel expenses of alternates in SAS panels will be covered by their relevant national office.

> **ESSAC Action Item 0805-07:** The ESSAC Office will suggest A. Kotilainen (Finland) to be a permanent alternate for the Science and Technology Panel (STP).

> **ESSAC Action Item 0805-08:** The ESSAC Office will issue a call for applications to replace M. Lovell (UK) at the Science and Technology Panel (STP).

> **ESSAC Action Item 0805-09:** The ESSAC Office will issue a call for applications for a new ECORD member of the Engineering Development Panel (EDP) who should become the next Vice-Chair of that panel.

ESSAC Consensus 0805-03: ESSAC decides that the terms of J. Thorogood, R. Person, L. Wohlgemuth and M. Ask at the Engineering Development Panel (EDP) will be extended until June 2009, June 2009, January 2009 and January 2010 respectively as suggested by the 4 ECORD panel members to avoid loss of expertise in that panel.

> **ESSAC Action Item 0805-10:** The ESSAC Office will issue a call for applications to replace T. Elliott (UK) at the Science Steering Evaluation Panel (SSEP)

ESSAC Consensus 0805-04: ESSAC decides the extension of G. Wefer's term at the Science Advisory Executive Committee (SASEC) for two additional meetings.

ESSAC Consensus 0805-05: ESSAC confirms the new general procedure for ranking the applications to sail on IODP expeditions:

- 1) The ESSAC delegates review all applications individually and group them in four categories, from 0 to 3 stars (3 stars being the highest ranking, 0 star the lowest) based on proposed research, experience, and expertise.
- 2) The rankings of the ESSAC delegates are sent to the ESSAC Science Coordinator who is compiling the results to make a synthetic grouping of all applications.
- 3) The ESSAC Nominations and Staffing subcommittee reviews the synthetic grouping based on the ECORD quota balance, which is monitored but not applied rigidly.

ESSAC decides that additional comments on applications from the relevant delegate and/or national office are welcome in the early stage of that process.

> **ESSAC Action Item 0805-11:** For each new staffing call, the ESSAC Office will ask the applicants to send a copy of their application to their respective national office. The ESSAC Office will liaise with the national offices to check that this process has been completed before the ranking procedure starts.

Education and Outreach

ECORD Scholarships

> ESSAC Consensus 0805-06: ESSAC confirms that all ESSAC Delegates take part in the ranking of applications for ECORD Scholarships.

> ESSAC Action Item 0805-12: The Education and Outreach subcommittee will meet electronically before the next ESSAC meeting to suggest criteria to evaluate applications for ECORD Scholarships. The coordinator of that subcommittee will report at the next ESSAC meeting.

Summer Schools

ESSAC Consensus 0805-07: ESSAC recommends not to define the number and the format of ECORD Summer Schools to be proposed for funding, but to work on a case-by-case basis, depending on the applications received after each call.

ESSAC Consensus 0805-08: ESSAC decides that a new call for ECORD Summer Schools will be issued every year in autumn with a deadline in spring for the upcoming year.

ESSAC Motion 0805-01: ESSAC recommends to fund both the 2009 Urbino Summer School in Paleoclimatology (USSP) and the ECORD Summer School 2009 in Bremen on "Geodynamics of Mid-Ocean Ridges". The voting results for the ECORD Summer Schools are:
From 15 votes, 13 votes for "Both ECORD Summer Schools"; 2 votes for "Only the Bremen Summer School" and 0 vote for "Only the Urbino Summer School". None abstained.

> ESSAC Action Item 0805-13: The ESSAC Office will inform the applicants for 2009 ECORD Summer Schools about the final decisions regarding the funding of the Summer Schools after the ECORD Council meeting.

> ESSAC Action Item 0805-14: The ESSAC Office will investigate if the European Community has instruments to fund Summer Schools.

> ESSAC Action Item 0805-15: J. McKenzie will distribute in the future information regarding ESF calls for Integrated Courses on Ocean Drilling Science to all ESSAC delegates.

Distinguished Lecturer Programme

ESSAC Motion 0805-02: ESSAC nominates the following scientists as 2008-2009 ECORD Distinguished Lecturers:

Theme 1 Solid Earth Cycles and Geodynamics: Achim Kopf, MARUM, University of Bremen, Germany, with the title "Subduction mega-earthquakes and other geohazards: IODP NanTroSEIZE as a type example for complex scientific drilling".

Theme 2 Deep Biosphere and the Subseafloor Ocean: R. John Parkes, University of Cardiff, UK – "The Sub-seafloor Biosphere: the largest prokaryotic habitat on Earth?"

Theme 3 Environmental Change, Processes and Effects: Peter Clift, University of Aberdeen, UK – "Mountain Building and the Development of the Asian Monsoon: A chicken and egg problem for the IODP".

The voting results for the 2008-2009 ECORD Distinguished Lecturers are:

Theme 1: 15 votes received, 9 votes for A. Kopf, 4 votes for J. Behrmann and 1 vote for C. Chauvel, 1 abstained;

Theme 2: 15 votes received, 13 votes for R. J. Parkes, 1 vote for D. Prieur, 1 abstained;

Theme 3: 15 votes received, 14 votes for P. Clift, 1 vote for T. Wagner and 0 vote for J. Groeneveld, none abstained.

> ESSAC Action Item 0805-16: The ESSAC Office will inform all applicants of the 2008-2009 Distinguished Lecturer Programme about the ESSAC voting results and invite the nominated lecturers to participate to that programme.

IODP publications

> ESSAC Action Item 0805-17: The ESSAC Office will send a mail to all ESSAC Delegates and the National Offices to ask for updating current IODP (and ODP) related publication lists.

> ESSAC Action Item 0805-18: The ESSAC Office will forward the publication lists obtained from ESSAC Delegates and National Offices to TAMU.

> ESSAC Action Item 0805-19: The ESSAC Office acknowledges that Italy keeps track on IODP-related PhDs carried out in Italy and will ask for updated information on a regular basis in order to sent these information to TAMU.

> ESSAC Action Item 0805-20: The ESSAC Office will inquire about the status of ECORD publications that are still missing in the database 6 months after having been sent to TAMU.

ECORD grants

ESSAC Consensus 0805-09: ESSAC envisages to create short-term ECORD post-graduate (doctoral students) grants covering especially analytical costs and travel support for studies on DSP, ODP or IODP material and/or data.

> ESSAC Action Item 0805-21: The Education and Outreach subcommittee will meet electronically before the next ESSAC meeting to set up the criteria and the format of the ECORD post-graduate (doctoral students) grants. The coordinator of that subcommittee will report at the next ESSAC meeting.

Workshops, Communication and Vision

ESSAC Consensus 0805-10: ESSAC recommends the organization of an EGU Session in April 2009 in Vienna, Austria, immediately followed by a workshop dealing with the future of the European scientific drilling.at the next EGU meeting in Vienna in April 2009.

> ESSAC Action Item 0805-22: G. Camoin and R. Stein will meet electronically to prepare the EGU Session in April 2009 in Vienna, Austria, immediately followed by a workshop dealing with the future of the European scientific drilling.

10. Any other business

ESSAC Consensus 0805-11: ESSAC decide to make all presentations related to the ESSAC meetings available to all ESSAC delegates and observers in the future.

European Consortium for Ocean Research Drilling (ECORD)

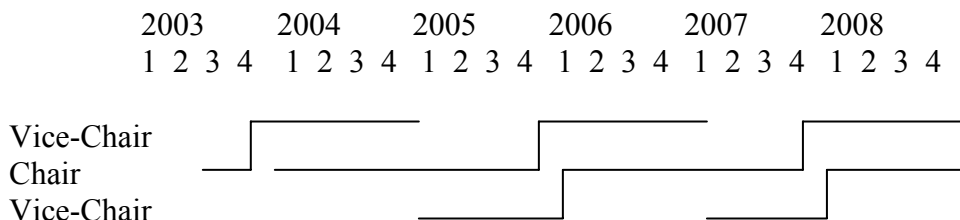
MEMORANDUM OF UNDERSTANDING of European and Other Funding Organisations on Membership and Operation of ECORD in the Integrated Ocean Drilling Program (IODP)

ANNEX D

ECORD Science Support and Advisory Committee (ESSAC) Terms of Reference

A. Representation

1. The ECORD Science Support and Advisory Committee (ESSAC) consists of a national delegate and an alternate from each participating country in the European Consortium for Ocean Research Drilling (ECORD) appointed by the respective Member Organization(s). Alternates can attend, when in addition to delegates, as non-voting members. Additional non-voting representation may be invited on an ad hoc basis. Terms of office of Committee members will be reviewed every three years. It is advised that there is rotation where possible and that no more than one-third of the membership is replaced each year. The first rotation will be in 2005 after an appointment of 2 years. Terms of office will normally begin in October.
2. A Chair and Vice-Chair shall be elected from among ESSAC members and approved by the ECORD Council. The incoming Chair serves one year as Vice-Chair followed by two years as Chair and rotates off as Vice-Chair during the fourth year (see diagram below). They may not self-succeed. The Chair shall be responsible for reporting to the ECORD Council and liaising with the European Managing Agency (EMA) and European Science Operator (ESO).



3. ESSAC's representation in the Science Planning Committee (SPC) should as a minimum comprise the Chair or the Vice-Chair.

B. Division of membership benefits

1. The IODP assigned quota of Leg participants granted to ECORD shall reflect the financial contributions of each member country and specific interests of each participating country over a rolling three-year period.. ESSAC, in consultation with EMA, shall annually review the division effective as of 1 October 2004 and make recommendations in view of the above target ratio and of specific drilling interests.
2. The delegates and alternates on IODP Science Advisory Structure (SAS) panels shall be designated by ESSAC based on national nominations, authorised by ECORD Council and reflect the financial contribution of each participating country: for the first four years the contribution specified in the MOU and thereafter the contribution over a rolling three year period. Normally all ECORD representatives on SAS bodies shall serve for a three-year period and may not be re-appointed for a second consecutive term.

C. Obligations of ESSAC delegates

3. To ensure that all IODP and ECORD meetings are attended by the delegates or by their alternates. If neither can participate the relevant committee shall be informed and, if possible, a substitute nominated.
4. To ensure that the scientific interests of ECORD as a whole are presented by whoever attends SAS meetings on behalf of ECORD.
5. To ensure that minutes of meetings are distributed to their alternate and to the ECORD bodies.
6. To submit a short written report to ESSAC within two weeks of the meeting.
5. To be prepared to attend ECORD workshops and report to ESSAC when requested.

D. Voting

A quorum is required before decisions can be taken. There is no power of attorney for absent members. A quorum requires the presence of a majority of the members. Where possible ESSAC shall proceed by consensus; if this is impossible there shall be a majority vote. Each delegate present has one vote and the Chair has a casting vote. If no decision is reached, the issue will be passed to ECORD Council.

E. Secretariat

The Secretariat shall be determined by the ECORD Council and located with the ESSAC Chair. It will be funded from the budget of the EMA. It shall rotate, on a two-yearly basis, with the Chair of ESSAC. The budget shall be sufficient to provide for a science coordinator with a scientific background, the full cost of maintaining an office and resources to compensate the Chair.

F. Tasks

ESSAC is responsible for the scientific planning and coordination of Europe's contribution to and participation in IODP. The main purpose of ESSAC is to maximize ECORD's scientific and technological contribution.

ESSAC is responsible for:

- Advising ECORD funding organisations on IODP issues.
- Responding to the ECORD Council on requests for evaluation of its activities and initiation of evaluations of the European scientific input to IODP.
- Interacting with the appropriate IODP bodies, in particular the IODP scientific bodies.
- Reporting to the ECORD Council.
- Liaising with the EMA and ESO.
- Nominating representatives (delegates and alternates) on SAS panels.
- Co-ordinating applications, nominating shipboard participants and reviewing the division of the quota of shipboard scientists between participating countries.
- ESSAC shall assist the ESO in preparing a Science Operations Plan for MSP Operations.
- Assist and advise EMA on the formulation of proposals for funding European related infrastructure.
- Initiating and monitoring Workshops and syntheses of European IODP programs.
- Providing stimulation and guidance for the writing of drilling proposals in accordance with the IODP Initial Science Plan and encouragement of IODP-related activities among participating countries.
- Encourage (a) innovative science and technology development, and (b) the formulation of long-term integrated IODP studies.
- Assist and advise the EMA and ESO on the public outreach.
- Assist and advise the EMA on extending the scientific base of the consortium to non-member countries.

G. Proceedings

1. ESSAC shall meet a minimum of two times each year. Meetings are called at the request of ECORD Council, at the initiative of the Chairman, or at the request of one-fourth of the members. The ordinary agenda shall include:
 - Reports from recent SAS meetings;
 - Staffing nominations, progress and evaluation;
 - Planning of ECORD initiatives for forthcoming SAS meetings;
 - Reports from completed legs;
 - Any other task as set down above.
2. ESSAC can implement working groups and define their terms of reference.

ESSAC subcommittee procedures

ESSAC has been structured in three subcommittees (Staffing and Nominations, Education and Outreach, and Workshops, Communication and Vision) to increase the efficiency of ESSAC and the involvement of the ESSAC Delegates in ESSAC life. Subcommittee general tasks and composition are summarized below.

The subcommittees meet electronically to prepare the meetings on general issues and to work on specific issues at the request of the ESSAC Chair. Each subcommittee is coordinated by an ESSAC Delegate, nominated by the ESSAC Chair. The coordinator is in charge of writing a report for the Agenda book and of presenting the activities of the subcommittee at the meetings. A general discussion follows that presentation.

Staffing and Nominations subcommittee

Members: Lucas Lourens (Coord.), Gilbert CAMOIN (ESSAC Chair), Bonnie WOLFF-BOENISCH (ESSAC Science Coordinator), Judith McKENZIE, Rachael H. JAMES, Fatima ABRANTES, Rudy SWENNEN.

General tasks:

- Suggesting nominations of ECORD representatives (delegates and alternates) on SAS panels, PPGs and DPGs.
- Co-ordinating applications, reviewing all the applications and suggesting nominations of shipboard participants.
- Reviewing the quota of shipboard scientists between participating countries.
- Suggesting co-chief nominations for IODP Expeditions.

Immediate actions:

- Summarize the current ECORD composition of SAS panels, identify future replacements (expertise), and suggest permanent alternates.
- Summarize the current ESSAC composition, identify future replacements (Delegates and alternates), and make recommendations.
- Summarize the quota balance for ECORD participation to IODP Expeditions.

Education and Outreach subcommittee

Members: Brian McCONNELL (Coord.), Gilbert CAMOIN (ESSAC Chair), Bonnie WOLFF-BOENISCH (ESSAC Science Coordinator), Maria ASK, Marit-Solveig Seidenkrantz, Werner PILLER, Michael Riedel.

General tasks:

- Developing educational opportunities/programs: Teacher's workshops, Summer Schools etc., especially in non-traditional audiences.
- Reviewing Summer School proposals.
- Reviewing applications and suggesting nominations for ECORD scholarships.
- Providing new ideas regarding new ways to raise funds for E&O activities.
- Advising on the public outreach (societal relevance of the IODP science).

Immediate actions:

- Make recommendations for deadlines for submission of Summer School proposals and for applications for ECORD scholarships.
- Make suggestions of new ideas regarding E&O activities (societal relevance of the IODP science), especially in non-traditional audiences.
- Make suggestions regarding new ways to raise funds for E&O activities.
- Monitoring ECORD database (e.g. ECORD publications).

Workshops, Communication and Vision subcommittee

Members: Ruediger STEIN (Coord.), Gilbert CAMOIN (ESSAC Chair), Bonnie WOLFF-BOENISCH (ESSAC Science Coordinator), Kari STRAND, Bryndís BRANDSDOTTIR, Elisabetta ERBA, Nalan KOÇ, Menchu COMAS

General tasks:

- Initiating and monitoring workshops.
- Reviewing applications for participation to IODP workshops and suggesting nominations.
- Initiating applications of speakers for the Distinguished Lecturer Series and suggesting nominations.
- Providing stimulation and guidance for the writing of drilling proposals in accordance with the IODP ISP and encouragement of IODP-related activities among participating countries.
- Assisting and advising on extending the scientific base of the consortium to non-member countries.
- Looking for gaps in the science spanned by the active proposals relative to the themes and initiatives specified in the Initial Science Plan (ISP),

Immediate actions:

- Review the ECORD database and make recommendations.
- Summarize ECORD active proposals by ISP themes.
- Make recommendations regarding stimulation and guidance for the writing of drilling proposals.
- Make recommendations regarding the extension of the scientific base of the consortium to non-member countries.

1. Introduction

1.1 Call to order, introductions

Letter from the Chair

Dear ESSAC Delegates, ESSAC alternates and ESSAC #11 meeting attendees,

Since last year, when I took over the ESSAC chairmanship, ESSAC has changed the way it works and plans its activities as it now routinely works with three subcommittees (Staffing and Nominations, Education and Outreach, and Workshops, Communication and Vision), which meet electronically to prepare the meetings on general issues and to work on specific issues at the Chair's request. The new expansion and strengthening of ESSAC activities have been especially conducted within those three subcommittees, which have proved that they increase the efficiency of ESSAC and the involvement of the ESSAC Delegates in ESSAC life, even if I do think that we still can do better.

Since its 10th meeting that was held in Stockholm on May 15th and 16th, ESSAC has worked intensively on all aspects of its activities.

Over the last months we have completed the staffing of the Canterbury Basin and the Wilkes Land expeditions, which were initially scheduled from November 2008 to February 2009 respectively and eventually postponed as consequences of further delays in the delivery of the JOIDES Resolution. The USIO has indicated that the ship will sail from Singapore by the end of January 2009, implying that the two first expeditions in 2009 will be the two Equatorial Pacific expeditions including also some additional work on the Juan de Fuca drill sites, which are scheduled from March to July 2009 (see table). The Operation Task Force now works on different scenarios to build the best drilling program for the rest of FY09. ESSAC just completed also the staffing of the Great Barrier Reef Expedition (about 30 applications), which should be the second MSP operation in 2009 (September-December 2009 time window), after the New Jersey Shallow Shelf Expedition, which is scheduled in May-August 2009. ESSAC has been recently engaged in staffing the two next NanTroSEIZE expeditions scheduled from March to September 2009: the Stage 1B « Subduction Input » Expedition and the Stage 2 Expedition « Riser/Riserless Observatory-1 » which will include the first riser drilling operations by the Chikyu.

The last year has been probably the most critical one for IODP since the beginning of the Programme, but it appears that 2009 should be the rebirth of IODP with all drilling capabilities deployed simultaneously. Precise dates and official notification can be found in the inserted table and on the IODP web site (<http://www.iodp.org/expeditions/>).

13 young scientists from 8 countries have been selected among 45 applicants from 16 ECORD and non-ECORD countries to be funded by ECORD to attend one of the two ECORD-sponsored summer schools: « Past Global Change Reconstruction and Modelling Techniques » (Urbino, Italy ; July 2008) and the « The Deep Subseafloor Biosphere » (Bremen, Germany ; September 2008). At its spring meeting, ESSAC decided to fund again the Urbino Summer School in 2009 along with a summer school on « Geodynamics of Mid-Ocean Ridges » which will be organized in Bremen. Last June, the ECORD Council accepted to increase the funding of the ECORD Summer Schools and the ECORD Scholarships for 2009. In parallel, a new call for applications for ECORD-sponsored 2010 summer schools has recently been issued by the ESSAC Office.

The first phase of the ECORD Distinguished Lecturer Programme launched in 2007 has been very successful with a total of 23 talks in 15 ECORD and non-ECORD countries by the 2007-08 lecturers Judy McKenzie, Benoît Ildefonse and Paul Wilson, and ended last summer. Peter Clift, Achim Kopf and John Parkes have been selected among 8 applicants by ESSAC as 2008-2009 ECORD Distinguished Lecturers at its spring meeting. 32 applications of institutions from 12 ECORD and non-ECORD countries to host those lecturers have been received by ESSAC. The times and venues of the lectures will appear on the ESSAC web site as soon as they are arranged.

At its next meeting which will be held on October 27th-28th, 2008 in Tübingen, Germany, ESSAC will define the format of a new tool called « ECORD Grants » which will consist of small and short-term grants which should cover travel and lab expenses to work on DSDP/ODP/IODP cores and/or data. The objectives of this Programme will be to enlarge the use of DSDP/ODP/IODP cores and/or data, and to attract still more young scientists and IODP newcomers. This concept will be soon submitted to the ECORD Council to start with a first funding phase of « ECORD Grants » in FY2010.

The IODP-ICDP EuroFORUM has been organized for the first time as an EGU Interdivision Session last April in Vienna ("Achievements and Perspectives in Ocean and Continental drilling"; convenor: Gilbert Camoin; co-conveners: Ulrich Harms, Ursula Roehl, Henk Brinkhuis and Flavio Anselmetti) and has been very successful with 29 talks and posters covering the 3 themes of the Initial Science Plan, and attended by more than 200 scientists.

ESSAC decided at its spring meeting to use again the EGU platform to organize an Interdivision Session entitled « Beyond 2013 - The future of European scientific drilling » (conveners: Gilbert Camoin and Rüdiger Stein) followed by a 1-2 days workshop at the University of Vienna specifically addressing the future of European scientific drilling research with the objective to sharpen the European interests in the future IODP and to prepare the INVEST (IODP New Ventures in Exploring Scientific Targets) Conference which will be held on 23-25 September 2009 in Bremen, Germany. In parallel, ESSAC will initiate a web forum, which will give to all people interested in scientific drilling the possibility to be included in the discussion, especially if they cannot attend the EGU. A questionnaire related to the IODP achievements and perspectives, the IODP and ECORD structures, the IODP problems, the relationships between academia and industry, the relationships between IODP and other drilling/coring programs will be posted soon on the ESSAC website.

The ESSAC activities are developing in parallel with the very successful ESF Magellan workshop series. Three ESF Magellan-sponsored workshops have been or will be held in 2008: "Ocean Drilling for Seismic Hazard in European Geosystems", "Arctic Ocean: from Speculation to Reality" and "Lithospheric Heterogeneities, Hydrothermal Regimes and Links Between Abiotic and Biotic Processes at Slow Spreading Ridges".

In conclusion, I am glad to notice that ESSAC has considerably grown and extended its activities to better serve the ECORD contribution to IODP. This new phase of ESSAC development could not have been achieved without the hard work of Bonnie Wolff-Boenisch, the ESSAC Science Coordinator and of the ESSAC delegates, as well as the strong support from Catherine Mével (EMA) and the ECORD Council members.

I thank warmly Jochen Erbacher and Rüdiger Stein for hosting the ESSAC 11th meeting in Tübingen and for their efforts for the outstanding arrangements made for that meeting.

I wish you a successful and pleasant meeting.

Gilbert CAMOIN,

Aix-en-Provence, October 6th, 2008

11th ESSAC Meeting 26th – 28th October, 2008

Tübingen, Germany

LODGING ACCOMODATIONS:

In the following hotels rooms are booked under
“**ESSAC Meeting in Tübingen**”

Please contact the hotels until **September 20, 2008**.

Hotel am Schloss

A block of 19 single rooms is reserved at a special rate of 95,00 Euros per night, including breakfast

Hotel am Schloss
Burgstrasse 18
72070 Tübingen
Telephone: +49 7071 92 94 0
Telefax: +49 7071 92 94 10
E-Mail: info@hotelamschloss.de
<http://www.hotelamschloss.de/>

Hotel Hospiz

A block of 10 single rooms is reserved at a special rate of 68 Euros per night
and 5 double rooms as single rooms are reserved at a special rate of 76 Euros per night,
including breakfast

Hotel Hospiz
Neckarhalde 2
72070 Tübingen
Telephone: + 49 7071 924 0
Telefax: + 49 7071 924 200
E-Mail: hotel.hospiz.tuebingen@t-online.de
<http://www.hotel-hospiz.de/>

TRANSPORTATION and TRAVELLING:

Travelling by plane to Stuttgart Airport.
<http://www.flughafen-stuttgart.de/sys/index.php>

Travel from Stuttgart Airport to the hotel in Tübingen

By taxi:

Taxis depart in front of the airport terminals.

The journey from the airport to the hotel in Tübingen takes approximately 30 minutes. You may order a taxi at a special rate of ~ 45 € at info@taxi-tuebingen.com. Think about organizing shared taxis. If you let us know the time of your arrival in Stuttgart we are happy to book taxis for you. Just contact us at iodp@bgr.de.

By train and subtrain:

More information about travel planning by train you can find at http://www.stuttgart-airport.com/sys/index.php?section_id=2&id=3&lang=1

The journey from the airport to Tübingen station takes one hour.

More information about Stuttgart, you can find here:

http://www.stuttgart-tourist.de/index_ENG.htm

MEETING LOCATION:

The meeting will be held in the “duke room” at Hohentübingen Castle just 5 minutes to walk from both hotels http://www.tuebingen.de/en/1560_2532.html. Lunches and coffees will be served there.

FIELD TRIP:

A field trip is organized for Sunday, 26th October (full day). We will visit Jurassic strata along the Swabian Alb. Highlights will be a spectacular Triassic-Jurassic boundary section; the famous Posidonia Shales and Oxfordian to Kimmerigian porifera reefs.

Please let us know whether you plan to participate in the field trip by September 20th.

SOCIAL EVENTS:

Monday, October 27, 2008, 18.00

Icebreaker in “Paleontological Museum” (Paleontological collection) with a guided tour

University of Tübingen
Paläontologisches Museum
Eberhard Karls Universität Tübingen
Sigwartstr. 10
72074 Tübingen

Tuesday, October 28, 2008

Dinner at 19.30 in "Weinstube Forelle", Tübingen

Weinstube Forelle

Kronenstrasse 8

72070 Tübingen

<http://www.weinstubeforelle.de/Forelle/index.html>

Map:

<http://www.weinstubeforelle.de/Forelle/dynamisch/load/frameset.html>

More information about Tübingen can be found at <http://www.tuebingen.de/index.html>

Map of locations in Tübingen

<http://maps.google.de/maps/ms?hl=de&ie=UTF8&msa=0&msid=104931356712183990129.000451be482ee1911bdca&ll=48.522702,9.056253&spn=0.020579,0.037422&z=15>

MEETING HOSTS:

Prof. Dr. Rüdiger Stein

ESSAC German delegate

Alfred-Wegener-Institut für Polar- und Meeresforschung

Columbusstraße

27568 Bremerhaven

Tel: (04 71) 4831-1576

Fax: (04 71) 4831-1923

E-Mail: Ruediger.Stein@awi.de

Dr. Jochen Erbacher

IODP-coordinator

Bundesanstalt für Geowissenschaften

und Rohstoffe (BGR)

Stilleweg 2

30655 Hannover

Tel.: +49-(0)511-643-2795

Fax: +49-(0)511-643-3663

E-Mail: Jochen.Erbacher@bgr.de

Prof. Michal Kučera

Institut für Geowissenschaften

Arbeitsbereich Biogeologie und Angewandte Paläontologie

Sigwartstraße 10

72076 Tübingen

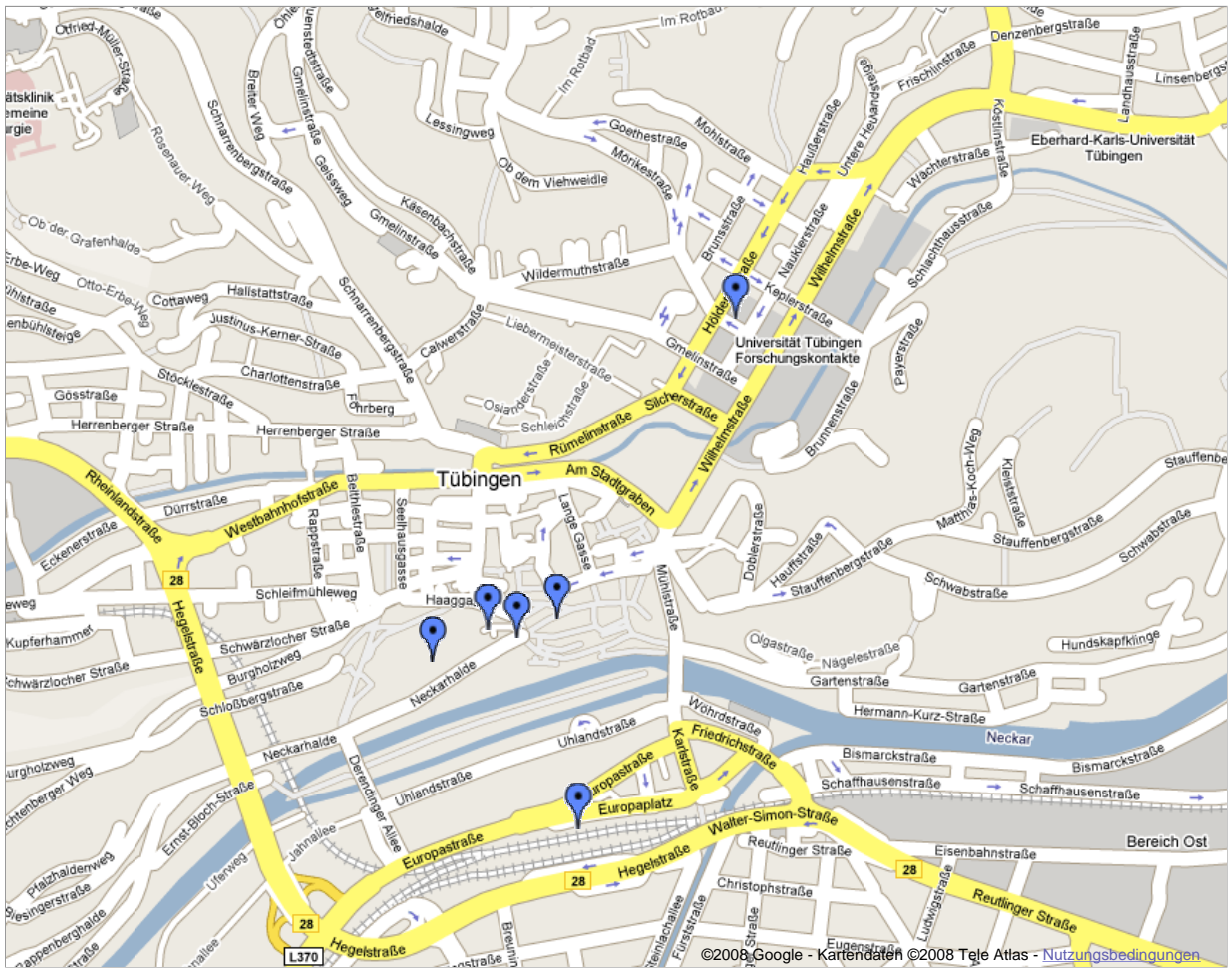
Tel. 0 70 71/2 97 46 74

Fax 0 70 71/29 57 27

E-Mail: michal.kucera@uni-tuebingen.de



Wenn Sie alle auf dem Bildschirm sichtbaren Details anzeigen möchten, verwenden Sie den Link "Drucken" neben der Karte.



ESSAC Tübingen

Locations map for the 11th ESSAC Meeting in Tübingen

3 Ansichten - Öffentlich

Erstellt am 11. Jul. - Vor 2 Tagen aktualisiert

Von [schweizerbacher](#)

[Bewerten Sie diese Karte](#) - [Kommentar verfassen](#)



[Hotel am Schloss](#)



[Hotel Hospiz](#)



[railway station](#)



[Forelle](#)
Social Event 2



[Paleontological Museum](#)
Social Event 1



[Castle Hohentübingen](#)
Meeting Location: South wing of the castle in the Fürstenzimmer

1.4 Items since the 10th ESSAC Meeting

The list down-below contains the actions items, which arose since the last ESSAC meeting in Stockholm (May 15th-16th, 2008) and that have been accomplished by the ESSAC Office or other persons in charge (ESSAC delegates, subcommittee members or observers) since then (labelled with "**Done**").

Action items not fulfilled yet, have been labelled by "**on-hold**" or have been explained on a case-by-case basis.

In some cases consensus and motions have been added, whether when actions had been entailed or if they had been deemed important to understand the context of the actions involved.

The full list of action items, consensuses and motions are given in the executive summary (above).

IODP news

> **ESSAC Action Item 0805-01:** The ESSAC Office will send an email to H. C. Larsen suggesting that 1 or 2 persons from industry should be included in the scientific steering committee of the SASEC Conference that will be held in September 2009 in Bremen.

Done: ESSAC Office sent an email to H.C. Larsen on June 2nd, 2008 to ask, if 1 or 2 persons from industry could be designated as members of the steering committee. On June 3rd, H.C. Larsen answered and suggested that the issue would be discussed during the upcoming SASEC meeting. He suggested that industry does not necessarily need to be on the steering committee, but that a good number of industry representatives should attend the meeting and make contributions, and that 1 or 2 of them could give talks..

Note: For the 2009 EGU conference in Vienna, the session "Beyond 2013 – The Future of European Scientific Drilling Research" a representative from Industry has been invited (compare **ESSAC Action Item 0805-05**, **ESSAC Consensus 0805-10** and **ESSAC Action Item 0805-22**).

> **ESSAC Action Item 0805-02:** E. Arnold will contact Carlo Laj to seek information regarding funds available for the participation of an ECORD teacher to the School of Rocks.

Done: During the 10th ESSAC meeting E. Arnold contacted Carlo Laj. Unfortunately the funds had been already consumed.

ECORD news

> **ESSAC Action Item 0805-03:** C. Mével will send the list of the EU contact persons from the different ECORD countries so that the ESSAC delegates will be able to lobby for ECORD on a national level.

Done: C. Mével had been contacted and she will send the list as soon as she gets new information about the current EC contact persons.

> **ESSAC Action Item 0805-04:** C. Mével will provide information regarding the internal ERA-Net evaluation of the ESF Magellan and ESF EUROMARC Program to better explain the aims of that evaluation.

Done: C. Mével sent an email on June 17th, 2008 including the clarification about the ERA-Net evaluation of the ESF Magellan workshop series, of the ESF EUROMARC programmes, and of the ESSAC activity report. The ESSAC Office forwarded this mail to the ESSAC delegates on June 18th, 2008.

> ESSAC Action Item 0805-05: The ESSAC Office will circulate in due time information about an EGU Session in April 2009 in Vienna, Austria, immediately followed by a workshop dealing with the future of the European scientific drilling (see also ESSAC Consensus 0805-10 and ESSAC Action Item 0805-22).

Done: The proposition to organise the session had been posted on the EGU cosis site on Sept. 18th, 2009. (http://www.cosis.net/members/meetings/skeleton/view.php?p_id=381)

Note: The announcement of the conference and the proposed topics appear on the ESSAC webpage.

> ESSAC Action Item 0805-06: ESO will inform the ESSAC Office in due time concerning the current state of the staffing of the New Jersey Expedition to evaluate the need to issue a new short term call for applications to replace scientists who declined their invitation due to the rescheduling of the expedition.

On-hold: ESO did not contact yet the ESSAC Office on that matter.

Other activities: The ESSAC Office sent on June 19th, 2008 an email to the ESSAC delegates regarding the withdrawal of Steve Hesselbo's application as co-Chief on the New Jersey expedition and requested suggestions for alternative co-Chief nominations. 1 suggestion has been made and the scientist has been invited as co-Chief on that expedition.

Nominations and Staffing

> ESSAC Action Item 0805-07: The ESSAC Office will suggest A. Kotilainen (Finland) to be a permanent alternate for the Science and Technology Panel (STP).

Done: On June 3rd, 2008 the ESSAC Office contacted A. Kotilainen. He agreed to serve as STP alternate on June 9th, 2008.

> ESSAC Action Item 0805-08: The ESSAC Office will issue a call for applications to replace M. Lovell (UK) at the Science and Technology Panel (STP).

Done: On June 20th, 2008 the ESSAC Office issued a new STP Call to replace M. Lovell (UK) at the Science and Technology Panel (STP). The deadline's call had been deferred from Sept. 15th to Oct. 15th, 2008 to leave enough time to UK to identify suitable candidates for the replacement of M. Lovell.

> ESSAC Action Item 0805-09: The ESSAC Office will issue a call for applications for a new ECORD member of the Engineering Development Panel (EDP) who should become the next Vice-Chair of that panel.

Done: The ESSAC Office contacted the ECORD EDP panel members for clarification of the needs of the panel members (clarification of L. Wohlgemuth's status and the ensuing decision on whether to issue a call for future EDP panel members or to nominate alternates for this panel). As soon as the EDP panel members clarified they needs, a call, if necessary, will be issued.

