ECORD
European Consortium for Ocean Research Drilling

Newsletter #4

n°4
April, 2005

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Dear ECORD participant and friend,

The Integrated Ocean Drilling Program has now been in operation for 18 months. I am very happy and also proud that ECORD has established itself as an integral part of IODP. The first Mission Specific Platform project, the Arctic Coring Expedition, was a spectacular success and has shown that the ECORD structure is working efficiently. The next MSP operation is scheduled for this year in Tahiti, and the aim is to have at least one MSP operation every year. Naturally, this can only be achieved if ECORD collects sufficient funds. Up to now, almost all ECORD funds come from national science funding bodies in Europe. IODP contributions will rise significantly in 2007, when the Japanese drillship «Chikyu» will be fully operational within IODP. It will be not be easy to convince the national European funding bodies that their respective contributions have to rise accordingly. To be successful, your help is needed! You can help by demonstrating the international scientific importance of IODP by creating new ideas for drill targets, by getting more and more of your colleagues interested, and by becoming actively involved in the self-organisation of both ECORD and IODP through the respective panels. I am confident that with a united effort, we can take this hurdle. The scientific gains and opportunities are tremendous - also this has been shown by ACEX. And, after all, it must be the science that drives the programme.

I look forward to a successful and long ECORD future - and now, please enjoy the latest ECORD newsletter!

Sören Dürr, ECORD Council chair, March 2005.

The full Science Party of IODP Expedition 302 meets at the Bremen Core Repository to open the first drill cores sampled from the Arctic seabed.

Science Party and operator personnel at the IODP Expedition 302 (Arctic Coring Expedition) Onshore Party. Photo Integrated Ocean Drilling Program *(see page 2).*

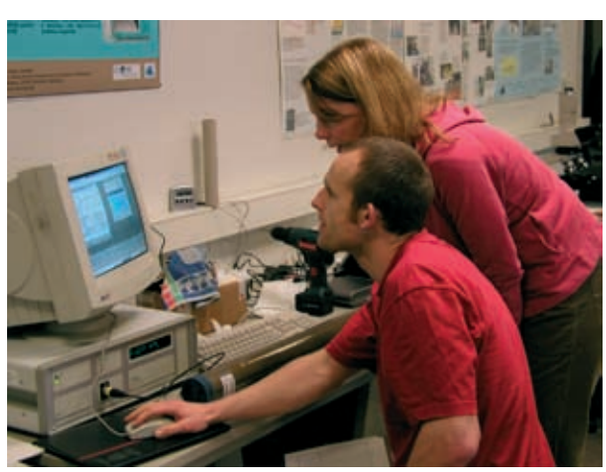
Completion of first IODP Mission Specific Platform (MSP) project (Arctic Coring Expedition-ACEX) in Bremen

The Arctic Coring Expedition (ACEX, IODP Expedition 302) was the first Mission-Specific Platform (MSP) project in scientific ocean drilling (see www.ecord.ord/acex/acex). Due to the nature of MSPs, some new approaches are required, e.g. due to space and time restrictions cores usually are not split at sea and the science has to be conducted both offshore and onshore. During ACEX three primary scientific activities were conducted offshore: ephemeral properties (pore-water chemistry, microbiology, physical properties; gas analyses for safety purposes) were measured and/or selected samples were preserved; core logging was carried out; and near real-time micropaleontology (and palynology) was performed for biostratigraphic analyses on core-catcher samples. The 340 m of recovered cores, yielding ~56million years of climate record from the Arctic Ocean, were then sealed and stored in temperature-controlled containers. The full science party did not meet until the so-called "Onshore Party" in Bremen when the cores were described, measured and sampled.

