ECORD
European Consortium for Ocean Research Drilling

Newsletter #7

IODP
INTEGRATED OCEAN DRILLING PROGRAM

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CONTENTS

ECORD Evaluation and Preparation for the Next Phase

Before entering the new phase of IODP, accompanied by a major increase in the cost of the program, the ECORD council has decided to conduct an evaluation of ECORD. The process was launched by the former ECORD Chair, Chris Franklin. Meanwhile, the Terms of Reference have been defined by Council, and panel members were elected. The panel now consists of a well balanced group of seven international experts not involved in IODP activities. In June, the panel members were invited to a kick-off meeting held in Paris, where they all received the necessary information and documents in order to be able to proceed to the laborious and important task. Besides the documents, visits of individual panel members at ECORD Science Operator's headquarters in Edinburgh and at ECORD Science Support & Advisory Committee's headquarter in Cardiff as well as meetings with representatives of the Lead Agencies and IODP-MI were organised. The evaluation report is expected with great interest, not only by the European but also by the whole IODP community. It should be ready as a draft version by the end of this year. This should hopefully give member organisations the necessary basis and time for their decision about an increase in their contribution to ECORD, to accomodate the increase in the participation unit to IODP. A rough picture of the ECORD funding in the second phase should be available at the ECORD Council meeting in June 2007 at the latest as the lead agencies also have to be informed in due time about the stance of Europe in the coming phase of IODP.
Council had also the sad task of saying goodbye to two personalities who can both be regarded as founding fathers of ECORD: John Ludden left Council as representative of France, moving to UK, where he assumed the role as Director of the British Geological Survey (BGS). Dave Falvey, former Director of BGS, has been part of the ocean drilling community for more than two decades. Like John, he has worked tirelessly promoting scientific ocean drilling in Europe, in his last function as Board of Governor officer in IODP.

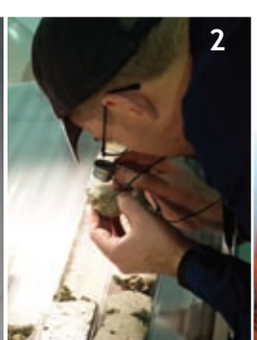
My term as Chair fell into a hiatus of operational activity in ECORD as the New Jersey Shallow Shelf Expedition was finally postponed to FY07. But also on an IODP-level, 2006 was a rather calm year as the *JOIDES Resolution* has gone into dock for a conversion. The newly overhauled ship should get a completely new bow and will be about 30 ft longer than the original JR, offering increased lab and berth space.

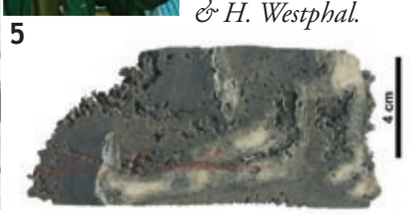
The Japanese ship, the *Chikyu*, which was built to take a leading role in IODP, headed off for an extensive testing phase in August to practice core sampling and analysis off the Japanese coast. Further testing will be conducted next year before the ship is delivered to the impatient scientific ocean drilling community in September 2007.

I look forward to 2007, which will be a very promising and interesting year, as for the first time in ocean drilling three different platforms will be operational simultaneously offering the scientific community a vast panoply of scientific expeditions.

Marcel Kullin, ECORD Council chair, September 2006

Tahiti Sea Level Expedition: Onshore Science Party at Bremen Core Repository





1- Both core halves, 2- Sample description, 3- Onshore Science Party scientists, 4- Sampling. All IODP photos. 5- Typical example of post-Last Glacial Maximum framework. Coral (dark-whitish) with thin coralline algal crust at upward-pointing tips (white), encrusted by thick microbial crusts (dark gray). IODP photo by K. Heindel & H. Westphal.

Successful review of the Tahiti Sea Level Expedition

ECORD Science Operator (ESO) submitted their final report on the Tahiti Sea Level Expedition to the IODP-MI Operations Review Task Force in June 2006. The report highlighted the successful completion of the MSP operation during October-November 2005 and the Onshore Science Party that followed (*see pages 3-4*). The key points of the report included the recovery of excellent cores of Holocene reefal limestones in shallow water using a piggy-back drilling system (*Figure 1, below*). A total of 632.12 metres of core were recovered, which conventionally calculated showed that core recovery was 57.47% although data from the optical and acoustic image logs show that highly porous formations were drilled, and suggest that the true recovery was much higher, probably > 90% (*Figure 2, right*).

Slimline geophysical logging was deployed for the first time in any ODP/IODP drilling operation and a variety of imaging and geophysical tools were used to collect high-quality data. Excellent core, MSCL data and downhole logging data were

Figure 1. Petrophysics staff scientist in the rooster box. The acquisition of downhole geophysical data was done in the rooster box which, in the used piggy-back drilling system, is heave-compensated. Although logging conditions were quite adverse (hot and humid), it did provide a work environment with a brilliant view (IODP photo).

obtained despite operating in formations that were consistently heterogeneous and extremely porous allowing core logs, downhole logs and drilling parameters to be correlated unambiguously for the first time. The use of a down-pipe camera was instrumental in avoiding live coral heads at shallow sites, and for proving the minimal impact of drilling on the sea bed at holes located in the drowned reef zones. An excellent environmental record was achieved by the expedition.

A full description of the sediments and biological assemblages in the cores was conducted at the Onshore Science Party at the Bremen Core Repository *(see Figures 1, 2, 5, cover page and Figures 1 & 2, page 3)*. Additionally, excellent results of petrophysical, microbiological and pore-water geochemical analyses have been produced (www.ecord.org/exp/tahiti/310PR & www.ecord.org/exp/tahiti/310log-sum). The results of the subsequent post-cruise research, supported by the descriptive framework produced in Bremen, are expected to entirely fulfil the Expedition 310 scientific objectives.