> ESSAC Action Item 0805-10: The ESSAC Office will issue a call for applications to replace T. Elliott (UK) at the Science Steering Evaluation Panel (SSEP).

Done: A call has been issued by the ESSAC Office October 6th, 2008 and distributed to the ESSAC delegates and the national offices.

ESSAC Consensus 0805-04: ESSAC decides the extension of G. Wefer's term at the Science Advisory Executive Committee (SASEC) for two additional meetings.

Done: G. Wefer had been contacted to ask, if he agrees, that his term will be extended for 1 more year. G. Wefer agreed to stay on SASEC for one more year at the ECORD Council June meeting.

ESSAC Consensus 0805-05: ESSAC confirms the new general procedure for ranking the applications to sail on IODP expeditions:

1) The ESSAC delegates review all applications individually and group them in four categories, from 0 to 3 stars (3 stars being the highest ranking, 0 star the lowest) based on proposed research, experience, and expertise.

2) The rankings of the ESSAC delegates are sent to the ESSAC Science Coordinator who is compiling the results to make a synthetic grouping of all applications.

3) The ESSAC Nominations and Staffing subcommittee reviews the synthetic grouping based on the ECORD quota balance, which is monitored but not applied rigidly.

ESSAC decides that additional comments on applications from the relevant delegate and/or national office are welcome in the early stage of that process.

Done: The process had been implemented during the staffing of the Great Barrier Reef expedition and the final decision of the ESSAC Subcommittee Nominations and Staffing (from August 15th to September, 17th, 2008).

> ESSAC Action Item 0805-11: For each new staffing call, the ESSAC Office will ask the applicants to send a copy of their application to their respective national office. The ESSAC Office will liaise with the national offices to check that this process has been completed before the ranking procedure starts.

Done: For the Great Barrier Reef expedition call, the applicants were asked to send a copy of their CVs to the respective national delegate/national office. Additionally, each full application was sent by the ESSAC Office to the respective national delegate/national office (Appendix 1).

Education and Outreach

ECORD Scholarships

> ESSAC Action Item 0805-12: The Education and Outreach subcommittee will meet electronically before the next ESSAC meeting to suggest criteria to evaluate applications for ECORD Scholarships. The coordinator of that subcommittee will report at the next ESSAC meeting.

Done: The Education and Outreach subcommittee met electronically on that matter at the Chair's request (message on August 30th, 2008). Brian McConnell sent a document as an opener to the discussions regarding the criteria for the ranking of the ECORD scholarships applications.

Summer Schools

ESSAC Consensus 0805-08: ESSAC decides that a new call for ECORD Summer Schools will be issued every year in autumn with a deadline in spring for the upcoming year.

Done: A call has been issued by the ESSAC Office October 6th, 2008 with a 30th April 2009 deadline, providing the future organiser(s) with a 1 year lead time to prepare the Summer School(s).

> ESSAC Action Item 0805-13: The ESSAC Office will inform the applicants for 2009 ECORD Summer Schools about the final decisions regarding the funding of the Summer Schools after the ECORD Council meeting.

Done: The organisers of both ECORD Summer Schools have been informed, that they will be funded by ECORD in summer 2009 (message on July 10th, 2008).

> ESSAC Action Item 0805-14: The ESSAC Office will investigate if the European Community (EC) has instruments to fund summer schools.

Done: The ESSAC Office explored the possibilities, if the EC has instruments to fund summer schools. The EC funds summer schools, but within much larger EU projects and structures such as Integrated Projects (IPs) or Initial Training Programmes (Marie-Curie). Furthermore, D. Hauglustaine and A.M. Hama (ESF) have been invited to attend the ESSAC #11 meeting to discuss those items and other ESF activities and programmes.

> ESSAC Action Item 0805-15: J. McKenzie will distribute in the future information regarding ESF calls for Integrated Courses on Ocean Drilling Science to all ESSAC delegates.

On-hold: There have been no proposals for this new ESF instruments and the use of this instrument will be re-evaluated in future discussions.

> ESSAC Action Item 0805-16: The ESSAC Office will inform all applicants of the 2008-2009 Distinguished Lecturer Programme about the ESSAC voting results and invite the nominated lecturers to participate to that programme.

Done: The ESSAC Office sent an email to all applicants on May 20th, 2008 to inform them about the final voting results. The nominated lecturers all accepted to become ECORD Distinguished Lecturers.

IODP publications

> ESSAC Action Item 0805-17: The ESSAC Office will send a mail to all ESSAC Delegates and the National Offices to ask for updating current IODP (and ODP) related publication lists.

Done: The ESSAC Office sent an email to the ESSAC delegates on July 17th, regarding the updates of the national publication lists. France and Germany sent updates and links towards national publication database, respectively.

> ESSAC Action Item 0805-18: The ESSAC Office will forward the publication lists obtained from ESSAC Delegates and National Offices to TAMU.

Done: The ESSAC Office sent the updated list and the link to A. Miller, Manager of the IODP publication citation database.

> ESSAC Action Item 0805-20: The ESSAC Office will inquire about the status of ECORD publications that are still missing in the database 6 months after having been sent to TAMU.

Done: The database has been updated, but there are still some ECORD publications missing in the database.

ECORD grants

ESSAC Consensus 0805-09: ESSAC envisages to create short-term ECORD post-graduate (doctoral students) grants covering especially analytical costs and travel support for studies on DSP, ODP or IODP material and/or data.

> ESSAC Action Item 0805-21: The Education and Outreach subcommittee will meet electronically before the next ESSAC meeting to set up the criteria and the format of the ECORD post-graduate (doctoral students) grants. The coordinator of that subcommittee will report at the next ESSAC meeting.

Done: The Education and Outreach subcommittee met electronically on that matter at the Chair's request (message on August 30th, 2008). Brian McConnell sent a document as an opener to the discussions regarding the format of the ECORD grants.

Workshops, Communication and Vision

ESSAC Consensus 0805-10: ESSAC recommends the organization of an EGU Session in April 2009 in Vienna, Austria, immediately followed by a workshop dealing with the future of the European scientific drilling at the next EGU meeting in Vienna in April 2009.

> ESSAC Action Item 0805-22: G. Camoin and R. Stein will meet electronically to prepare the EGU Session in April 2009 in Vienna, Austria, immediately followed by a workshop dealing with the future of the European scientific drilling.

Done: The proposition to organise the session had been posted on the EGU cosis site on Sept. 18th, 2009. (http://www.cosis.net/members/meetings/skeleton/view.php?p_id=381)

The conference is announced on the ESSAC webpage.

Any other business

ESSAC Consensus 0805-11: ESSAC decide to make all presentations related to the ESSAC meetings available to all ESSAC delegates and observers in the future.

Done: All transparencies, made available by the ESSAC delegates and the observers of the last ESSAC meeting in Stockholm have been sent to all ESSAC delegates, observers and guests of the 10th ESSAC meeting on September, 29th, 2008.

1.5 ESSAC 09 budget

An increase of the ESSAC budget by 6.3% (+ € 9.000) for FY09 compared to FY08 has been obtained from the ECORD Council. Several expenses will remain constant compared to FY 08:

- Travel and subsistence costs for the Chair and the Science Coordinator
- General office costs
- Organization of the ESSAC meetings, including meeting costs and travel support for invited speakers
- Support for the Distinguished Lecturer Programme
- Workshop scientist support for « over quota » participation of ECORD scientists at IODP workshops

- Travel support for speakers invited at the ECORD Conference planned in April 09 (similar to the budget obtained for the organization of EuroFORUM'08)

Some expenses have been increased:

- The Science Coordinator's salary that has been re-evaluated
- The participation to the organization of the ECORD Summer Schools, to face an increase in the costs for their organization
- The ECORD scholarships to ensure 15 ECORD scholarships

The overall evolution of the ESSAC budget is characterized by a decrease of ECORD contribution of € 25.647 (- 14.4 %) over the last two years, following the rotation of the ESSAC Office from Cardiff to Aix-en-Provence.

1.6 ESSAC Office news

In the future the items 1.4 "Items since the last ESSAC Meeting" and 1.6 "ESSAC Office news" will be merged together. It is mainly because, their contents are interlinked and the "chronology" of ESSAC decision and procedure developments as well as the fulfilment of action items (compare item 1.4) can be better measured in this manner.

In Tuebingen, the ESSAC Office will summarize its undertakings and the impetus it gave to new initiatives during the period from May to October, 2008. A part of these undertakings (and the fulfilment of the related action items) will be centralised in the respective thematic themes. Details will be given by the respective lecturers (for example: action items regarding SAS panel matters will be presented under item 2.2 to 2.4, etc.).

2. IODP News

2.1 Lead Agencies and Implementing Organizations

MEXT and NSF

The Basic Act on Ocean Policy and Basic Plan on Ocean Policy

The Basic Plan on Ocean Policy was approved in a Cabinet meeting on March 18th, 2008. In accordance with the corresponding Act, the Plan prescribes the matters regarding (i) the basic policy of measures with regard to the oceans, (ii) the measures that the government shall implement with regard to the oceans comprehensively and systematically, (iii) any items necessary for promoting above measures. The Plan also provides that the government should promote the research and development and international cooperation with regard to the science and technology of the oceans. IODP is mentioned as one of the international programs to be promoted by Japan's leadership.

In May 2008, NSF Director Arden Bement came to Japan to meet with the Minister for MEXT, Kisaburo Tokai. They held successful talks including a discussion of the future of the IODP post-2013. Also, the Prime Minister of Australia came to Japan to meet with the Prime Minister of Japan. IODP was mentioned in a statement that was issued welcoming Australia to the IODP.

IODP Campaign in Japan

JAMSTEC and J-DESC have held the "IODP Campaign in Universities & Museums" to introduce the IODP activities (exhibition booth of IODP science and activities of drilling platforms, lectures of scientists and technicians and so on) especially to graduate and undergraduate students since 2004.

Personnel change in MEXT

Mr. Hiroshi IKUKAWA has assumed the Director of Ocean and Earth Division, Research and Development Bureau, MEXT since July 1, as the successor to Mr. Hideki Kondo.

CEDEX

After three expeditions (IODP Expeditions 314, 315, 316) in Nankai Trough, the drydock work was carried out for D/V Chikyu in Sasebo, Nagasaki from late February. This drydock work included repair, maintenance and inspection works of the ship as well as onboard laboratory improvement. During the drydock, some cracks and losses were discovered on the gear teeth of three the Azimuth Thruster (360° swiveling propellers used to maintain ship's position during drilling operations).

JAMSTEC and outside experts investigated the causes of this failure, and found that several factors might involved, including its design, manufacturing process, material, and the assembly and adjustments of gears. Projected future preventative measures include improvement of material, designing, and manufacturing process, and also more precise assembly and adjustment of those gears. As the results, all six gears have been replaced with new designed ones.

Because of this failure, the original expedition schedule (IODP operation starts from December 2008) has been amended (www.iodp.org/expeditions).

IODP promotion campaigns success in Asia (JPGU and AOGS 2008)

IODP partners in Asia organized IODP booth at Japan Geoscience Union: JPGU 2008 in Chiba Japan and Asia Oceania Geosciences Society: AOGS 2008 in Busan Korea. It was a joint collaboration campaign with CDEX, J-DESC, and K-IODP which successfully promoted the IODP expedition highlights, how to get IODP data and sample, and the future expedition schedules. In addition, J-DESC sponsored the first IODP-ICDP town hall meeting in the evening of May 27, during the JPGU. It was the first time for J-DESC to hold such a town hall meeting and it brought about 100 scientists and graduate students together. Photos from the town hall meeting, can be obtained under:

http://www.j-desc.org/modules/tinyd0/rewrite/events/080527_JDESC_THM.html

Legacy core redistribution project will be completed in KCC

By mid August, all legacy (DSDP-ODP) cores planned to be delivered to KCC (approximately 84 km long) from other legacy repositories will be all stored so that the core redistribution project will be completed. Therefore KCC will provide full curation service with respect to all legacy and IODP cores in the west half of Pacific Ocean and the Indian Ocean.

Information about the release of core data by the CHIKYU "Public J-CORES Data Center"

The "Public J-CORES Data Center" has been set up for public release of expedition data after one year moratorium period. With this data center, researchers will be able to use core data collected during CHIKYU expeditions. After moratorium period expired, everyone can access and use the data via this data center. The first data release will be taken place in fall 2008, for Shimokita shake down cruise. Information about visual core descriptions (VCD), micro-paleontological records of fossil occurrences, and X-ray CT Scanner for each drilling hole can be downloaded. It is also possible to retrieve the drilling hole locations by using Google Map and Google Earth.

IODP-USIO and SODV Updates

Leadership changes at IODP-TAMU

Dr. Jeff Fox, Director of Science Operations, and Dr. Jack Baldauf, Deputy Director of Science Operations were replaced by appointing an IODP Transition Leadership Team that consisted of Dr. Mitch Malone - Acting Director of Science Operations; Dr. Ethan Grossman - Acting Deputy Director of Science Operations; Ms. Ann Klaus - Deputy Director of Data Services (continuing in her present role); and Dr. Jay Miller - Acting SODV Project Manager.

On 1 August 2008, Dr. Steve Bohlen became Interim Director of Science Operations at IODP-TAMU and serves in that role until approximately 31 May 2009. Dr. Bohlen has been charged to develop a new vision and structure for IODP, work closely with the USIO Alliance partners and the drilling community, build academic bridges, and position IODP-TAMU to take advantage of current and future research opportunities in climate change, sea-level rise, energy security and other relevant National issues and start planning for ocean science drilling beyond 2013.

Late in 2008 or early in 2009, TAMU will advertise internationally for a new and permanent Director of Science Operations at IODP.

ODC

Ocean Leadership and Integrated Ocean Drilling Program Management International (IODP-MI) have met with major energy companies interested in participating in an industry sponsored Ocean Drilling Consortium (ODC). The JOIDES Resolution (JR), its laboratories, and the USIO technical staff have been offered to industry for four per year. The USIO services and facilities would be augmented with academic scientists, as in IODP, to conduct IODP-like science in areas of interest to the sponsoring companies. A workshop including representatives from four major oil companies as well as a number of academic participants was held in Houston. There were a total of about 80 attendees for the workshop held in June 15th-17th, 2008. The objective of the workshop was to see if a drilling program using the JR for four-months per year for four-years could be developed. To put all of the pieces together and to finalize the drilling program, a smaller meeting involving representatives from the interested energy companies as well as the ODC steering committee, consisting of nine academic scientists and representatives from the USIO, took place on July, 17th - 18th, 2008.

On a parallel track, an alliance between the USIO, Overseas Drilling Limited (ODL), the owners of the JR, and Fugro, a major geotechnical company, is being finalized. A contract is being negotiated to cover the period when the JR is off the NSF contract. The two commercial companies would market and identify work where the JR would be utilized. This approach would relieve the USIO from paying the day rate for the JR to ODL when the ship was off-contract, allowing those savings to be reprogrammed for IODP science.

A Draft FY09 APP with an approximate budget of \$64M was submitted to NSF and IODP-MI on May 15th, 2008. The FY09 APP reflects a budget to conduct 4 IODP expeditions and a reduction in Full-Time Equivalent (FTE) allocations for the entire USIO from 181 to 152.25.

The FY09 USIO budget will deliver as much science to the community while facing the fact that ~70% of our budget goes to "fixed" costs (day-rate, fuel, logging subcontract, etc.).

2.2 SAS Executive Committee – SASEC

The 6th SASEC Meeting took place in June 23rd to 24th, 2008 in Beijing, People's Republic of China.

The most important consensus and discussion items are listed below:

IODP-MI Operations Task Force (OTF) report

SASEC Consensus 0806-03: SASEC reaffirms IODP's commitment to maximize riser drilling with Chikyu over the next five years. The program is presently constrained to one riser operational area with 3-D seismic coverage (i.e., NanTroSEIZE), and that area has other logistical limitations (e.g., Kuroshio Current). SASEC encourages acquisition of 3-D site survey data for other potential, highly-rated projects in order to provide other opportunities to utilize riser drilling. Any future riser drilling is critically dependent on such data.

Report on the March 2008 Science Planning Committee (SPC) meeting

SASEC Consensus 0806-04: SASEC thanks the Science Planning Committee (SPC) for its conscientious efforts in ranking proposals and sending highly-ranked science to the Operations Task Force (OTF). SASEC concurs with SPC that in their rankings, it is important to consider balance among themes of the Initial Science Plan (ISP). As we consider building toward completion of the present phase of IODP and renewal, SASEC will be paying special attention to thematic balance among expeditions and addressing the objectives of the ISP.

Industry activities by IOs and the IODP-MI

In June 15th-17th, 2008 the Ocean Drilling Consortium (ODC) met. The deliverable for the June workshop was an outline of a proposal for a four-year drilling program. The three themes to be considered by the ODC were:

- Genesis and evolution of extensional margins and basin architecture;
- De-risking uncertainty in shelf margin and deep-water reservoirs;
- Distribution and genesis of Mesozoic through Paleogene marine source rocks on passive margins.

The workshop was funded by 4 energy companies.

IODP-MI corporate funds were being used to support planning for the ODC. The intention was to keep the June workshop small (~20 participants), but a large number of people wanted to participate. Because of this, cyber-workrooms were set up so that non-attendees could present material.

Industry representatives said they would make sure that there were adequate site surveys to support the proposed drilling and, if necessary, the rights to the site survey data would be purchased. The main reason for industry interest is that it provides an opportunity to acquire data that the companies would otherwise never get individually. Industry representatives also said that at least six companies would be necessary to sponsor the program, though ten would be better, and good justification for the costs will be necessary to satisfy managers that the money will be well spent.

Indication of the success of the ODC will be known by December 2008, but a final decision will not be known until May 2009. The program would start in 2010.

NSF and MEXT have stressed that the ODC cannot be an IODP project. The ODC was an IODP-MI corporate activity, and the IODP SAS would not be involved in ODC projects.

Currently it is negotiated that after two years there would be full access for everyone.

Thematic review

The final report from the first IODP thematic review (on climate variability) is posted on the IODP website.

The second review (on oceanic crustal structure and formation) will take place in October 2-3, 2008 in Zuerich and hosted by SPC-member Gretchen Frueh-Green. 4 IODP expeditions

have addressed issues of crustal structure (304, 305, 309 and 312), and the review will include two highly relevant late-ODP legs (206 and 209). After this thematic review, all IODP expeditions except 301, 307, 308 and 311 will have been reviewed.

SASEC Consensus 0806-05: SASEC accepts SPC Consensus 0803-20 to conduct the next thematic review in FY 2009 on Initial Science Plan Theme I: the Deep Biosphere and Subseafloor Ocean. This will include, but not be limited to, reviews of Expeditions 301, 307, 308 and 311.

SPC feels it is too early to do a review on the theme of the seismogenic zone.

Status of IODP DRILLS program

The inaugural series, which ran from November 2007 to May 2008, was very successful, featuring three speakers: Bo Barker Jørgensen, Ted Moore and Yoshi Tatsumi. He also presented feedback from the DRILLS hosts, noting that half of all hosts responded to an online survey, and of those most were very supportive of the program and would like to host a DRILLS speaker in the future.

It was noted, ECORD has a distinguished lecture series. Japan also has a similar program. M. Talwani suggested that, in the future, better coordination with distinguished lecture series organized by other entities (e.g., ECORD) was needed.

It was commented that it would be useful (e.g., for teaching purposes) if the lectures were made available on the IODP website.

Evans noted that the lecture by Tatsumi in Edinburgh was filmed, though he was not sure what happened to the video.

Program renewal

M. Kono sent emails to funding agencies (U.S., Japan, ECORD) with following questions:

1. Should we stop receiving new proposals;
2. Does the SAS structure need downsizing;
3. Is the renewal part of the IODP business,
4. Is the planning conference for renewal of the program important for IODP;
5. Where is source of funds for this meeting;
6. What (else) should be done for the renewal?

Regarding the need for restructuring of the SAS, the NSF and MEXT replied that no major restructuring is necessary at the moment, while ECORD called for evolution of the SAS so that proposals with no real chance of implementation are rejected early in the review process.

Regarding the necessity for the IODP renewal planning meeting, the NSF, MEXT and ECORD replied that the meeting was important, though ECORD questioned whether the timing (September 2009) was too early.

Regarding the nature of the program after 2013, the NSF and MEXT replied that no major shift was anticipated, though large changes could occur (i.e., involving industry). The intention is to seek full-year funding, but if that is not possible, other sources need to be identified. ECORD said that it was too early to answer.

Commenting on the current preparations for renewal, the NSF and MEXT described the preparations as excellent. ECORD replied that the most important elements are the need for a convincing science plan, and external evaluation of scientific achievements. Regarding other activities necessary for renewal, the NSF and MEXT also highlight the need for an evaluation of scientific achievements, review of program structure and review of national contributions..

Kono presented a revised timeline for planning for renewal:

- September 2009 Big meeting
- Early 2010 Proceedings of meeting
- Late 2010 New science plan (draft)
- Early 2011 Completion of science plan
- Review of IODP science
- Late 2011 Review of new science plan
- Late 2011-early 2012 Approval by National Science Board
- Approval by Council for Science and Technology Policy ECORD countries?

Steering committee and its mandate

SASEC Motion 0806-06: SASEC approves the following committee to organize an international scientific meeting for all scientists interested in renewal of IODP: Christina Ravelo (Co-chair), Wolfgang Bach (Co-chair), Jan Behrmann, Bob Duncan, Katrina Edwards, Sean Gulick, Fumio Inagaki, Heiko Pälike, Ryuji Tada, Gilbert Camoin

Raymo moved, Wefer seconded, 10 in favor (Arndt, Hayes, Humphris, Kawahata, Kimura, Kono, Raymo, Tatsumi, Taylor, Wefer), none opposed, 2 non-voting (Mori, Talwani).

SASEC Consensus 0806-07: SASEC names Yoshi Tatsumi and Gerold Wefer as the SASEC liaisons to the steering committee for the international scientific meeting related to renewal of IODP.

SASEC Consensus 0806-08: SASEC adds the following statement to the mandate for the steering committee for the international IODP renewal meeting: The steering committee should seek guidance, possibly in the form of liaisons, from national funding agencies and other funding sources, as to the evolving nature of plausible future structure and funding level of a new ocean drilling program.

Background:

The steering committee has not been given guidance on the framework or scale of a renewed program. If the steering committee is left to set scientific directions with no limitations, the community will find itself in the same situation it currently faces, with planning for a program that cannot be afforded. It would be helpful to know what level of funding can be anticipated.

SASEC Consensus 0806-09: SASEC recognizes that IODP is entering a new framework of doing business. Our ocean drilling facilities' use is no longer sufficiently funded by, nor therefore limited to, scientific drilling. IODP-MI and the Implementing Organizations (IOs) are currently entertaining industry and national drilling projects, and consortia. The possible mix of funding/projects, and what falls within or outside international scientific drilling, is under discussion.

SASEC envisions the possibility of a mixed mode of funding for a renewed program of ocean drilling, including government science appropriations, industry-science consortia, and contracts with industry and/or other government agencies. SASEC requests that the IODP Council, IODP-MI Board of Governors and the IOs consider forming a working group to frame the possible scope and structure of a post-2013 ocean drilling program, and how such a program might be formulated/proposed/funded/contracted.

Continuation of proposal submission

SASEC Consensus 0806-11: SASEC encourages the community to continue to submit proposals for drilling within the current program and in preparation for renewal of the Program. Truly innovative ideas can still be incorporated into the current phase of drilling

The next SASEC meeting is scheduled for January 2009.

2.3 Science Steering Evaluation Panel – SSEP

The report of the 10th SSEP meeting in May 2009 in Busan, Korea can be viewed under appendix 2.

2.4 Science Planning Committee – SPC – and Operations Task Force – OTF

The 12th meeting of the IODP Science Planning Committee was held on August, 25th-27th, 2008 at the Advanced Center For Universities, Sapporo, Japan.

Current situation of the Program (FY09-10)

Financial situation and consequences for the Program (see also agenda item 2.1):

The lead agencies are in final negotiations with Australia/New Zealand (1/4 participation unit) and India (1/6 participation unit) for Associate membership. The lead agencies are also negotiating with China and Korea for renewal of their memberships. A Memorandum of Understanding (MOU) with the Australia-New Zealand IODP Consortium (ANZIC) was agreed upon and initiated in Beijing in June 2008, with signatures to be finalized by early next year. ANZIC has a 30% membership in the IODP, and that the ARC has a five-year commitment through 2012. New Zealand, which contributes 5% of the membership is currently committed only to the first two years.

The NSF's commitment to the IODP has been reaffirmed. Following discussions with the Minister for MEXT in May 2008, NSF Director, Arden Bement, stated that the NSF intends "...to support a ten year extension of IODP beyond the current phase." In addition, the NSF will provide the JOIDES Resolution to the IODP for 70% of the time during FY2009 to FY2013; more if possible.

Most ECORD member countries were able to increase their contribution by 60%. In FY08, ECORD will pool more than \$, 21 M but will not quite meet the requirement of the Memorandum signed with the Lead Agencies: \$ 22.4 M, 3 in SOC's and 1 in POC's. Hopefully, this level will be reached next year. However, there are other emerging scientific initiatives in ECORD member countries that require new funding and the competition is harsh. It is therefore essential that IODP can demonstrate major scientific achievements.

The funding for New Jersey Shallow Shelf (Proposal 564-Full2) and Great Barrier Reef (South Pacific Sea Level; Proposal 519-Full2) was secure. The ECORD Council plans to fund one MSP expedition every year during the last three years of the current phase of the IODP, hoping to increase the visibility of ECORD and prepare for program renewal. However, more MSP proposals are needed at the SPC and OTF level.

The China Ministry of Science and Technology (MOST) will certainly renew its membership for the next five years. China is also interested in funding one or two cruises outside of the IODP.

The Korea Institute of Geoscience and Mineral Resources (KIGAM)'s budget for IODP may increase next year.

Operational situation

FY 2009

Changes to the FY2009 platform schedules relative to the schedules approved at the March 2008 SPC meeting were the following:

- For MSP operations, the main change was the delay of the New Jersey Shallow Shelf expedition from FY2008 to FY2009, now targeted for May-August 2009.
- FY2009 Chikyu operations have been delayed to March 2009 because of damage to the azimuthal thrusters. Other constraints include the Kuroshio Current, fishing unions, and NanTroSEIZE Project Management Team (PMT) prioritizations. The OTF options for FY2009 Chikyu utilization were: (1) allocate all time to NanTroSEIZE; (2) split time between NanTroSEIZE and non-NanTroSEIZE; or (3) allocate all time to non-NanTroSEIZE effort. In considering these options, the OTF noted: (1) the importance of progress at NanTroSEIZE to the IODP; (2) the need to maximize operational flexibility; (3) the limited operations to date at NanTroSEIZE; (4) the likelihood of the JOIDES Resolution operating in the Pacific in FY2010; and (5) no viable non-NanTroSEIZE riser options are ready for FY2009. The OTF's recommendation is to make progress on the PMT's second and third priorities, i.e., installing upper-plate observatories; and sampling inputs to the subduction zone.
- Further delays in delivery of the JOIDES Resolution beyond September 2009 led the OTF to consider the SPC priorities for FY2009 operations as specified in SPC Consensus 0803-04. In that consensus statement, the SPC's preference was to implement Canterbury Basin, Wilkes Land Margin, Pacific Equatorial Age Transect II plus Juan de Fuca Flank Hydrogeology remedial cementing, and Bering Plio-Pleistocene. The second priority was implementation of Canterbury, Wilkes, Pacific Equatorial Age Transect II plus Juan de Fuca Flank Hydrogeology remedial cementing, and Pacific Equatorial Age Transect I. The preferred option required idle time of thirty days prior to the Bering Sea expedition, and therefore a thirty-day extension of the operational window for FY 2009. OTF deliberations noted: (1) only an eight-month budget, which means the extra thirty days come at the expense of other operations; (2) idling the vessel while paying the day-rate with no science was deemed not acceptable; (3) no viable IODP operations for thirty days idle time; (4) need to maximize contiguous non-IODP days; and (5) a good chance for the Bering Sea option in FY2010.

Based on these factors, the OTF recommended proceeding with the SPC's second priority FY2009 schedule.

The revised FY2009 OTF schedule recommendations are summarized below:

On September 15th, 2008, Ocean Leadership updated the status of the JOIDES Resolution (JR) delivery. The target date for the JR's departure from Singapore has been October 11th. Sailing on this date would have allowed for transit to Wellington, NZ to begin the Canterbury Basin expedition as scheduled. On August 28th, the shipyard and ship owner concluded that the ship was not ready for a key milestone scheduled for last week; the inclining test. This conclusion, along with continued under performance of the shipyard in completing electrical terminations, indicated that further delay in delivery had become inevitable. The USIO has indicated that the ship will sail from Singapore by the end of January 2009. The implications of this date have been evaluated, but a likely outcome is that the Canterbury Basin and Wilkes Land expeditions will not occur as scheduled.

FY 2010 and beyond

Besides the Great Barrier Reef expedition, which may start at the beginning of FY 2010, there will be no MSP operations in FY 2010. After FY 2010, ECORD desires to implement one MSP for each fiscal year.

The scheduling of the Chikyu beyond FY 2009 is seen as problematic, particularly with regard to the ability to achieve the primary objective (deep fault) due to uncertainties of the Kuroshio Current. One option is to consider a commitment to another riser project, such as the Costa Rica Seismogenesis Project (CRISP). There will be no Chikyu operations in FY 2010 (most will be in FY 2009 and FY 2011).

The FY 2010 schedule for the JOIDES Resolution is uncertain and dependent on the location of non-IODP contract work.

Scientific issues

Proposals:

Based on the proposal statistics made for the April, 1st, 2008 submission deadline, it appears that there is a relatively low number of proposals requiring riser drilling. The current way of generating and nurturing riser proposals has not worked. There is also a low number of MSP proposals.

Procedures for SPC proposal handling

SPC perceived problems with proposal evaluations: (1) many proposals to evaluate; (2) time restrictions; (3) repetition of discussions by the SSEP; (4) expertise balance of watchdogs; and (5) criteria for ranking.

Possible criteria for ranking should include: (1) quality of science; (2) relevance to the ISP; (3) programmatic balance; (4) importance for program renewal; (5) readiness of proposal including SSP, EPSP evaluations; and (6) logistical considerations.

Some protocols for forwarding proposals to the OTF with Tier 1 and 2 classifications have been suggested:

- For Tier 1 proposals: (1) highest priority proposal for an ocean basin; (2) important to complete by 2013; (3) reside at OTF for two or three years; and (4) ready for drilling.
- For Tier 2 proposals: (1) high priority proposal for an ocean basin; (2) re-evaluated at each ranking meeting; and (3) ready for drilling.

The following consensus was adopted by the committee:

SPC Consensus 0808-25: At its March 2009 meeting, the SPC intends to review and rank (1) new proposals that have been forwarded by the Science Steering and Evaluation Panel (SSEP), (2) existing proposals residing with the SPC, and (3) all Tier 2 proposals that are residing with the Operations Task Force (OTF) and that are not on any OTF-approved schedule for FY2009 or FY2010.

In March 2010, and at subsequent ranking meetings, the SPC will normally rank (1) new proposals forwarded by the SSEP, (2) existing proposals residing with the SPC, and (3) the Tier 2 proposals that have been residing with the OTF for two years and that are not on an approved schedule at the time of the SPC meeting.

Lifetime of proposals at SPC

Some proposals that perennially rank low, and probably will never rank high. Proponents should be given this information. SPC will discuss the option of deactivating proposals at its March 2009 meeting. However, the committee does not want to set up a specific set of rules for deactivating proposals, instead the decision would come from discussion.

Workshops

The only IODP-MI-funded workshop held in 2008 was entitled « Acquiring high to ultra-high resolution geological records of past climate change by scientific drilling » (29 September–1 October 2008 in Potsdam; see agenda item 9.1.1). More than 150 applications were received, with a target of about seventy participants. A December 2008 AGU session has been organized as a follow-up to accommodate some of the people that cannot attend the workshop.

Thematic reviews

The final report from the first IODP Thematic Review on climate variability is available online. The second review, on oceanic crustal structure and formation, was organized on 2-3 October 2008 in Zurich.

Annual Program Plan

The revised draft budget meets the lead agencies science operating costs (SOCs) budget target of \$ 35 M, and is consistent with the current operational schedule. Recent cuts to the budget led to: (1) moderate full-time equivalent (FTE) reduction; (2) some reduced borehole logging programs; (3) reduction of the IODP Proceedings to only the Initial Reports Volume, and only on the web (i.e., no DVD volume); and (4) no IO handling or review of data reports and syntheses papers. The funding for shipboard support, engineering and data management development, and the renewal conference (IODP New Ventures in Exploring Scientific Targets; INVEST) was maintained.

SAS Panels

The SPC appointed Jin-Oh Park as chair and Gilles Lericolais as vice chair of the Site Survey Panel, effective immediately.

The SPC appointed Clive Neal as chair and Saneatsu Saito as vice chair of the Scientific Technology Panel, effective immediately.

The SPC appointed Manabu Tanahashi as vice chair of the Environmental Protection and Safety Panel, effective immediately.

Proposal review - Proposal 728-APL2 (Gulf of Papua Coralgall Barrier Reef)

The proponents submitted a revised ancillary project letter (APL) with a revised drilling plan based on a single hole. The APL was planned to piggyback on the Great Barrier Reef drilling, and was based on the likelihood that the drilling platform will transit through Torres Strait. Eventually, the watchdogs' recommendation that the APL be supported as an add-on to the Great Barrier Reef drilling, subject to review and approval by both the SSP and EPSP, was accepted in a motion.

SPC Motion 0808-03: Recognizing the high scientific priority of Proposal 728-APL2 (Gulf of Papua Coralgall Barrier Reef), which targets a record of the 19ky melt-water pulse at a single site in the Gulf of Papua, and its high potential to complement the scientific objectives of the South Pacific Sea Level (Great Barrier Reef; GBR) expedition (Proposal 519-Full2), the SPC requests that site GoP-01 be included in the 519-Full2 program plan contingent on the GBR drilling platform transiting through Torres Strait, and contingent on Site Survey Panel and Environmental Protection and Safety Panel approval.

Flexibility in implementation

Some ideas on flexibility in the implementation of expeditions have been presented. The combination of environmental windows, restricted scheduling, and urgency in moving forward rapidly with science after a hiatus and in advance of renewal provides incentive to implement expeditions in a different way than the standard two-months proposal-expedition model.

A more flexible implementation may provide better opportunities to achieve top science objectives while operating under operational realities for the remainder of this program and for renewal. As an example, with the current mode of expedition scheduling three or four of the top eight proposals with planned drilling in the northern Pacific could be completed in FY2010. This would leave four or five top proposals un-implemented if the ship leaves the Pacific after FY2010. It appears that it would be possible to "de-scope" some proposals, streamline them, maintain the high priority science objectives, and get them implemented via hybrid legs with flexible expedition length. This would allow more Pacific proposals to be implemented before renewal.

The following consensus was adopted by the committee

SPC Consensus 0808-29: The SPC supports pursuing a more flexible approach to expedition design. The combination of environmental windows, restricted scheduling, and urgency in moving forward rapidly with science after a hiatus and in advance of renewal, provides an incentive to implement expeditions in a different way than the standard expedition model. Further, more flexible implementation may provide better opportunities to achieve top science objectives while operating under operational realities for the remainder of this program and for renewal. The SPC members on the Operations Task Force (OTF) will initiate the flexibility model by reviewing northern Pacific proposals currently residing with the OTF and under consideration for possible scheduling in FY2010. This review will begin immediately, and will focus on balancing the highest possible scientific outcomes with operational efficiency. The SPC constitutes a subcommittee (Filippelli, Ohkouchi, Peterson) to explore how to develop a flexibility scheme at the proposal level that ensures maximum science and maximum implementation flexibility. This subcommittee will report on these efforts at the March 2009 SPC meeting. The subcommittee will pursue a number of lines of inquiry, potentially including:

1. Request that the Implementing Organizations (IOs) provide guidance about expedition flexibility, including ramifications of combining expedition objectives and/or staffing and crew rotation to implement various length expeditions and/or combined science parties and/or short-term port calls for crew and scientist rotation.
2. Request that the funding agencies and Program Member Offices (PMOs) provide information about what financial impact the above flexibility options might have.
3. Request that the Science Steering and Evaluation Panel (SSEP) considers how proposals might include additional information about objectives achieved with respect to the overall proposal objectives with streamlined drilling plans.