The first IODP Mission-Specific Platform (MSP) Onshore Party was held November 8 to 23, 2004 in the ODP/IODP Core Repository (BCR) and laboratory at the Bremen docks. The science party was welcomed at an icebreaker party in the hotel on the evening before the start. On the first day of the onshore party a science meeting was held in a seminar room on campus. While the main lab of the BCR has often been the site of standard ODP sampling parties during its past 10 years of operation, it was a totally new experience to split cores and also acquire all the data for the IODP minimum measurements. About 50 people (scientists, operator personnel, guests from US and Japanese Implementation Organizations in IODP) worked in two shifts processing the IODP Expedition 302 cores. All participants worked hard, helped each other, and came up with solutions as difficulties arose. This was a critical aspect in making this first onshore party successful, as was the enthusiasm of everybody involved. The facilities used two floors in the building, with the upper floor devoted to office space and specific laboratories (e.g., report writing, microscopy, and physical properties measurements on discrete samples). The main lab downstairs was used for initial core description of the freshly split cores, digital imaging, color reflectance measurements, split-core logging, petrophysical analyses (thermal conductivity, falling cone penetrometer measurements), photography, and detailed core sampling. Further analytical laboratories were available through the Department of Geosciences (specifically the geochemistry lab), the DFG Research Center for Ocean Margins (RCOM), the Centre for Marine Environmental Research (MARUM) of Bremen University, and the Max Planck Institute for Marine Microbiology (MPI), all on the campus of Bremen University. Overall it was a very well functioning system, and the work flow was much faster and smoother than might have been expected for a first-time effort. Trips during the week to the city hall, including a reception with the mayor of Bremen, and a visit to the Alfred Wegener Institute for Polar and Marine Research (AWI) in Bremerhaven were nice interludes to ease the stress of the regular shift work. Numerous national and international media representatives from television as well as journals and newspapers attended a press conference and showed great interest in the scientific activities. Scientists stayed in a hotel in the city center, which, in contrast to a ship environment, allowed them to spend their off-shift time enjoying a variety of excellent Bremen restaurants, all of which offer very good German beer. The scientists received their samples soon after returning home (those who did not take the samples with them personally in cars or planes), and are busy now working on their individual analyses. New key results regarding the long-term climate history of the planet will soon be available.

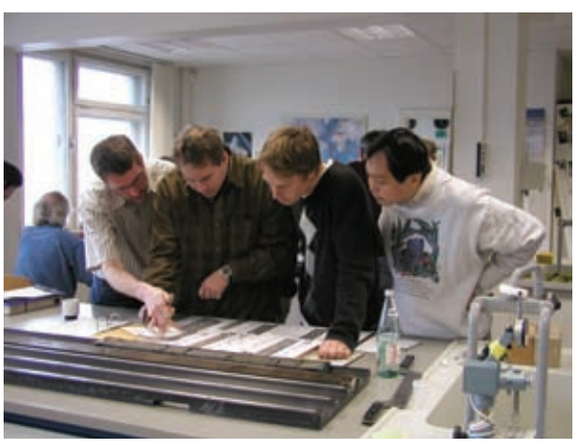
Ursula Röhl, ESO curation manager

Holger Kuhlmann (left) and Alex Wülbers (right, both Bremen) splitting an ACEX core. Photo courtesy BCR, Bremen.



Heike Delius and Brice Rea (Leicester University) checking the thermal conductivity measurement station at initiation of the ACEX onshore phase. Photo courtesy BCR, Bremen.

Ric Jordan (micropaleontogist, Japan, left) and Nalan Koc (micropaleontogist, Norway, right) doing microscope work during the ACEX Onshore Party. Photo courtesy BCR, Bremen.



IODP Expedition 302 scientists discussing lithological features (from left to right: Jens Matthiessen (micropaleontologist/sedimentologist, Germany), Matt O'Regan (physical properties specialist, USA), Martin Jakobsson (physical properties/logging specialist, Sweden), Masanobu Yamamoto (organic geochemist, Japan)). Photo courtesy BCR, Bremen.

Ted Moore (sedimentologist, USA) and Kristen St. John (sedimentologist, USA) admiring the freshly printed T-shirt logo. Photo courtesy BCR, Bremen.

New IODP Bremen Core Repository (BCR)

A very special landmark helps find the way to the Bremen University Campus – the 146-meter-high gravity tower, the only one in Europe, at the Bremen Center for Applied Space Technology and Microgravitation (ZARM). In this literally towering space laboratory, experiments can be carried out under simulated weightlessness. The University Campus "University and Technology Park" mirrors the practical, application-oriented approach as a principle of research in Bremen. Facilities that are closely associated with the university ensure that this transfer takes place. More than 40 high-tech companies have started up or moved in here in recent years. On the University Campus the Department of Geosciences, the new building housing both the Centre for Marine Environmental Sciences (MARUM), the DFG Research Center for Ocean Margins (RCOM), and the Bremen Core Repository (BCR), as well as the University and State Library of Bremen are all located in close proximity.