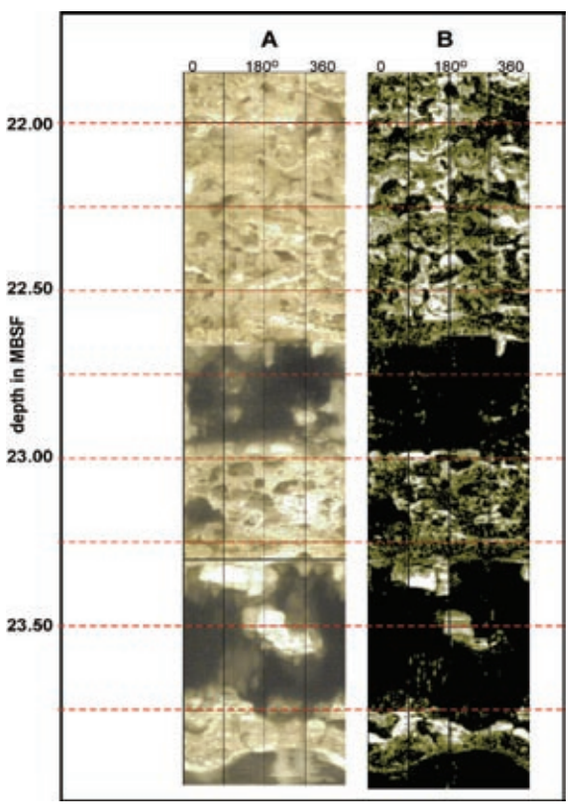


Figure 2. Imaging results of M0015A illustrate the extremely hostile borehole conditions. Cavities up to 0.5 m in size were encountered which cannot be cored obviously (IODP photo).

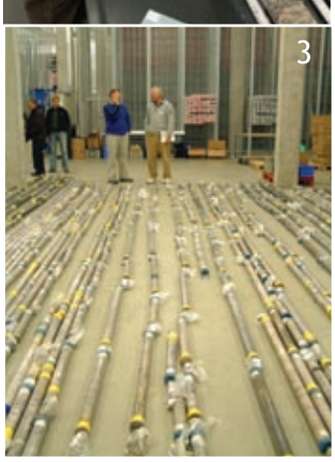
Overall, the Expedition 310 Operations Review Task Force found that the Tahiti Sea Level expedition was an unqualified success. This success resulted from a combination of factors including, the lessons learned from the Arctic Coring Expedition in 2004, experience gained by ESO working in the IODP environment, close collaboration between the co-chief scientists and operators, and a willingness and flexibility shown by all parties to work through issues as they arose at sea and onshore. All parties involved in the operation were congratulated on a very successful drilling and sampling venture, which the Task Force believes will produce a wealth of scientific knowledge for years to come.

Dan Evans, Alister Skinner, ESO managers and Tim S. Brewer, EPC co-ordinator

Ursula Röhl

Tahiti Sea Level Expedition completed
Onshore Science Party held in the new IODP Bremen Core Repository

The Tahiti Sea Level Expedition (IODP Expedition 310) to the reef terraces around Tahiti, French Polynesia, was the second mission-specific platform (MSP) project organised and carried out by the European Consortium for Ocean Research Drilling (ECORD) under the auspices of the Integrated Ocean Drilling Program (www.iodp.org). A total of 37 boreholes across 22 sites were cored in water depths ranging from 41.65 to 117.54 m. During Expedition 310 three primary scientific activities were conducted offshore: ephemeral properties (pore-water chemistry, microbiology, physical properties) were measured and/or selected samples were preserved; core logging was carried out; and near real-time core description was performed on cores through the liners and on core-catcher samples. The 632 m of recovered cores, covering the period 20–10 ka of earth history, were then sealed and stored in temperature-controlled containers.



All photos IODP

Due to the nature of MSPs, e.g. due to space and time restrictions cores usually are not split at sea and the main part of the science has to be conducted onshore. Therefore, for the first time, the IODP mission-specific platform Onshore Science Party (OSP) was held from February 13 to March 4, 2006, in the new IODP Bremen Core Repository (BCR), which is located in the Centre of Marine Environmental Sciences (Marum) building opened in early 2005 on the campus of Bremen University *(Figure 3, cover page)*.

The scientists were welcomed at an icebreaker party in the hotel on the evening before the start of the OSP. On the first day, a science meeting was held in a seminar room. While the main lab of the BCR is usually the site of standard IODP/ODP sampling parties during its past 12 years of operation, it was an extended experience to split cores and also acquire all the data for the IODP minimum measurements. About 50 people (scientists and operator personnel) worked in two shifts processing the IODP Expedition 310 cores. All participants worked hard, helped each other, and came up with solutions as difficulties arose. This was a critical aspect in making this onshore science party successful and faster than originally planned, as was the enthusiasm of everybody involved.

The facilities used different labs in the building, some of which were devoted to office space and specific laboratories (e.g., report writing, microscopy, and physical properties measurements on discrete samples). The main labs were used for initial but extensive core description of the freshly split cores, digital imaging, color reflectance measurements, split-core logging, petrophysical analyses (volume determinations (pycnometer), thermal conductivity), photography, and detailed core sampling *(Figures 1 & 2, below, Figures 2 & 4, cover page)*. Further analytical laboratories were available through the Department of Geosciences (specifically the geochemistry lab), the DFG Research Center for Ocean Margins (RCOM), and the Centre for Marine Environmental Research (MARUM) of Bremen University 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. One Sunday off was a nice break to ease the stress of the regular shift work, some people did visit museums, others explored the area or even drove to Berlin.