NanTroSEIZE science update

NanTroSEIZE is "all about fault mechanics", with the drilling transect spanning the up-dip limit of the M8+ 1944 Tonankai subduction earthquake. NanTroSEIZE was the first IODP complex drilling project (CDP). The NanTroSEIZE Project Management Team (PMT) divided the project into discrete stages, which do not correspond directly to the individual proposals, and which also are not individual expeditions. Stage 1 was completed during 2007-2008 with riserless drilling of eight sites; Stage 2 was planned for 2009 with riser drilling at site NT2-11 and additional riserless operations at subduction input sites and observatory sites; Stage 3 was planned for 2011-2012 with ~6000m of riser drilling at site NT3-01 and observatory installations at other sites; and Stage 4 will comprise long-term monitoring using observatories installed in two deep riser holes.

Stage 1 drilling comprised Expeditions 314 (LWD Transect), 315 (Megasplay Riser Pilot) and 316 (Shallow Megasplay and Frontal Thrusts). These represented the first expeditions by Chikyu. Seventy-one scientists from twelve countries were on board for five months of continuous operations (September 2007 – February 2008). Thirty-three holes were drilled at eight sites up to 1400m below the seafloor. Core samples were obtained from active faults. Major variations in stress orientations were found, providing evidence for the location of the up-dip limit of the frictionally locked plate interface.

Expeditions 319, 322 and 323 are designed to drill and prepare for installation of seismic, geodetic and hydrologic observatories at three sites above the seismogenic zone, and core the subduction inputs to basement. On a longer term monitoring systems in cased boreholes will be installed in 2011 and riser drilling into the megasplay fault/plate boundary will be conducted from 2011 to 20?? There are also plans to link NanTroSEIZE observatories to the Japanese seafloor cabled network, DONET, to allow real time borehole monitoring.

Asian Monsoon Detailed Planning Group (DPG) report (see also agenda item 5)

A meeting of the Asian Monsoon and Cenozoic Tectonic History DPG was held in March 2008. The tasks of the DPG were to: (1) design a drilling plan based on the information presented in IODP Proposals 552-Full3 (Bengal Fan), 595-Full3 (Indus Fan), 618-Full3 (East Asia Margin) and 683-Full (East Asia Topography and Monsoon); (2) identify outreach and education possibilities; (3) incorporate climate modelling into the planning; and (4) identify proxies for uplift and erosion and for the monsoon.

On the topic of modelling, the DPG report noted, that "more recent sophisticated modelling studies over the past decade have generally confirmed the apparent relationship between enhanced topography and the monsoon circulation." The DPG recommended that a paleoclimate modeller be assigned to the shipboard/shore-based scientific parties as soon as they are selected. The DPG report lists numerous proxies for: sources of clastic sediment; estimation of exhumation rates; terrestrial response to monsoon strength; and marine response to monsoon strength. The DPG noted that a variety of proxy records will be required to resolve the suite of issues associated with the mountains and monsoons enterprise.

The drilling plan recommended by the DPG comprised two stages. Stage 1 comprises: (a) drilling the Bengal Fan as outlined in Proposal 552-Full3, using the JOIDES Resolution; and (b) drilling the top 1000 m of the distal sites offshore from the Mekong and Red River systems (Proposal 618-Full3), and Yangtze River system (Proposal 683-Full), also using the JOIDES Resolution. Stage 2 comprises: (a) using Chikyu to deepen the holes offshore from the Mekong and Red Rivers to recover Paleogene materials, and drilling a new deep hole offshore from the Yangtze to the top of the Oligocene; and (b) drilling the sites on the Indus Fan in the Arabian Sea (Proposal 595-Full3), which may require relocation of the sites, or resolution of regional political and security issues.

The SPC will have to follow up with consistent proposal rankings at its March 2009 meeting.

SPC Consensus 0808-06: The SPC accepts the Stage 1 recommendation of the Asian Monsoon Detailed Planning Group (DPG), which includes as its first priority the drilling objectives of Proposal 552-Full3 (Bengal Fan). SPC also accepts the other aspects of the Stage 1 recommendation of the Asian Monsoon DPG that concern the coring of selected sites on the Southeast Asian margin. The target of these sites is to obtain late Miocene to present sedimentary records to develop regionally coherent data sets characterizing erosional and hydrologic dynamics in response to the onset and intensification of the Asian Monsoon. The SPC therefore urges the proponents of Proposals 618-Full3 (East Asia Margin) and 683-Full (East Asia Topography and Monsoon) to respond to the DPG recommendations in refining the drilling objectives of these efforts.

FY 2009/2010 engineering development

The three FY2008 active projects include: (1) Long Term Borehole Monitoring System (LTBMS), for which a prototype should be completed this year; (2) Simple Observatory Common Deployment System Design, for which design has commenced; and (3) an in-house analysis of core quality and quantity, which is ongoing.

The FY2009 engineering development plan includes funding for: (1) LTBMS completion and field test; (2) Simple Observatory Initiative, which includes high level design of SCIMPI and S-CORK, and the Simple Observatory Common Deployment System Design; (3) Motion Decoupled Hydraulic Delivery System (MDHDS); and (4) continuation of in-house coring study.

In addition to the Multi-sensor Magnetometer Module (MMM), the FY2010 draft plan comprises two continuing projects: (1) the MDHDS (final year); and (2) Simple Observatory development, for which one observatory design would be selected and fully funded.

The future of the Program

Ocean Drilling Consortium (ODC)

The ODC workshop was held in June 2008 and attended by academic and industry representatives. The goal of the ODC was to use the JOIDES Resolution during the four months of the year when it will be unavailable to the IODP, to pursue goals of mutual interest in academia and industry. The ODC's nine-member steering committee has almost finished a proposal, which will be presented to energy companies within the next month. The companies would then decide whether or not to buy into the consortium.

There are three principal scientific themes for the ODC: (1) rifted margins (structure and evolution of deep-water basins); (2) reservoirs (origin, architecture, and properties); and (3) source rocks (distribution and origin of organic-carbon-rich strata).

The timeline for the ODC included: (1) submission of proposal to energy companies in September 2008; (2) decision on whether the ODC will proceed in May 2009; (3) possible first four-month block of ODC drilling starting June 2010; and (4) possible second four-month block of ODC drilling starting June 2012. The drilling schedule shown in the timeline is hypothetical.

Future role of the Industry-IODP Science Program Planning Group (IIS PPG)

A status report on the IIS PPG has been presented at the SPC meeting. The key elements of the group's mandate were: (1) to promote IODP proposals to address industry-relevant objectives within the context of the ISP; (2) to develop effective links between academic and industry scientists; and (3) to engage industry professionals as ambassadors in communicating and promoting IODP activities.

There were vastly different stages of maturity for industry-IODP interaction in different countries, and for some countries (e.g., the UK) the PPG represents a step backwards.

The mandate was sufficiently vague that it is hard to measure success/failure of the PPG. The major achievements of the IIS PPG included:

(1) The IIS PPG recommended formation of an Industry Task Force independent of the SAS and the IIS PPG, which effectively became the ODC;

(2) The IIS PPG used their contacts to advise IODP-MI on the "right" people to engage in the ODC at various companies;

(3) Encouraged future Arctic drilling and the Arctic workshop;

(4) Industry-IODP meeting in Tokyo in summer 2007;

(5) Promoted a South Atlantic IODP proposal submission as part of the rifted margins “mission” (though it was not selected for mission status);

(6) Identified industry-relevant proposals within the SAS.

SPC recommended that the IODP maintains a permanent industry-related group within the SAS, which should: (1) not be a PPG; (2) needs a clear mandate; and (3) needs strong leadership from academics with deep, established interactions with industry.

Complementary Project Proposals (CPPs)

SASEC endorsed the concept of CPPs, which are hybrid IODP projects with substantial external funding. The SPC also accepted the CPP concept and established a working group to examine the evaluation process for such proposals.

A CPP was defined as a project that: (1) has substantial sponsorship from a third-party, but does not have to be a “collaboration”; (2) has a compelling scientific focus; (3) is intended to be completed on an IODP platform operating under normal IO contracts; and (4) is reviewed by the SAS, but in a streamlined way.

A CPP is defined by: (1) a scientific focus linked to the ISP, of interest to academic scientists, and consistent with IO contracts and memoranda (e.g., oil exploration is not permissible); (2) minimum of 70% third-party commitment for POCs (at the time of drilling); (3) contains an additional proposal section (within the normal length limit) explaining the benefit of the third-party contribution and/or collaboration; and (4) is given fast-track consideration by the SAS.

Suggested procedure for the SAS in dealing with CPPs included: (1) proposal submission follows all normal guidelines and deadlines; (2) the CPP requires a description of, and pledge for, financial commitment; (3) some flexibility regarding standard practices (i.e., coring, logging, sampling); and (4) the SSEP would evaluate the CPP as it would any other proposal. A key question was whether the SPC should rank CPPs, and if so, when. The following motion, dealing with these issues was voted by the committee:

SPC Motion 0808-21: The SPC will make a decision on a complementary project proposal (CPP) by either forwarding it to the Operations Task Force (OTF), or declining it. This will be done at the SPC meeting, which immediately follows the Science Steering and Evaluation Panel (SSEP) meeting that forwarded the proposal.

Prospects for riser drilling beyond NanTroSEIZE

The question was to discuss what should be done in FY2011-2013 if the Kuroshio Current prevents Chikyu riser drilling at site C0002 as no alternate deep drilling site has been identified in the region. Furthermore, there are no other riser projects ready to be implemented. However, CRISP (Costa Rica Seismogenesis Project) proponents have submitted a proposal to NSF to fund a 3-D survey and OTF has been asked to look at the feasibility of CRISP and report to the SPC in March 2009. The following consensus was adopted by the committee:

SPC Consensus 0808-24: The SPC reaffirms its commitment to Proposal 537B-Full4 (Costa Rica Seismogenesis Project - CRISP - Phase B) as a highly ranked riser-drilling proposal residing with the Operations Task Force (OTF). The committee wishes to see necessary actions toward the process of readying this proposal for operations. The SPC requests that IODP-MI and the platform operator scope this proposal to assess key operational necessities for implementation. The SPC requests that the Site Survey Panel work with the CRISP proponents to determine any scientific gaps for final site characterization and project implementation. The SPC also requests that the proponents work with the Environmental Protection and Safety Panel to update relevant information.

Program renewal activities and timelines

The INVEST meeting will take place on September 23rd-25th, 2009 in Bremen.

The timeline for the science planning part of the program renewal process is the following:

- INVEST renewal conference Sept. 2009
- Proceedings of INVEST published early 2010
- Transforming INVEST into the science and implementation plan
- New science plan (1st draft) late 2010
- Internal and external review of science plan
- New science plan fully completed 2011
- Approval by national science boards (US/JP/EU) 2011/2012
- Science/program plan, funding agencies approval 2012

The national science planning processes has started; lead agencies will meet in September to discuss planning; the IODP Council will meet in January; and the SAS external committee on hybrid funding is starting now. The SAS external committee was formed by the IODP-MI President as charged by the Board of Governors.

In preparation of the INVEST Conference, besides the EGU session and the related workshop that will be held in April 09 in Vienna (see agenda item 9.3), the Japan Drilling Earth Science Consortium (J-DESC) will host a domestic big meeting in October or November 2008, at which discussions will focus on renewal of the IODP beyond 2013, and the future of ocean drilling.

3. ECORD News

3.1 EMA - ECORD Council

Severino Falcon-Morales (Spain) is the current ECORD Council chair. Bruno Goffé (France) rotated off on April 1st, 2008, and became vice-chair. Chris Franklin was designated as the incoming vice-Chair, to become the chair on Oct 1st, 2008. The Council met in Paris, June 5th-6th, 2008. A summary of the meeting is available on the ECORD website <http://www.ecord.org/rep/council13-rep.html>.

The next ECORD Council meeting is scheduled in November 2008, in London

Funding

Most ECORD member countries were able to increase their contribution by 60%. In FY08, ECORD will pool more than \$21M, but will not quite meet the requirement of the Memorandum signed with the Lead Agencies: \$22.4 M, 3 in SOC's and 1 in POC's. Hopefully, this level will be reached next year. However, there are other emerging scientific initiatives in ECORD member countries that require new funding and the competition is harsh. It is therefore essential that IODP can demonstrate major scientific achievements. Because ECORD does not currently have \$20M, it will have to tap into the FY2010 budget. This means there will not be an MSP expedition in 2010; the next MSP expedition will be in 2011.

Relations with the European Commission

The ECORD-Net project supported by the European Commission ended in August 31st 2008. Representatives of the ECORD Council have met with a number of key persons at the EC. Funding opportunities for ECORD within the Framework Programme 7th are rare.

However, under the funding scheme "Cooperation" a new Environment (including Climate Change) call for a Coordination and Support Action (ENV.2009.2.2.1.6. – "Contribution of subseafloor sampling programs to European deep-sea research") has been published September 3rd, 2008. The deadline is January 8th, 2009.

The project is for planning and assessing the contribution of subseafloor sampling programs, including the European participation in international drilling initiatives, with a view of providing knowledge and information necessary for the understanding of deep-sea and subseafloor processes and patterns, in the perspective of the conservation and sustainable use of deep sea resources. A particular emphasis should be put on applications relevant to deep-sea ecosystem research and to global environmental change research. The needs of the end-users of the samplings, in particular the needs of ecosystem specialists, geologists, geophysicists and climatologists, should therefore be addressed and synergies with deep-sea research programmes, including observatories, should be strengthened.

Expected impact are a broad assessment of the contribution of seabed drilling to the understanding of the functioning of deep-sea ecosystems and to the prediction of their evolution in the context of current environmental issues. Enhanced synergies between deep-sea research and drilling programmes.

The future of ocean drilling

The ECORD council feels that it is important to start thinking about the future of ocean drilling, not only in terms of scientific goals, but also in terms of structure. As it stands now, the programme is not what was expected when it was set up and some changes in the way it is run may be necessary. The "Vision Group", set up by ECORD, will make recommendations to the IODP Council. Moreover, the Aurora Borealis project has now received support from the European Commission. The ERICON-AB (European Research Icebreaker Consortium – Aurora Borealis) project, to support the preparatory phase of the Aurora Borealis has been funded by the EC. ECORD is involved in this proposal, and the first meeting took place in Strasbourg, May 6th-7th. The project is led by the Polar Board of the European Science Foundation. The current planning aims to have the ship delivered in 2014. ECORD's major inputs will be the ESO experience in drilling in the Arctic, as well as the ECORD/IODP experience in managing a science programme. The Aurora Borealis could be contracted as an MSP in polar areas. However, the funding for building the ship is not yet secured, although Germany and Russia have committed to participate. The Aurora Borealis needs to be incorporated in the thinking for post 2013, both at the scientific and the structural levels.

3.2 ESO

New Jersey Shallow Shelf - Expedition 313

At the time of the last ESSAC meeting, ESO were waiting for tender responses from companies interested in undertaking scientific drilling offshore New Jersey (NJ), starting in May 2009. More than one tender was received and contractual discussions are currently ongoing with the preferred contractor.

Once the contract is signed and dates can be fixed, the current Science Party will be asked if they want to continue to participate. Should scientists be unable or unwilling to participate, ESO will contact the PMO's with details of the staffing shortfall, and seek their assistance to repopulate the Science Party. Assuming that the offshore phase of the expedition takes place as planned, the Onshore Science Party will be held in FY2009, probably during January-February 2010.

Steve Hesselbo (UK) has withdrawn from the role of Co-chief Scientist for the expedition and steps are being taken find a replacement.

Great Barrier Reef Expedition

Planning is continuing for the Great Barrier Reef (GBR) Expedition with a view to implementation in Sept-Dec 2009. For scheduling reasons, the realisation of the GBR Expedition depends on the NJ Expedition being implemented at the beginning of May 2009, as time is needed for that expedition's drilling to be completed, demobilisation, transport of equipment to the next port of mobilisation (at least 1 month) and remobilisation. Tenders for the scientific drilling on the GBR were received this summer (more than one). Contractual discussions are currently ongoing with the preferred contractor. Contract and finance arrangements have been put in place between EMA and ESO to enable a contract to be signed with the drilling company at an early stage.

A drilling permit has been obtained from the Great Barrier Reef Marine Park Authority (GBRMPA), although it ends on 1st November 2009 and there is a limit on the number of sites that can be drilled. Since the last ESSAC meeting, in September this year, ESO representatives visited the GBRMPA to promote the GBR Expedition, ESO and IODP, in the hope of extending the drilling permit duration and increasing number of sites. The meeting was encouraging, and ESO have been asked to re-apply for a new drilling permit. Positive discussions from the meeting with GBRMAP indicate that ESO will be granted the new permit.

Jody Webster (Australia) and Yusuke Yokoyama (Japan) have accepted invitations to be Co-chief Scientists. Nominations for Science Party members have been received from all the PMOs, except China and Korea. ESO are currently in discussion with the Co-Chiefs regarding the make-up of the Science Party.

NERC has signed a Deed of Agreement for the GBR drilling, and all indications are that GBRMPA are satisfied with ESO's Environmental Management Plan. The GBR Expedition has approval from SSP. Co-chief Jody Webster will add 2 more site options to the expedition, and will submit these to EPSP and SSP for their approval shortly.

3.3 ESO-EMA-ESSAC Meeting

The ESO-EMA-ESSAC meeting is aimed to coordinate current and future outreach and education efforts for ECORD and to speak with a single voice to IODP partners.

R.Bernal-Carrera, C. Mével and P. Maruéjol (EMA), A. Gerdes and A. Stevenson (ESO) were convened to meet in Aix-en-Provence by G. Camoin and B. Wolff-Boenisch (ESSAC) for a two-day meeting, August 20-21, 2008. The following items were reviewed:

- Establishing a detailed draft of ECORD Newsletter #11 - October 2008,
- Organisation of the 2008 IODP booths located in Europe: EGU 2008, April 13th 18th in Vienna, Austria; 33rd IGC, August 6-14 in Oslo, Norway,
- Reviewing the available of ECORD outreach materials (core replicas, posters, web pages...) and new/updated publications (Answers, ECORD flyer, RTCC 2009...)
- ECORD activities integrated with IODP partners of the Outreach Task Force (IODP-MI, USIO and JPIO),
- Presentation of the ECORD Summer Schools for 2008 and scholarships,
- Coordinating our efforts in updating the ECORD web sites and databases.

The next EMA-ESO-ESSAC is scheduled on January 15th-16th, 2009 in Paris. Two main items of the agenda will be the ECORD Newsletter #12 - April issue and the preparation of the IODP booth at EGU 2009.

3.4 ESSAC representatives and National Office reports

Several ESSAC delegates announced, that they will present the newest development and latest activities regarding the respective national offices. Among them F. Abrantes will and E. Erba.

IODP Proposal Cover Sheet**672-Full2**☐ New☒ Revised☐ Addendum

Please fill out information in all gray boxes

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	Please check if this is Mission proposal <input type="checkbox"/>	
Title:	Paleoenvironmental evolution of the Baltic Sea Basin through the last glacial cycle	
Proponent(s):	Thomas Andrén, Svante Björck, Bo Baker Jørgensen, Karen Luise Knudsen, Jan Harff, Albertas Bitinas, Emeljan Emelyanov, Martin Jakobsson, Jörn Bo Jensen, Aarno Kotilainen, Volkhard Spiess, Szymon Uścińowicz, Siim Veski, Vitalijs Zelchs	
Keywords: (5 or less)	Baltic Sea Basin, Eemian interglacial, Weichselian, Holocene, climate development	Area: Baltic Sea

Contact Information:

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E-mail:	Thomas.andren@geo.su.se		

Permission to post abstract on IODP Web site: ☒ Yes ☐ No**Abstract: (400 words or less)**

The Baltic Sea Basin (BSB) is one of the world's largest intra-continental basins, presently occupying 373,000 km² and with a drainage area four times its size. BSB has served as depositional sink throughout its geological history and accumulated sediments comprise a unique high-resolution paleoenvironmental archive where the history of the drainage area and the basin itself is preserved. Sediments of the largest European intra-continental basin, the BSB, form an archive for past and present climate. The geographic location of the BSB also makes it a unique link between the northwest European terrestrial climate records and those from the North Atlantic.

Our present knowledge of the development of BSB is based on results from short cores (up to 20 m long); a frustrating situation since our seismic records show us that apparently undisturbed sediment sequences much thicker than available short cores exists. We have merely scraped the surface of the Baltic's paleoenvironmental record. Eleven primary sites are proposed together constituting a complete composite sediment sequences from the Saalian deglaciation up to present.

Drillings are proposed to study the climatic development during the past interglacial-glacial cycle, with emphasis on the last interglacial, the Eemian, and its transition into the Weichselian, corresponding to the Marine Oxygen Isotope Stage 5e/5d transition, the response of the BSB and the Fennoscandian ice sheet to millennial scale climate shifts of the last glacial cycle and the exact timing and amount of freshwater forcing on the North Atlantic during the Last Termination from the BSB. Sediment cores from the BSB will also enable us to determine what role the Early and Middle Weichselian changes in ice volume of the Fennoscandian ice sheet played for the regional paleoenvironmental history of the North Atlantic region.

High sedimentation rates (1-5 m/1000 years) provide an excellent opportunity to reconstruct climatic variability of global importance, controlled by e.g. changes in the NADW Formation, the North Atlantic Oscillation (NAO) and the Arctic Oscillation (AO) in great detail (up to interannual time-scale)

The proposal outlined here would address many of the main themes in the IODP science plan (particularly "Environmental changes, processes and effects") and answer the following fundamental scientific questions related to paleoenvironmental evolution of the BSB and its relation to the regional climate development.

Scientific Objectives: (250 words or less)

- To recover a complete composite sediment sequence for the BSB covering the late Saalian glacial, the Eemian interglacial, the Weichselian glacial and the Holocene with its unique varved sediments. We regard this as the most important objective.
- To establish any link between a long northwest European paleoclimatic record and the North Atlantic/Greenland records of the last glacial cycle. The location of the intra-continental BSB makes it an excellent place to establish such a link.
- To analyze in great detail the paleoenvironmental development of the Eemian and Holocene Baltic Sea at sites with the highest time-resolution. Knowledge on how the anthropogenically undisturbed Eemian Baltic Sea ecosystem responded to different environmental forcing factors would enhance our understanding on anthropogenic factors in relation to natural driving mechanisms behind the presently threatened Baltic Sea environment and ecosystems.
- To quantify and model the variability of climate parameters from annual to millennial time scales in the transit area between the North Atlantic realm and Eurasia during the last Glacial Cycle.

To analyze how the environmental and depositional history of the BSB throughout the Eemian, Weichselian and Holocene has affected the physiological properties and phylogenetic diversity of the buried microbial communities. Specifically, the microbial and biogeochemical response can be studied relative to major regime shifts: a) between limnic, brackish and marine phases, b) between high or low deposition of terrestrial vs. marine organic and clastic material.

Please describe below any non-standard measurements technology needed to achieve the proposed scientific objectives.

Proposed Sites:

Site Name	Position	Water Depth (m)	Penetration (m)			Brief Site-specific Objectives
			Sed	Bsm	Total	
BSB-1	56.36.797N, 11.42.145E	34	214	6	220	Late Saalian, Emian and early Weichselian
BSB-2	56.40.675N, 11.47.313E	34	149	6	155	Late Saalian, Emian and early Weichselian
BSB-3	55.01.00N, 10.07.00E	35	150	6	156	Late Saalian, Emian and early Weichselian
BSB-4	55.08.00N, 09.48.00E	23	180	6	186	Late Saalian, Emian and early Weichselian
BSB-5	55.43.412N, 15.13.59E	61	36	6	42	Early and Mid Weichselian (littoral facies)
BSB-6	55.41.613N, 15.32.251E	67	52	6	58	Early and Mid Weichselian (littoral facies)
BSB-7	55.28.034N, 15.28.402E	85	74	6	80	Early and Mid Weichselian (deep lake facies)
BSB-8	55.17.258N, 15.28.917E	93	93	6	99	Early and Mid Weichselian (deep lake facies)
BSB-9	58.37.60N, 18.15.30E	451	152	6	158	Expanded Late Weichselian-Holocene sequence
BSB-10	62.46.70N, 18.02.95E	86	40+	0	40	Varved Holocene sequence
BSB-11	62.57.35N, 17.47.70E	68	40+	0	40	Varved Holocene sequence

AGENDUM 9

Asian Monsoon DPG report

DPG terms of reference
DPG report

SSEP Recommendation 0705-4: The SSEP recommends that SPC consider forming a Detailed Planning Group that will be responsible for organizing and prioritizing proposals dealing with the history of Asian monsoon and its linkage to the uplift of the Himalayan-Tibetan orogenic system (Proposals 552 – Bengal Fan, 595 – Indus Fan, 618 – SE Asian Shelf, and 683 – East Asia Topography and Monsoon). The SSEP will provide SPC with a mandate for the DPG before the next SPC meeting.

SPC Consensus 0708-26: The SPC does not designate proposal 713-MP (Mission Monsoon) as an IODP mission. However, the SPC concluded that the deep drilling objectives of four proposals, 552-Full3 (Bengal Fan), 595-Full3 (Murray Ridge), 618-Full3 (East Asia Margin) and 683-Full (East Asia Topography and Monsoon), could benefit from detailed scoping at this stage (see SPC Motion 0708-27 and SPC Consensus 0708-28).

SPC Motion 0708-27: A Detailed Planning Group (DPG) should be formed as requested in SSEP Recommendation 0705-4 to prioritize components of proposal 713-MP (Mission Monsoon), in particular proposals 552-Full3 (Bengal Fan), 595-Full3 (Murray Ridge), 618-Full3 (East Asia Margin) and 683-Full (East Asia Topography and Monsoon), with terms of reference to be written after the August 2007 SPC meeting by a subgroup of the SPC and approval by e-mail. The DPG should: (1) have a timeline of 1 year; (2) be chaired by a nonproponent; (3) prioritize the drilling programs; (4) address technical issues; (5) include an outreach and education plan; and (6) include a modeling component to help prioritize sites.
Quinn moved, Camoin seconded; 17 in favor, none opposed.

SPC Consensus 0708-28: The SPC accepts the draft mandate for the Asian Monsoon detailed planning group (DPG) as presented by SSEP co-chair/SPC alternate Heiko Pälike. The SPC approves Steve Clemens and Jerry Dickens as candidate chairpersons for the DPG. The SPC also approves Peter Clift, Douglas Burbank, Christian France-Lanord, Hongbo Zheng, Ryuji Tada, Peter Molnar, Karen Bice, Brian Horton, Matt Huber, John Kutzback and Sidney Hemming as candidate members, and Naohiko Ohkouchi as SPC liaison.

SPC Motion 0712-01: The SPC appoints David Rea as chair of the Asian Monsoon and Cenozoic Tectonic History Detailed Planning Group (DPG), effective immediately.

SPC Motion 0801-01: The SPC approves the following as members of the Asian Monsoon and Cenozoic Tectonic History Detailed Planning Group (DPG) effective immediately: Karen Bice, Peter Clift, Sidney Hemming, Matt Huber, Youngsook Huh, Warren Prell, Harutaka Sakai, Volkhard Spiess, Ryuji Tada, Hongbo Zheng.

Detailed Planning Group on Asian Monsoon and Cenozoic Tectonic History

1) General Purpose

SPC and SSEP recognize the high scientific value and societal relevance of making progress on understanding how tectonic evolution and uplift of the Himalaya and Tibet region affect the monsoonal system, including rates of uplift, erosion and their relationship with the global climatic evolution, such as presented by Mission Monsoon (Proposal 713MP) and its component proposals.

Following SSEP recommendation 0705-4, SPC agrees to provide the following terms of reference to form a Detailed Planning Group (DPG) including the following detailed charges:

2) Mandate

The DPG is charged to develop an optimal plan to advance the understanding of the Asian monsoon and Cenozoic tectonic history that coordinates, organizes and prioritizes a drilling plan, the erosion and uplift proxies to be used, and an integration of post-cruise science. Specifically, the DPG shall identify how the current strong source-to-sink component originally presented in Proposal 713-MP ("Mission Monsoon") can be retooled to more clearly identify the proxy toolbox that will allow differentiation between uplift and erosion on one side and monsoon on the other.

It should also identify and consider technical issues of deep drilling and analysis, within non-scientific constraints such as necessary permits, budgetary constraints, and potential political complications.

3) Scope:

The DPG should focus on existing proposals:

552 – Bengal Fan

595 – Indus Fan

618 – SE Asian Shelf

683 – East Asia Topography and Monsoon

and adhere to the guiding principles that the prioritization advanced by the DPG should not hold back proposals that are already scheduled.

4) Outreach and Education:

The DPG should include and identify outreach and education possibilities and make recommendations as to their feasibility and implementation. It should include specific statements as to the extremely high societal relevance of the project.

5) Climate Modeling:

The SPC recognizes the importance of advancing climate modeling within the scope of the monsoon system and this DPG and charges the DPG with including input from climate modelers. The DPG should take modeling results into consideration for their site

prioritization and evaluate how predicted drilling results will bear on predictions that arise from climate models.

6) Timeline:

The DPG is charged to provide SPC with an interim report that describes initial implementation principles and site prioritization in time for the March 2008 SPC meeting. A full report, following the example of the previous Hotspot Geodynamics DPG, should be submitted to SPC in time for the August 2008 meeting.

7) Composition of the DPG:

The DPG chairperson shall be from outside the proponent group of Mission Monsoon and its component proposals. The membership of the DPG shall comprise members from both the proponent group as well a diverse group from outside the proponents, including climate modelers and formal liaisons to a designated subset of SPC. It should also seek advice from IODP-MI and the IOs as to the practical feasibilities.

8) Decisions:

The Monsoon DPG shall make decisions by consensus.

9) Chair:

The SPC shall appoint the chair of the Asian Monsoon and Cenozoic Tectonic History DPG.

10) Liaisons:

The SPC may appoint a liaison to the Asian Monsoon and Cenozoic Tectonic History DPG

Asian Monsoon and Cenozoic Tectonic History:

Report of the Detailed Planning Group

May 2008



Asian Monsoon and Cenozoic Tectonic History:

Report of the Detailed Planning Group

A. Introduction

The Earth's climate has varied through geological time as a result of both external, orbital processes and internal climatic feedbacks, as well as the positions of continents, growth of mountains and oceanic gateway openings/closures controlled by tectonic forces. Typically these processes act over time spans of less than 10^5 yrs and more than 10^6 yrs respectively. While significant progress has been made in linking climate change to solar insolation driven by perturbations in the Earth's orbit, links between tectonic processes and climate have remained more conjectural due to the more complex forcing as well as from a lack of long duration geological records. The archetypal example of climate-tectonic coupling is the proposed link between the intensity of the Asian monsoon and the uplift history of the Tibetan Plateau (Prell and Kutzbach, 1992; Molnar et al., 1993; An et al., 2001). Although atmospheric scientists have demonstrated the importance of a wide, high Tibetan Plateau in controlling the climate in South and East Asia (for example Hahn and Manabe, 1975; Webster et al., 1998) the detailed co-variation of monsoon intensity and Tibetan elevation over geological time has yet to be documented. This lack of a causative relationship reflects, in part the controversial uplift history of Tibet (Harris, 2006), and the poorly known Cenozoic evolution of the monsoon beyond the past few million years. A long-term reconstruction of mountain building and associated erosion, and monsoon activity is key to testing the proposed links between climate and Tibetan evolution, and to show that this uplift, rather than other possible triggers, is dominant. For example,

alternative models propose that the retreat of shallow seas from Central Asia is a crucial boundary condition influence (Ramstein et al., 1997), while others have argued that strengthening of the monsoon is linked to opening of the South China Sea (Zhang et al., 2007a) and/or to formation of the Western Pacific Warm Pool (Li et al., 2006).

Understanding the controls on monsoon strength is important not only to science but also to society, given the large number of people - nearly half of Earth's population - who live within the influence of the modern monsoon and the economic importance of monsoonal regions to the global economy. Furthermore, the monsoon has been suggested to have a wider influence on global climate (Wang et al., 2003), and may even control the tectonic evolution of mountains in Asia, via its effect on continental erosion. Plate tectonic processes have long been recognized to affect climate but climate-driven erosion can also influence tectonism and the architecture of mountain belts (Hodges et al., 2004; Thiede et al., 2004; Wobus et al., 2005). Indeed, orogenesis and climate change may feed back on each other. In order to understand how these processes interact, detailed records of climate and continental erosion must be developed so that linkages can be tested and quantified.

Chemical weathering of the Himalaya, which is thought to have drawn down atmospheric CO₂, may have affected global climate since the Eocene (Raymo and Ruddiman, 1992). Initial Ocean Drilling Program (ODP) studies from the Indian Ocean in the late 1980s emphasized a climate change event at 8 Ma as being the time of initial monsoon intensification (Quade et al., 1989; Kroon et al., 1991; Prell et al., 1992). While this interval of climate change is well documented, the cored record in the Arabian Sea off Oman is only ~16 m.y. long (e.g., ODP Site 730). In contrast, India-Asia collision dates back to around 50 Ma (Garzanti et al., 1987; Beck et

al., 1995; Rowley, 1996) and the Greater Himalaya themselves are at least 22 Ma old (Searle, 1986; Hodges, 2000; Godin et al., 2006). Very few records of monsoon intensity extend as far back as the major known tectonic events, making convincing testing of earlier climate-tectonic coupling impossible. Indeed, the coupling of the Indian with the East and South Asian monsoons over long periods of time is unclear, as might be anticipated by some numerical models (Prell and Kutzbach, 1992; Kitoh, 2004).

The India-Asia continental collision likely began some time during the Eocene (Windley, 1993), along with a several-fold increase in sediment flux to the East Asian basins (Clift, 2006), closure of the Paratethys (Ramstein, 1997) and a drastic decrease in $p\text{CO}_2$ and global cooling (DeConto and Pollard, 2003; Pagani, et al., 2005). GeoCarb type geochemical cycle modelling suggests that approximately 70% of the late Eocene/early Oligocene CO_2 decrease could be explained by increases in uplift-related chemical weathering rate and organic carbon burial rate (Tajika, 1998). At present, the rivers draining the Himalaya-Tibet region deliver ca. 28% of the global sediment flux to the ocean, and these high mountain rivers are characterized by higher sediment yield by one to two orders of magnitude compared to the low land rivers (Milliman and Syvitski, 1997). Hence, uplift of Himalaya-Tibetan Plateau and consequent enhancement of continental erosion may have increased global sediment yield by 20 to 30%. Scientific ocean drilling and the recovery of sediment as old as late Eocene from the Indian/East Asian seas is the only direct way to test the possible relations among mountain uplift, erosion, sea level change, sediment deposition, carbon burial, chemical weathering and CO_2 drawdown.