The **Bremen Core Repository (BCR)** has been operating for the Ocean Drilling Program (ODP) for the past ten years, and on October 1, 2004, was carried over into the new Integrated Ocean Drilling Program (IODP). The BCR is the second largest ODP/IODP core repository in the world, and presently contains about 83 km of deep-sea sediment and hard-rock cores from 31 expeditions (thirty with the JOIDES Resolution in the Atlantic Ocean, Caribbean Sea, Mediterranean Sea, South of 60° S, and one with the Vidar Viking in the Arctic Ocean) in over 127,000 d-tubes in a refrigerated storage hall. With the recent move to the new building on campus, the BCR now has an 1100 sqm refrigerated storage area and racks with a height of 5.5 meters *(see photo below)*, most of them are movable. The total capacity will be about triple that of the former refrigerated hall at the Bremen docks.
Almost two thousand scientists have visited the repository since 1994, often cooperating in week-long sampling meetings of the shipboard investigators. So far more than 375,000 samples have been taken by the visitors and BCR staff and distributed world-wide.
As a partner within the ECORD Science Operator (ESO) Consortium for IODP, the University of Bremen also undertakes the curation, database operations, and archiving of collected cores, as well as providing offshore (mobile laboratory containers) and onshore laboratory facilities for systematic sampling and further data gathering according to IODP minimum measurements policies.

Ursula Röhl, ESO curation manager, IODP curator

Refrigerated hall of the new Bremen Core Repository (BCR). Photo courtesy BCR, Bremen.

Report from the Sea - Expedition 304 - Atlantic Core Complex I
Two months aboard the JOIDES Resolution: the tale of a young sailor

Sailing on the JOIDES Resolution was my first oceanographic cruise experience. My PhD was on altered ultramafic rocks, that we expected to recover from the deep hole drilled during the cruise, but in a totally different setting. Up to the moment of my application to participate in the expedition as a metamorphic petrologist, I had been more used to geological field trips on land. I quickly realized that working on drilled cores is somewhat similar to field work on land. The main difference is the scale of the "outcrop" so that larger scale interpretations require careful integration of all the data (petrological, geophysical, geochemical...).

We joined the JOIDES Resolution in mid-November, theoretically not the best time in the year to go to the Azores. However, when three other shipboard scientists and I met at the hotel, we were lucky with the weather and we enjoyed a one-day trip around the island. We all wanted to catch as many sights of land and vegetation before leaving the coast for two months.

On board, these expeditions provide a great opportunity to closely work with scientists of other disciplines. Several days are needed before you can follow all the scientific discussions at daily meetings. First, because of the language, and also because of a variety of new notions to assimilate. But this type of work environment is a unique chance to expand the knowledge in various domains of Earth sciences from more experienced scientists. The excellent scientific equipment available on board, completed by the dynamism and humour of the technicians, makes lab work extremely efficient.
Another aspect of the expedition is the technical challenge of this type of operation. I was very curious to see how, in reality, it is possible to drill more than 1 km of hard rock, at several thousand meters of depth below sea floor, thanks to a drill bit a few tens of cm large ! A detailed visit of the drill ship, and following the operations, is needed to understand how impressive are the organisation and operation on board.

Photo 1 : Sunset watching from the heli deck on the way back to the Azores.

Two months is a long time, and even if the working atmosphere is very good, you are still on an isolated vessel, so it is important to find some extra-scientific distractions. The long working day is regularly interrupted by the famous "cookie breaks" that some of us never missed. A break can also be the right moment to go on the deck and look for other signs of life in the ocean. Sometimes the most curious whales would come quite close to the ship, whereas others would stay away, being suspicious of theses strange humans trying to "aspirate" the ocean crust! Rainbows and sunsets are also beautiful shows and draw everyone outside *(photo 1)*. After some practice, you may even be able to see the famous "green flash". Yet every day is quite similar to the previous one and you get lost in time. Luckily, the cook team gave us some calendar indications, with Sundays easily identifiable by the smell of BBQ on the front deck.

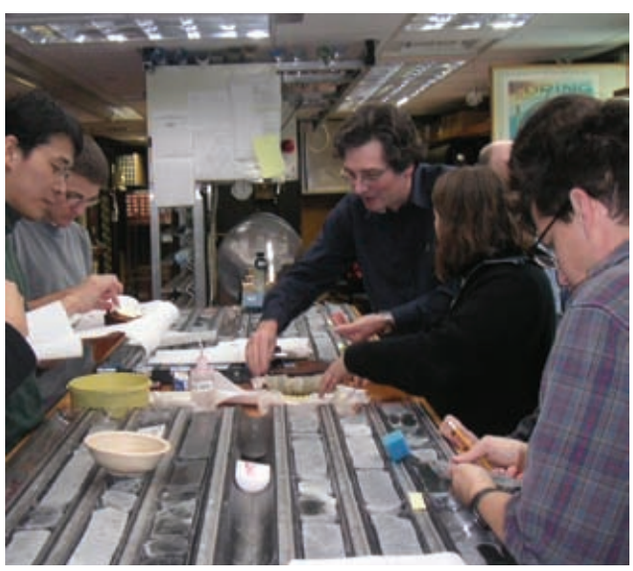


Photo 2 : Sharing of the English "Christmas cake" while describing cores on Christmas day.