Numerous national and international media representatives from television, radio, and newspapers attended a media conference, interviewed the scientific co-chiefs, and benefited from being able to talk to scientists while they were working in theirs labs *(Figure 4, page 4)*. The onshore science party was also attended by Nancy Light, director of communication at IODP-MI, who together with a TV crew shot some scenes for the recently released IODP image DVD (www.iodp.org/audiovisual).

The 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 social and cultural events as well as excellent Bremen restaurants, all of which offer very good German beer and wine. The scientists received their samples soon after returning home, 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.

The Bremen Core Repository (BCR), www.rcom.marum.de/English/IODP_Core_Repository, has been operating for the Ocean Drilling Program (ODP) for ten years, and on October 1, 2004, was carried over into the new Integrated Ocean Drilling Program (IODP). In addition to the collection of presently 85 km of deep-sea sediment and hard-rock cores from 36 legs in over 126,000 d-tubes in a refrigerated storage hall, most of the core collection stored at the Lamont Doherty Earth Observatory of Columbia University, located in Palisades, New York - namely

those cores drilled in the Atlantic Ocean - will be moved to Bremen by the summer of 2007. After completion of the redistribution the Bremen Core Repository will comprise 135 kilometres of deep sea cores and will be the largest of the IODP core repositories. In the new building on the campus the BCR has an 1100 sqm refrigerated storage area and racks with a height of 5.5 metres, most of them are movable *(Figure 3, page 3)*. The total capacity will be about triple that of the former refrigerated hall at the Bremen docks. An additional refrigerated storage area is planned to be finalised within the next two years.

About two thousand scientists have visited the repository since it was established in 1994, often cooperating in week-long sampling meetings of the shipboard investigators. So far more than 400,000 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 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.

Ursula Röhl, ESO curation manager

Catherine Mével

News from the ECORD Managing Agency

2006 has been a quiet year for the program, as no operation will have taken place. The *Chikyu* is under testing and the *JOIDES Resolution* is about to go through a major refit. There will be no mission-specific platform (MSP) operation either. Although the budget to implement the New Jersey Shallow Shelf Expedition was secured, the ECORD Science Operator (ESO), in concertation with the ECORD Managing Agency (EMA), decided to delay the implementation to the summer 2007. This decision was made because the schedule was too tight to ensure a good service to the scientific community. ESO is presently negotiating a platform, and hopefully the operation will start next May. This emphazises the challenges to run MSPs. By essence, each project is different and likely requires a different platform. But this means that for each expedition, ESO has to start again from the beginning, locating and contracting a platform suitable for the scientific objectives. In these days of increased oil prices and high demand for drilling platforms, this task is becoming more and more difficult. However, for the scientists, having access to MSPs is a major opportunity, as demonstrated by the first two, very successful operations, the Arctic Coring Expedition and the Tahiti Sea Level Expedition.

The scientific community has taken advantage of this hiatus in operations to discuss and plan the future. A number of workshops have been held, both at the European and international level *(See Recent and Forthcoming Workshops, page 7)*. Hopefully, new ideas will emerge and the scientific community interested in ocean drilling will expand. We are all looking forward to seeing the reports of these meetings.

The major concern now for ECORD is the increase in the cost of the program starting in October 2007, when all three platforms will operate simultaneously. It will be a major opportunity for the science community, but it will be a challenge for the funding. An evaluation of the efficiency of ECORD and its performance within IODP is currently being conducted by an independant committee. Hopefully, the result of this evaluation will help the 17 ECORD member countries to increase their contribution at the national level. The other avenue that the ECORD Council is pursuing, is to get some help from the European Commission. The Deep Sea Frontier Initiative is part of the strategy developed by the Council in association with other EC-funded programs investigating the deep seafloor, to become more visible to the Commission. This initiative has progressed significantly since last April, and hopefully will have an impact at the European level *(See page12)*. However, at the individual level, scientists also have an important role to play, to convince their funding agencies that being part of this unique international program is essential for the future of cutting edge research in ocean environments.

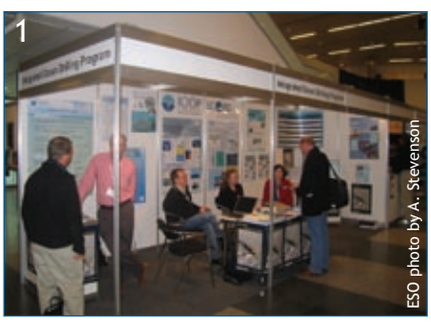
Catherine Mével, EMA director

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

ECORD Outreach Activity

ECORD at EGU 2006 in Vienna

The ECORD Management Agency (EMA) organised the IODP booth at EGU 2006 General Assembly in Vienna, Austria, 2-7 April 2006 *(Figure 1, below)*. Approximately 8,000 people attended the meeting and many of them visited the ECORD-IODP booth. The booth was well supported by ESO and ESSAC, with help from staff at IODP Germany and IODP-MI. Many scientists, mainly European, volunteered in the booth, sharing their own IODP experiences with interested EGU attendees. The booth featured informational materials from all parts of IODP, including new posters and a flyer that focus on Mission-Specific Platforms in the IODP, and Platforms and Vessels in IODP.



During the same week,ECORD welcomed nearly 100 participants to a Townhall Meeting jointly sponsored with the International Continental Scientific Drilling Program (ICDP). Ulrich Harms of ICDP, Julian Pearce and Chris MacLeod (ESSAC chairs) provided brief updates on future plans for drilling operations, workshops, and associated activities.