This Detailed Planning Group (DPG, Appendix 1) examined the existing proposals submitted to IODP and assessed how they might be used to make a significant advance in

monsoon science before the end of the current program. In particular, we considered Proposal 552 for the Bengal Fan, Proposal 595 for the Indus Fan/Murray Ridge, Proposal 618 for the Vietnam margin/South China Sea and Proposal 683 for the East China Sea. Figure 1 shows the distribution of the proposed drill sites, together with those from previous cruises by ODP and the Deep Sea Drilling Project (DSDP) that have been used to constrain the temporal evolution of the monsoon. Together these proposals cover both South and East Asian systems and are designed to

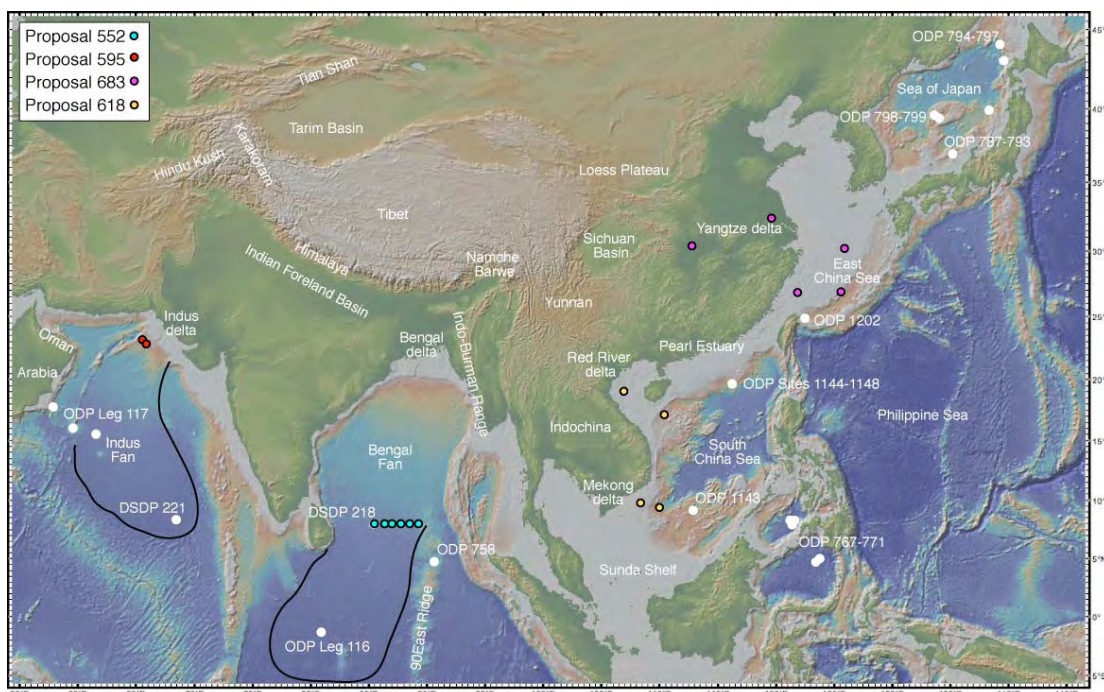


Figure 1. Shaded bathymetric and topographic map showing the location of the proposed drill sites considered here, together with existing drill sites and the major geographic features mentioned in this report.

reconstruct the long-term evolution of sedimentation and paleoceanography on the Asian margin and thus monsoon intensity. The DPG did not consider proposals 549 and 605, which target onset and evolution of the millennial scale variability of the monsoon in the Arabian Sea and Sea of Japan respectively.

Existing data

Many marine and terrestrial records now show that summer monsoon intensity has decreased since 3–4 Ma (An et al., 2001). This change is often linked to the onset of Northern Hemispheric Glaciation (NHG), yet this association has yet to be properly demonstrated. At ODP Site 885/886 in the North Pacific dust blown by westerlies accumulates at an increased rate after 4 Ma (Rea, 1994; Rea et al., 1998; Pettke et al., 2000), as does magnetic susceptibility in the Loess Plateau (Sun et al., 2006), somewhat predating the onset of NHG at around 2.6 Ma (Shackleton and Opdyke, 1977; Tiedemann et al., 1999). Similar poor fits are noted for the monsoon upwelling records in the Arabian Sea, suggesting that other controls, such as Pliocene uplift in northern Tibet (Zheng et al., 2000) or the Tian Shan have also played an important role in controlling climate.

A number of lines of evidence have focused on 8 Ma as being a crucial period of intensification. Kroon et al. (1991) and Prell et al. (1992) used various paleoceanographic proxies from the Oman margin to show that upwelling strengthened there around 8 Ma (Figure 2) and inferred that because upwelling here is presently linked to the summer monsoon winds that these also intensified at that time. The notion of major Asian climate change at this time was supported by changes in carbon isotopes onshore in the Himalayan foreland basin (Quade et al., 1989) that were driven by changes in flora from C3 to C4 type. In addition, dust transported by winds is seen to accelerate in its accumulation both in the Chinese Loess Plateau (An et al., 2001) and in the North Pacific (Rea et al., 1998), an event associated with monsoon enhancement by Sun and Wang (2005) (Figure 2). Further evidence from the South China Sea is also consistent with increased upwelling under monsoon influence at around 8 Ma (Li et al., 2005).

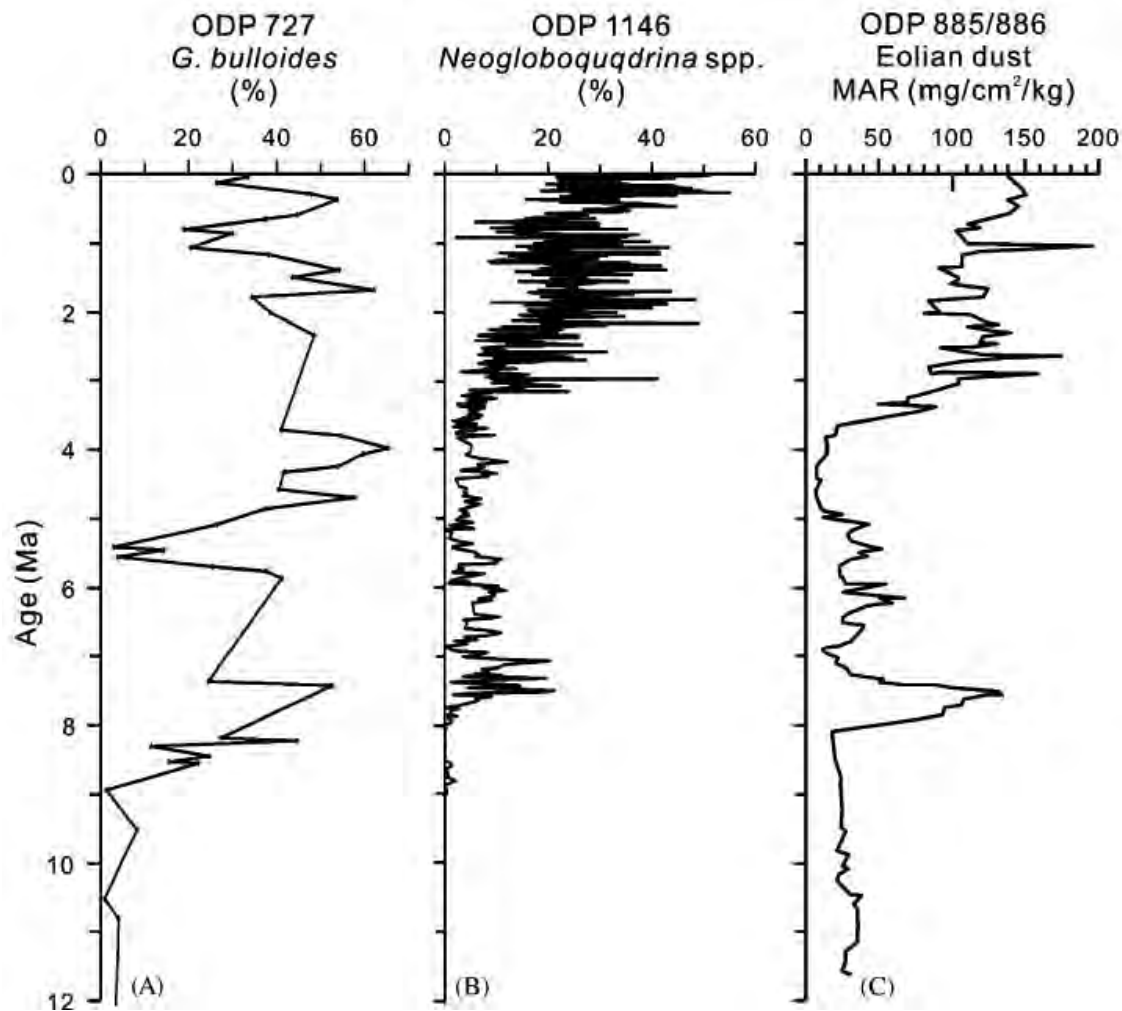


Figure 2. Summary figure from Sun and Wang (2005) showing variability in three separate monsoon proxies across Asia: (A) the upwelling *G. Bulloides* record from Oman (Kroon et al., 1991), (B) another upwelling-related foraminifer (*Neogloboquadrina*) from the South China Sea (Li et al., 2005) and (C) dust flux to the North Pacific (Rea et al., 1998). Note that none of these records extends beyond 12 Ma here.

While the late Miocene-Recent record is relatively comprehensive, older reconstructions are more patchy. In the Bay of Bengal changes in clay mineralogy and Sr isotope character at ODP Sites 717/718 were used to identify an 8 Ma change in continental weathering (Derry and France-Lanord, 1996), but provide only a sketchy, albeit apparently unchanging image of monsoon strength between 17 Ma (base of the drilled section) and ca. 10 Ma. Further east drilling by ODP Leg 184 penetrated to the Oligocene in the South China Sea and attempts have been made to use the evolving clay mineral suites to identify earlier phases of monsoon strengthening, most notably at ~15 Ma (Clift et al., 2002) and evidence also is pointing to a change at around 23 Ma (Clift, 2006; Jia et al., 2003). Unfortunately, the monsoon records from the Arabian Sea are much shorter and it is not possible with existing record to correlate the East and South monsoon prior to around 17 Ma.

Proposed expeditions

Unlike earlier monsoon-oriented cruises (ODP Legs 117 and 184) the new proposals considered here are mostly designed to look at the varying compositions and volumes of clastic sediment on the Asian margins rather than at oceanic paleoproductivity and upwelling. In many cases the objectives are three-fold: (1) to use the varying chemistry and mineralogy of the sediments to reconstruct changing continental provenance and weathering intensities, which are largely governed by the monsoon strength, glacial activity, and sea level changes; (2) to use the organic carbon and other biogenic components of the sediments to reconstruct past oceanic conditions (e.g. temperature, salinity) and productivity linked to the monsoon; and (3) to assess the erosional impact of the changing monsoon precipitation on the mountains. This latter task is

achieved by constraining the sources and volumes of sediment estimated from regional seismic stratigraphy and dated by drilling, combined with thermochronology work on the detrital minerals that allows source exhumation rates to be estimated.

Proposal 595 targets the Indus Fan and the erosional/weathering history of the western Himalaya. Drilling is designed to penetrate to the fan base (presumed Eocene) at around 3.6 km depth using the sequences uplifted along the Murray Ridge and which are not buried under the Neogene as in the central Arabian Sea. Proposal 552 addresses the clastic sedimentation history in the Bay of Bengal as a way to reconstruct erosion in the eastern and central Himalaya where the South Asian monsoon is strongest. Again the drilling targets the base of the fan section where it is uplifted along the NinetyEast Ridge. A major goal is to understand when the Greater Himalaya began to form and how that relates to monsoon intensification. Proposal 618 is designed to core the sediments delivered by the Mekong and Red Rivers along the margin of Vietnam. This proposal aims to examine changing continental weathering in Indochina and SE Tibet, but also to test models for drainage evolution in East Asia. Brookfield (1998) has suggested that progressive uplift of Tibet has forced the re-organization of these rivers, by transferring headwater drainage from one to another. In particular, the Red River appears to have lost drainage to the Yangtze (Clark et al., 2004; Figure 3). Thus reconstructing the history of river evolution can help to understand the timing and patterns of Tibetan uplift and is also essential to using sediment budgets in any one delta as a measure of monsoon driven erosion intensity. Because this drainage evolution impacts the Yarlung Tsangpo (the headwaters of the Brahmaputra), this influence extends also to the Bengal Fan. Finally, Proposal 683 aims to understand the sediment flux from Tibet into the East China Sea. This project involves linked

onshore drilling in eastern China (Subei Basin) as well as offshore. Proposal 683 will date the onset of flow from the Yangtze River (captured away from the Red River) and provide information on the climate history of eastern China and the incision of gorges in Sichuan and Yunnan on the flanks for the Tibetan Plateau. Although some workers have suggested a relatively young (Pleistocene) age to the river initiation (Wang, 2004) this remains controversial.

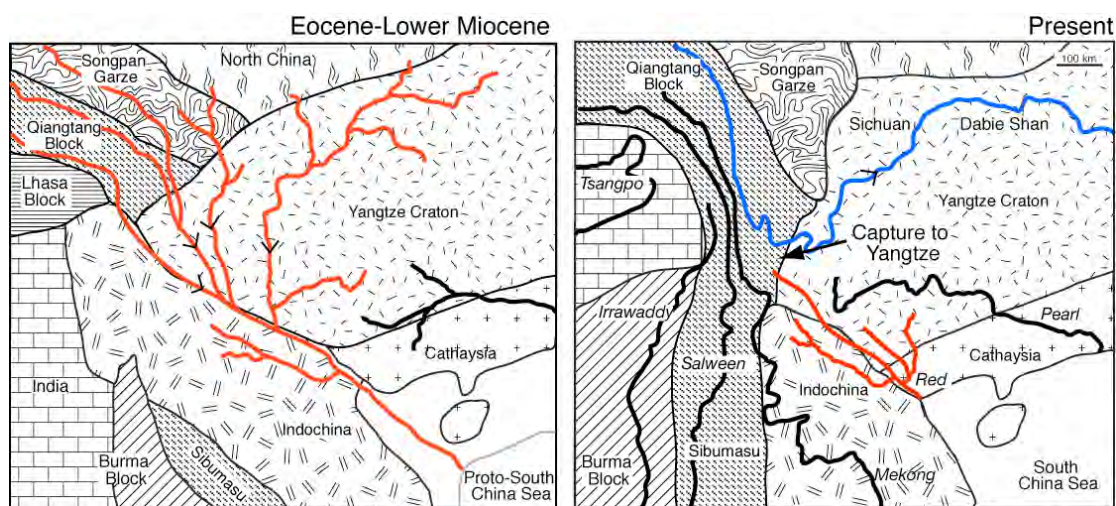


Figure 3. Proposed river evolution in SE Tibet during the Cenozoic, modified from Clark et al. (2004). The fact that the river headwaters start in different tectonic blocks of Tibet provides a method of identifying capture events in the delta/fan sediment by provenance methods.

B. Proxies

Uplift and monsoon proxies

The interpretation of past tectonic uplift, erosion, and monsoon activity using geologic proxies is both complex and multi-faceted. Simply stated, no single or even small set of proxies uniquely identifies and quantifies past tectonic and/or monsoon activity. The reason for this non-

uniqueness is that both tectonic activity and monsoon circulation have a wide variety of impacts and signatures on the erosional, depositional and environmental systems. For example, monsoon strengthening might be characterized by increased erosion and lowered salinities in one area and stronger upwelling and increased dust flux in another. In the marine realm, monsoon circulation has the capability of changing near surface environments (temperature, mixed layer depth, salinity, productivity, etc.) whereas terrestrial manifestations of monsoonal climate might be observed as changes in weathering products, vegetation and organic biomarkers.

Proxies relevant to the Asian Monsoon and Cenozoic Tectonic History DPG can be broadly divided into three major areas: (1) Proxies that reflect tectonics through indicators of source rock areas, exhumation rates, and age structure; (2) Proxies that reflect changes in the terrestrial environment that could be attributed to monsoon activity; and (3) Proxies that reflect changes in the marine environment that can be attributed to changes in monsoon circulation. Understanding the potential coupling between tectonics and monsoon climate will require the detailed intercomparison of time series of tectonic, terrestrial, and marine proxies. Identifying the internally consistent responses between tectonic, terrestrial, and marine processes, guided by a framework of coupled climate model sensitivity simulations, is the most likely solution to assessing the tectonic-climate connections. The question of causation will remain hypothesis driven. Does uplift cause stronger monsoons or does monsoon-related erosion result in tectonic uplift? If tectonic and monsoon changes/responses are tightly coupled, as might be expected, the lead-lag between the causes and responses are unlikely to be resolved well enough to distinguish causation. Hence, the lack of co-variation between tectonic, terrestrial, and marine indicators of change would also provide insight into the nature of coupling among these systems.

The strategy to sorting out the tectonic-climate question is therefore to recover continuous sections of marine sediments over key intervals of known or hypothesized boundary conditions and to compare the tectonic proxies with those of the terrestrial and marine monsoon proxies. The sites proposed in the Bay Bengal and the East Asian seas are in the appropriate locations and cover the critical time intervals to provide the materials for generation of the tectonic and monsoon proxies that will contribute to our understanding on how these two complex systems are related.

Below, we summarize many, but not all, of the proxies that could be used in marine sediments to document the tectonic, terrestrial, and marine changes that are related to the connections between tectonics and monsoon climates.

Proxies for the Sources of Clastic Sediment

Petrologic and geochemical data can be used to constrain the continental sources of clastic sediments, the intensity of chemical alteration, and the rate that source areas were being exhumed. Although no single measurement can address all these factors, a combination of geochemical measurements can simultaneously constrain these various processes.

Bulk Nd isotope analysis allows the calculation of the average age of crustal genesis and is an integrated signal that is relatively insensitive to sedimentary processes. Thus it is a relatively simple and reliable measure of average provenance.

Zircon U-Pb ages. Zircon is extremely robust during weathering as well as metamorphism and even melting. Because the closure temperatures are in excess of 750°C, U-Pb ages in zircon can be taken to approximate the crystallization age. The age of crustal genesis differs across the Indus Suture Zone and between the Lesser and Greater Himalaya. It also allows the flux from Indochina, Yangtze Craton, Tibet and the Tsangpo Suture Zone to be distinguished.

Hf isotopes in dated zircon grains. Hf isotopes in zircon grains provide information on the pre-history of the zircon's host that is a measure of the average time of residence in the continental crust prior to formation of the zircon. The methods for measuring Hf in zircon are improving such that it is practical to measure Hf isotopes on all the dated

zircon. The potential source regions are known to be heterogeneous with respect to Hf over large-scale tectonic units.

Pb isotopes in K-feldspar grains. Because feldspars are susceptible to weathering as well as metamorphism, they tend to be derived from the crystalline basement. Pb isotopes in K-feldspars approximate the initial Pb isotope compositions of its source host because the parents, U and Th are excluded from its structure. Pb isotope values in single grain K-feldspars are especially good for separating input from young arc units from ancient cratonic crust.

Petrology and chemistry of mineral grains. Basic petrographic analysis constrains the mineralogy of the source and can identify specific heavy mineral suites that have specific origins, such as ophiolitic, high-pressure terrains, volcanic, cratonic, and recycled sediments. Probe analysis of certain minerals with a range of natural compositions (e.g., amphiboles) also allows identification of populations unique to a given source. Both the petrology and chemistry of potential source areas are well enough known to allow the geochemical fingerprint of specific source areas to be identified in the cored sediments

Proxies for estimation of exhumation rates

The comparison of radiometric cooling ages with depositional ages allows the rates of exhumation of the source terrains to be determined. Comparison of cooling ages of detrital grains with the known ages from different source terrains also allows the provenance of the grains to be constrained. A variety of minerals and radionuclide systems can be used in clastic sediments to estimate the closure ages. The mass accumulation rate of terrigenous sediment is a direct function of the amount of erosion on land.

U-Pb in zircon (and Ti thermometry) provides the crystallization age, and will generally estimate the timing of major tectonothermal events within a drainage basin. Ti thermometry gives an estimate of the crystallization temperature (depth in the crust)

Ar-Ar dating in hornblende, muscovite, biotite, and K-feldspar provides records of crystallization or cooling rates from temperatures of 450°C to 200°C

Fission track dating in zircon and apatite constrains the timing of cooling from temperatures of 220°C to 100°C.

(U-Th)/He dating in zircon and apatite provides crystallization or cooling temperatures from 180°C through 60°C. Given the different indicators of crystallization temperature, composition, and age, the combination of several mineral systems and geochemical measurements is sufficient to identify specific source areas and exhumation rates in the clastic sediments to be recovered by the proposed drilling.

Proxies for the Terrestrial Response to Monsoon Strength

In the terrestrial environment, monsoon proxies have focused on weathering, soil formation, vegetative cover, and the sedimentary character of the land surface that are thought to be related to the temperature, seasonality and moisture changes associated with monsoons.

Clay mineralogy can reflect changes in climate (temperature and moisture) and the direction of wind transport but also support other evidence for provenance, with greater chlorite and illite contributions from rapidly exhuming metamorphic blocks. In addition the δD , $\delta^{18}O$ of pedogenic clays can potentially quantify the changes in rainfall and temperature. Magnetic characteristics, such as the ARM/SIRM ratio, in sediments can also be used as a sensitive measure of soil formation and weathering.

Bulk geochemistry reflects the loss or gain of chemically distinctive sources, such as ophiolite belts; carbonate platforms, granite plutons, etc. from a drainage. A careful assessment of elemental ratios that are sensitive to sedimentary processes will help to identify chemical alteration in the weathering environment.

Specific pollen assemblages, charcoal, and compound-specific organic geochemical biomarkers reflect the vegetation types in equilibrium with the terrestrial climate, the precipitation and temperature regimes, and patterns of terrestrial transport. New organic geochemical proxies may also provide information on the changes in vegetation, as well as the hydrology of the terrestrial environment.

Sedimentology; basic sedimentology can provide insight to loess sediments where modal grain size reflect the strength/capacity of wind transport, source regions, and land surface state.

Proxies for the Marine Response to Monsoon Strength

The near-surface marine environment responds to the solar heating, winds, precipitation, and convergence/divergence of water masses. All of these atmospheric and oceanic variables are affected by the strength of the monsoon circulation. Hence, a variety of biotic, isotopic, and geochemical proxies can be used to reconstruct environmental changes that might be attributed to changes in the monsoon system.

Biotic assemblages (planktonic and benthic foraminifera, radiolaria, diatoms, nannofossils) reflect changes in the near surface environment forced by monsoon winds, temperature, and precipitation. Marine responses include changes in temperature, salinity, depth of mixed layer and thermocline, productivity and floral/faunal assemblages.

$\delta^{18}O$ and $\delta^{13}C$ of planktonic and benthic foraminifera reflect ice volume variations, which are needed for detailed stratigraphy, and near surface temperature, salinity, and productivity gradients along with the vertical structure of the water column.

Organic geochemical proxies (organic carbon % and flux, opal % and flux, ^{15}N , ^{13}C in near-surface dwelling planktonic foraminifera, Alkenone SST, TEX86, and compound specific biomarkers) reflect the temperature, productivity, nutrient utilization, and water column structure that can be forced by changes in winds, mixing, and precipitation.

Inorganic Geochemical proxies (i.e.: Mg/Ca, Ba/Al, Cd/Ca) reflect a variety of temperature and productivity responses related to monsoon circulation.

C. Modeling

Overview

General circulation models (GCMs) and coupled climate system models (CSMs) enable hypotheses based on paleoenvironmental inference to be evaluated in a physically plausible and self-consistent framework. GCM modeling has historically played an important role in the uplift-monsoon hypothesis and CSMs continue to give insights into the impact of orography on monsoon processes. At this time, largely driven by improvements in computational power and climate modeling associated with the Intergovernmental Panel on Climate Change (IPCC) reports, a powerful modeling toolbox is available for understanding monsoon dynamics and for improved, multiparameter comparison with proxy records. Here we summarize lessons learned from prior work, show a feasibility study for how current state-of-the-art models might help the DPG objectives, and finally make a series of recommendations of how to move ahead.

Modeling of the effect of orographic forcing on climate has a long and impressive history, both from the point of view of climate dynamics theory (Charney and Eliassen, 1949; Manabe and Terpstra, 1974) and from the applied paleoclimate perspective (Kutzbach, 1981; Kutzbach and Guetter, 1986; Kutzbach et al., 1989; Rind and Chandler, 1991). This pioneering showed that emplacement of a significant orogen at the margins of the subtropics would have

large local and globally teleconnected climate responses. For the Indian-Asian monsoon region, the large local responses include a strong cross-equatorial flow of water vapor, intensive upwelling along the eastern coasts of Africa and Arabia that is associated with the monsoonal southwesterlies, a massive increase in summer precipitation maxima, and a distinct seasonal alteration of these phenomena between hemispheres. The teleconnected impacts of orographic forcing are communicated by planetary wave perturbations that potentially affect the major quasi-stationary high and low pressure systems in the Pacific and Atlantic Oceans, altering temperatures, winds, storm tracks, throughout the Northern Hemisphere.

The Indian-Asian monsoon is a complex and multifaceted phenomenon that can be lumped together and attributed to a large-scale dynamical, balanced flow or split into regional monsoons with more local causes and sensitivities. From a theoretical point of view monsoons arise when there is a strong violation of a balance criterion, e.g. a critical meridional entropy gradient, which engenders a large scale flow to return the system to balance (Plumb and Hou, 1992; Emanuel, 1995). Anomalous sensible heating, for example of the Tibetan Plateau, drives a strong meridional circulation, which in turn transports latent heat, greatly enhancing the overturning circulation (Webster et al., 1998; Rodwell and Hoskins, 2001). Within this conceptual model, regional scale and local scale forcings and response become important. For our purposes distinguishing between the Indian and the East Asian monsoon (See Figure 4) may be helpful because they may reflect conditions in the Indian versus Pacific oceans (Wang et al., 2003), despite having gross dynamical similarities and sensitivities in common. Hence, proxy records from both the Indian Ocean and South China and east Asian Seas will be needed in order to deconvolve the forcing and response relationships in these two areas.

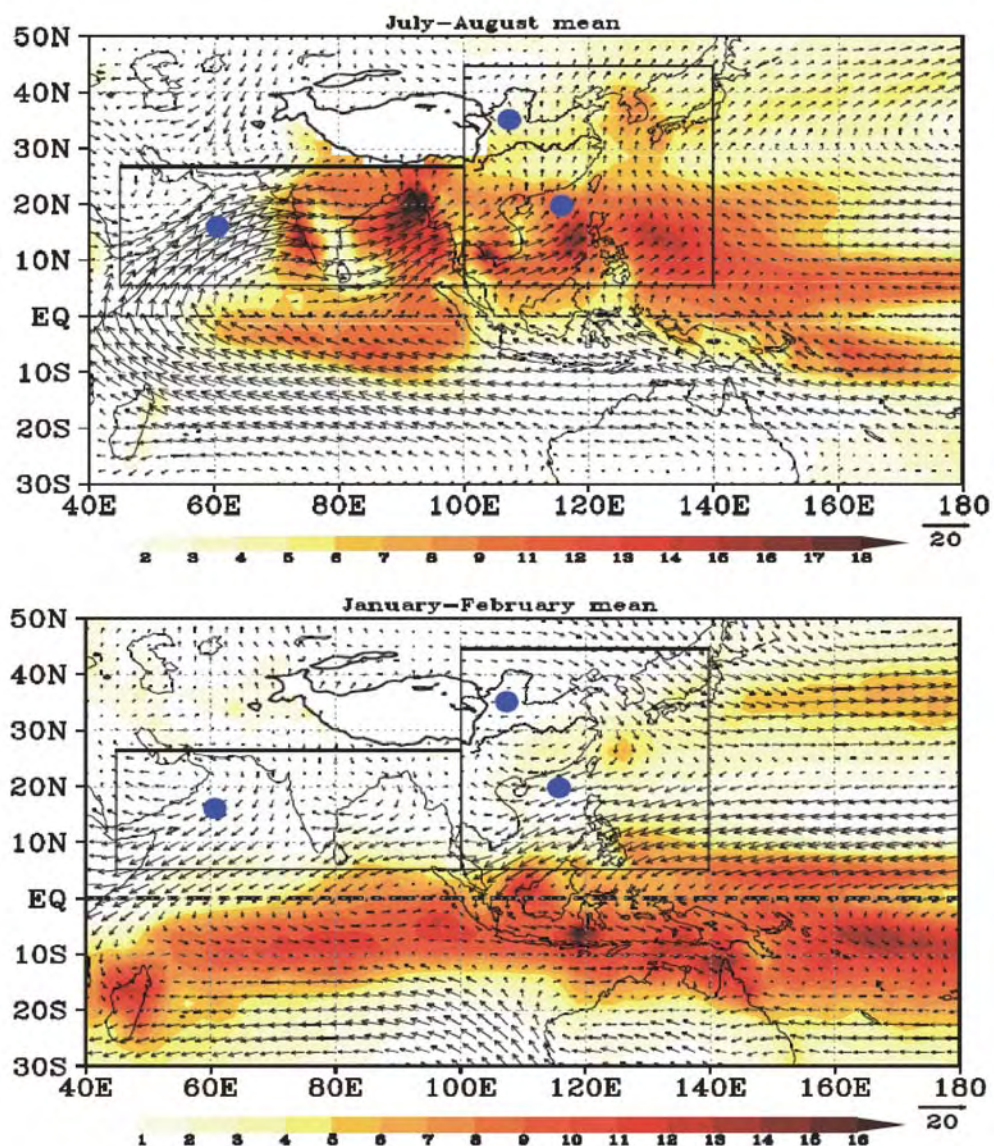


Figure 4. Monsoon winds (arrows; ms-1), precipitation (shading; mmd-1), and site locations (dots). ODP Site 722 in the Arabian Sea, ODP Site 1146 in the South China Sea, and stacked records from Lingtai and Zhaojiachuan in the south central Chinese Loess Plateau. Boxes delineate Indian and East Asian monsoon sectors. Climatological summer and winter mean precipitation (CMAP, 1979-2000) and wind patterns (NCEP/NCAR reanalysis, 1951-2000) are reproduced from Wang et al., (Wang et al., 2003) with permission from Elsevier.

As collected in *Tectonic Uplift and Climate Change* (ed. Ruddiman, 1997) paleoclimate simulations have yielded a variety of important insights into the possible affects of orographic changes. Broccoli and Manabe (1997) used a GCM to conclude that a world with no mountains was significantly moister in midlatitudes than a world with modern mountains. Rind et al. (1997) using a low-resolution coupled model found that lower topography in Southern Asia (300 meters) produced a strong anticyclonic flow in winter and stronger cyclonic flow in summer over the Tibetan Plateau in agreement with previous work. The world was found to be slightly cooler without the plateau, and midlatitude northern interiors were somewhat moister. Interestingly, ocean heat transport was somewhat decreased from the modern state without the plateau. Kutzbach et al. (1997) used NCAR's CCM1 model coupled to a 50-m thick mixed layer "slab" ocean and a bucket hydrology scheme to explore the importance of changing elevation globally and also changing $p\text{CO}_2$. In general, their study indicated cooling with uplift, and rainout and surface moistening on the upstream side of uplifted mountains and drying on the downstream side.

All of these previous studies should be considered as sensitivity studies because none of them used high-resolution topography of the Tibetan/Himalayan orogen or other realistic boundary conditions such as changed ocean gateways or interactive vegetation. Subsequent work has built upon those results to incorporate more realistic elements of the likely evolution of paleogeographic boundary conditions through the mid-to-late Cenozoic.

More recent sophisticated modeling studies over the past decade have generally confirmed the apparent relationship between enhanced topography and the monsoon circulation

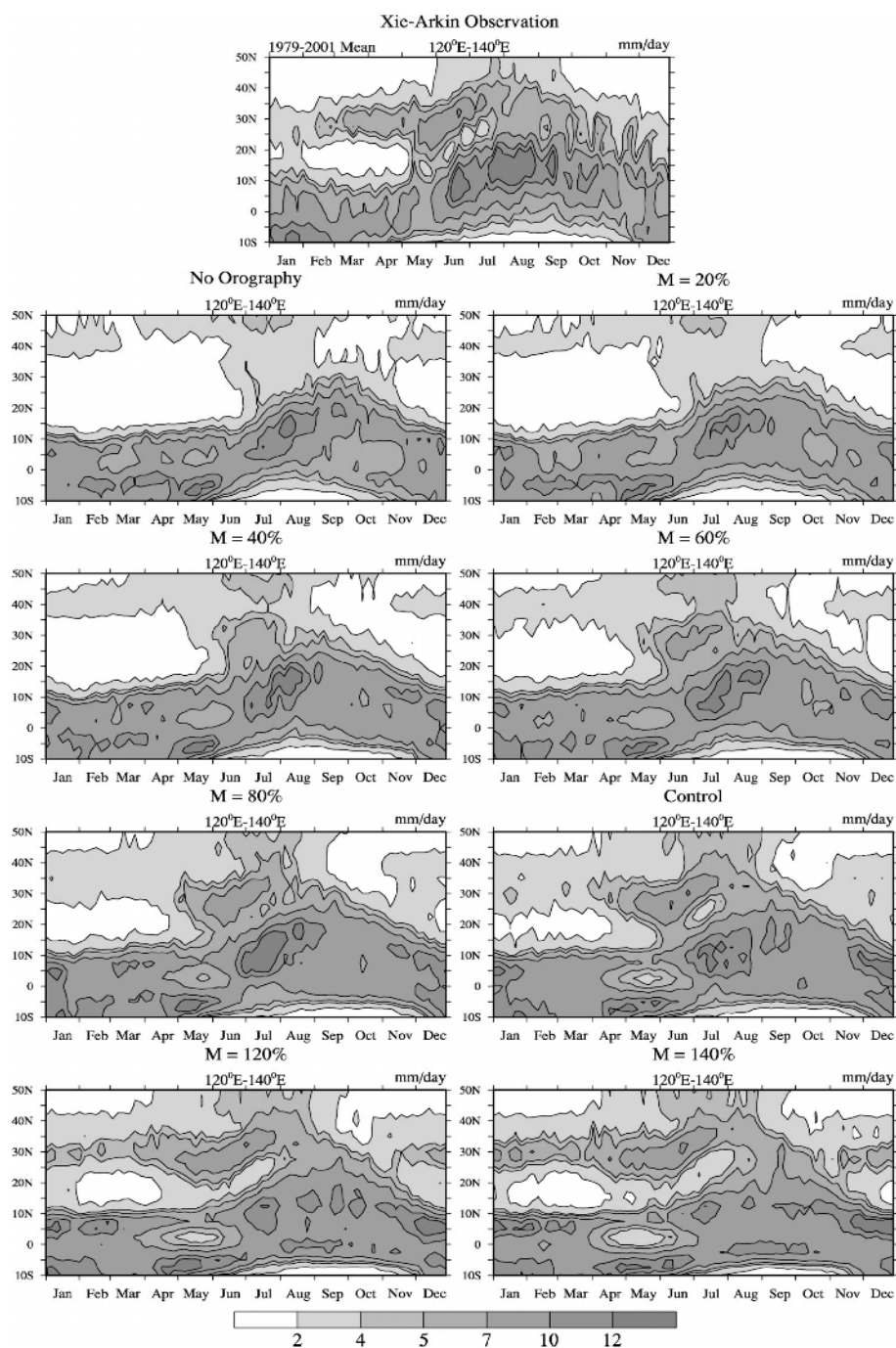


Figure 5. Time-latitude sections of the climatological pentad mean precipitation averaged for 120°E-140°E for the observations and the M0 (no topography run), M2 (20%), M4 (40%), M6 (60%), M8 (80%), and M10 (control run), M12 (120%), and M14 (140%) runs. The observations are the 23-year averages for 1979-2001 from Xie and Arkin (1997). Figure from Kitoh (2004).

(Figure 5). For instance the retreat of the Paratethyan epicontinental sea and the expansion of the East and South China seas may have played a role in the nature of the Indian and Asian monsoons respectively (Ramstein et al., 1997; Vavrus and Kutzbach, 2002; Kitoh, 2004; Zhang et al., 2007a, 2007b).