Christmas and New Year's Eve on board were some of the best moments, even though it may feel like a difficult occasion to be far from home. All the crew did their best to make these days very special, and involved everyone to present customs and songs of all the nationalities represented on board. *Photo 2* illustrates sharing of the famous English "Christmas cake", eaten with cheese....surprisingly good!!

I keep very good memories of these two months spent onboard JOIDES Resolution. It was a great and enriching experience, which I would not repeat several times a year, but which is worth living at least once, to learn a lot professionally, and to meet amazing people from all over the world.

Muriel Andréani, Postdoc,
Marine Geosciences Laboratory, IPG-Paris, France

Teacher at Sea Program - Expedition 302 - ACEX
A Teacher's Experience of Ocean Drilling

In the beginning of last summer something very special happened to me, I was selected to take part in the Arctic Coring Expedition (ACEX). Being a teacher in an upper secondary school in Sweden (Järfälla NT-Gymnasium) opportunities like these to have first hand contact with science are rare and this expedition in particular seemed very interesting both from a scientific viewpoint and because of its setting in the Arctic Ocean. Time for preparation was short however, and there was only barely enough time to manage health controls and insurances and to study the world of oceanography. Even though I am quite a curious science teacher and try my best to keep up to date on new research, I found that this field was largely unknown to me. In fact, I did not even know about ECORD prior to my involvement and one of Sweden's major encyclopaedias does not yet list IODP as a searchable word. My studies were very rewarding and even before I set foot upon the expedition ships I had learnt a lot about the oceans and climate research that was directly applicable in my school classes.

The expedition itself was of course quite an experience and I was allowed to take part in most of the activities from the drilling to the analyses and the science meetings and ice management. Dealing with the ice on this mission felt like a science in itself and it was very interesting to follow, especially when new methods of ice reconnaissance were tested and evaluated. There were also a lot of questions in my mind about how the actual ocean drilling was done that were answered when I was on board the drill ship and could see the process myself. Although my theories of how it was done were close to the truth, the realities of being on the drill site were a lot harder to imagine without actually being there. I was amazed at the wide range of different analyses available to study the sediments, from simple colour comparisons to more advanced methods like different isotope measurements. Still, maybe the contact with the scientists themselves, talking to them about their research and their lives as scientists and watching their ways of presenting their findings was what I appreciated the most.

In all, I have returned to my school loaded with a lot of material useful for many different situations in the education at home. Samples from diatoms in the Arctic ice have provided comparisons between life in Swedish and Arctic waters. Pictures and movie clips from the Arctic have been invaluable in explaining the role of the Arctic in global climate and the Arctic ecology and also for raising the interest of my students on many topics around the oceans and ocean drilling. Maps have been useful in many ways including among other plate tectonics, an issue relevant to the expedition in studying the geological origin of the drill site on the Lomonosov underwater mountain range. The list of course goes on from there and I have also been giving talks about the expedition to different interested groups outside of the school world. Although the mission itself is over, I think my own mission of turning information from the cruise into school curriculum material is something that I will be continuously doing for a lot of time to come.

Erik Zetterberg, Science and technology teacher
Järfälla NT-Gymnasium, Sweden

In front of Vidar Viking during refueling (Kathy Couchon © IODP).

Ready for ice reconnaissance in front of helicopter (Kathy Couchon © IODP).

Investigating agglutinated foraminifera through the microscope (Kathy Couchon © IODP).

The central goals of the IODP Teacher at Sea Program include 1) providing teachers with an opportunity to participate in seagoing research experiences, 2) translating scientific results into useful teaching resources and 3) distributing these resources to classrooms. During the Arctic Coring Expedition (IODP 302), Erik Zetterberg, the European teacher selected for the IODP Expedition 302, has found financial and educational supports provided by ECORD and ESSAC respectively.