Arctic Coring expedition scientists publish in Nature

Four articles reporting the initial results from the IODP Arctic Coring Expedition 302 (ACEX) were published in the June 1, 2006 issue of Nature (www.iodp.org/recently-in-the-news). Following publication in Nature, ACEX scientific results made headlines in countless print, television, radio, and online news media in more than 20 countries. Two key stories published in the New York Times and on the Associated Press (AP) newswire were picked up by news agencies around the world. ACEX even featured as the subject of a cartoon in the Daytona Beach Journal! Headlines generally reported that 55 million years ago, water temperatures in the Arctic were similar to present-day temperatures in Florida. News reports also focussed on the sudden growth of large quantities of the free-floating fern, Azolla, about 49 million years ago, an indicator of fresh surface water and cooler conditions that enabled ice formation much earlier than previously believed.

The key factors that contributed to this outreach effort's success were the co-ordinated outreach by a larger-than-usual network of media relations professionals, including public information officers at institutions that represent ACEX science party members, plus IODP IO outreach specialists, ECORD, NSF, and MEXT. Co-ordinated outreach with Nature magazine, where the IODP news release was posted online at nature.com, along with the embargoed ACEX news articles, also led to numerous journalists having time to start preparing articles to release as soon as the embargo lifted. It also helped that the ACEX story dovetailed with the U.S. release of a movie about global warming produced by a prominent American political figure!

Examples of the resulting ACEX coverage, with regional overviews, can be viewed at www.iodp.org/more-ACEX-news-coverage/.The IODP news release that helped kick off the media frenzy can be viewed at www.iodp.org/nature-06012006/. The ACEX expedition page, including expedition reports, is online at www.ecord.org/exp/acex/302.

ACEX featured once again in the August 10th issue of Nature in an article that summarised findings of further evidence that the Arctic was extremely warm, unusually wet, and ice-free up to the time the last massive amounts of greenhouse gases were released into the Earth's atmosphere during the Paleocene/Eocene thermal maximum (PETM) (www.iodp.org/recently-in-the-news).

Tahiti Expedition Press Conference

The Tahiti Sea Level Expedition Onshore Science Party Press Conference was held on March 2 at the Bremen Core Repository *(See page 3)*. A press release was issued prior to the conference and a number of media groups were contacted directly to inform them of the event.

ECORD on-line and Publications

The ECORD web site, www.ecord.org, is the official ECORD web portal that keeps you informed about the different ECORD bodies (ESSAC, ESO, EPC and EMA), the program expeditions, the MSP publications & reports and the E&O activity. ESO web pages are currently being revised with a new design, featuring issues specifically related to MSP expeditions. They will be re-launched during October 2006. All ECORD publications are available for download at www.ecord.org/pub/publications. You may also request paper copies at: ema@ipgp.jussieu.fr. The most recent publications, the MSP flyer *(Figure 2, right)* and a poster presenting the IODP drilling platforms, were released in April 2006.

The ECORD web site is closely related to the IODP website (www.iodp.org) and to the national IODP offices from ECORD member countries. Guidelines for style and content of national IODP web sites are being prepared and ECORD members who do not have a web site will be encouraged to develop information on-line. The German member of IODP has relaunched the portal www.iodp.de, which gives access to both the German coordinator Bundesanstalt für Geowissenschaften in Hannover and the Bremen Core Repository at Bremen University.

ECORD Outreach Team: Albert Gerdes & Alan Stevenson, ESO, and Patricia Maruéjol, EMA.

New Jersey Shallow Shelf - Expedition 313: Scientific Programme

Drilling for the IODP New Jersey Shallow Shelf Expedition 313 is planned for late Spring 2007. The expedition will focus on Early to mid Miocene (~24–14 Myr old) siliciclastic sequences on this passive margin to estimate the timing and magnitudes of eustatic sea-level changes, and determine the relationship between sea-level change and sedimentary architecture of the paralic and nearshore sediment prism *(See www.ecord.org/exp/new-jersey/313 for prospectus).* Major developments in the Earth system over approximately this period include intense Antarctic glaciation at the beginning of the Early Miocene and at the end of the Middle Miocene, events which bracket a mid-Miocene 'Climatic Optimum' when ice sheets were at a relative minimum. Thus the expedition will yield information about changing characteristics of short-term sea-level change through contrasting glacial states.

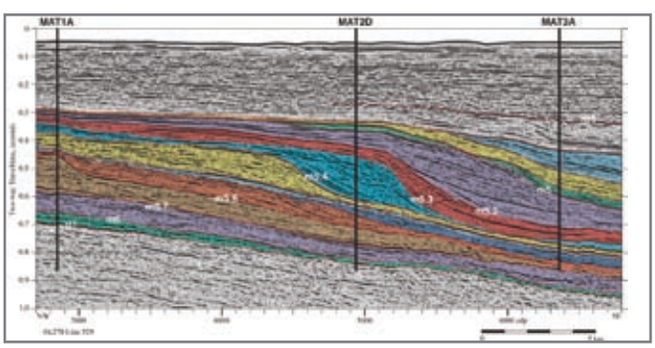


Figure 1. Seismic reflection profile showing Expedition 313 drill sites in relation to regionally mapped Early Miocene to mid Miocene depositional sequences (shaded). See Figure 2 for geographic locations.