While these studies have explored explicitly the role of changing orography on the monsoonal climate, other paleoclimate modeling has addressed the more distant geological past and has routinely changed global boundary conditions. These include fully coupled simulations for the Jurassic (Kiehl and Shields, 2005), Cretaceous (Markwick and Valdes, 2004; Otto-Bliesner, et al., 2002; Sewall et al., 2007), and Eocene (Huber and Nof, 2006). In Eocene simulations, even without a Tibetan Plateau a monsoon-like circulation exists but does not have the strong onshore and cross-equatorial flows associated with the modern monsoon. As preparation for this DPG report, Huber used a fully coupled GCM to perform a simple sensitivity study by doubling the height of the low Asian Eocene paleotopography in his simulations. Peak elevations doubled from 2000 m to 4000 m whereas mean elevations increased from 500 to 1000m. With Eocene boundary conditions aspects of the canonical response remain the same: cooling over the uplifted region (Figure 6, top left), a large stationary wave response emanating from the plateau and extending into North America (Figure 6, top right), and a large increase in precipitation in summer in the regions with strongest relief, with a rain shadow behind it (Figure 6, lower left). Some important local responses are different from similar studies with modern boundary conditions, such as a warming behind the uplifted mountains, which would increase local evaporation (this is associated with increase advection off of the northern extension of

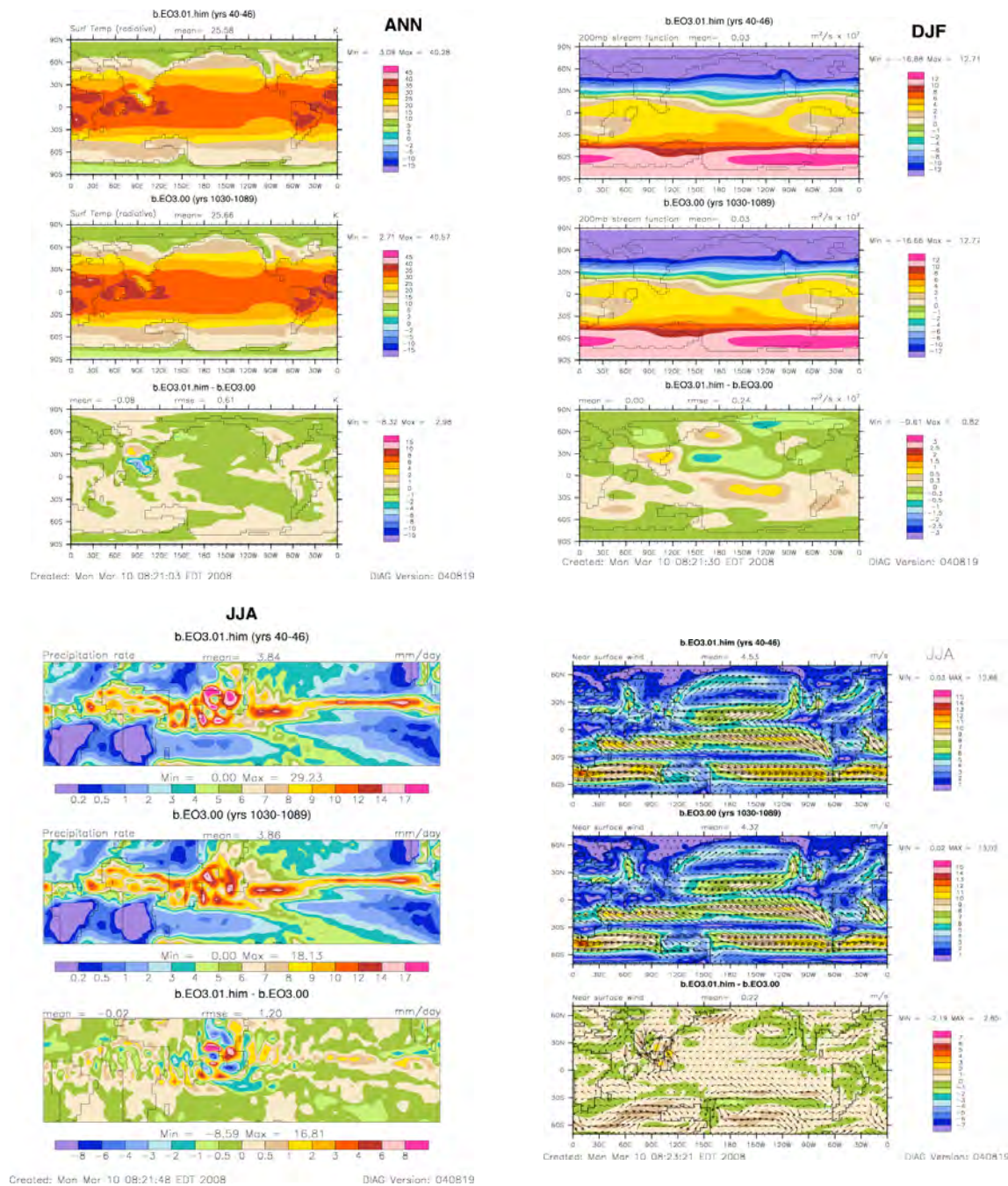


Figure 6. Results of a GCM sensitivity study that increased the mean and maximum topography of southern Asia by x2. Top row shows temperature, left panel, and the 200 mb stream function, right panel. Bottom row shows precipitation, left panel, and near surface wind. See text for details.

Tethys). These results demonstrate that simulations with fully interactive ocean-atmosphere coupled models with a realistic history of paleogeographic boundary conditions will increase the realism of the resulting climatic simulations and increase the body of available proxy evidence for comparison.

Specific recommendations and value-added components that could grow out of this report:

Potential modeling partners should be contacted as soon as possible. There is great opportunity for synergies here because monsoon evolution remains a key area of interest to modelers internationally, including in the Japan, China, the U.K., U.S., and Germany. While it is outside our purview to suggest how such interaction might be funded, one concrete step would be to include modelers as shore-based members of the proposed cruises. This would provide an IODP-centered and concrete means to encourage interactions between dynamicists and paleoclimate/tectonics experts.

To enable the testing of the hypotheses that have been proposed requires a more refined and explicit characterization of the paleogeographic and orographic boundary conditions through a wide swath of time. Because recent work (summarized in Rowley and Garzzone, 2007) suggest that some fraction of the Tibetan Plateau topographic uplift (in addition to Andean-type orogenesis in the Himalayas) may have occurred as early as the Eocene, a paleotopographic and paleogeographic reconstruction of the region from the late Eocene to present is crucial as input to climate models. Since the true paleotopographic history is unknown, several possible scenarios

are needed to establish different climatic responses that might be expressed in the paleoclimatic and geochemical record.

Thus specifically, we recommend that modeling groups work with geologists to create and disseminate a small suite of potential boundary condition scenarios from the late Eocene to modern covering this region. From the modeling prospective, a gridded, $0.5 \times 0.5^\circ$ dataset with a temporal resolution of ~ 10 m.y. would be ideal. The modeling should include coupled oceans and known ocean gateways which may play a significant role in determining monsoon response (Ramstein, et al., 1997), and many of the proxy records will be marine in origin.

In addition, modern monsoon modeling studies, such as those that are focused on predicting the impacts of anthropogenic CO_2 on climate, have found that fine atmospheric resolution ($>T42$) is a great benefit. Consequently we recommend that as far as possible, some studies should employ resolutions equivalent to T85 or greater, if only in fixed sea-surface temperature (SST) mode, to evaluate the sensitivity to resolution. We also recommend that some simulations use a dynamic vegetation component, for two reasons. First, vegetation radiation and hydrological interactions are well established as means by which plants can modulate monsoon onset and intensity. Secondly, paleobotanical and related proxy records exist in China and nearby regions and predictive vegetation can provide a key means for model-data comparison.

A link with geochemical and sediment modeling would also be important. Spatially resolved geochemical weathering models (Sloan et al., 1997) produce fundamentally different weathering rates than do global mean models, and if a suite of GCM simulations were carried out a geochemical model could be driven with output from the model to produce weathering fluxes. Climate models with explicit river routing (several exist and have been applied in paleoclimate)

can be combined with the spatially resolved weathering model output to generate specific predictions about relative changes in river discharge of dissolved constituents. Similarly, ocean biogeochemical models that explicitly include sediment could be utilized to explore the important issues of climate change and geochemical fluxes.

In summary, climate model experiments can simulate many of the climate conditions and processes that are related to the proxies measured in drill cores. Comparison of model results with time series of monsoon-related proxies offers the best approach to interpreting the functional relations between uplifted orography and the monsoon response.

D. Drilling Plan

Stage 1 Operations

The first stage of an IODP program to address monsoon evolution should target both Indian and Asian monsoons. We consider this important in order to establish the degree of linkage between the regional monsoon systems, which has significant implications for the possible processes that could trigger monsoon intensification. In addition, sediment budgets in either the Bengal Fan or southeast Asia are hard to interpret in terms of changing continental erosion unless both regions are taken into account. Our first phase of drilling can all be accomplished using the *D/V JOIDES Resolution* (SODV), while leaving open the option to use *D/V Chikyu* in non-riser mode.

Due to political, security, and technical uncertainties related to drilling in the Arabian Sea close to Pakistan using the *D/V Chikyu*, we have not included Proposal 595 drilling on the Indus Fan and Murray Ridge in our discussion. We select the Bengal Fan (Proposal 552) as our highest

priority location for examining the Indian-South Asian monsoon. This location targets a region where monsoon intensity is great and thus the erosional response is strong (Galy and France-Lanord, 2001). Furthermore, the provenance of the river-borne sediment appears to be relatively simple, at least back to 17 Ma (France-Lanord et al., 1993). Although the major objective of Bengal Fan drilling is to address the Neogene monsoon history, a major advantage to drilling the Bengal Fan is that one site (MBF-3A) may penetrate to the Eocene, dating a major regional reflector that could indicate the start of fan sedimentation. As such, Site MBF-3A may provide a critically important record that is needed to extend the monsoon/erosion record back into the Eocene or at least far beyond the 17 Ma record now available for the Bengal Fan. We also prioritize Sites MBF-1 and MBF-2A as important because they will provide additional details regarding the late Miocene-Recent accretion of the fan. Because the sites form a transect across the fan width, together they will provide a comprehensive history of Neogene sediment flux into the Bay of Bengal. Sites MBF-1 and MBF-2A are projected to reach sediments dating to 10 Ma at ~800 and 1150 mbsf respectively. The other sites within Proposal 552 (MBF-4A, -5A and -6A) are recommended for drilling as part of Stage 1, even though their emphasis is on shorter timescales. This is because understanding of how the channel-levee complexes are constructed is central to interpreting the overall sediment budget and they will provide an expanded section allowing millennial scale erosion response to monsoon variability to be constrained. While a drilling ship is in the area this provides a significant scientific bonus with modest additional operations time.

In South and East Asia we target three drill sites, one each in the deep-water slopes of the Mekong, Red and Yangtze River systems, in order to recover a late Miocene to Recent outflow

record from the three river systems. Drilling to 1000 mbsf is recommended, with additional non-riser deepening of the hole desired depending on hole stability and time availability. Site ECS-3A (Proposal 683) is located on the eastern edge of the East China Shelf, in the transition to the deep water Okinawa Trough. The major source of clastic material is presumed to be the Yangtze River and correlation to industrial boreholes indicates that a late Miocene horizon will be reached at 1000 mbsf. The sediments are expected to yield a record of provenance evolution, allowing any major changes in Yangtze River drainage configuration to be constrained. Comparison with known compositions in the upper Yangtze allows the hypothesis of a continuous river feeding material to the ocean to be tested. Clay mineral and geochemical analysis of the clastic sediments fraction allows long-term changes in continental weathering intensity to be reconstructed and compared with other targeted regions, including the South China Sea.

Site VN-3 (Proposal 618-Add 3) is located in 1506 m of water offshore the Mekong River. The top of the middle Miocene is estimated at 1120 mbsf so that we anticipate around 10 Ma of record from a 1000 m hole. The Mekong River provides a record of weathering in Indochina, a region of especially strong modern summer monsoon rains, similar to the Bay of Bengal. We shall be able to test the hypothesis of monsoon changes around 8 Ma and assess recent capture into the system from the Red River. In particular, drilling will examine the nature of a major clinoform sequence apparently dating from the Pliocene and which could represent the effects of a number of possible processes, including monsoon strengthening, tectonic uplift in the Vietnamese Central Highlands (Carter et al., 2000) or drainage capture from the Red River. Accurate dating and provenance analysis is expected to resolve these competing hypotheses.

Site PA-1B (Proposal 618-Add 3) lies south of Hainan Island with the Paracel Basin in the NW South China Sea. Phase one operations will again penetrate to the upper Miocene, dating a major Pliocene-Recent foreset sequence. This region is chosen because it is located in deep water offshore the Red River delta. As explained above the history of the Red River is especially important to the drainage evolution of southeastern Asia, and because there are no major onshore basins erosional pulses in southeast Tibet should be rapidly communicated to the marine record. Of all the East Asian areas Site PA-1B should provide the clearest image of tectonically induced erosion on the flanks of Tibet. Studies of the modern river confirm that the sediment load is derived from regions of active rock uplift (Clift et al., 2006a) meaning that the sediments should reveal periods of accelerated gorge incision driven by tectonism. Clay mineral studies confirm that the sediments show less chemical weathering compared to the neighboring basins (Liu et al., 2007), making the site an important complement to VN-3 and to the existing ODP sites offshore the Pearl River. Changes in weathering seen in these basins should result in changes at Site PA-1B if monsoon intensity is the dominant control on continental erosion, a hypothesis that can be tested by this program.

Stage 2 Operations

Having generated a late Miocene-Recent monsoon and erosion record in East Asia we recommend following up the initial two expeditions of Stage 1 drilling with a program of deeper sampling based on riser methods and the *D/V Chikyu*. The primary objective of Stage 2 is to extend the East Asian record into the Paleogene in order to match the record derived from the Bengal Fan Stage 1 recovery. This will allow us to determine the degree to which the two

monsoon systems are coupled and to what extent environmental conditions in the Mekong basin are controlled by either the Indian or the East Asian monsoons. Comparison of the Mekong record with those of the Bengal Fan and the Yangtze is important because Indochina lies between the two main focus regions. By reaching the Eocene we also have the opportunity to characterize the climate across Asia prior to the onset of major mountain building outside the initial collision zones in the Indus-Yarlung Suture Zone. Establishing the baseline is key to demonstrating phases of subsequent intensification.

The Paleogene is also likely a crucial time of drainage capture, because pilot work on the Red River suggests the greatest reorganizations there to be Oligocene in age (Clift et al., 2006b). This would be consistent with recent advances in our understanding of the paleo-altitude of central Tibet which points to significant uplift soon after India-Asia collision (Rowley and Currie, 2006), even if major topographic uplift in southeastern Tibet is known to be significantly later e.g. 8 Ma (Clark et al., 2005; Schoenbohm et al., 2006).

Developing a long-term erosion history for the Red River is an important goal for the work proposed by this DPG. As a result, for Stage 2 we propose to deepen Site PA-1B (Proposal 618-Add 3) to the middle Oligocene (~28 Ma), predicted to lie at 2874 mbsf. Basement lies at around 5 km, but the additional scientific benefit of recovering the earliest syn-rift is insufficient to warrant the major extra logistical effort at this time. Instead we prefer to examine the Eocene climatic history in South China Sea via deepening of Site VN-3A. Both these operations require use of the riser and thus *D/V Chikyu*. The acoustic basement at VN-3A (Proposal 618-Add 3) lies at 2790 mbsf. Although much of the Paleogene section below 1815 mbsf is expected to be Oligocene, because this is the time of active extension and rapid sedimentation (Lee et al., 2001),

industrial drilling in the neighboring Nam Con Son Basin indicates that an Eocene section can be expected, allowing comparison with the Bay of Bengal. In any case VN-3A can be expected to yield an especially complete monsoon record for the mid and early Miocene.

We also propose to extend the Yangtze/East China weathering record by drilling at proposed site ECS-2B (Proposal 683), located in 102 m of water on the East China Shelf within the Xihu sub-basin. In this location the top of the Oligocene is predicted to lie at 3155 mbsf. Drilling would attempt to recover a section through that interval and test the hypothesis that the Middle Yangtze was lost from the Red River and diverted into the East China Sea before that time. The same section can be used to chart the changing degrees of chemical weathering in eastern China and help test the notion of a wetter monsoon climate across the region starting at the Oligocene-Miocene boundary (Sun and Wang, 2005).

In proposing these operations we do not ignore the drilling opportunities at Site MU-1 (Proposal 595) on the Murray Ridge (Arabian Sea). The Indus Fan has an especially well developed Paleogene section and should be a key part of any comprehensive monsoon reconstruction, not least because of the links to the established monsoon records on the Oman margin. There are suggestions that India-Asia collision is older in the western Himalaya than in the east and that early Himalayan drainage is dominated by a paleo-Indus system (Qayyum et al., 1997). In this case the onset of fan sedimentation in the Bay of Bengal would significantly postdate that in the Arabian Sea. Drilling at MU-1B also offers a good chance to image oceanographic state of a pre-monsoonal/pre-collisional Tethys.

In the event that the security situation changes in this region then operations at this site would be considered of high priority. If that does not occur then seismic profiles held by the

proponents, lying outside the Pakistan EEZ and already submitted to the IODP Site Survey Data Bank, should be used to identify a new drill site over thinner parts of the fan that could be sampled using the SODV. Results from DSDP Site 221 showed that fan sedimentation started in this distal location in the late Oligocene (Whitmarsh et al., 1974). The base of the fan was recovered at only around 170 mbsf in a partially recovered, spot-cored borehole. Even a fully recovered succession from such a section would be of great use in understanding the temporal and spatial variability in the monsoon. Deriving a similar but extended and more proximal record should be a priority for Stage 2.

E. Technical issues

Drilling

Stage I of the drilling proposed will utilize the *D/V JOIDES Resolution* in normal operations mode, including APC, XCB and rotary drilling. Recovery of sediments is expected to be good in silty clays of the offshore China and Vietnam sites, and less good in the Bengal Fan sites. Low recovery will not jeopardize the primary results, as questions posed are on the longer tectonic timescales. Even in the lowest recovery zones of ODP Sites 717 and 718 in the distal Bengal Fan the temporal sample spacing is 50 to 100ky because of the very high sedimentation rates. Drilling and logging times for all sites are given in Tables 1 and 2 and sum to about 2.5 legs of drilling and logging.

Phase II drilling will require the riser capabilities of the *D/V Chikyu* for deep penetration of, and sediment recovery from, sites in the western Pacific. The new sea-floor mud recovery

system being designed and built by AGR, Norway, is being considered by IODP-MI may allow the use of the SODV for drilling into/through the Indus Fan.

Analyses

The DPG senses an urgency to have exciting, high-visibility results by the 2012 time frame, in time to publicize any new understanding of linkages between mountain uplift and monsoons before project renewal decisions in 2013. This requires that the drilling be scheduled in 2010 or 2011. To analyze thousands of samples for the many proxies described above will require multiple laboratories and several years, so thought should be given to what science can be done on board the *JOIDES Resolution* to provide first-order results. The standard measurements include the MST data of bulk density, P-wave velocity, natural gamma logs, and magnetic susceptibility, color scanning of the cores, and X-Ray mineralogy, rock magnetic properties, major element and minor element geochemistry, TOC and CaCO₃ abundance. Other scans, like those by XRF or CAT, can be done immediately upon the arrival of the cores at the repository. These measurements, along with the mass fluxes of the sediments and their components will shed light on the timing and nature of the first order changes in the sedimentary systems being considered and can form the basis for high-visibility publications that can be largely prepared on board ship.

Within two or three years post cruise, the many investigators from both the East China/Vietnam drilling and the Bengal Fan project should convene to compare and integrate results. Only in such a manner can the histories of, and differences between the South Asian and East Asian monsoon systems be determined. Such a meeting, attended also by climate modelers,

should result in a number of manuscripts, including a summary/overview paper that can be submitted to a journal for ultimate presentation of results.

Other issues

None of the sites proposed for the Stage 1 or Stage 2 drilling lie in contested waters. The Bengal Fan sites are in international waters, Site VN-3 is in Vietnamese waters, and Sites PA1-B and ECS-3B are in Chinese territorial waters. The estimated time for Stage 1, for the science proposed, is about 2.5 legs worth of drilling, logging and transit (Tables 1 and 2).

Sites proposed for the Indus Fan project lie in the EEZ of Pakistan, and the Foreign Office of Japan will not permit the *D/V Chikyu* to enter Pakistani waters. The Indus project, which was well regarded by the DPG, could be slightly redesigned by moving the sites south of the EEZ where the fan sediments would be thinner and where it might be possible to use the *D/V JOIDES Resolution* in conjunction with the sea-floor mud recovery system to penetrate the 1500+ meters of sediment that would be needed to fulfill the science objectives there.

F. Outreach and Education

Importance

Asian monsoon evolution and its potential linkage with the uplift of Himalaya and Tibet has high social relevance because: (1) Nearly half of the world's population lives in the area under the influence of the Asian monsoon, and changes in its intensity and spatial pattern has a strong impact on the life of the people living there. Thus to know the variability of Asian monsoon and its controlling factor(s) are crucial for the society. (2) Understanding the

mechanism underlying the linkage between the monsoon and tectonics will provide a chance to find new feedback mechanisms that either enhance or reduce the variability of Asian monsoon and specify factors that control its spatial pattern. (3) The enhanced sediment discharge to the marginal seas due to the erosion of the uplifted Himalaya and Tibet and increased monsoon intensity buried large amount of organic material that removes CO₂ from the atmosphere and eventually becomes the source of oil and natural gas.

Public outreach and education, once the step-child of large projects, has become an integral part of the management programs for scientific ocean drilling. JOI-Ocean Leadership, CDEX, and ECORD all have outreach and education programs that are aimed at teachers at all levels, students of elementary through college age, and the general public. For instance, the JOI – Ocean Leadership office in Washington runs the Deep Earth Academy and the School of Rock that takes science teachers to sea, sets up real-time interactions between shipboard scientists and classrooms on land, and provides curricular materials based on ocean drilling results to educators at all levels. ECORD supports an annual teachers workshop and summer schools for students, held last year in Urbino and Bremen. CDEX is supporting a round of lectures by distinguished scientists to be given at the National Museum of Emerging Science and Innovation in Tokyo, and also exhibits at the National Museum of Nature and Science, also in Tokyo. All organizations fund distinguished lecture programs, mount sophisticated exhibits at national and international meetings, and provide hands-on experiences for students. Full information on these activities may be found at the respective web sites (www.ecord.org/edu/education, www.jamstec.go.jp/chikyu/eng/index.html, and <http://oceanleadership.org/learning>).

Outreach and education suggestions

IODP drilling for this objective will provide us a good opportunity to display our scientific activity to the Asian community and demonstrate the potential relevance to their daily lives. Invitations of scientists and possibly teachers from Asian countries to join a shipboard party, selection of ports in nearby countries, open houses at the ports, and giving outreach lectures in these countries will be good opportunities to broaden public recognition of our project.

Given the abilities of the several organizations with regard to highlighting IODP accomplishments with educational exercises and materials, the DPG suggests that a number of the scientific questions being addressed in this work are eminently suitable for such an education/outreach effort.

A topic as simple to Earth Scientists as telling the story of where India came from, migrated north, and how it came to collide with Asia with the resulting building of mountains would be something that a non-specialist audience would appreciate. There already are materials developed in this context such as the following website which is a good start, or maybe even enough in this regard <http://www.scotese.com/indianim.htm>. In addition, there are 3-dimensional, dynamical models of Asian deformation (e.g., Ghosh et al., 2006) that could be incorporated into curricular material.

Another simple concept – to Earth Scientists – is the idea that we can tell with some certainty where sediment grains come from. Describing the several geochemical clues to provenance and how they are utilized will permit students in particular and the public in general

to understand this basic geologic concept. Much of the anticipated success of the Mountains and Monsoons program hinges on our provenance studies.

The potential impact of mountain building on climate has multiple aspects that seem like they would lead to good interactive lessons for students and the curious non-specialist. These include using something like the Educational General Circulation Model (EdGCM), which runs on a desktop machine and allows students to test their own ideas about how certain changes in the solid Earth system might result in climate changes. Such basic modeling exercises could be readily incorporated into curricula for high school and college students.

Two other things about how the uplift and erosion process might have a global impact on the Earth are related to atmospheric CO₂. The suite of extant simple geochemical models should be able to simulate the drawdown of atmospheric CO₂ caused by chemical weathering. At the same time erosion-related chemical weathering is occurring on land, at the depositional end of the same system organic carbon is being buried in the deep-sea deposits. For instance, the burial of organic carbon in the Bengal Fan may be of a sufficient magnitude to have played an important role in the late Cenozoic CO₂ drawdown and resultant global cooling.

G. Summary and recommendations:

The Asian Monsoon – Cenozoic Tectonic History Detailed Planning Group (Appendix 1) met at IODP-MI headquarters in Washington, D.C., on March 10-12, 2008. The DPG followed its mandate to extract the best possible drilling plan from information and sites presented in IODP Proposals 552, 595, 618 and 683. The resulting plan, which has an earlier Stage-1 and a later Stage-2, is given below in our recommendations.

The objectives of the drilling program are to: (1) Determine the uplift-erosional history of both the Himalaya and Tibetan region as based on the records recovered from deep-sea sediments; (2) Use the sediment record to determine the long-term evolution and variability of the East Asian and Indian monsoons based upon multi-proxy reconstructions of the changing environment; (3) Test hypotheses of monsoon-uplift relations using modern coupled (atmospheric and oceanic) models of the climate system; and (4) Quantify to the extent possible any cause-effect relations between mountain uplift and intensity of the Indian and East Asian monsoons.

No single sedimentary proxy gives a uniquely clear picture of uplift, erosion, or marine or terrestrial environments. As a result we strongly encourage a multi-proxy approach to construction of records of past conditions. Every advantage should be taken from the use of computer models to create testable scenarios and, in turn, to test scenarios constructed by geologists and oceanographers. This type of data-model interaction, which should include linking modelers with the shipboard or shore-based scientific parties, has the possibility of leading this science to its ultimate goals.

Issues of outreach and education have become important aspects of IODP in the past several years. Japan, ECORD and the US all have offices and staff devoted to a variety of sophisticated and wide-ranging activities for students, teachers and the general public. There are no technical or clearance issues that should impede the drilling plan for Stage 1.

We recommend two stages of drilling, for Stage 1:

- Drill the Bengal Fan essentially in the manner recommended in Proposal 552.

Among the sites, the highest priority should be assigned to the deep penetration

Site MBF-3A, which likely will provide a record back through the Eocene/Oligocene boundary, followed by the intermediate penetration Sites MBF-1A and -2A, then the three shallower sites. The Bengal fan drilling can be done with the SODV.

- Drill the top approximately 1000 meters of the more distal sites offshore from the major Asian rivers: ECS-3B (Proposal 683) for the record of the Yangtze, PA-1B (Proposal 618 Add-3) for the Red, and VN-3 (Proposal 618 Add-3) for the Mekong River. The East Asian drilling can be done with the *D/V JOIDES Resolution*, however depending on its schedule the *D/V Chikyu*, in riserless mode, could be easily deployed to drill Site ECS-3B.

Stage 2:

- Deepen the holes at VN-3 and PA-1B (Proposal 618 Add-3), and drill a new hole at ECS-2B (Proposal 683) to depths of 2300 to 3500 mbsf, in order to reach Oligocene/Eocene targets. This is critical to determine pre-monsoon and pre-uplift conditions, and to understand when the whole process began. Drilling these sites to their full-recommended depth will require the *D/V Chikyu* in riser mode with current technology.
- Adjust the sites on the Indus Fan to lie outside the EEZ of Pakistan at existing seismic line crossings and drill them with the SODV using the expected advanced capabilities of the sea-floor mud recovery system.

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Table 1. Estimates of operation times for Stage 1 Bengal Fan drilling

Site No.	Location (Latitude Longitude)	Sea Floor Depth (mbrf)	Operations Description	Transit (days)	Drilling Coring (days)	Log (days)
Starting Port						
			Transit ~ nmi to Site (number) @ 10.5 kt			
MBF-1A	8° 0.42'N	3747 mbsl	Hole A: APC to ref. ~200m, XCB to ref. ~500m, Heat Flow		4.1	
	86° 16.97'E	3758 mbrf	Hole B: APC to ref. ~200m, XCB to ref. ~500m		4.3	
			Hole C: Drill to ~490 m, RCB 490-900m sedmt.		5.0	
	900 m sedmt		Log w/ Triple-Combo, FMS-Sonic			1.9
			Sub-Total Days On-Site: 15.3			
			Transit 80 nmi MBF-1A to MBF-2A @ 10.5 kt	0.3		
MBF-2A	8° 0.4'N	3678 mbsl	Hole A: APC to ref. ~200m, XCB to ref. ~500m, Heat Flow		4.0	
	87° 38'E	3689 mbrf	Hole B: APC to ref. ~200m, XCB to ref. ~500m		4.2	
			Hole C: Drill to ~490 m, RCB 490-900m sedmt.		5.0	
	900 m sedmt		Log w/ Triple-Combo, FMS-Sonic			1.9
			Sub-Total Days On-Site: 15.1			
			Transit 62 nmi MBF-2A to MBF-3A @ 10.5 kt	0.3		
MBF-3A	8° 0.4'N	3620 mbsl	Hole A: APC to ref. ~200m, XCB to ref. ~500m, Heat Flow		4.0	
	88° 41'E	3631 mbrf	Hole B: APC to ref. ~200m, XCB to ref. ~500m		4.2	
			Hole C: Drill to ~490 m, RCB 490-1100m sedmt.		8.0	
	1500 m sedmt		Drop FFF, Trip for bit, RCB 1100-1500m sedmt.		5.9	
			Log w/ Triple-Combo, FMS-Sonic			2.3
			Sub-Total Days On-Site: 24.4			
			Transit 159 nmi MBF-3A to MBF-4A @ 10.5 kt	0.6		
MBF-4A	8° 0.4'N	3694 mbsl	Hole A: APC to ref. ~200m, XCB to 300m, Heat Flow		2.4	
	86° 47.9'E	3705 mbrf	Hole B: APC to ref. ~200m, XCB to 300m		2.7	
	300 m sedmt		Log w/ Triple-Combo, FMS-Sonic			1.1
			Sub-Total Days On-Site: 6.2			
			Transit 70 nmi MBF-4A to MBF-5A @ 10.5 kt	0.3		
MBF-5A	8° 0.4'N	3687 mbsl	Hole A: APC to ref. ~200m, XCB to 300m, Heat Flow		2.4	
	87° 10.9'E	3698 mbrf	Hole B: APC to ref. ~200m, XCB to 300m		2.7	
	300 m sedmt		Log w/ Triple-Combo, FMS-Sonic			1.1
			Sub-Total Days On-Site: 6.2			
			Transit 55 nmi MBF-5A to MBF-6A @ 10.5 kt	0.2		
MBF-6A	8° 0.4'N	3672 mbsl	Hole A: APC to ref. ~200m, XCB to 300m, Heat Flow		2.4	
	86° 06.6'E	3683 mbrf	Hole B: APC to ref. ~200m, XCB to 300m		2.7	
	300 m sedmt		Log w/ Triple-Combo, FMS-Sonic			1.1
			Sub-Total Days On-Site: 6.2			
			Transit (~distance) nmi to (ending port) @ (speed) kt			
Ending Port				1.7	64.0	9.4
Subtotal On-Site Time:					73.4	
Total Operating Days:					75.1	
Total Expedition Including Port Call Days=					5	80.1

Note-1: Sea floor depth is prospectus water depth plus 11.0 m adjustment from water line to rig floor (i.e. drillers depth).

Table 2. Estimates of operation times for Stage 1 East Asian seas drilling.

Site No.	Location (Latitude Longitude)	Sea Floor Depth (mbsf)	Operations Description	Transit (days)	Drilling Coring (days)	Log (days)
PA-1B	17° 12' N	1460	Hole A: APC to ref. ~200 mbsf, XCB to 500 mbsf		3.2	
	110° 30' E		Wiper Trip, Hole Prep, Triple combo, FMS-Sonic, and VSP.			1.0
			Hole B: Drill to ~500 mbsf, RCB to 1000 mbsf		5.4	
			Drop bit w/ MBR, Hole Prep, Triple combo, FMS-Sonic, VSP and secure.			1.8
			Sub-Total Days On-Site: 11.4			
VN-3	08° 38' N	1506	Hole A: APC to ref. ~200 mbsf, XCB to 500 mbsf		3.2	
	109° 43' E		Wiper Trip, Hole Prep, Triple combo, FMS-Sonic, and VSP.			1.0
			Hole B: Drill to ~500 mbsf, RCB to 1000 mbsf		5.4	
			Drop bit w/ MBR, Hole Prep, Triple combo, FMS-Sonic, VSP and secure.			1.8
			Sub-Total Days On-Site: 11.4			
ECS-3B	28° 45' N	1000	Hole A: APC to ref. ~200 mbsf, XCB to 500 mbsf		2.9	
	127° 20' E		Wiper Trip, Hole Prep, Triple combo, FMS-Sonic, and VSP.			1.0
			Hole B: Drill to ~500 mbsf, RCB to 1000 mbsf		5.0	
			Drop bit w/ MBR, Hole Prep, Triple combo, FMS-Sonic, VSP and secure.			1.8
			Sub-Total Days On-Site: 10.7			

Appendix 1. Asian Monsoon and Cenozoic Tectonic History Detailed Planning Group
and guests at the DPG meeting, March 10-12, 2008, Washington, D.C.

DPG Members	Affiliation	Institution	Expertise	E-Mail
Clift, Peter	ECORD	U Aberdeen	Sedimentology, Paleoclimatology	pclift@abdn.ac.uk
Hemming, Sidney	USA	LDEO	Geo-chemistry/-chronology	sidney@ldeo.columbia.edu
Huber, Matt	USA	Purdue U	Climate Modelling	huberm@purdue.edu
Huh, Youngsook	IAC	Seoul National U	Sedimentary geochemistry	yhuh@snu.ac.kr
Prell, Warren	USA	Brown U	Paleo-climatology/-oceanography	Warren_Prell@brown.edu
Rea, David (chair)	USA	U Michigan	Paleo-climatology/-oceanography	davidrea@umich.edu
Sakai, Harutaka	Japan	Kyoto University	Tectonics	hsakai@kueps.kyoto-u.ac.jp
Tada, Ryuji	Japan	U Tokyo, EPS	Paleo-climatology/-oceanography	ryuji@eps.s.u-tokyo.ac.jp
Zheng, Hongbo	China	Tongji University	Paleoclimatology	zhenghb@mail.tongji.edu.cn

Guests

Grout, Ron	TAMU
Higgins, Sean	JOI
Janecek, Tom	IMI
Kawamura, Yoshi	CEDEX
Kubo, Yusuke	CEDEX

7. Nominations and Staffing

7.1 Staffing

7.1.1 Quotas

The quota balance has been updated based on the recent cancellation/postponement of the Canterbury and Wilkes Land expeditions, the recent thorough revision of the previous tables obtained and made by former ESSAC Offices and the incorporation of the participation of ECORD scientists to IODP Expeditions #301 through #312.

The table below summarizes the total berths by country including all completed IODP expeditions and the forthcoming expeditions #313 (New Jersey), #320 and #321 (Equatorial Pacific).

Member	Financial contribution %	Entitlement	Berths	Balance
France	24.8%	36.2	30	(-) 6.2
Germany	25.9%	37.8	38	(+) 0.2
UK	24.8%	36.2	35	(-) 1.2
Sum	<i>75.5%</i>	<i>110.3</i>	<i>103</i>	<i>(-) 7.3</i>
Austria	0.6%	0.8	0	(-) 0.8
Belgium	0.2%	0.2	1	(+) 0.8
Canada	1.1%	1.6	5	(+) 3.4
Denmark	3.1%	4.5	3	(-) 1.5
Finland	0.5%	0.7	2	(+) 1.3
Iceland	0.2%	0.3	0	(-) 0.3
Ireland	0.8%	1.1	0	(-) 1.1
Italy	1.8%	2.7	6	(+) 3.3
The Netherlands	1.8%	2.7	4	(+) 1.3
Norway	4.9%	7.2	4	(-) 3.2
Portugal	0.6%	0.9	1	(+) 0.1
Spain	2.4%	3.5	6	(+) 2.5
Sweden	4.0%	5.8	6	(+) 0.2
Switzerland	2.5%	3.6	5	(+) 1.4
Sum	<i>24.5%</i>	<i>35.7</i>	<i>43</i>	<i>(+) 7.3</i>
Total ECORD		146	146	<i>0,0</i>

7.1.2 EqPac expeditions

L. Dezileau (ESSAC-F) eventually declined the invitation to sail on Expedition #321 Equatorial Pacific due to the new scheduling of the expedition. He has been replaced by C. Beltran (ESSAC-F).

The two tables below summarize the current staffing lists of the two Equatorial Pacific expeditions.