Watch the ECORD website for the next opportunity for a teacher to participate in IODP science!
www.ecord.org/pi/public-info

ECORD Announcements

Visit

the IODP-ECORD booth

at the

EGU 2005

Vienna, Austria
April 24-29, '05

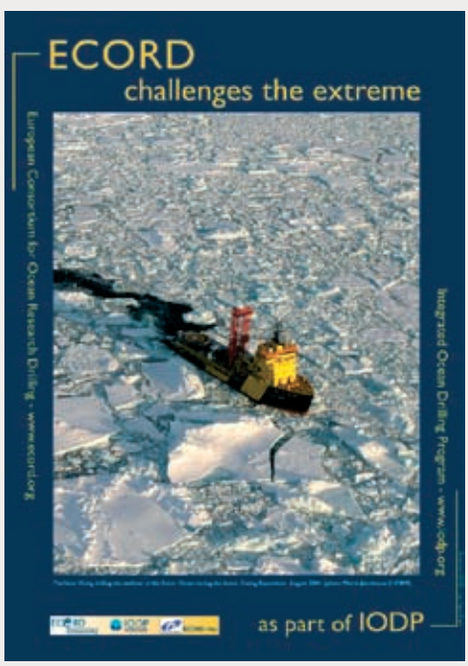
More information:
www.copernicus.org/EGU/ga/egu05

IODP ECORD European Consortium for Ocean Research Drilling

ECORD Recent Publications

These publications will be widely distributed at the EGU in Vienna, April 24-29, '05. You may also request electronic or paper copies at :
ema@ipgp.jussieu.fr
or from the ECORD website : www.ecord.org/pub/publications

ACEX poster (400x600 mm)



ECORD leaflet

Conferences & Workshops

Palaeoclimate Change: High-latitudes and Ocean Circulation

The Geological Society of London, Burlington House, UK
2-3 June, 2005

ECORD *Science Support & Advisory Committee Workshop*

Hosted by the UK Integrated Ocean Drilling Program (IODP) & NERC with sponsorship from IMAGES, The Tyndall Centre, RAPID, Geotek Ltd, BP, Exxon Mobil International, Fugro Robertson and Statoil.

More information : www.ecord.org/calendar
Enquiries: Charlotte Dew - cdge@nerc.ac.uk

International Symposium on the Geodynamics of the Eastern Mediterranean : Active Tectonics of the Aegean

Istanbul, Turkey, 15-18 June, 2005

More information:
www.khas.edu.tr/kinto/earth2005

News from the ECORD Managing Agency

As I write these lines, two more countries are about to join ECORD : Ireland and Belgium. These two countries were members of ODP and unfortunately were not able to sign the ECORD Memorandum of Understanding last year. It is a pleasure to welcome them now. It is also good timing, as this April the JOIDES Resolution will drill the Porcupine carbonate mounds (IODP Expedition 307). These mounds were the subject of European Commission sponsored programs, in which Ireland and Belgium played a major role. The drilling is the ultimate phase because it will allow subsurface sampling and groundtruthing the interpretation of seismic data. This demonstrates the necessity of ties between EC funded programs and IODP to fully address major scientific problems.

The portcall in Dublin before the JOIDES Resolution sails to the Porcupine mounds will be an excellent opportunity to advertise IODP to the Irish scientific community and to the public in general.

The ECORD Science Operator has been busy with Mission Specific Platforms implementation. In essence, MSP expeditions do not follow the «JOIDES Resolution model» which proved very efficient during the Ocean Drilling Program and now applies to the riserless ship. MSPs are likely to be smaller and not fully equipped with laboratories, therefore only a subset of the science party sails to conduct the identifications/measurements necessary to make decisions on board. Most of the work on cores has to be done after the cruise, during an onshore party.

The first IODP onshore party was successfully completed at the Bremen core repository last November (see page 2), when the cores of the Arctic Coring expedition were opened and described by the whole ACEX science party. ESO is now getting ready to implement the Tahiti expedition. After the Arctic, they will be facing a completely different environment, with its own challenges !

Catherine Mével, ECORD Managing Agency Director.

ECORD member countries :
Austria, Canada, Denmark, Finland, France, Germany, Iceland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom

IODP-ICDP Joint Townhall Meeting

On the occasion of the
EGU Annual Meeting in Vienna
Tuesday, April 26th, 17h30, Room 19

Scientific Drilling:
new perspectives from IODP and ICDP

Program

- News from IODP and ICDP
- North Pole climate history: results of the Arctic Coring Expedition
  Jan Backman, Stockholm University
- Quaternary rapid sea level change: archives from Tahiti coral reef
  Gilbert Camoin, CEREGE, Aix en Provence, France
- Iceland Deep Drilling Project
  Ulrich Harms, ICDP, GeoForschungsZentrum Potsdam, Germany
- Bosumtwi drilling project: paleoclimate archive and model impact
  Chris Koeberl, University of Vienna

Free drinks !

ECORD *Science Support & Advisory Committee*

Updates

Expedition Schedule

With the recent funding made available by NSF, 6 riserless expeditions are now scheduled in the FY05-06 period. Based on SPC ranking in Corvallis in the fall of 04 and provision by OPCOM of a set of drilling scenarios, a highly interesting expedition schedule has been generated. In parallel, an expedition using a mission specific platform will also be implemented *(see table below)*.