The New Jersey margin is a good location to investigate the history of sea-level change and its relationship to sequence stratigraphy for several reasons: rapid depositional rates, tectonic stability, and well-preserved, cosmopolitan fossils suitable for age control characterize the sediments of this margin throughout the time interval of interest. In addition, there exists a large set of seismic, well log, and borehole data with which to frame the geologic setting from the coastal plain across the shelf to the slope and rise. The three holes to be drilled, sites MAT-1, MAT-2 and MAT-3, form a key part of a transect of boreholes drilled over the last fifteen years in a multi-agency effort to document eustatic sea-level history for the whole of the mid to late Cenozoic *(Figure 1, above)*. This 'New Jersey/Mid-Atlantic Transect' (NJ/MAT) has included drilling both onshore and offshore, ODP Legs 150X, 174AX, 150 and 174A *(Figure 2, right)*. Expedition 313 is different from these previous missions in that it targets the region most sensitive to sea-level change, the shallow shelf, and the technology aboard the mission specific platform is well suited for recovering sand-prone shelf sediments.

Previous drilling in the New Jersey margin has provided ages for sequence stratigraphic surfaces extending as far back in time as the late Cretaceous. Furthermore, lithofacies and biofacies data from onshore sites have provided the basis for eustatic estimates which have included one and two dimensional backstripping procedures that account for the effects of tectonic subsidence as well as water and sediment loading. However, studies of the onshore deposits have given an incomplete record of change because lowstand components of the sequences are missing in these locations and the continental slope sites give no quantitative information about palaeobathymetric change. By contrast, Expedition 313 sites will sample for the first time both lowstand and highstand deposits of the Early to mid Miocene *(Figure 1, left)*. In addition to providing quantitative eustatic estimates through complete sea-level cycles, data from Expedition 313 will yield data to test the assumptions needed to make glacioeustatic estimates from $\delta^{18}O$ records and evaluate the Cenozoic sea-level/δ_w calibration based on backstripping the incomplete onshore record. Although both backstripping and $\delta^{18}O$ methods have inherently large assumptions, the growing convergence of results of the two methods suggests that a testable eustatic model can be produced. Other issues that we hope to resolve with Expedition 313 include: (1) the bathymetry of siliciclastic clinoform surfaces, which form the basis for most sequence stratigraphic models but are presently largely unconstrained in such ancient shelf settings; (2) the relationships between environmental and climatic changes taking place on land and those taking place in the ocean during sea-level cycles; and (3) relationships between oceanic parameters that reflect Milankovitch processes (such as seawater carbon-isotope composition) and the observed sea-level cycles.

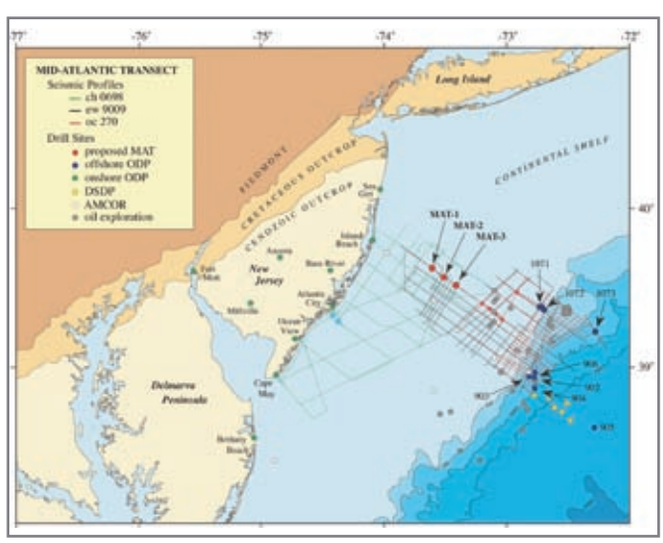


Figure 2. Drill sites for Expedition 313 (MAT-1, MAT-2 and MAT-3) and positions of boreholes drilled previously as part of the New Jersey/Mid Atlantic Transect.

Stephen Hesselbo and Gregory Mountain, Expedition 313 co-chiefs

New faces at ECORD

ESSAC Science Coordinator Dr Federica Lenci left her post in July 2006 to get married and start a new life in Australia. Her energy and initiative are sorely missed and we wish her well Down Under. We are delighted to welcome in her place Dr Elspeth Urquhart, who joins the ESSAC Office in Cardiff. Elspeth will be familiar to many of you from one of her former guises. From 2001-2003 she worked for the Ocean Drilling Program (ODP) as International Liaison for the Joint Oceanographic Institutions in Miami, a job very similar to the present ESSAC Science Coordinator position. Prior to that she worked for Robertson Research International as a micropalaeontologist and stratigrapher, and then held a lecturing position at the University College London. Her main research interest is in the use of siliceous microfossils as predictive tools in environmental change. Elspeth sailed on ODP legs 173 and 210.

Chris MacLeod, the ESSAC Chair and head of the ESSAC Office, is returning to full duties. In October 2005 Julian Pearce stepped in as acting Chair while Chris recovered from serious illness. Chris gradually increased his involvement in ESSAC affairs over the past nine months and, now that he is fighting fit again, is fully at the helm. Julian has therefore stepped down from any active role in ESSAC affairs. We offer our sincerest thanks to Julian for all his efforts on behalf of the committee and ECORD as a whole.

Rosa Bernal-Carrera is the new EMA executive assistant. She replaces Svetlana Zolotikova who recently resigned to move to UK. Rosa has a background in geophysics. She has lived in different countries and is fluent in Spanish, English and French. These skills will be very useful in her new position in an international programme.