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EQUATORIAL PACIFIC 320						IODP PMO Balance					
Berth #	Science Party #	Responsibility	Name	Status	Affiliation (ranking)	J-DESC (8)	ESSAC (8)	USSAC (8)	IODP-China (1)	Aust- IODP (1)	K- IODP (1)
1	1	Co-chief Scientist	Ahagon	Accepted	J-DESC(cc)	1					
2	2	Co-chief Scientist	Palike	Accepted	ESSAC-UK(cc)		1				
3		USIO Expedition Project Manager	Garnage	Accepted	USIO						
4		USIO Logging Staff Scientist	Evans	Accepted	USIO						
5		USIO Logging Staff Scientist	Anderson, Louise	Accepted	USIO						
6	3	Stratigraphic Correlator	Westerhold	Accepted	ESSAC-GER(1)		1				
7	4	Stratigraphic Correlator	Richter	Accepted	USSAC(1.5)			1			
8	5	Core Description- Sedimentology(1)	Wilson	Accepted	ESSAC-UK(1)		1				
9	6	Core Description- Sedimentology(2)	Jacket	Accepted	ESSAC-SW(1)		1				
10	7	Core Description- Sedimentology(3)	Nakamura	Accepted	J-DESC	1					
11	8	Core Description- Sedimentology(4)	Murphy, Brandon	Accepted	USSAC (1.5,s)			1			
12	9	Core Description- Sedimentology(5)	Hyeong	Accepted	K- IODP						1
13	10	Core Description- Sedimentology(6)	Robinson	Accepted	USSAC(1)			1			
14	11	Core Description- Sedimentology(7)	Kuroda, Junichiro	Accepted	J-DESC	1					
15	12	Paleomagnetism	Yamamoto, Yuhji	Accepted	J-DESC	1					
16	13	Paleomagnetism	Sager	Accepted	USSAC(2)			1			
17	14	Physical Properties/downhole tools	Fitch	Accepted	ESSAC-UK		1				
18	15	Physical Properties/downhole tools	Scher	Accepted	USSAC			1			
19	16	Organic Geochemistry	Sawada	Accepted	J-DESC(3)	1					
20	17	Inorganic Geochemistry	Delaney	Accepted	USSAC(1)			1			
21	18	Inorganic Geochemistry	Zhifei	Accepted	IODP-China				1		
22	19	Inorganic Geochemistry	Gussone	Accepted	ESSAC-GER(1)		1				
23	20	Micropaleontology (Nannofossils)	Bown	Accepted	ESSAC-UK(2)		1				
24	21	Micropaleontology (Nannofossils)	Dunkley-Jones	Accepted	ESSAC-UK(2)		1				
25	22	Micropaleontology (foram-benthic)	Takata	Accepted	J-DESC(6)	1					
26	23	Micropaleontology (foram-planktonic)	Edgar (Kirsty)	Accepted	ESSAC-UK(2)		1				
27	24	Micropaleontology (foram-planktonic)	Leon-Rodriguez	Accepted	USSAC(1.5)			1			
28	25	Micropaleontology (Radiolaria)	Moore	Accepted	USSAC(1)			1			
29	26	Micropaleontology (Radiolaria)	Kamikuri	Accepted	J-DESC(7)	1					
30	27										
						7	9	8	1		1
						Total Scientists =					
						26					

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EQUATORIAL PACIFIC 321						IODP National Balance					
Berth #	Science Party #	Responsibility	Name	Status	Affiliation (ranking)	J-DESC (8)	ESSAC (8)	USSAC (8)	IODP-China (1)	AUS- IODP (1)	K- IODP (1)
1	1	Co-chief Scientist	Lyle	Accepted	USSAC(cc)			1			
2	2	Co-chief Scientist	Raffi	Accepted	ESSAC-IT(cc)		1				
3		USIO Expedition Project Manager	Zarikian	Accepted	USIO						
4		USIO Logging Staff Scientist	Malinverno	Accepted	USIO						
5	3	Stratigraphic Correlator	Tian	Accepted	IODP-China				1		
6	4	Stratigraphic Correlator	Wilkins	Accepted	USSAC(1)			1			
7	5	Core Description- Sedimentology	Hovan	Accepted	USSAC(1.5)			1			
8	6	Core Description- Sedimentology	Ogane	Accepted	J-DESC(3)	1					
9	7	Core Description- Sedimentology	Slujs	Accepted	ESSAC-NL(1)		1				
10	8	Core Description- Sedimentology	Beltran	Accepted	ESSAC		1				
11	9	Core Description- Sedimentology	Ito, Takashi	Accepted	J-DESC(10)	1					
12	10	Core Description- Sedimentology	Tsujimoto	Accepted	J-DESC(9)	1					
13	11	Core Description- Sedimentology	Murphy, Daniel	Accepted	USSAC (1.5,s)			1			
14	12	Paleomagnetism	Yamazaki	Accepted	J-DESC(10)	1					
15	13	Paleomagnetism	Channell	Accepted	USSAC (3)			1			
16	14	Physical Properties/downhole tools	Busch	Accepted	USSAC(2)			1			
17	15	Physical Properties/downhole tools	Iijima	Accepted	J-DESC	1					
18	16	Organic Geochemistry	Yamamoto, Shinya	Accepted	J-DESC(7)	1					
19	17	Inorganic Geochemistry	Hathorne	Accepted	ESSAC-GER(1)		1				
20	18	Inorganic Geochemistry	Yamaguchi**	Accepted	J-DESC(5)	1					
21	19	Micropaleontology (Nannofossils)	Backman	Accepted	ESSAC-SW(1)		1				
22	20	Micropaleontology (Nannofossils)	Schneider	Accepted	USSAC(2)			1			
23	21	Micropaleontology (foram-benthic)	Holbourn	Accepted	ESSAC-GER(1)		1				
24	22	Micropaleontology (foram-planktonic)	Nishi	Accepted	J-DESC(6)	1					
25	23	Micropaleontology (foram-planktonic)	Wade	Accepted	USSAC(1.5)			1			
26	24	Micropaleontology (Radiolaria)	Suzuki	Accepted	J-DESC(2)	1					
27	25	Micropaleontology (Diatoms)	Romero	Accepted	ESSAC-SP(1)		1				
28	26										
						9	7	8	1	0	0
						Total Scientists =					
						25					

7.1.3 Canterbury and Wilkes Land Expeditions

The two tables below summarize the current staffing list of the Canterbury Basin (formerly Expedition #317) and Wilkes Land (formerly Expedition #318) expeditions before they have been removed from scheduling. One change occurred after the edition of the table concerning the Canterbury Basin Expedition : J. Gruetzner (ESSAC-Ger) declined the invitation to sail on that expedition.

Wilkes Land Science Party						IODP PMO Balance						Notes/alternates
Berth #	Science Party #	Responsibility	Name	Status	Affiliation (ranking)	J-DESC (8)*	ESSAC (8)**	USSAC (8)	IODP- China (1)	ANZIC (2)***	K-IOOP (1)	
1	1	Co-chief Scientist	Escutia, Carlot	accepted	ESSAC (cc)		1					
2	2	Co-chief Scientist	Brinkhuis, Henk	accepted	ESSAC (cc)		1					
3		USIO Expedition Project Manager	Klaus, Adam	accepted	USIO							
4		USIO Logging Staff Scientist	Williams, Trevor	accepted	USIO							
5		USIO Logging Staff Scientist	Fehr, Annick	accepted	USIO							
6	3	Core Description- Sedimentology(1)	Dunbar	accepted	USSAC 1			1				
7	4	Core Description- Sedimentology(2)	Passchier	accepted	USSAC 1			1				
8	5	Core Description- Sedimentology(3)	Tuo	accepted	IODP-China (s)				1			Naish (ANZIC, declined)
9	6	Core Description- Sedimentology(4)	Goodwin	accepted	ANZIC 3 (AUS)					1		Dornack (USSAC 1, declined)
10	7	Core Description- Sedimentology(5)	Kh'm	accepted	K-IOOP						1	
11	8	Core Description- Sedimentology(6)	Miura	accepted	J-DESC A-5	1						
12	9	Core Description- Sedimentology(7)	Bohaty	accepted	ESSAC 2 (UK)		1					
13	10	Core Description- Sedimentology(8)	Yamane	accepted	J-DESC 6 (s)	1						
14	11	Core Description- Sedimentology(9)	McKay	accepted	ANZIC 2 (NZ)					1		
15	12	Paleomagnetism	Suganuma	accepted	J-DESC (3)	1						
16	13	Paleomagnetism	Tauxe	accepted	USSAC 1			1				
17	14	Physical Properties	Roehl	accepted	ESSAC 1 (GER)		1					
18	15	Physical Properties	Nakai	accepted	J-DESC 4	1						
19	16	Physical Properties	Gonzalez	accepted	ESSAC 2 (SPs)		1					*J-DESC Relinquished one (1) berth
20	17	Physical Properties	Hayden	accepted	USSAC 1 (s)			1				
21	18	Organic Geochemistry	Denis	accepted	ESSAC 1 (Fr, s)		1					
22	19	Inorganic Geochemistry	Jimenez	accepted	J-DESC 2	1						
23	20	Inorganic Geochemistry	van de Flierdt	accepted	ESSAC 1 (UK)		1					
24	21	Microbiology	Carr	accepted	USSAC 1 (s)			1				
25	22	Micropaleontology (diatom)	Stickley	accepted	ESSAC 1 (NO)		1					
26	23	Micropaleontology (diatom)	Iwai	accepted	J-DESC 1	1			1			
27	24	Micropaleontology (diatom)	Riesseiman	accepted	USSAC 1 (s)			1				
28	25	Micropaleontology (palynologist-dinoflagellate)	Bijl	accepted	ESSAC 2 (NE, S)		1					
29	26	Micropaleontology (palynologist)	Pross	accepted	ESSAC 1 (GER)		1					
30	27	Micropaleontology (radiolaria)	Sakai	accepted	J-DESC	1						
31	28	Micropaleontology (foram-benthic)	Pekar	accepted	USSAC 1			1				
32	29	Micropaleontology (diatom)	Olney	accepted	USSAC (1,p-doc)			1				
33		Weather & Ice Monitoring Observer (2)			USIO							
* J-DESC relinquished one (1) berth						7	10	8	1	2	1	
** ESSAC: (a) 1 scientist filled relinquished berth will not count toward ESSAC quota						Total Scientists = 29						
(b) 1 scientist above quota will be balanced by reduction in future participation												
*** ANZIC: participation above quota will be balanced by reduction in future participation												
Initial science staffing target:						28	8	8	8	1	2	1
*One berth relinquished by J-DESC						Total Scientists = 27						
***ANZIC scientist invited in relinquished berth will not count toward ANZIC quota												
Initial target science staffing:						28	8	8	8	1	2	1

7.1.4 Great Barrier Reef

According to the ESSAC Consensus 0805-05, 7 (out of 17) ESSAC delegates reviewed the Great Barrier Reef applications individually and grouped them in four categories, from 0 to 3 stars (3 stars being the highest ranking, 0 star the lowest) based on proposed research, experience, and expertise.

The rankings were sent to the ESSAC Science Coordinator. Bonnie Wolff-Boenisch compiled the results, made a synthetic grouping of all applications and sent the final table, including the ECORD quota balances, the specific applicant's expertises and the additional comments on applications from the relevant delegate and/or national office (5 out of 10 concerned) to the ESSAC Nominations and Staffing subcommittee, September 11th, 2008.

The subcommittee, lead by L. Lourens discussed the reviews and made a priority list, which was sent back to the ESSAC Office, which in turn sent the final list to the respective Implementation Organisation, ESO, and to the other ESSAC delegates, September 19th, 2008.

7.1.5 NanTroSEIZE riser expeditions

Two calls for applications to sail on the two next Nankai Trough Seismogenic Zone Experiment (NanTroSEIZE) drilling operations to be conducted March - early September 2009 have been issued in early september with an October 15th, 2008 deadline.

- The NANTROSEIZE Expedition #319 « Riser/riserless observatory-1 » will conduct riser drilling in the Kumano forearc basin to a target depth of 2500 meters below the sea floor (proposed Site NT2-11) and riserless drilling across the shallow branch of the mega-splay fault at NT2-01J (close to Site C0004) to prepare cased holes for future deployment of long-term borehole observatories.
- The NANTROSEIZE Expedition #322 « Subduction input » plans to investigate pre-subduction materials in the Shikoku Basin seaward of the Nankai subduction system using direct sampling, in-situ measurement, and wireline logging. The primary goal of this expedition is to characterize the composition, architecture, and state of sediments entering into the subduction system. The expedition plan has full coring, downhole measurements, and wireline logging at the proposed input site, NT1-07, with standard core and logging data analyses aboard Chikyu to study the properties of the initial condition of pre-subduction material.

A summary of the scientific objectives and operations for these two expeditions and overall NanTroSEIZE drilling is available at www.jamstec.go.jp/chikyu/eng/Expedition/index.html

7.2 SAS panel nominations

Based on ESSAC Consensus 0710-02, 0710-03 and ESSAC Action Item 0710-08, the ESSAC Office has identified the following rotations of ECORD SAS panel members and the related actions to be taken:

7.2.1 SPC

J. Behrmann (Ger) and G. Camoin (F) should rotate off after the August 2009 SPC meeting. J. Behrmann will be replaced by R. Stein, who will become ESSAC Chair on October 1st, 2009. G. Camoin has been asked by the next SPC Chair to stay for one more meeting at SPC (until the March 2010 meeting) as his expertise on shallow-water carbonates will be required.

7.2.2 SSEP

T. Elliott (UK) will rotate off from the SSEP after the May 2009 meeting. A call for applications will be widely distributed and posted on the ESSAC website; the applications will then be reviewed by the Nominations and Staffing ESSAC subcommittee, who will recommend nominations. The ESSAC office will contact SAS panel chairs for guidance regarding the expertise needed.

7.2.3 STP

M. Lovell has rotated off from STP. A call has been distributed but, so far, there is no candidate to replace him. The deadline has been extended to October 15th, 2008.

C. Neal, incoming Chair of STP contacted the ESSAC Office to request, if D. Schmitt (Canada), current alternate of N. Vigier (F) could stay the complete length of N. Vigier's (F) planned term and become the current (French) delegate. He suggested that N. Vigier could join STP later, after the end of D. Schmitt's term. The ESSAC Office contacted N. Vigier, who recently gave birth to twins, and she agreed with that proposition.

7.2.4 SSP

Three ECORD members were supposed to rotate off after the July 2009 meeting:

C. Gaedicke (Ger), G. Lericolais (F) and A. Holger-Lykke (DK). Gilles Lericolais has been recently appointed as Vice-Chair of this panel; he will therefore stay until 2012 as Vice-Chair and then Chair of the SSP. For the two other members, a call for applications will be widely distributed and posted on the ESSAC website; the applications will then be reviewed by the Nominations and Staffing ESSAC subcommittee, who will recommend nominations. The ESSAC office will contact SAS panel chairs for guidance regarding the expertise needed.

7.2.5 EDP

Based on the ESSAC Consensus 0805-03, the terms of J. Thorogood (UK), R. Person (F), L. Wohlgemuth (Ger) and M. Ask (Swe) at the EDP has been extended until June 2009, June 2009, January 2009 and January 2010 respectively as suggested by the four ECORD panel members to avoid loss of expertise in that panel. Since then, L. Wohlgemuth (Ger) has been asked to prolong his term, because of his rare expertise on ultra-deep drilling (KTB site).

ECORD should get a Vice-Chair position on that panel when Miyairi rotates off and Ussler becomes the new Chairperson. ESSAC needs to identify the Vice-Chairperson for 2010, so that a good candidate is found, and so that he/she can solve potential funding issues for own salary in due time.

THE 2008 IODP-ECORD URBINO SUMMER SCHOOL IN PALEOCLIMATOLOGY (USSP 2008)

To promote the integration of field data and modeling results in the next generation of paleoclimatologists, the USSP Consortium and teacher pool (Table 1a, b) organized the 5th annual IODP-ECORD Urbino Summer School in Paleoclimatology during July 15 through August 3 in Urbino, Italy. The USSP brought together ~40 experts in paleontology, palaeoceanography, palaeoclimatology, climate modeling, and geochemistry, including many past and future ODP/IODP participants, to lecture and mentor 58 typically first-year graduate students from 20 nations (Table 2). This report summarizes the USSP in terms of structure and impact, support and financing, and ongoing planning for its next offering.

USSP 2008 Structure and Impact – The USSP 2008 provided a 3- week integrated student-centered program comprised of (1) integrated topical lectures by internationally recognized scientists; (2) student-centered data-rich exercises, investigations, and presentations on field data and modeling results; (3) Parallel sessions providing groups of participants with a more focused coverage of selected topics within paleoclimatology (4) a regional field excursion to classic Cretaceous and Cenozoic sections, and (5) intensive discussions of specific palaeoclimate topics in small student working groups facilitated by dedicated instructors. The 2008 program structure included more IODP/JOI elements with respect to previous editions, including incorporation of the ‘*School of Rock*’ by Mark Leckie (UMass. Amherst, USA) and others at the start of the program and an integration of student-centered investigations within the broader structure of a "virtual IODP leg". The USSP 2008 schedule is presented in Table 3. In addition, USSP 2008 programme included a 2 day workshop (Transient Changes in Past Warm Climates) where many instructors gave informal presentations on their latest, often unpublished, field and modeling results, providing students with an excellent opportunity to experience the cutting edge of scientific progress (including some vigorous dissenting responses by colleagues!). Student 2008 course evaluations assessed USSP 2008 as extremely positive.

USSP Support and Financing – As in past years, the Faculty of Sciences & Technologies of the University of Urbino hosted the program, providing a large hall for lectures, smaller rooms for student working groups and parallel sessions, and computer and library access to support student-centered investigations. Student tuition was set at an economical 600 euro, due in large part to generous sponsorship by (1) The Netherlands Darwin Center for Geobiology, (2) the Institute for

Marine and Atmospheric Sciences Utrecht (IMAU), (3) the Netherlands Research School for Sedimentary Geology (NSG), (4) the European Consortium for Ocean Research Drilling (ECORD), (5) the universities of Urbino and Utrecht, (7) Elsevier Publishers, (8) Worldwide University Network (WUN), and (6) the Province of Pesaro and Urbino. Additional generous support allowed the USSP to offer 18 student fellowships (i.e., eleven ECORD, three ACE, two ANDRILL; two IMAGES, Table 2). The collective support of these institutions is gratefully acknowledged. All institutional support and student tuition is used to fund travel and lodging for the USSP instructors, who freely donate their valuable time and effort to organize and produce the USSP program. Frugal budgeting to minimize student costs and maximize instructor support has led to a small standing deficit of ~6K euros (Table 4).

USSP 2009 Ongoing Planning – For our 2009 offering, we have received, and gratefully acknowledge the larger financial support from ECORD. The Netherlands DARWIN initiative, and IMAU – sponsors for three years - will not be able to continue their support for USSP 2009 and we are currently seeking additional financial sponsorship, notably from non-European IODP sources, to reduce tuition levels, increase student enrollment, and maintain our low instructor to student ratio.

obo USSP consortium: Henk Brinkhuis & Simone Galeotti, directors USSP

8.1.2 ECORD Summer School on Deep Subseafloor Biosphere, Bremen, September 2008

Aims

The major goal was to bring PhD students and young PostDocs in touch with IODP at an early stage of their career, inform them about the actual research within this international scientific program, and to prepare them for future participations in IODP expeditions. Such training will be achieved by taking the summer school participants on a "virtual ship" where they get familiarized with a wide spectrum of state-of-the-art analytical technologies and core description methods according to the high standards on IODP expeditions. Therefore the course was equally balanced, with half the time dedicated to lectures and discussions and the other half to laboratory exercises.

Location and Organisation

The ECORD Summer School on the Deep Subseafloor Biosphere 2008 was held from 1 – 12 September 2008 at the MARUM – Center for Marine Environmental Sciences, Bremen University, Germany. It has been organized by Prof. Dierk Hebbeln, Director of the Bremen International Graduate School for Marine Sciences „Global Change in the Marine Realm" (GLOMAR), by Prof. Dr. Kai-Uwe Hinrichs, head of the MARUM Organic Geochemistry Group, and by Dr. Ursula Röhl, head of the IODP Bremen Core Repository (BCR). GLOMAR, MARUM and BCR jointly offered the unique training possibilities used for this summer school by providing laboratory facilities and by providing a seminar room equipped with 20 laptops (internet access, MatLab etc.).

Programme

The two-week course combined lectures and interactive discussions on the deep subseafloor biosphere with practical exercises, with the latter mainly using the facilities of the BCR. The scientific lectures and exercises have been confined mostly to the first week, whereas the "virtual ship" related practicals took part during the second week. During the weekend in the middle of the summer school an excursion was offered.

In the first week the program (appendix 5) focused on lectures by and discussions with leading researchers on key topics related to, e.g., subsurface microbial life, bioenergetics, gas hydrates, new technologies, etc. These lectures were given by leading scientists from the field.

The weekend between the first and the second week gave the participants the possibility to explore the city of Bremen at the free Saturday. On Sunday an excursion to the German Wadden Sea (running application to become a UNESCO world heritage site) was offered.

The second week of the Summer School took advantage of the unique facilities of the Bremen IODP core repository and labs and aimed at introducing PhD students and young PostDocs to a full range of IODP related topics from general introduction to the program to compiling of IODP proposals and to get an insight into "shipboard" methodologies applied on the drilling vessels. The focus was on group-based practicals focusing on "deep biosphere" topics (such as cell enumeration, pore water extraction, and biogeochemistry) and on standard shipboard methodologies (such as core description, physical properties, etc.).

Within the summer school, the participants were given the opportunity to present their own projects in 15-minute talks. Mrs Laura Wehrmann, MPI Bremen and Mrs. Muriel Pacton, University of Geneva, received awards for best oral presentations.

Participants

A total of 28 PhD students and young post-docs from several European countries and the US participated in the ECORD Summer School.

Name	City	Country
Petrea Catalin Costel	Torino	Italy
Marcello Natalicchio	Torino	Italy
Beth N. Orcutt	Los Angeles	USA
Kristina Rathsack	Göttingen	Germany
Florian Scholz	Kiel	Germany
Britta Gribsholt	Aarhus	Denmark
Lies De Mol	Gent	Belgium
Patrick Meister	Bremen	Germany
Laura Wehrmann	Bremen	Germany
Sergio Contreras Quintana	Bremen	Germany
Julia Rosa de Rezende	Bremen	Germany
Nils Risgaard-Petersen	Aarhus	Denmark
Maria Pachiadaki	Crete	Greece
Hans Røy	Aarhus	Denmark
Karine Plee	Geneva	Switzerland
Aurèle VUILLEMIN	Geneva	Switzerland
Muril Pacton	Geneva	Switzerland
Susann Henkel	Bremerhaven	Germany
Xiaolei Liu	Bremen	Germany
Tobias Goldhammer	Bremen	Germany
Charlotte Ockert	Münster	Germany
Matthias Kellermann	Bremen	Germany
David Fischer	Bremerhaven	Germany
Giuliana Panieri	Bologna	Italy
Silvia Mecozzi	Modena	Italy
Rebecca Lundberg,	Zurich	Switzerland
Jörn Tonnius	Bremen	Germany
Nina Knab	Los Angeles	USA

Outcomes and Evaluation

Anonymous evaluation forms filled out by the participants revealed a very positive feedback. In particular the “virtual ship” experience was a highlight of the Summer School for many participants. Furthermore the statements show that the participants very much appreciated the lectures given by international experts. Nevertheless the participants gave hints for improvements as well, e.g. the length of the lectures could be shortened and the presentations by the school participants could rather be distributed over the entire two weeks instead of being given all in one day.

Outlook and ECORD Summer School 2009

The comprehensive approach of the ECORD Summer Schools on Paleoceanography in 2007 and on the Deep Subseafloor Biosphere in 2008 – combining scientific lectures with practicals on IODP-style “shipboard” measurements – were the first two of a proposed series of summer schools to be held once per year within the ECORD summer school program at the MARUM in Bremen. It is planned to address the three major topics of the IODP Initial Science Plan in a recurring three year cycle, thereby exploiting the unique facilities in Bremen where about 50 scientists work on the whole width of IODP-related topics. Following an “Earth History” topic in 2007 (ECORD Summer School on Paleoceanography) and a “Deep Biosphere” topic in 2008 (ECORD Summer School on the Deep Subseafloor Biosphere) ECORD has already agreed to provide funds for an “Solid Earth Cycles” topic in 2009: the ECORD Summer School on “Geodynamics of Mid-Ocean Ridges”. The probable time frame is early September 2009.

8.1.3 ESF Magellan Integrated Courses on Ocean Drilling Science

Teresa Hawthorne, the science co-ordinator for the Magellan Workshops informed J. McKenzie, that there have been no proposals submitted for the ESF Magellan Integrated Courses. Because of this, it is proposed to discuss with J. Erbacher, J. McKenzie and the ESSAC delegates, what should be done with this possibility.

8.2 Distinguished Lecturer Programme

Distinguished Lecturer Programme FY 07-08

B. Ildefonse sent an informative report about his experiences as an ECORD distinguished lecturer to the ESSAC Office. He quoted: “although a bit time consuming, it was an enjoyable experience. I found particularly exciting and interesting to have the opportunity to advertise IODP/ECORD in institutes where it is poorly known (e.g., Prague, Munich, Muenster), and where I received very positive feedback. The contact with the students, in particular, was excellent. I heard from Dan Evans (ESO) that a student from Munich contacted him 2 days after my talk there to ask about the possibility of getting 2-months internship. I feel that the DLP is a good way to increase the visibility of IODP in Europe, and potentially attract new participants. I hope that some of the discussions I had through my visits with colleagues who are not familiar with the program will encourage them to consider to participate in the future”.

The report of J. McKenzie can be found in the appendix 6. This text will be published in the next ECORD newsletter # 11.

Distinguished Lecturer Programme FY 08-09

A call to apply to host an ECORD Distinguished lecturer with a September 30th, 2008 deadline was issued on July 2nd, 2008. After approval by the future lecturers, the flyer has been widely distributed via mass mail to the community.

The ESSAC Office requested in the forefront the logos of the corresponding universities in order to better visualize the involved representation of these institutions and to support their undertakings to solicit the ECORD Distinguished Lecture Program. As an example, the Bremen University released a press release regarding A. Kopf’s nomination as an ECORD distinguished lecturer.

In total 34 applications from 14 countries were received by the ESSAC Office. An application from the US has not been taken into account. Compared to the DLP 2007/2008,

the number of applications remained constant. With exception of only 4 institutions and hosts, all other applications come from institutions, which had not applied in 2007.

Interesting to note, in 2008 Belgium and Denmark applied for the first time for inviting an ECORD lecturer; Ireland, Austria and Norway neither in 2007 nor in 2008.

The ESSAC Office received an application from Bulgaria.

For the first time an application derived from industry (compare appendix 7).

The ESSAC Office compiled and sent the applications received by countries and applicant's preferences, so that the lecturers already got a general idea of which countries should be visited. Instructions regarding inter alia the modality of how the lecturers could organize their lectures in concert with the other lecturers were given by the ESSAC Office. P. Clift and A. Kopf already started to coordinate their schedules.

8.3 ECORD Publications

8.3.1 ECORD Newsletter #11

The 11th issue of the ECORD Newsletter will be released by late October 2008 on time for the AGU meeting. Paper copies will be widely distributed to the ECORD community (ESO, ESSAC, ECORD Council and SAS delegates), IODP partners (IODP-MI, IOs and national offices). The electronic version is posted at: <http://www.ecord.org/pub/nl.html>

This 16-page issue presents updated information of the ECORD bodies from May to October 2008, assembled as follows:

- Message from the outgoing Council chair,
- The ESO part comprises some news about the upcoming MSP Expeditions and an article describing the management of the MSP Database.
- News from EMA,
- ECORD E&O activities present the IODP booths set up and managed by ECORD (EGU 2008 and 33rd IGC) and report on the ECORD 2008 Summer Schools,
- ESSAC Updates detail the activities of the scientific committee, the IODP drilling schedule and a report of EuroForum 2008,
- Workshops and conference reports include the Magellan Workshop Series, "Ocean Drilling for Seismic Hazard in European GeoSystems" and "Lithospheric Heterogeneities, Hydrothermal Regimes, and Links Between Abiotic and Biotic Processes at Slow Spreading Ridges", as well as the DLP Lectures given by J. McKenzie,
- ECORD-Net Updates details the ECORD Workshop "Drilling for the Future" held in Edinburgh on May 28-29,
- Highlights of proposal recently sent to the OTF "Latest Pleistocene Drowned Corallgal Banks and Mounds along the Edge of the S. Texas and Mississippi Continental Shelves (# 581),
- A new topic entitled "A point of View" starts here as a regular contribution with C. Mevel as the first author,
- Updated Tables, ESSAC and SAS delegates, all ECORD acientists who sailed in NanTroSEIZE Expeditions, information about the upcoming meetings and conferences and contacts/web links.

The next issue will be Newsletter #12 - April 2009 (to be distributed at EGU 2009 in Vienna) and will be set up during the next ESO-EMA-ESSAC meeting in Paris. The major deadlines are:

Call for contributions - to be issued on early February 2009,
Author's deadline – March 20th, 2009,
Date of release - mid April 2009.

8.4 Subcommittee report, discussion and future actions

The ESSAC E&O subcommittee met electronically to debate on topics resulting from the action items of the 10th ESSAC meeting in Stockholm and which are to be discussed at the upcoming 11th ESSAC meeting:

1. To set up the criteria to better evaluate applications for ECORD Scholarships (ESSAC Action Item 0805-12)
2. To set up the criteria and the format of the ECORD grants (ESSAC Consensus 0805-09 and ESSAC Action Item 0805-21).

Additionally topics have been added at the Chair's request:

3. To decide if 1 scholarship for an European non-ECORD student could be reserved
4. To decide if ESSAC is going to plan a Teachers' workshop at EGU 2010, if yes to identify a volunteer to organise the workshop and to define a budget

The text below summarizes the exchanges among the subcommittee members and will serve as a preliminary document for further discussions at the ESSAC #11 meeting.

ECORD Scholarships (1. and 3.)

Actual state

So far all delegates are supposed to rank and to judge the CVs of the young researchers as the CVs of the expedition applicants. Then the ranking is purely averaged and that seems to be accepted by the ESSAC delegates "as potential mistakes will get ironed out".

The ESSAC office modulates the result and takes into account the quotas, although not monitored rigidly.

At the last ESSAC meeting it has been decided that all ESSAC Delegates take part in the ranking of applications for ECORD Scholarships (ESSAC Consensus 0805-06).

Discussion

From the last ESSAC meeting it appeared that delegates found it difficult to judge the students from the CVs as their CVs "are the same" and most students have so far no scientific reputation (e.g publication list). Also it has been suggested that the ranking procedure should be kept simple ("needn't be too big a task for individual ESSAC members).

Currently applicants send 4 documents to the ESSAC Office: CVs, letter of interest, letter of support and if existing a publication list

The Irish office chooses national applicants to ECORD from the criteria described down-below and that are comparative with those applying by the ESSAC delegates.

1. Qualifying criterion – applicant should be a research student or final year undergraduate at a university or equivalent research institute in an ECORD country or potential ECORD country

Nearly applicable for all candidates

2. Scientific merit of the applicant, judged from CV

This was judged difficult by the ESSAC delegates

3. Is the scientific profile of the applicant likely to benefit from attendance at the summer school?

Judged from Statement of Interest

4. A letter of support from the research supervisor

Demonstrating the value of attendance to the student and his/her research

Potential questions for setting up the selection of scholarship criteria:

- Are the currently requested documents sufficient to evaluate the candidates?
- If not, then what additional documents should be requested? A disadvantage would be to increase the already heavy workload for the ESSAC delegates.
- Are some requested documents perhaps redundant? Should students send a publication list?
- Should the applicants better elaborate their letter of interests, so that the ESSAC delegates can better judge how the attendance of the school would add benefits to the students' careers? If yes, when which key issues should the applicant address?
- To what extent the ESSAC delegates give weight to the letter of recommendations (good written versus bad written letter of supports depending e.g. on the writing capacities or experience of the supervisors)?
- Should the ESSAC delegates give more weight to a candidate's application deriving from a known institution/supervisor?
- As the attendance of the ECORD summer schools are of importance to a young researcher's career, theoretically all applicants are selectable. ESSAC should therefore try to select those with the most potential to continue. How to identify this?
- Should national offices add an additional budget line for offering potential additional scholarships to unsuccessful national candidates (as for example Ireland and the UK do)?
- Should a relative scoring of established criteria be set up, and if yes, how?
- Should the national offices give recommendations regarding the national students, such as in the case of the expedition applications?
- How many (if any) can go to non-ECORD students?
- Should the proportion of scholarships to each summer school be established at the start, or just award to the overall best applicants?

ECORD Grants (2.)

At the last ESSAC meeting, there was a consensus that the creation of short-term ECORD grants should be granted to post-graduate (doctoral students) and not Master students.

- For the setting up of the criteria for selecting ECORD grant awardees, similar potential questions arise than those for the ECORD scholarships: How to select the appropriate candidates?
- Are there criteria to be added?
- How to choose the candidates by scientific merits or by scientific ideas? Or both? Or additional criteria?
- Should the letter of interest be extended to a mini proposal?

- If yes, what are the criteria?
- How should ESSAC monitor the outcome of the grants?
- Should ESSAC define controls to monitor the output of the grant?
- What exactly is the expected output of the grant?
- How to define the expected output?
- Are there existing models (other grants), which ESSAC could adopt, adjust, refine etc. for its own grant scheme, in order to save time and to adopt a tested best practice method?
- Etc, etc.

Teachers' workshop at EGU 2010 (4)

M. Wagreich, the Austrian ESSAC alternate proposed that he could act as one of the convenors, especially if EGU is still in Vienna.

- What are the ESSAC delegates general opinions of organising this event?
- Who is going to volunteer?
- What should the topics?
- Etc. etc.

9. ESSAC highlights on ESF Programs

European Collaboration for Implementation of marine Research on Cores: the EuroMARC programme

Scientific marine drilling and coring from the sub-seafloor is crucial to progress in the Earth and environmental sciences because the oceans regulate climate, cover the sites of fundamental geodynamic, geochemical and biological processes and preserve high-resolution records of the Earth history.

EuroMARC is an ESF-EUROCORES programme running for three years and aiming at supporting all coring activities in marine areas. EuroMARC aims at enhancing the benefit from already established funding groups and research communities like, for example, the International Marine Global Change Study (IMAGES) and the European Consortium for Ocean Research Drilling (ECORD), which is a contributing member of the Integrated Ocean Drilling Programme (IODP).

EuroMARC is an essential enabling tool to boost European leadership in the planning of international marine coring expeditions and the preparation of European proposals, hence ensuring the effective exploitation of research opportunities. Support of a properly resourced pre- and post-cruise science enabling programme will ensure that the nine participating countries (Belgium, Switzerland, Germany, France, Ireland, The Netherlands, Norway, Portugal and the United Kingdom) will obtain the maximum benefit from marine coring investment, meet their mission requirements to maintain world-class environmental science communities, conduct excellent, innovative and societal-relevant science and maintain international science leadership.

10. Workshops, communication and vision

10.1 Conference and workshop reports

10.1.1 Acquiring high to ultra-high resolution geological records of past climate change by scientific drilling

The report should be available during the meeting and distributed to all ESSAC delegates.

10.1.2 Ocean Drilling for Seismic Hazard in European Geosystems

The Magellan Workshop sponsored by the European Science Foundation and the Swedish research council entitled "Ocean drilling for seismic hazard in European geosystems" was recently held in Luleå, Sweden, 18-20 August, 2008.

Submarine seismic geohazards are some of the most devastating natural events in terms of lives lost and economic impact. Earthquakes pose a big threat to society and infrastructure because of their episodicity, while tsunamis are known for their potential of striking coastlines world-wide. However, the governing processes and recurrence intervals of geohazards are still poorly understood. The European scientific community has a strong focus on geohazards along European and nearby continental margins. For example, the Mediterranean is highly vulnerable with respect to submarine geohazards because of its densely-populated coastline that is the World's leading holiday destination with up to 30% of the global tourism, and its seafloor that is criss-crossed by hydrocarbon pipelines and telecommunication cables. Examples include, but are not limited to, earthquakes along the active tectonic margins of the Mediterranean and Sea of Marmara, landslides on active and passive margins, and tsunamites and seismites in the sedimentary record that suggest a long history of similar events.

The workshop objectives were to: (1) address scientific questions and goals on a European scale; (2) combine European expertise in research related to seismogenesis, and (3) coordinate and strengthen Europe's role within large-scale international projects (IODP, ICDP, etc.). A total of 19 dedicated scientists participated at the workshop, from nine European countries and USA (see section "workshop participants"). The expertise of the group spans over a wide scientific spectrum within geosciences. In addition, several of the participants have been (or are) leaders of scientific drilling expeditions, lead proponents of IODP and ICDP proposals, members of the IODP science advisory structure, and/or leaders of ongoing EU projects.

10.1.3 Lithospheric heterogeneities, hydrothermal regimes, and abiogenic and biogenic processes at slow spreading ridges

Recent discoveries of low-temperature hydrothermal vents specific to mantle exhumation areas and of abiogenic synthesis of hydrocarbons directly associated with these vents highlights the strong links between the structural and petrological heterogeneities of the lithosphere formed at slow spreading ridges and the development of conditions favourable to life in extreme environments.