ESSAC has been discussing nominations for the first of those expeditions. The short lead-time and electronic character of most of the decision-making process has been a learning experience but resulted in balanced and adequate nominations. As a result, the nominations for ECORD scientists for the Tahiti (310), Porcupine (307), Gulf of Mexico (309) and Cascadia (311) expeditions were submitted to the Implementing Organizations (IOs).

Magellan Workshop Series and Pre- and Post Cruise Science Support

It has been long recognized that for maximum involvement and engagement of the ECORD community in marine coring science it is crucial to help scientists organize workshops to discuss key scientific issues. At its Bonn meeting, the ECORD Council decided to provide funding for two workshops in FY05. At the same time, it decided to commit funds for longer term co-ordination of the scientific community using schemes offered by the European Science Foundation. ESSAC assumed the initiative to submit two proposals to the ESF Life and Earth Sciences Standing Committee (LESC) to set up workshop series and arrange the support for pre- and postcruise science. Only very recently LESC endorsed the two proposals following expressions of support by the leading science foundations : 1) the ESF Magellan Workshop Series on scientific marine coring and, 2) a EuroCORES for European Collaboration for Implementation of Marine Research on Cores (EuroMARC).

The ESF Magellan Workshop Series is an ESF Program for coordinated workshops to stimulate and nurture European science proposals in the area of marine research drilling. EuroMARC is an enabling programme for coordinated collaboration by European Partners of marine research to ensure effective European Leadership of science conducted through international scientific marine drilling and coring. ESSAC will play important roles in both programmes and calls are expected to be issued this summer (or earlier). It must be noted that both programmes reach out to the entire European marine science community and serve the pan-European community by supporting all drilling and coring in marine areas.

ESSAC Workshops in 2005

The funds that the ECORD Council provided for this year have been committed to two workshops on the following themes selected by ESSAC: Palaeoceanography & Palaeoclimate Change and Deep Biosphere.

The first workshop and conference is scheduled for 2-3 June 2005 and will take place at the Geological Society of London, Burlington House *(see page 6)*. It is co-funded by NERC,

The IODP drilling schedule : 2005 - early 2006 Expeditions

expedition	dates	platform		
303 - North Atlantic Climate1	25 Sep. - 17 Nov. '04	riserless		
304 - Oceanic Core Complex 1	17 Nov. '04 - 8 Jan. '05	riserless		
305 - Oceanic Core Complex 2	8 Jan. - 2 Mar. '05	riserless		
306 - North Atlantic Climate 2	2 Mar. - 26 Apr. '05	riserless	staffing	
307 - Porcupine Basin Carbonate Mounds	26 Apr. - 31 May '05	riserless	closed	
308 - Gulf of Mexico Overpressures	31 May - 6 Jul. '05	riserless	pending	
310 - Tahiti Sea Level	tbd	MSP	closed	
311 - Cascadia Margin Hydrates	24 Aug. - 7 Oct. '05	riserless	pending	applications deadline
309 - Superfast Spreading Crust 1	6 Jul. - 24 Aug. '05	riserless	-	22 April '05
312 - Monterey bay Observatory	7 Oct. - 24 Nov. '05	riserless	-	22 April '05
313 - Superfast Spreading Crust 2	24 Nov. '05 - 8 Jan. '06	riserless	-	22 April '05

Submit a proposal ?
Visit the IODP proposal submission page at: www.iodp-mi-sapporo.org
next deadline: October, 1, 2005

How to Apply?
Application procedures are available on ESSAC web page at:
www.ecord.org

IMAGES and the industry. Organizers are Paul Wilson (SOC), Ian Hall (Cardiff), Mike Bickle (Cambridge) and Juergen Thurow (UCL). The aim of the meeting is to bring together the UK and ECORD community in the broad field of Palaeoceanography & Palaeoclimate Change to discuss exciting new results emerging from recent initiatives (eg, IODP drilling in the Arctic, IMAGES, RAPID) aimed at improving our understanding of extreme and rapid changes in Earth's past climate, with special emphasis on the high latitudes and ocean circulation and developing new ideas to formulate new IODP proposals.