Recent and Forthcoming Workshops

♦ **EuroForum (incorporating an IODP Proposal-Writing Workshop)** - Magellan (UKIODP/ESF, 8-9 May 2006, Cardiff, UK *(See photo, right)*

♦ **Fault Zone Drilling: Developing a Global Perspective,** IODP-MI (co-mingled funds), 23-26 May 2006, Miyazaki, Japan

♦ **Deep Sea Floor Frontier**, ECORD-net, 1-2 June 2006, Naples, Italy

♦ **Climate-Tectonic Drilling Studies in Southeast Asia**, J-DESC, InterMARGINS, USSAC, UKIODP, 5-7 June 2006, Kochi, Japan

♦ **Mission Moho** IODP-MI, 6-9 Sept 2006, Portland, Oregon, USA

IODP photo by F. Tamburini

♦ **Chicxulub Crater Drilling**, IODP-MI/ICDP, 11-12 Sept 2006, Potsdam, Germany

♦ **Investigating Continental Break-Up and Sedimentary Basin Formation,** IODP-MI, 15-18 Sept 2006, Pontresina, Switzerland

♦ **Sub-Seafloor Life with the Integrated Ocean Drilling Program**, IODP-MI, 3-5 Oct 2006, Vancouver, Canada

♦ **Capturing a Salt Giant**, Magellan (ESF), 13-15 Oct 2006, Hamburg, Germany

♦ **Scientific Ocean Drilling Behind the Assessment of Geohazard from Submarine Slides**, Magellan (ESF), 25-27 Oct 2006, Barcelona, Spain

♦ **Drilling Through an Active Caldera, Offshore Campi Flegrei, Eastern Tyrrhenian Margin**, Magellan (ESF), 6-8 Nov 2006, Naples, Italy/Zürich, Switzerland

♦ **Ocean Margins LINK Programme,** NERC,15-16 November 2006, London, UK

♦ **Submarine mass movements and their consequenses** - Santorini, UNESCO-IGCP 511, 1-3 October 2007

Potential workshops on Geohazards and Large Igneous Provinces are currently under consideration by IODP-MI for funding in 2007.

ESF/MAGELLAN CALL FOR PROPOSALS: NEXT DEADLINE 15 NOVEMBER 2006

Chris MacLeod

ECORD *Science Support & Advisory Committee*
Updates

Workshops

At the present time, in the autumn of 2006, no IODP scientific drilling operations are taking place. That is not to say that there is no activity at the present time – quite the contrary. Following the temporary cessation of operations at the end of 2005, the scientific community has instead been focusing its attentions and energies on reviewing what has been achieved so far and the best way to proceed in the next phase of IODP. Throughout 2006 a series of topical scientific workshops has been held, on subjects spanning the major themes of the IODP Initial Science Plan. They have had the intention of bringing together as broad a section of the community as possible, experts and up-and-coming young scientists alike, to determine how best to utilise the new, enhanced capabilities of the drilling platforms available in IODP to maximise the potential for scientific advancement in their particular field. Two separate workshop series have been organised and are running in parallel: on a world-wide level, by IODP Management International (IODP-MI); and on a European level, under the aegis of the 'Magellan' programme. The latter are now being administered on ECORD's behalf by the European Science Foundation (ESF). Whereas the topics of the IODP-MI workshop series have been decided on a 'top down' basis – i.e. chosen strategically by the top levels of the IODP SAS– the Magellan workshops are 'bottom up', chosen on a competitive basis from proposals submitted by members of the European scientific community. The ESF are issuing calls for new workshop proposals on a twice-yearly basis: their next deadline is **15 November 2006** (See www.esf.org for details). Many members of the Magellan Steering Committee also serve on ESSAC, providing a two-way mechanism for ESSAC and ECORD to have some strategic scientific input into the direction of future IODP activities.

A list of the recent and forthcoming workshops held under the IODP-MI and Magellan umbrellas is given *page 7*. Reports from some of the meetings may be accessed via the ESSAC web site (www.essac.ecord.org); others will be posted as they become available.

A major change has been introduced by IODP-MI in the way major scientific questions are to be addressed in the next phase of IODP. Concerned that some of the larger scale initiatives identified in the Initial Science Plan as key scientific questions for the next decade are only being tackled in a piecemeal, ad hoc manner in the present proposal system, IODP-MI have come up with the concept of 'Missions'. These are envisaged as 'super-proposals' for multi-year operations involving a number of individual drilling expeditions, with the coherent, broad-scale goal of addressing one of the major strategic initiatives of the Initial Science Plan. IODP-MI consider them comparable in their scope and strategic vision to NASA's lunar missions. One such Mission in IODP could, for instance, be a 'Mission Moho': a focused series of drilling expeditions targeting oceanic basement, with the long-term goal of drilling a total ocean crustal section and penetrating the mantle. If approved, such a Mission would in effect resurrect the abortive 'Project Mohole' concept of the 1960s, a still-born idea which nevertheless paved the way politically and technologically for the highly successful Deep Sea Drilling Project later that decade, and eventually ODP and IODP. The forthcoming NanTroSEIZE drilling operations could potentially be considered as the first IODP Mission; in essence, a refinement of the earlier concept of a 'Complex Drilling Program', with more or less the same broad-scale strategic vision.

Although Mission proposals are to come from the scientific community, some of the potential Mission topics are likely to be along the lines of the subjects of the IODP-MI sponsored workshops. Some of the workshops may generate Mission proposals directly. Because of the long-term implications for resources, only 2-3 Missions are envisaged to be in operation at any one time. Missions are intended to run in parallel to, and not replace, the present single-expedition proposal system and mode of operations.

Forthcoming operations

IODP operations are to resume with a vengeance in 2007. Mission-specific platform Expedition 313, operated by the ECORD Science Operator (ESO) is scheduled to commence drilling on the New Jersey margin in the middle of the year. Nine ECORD scientists have accepted invitations to become members of the expedition science party, including co-chief scientist Stephen Hesselbo from Oxford (UK).