A workshop was held in Montpellier (France) between 10th 12th September, 2008 that brought together specialists in marine geology and geochemistry, oceanography, biology and petrology; its aim was to develop an European-initiated, mission-specific platform (MSP) IODP drilling proposal to investigate geological, physical and chemical evolution of the accretion system at slow spreading ridges and the life it sustains. The workshop was supported by ESF (Magellan Workshop Series), UKIODP and InterRidge. A total of twenty-three participants from twelve research institutions from six European countries, together with four participants from the United States (three institutions) attended.

The workshop was introduced by a series of presentations that provided an updated view of tectono-magmatic processes in a volcanic slow spreading centres, the associated development of H₂ generating, serpentine-hosted hydrothermal fields and on related microbial communities, as well as an introduction to the most recent improvements in seabed

rock drills (BGS, MeBo ...). Discussions focussed on (i) the development of novel uses of MSP to explore ridges processes and options for design of a drilling experiment, and (ii) the major questions and rationale that drive interest in Scientific Ocean Drilling at slow spreading ridges today. Atlantis Massif (Mid-Atlantic Ridge, 30°N) was chosen as target area because (i) it samples a typical slow spreading ridge intrusive mantle lithosphere (mantle rocks intruded by gabbros), (ii) it hosts a H₂ generating hydrothermal system (Lost City Hydrothermal Vent), (iii) abundant geophysical and geological data were already obtained at this site (e.g., IODP Expeditions 304-305), and (iv) of its shallow topography. Substantial discussion was directed at defining the detailed objectives, and work plan, to submit a proposal using IODP MSP in April 2009 (coordinator: Gretchen Früh-Green) focused on the exploration/characterization of interactions between faulting, serpentinization, fluid flow and microbial activity in the shallow ultramafic seafloor.

10.2 Upcoming conferences and workshops

10.2.1 Arctic Ocean History: From Speculation to Reality

Despite the many successes achieved by scientific ocean drilling at lower latitudes, the tectonic and palaeoceanographic history of the Arctic Ocean is largely unknown. The answers to many crucial questions about Arctic Ocean history, however, can only be found with a drill bit. The first successful drilling leg, on Lomonosov Ridge during the summer of 2004, acquired unique arctic samples for much of the Cenozoic. The surprising results from IODP Expedition 302 (ACEX) will help frame new questions and direct future drilling. Answers to these questions will make it possible to write the post-Paleozoic history of the northern polar region, illuminating this ocean basin, the continents that ring it, and the global climate system.

Due to the obstacles imposed by circulating sea ice, Arctic Ocean drilling requires extensive planning and preparation. In order to recruit and engage the scientists necessary to develop a new set of IODP proposals for the Arctic Ocean, a workshop has been scheduled for 3rd-5th November, 2008 in Bremerhaven, Germany, at the Alfred Wegener Institute. About 100 people from Europe, Canada, US, Japan, Korea, and Russia have been invited. The workshop is funded by the ESF (ESF Magellan Workshop Series), the US Ocean Leadership, NAD, AOSB, and by industry sponsorships. Co-convenors of the workshop are Bernard Coakley (University of Alaska, Fairbanks/USA) and Ruediger Stein (AWI Bremerhaven/Germany). Scientific questions which will be addressed at the workshop, include:

- What was the pre-drift setting of the Chukchi Borderland?
- What is the composition of the Alpha-Mendeleev Ridge?
- What is the Mesozoic tectonic history of the Arctic Ocean?
- When did the gateways to the Arctic Ocean open and close?
- How did these gateways affect Arctic Ocean circulation?
- What is the role of the Arctic in the greenhouse to icehouse transition?
- What is the history of ice rafting in the Arctic Ocean?
- How has the influx of fresh water to the basin changed over time?
- How has continental glaciation influenced the Arctic Ocean?
- What is the history of exchange between the Arctic, Atlantic and Pacific Oceans?

The three-day meeting will begin with a day of talks on Arctic Ocean climate and tectonic history, including the latest results from ACEX, a review of drilling, and an overview of the Arctic site survey database. This will be followed by one day of small group discussions about opportunities for drilling in particular regions and a half-day of presentations on plans

generated by the small groups. We anticipate that the active participants in the small geographically-focused groups (eg., Chukchi Borderland, Alpha Ridge, Lomonosov Ridge, Barents Shelf etc.) will form the nucleus for the proponent groups for the proposals this meeting will bring into being.

10.2.2 Next Magellan workshops

In order to maximize the full potential of pan-European marine drilling science, by planning and execution of identified and promising research, the ESF Magellan Workshop Series Program was initiated by the European Consortium for Ocean Research Drilling (ECORD), the European partner of the Integrated Ocean Drilling Program (IODP). Its aims are to stimulate and nurture the process of developing new and innovative science proposals, to support European leadership in the planning of marine drilling expeditions, and execute European proposals for use of drilling platforms and hence ensure the effective exploitation of research opportunities.

The first funded 2009 Magellan Workshop will be « Cold-Water Carbonate Reservoir systems in Deep Environments-COCARDE » January 21st-25th in Fribourg, Switzerland. More Workshops will follow in 2009. <http://www.esf.org/activities/research-networking-programmes/life-earth-and-environmental-sciences-lesc/current-esf-research-networking-programmes-in-life-earth-and-environmental-sciences/workshops-on-marine-research-drilling-magellan-workshop-series/science-meetings.html>

10.3 Beyond 2013 - The Future of European Ocean Drilling Research

Following the ESSAC Consensus 0805-10 by which ESSAC recommended the organization of an EGU Session in April 2009 in Vienna, Austria, immediately followed by a workshop dealing with the future of the European scientific drilling, G. Camoin and R. Stein, co-convenors, prepared electronically that EGU Session and the related workshop.

The proposed interdivision session has been supported by all contacted EGU divisions, namely SSP, OS, TS, CL, BG and GMPV. The Steering Committee is the following:

- Wolfgang BACH (IODP) - Univ. of Bremen, Germany.
- Jan BEHRMANN (IODP) - IFM-GEOMAR, Kiel, Germany.
- Angelo CAMERLENGHI (IODP) - Univ. of Barcelona, Spain.
- Jochen ERBACHER (ESF Magellan) - Univ. of Hanover, Germany
- Ulrich HARMS (ICDP) - GFZ, Potsdam, Germany.
- Jeroen KENTER - Chevron-Texaco, USA.
- Heiko PAELIKE (IODP) - NOC, Southampton, UK.
- Ralph SCHNEIDER (IMAGES) - Univ. of Kiel, Germany.

The session announcement has been posted on the EGU (http://www.cosis.net/members/meetings/skeleton/view.php?p_id=381) and on the ESSAC webpage on September 18th, 2008. The description of the session appears as below:

The Integrated Ocean Drilling Program (IODP) is funded for the period 2003–2013, and is now starting to plan for ocean drilling beyond 2013.

A community-wide (USA, Europe, Japan, Asian and Oceanian countries), major conference – INVEST IODP New Ventures in Exploring Scientific Targets - addressing all international IODP partners is planned for 23rd–25th September 2009 in Bremen, Germany (More information at <http://www.iodp.org>) to discuss future directions of scientific ocean drilling.

The outcome of the conference will be a contribution to a science plan that will be drafted in 2010 to define new goals and strategies to effectively meet the challenges of future ocean drilling.

At its last meeting, ESSAC (ECORD Science Steering and Advisory Committee) discussed the opportunity to organize a Session of the EGU General Assembly 2009 in Vienna, Austria (April 2009), followed by a 1-2 days workshop specifically addressing the future of European scientific drilling research with the objective to sharpen the European interests in the future IODP and to prepare the INVEST Conference. The key items that should be addressed during the EGU Session and the workshop should especially include:

- (1) The future of ECORD (science, technology, management).
- (2) New research initiatives and emerging fields in scientific drilling
- (3) Relationships between IODP and other programs (e.g. ICDP, IMAGES etc).
- (4) Collaboration between academia and industry.
- (5) New technologies and the Mission Specific Platform approach.
- (6) And additional topics to be defined based on participants' propositions.

This EGU session and the related workshop are open to all scientists with an interest in scientific drilling and to representatives from industry.

The EGU Session should be organized on the morning of April 24th, 2009. The related workshop should be held at the Geocenter of the University of Vienna on April 24th afternoon and April 25th, 2009.

10.4 Subcommittee report, discussion and future actions

The « Workshops, Communication and Vision » ESSAC subcommittee met electronically to debate on the following topics to be discussed at the ESSAC #11 meeting:

1) Preparation of the EGU 09 session and Workshop "Beyond 2013: the future of the European scientific drilling" (ESSAC consensus 0805-10):

- a) Nominations of potential invited speakers;
- b) Suggestions of additional topics to be discussed at the workshop;
- c) Organization of a web forum to seek inputs from the European scientific community.

2) Evaluate the need for support (e.g. letter or other format) from large European institutions to the IODP renewal phase.

The text below summarizes the exchanges among the subcommittee members and will serve as a preliminary document for further discussions at the ESSAC #11 meeting.

1) Preparation of the EGU 09 session and Workshop "Beyond 2013 - the future of the European scientific drilling":

a) Nominations of potential invited speakers:

Some potential invited speakers have been nominated for the five key items of the EGU 09 session.

b) The future of ECORD (science, technology, management):

This is the overall theme of the EGU session and will be mostly discussed at length during the workshop following the EGU session. Because both meetings will be open to all scientists with an interest in scientific drilling, including young scientists and scientists who are not currently involved in IODP and ECORD, it appears that an overview about the

ongoing and future ECORD/IODP activities might be useful. An invited speaker needs to be identified.

c) New research initiatives and emerging fields in scientific drilling:

Among the new research initiatives and emerging fields in scientific drilling, the Arctic Ocean Drilling appears as a major challenge for the next decades. Governments of countries around the Arctic region already assert their claims in the region; they will have therefore to fund research in order to support these claims. The Arctic Ocean Drilling will be listed as a major topic of the INVEST 09 Conference. An invited speaker at the EGU Session should summarize the outcome of our Arctic Drilling Workshop that will be held in November 2008. The first nominations of potential invited speakers on that topic are: Ruediger Stein, Jan Backman and Martin Jakobsson.

High latitude research drilling (Arctic Ocean - Antarctica) will involve a limited part of the scientific community. What about the rest of the oceans? There is a need to list those important fields of geosciences that can only be reached by ocean research drilling. There are already tens of exciting proposals as well as tens of "overlapping proposals" in the system. One way to tackle those issues would be to critically re-organize what is already available before starting with new projects, or at least we should be fully aware of existing science that might be already innovative. In a number of cases, the expected new science relies on a new technological approach, which is absolutely necessary but cannot be more important than the science itself. We might still need to "EXPLORE" the oceans, to understand the fundamental processes in earth science (both surface and deep processes) and to develop a BASIC research. Some scientific challenges can be achieved only by ocean drilling, e.g. Geochronology (GPTS, ATS, radiometric dating), Life Evolution (deep and surface biosphere), Functioning of the Oceanic Ecosystem and Interactions with the Atmosphere, the Geosphere etc. In parallel, we could use the ocean as a « huge natural lab » for culture experiments, direct sampling of water parameters etc. A talk on IODP highlights and on open questions such as "What questions we could answer?" "What are the gaps, i.e. what are important overall goals of the ISP, which could not be reached and should be included in a post 2013 programme?" could be considered. The first nominations of potential invited speakers on those aspects are needed.

Among emerging fields, Geohazards and Geosystems Understanding are some of those important target areas and scientifically important fields as otherwise difficult to reach without a drilling program like IODP. The first nominations of potential invited speakers on the "emerging fields" topic are: Angelo Camerlenghi and Achim Kopf.

d) Relationships between IODP and other programs (e.g. ICDP, IMAGES etc):

A talk concerning "Joint IODP/ICDP initiatives - Past and Future" could be considered as there were/are some ICDP/IODP proposals in the system (e.g. New Jersey, Chicxulub, Ryukyu). Nominations of potential invited speakers on that topic are needed.

A talk concerning the relationships between IODP and IMAGES should be considered.

e) Collaboration between academia and industry:

Two aspects have been considered:

- EUREKA/EUROGIA development:

Long-term strategically significant industrial initiatives. Gabrielle Marquette has been nominated as potential invited speaker on that topic.

- Joint academia/industry research initiatives: key areas and key topics. Jeroen Kenter has been nominated as potential invited speaker on that topic. There is a clear need for support from large companies (Statoil, Shell etc.) to the IODP renewal phase.

f) New technologies and the Mission Specific Platform approach:

With further JOIDES Resolution delays, the Mission Specific Platform approach appears as the most viable part of IODP. All MSP drilling projects have been a success so far.

Two topics have been considered during the subcommittee electronic meeting:

- The Sea floor drill rig MeBO, which has the possibility to drill 10-100 m long cores into soft and hard rocks and to be used on "normal" research vessel in 0-2000 m water depth. This is a relatively cheap solution filling the gap between piston/gravity coring and expensive IODP-type deep drilling. This tool could be used for igneous petrology and numerous paleoceanography research themes. Tim Freudenthal has been nominated as a potential invited speaker on that topic.

- "Aurora Borealis", which could be an icebreaker with deep-water drilling capability. Nicole Bieblow and Jörn Thiede have been nominated as potential invited speakers on that topic.

2) Suggestions of additional topics to be discussed at the workshop:

a) The future of IODP:

A general discussion on the current and the future state of the program itself is clearly needed at the workshop following the EGU session. The program as it is presently structured is simply unaffordable. The US can only afford to operate the JR for 6-7 months a year; the Japanese can only operate Chikyu about 4-6 months/yr; and ECORD can only afford an MSP expedition about every other year. And this costs about \$ 225 M/yr in FY09!!! Even for \$ 225 M, there is not enough money to do expensive operations like CORKS or deep drilling. A fully operational program could cost close to \$ 500 M/yr.

US Scientists say that the cost of IODP is resulting in a budget imbalance - too much money going into operating the facility and too much going to support an important, but comparatively small segment of the ocean science community. We seriously need to rethink not only the scope but also the funding of the overall program. Pooling various resources is definitely needed if we are to extend IODP.

b) Young scientist training:

IODP-IODP has been crucial for shaping an excellent community of young scientists. In the post 2013 phase (but also in the 2009-2012 phase) we could strengthen this role in a more coordinated way. ECORD (at least as far as the European community is concerned) can play a pivotal role in that process. Several PhD students have been already shipboard scientists, but outside a coordinated effort. What about proposals submitted by PhD students?

c) Organization of a web forum to seek inputs from the European scientific community for the INVEST Conference: This web forum will give to all people interested in scientific drilling the possibility to be included in the discussion, especially if they can will imply the creation of a questionnaire (and the definition of the items) related to the IODP achievements and perspectives, the IODP and ECORD structures, the IODP problems, the relationships between academia and industry, the relationships between IODP and other drilling/coring programs etc.

Other inputs are needed. The technical aspects of this web forum must be determined.

2) Evaluate the need for support (e.g. letter or other format) from large European institutions to the IODP renewal phase. No input on that topic during the electronic meeting of the subcommittee (see 10.5)

10.5 Open discussion on the current state of the IODP

Under this item the ESSAC delegates will discuss the current state of the IODP and collect European views and ideas.

The UK delegate R. H. James made the suggestion to publish an European open letter regarding the importance of the strong support for the continuation of scientific ocean drilling beyond 2013 (see appendix 9).

Candidate	Candidate		Reminder to send required documents	ESSAC Office appl. confirmation date	Send to National Office/ESSAC delegate
Family name	Family name	First name			
Alvisi	Alvisi	Francesca		01.07.	01.07.
Monticelli	Monticelli	Damiano		18.08	18.08
Gischler	Gischler	Eberhard		02.07.	02.07.
Westphal	Westphal	Hildegard		31.07.	31.07.
Brachert	Brachert	Thomas		11.08.	11.08.
Kallmeyer	Kallmeyer	Jens		14.08	14.08
Felis	Felis	Thomas		14.08	14.08
Braga	Braga	Juan C.		08.07.	08.07.
Puga-Bernabeu	Puga-Bernabeu	Angel		11.08.	11.08.
Gonzalez-Mora	Gonzalez-Mora	Beatriz		18.08	18.08
John	John	Cédric		08.07.	08.07.
Thomas	Thomas	Alex		31.07.	31.07.
Andersen	Andersen	Morten		13.08.	13.08.: only IODP UK, James informed by A.
Tudhope	Tudhope	Sandy		14.08	IODP copy already in Tudhope's Mail, sent to Rachael
Hendy	Hendy	Erika		15.08	15.08
Dahlbeck	Dahlbeck	Paul		18.08	18.08
Camoin	Camoin	Gilbert		22.07.	22.07.
Gouze	Gouze	Philippe		11.08.	11.08.
Seard	Seard	Claire		15.08	15.08
Cabioch	Cabioch	Guy	15.08	18.08	18.08
Deschamps	Deschamps	Pierre		15.08	15.08
Spezzaferri	Spezzaferri	Silvia		28.07.	28.07.
Samankassou	Samankassou	Elias		11.08.	11.08.
Fox	Fox	Arron	12.08.	18.08	18.08
Sanders	Sanders	Diethard		12.08.	12.08.
Renema	Renema	Wilem		13.08.	copy to L. Lourens by applicant
Matos	Matos	Lelia			
Torbinsky	Torbinsky	Anton		11.08.	11.08.

**10th Meeting of the
Science Steering and Evaluation Panel
May 19-22, 2008
Busan, Republic of Korea**

Draft Minutes (v1.1)

1. Joint Session, Reports

1.1. Call to Order (SSEP co-chair Akira Ishiwatari)

SSEP co-chair Ishiwatari-san briefly reviewed the meeting agenda and described how the meeting would be organized.

1.2. Welcome and meeting logistics (host and SSEP member Dae Choul Kim)

1.3. Self-introduction of panel members, new ANZIC observer, liaisons, MSPHD students and guests.

1.4. Approval of present 10th SSEP meeting agenda

SSEP Consensus 0805-1: The SSEP approves the revised agenda of its tenth meeting on 19–22 May 2008 in Busan, Republic of Korea.

The agenda for the tenth meeting of SSEP is provided as **Attachment 1**.

1.5. Approval of last (9th) SSEP meeting minutes

SSEP Consensus 0805-2: The SSEP approves the minutes of its ninth meeting on 11–15 November 2007 in Arcachon, France.

1.6. SAS Panel Reports

1.6.1. SPC Report

SPC chair Jim Mori gave an update of the previous (March 2008) SPC meeting in Barcelona, and the January 2008 SASEC meeting.

A review was provided for 1) missions, 2) implementation plan, 3) preparation for renewal of IODP after 2013 including a large scale open planning conference in the style of COMPLEX in late 2009, 4) current scheduling, 5) current engineering issues in SAS, 6) Tier 1, tier 2 designation of proposals forwarded to OTF, 7) proposal ranking during the March SPC meeting, 8) progress of the Asian Monsoon DPG.

1.6.2. SSP Report (Site Survey Panel)

Gwang Lee (SSP liaison) reported on the outcome of the January 2008 SSP Meeting, held in Tokyo, Japan. Detailed site readiness information was provided for those proposals that the SSEP panel evaluated during the meeting. The detailed dispositions were:

Proposal:

- 605: site readiness classifications: 1Aa (9)
- 644 Mediterranean Outflow 1Ba
- 535 Atlantic Bank Deep 2Cc
- 551 Hess Deep Plutonic Crust 3A (4)
- 567-Full4: Paleogene: 2Ad (8), 3A (1)
errors in annotation, no data for one proposed site
- 601: 1Bb (10)
- with SPC:
 - 618: East Asia Margin 1Aa (4), ready to go

662: South Pac Microbiology 1Aa (11)
 724 Gulf of Aden (data of poor quality?)
 728APL (Papua), 3B(5)
 SSEP 672, 692, 697

1.6.3. EDP Report (Engineering Development Panel)

Hiroshi Asanuma (EDP liaison) reviewed the role of the EDP and updated the SSEP on EDP activities. Asanuma-san reported on the detailed IODP-MI database that collects and reports engineering and technological issues relating to current proposals, and provided further information on IODP-MI engineering development activities: 1. SCIMPI (simple cable instruments from measuring parameters in situ), 2. Sediment CORK (S-CORK), 3. MDHDS (motion decoupled hydraulic delivery system).

1.6.4. CDEX Report (Japan Implementing Organization)

Nobu Eguchi (CDEX) reviewed the operations and results from the recent NantroSEIZE Stage 1a activities (Expeditions 314, 315, 316). He provided an update on the current status of *Chikyu*, and reported that scheduled expeditions 318 & 319 would be postponed until early 2009 for technical and permitting reasons.

1.6.5. USIO Report (United States Implementing Organization)

Jay Miller (TAMU) reported on the *JOIDES Resolution* conversion status and accomplishments, and its impact on the non-riser expedition schedule, and expedition Planning. Miller reviewed the enhanced capabilities of laboratory and logging facilities on the *JOIDES Resolution*.

1.6.6. ESO Report (European Implementing Organization)

Sarah Davies (EPC/ESO) introduced herself as the new manager of the European Petrophysics Consortium (EPC), replacing Tim Brewer after his untimely death. She reported on the status of the next planned Mission Specific Platform expeditions. She stated that the New Jersey shallow shelf expedition would be postponed (to 2009) but that the Great Barrier Reef expedition has now obtained an operations permit for 2009. She noted that the first publications from the recent Tahiti expedition are now forthcoming.

1.7 IODP-MI Report

Barry Zelt (science coordinator with the IODP-MI, Sapporo office) reported on activities at IODP-MI, showing an updated SAS meeting schedule (EPSP 16-18 June 2008 in Hannover, SASEC 23-24 June in Beijing, China, SPC 25-28 August 2008 in Sapporo), proposal submission statistics (109 active proposals, excluding CDPs; proposals to review for this meeting = 14 + 2 with external review), possible SSEP recommendations, workshop update, SSEP rotations, and a new proposal submission system (undergoing testing). For the current SSEP meeting, he re-iterated that only 14 proposals were received, in addition to two proposals for which external reviews had been received (and with only four entirely new submissions). He presented new statistics on the number of unique proponents of currently active proposals (990 unique proponents). The current allocation of active proposals is 57 with SSEP, 22 with SPC, and 30 with OTF.

1.8 MS-PhD's Outreach Program

Charna Meth (USSSP) and Ithier-Guzman introduced this meetings' cohort of students participating in the SSEP meeting, and being mentored by U.S. SSEP members.

2. Reviewing process

2.1 Introduction

SSEP co-chair Akira Ishiwatari reviewed the SSEP terms of reference, and explained the conflict of interest (COI) rules that had been circulated prior to the meeting. The SSEP agreed to delete SSEP member Fumio Inagaki from the conflicted member list.

2.1 Breakout Sessions

A total of 16 proposals were reviewed during the meeting, including new external reviews available for two proposals. Panel members were divided into two breakout sessions for detailed discussions of the proposals: Breakout Session 1: *Solid Earth/Petrology* (chaired by A. Ishiwatari and B. John); Breakout Session 2: *Paleoclimate/oceanography, Faults/Fluids and Deep biosphere* (H. Pälike):

BREAKOUT Group 1 (Solid Earth, chairs Akira Ishiwatari and Barbara John)

Proposal	Short Title	Lead proponent	Watchdogs					
640-Full	Godzilla Mullion	Ohara	Zierenberg	Kimura	Berné	Yamaguchi	Tamura	
695-Full2	Izu-Bonin-Mariana Pre-Arc Crust	Arculus	Anma	Elliot	Christeson	Gutscher	Suzuki	Kimura
697-Full3	Izu-Bonin-Mariana Reararc Crust	Tamura	Elliott	Takazawa	Christeson	Fujiwara	Anma	Kim
710-Pre2	Gulf of Corinth Rift	McNeill	Kopf	Vrolijk	Yamaguchi	Zierenberg	Jaeger	Spinelli
729-Pre	Western Lord Howe Rise Extension	Lister	Gurnis	Aiello	Jaeger	Nishi	Schulte	
731-Pre	Papua New Guinea Orogenic Lifecycle	Goodliffe	Tamura	Gutscher	Takazawa	Gurnis	Nishi	
636-Full3	Louisville Seamounts	Koppers	Fujiwara	Wilson	Gurnis	Kim	Tamura	Kimura
698-Full2	Izu-Bonin-Mariana Arc Middle Crust	Tatsumi	Christeson	Anma	Fujiwara	Zierenberg	Elliott	Takazawa

BREAKOUT Group 2 (Paleoceanography, Fluids & Faults, Geomicrobio, chair Heiko Pälike)

Proposal	Short Title	Lead proponent	Watchdogs					
635-Full3	Hydrate Ridge Observatory	Torres	Takeuchi	Wilson	Eynaud	Rosenthal	Berné	Yamaguchi
645-Full2	North Atlantic Gateway	Jokat	Aiello	Brinkhuis	Li	Gutscher	Vrolijk	Inagaki
672-Full2	Baltic Sea Basin Paleoenvironment	Andren	Li	Eynaud	Suzuki	Kuroda	Takeuchi	Brinkhuis
705-Full2	Santa Barbara Basin Climate Change	Kennett	Vrolijk	Rosenthal	Hinrichs	Inagaki	Li	Takeuchi
715-Full	Mediterranean Landslides	Camerlenghi	Schulte	Kopf	Aiello	Jaeger	Kuroda	Spinelli
716-Full2	Hawaiian Drowned Reefs	Webster	Suzuki	Hinrichs	Torres	Eynaud	Wilson	Berné

730-Pre	Sabine Bank Sea Level	Taylor F.	Nishi	Hinrichs	Rosenthal	Kopf	Torres	
732-Full	Antarctic Peninsula Sediment Drifts	Channell	Brinkhuis	Kuroda	Torres	Inagaki	Schulte	Spinelli

The conflict of interest rules and confidentiality requirements were respected during the entire review procedure (breakout sessions, general sessions, and grouping). The table below lists the conflicted SSEP members, liaisons and guests who left the room during the review of the relevant proposals.

BREAKOUT Group 1 (Solid Earth, chairs Akira Ishiwatari and Barbara John)

Proposal	Short Title	Lead proponent	COI
640-Full	Godzilla Mullion	Ohara	
695-Full2	Izu-Bonin-Mariana Pre-Arc Crust	Arculus	Gurnis
697-Full3	Izu-Bonin-Mariana Reararc Crust	Tamura	Tamura, Kimura
710-Pre2	Gulf of Corinth Rift	McNeill	
729-Pre	Western Lord Howe Rise Extension	Lister	
731-Pre	Papua New Guinea Orogenic Lifecycle	Goodliffe	
636-Full3	Louisville Seamounts	Koppers	
698-Full2	Izu-Bonin-Mariana Arc Middle Crust	Tatsumi	Tamura, Kimura

BREAKOUT Group 2 (Paleoceanography, Fluids & Faults, Geomicrobio, chair Heiko Pälike)

Proposal	Short Title	Lead proponent	Conflicts
635-Full3	Hydrate Ridge Observatory	Torres	Torres
645-Full2	North Atlantic Gateway	Jokat	
672-Full2	Baltic Sea Basin Paleoenvironment	Andren	
705-Full2	Santa Barbara Basin Climate Change	Kennett	Schulte
715-Full	Mediterranean Landslides	Camerlenghi	
716-Full2	Hawaiian Drowned Reefs	Webster	
730-Pre	Sabine Bank Sea Level	Taylor F.	
732-Full	Antarctic Peninsula Sediment Drifts	Channell	Jaeger

3. Joint Session, Proposal Dispositions

The recommendations for each of the 16 proposals reviewed during the Busan meeting was achieved by consensus of the full panel. The summary dispositions were as follows:

Pre-Proposal: request Pre2 Proposal =	3
Pre2-Proposal: request Full Proposal =	1
Full Proposal: forward to SPC =	2 (Groupings: 4*: 1, 5*: 1)
APL: invite APL2 =	0
APL: forward to SPC =	0
Full Proposal: send for External Review =	4
Full Proposal: request revision =	6
Full Proposal: request new submission =	0

Pre Proposal: request new submission =	0
APL: request new submission =	0

The specific dispositions for each proposal were as follows:

Proposal	Short Title	Lead proponent	Country	Theme	SSEP disposition
635-Full3	Hydrate Ridge Observatory	Torres	USA	1	revise to Full4
640-Full	Godzilla Mullion	Ohara	Japan	3	revise to Full2
645-Full2	North Atlantic Gateway	Jokat	Germany	2	revise to Full3
672-Full2	Baltic Sea Basin Paleoenvironment	Andren	Sweden	2	revise to Full3
695-Full2	Izu-Bonin-Mariana Pre-Arc Crust	Arculus	Australia	3	send for ext review
697-Full3	Izu-Bonin-Mariana Reararc Crust	Tamura	Japan	3	send for ext review
705-Full2	Santa Barbara Basin Climate Change	Kennett	USA	2	send for ext review
710-Pre2	Gulf of Corinth Rift	McNeill	UK	3+2	revise to Full
715-Full	Mediterranean Landslides	Camerlenghi	Spain	1+3	revise to Full2
716-Full2	Hawaiian Drowned Reefs	Webster	Australia	2	send for ext review
729-Pre	Western Lord Howe Rise Extension	Lister	Australia	3	revise to Pre2
730-Pre	Sabine Bank Sea Level	Taylor F.	USA	2	revise to Pre2
731-Pre	Papua New Guinea Orogenic Lifecycle	Goodliffe	USA	3	revise to Pre2
732-Full	Antarctic Peninsula Sediment Drifts	Channell	USA	2	revise to Full2
636-Full3	Louisville Seamounts	Koppers	USA	3	SPC 5stars
698-Full2	Izu-Bonin-Mariana Arc Middle Crust	Tatsumi	Japan	3	SPC 4stars; review by EDP

Theme totals

1	2	Deep biosph. & subseaf.
2	6	Environment
3	8	Solid Earth

A qualitative grouping was assigned to those proposals forwarded to the SPC using the 5-star scale grouping. Grouping was obtained by consensus of the full panel, after evaluation against the individual grouping criteria.

4. SSEP Discussion Items

4.1. Input of SSEP into renewal process for IODP post 2013

IODP-MI Vice President (Science Planning) Hans-Christian Larsen updated the SSEP on recent deliberations of SASEC, which resulted in a proposed schedule for preparation of efforts towards IODP renewal after Phase II of IODP (post 2013). He noted that preparations should begin in 2009, and include, amongst others, a broad, bottoms-up, conference in the spirit of CONCORD and COMPLEX, late in 2009, probably in Bremen. The identification of new challenges and major scientific questions and themes would benefit from the knowledgeable input of the SSEP, and at this point the panel members were requested to prepare more detailed input in time for the next SSEP meeting (Nov. 2008). Larsen explained, that one form such input could take would be through white papers (e.g., what has been achieved, what still

should be achieved, and what new science is missing in the current Initial Science Plan, ISP).

4.2. Effective communication between SSEP and SPC

Science Planning Committee (SPC) Chair Jim Mori reviewed the process by which SPC undertook the most recent ranking of proposals during the March 2008 meeting in Barcelona, and explained that because a large number of proposals had been moved back to SPC from the Operations Task Force (OTF), SPC desired a discussion of how the input from the SSEP could be made more effective and efficient. It was noted that the SPC watchdogs repeat to a large extent the discussions that take place in the SSEP, and Mori requested suggestions by the SSEP as to how the process could be streamlined. It was noted that the SSEP had trialed a more detailed number of subheadings in their review form during the Potsdam meeting in May 2006, and the detailed criteria and evaluation subheadings were re-circulated to the SSEP members. In addition, the SSEP received the request by SPC chair Mori that for future March ranking meetings of SPC all three SSEP co-chairs will be present if at all possible. A lively discussion of the SSEP members ensued, with various proposals as to how the system could be changed in more fundamental ways, including a risk-reward matrix as is often used for national funding agency evaluations and modifications to the star grouping system. However, there were many views that it was of fundamental importance that the SSEP does not rank proposals against each other, and SPC chair Mori explained that SPC was not really interested in significant changes to the current system, but simply an effort to achieve more consistent review forms.

5. Presentations by MScPhD students

Andrea Balbas, Fabian Batista, Yaika Echevarría Román and Isaiah Corley presented their experiences and thoughts on the science review process. All expressed their gratitude to their SSEP mentors.

6. Next SSEP meetings

After considering a conflict of the previously suggested meeting in Portland, Oregon, during the week 17-20 November with a major Microbiology conference in Japan, Barbara John suggested an alternative date (10-13 November 2008) and location (Texas) for the next 11th SSEP meeting. The following 12th SSEP meeting in Europe is to be held in Utrecht, The Netherlands, co-hosted by new SSEP member Henk Brinkhuis.

7. Resolutions for outgoing SSEP members

Resolutions were presented thanking outgoing SSEP members for their years of dedication: Christeson, Eynaud, Fujiwara, Konnerup-Madsen and Wilson.

8. Conclusion

The co-chairs Akira Ishiwatari, Barbara John and Heiko Pälike thanked again the hosts Dae Choul Kim, Gil Young Kim and Young Joo Lee, as well as K-IODP, KIGAM and KIMST, for their excellent organization and arrangements, field trip coordination, and hospitality throughout the meeting. The co-chairs thanked all of

the panel members for their dedication and hard work. Watchdogs submitted drafts of all proposal reviews to the IODP-MI science coordinators (Hiroshi Kawamura and Barry Zelt) before the meeting ended.

The Urbino Summer School in Paleoclimatology, the European Consortium for Ocean Research Drilling and the Darwin Center for Biogeology present

PAST CLIMATE RECONSTRUCTION AND MODELLING TECHNIQUES



USSP
2008

an advanced course co-sponsored by the Institute for Marine & Atmospheric research Utrecht (IMAU) and the Netherlands Research School of Sedimentary Geology, in collaboration with IODP's School of Rock

University of Urbino
July 15-August 3, 2008

The 5th Summerschool of the USSP consortium will be focused on the evolution and dynamics of Cretaceous and Cenozoic climates. Experts will give lectures in the areas of stratigraphy, biogeochemical cycling, paleoceanography, climate models and integration of results. Interactive discussions of case-studies (e.g. black shale deposition and carbon cycling including Cretaceous Oceanic Anoxic Events, Paleocene-Eocene hyperthermals and the Eocene-Oligocene transition) in classes, practicals and in the field will provide participants with an advanced working knowledge on the paleobiological and geochemical proxy data and their use in the reconstruction and modelling of past climates.

For detailed information visit www.uniurb.it/ussp and www.darwincenter.nl

Deadline for early-registration

March 15th, 2008

Registration Fee (early registration)

Students: 600 Euros - Academic / industrial staff: 1000 Euros

USSP Instructor Pool

David Beerling University of Sheffield
Jelle Bijma Alfred Wegener Institute
Gabriel Bowen Purdue University
Hans Brumsack Oldenburg University
Ken Caldeira Carnegie Institution
Giuseppe Cortese Alfred Wegener Institute
Thomas Cronin USGS National Center
Robert DeConto University of Massachusetts
Timme Donders Utrecht University
Gerald Dickens Rice University
Elisabetta Erba University of Milan
Jochen Erbacher BRG Hannover
Martin Frank GEOMAR Kiel
Gerold Haug ETH Zurich
Jens Herrle University of Alberta

Matthew Huber Purdue University
Dennis Kent Rutgers University
Paul Koch UC Santa Cruz
Dick Kroon University of Edinburgh
Wolfram Kuerschner Utrecht University
Lee Kump Penn State University
Luca Lanci University of Urbino
Mark Leckie University of Massachusetts
Lucas Lourens Utrecht University
Mark Pagani Yale University
Heiko Pälike University of Southampton
Paul Pearson Cardiff University
Isabella Premoli-Silva University of Milan
Isabella Raffi University of Chieti
Gert-Jan Reichart Utrecht University
Ursula Röhl University of Bremen
Eelco Rohling University of Southampton

Francesca Sangiorgi Utrecht University
Appy Sluijs Utrecht University
Jan Smit Vrije Universiteit Amsterdam
Howard Spero UC Davis
Rudy Stein Alfred Wegener Institute
Catherine Stickley Norwegian Polar Institute
Debbie Thomas Texas A&M University
Ellen Thomas Yale University
Erik Tuernter IMAU Utrecht
Paul Valdes University of Bristol
Anna von der Heydt IMAU Utrecht
Tim White Penn State University
Scott Wing Smithsonian Inst. Washington DC
James Zachos UC Santa Cruz
Richard Zeebe University of Hawaii at Manoa
Patrizia Ziveri UAB Barcelona
Karin Zonneveld University of Bremen

Organization and coordination

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Roderik van de Wal
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Table 1a. *Members of the USSP Consortium. The Consortium was established in November 2005 to support and give continuity to the USSP programme.*

Member	Institution	Country
Henk Brinkhuis (Lead Organizer)	Utrecht University	Netherlands
Ken Caldeira	Stanford University	USA
Gerald Dickens	Rice University	USA
Simone Galeotti (Lead Organizer)	Urbino University	Italy
Matthew Huber	Purdue University	USA
Lee Kump	Penn State University	USA
Mark Leckie	University of Massachusetts	USA
Mark Pagani	Yale University	USA
Paul Pearson	University of Cardiff	UK
Isabella Premoli-Silva	Milano University	Italy
Isabella Raffi	Chieti University	Italy
Ursula Röhl	University of Bremen	Germany
Eelco Rohling	University of Southampton	UK
Stephen Schellenberg	San Diego State University	USA
James Zachos	University of California, Santa Cruz	USA

Table 1b. Members of the USSP teacher pool and their academic institution. USSP lecturers are recognized scholars in paleoclimatology, and related disciplines, and frequently contribute to the field through publications in peer-reviewed journals (e.g., *Science*, *Nature*, *Geology*, *Paleoceanography*, etc.). Nearly all teach university courses and mentor student research from the undergraduate and graduate level.