The second workshop is planned for 6-8 October 2005 at Kartause Ittingen, Warth, Switzerland, and the organizers are Judith McKenzie (ETH-Zurich), Sabine Kasten (AWI-Bremenhaven) and Crisogono Vasconselos (ETH-Zurich). Primary goal of the meeting is to develop ideas and formulate new drilling proposals to study the deep biosphere in sedimentary sequences, as well as in crustal environments. Based on ODP Leg 201 results, the emphasis will, however, be placed on developing proposals to study the processes involved in anaerobic methane oxidation associated with the methane/sulfate interface, but not exclusively. The goal of the workshop is to further integrate microbiology into the new Integrated Ocean Drilling Program (IODP) with the development of specific drilling programmes. The ultimate product of the workshop will be European-initiated drilling proposals to be submitted to the IODP Science Advisory Structure.

A call for the Palaeoceanography & Palaeoclimate Change workshop was issued some time ago and a call for the Deep Biosphere will be issued in the spring.

Jeroen Kenter, ESSAC chair

ESSAC Delegates and Alternates

Country	Delegate	*Alternate*
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Denmark	Paul Martin Holm paulmh@geol.ku.dk	*Paul Knutz* *knutz@geol.ku.dk*
Finland	Kari Strand kari.strand@oulu.fi	*Annakaisa Korja* *annakaisa.korja@seismo.helsinki.fi*
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Netherlands	Jeroen Kenter jeroen.kenter@falw.vu.nl	*Frits Hilgen* *fhilgen@geo.uu.nl*
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Spain	Menchu Comas mcomas@ugr.es	*Victor Diaz del Rio* *diazdelrio@ma.ieo.es*
Sweden	Eve Arnold emarnold@geo.su.se	*pending*
Switzerland	Judy MacKenzie judy.mckenzie@erdw.ethz.ch	*Helmut Weissert* *helmut.weissert@erdw.ethz.ch*
United Kingdom	Chris MacLeod macleod@cardiff.ac.uk	*Paul Wilson* *paw1@soc.soton.ac.uk*

Further information on ESSAC webpage at : www.ecord.org

ECORD scientists on IODP expeditions (303-306)

Expedition - 303:
North Atlantic 1

Gretta Linda Bartoli, Germany
Anne De Vernal, Canada
Lucia De Abreu, U.K.
Estela Vazquez Esmerode, Denmark
Sasha N.B. Leigh, U.K.
Alain Mazaud, France
Oscar E. Romero, Germany
Ralf Schiebel, Switzerland

Expedition - 304:
Core Complex 1

Michael Abratis, Germany
Muriel Andreani, France
Marion Drouin, France
Marguerite Godard, France
Takehiro Hirose, Switzerland
Andrew M. McCaig, U.K.
Antony Morris, U.K.
Roger C. Searle, U.K.
Annette von der Handt, Germany

Expedition - 305:
Core Complex 2

Benoît Ildefonse (co-chief), France
Daniele Brunelli, France
Adélie G. Delacour, Switzerland
Javier Escartin, France
Angela Halfpenny, U.K.
Heidi Elisabeth Hansen, Norway
Eric Hellebrand, Germany
Günter Suhr, Germany

Expedition - 306:
North Atlantic 2

Rüdiger Stein (co-chief), Germany
Jens Norbert Hefter, Germany
Yohan J. B. Guyodo, France
Francisco J. Sierro Sanchez, Spain
Antje Voelker, Portugal
Kjell R. Bjørklund, Norway
Patrizia Ferretti, U.K.

IODP Expedition 310 "Tahiti Sea Levels"

Coral reefs are sensitive recorders of past sea-level and environmental changes. Their accurate dating by mass spectrometry is of prime importance for the determination of the timing of deglaciation events and thus for the understanding of the mechanisms driving glacial-interglacial cycles.

The history of sea-level and sea surface temperature variations associated with the last deglaciation is of prime interest to understand the dynamics of large ice sheets and their effects on Earth's isostasy. So far, the only sea-level record that encompasses the whole deglaciation is based on offshore drilling of Barbados coral reefs which overlie an active subduction zone and was located close to the former ice sheets during the Last Deglaciation. Vertical tectonic movements in such areas may be large and are often discontinuous, implying that apparent sea-level records may be biased by variations in the rates of uplift. Hence, there is a clear need to study sea-level changes in tectonically stable regions or in areas where vertical movements are slow and/or regular. Furthermore, the eustatic function is best estimated from sea-level data collected far from the former ice margins where the influence of glacio-isostatic rebound is minimized.

The IODP Expedition # 310 « Tahiti sea level » (Camoin, Iryu, McInroy et al.) seeks to establish the course and effects of the last deglaciation on the subsiding volcanic island of Tahiti (subsidence rate : 0.25 mm yr^{-1}), at a considerable distance from former ice sheets.