The new riser drillship *Chikyu* should come into service in September 2007, drilling in the Nankai Trough. She is currently undergoing sea trials off NE Japan, for the first time testing the riser and blow-out preventer. Drilling to 2200 m below seafloor (mbsf) will take place during this phase. Further test drilling, in collaboration with petroleum industry partners, is scheduled from November 2006 until August 2007 off Kenya and NW Australia. Riser drilling to an eventual depth of 4400 mbsf is planned.

The schedule for forthcoming ***Chikyu*** IODP operations is as follows:

NanTroSEIZE (Stage 1): Logging-While Drilling Transect September-October 2007
NanTroSEIZE (Stage 1): Mega-Splay Riser Pilot Hole, November-December 2007
NanTroSEIZE (Stage 1): Thrust Faults, January-February 2008
Maintenance, March-May 2008
NanTroSEIZE (Stage 2): Mega-Splay Riser, June 2008, TBD

Meanwhile, the riserless drillship *JOIDES Resolution* is due to go into dry dock in November 2006, probably at a shipyard in East Asia. The ship is due an extensive refit, including addition of a completely new lab and accommodation stack, which will increase the length of the ship by 30 feet (10 metres). She is scheduled to return to operations, complete with a new name, in November 2007. However, at the time of writing some

uncertainty remains: because of buoyant demand in world shipyards the price of the refit has increased substantially, and the scope of the upgrade to the vessel may have to be reduced unless further funds can be found.

The schedule for operations on the **upgraded *JOIDES Resolution*** for its first year back in service has been confirmed. It is as follows:

Equatorial Pacific Transect 1, November-December 2007
NanTroSEIZE (Stage 1): Subduction Inputs, January-February 2008
NanTroSEIZE (Stage 1): Kumano Basin Observatory, March-April 2008
Bering Sea, May-June 2008
Juan de Fuca Hydrogeology 2 (Expedition 301 follow-up), July-August 2008
Equatorial Pacific Transect 2, September-October 2008

The preferred plan is that this should be followed by expeditions to the Canterbury Basin (New Zealand) and thence Wilkes Land in Antarctica. However, clearance has not yet been obtained for the Canterbury expedition because of the potential risk of shallow gas at the proposed drill sites. A hazard assessment is awaited. If the outcome is unfavourable then both the Canterbury Basin and Wilkes Land expeditions will be postponed until a later time.

The IODP Science Planning Committee, acting upon advice from the Operations Task Force, has recommended that the non-riser drillship return to the Pacific in 2009-10 after the above operations (with or without Canterbury/Wilkes) are completed. It is possible that some of the highly-ranked proposals in the Indian Ocean may be drilled by *Chikyu* (perhaps in riserless mode) during this period.

Call for applications for participation in IODP expeditions

Applications are currently being sought from scientists who wish to participate in the forthcoming IODP expeditions. In particular, ESSAC is currently encouraging scientists from the 17 ECORD nations who may be interested in sailing on the five Nankai Trough seismogenic zone ('NanTroSEIZE') expeditions: two on the upgraded *JOIDES Resolution*, three on *Chikyu*. Details of the broader scale goals of the NanTroSEIZE project, and on the objectives of the five individual expeditions, may be found in the *Table below,* or at www.iodp.org/nantroseize (or follow link on ESSAC web site).

We are looking for applicants at all career stages, including postgraduate students, with interests and expertise in lithostratigraphy, geochemistry, micropalaeontology, palaeomagnetism, physical properties, structural analysis, hydrogeology, logging interpretation, log-seismic integration, downhole measurements, and long-term observatory science.

Financial support for those European-based researchers who are invited by the expedition operators to become part of the international science parties is provided by the national offices of member nations of the ECORD consortium (Austria, Belgium, Canada, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, The Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom). We suggest you contact your national office directly for details of the level of support they will provide (www.essac.ecord.org/partners.php).

Although the deadline for applications for the NanTroSEIZE expeditions is officially 15 October 2006, some places may be available at a slightly later date (if there remain gaps in particular areas of expertise, for example). In this case please contact the ESSAC Office (ESSAC@cardiff.ac.uk) as soon as possible, or if you have any other queries regarding expedition participation or access to samples.

Applications to participate in the other non-riser expeditions will be issued shortly. Again, look at the ESSAC web site for the call for applications and deadlines.

Chris MacLeod, ESSAC chair and Elspeth Urquhart, ESSAC science co-ordinator

Expedition (numbers not yet allocated)	Estimated Duration (Days)	Expedition Name	Expedition Objectives	Expedition Expertise
Chikyu 1	53 (Sept-Oct 2007)	NanTroSEIZE Logging While Drilling (LWD) Transect	Riserless drilling logging-while-drilling technology (no coring) at six Stage 1 sites	Physical properties, Structural analysis, Lithostratigraphy, Logging interpretation, Log-seismic integration
Chikyu 2	24 (Nov-Dec 2007)	NanTroSEIZE Megasplay Riser Pilot Hole	Riserless coring to sample forearc basin sediments and deformed accretionary prism with fault zones derived from a megasplay fault system; preparatory site for intermediate-depth Stage 2 riser site	Physical properties, Lithostratigraphy, Structure, Geochemistry, Micropalaeontology, Palaeomagnetism
Chikyu 3	57 (Jan-Feb 2007)	NanTroSEIZE Thrust Faults	Riserless coring of frontal thrust and splay fault targets	Lithostratigraphy, Structure, Hydrogeology, Physical properties, Geochemistry, Micropalaeontology, Palaeomagnetism
JOIDES Resolution replacement 1	54 (Jan-Feb 2008)	NanTroSEIZE Subduction Inputs	Coring of Shikoku Basin sediments to determine inputs to the seismogenic zone	Lithostratigraphy, Physical properties, Hydrogeology, Geochemistry, Micropalaeontology, Palaeomagnetism
JOIDES Resolution replacement 2	53 (Mar-Apr 2008)	NanTroSEIZE Kumano Basin Observatory	Coring entire forearc basin section and upper portion of underlying prism; installation of observatory to monitor seismicity, strain, pressure, and temperature; pilot site for deep riser site	Long-term observatory science, Downhole measurements, Physical properties, Lithostratigraphy, Geochemistry, Micropalaeontology, Palaeomagnetism