USSP Teachers		
David Beerling	University of Sheffield	UK
Jelle Bijma	Alfred Wegener Institute	Germany
Gabriel Bowen	Purdue University	USA
<i>Henk Brinkhuis (Lead Organizer)</i>	Utrecht University	The Netherlands
Hans Brumsack	Oldenburg University	Germany
Ken Caldeira	Stanford University	USA
Giuseppe Cortese	Alfred Wegener Institute	Germany
Thomas Cronin	USGS National Center	USA
Robert DeConto	University of Massachusetts	USA
Gerald Dickens	Rice University	USA
Jochen Erbacher	University of Hannover	Germany
<i>Simone Galeotti (Lead Organizer)</i>	Urbino University	Italy
Gerold Haug	ETH Zurich	Switzerland
Jens Herrle	University of Liverpool	UK
Matthew Huber	Purdue University	USA
Kirk Johnson	Denver Museum NH	USA
Paul Koch	University of California Santa Cruz	USA
Lee Kump	Penn State University	USA
Wolfram Kuerschner	Utrecht University	The Netherlands
Luca Lanci	Urbino University	Italy
Mark Leckie	University of Massachusetts	USA
Lucas Lourens	Utrecht University	The Netherlands
Dick Kroon	Edinburgh University	UK
Simonetta Monechi	Firenze University	Italy
Mark Pagani	Yale University	USA
Heiko Pälike	University of Southampton	UK
Paul Pearson	University of Cardiff	UK
Isabella Premoli-Silva	Milano University	Italy
Isabella Raffi	Chieti University	Italy
Gert-Jan Reichert	Utrecht University	The Netherlands
Ursula Röhl	University of Bremen	Germany

Eelco Rohling	University of Southampton	UK
Francesca Sangiorgi	Utrecht University	The Netherlands
Stephen Schellenberg	San Diego State University	USA
Appy Sluijs	Utrecht University	The Netherlands
Jan Smit	Vrije Universiteit Amsterdam	The Netherlands
Howard Spero	University of California Davis	USA
Mario Sprovieri	CNR-IAMC Napoli	Italy
Rudy Stein	Alfred Wegener Institute	Germany
Catherine Stickley	Norwegian Polar Institute	Norway
Ellen Thomas	Yale University	USA
Scott Wing	Smithsonian Inst. Washington DC	USA
Roderik van de Wal	IMAU Utrecht	The Netherlands
Johan Weijers	Bristol University	UK
Anna von der Heydt	IMAU Utrecht	The Netherlands
James Zachos	University of California, Santa Cruz	USA
Richard Zeebe	University of Hawaii at Manoa	USA
Patrizia Ziveri	UAB Barcelona	Spain
Karin Zonneveld	University of Bremen	Germany

Table 2. Participants to USSP2007 and their academic institutions. USSP received more than 80 applications this year and was able to accept 58 participants, several of them is receiving a scholarship from different institutions.

NAME	Nationality	Affiliation	Scholarship
Arellano Elsa	Spanish	University of Edinburgh	ECORD
Azizi Ghasem	Iranian	University of Tehran	
Bamberg Audrey	German	University of Bremen	ECORD
Batenburg Sietske	Dutch	Utrecht University	
Bennett Carys	British	University of Leicester	
Bijl Peter	Dutch	Utrecht University	
Bolton Annette	NZ	Victoria University of Wellington	ACE
Brennan Catherine	USA	University of Victoria, Canada	
Brown Rachel E.	USA	Univeristy of California Santa Cruz	
Dal Corso Jacopo	Italian	University of Padova	
de Boer Bas	Dutch	IMAU - Utrecht	
Dedert Mascha	Dutch	VU Amsterdam	
DiDioBalsamo Samuel	French	Nancy University	
Edgar Kirsty	British	NOC Southampton	ECORD
Euler Christine	German	University of Bergen	ACE
Garzarella Adele	Italian	University of Chieti	
Gennari Giordana	Italian	University of Fribourg	
Grunert Patrick	Austrian	University of Graz	
Hanslik Daniela	German	Stockholm University	
Heirman Katrien	Belgian	Ghent University	ACE
Heymann Christian	German	University of Hamburg	
Houben Sander	Dutch	Utrecht University	
Howe Heidi	Australian	Chevron USA	
Immonen Ninna	Finnish	University of Oulu	
Kahn Alicia	USA	Chevron USA	
Koenig Sebastian Jan	Swiss	University of Massachusetts Amherst	ANDRILL
Koss Howard	Swiss	The City University of NY	ANDRILL
Larsson Kristina	Swedish	Trinity College Dublin	ECORD
Le Houëdec Sandrine	French	Institut de Physique du Globe de Paris	ECORD
Leith Thomas Leslie	British	Statoil Hydro Research Centre	
Liebrand Diederik	Dutch	University of Barcelona	ECORD
Littler Kate	British	University College London	
Lopes dos Santos Raquel	Capeverdean	NIOZ, The Netherland	
Mander Luke	British	Unviersity College Dublin	
Meyer Inka	German	University of Bremen	

Paczek Urszula	Polish	University of Gdansk	
Pan Jenny	British	Oxford University	
Pea Lura	Italian	University of Parma	ECORD
Rackebbrandt Nick	German	University of Bremen	IMAGES
Rae James	British	University of Bristol	IMAGES
Reed Daniel	British	Utrecht University	
Robert Brice	French	Utrecht University	ECORD
Schlezac Illit	Israeli	Weizmann Institute of Science, Israel	
Schoon Petra	Dutch	NIOZ, The Netherland	
Seard Claire	French	CEREGE lab (Aix en Provence), France	ECORD
Shin Younglan	Korean	University of Toronto	
Spofforth David	British	NOC Southampton	
Stevenson Samantha	USA	University of Colorado	
Strong David	British	Bristol University	
Thibodeau Benoît	Canadian	Université du Québec at Montréal	ECORD
Toms Lee	British	University College Dublin	
Vallpu Henna	Finnish	University of Oulu	
Van Soelen Els	Dutch	Utrecht University	
VanDeVelde Justin	USA	Purdue University	
Warner Jared	USA	San Diego State University	
Warren Courtney	USA	Smithsonian Institution	
Wit Jos	Dutch	Utrecht University	ECORD
Wood Bill	British	National University of Ireland, Galway	

Table 3. Budget of the USSP 2008 (preliminary results)

5th USSP - Urbino July 15 - August 3, 2008 (costs; as per Sept 08)	
Cost for travel, lodging and food of USSP teachers	22,786 Euro + airfares
Administration (Utrecht, Urbino Universities)	2,400 Euro
Facilities (Lecture room, computer room etc..)	4,200 Euro
Excursion	1,350 Euro
Social Dinner	2,430 Euro
Lecture notes (hard copies and CDs)	2,580 Euro
Daily transportation to/from the campus	3,322 Euro
Lunches and Coffee breaks	12,207 Euro
Advertising, T-Shirt production	1,123 Euro
TOTAL (sept 08)	52,400 Euro

INCOME:

registration fees 28,920 euro

Province Pesaro and Urbino 3,000 euro

NSG Netherlands 10,500 euro

DARWIN centre Netherlands 10,000 euro

IMAU Netherlands 10,000 euro

ECORD 7,500 euro

Elsevier Publishers 250 euro

Subtotal 62,750 euro

Balance -6,150 euro

ECORD Summer School on “The Deep Subseafloor Biosphere” 2008

September 1 - 12, University of Bremen

Venue: University of Bremen, MARUM building, room 2070, www.marum.de

Monday September 1

- 09:00 – 09:15 **Welcome and opening of the Summer School**
D. Hebbeln, Univ. Bremen
- 09:15 – 10:30 **The deep subseafloor biosphere: history and overview**
S. D'Hondt, Univ. Rhode Island
- 10:30 – 11:00 Coffee break
- 11:00 – 12:30 **Subsurface sediments as habitat for microbial life,**
B. Jørgensen, MPI Bremen
- 12:30 – 13:30 Lunch
- 13:30 – 17:00 **Microbial life in crustal rocks & the subseafloor ocean**
K. Edwards, Univ. Southern California, W. Bach, Univ. Bremen
- 15:00 – 15:30 Coffee break
- 17:30 **Ice breaker party with buffet**
(MARUM building, area next to room 2070)

Tuesday September 2

- 09:00 – 10:30 **Dark energy: Bioenergetics of chemolithoautotrophy in subsurface habitats**
W. Bach, Univ. Bremen
- 10:30 – 11:00 Coffee break
- 11:00 – 12:30 **Radioactivity-driven life**
S. D'Hondt, Univ. Rhode Island
- 12:30 – 13:30 Lunch
- 13:30 – 15:00 **The subsurface carbon cycle**
T. Ferdelman, MPI Bremen
- 15:00 – 15:30 Coffee break
- 15:30 – 17:00 **Gas Hydrates: a dynamic carbon pool connecting subsurface and surface**
G. Bohrmann, Univ. Bremen

Wednesday September 3

- 09:00 – 10:30 **Quantifying gas hydrate and subsurface methane production**
V. Heuer, Univ. Bremen
- 10:30 – 11:00 Coffee break
- 11:00 – 12:30 **Subsurface microbiology in sedimentary environments, introduction**

J. Parkes, Univ. Cardiff

12:30 – 13:30

Lunch

13:30 – 15:00

Cell-enumeration techniques and quantities of microbial biomass I

B. Engelen, Univ. Oldenburg, F. Inagaki, JAMSTEC, Kochi, J. Parkes, Univ. Cardiff, A. Schippers, BGR Hannover

15:00 – 15:30

Coffee break

15:50 – 17:00

Current and future IODP subsurface biosphere expeditions: NanTroSeize & North Pond & South Pacific Gyre

K. Edwards, Univ. Southern California, S. D'Hondt, Univ. Rhode Island, F. Inagaki, JAMSTEC, Kochi

Thursday September 4

09:00 – 10:30

Cell-enumeration techniques and quantities of microbial biomass II

B. Engelen, Univ. Oldenburg, F. Inagaki, JAMSTEC, Kochi, J. Parkes, Univ. Cardiff, A. Schippers, BGR Hannover

10:30 – 11:00

Coffee break

11:00 – 12:30

Who is there? Gene-based culture-independent techniques

A. Teske, Chapel Hill (lead), et al.

12:30 – 13:30

Lunch

13:30 – 15:00

Who is there? "New" molecular techniques: lipids and metagenomics

K.-U. Hinrichs, J. Lipp, Univ. Bremen, A. Teske, Chapel Hill

15:00 – 15:30

Coffee break

15:30 – 17:00

Archaeal and bacterial diversity in subsurface sediments

J. Parkes, Univ. Cardiff, A. Teske, Chapel Hill

Friday September 5

09:00 – 10:30

Cultivation of subsurface microorganisms

H. Cypionka, Univ. Oldenburg

10:30 – 11:00

Coffee break

11:00 – 12:30

Closing discussion: identifying research problems, future targets and drilling strategies for IODP deep biosphere studies

All available lecturers.

12:30 – 13:30

Lunch

13:30 – 17:00

Presentations of own PhD/postdoc projects by Summer School participants

moderation by D. Hebbeln, Univ. Bremen

15:00 – 15:30 Coffee break

Saturday September 6

Free time to explore Bremen

Sunday September 7

Field Trip to the German Wadden Sea

S. Kasten & M. Schlüter, AWI Bremerhaven

Monday September 8

all day **Presentations of own PhD/postdoc projects by Summer School participants**

moderation by D. Hebbeln, Univ. Bremen

Tuesday September 9

Introduction to IODP

09:00 – 10:30 **IODP and ECORD: Structure and objectives and an introduction to "the virtual ship experience"**

J. Erbacher, BGR Hannover, U. Röhl, Univ. Bremen

10:30 – 11:00 Coffee break

11:00 – 12:00 **IODP Core Curation**

W. Hale, Univ. Bremen

12:00 – 13:00 Lunch

Practical – Core Description, Cell counting and initial interstitial water chemistry

13:00 – 13:45 **Introduction to core description and colour scanning**

F. Lamy, AWI Bremerhaven, M. Mohtadi, Univ. Bremen

13:45 – 14:30 **Shipboard techniques for counting cells**

B. Engelen, Univ. Oldenburg

14:30 – 15:15 **Initial interstitial water chemistry**

M. Kölling, Univ. Bremen

15:15 – 15:45 Coffee break

15:45 – 17:30 **Practical**

(three groups of 10 students)

Group I: Core description and color scanning (*F. Lamy, M. Mohtadi*)

Group II: Cell counting (*B. Engelen*)

Group III: Initial interstitial water chemistry (*M. Kölling*)

Wednesday September 10

09:00 – 10:45	Practical continued – exchange of groups
10:45 – 11:15	Coffee break
11:15 – 13:00	Practical continued – exchange of groups
13:00 – 14:00	Lunch

Practical – Core logging and core splicing

14:00 – 14:45	Introduction to core logging: Physical properties of sediments <i>H. Kuhlmann, Univ. Bremen</i>
14:45 – 15:45	Downhole Logging Integration <i>S. Davies, Leicester</i>
15:45 – 16:15	Coffee break
16:15 – 17:00	Biogeochemistry <i>T. Ferdelman, MPI Bremen</i>

Thursday September 11

09:00 – 09:45	Core splicing – linking different holes of an individual site towards a composite record: Some basics <i>T. Westerhold, Univ. Bremen</i>
09:45 – 10:15	Coffee break
10:15 – 12:15	Practical (three groups of 10 students) Group I: MultiSensor Core Logging (<i>H. Kuhlmann,</i>) Group II: Biogeochemistry (<i>T. Ferdelman</i>) Group III: Core splicing and time-series analysis (<i>T. Westerhold</i>)
12:15 – 13:15	Lunch
13:15 – 15:15	Practical continued – exchange of groups
15:15 – 15:45	Coffee break
15:45 – 17:45	Practical continued – exchange of groups
18:00	Barbeque

Friday September 12

09:00 – 10:30	Exercise: Writing of an IODP proposal <i>J. Erbacher, BGR Hannover, U. Röhl, Univ. Bremen</i>
10:30 – 11:00	Coffee break
11:00 – 12:30	Exercise: Writing of a proposal (continued)
12:30 – 13:00	Awards for best oral presentations and farewell <i>D. Hebbeln, Univ. Bremen</i>

Travels of an ECORD Distinguished Lecturer 2007/2008

Judith A. McKenzie, Geological Institute, ETH Zürich, Switzerland

When I agreed to become one of the three lectures in the first ECORD Distinguished Lecturer Program (DLP), offering a lecture entitled "Exploring the Deep Biosphere beneath the Seafloor with Scientific Ocean Drilling", I was very curious to learn who would request my lecture and to which European locations this journey would take me. Informed of the requests arriving at the ESSAC Office, I was very pleased at the interest for my proposed lecture and began planning my lecture tour. With 14 invitations from 8 different countries from which to choose, the logistics of planning such a lecture tour required much juggling of dates within the 2007/2008 timeframe, particularly as each location had a specific timetable in which to accommodate individual seminar schedules or a certain meeting date. However, with a bit of organization, it was my great pleasure to be able to schedule 7 DLP lecture dates in a variety of venues, as reported below.

The first stop on my DLP lecture tour was in Granada, Spain, where I spoke to a keenly interested audience from the Faculty of Earth Sciences on 18 October 2008. The seminar room was packed and the questions following my talk were many. Such lively discussions on the deep biosphere and IODP were to be a common thread throughout my lecture tour. Of course, Spanish tapas and wine promoted continued discussions throughout the following 9th ESSAC meeting and a field trip to the beautiful Las Alpujarras Mountains. My next DLP lecture was delivered to an even larger audience as a keynote in the plenary session of the 9th Netherlands Earth Science Congress (NAC 9) held on 18 & 19 March 2008 in a converted nunnery, the Koningshof in Veldhoven. The two-day meeting in this secluded pastoral setting offered numerous opportunities to converse with Dutch colleagues and many young students in a congenial atmosphere sharing meals in a common dining room. Inspired by these positive experiences, I gave my third DLP lecture to the Croatian Geological Society in Zagreb on 24 April 2008. As Croatia is not a member of ECORD, this lecture also provided an opportunity to present the ECORD/IODP to a new audience. As a special "deep biosphere" attraction, my hosts guided me on a one-day tour of the Plitvice Lakes National Park, where microorganisms are actively at work creating tufa/travertine barriers over which waterfalls cascade to interconnect a string of turquoise blue lakes in a magnificent karst landscape (Fig. 1).

The occasion of the 10th ESSAC meeting in Stockholm, Sweden provided me with the possibility to combine two trips and present my 4th DLP lecture to members of the

Department of Geology and Geochemistry at the University of Stockholm on 14 May 2008. Afterwards, a fine selection of wines and cheeses was offered for tasting in order to stimulate conversation among the attendees and continue an interesting discussion of the deep biosphere. Later in May on the 28th, my 5th DLP lecture was scheduled as part of a special program on IODP held in the beautiful old library of the Academia das Ciências de Lisboa, a truly impressive setting for any gathering of Earth scientists. This special Portugal/IODP event attracted a large enthusiastic audience, including a busload of students from the University of Aveiro who had traveled to Lisbon to learn more about the scientific plan behind IODP. Finally, the last two DLP lectures that I was able to schedule allowed me to make a min-tour of France. Traveling by train, I visited the University Joseph Fourier in Grenoble on 3rd of June and CRPG-CNRS in Nancy on 9th of June. These 6th and 7th DLP lectures were both presented within the seminar programs of the respective institutes and offered the opportunity to discuss the deep biosphere and IODP, as well as partaking of the famous French cuisine.

In summary, my ECORD DLP lecture tour 2007/2008 was most enjoyable and full of wonderful cultural variety. Stimulating scientific discussions were encountered at each stop along the way. In fact, I feel that the experience was so worthwhile that I hope to accommodate a few more of the unfulfilled invitations outside of the official tour. Finally, I warmly thank all of my hosts for their kind hospitality and for introducing me to their scientific and social environments.



Fig. 1: Waterfalls cascading over tufa/travertine barriers build by carbonate precipitating microorganisms in Plitvice Lakes National Park, Croatia. Photograph courtesy of Davor Pavelic.

Contact persons		Achim Kopf 1st choice	Peter Clift 1st choice	R. John Parkes 1st choice	Achim Kopf 2nd choice	Peter Clift 2nd choice	R. John Parkes 2nd	Achim Kopf 3rd choice	Peter Clift 3rd choice	R. John Parkes 3rd choice	No special choice
Fatima Abrantes	P		OK	OK	OK						
CEREGE via ESSAC Office	F	OK	OK								
Benoît Ildefonse	F	OK	OK								
Dr. Stephane Guillot	F		OK			OK			OK		
Mai Linh Doan	F	OK									
Nabil SULTAN	F	OK									
Pete Burnard	F	OK				OK					
Martin Meschede	G	OK				OK					
Lothar Viereck-Goette	G			OK							
Heribert Cypionka	G			OK		OK		OK			
Heinrich Villinger	G		OK								
Stefano Poli	I		OK		OK					OK	
paola vannucchi	I		OK		OK						
Dr. Britta Gribsholt	DK			OK							
Dr. Anneleen Foubert	BELG			OK	OK				OK		
Prof. Eric Verrecchia	CH			OK		OK			OK		
Juha Karhu	FINN			OK	OK				OK		
Dr. Lyubomir Dimitrov	BULG			OK							
Dr. Mark Moore	UK			OK	OK				OK		
Dr. Louise Anderson	UK			OK	OK				OK		
Geoff Adderley	UK			OK		OK					
Dr. Claire Mahaffey	UK		OK	OK		OK					
Antony Morris	UK		OK	OK		OK		OK			
Dr. Erin McClymont	UK		OK				OK				
Neil Mitchell	UK	OK	OK								
Peter Clift	UK	OK									
Roger Searle	UK	OK					OK		OK		
Sandy Sheperd	CAN										OK
Graham D Layne	CAN		OK		OK					OK	
Ed Davies	CAN	OK									NEW
Wiebke Athmer	NL		OK								
Martin Wilpshaar	NL Industry	OK									
Maria Ask	SWE	OK									
Not financed by ECORD											
Donna Blackman	US	OK				OK					

Workshop Report to ESSAC, October 14, 2008 by Maria Ask, Achim Kopf and Angelo Camerlenghi

Workshop on Marine Research Drilling (MAGELLAN WORKSHOP SERIES)

Ocean Drilling for Seismic Hazard in European Geosystems

CONVENERS:

Maria Ask, Luleå University of Technology, Luleå, Sweden (Maria.Ask@ltu.se)

Achim Kopf, RCOM, Bremen University, Germany (akopf@uni-bremen.de)

SCIENTIFIC COMMITTEE:

Maria-Ana Baptista, CGUL, Lisbon University, Portugal

Pierre Henry, Aix-en-Provence, France

Shaoli Yang, NGI, Norway

Andreas Rietbrock, Liverpool University, UK



Photo of participants of the ESF and VR supported workshop "*Ocean Drilling for Seismic Hazard in European Geosystems*", held August 18-20, 2008, Luleå University of Technology, Luleå. Sweden.

Main sponsor of the workshop



Life, Earth and Environmental Sciences (LESC)

Co-sponsor of the workshop



SUMMARY

Submarine seismic geohazards are some of the most devastating natural events in terms of lives lost and economic impact. Earthquakes pose a big threat to society and infrastructure because of their episodicity, while tsunamis are known for their potential of striking coastlines world-wide. However, the governing processes and recurrence intervals of geohazards are still poorly understood. The European scientific community has a strong focus on geohazards along European and nearby continental margins. For example, the Mediterranean is highly vulnerable with respect to submarine geohazards because of its densely-populated coastline that is the World's leading holiday destination with up to 30% of the global tourism, and its seafloor that is criss-crossed by hydrocarbon pipelines and telecommunication cables. Examples include, but are not limited to, earthquakes along the active tectonic margins of the Mediterranean and Sea of Marmara, landslides on active and passive margins, and tsunamites and seismites in the sedimentary record that suggest a long history of similar events.

The Magellan Workshop sponsored by the European Science Foundation and the Swedish research council entitled "*Ocean drilling for seismic hazard in European geosystems*" was recently held in Luleå, Sweden, 18-20 August, 2008. The workshop objectives were to: (1) address scientific questions and goals on a European scale; (2) combine European expertise in research related to seismogenesis, and (3) coordinate and strengthen Europe's role within large-scale international projects (IODP, ICDP, etc.). A total of 19 dedicated scientists participated at the workshop, from nine European countries and USA (see section "*workshop participants*"). The expertise of the group spans over a wide scientific spectrum within geosciences. In addition, several of the participants have been (or are) leaders of scientific drilling expeditions, lead proponents of IODP and ICDP proposals, members of the IODP science advisory structure, and/or leaders of ongoing EU projects.

About half of the meeting was devoted to presentations about the Integrated Ocean Drilling Program (IODP) and International Continental Scientific Drilling Program (ICDP) structure, active and future drilling proposals related to the topic of the workshop, technology (stress measurements, observatories, ship status, new site survey sources), funding, as well as various aspects of seismic hazard (landslide triggers and slope response, earthquake modeling, and tsunamis). The second half of the meeting was devoted to discussions in the entire group as well as in break-out working groups. The first group focused on existing and new drilling- and engineering development proposals. Much of the discussion regarded proposals for which Mission Specific Platforms (MSPs) could be used. The second group concentrated on discussing proactive activities to increase the recognition of ocean drilling for geohazards within individual member countries, EU and IODP.

The deliverables of the workshop, stated in the application, are already fulfilled: (1) a summary article to the ECORD newsletter (October 15, 2008); and (2) a new proposal "*Ancillary Project Letter: Nankai Trough Submarine LandSLIDE history (NanTroSLIDE)*" to IODP (October 1, 2008) by Michael Strasser (lead proponent) and Angelo Camerlenghi among other co-proponents.

Additional post-workshop activities include submission of an abstract to the AGU fall meeting in San Francisco in December 2008 by the group of workshop participants [Ask *et al.*, 2008], and two presentations on geohazards and scientific drilling, given as a follow-up of the workshop, at the 2nd EURO-MEDITERRANEAN Symposium by Angelo Camerlenghi, and for Statoil executives by Maarten Venneste. We are planning talks on geohazards at the ESONET General Assembly in October 2008 by Maria Ask, EGU General Assembly in April 2009, and IODP INVEST meeting in Bremen in September 2009. Further progress regarding proposals include (1) several existing IODP proposals are planned to be resubmitted on April 1, 2009 (685-full [Pierre Henry *et al.*] and one complex drilling proposal, CDP, 715-full [Angelo Camerlenghi *et al.*]) and October 1, 2009 (710-pre2 [Lisa McNeill *et al.*] that will be adapted for MSP drilling, and 704-full2 by [Chris Goldfinger *et al.*]); (2) one engineering drilling proposal will be submitted to IODP on March 15, 2009, for development of in situ stress measurements by Francois Cornet, Pierre Henry, and Achim Kopf; and (3) one pre-proposal on riser or riser-less drilling is planned to be submitted during year 2009, by Jean-Yves Collot. Another result of the workshop is the contention that ocean scientific drilling of geohazards needs more attention in the EU framework programs. The two workshop organizers try to respond to this shortcoming by leading a proposal for a coordination action on subseafloor sampling (formerly Deep-Sea Frontier Initiative; Achim Kopf) and for submission of a Marie Curie RTN (initial training network; Maria Ask) proposal in early 2009. The workshop also recognizes the need for industry cooperations, and a small group lead by Maarten Venneste, was formed.

FINAL PROGRAM OF THE WORKSHOP

DAY/TIME	TITLE	SPEAKER
<u>Monday, 18 August</u>		
9.00 – 10.00	Opening and welcome Introduction to workshop goals and ocean drilling	Maria ASK (SE), Achim KOPF (DE)
10.00 – 10.30	Coffee (Centrumrestaurangen Amica)	
10.30 – 11.15	Report from IODP International Workshop on Geohazards	Julia MORGAN (USA)
11.15 – 12.00	Scientific Drilling Programs and their proposals IODP and ICDP Drilling Proposals and Statistics IODP Engineering development proposals	Achim KOPF (DE) Maria ASK (SE)
12.00 – 13.00	Lunch (Wibergsgården)	
13.00 – 14.00	Funding EU – Project funding, Collaborations and links to ongoing European activities	Angelo CAMERLENGHI (SP)
14.00 – 15.00	Technology EMSO: European Multidisciplinary Seafloor Observation In Situ Stress Measurements and Regional Stress Field Determination	Miguel MIRANDA (PT) François CORNET (FR)
15.00 – 15.30	Coffee (Centrumrestaurangen Amica)	
15.30 – 17.00	IODP and other European drilling proposals on seismic hazard Ligurian Sea Cold seeps associated with the North Anatolian Fault zone in the Sea of Marmara Gulf of Corinth, Greece: Geohazards and Drilling Potential New results and challenges for the Corinth Rift Laboratory	Pierre HENRY (FR) Pierre HENRY (FR) Lisa MCNEILL (UK) François CORNET (FR)
17.00 – 17.15	Coffee (Hoppe-salen)	
17.15 – 18.00	<i>Continue</i> IODP and other European drilling proposals on seismic hazard Eastern Mediterranean Sea: Drilling proposal 555-full3 International Continental Scientific Drilling Program and proposals on seismic hazard	Achim KOPF (DE) Achim KOPF (DE)
18.00 – 18.15	Status of drillships and tools	Maria ASK (SE)

18.15 – 18.45	NantroSEIZE: Nankai Trough Seismogenic Zone Experiment	Achim KOPF (DE)
18.45 – 19.00	Wrap-up of day 1	Achim KOPF (DE)
<u>Tuesday, 19 August</u>		
8.30 – 10.00	Seismic hazard: Geotechnical stuff, modelling and mitigation	
	Particle Dynamics Models of Faulting and Structural Evolution: Applications to Geohazards	Julia MORGAN (USA)
	Earthquake modeling	
	Earthquake response of submarine slopes	Amir KAYNIA (NO)
	Tsunami hazards in the North East Atlantic (NEA) region	Maria Ana BAPTISTA (PT)
10.00 – 10.30	Coffee (Centrumrestaurangen Amica)	
10.30 – 11.00	Seismic hazard: Geotechnical stuff, modelling and mitigation	
	Submarine landslides, earthquakes, and the Mediterranean case	Angelo CAMERLENGHI (SP)
	Seabed Mapping with surface and shear Waves for Geohazards	Maarten VANNESTE (NO)
11.00 – 12.00	Open session on future IODP drilling projects on seismic hazard/related geohazards	
	EQ-triggered subaquatic landslides, paleoseismology and seismic hazard in the Swiss Alps	Michi STRASSER (DE)
	Paleoseismology of South-Central Chile	Marc De Batist (BE)
	MSP proposal Nice airport	Nabil SULTAN (FR)
12.00 – 13.00	Lunch (Wibergsgården)	
13.00 – 14.00	<i>Continue</i> Open session on future IODP drilling projects on seismic hazard/related geohazards	
	The Ecuador Margin: a potential IODP target (linked to the Seize initiative)	Jean-Yves COLLOT (FR)
	Sumatra Sunda subduction zone - Future drilling and related activities	Lisa MCNEILL (UK)
	Cenozoic mud volcano activity along the Indus Fan – offshore Pakistan	Gerome (CALVES)
14.00 – 15.00	Plenary discussion of European role in IODP and potential drilling targets Set up of the two working groups on Proposals (existing and new ones) and Proactive working group on increasing the recognition of geohazards	
15.00 – 15.30	Coffee (Centrumrestaurangen Amica)	
15.30 – 17.00	Discussion in the two working groups on the development of active and planned drilling proposals (and engineering development proposals)	

17.00 – 17.15	Coffee (Hoppe-salen)	
17.15 – 17.45	Continuation of discussion in working groups on the development of active and planned drilling proposals (and engineering development proposals)	
17.45 – 18.30	Report from working groups on the development of active and planned drilling proposals (and engineering development proposals), and plenary discussion	
18.30 – 18.45	Wrap-up of day 2	Achim KOPF (DE)
18.45	Bus departs to Gammelstad (Location D in MAP 3)	
19.00 –	Tour in Church Village of Gammelstad, UNESCO World Heritage	
19.30 –	Social dinner at Margaretas Vårdshus, Gammelstad	
22.30 –	Bus departs to hotel	
<u>Wednesday 20 August</u>		
9.00 – 10.00	Working group reports, plenary discussion	
10.00 – 10.30	Coffee (Centrumrestaurangen Amica)	
10.30 – 12.30	Discussion and writing of pre-proposal drafts in working groups or sub-groups	
12.30 – 13.30	Lunch (Wibergsgården)	
13.30 – 14.45	Discussion of upcoming SEIZE Portland workshop (Nov. 2008) and IODP Bremen meeting (Sept. 2009) and future activities/milestones Geohazards Scope Final plenary discussion.	
14.45 – 15.00	Wrap-up of day 3 and workshop	Achim KOPF (DE), Maria Ask (SE)
15.00	End of workshop Coffee (Centrumrestaurangen Amica)	

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OPEN LETTER TO THE COMMUNITY FROM SCIENTISTS AT WOODS HOLE OCEANOGRAPHIC INSTITUTION

We are writing this open letter to inform the marine science community, leaders of scientific ocean drilling, and the federal agencies of our strong support for the continuation of scientific ocean drilling beyond 2013. Scientists from Woods Hole Oceanographic Institution have been heavily involved in many aspects of ocean drilling for many decades. They have conducted site surveys, participated in drilling legs and post-cruise work, and served within the science advisory structure. We are eager and excited to begin planning for another decade of research to address the many important, yet unanswered, questions about our planet that require access to a seafloor drilling capability.

Over the past four decades, scientific ocean drilling has provided records inaccessible by any other means. These have revealed the nature and variability of Earth's climate, structure, composition, and dynamics over historical and geological timescales. Major accomplishments have included validation of the theory of plate tectonics; rapid development of the fields of paleoceanography and paleoclimatology; determination of structure, tectonics, and composition of the ocean crust and margins; demonstration of the existence of extensive seafloor fluid flow and a microbial biosphere; increased understanding of the formation of hydrothermal mineral deposits; and pilot installations to extend the Global Seismic Network into the ocean basins. Since its inception in 1968, scientific ocean drilling has continually pushed the limits of technology available for drilling and downhole measurements while expanding our capabilities to obtain records from a greater variety of marine environments. In addition, the scientific opportunities afforded by ocean drilling have attracted scientists from disciplines other than geology and geophysics - microbiologists, chemists, and physical oceanographers. Scientific ocean drilling is frequently cited as one of the most successful international scientific programs of the last half-century.

Today, at its halfway point, the Integrated Ocean Drilling Program (IODP) is facing challenges on every front - an extended hiatus in drilling operations, rapidly rising operational costs, and budgetary constraints. However, at this difficult time, it is important not to lose sight of the major accomplishments of IODP to date, including:

- the first long cores from deep Arctic locations
- new views on gas hydrate formation

- a record of post-glacial sea level rise from a shallow Pacific coral reef
- a continuous section through volcanic basement and into the uppermost plutonic rocks of the ocean crust
- long-term borehole monitoring of hydrological and geochemical properties on the flanks of the Juan de Fuca Ridge
- drilling through major thrust faults in a subduction zone notorious for generating devastating earthquakes and tsunamis.

We also need to look forward to the exciting expeditions that will be conducted over the next five years - in environments and depths that were beyond the capability of the program just six years ago.

We strongly believe that access to samples and data that can be obtained only through drilling is critical to the health of marine and geological sciences, and continuation of access to an ocean drilling capability is essential. Drilling is the only way to obtain sedimentary archives of the natural variability in ocean circulation, sea level, and climate over the last 150+ million years to advance our understanding of current climate change. Drilling is the only way to investigate the in situ structure of the ocean crust and basin margins to better understand the dynamics of geological processes. Drilling is the best way to obtain samples of the subseafloor microbial communities that we now believe exist within sediment and the oceanic basement and to learn how that community is supported. Drilling is the most sensitive way to directly monitor processes associated with, and potentially precursors to, subduction zone earthquakes – the largest in the world. These are but four examples - there are many more.

As members of the marine science community, we wish to restate our firm commitment to continued access to an ocean drilling capability beyond 2013. We are excited about the scientific questions that can be addressed only through drilling, and we look forward to strong participation by WHOI scientists in future scientific ocean drilling.

Signed,

Susan Humphris, Andrew Ashton, Mark Behn, Bill Berggren, Joan Bernhard, Carl Bowin, Karen Bice, Anne Cohen, John Collins, Bill Curry, Henry Dick, Jeff Donnelly,

Tim Eglinton, Rob Evans, John Farrington, Dan Fornari, Chris German, Liviu Giosan, Stan Hart, John Hayes, Greg Hirth, Konrad Huguen, Lloyd Keigwin, Peter Kelemen (adjunct scientist), Jian Lin, Dan Lizarralde, Dan McCorkle, Jeff McGuire, Jerry McManus, Delia Oppo, Bernhard Peucker-Ehrenbrink, Rob Reves-Sohn, Roger Searle (adjunct scientist), Alison Shaw, Nobu Shimizu, Stefan Sievert, Ken Sims, Adam Soule, Ralph Stephen, Steve Swift, Bill Thompson, Maurice Tivey, Meg Tivey, Brian Tucholke