The scientific objectives of the Expedition are :

A - To reconstruct the general pattern of sea-level rise during the last deglaciation events in order : 1) to establish the amplitude of the maximum lowstand during the Last Glacial Maximum; 2) to assess the validity, the timing and amplitude of meltwater pulses (so-called MWP-1A and MWP-1B events; c. 13,800 and 11,300 cal. yr BP) which are thought to have induced reef-drowning events and to have disturbed the general thermohaline oceanic circulation and, hence, global climate ; 3) to test predictions based on different ice and rheological models.

B - To identify and to establish patterns of short-term palaeoclimatic changes that are thought to have punctuated the transitional period between present-day climatic conditions following the Last Glacial Maximum in order to get a better knowledge of : 1) the regional variation of sea surface temperatures in the south Pacific; 2) the climatic variability and the identification of specific phenomena such as El Nino-Southern Oscillation (ENSO); 3) the global variation and relative timing of post glacial climate change in the southern and northern hemispheres.

C - To analyse the impact of sea-level changes on reef growth, geometry and biological makeup, emphasizing : 1) the impact of glacial meltwater phases (identification of reef drowning events); 2) the morphological and sedimentological evolution of the foreslopes (highstand vs lowstand processes); 3) the modeling of reef building; 4) environmental changes during reef development.

Drilling sites of the Expedition 310. (Image courtesy of Earth Sciences an,d Image Analysis Laboratory, NASA Johnson Space Center - http://eol.jcs.nasa.gov).

The scientific goals of a high resolution 3D seismic tomography study (Ancillary Project Letter by Kenter et al.) that may be developed after the drilling cruise are : (1) to provide the geometric evolution of the reef system in time and space to validate and anchor the sea-level reconstruction; (2) to improve the methodology of seismic imaging of coralgal reefs; and (3) to advance the understanding of the heterogeneity of the pore system and its associated acoustic properties.

The recovery of the whole post glacial reef sequence implies to drill the successive reef terraces that occur seaward of the living barrier reef. Studies and surveys on Tahiti have demonstrated the occurrence of successive reef terraces at various depths, 100 m, 90 m, 60 m and 40-50 m which correspond to drilling targets.

Based on the results of the previous scientific drillings and surveys, it is proposed to drill a transect of holes in three areas around Tahiti : offshore Papeete-Faaa (Site TAH-01A), Papenoo-Tiarei (Site TAH-02A) and Maraa (Site TAH-03A) *(see photo above)*. The involved water depths range from 40 to 310 m with one exception concerning the drilling of a keep up reef in the Papenoo-Tiarei area (water depth : 25 m).

Gilbert Camoin, IODP ESSEP chair, ESSAC delegate
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More information is available on the IODP-MI Sapporo Office website at: www.iodp-mi-sapporo.org

ECORD-Net Updates

ERA-NET

ECORD-Net: European Research Area for scientific drilling

Project n° ERAC-CT-2003- 510218, European Consortium for Ocean Research Drilling Network

For improved coordination of national research activities and policies related to scientific drilling, the ECORD-Net partners :

- create a data base that can be used by funding agencies to assess the participation of ECORD scientists in the IODP expeditions, proposals and resulted publications
- launch a geo-microbiology database to facilitate the task of writing proposals for research drilling in IODP
- encourage networking and linking of all geoscientific-drilling and coring programs in Europe (IDDP – the Iceland Deep Drilling Project, IMAGES – The International Marine Past Global Changes Study).
- have established a contracting procedure with ECORD countries and among ECORD and the IODP Lead Agencies.

Common strategic issues and joint activities

ECORD-Net & FP6 ERA-Nets

- To open ECORD to other countries, and to define common issues with other EU-funded ERA-net projects, an ECORD-Net outreach team consisting of Catherine Mével and Jonas Björck attended a Forum for programme managers of BONUS for the Baltic Sea Science – Network of Funding agencies, where Research Council managers from Poland, Estonia, Latvia and Lithuania, as well as Sweden and Finland, were present. The ERA-net MARINERA was also represented at the meeting by Aurelién Carbonnière from the ESF. ECORD-Net liaisons are Jonas Björck to BONUS and Raymond Schorno to MARINERA.

ECORD-Net at the BONUS Forum for Programme Managers, Helsinki, 17 February 2005.

ECORD-Net & ESF

- To stimulate and nurture European science proposals in the area of marine research drilling, ECORD-Net partners have established with the ESF a series of ECORD Workshops - Magellan Workshop Series.
- To support pre- and post cruise marine coring science, the EuroCore – EuroMARC has been put in place at the ESF (see also page 8).

Further information and announcements will be posted at **www.ecord.org**

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