Applications from ECORD scientists should be made on-line via ESSAC, at: www.essac.ecord.org/sailform1x.php

What is ESSAC, and what is it for?

To many, perhaps most, of you, the drilling program in the broadest sense is little more than a mass of bewildering acronyms. Given that IODP (the Integrated Ocean Drilling Program) will soon be costing $160M/year to run, it is inevitable that a highly complex planning and management structure is necessary, and with it a plethora of committees and organisations plus their attendant acronyms.

However, if your interest in IODP is purely as a scientific 'user' – either in participating in an IODP expedition, obtaining or working with existing samples for your research, or simply your own curiosity – then knowledge of many of these committees and acronyms is unnecessary.

We nevertheless steer you towards one, which hopefully should assist you in finding your way around. This is ESSAC, the Science Support and Advisory Committee of ECORD (the European Consortium for Ocean Research Drilling). ESSAC is responsible for the scientific planning and coordination of the European consortium's contribution to and participation in IODP. In other words, it is the portal between you, the scientist, and the global IODP program. It works in both directions, attempting to ensure that your country's national interests are met at a European and global level, and at the same time reporting back news and information of relevance to you, the scientific community.

Much of the information about what is going on in the program, and how you can be involved in it, is relayed via the ESSAC web site – **www.essac.ecord.org** – and by occasional e-mails to people who have signed up on the mailing list (which can be done via the web site, or by contacting **ESSAC@cardiff.ac.uk**). The ESSAC Office, currently hosted at Cardiff University, in the UK, is always available to answer any queries you may have regarding IODP at whatever level.

You should also make use of your national representative on ESSAC *(See Table below)*. The ESSAC committee itself consists of a panel of 17 scientists, one from each of the member nations of ECORD. They are all experienced scientists with close personal knowledge of the workings of IODP: most also serve or have served on the various IODP planning or advisory committees *(See Table, page 11)*. These delegates are tasked to ensure that your country's national interests are met at a European and global level, and at the same time to report back news and information of relevance to you, the scientific community, in your country. Their names and contact details are listed here: make use of them!

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More information: www.essac.ecord.org/sasreps

Submit a Proposal ?

Next submission deadline: April 1, 2007

How to Participate ?
Further information at:
www.ecorg.org

ERA-NET

The Deep Sea Frontier Initiative has reached its first milestone !

The **Deep Sea Frontier Initiative** attempts to combine the scientific expertise of the ocean floor drilling community, ocean margin researchers and sea floor observation scientists. Initiated by the European Commission-funded ECORD-net, scientists and science managers from numerous European countries agreed on a science plan as template for European research in the deep sea in the next decade. This science plan will be published in early 2007.

Since the first meeting of representatives of the European research communities on ocean drilling, ocean margin research, and sea floor observation one year ago, the Deep Sea Frontier initiative (DSF) has evolved rapidly towards a joint research programme on deep sea and deep sea floor science.
A first milestone was reached by implementing a workshop in Naples on June 1 to 2, 2006 *(See photo, below)*, which brought together 70 scientists from 11 European countries, invited keynote speaker from Canada, representatives from the oil industry as well as programme managers and administrators of national and European funding agencies.

The aim of the workshop was the identification of research needs and new research targets in European marine sciences, as well as a better integration of the involved scientific fields to create joint research programmes in deep sea floor science for the next decade.
During this workshop, experts from a wide range of scientific disciplines such as geophysics, seismology, sedimentology, geochemistry, paleontology, paleoclimatology, paleooceanography, marine geology, volcanology, marine biology, microbiology, fisheries, and marine policy jointly discussed the challenges, chances and threats of innovative research and technology developments in marine sciences. Six scientific target fields were identified as major foci for this new initiative:

- History, monitoring and prediction of geohazards,
- Biosphere-Geosphere interactions – affecting margins, oceans and the atmosphere,
- Climatic control and feedbacks in the deep sea environment,
- Development and conservation of deep sea ecosystems,
- The deep sea landscape – sediment transport and fluxes,
- Sustainable exploitation of deep sea resources.

During the two-day workshop the scientists identified pressing research topics in deep sea science, developed integrated research approaches, and discussed scientific and technological implementation strategies. The involvement of industry partners interested in deep sea research, such as the hydrocarbon industry, is an important part of the initiative. One further and important aspect that the DSF pursues is to provide data and information to policy makers as tools for the development of management concepts for the conservation and a sustainable exploitation of the deep sea environment.

The Steering Committee of the DSF, which includes 12 representatives of the respective European research programmes and the ECORD-net, is now finalising a "Foresight Paper" on deep sea science for the next decade. This is planned to be published in the beginning of 2007.

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http://www.ecord.org/enet/deepsea-sf.html
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ECORD-net: European Research Area for scientific drilling
Project nº ERAC-CT-2003- 510218, European Consortium for Ocean Research Drilling Network
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