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Nigel Wardell

From the Council Chair

In the last six months IODP has continued with the levels of intense activity that began in March 2009, with all three platforms operational. In October the *Chikyu* successfully completed Expedition 322, NanTroSEIZE Stage 2: Subduction input, sampling the basaltic pillow lavas from the subsiding Philippine Sea Plate. Following the Shatsky Rise Expedition, the *JOIDES Resolution* moved down to the southern hemisphere to undertake the Canterbury Basin and Wilkes Land expeditions that were postponed from last year. Meanwhile, ESO is currently operating an MSP in the Great Barrier Reef Environmental Changes project off Australia. Following a rather lean phase in the program, we have now had an impressive total of ten drilling expeditions in 12 months!

Closer to home, as EMA Director Catherine Mével points out on [page 9](#), the ECORD Council meeting in Rome in November saw a number of new faces. This is a positive development, bringing new ideas into ECORD at a time when we are discussing the new program post 2013 and I would like to welcome them all to Council. However, at the same time, remembering that 'new' faces mean that 'old' faces have moved on to other assignments. One of these who was particularly missed was the UK delegate, Chris Franklin. Chris was one of the founding members of ECORD in 2003 and held the Chair for three terms during his tenure as Council Member. His knowledge, experience and attention to detail were invaluable in Council. I would like to thank Chris for his dedication and contributions to ECORD and wish him all the best in his new assignment.

One other 'old hand' who is moving on - into retirement - is Dan Evans the Science Manager of ESO ([pages 2-3](#)). The

success of the mission-specific platform concept is in a large part due to Dan's untiring effort and dedication, and I take this opportunity to thank him on behalf of Council and to wish him all the best in his retirement. Council has recognised that the success of the MSP concept has given an additional and important European dimension to IODP and is actively planning for another two MSP expeditions before the end of the current program.

In fact, the success of the MSP concept has encouraged new proposals to IODP in areas such as recent climate change and natural hazards hitherto regarded as inaccessible to the program. One of the fundamental questions for ECORD in the new program will be the balance between contributing to the co-mingled funds and ensuring participation for European scientists in *JOIDES Resolution* and *Chikyu* expeditions, and financing and running MSP expeditions. I feel that both can contribute greatly to the scientific goals of the program and should be equally pursued.

One thing is for certain; the current IODP program is back on track delivering the science that only comes from ocean drilling. And a rich schedule of drilling is still planned to complete the current phase of the program. Participation in the program is important for the science community in every contributing country and scientists, especially young ones who can carry the torch forward, should be given every encouragement to submit applications to the expeditions and thus experience at first hand this unique science program.

Nigel Wardell, ECORD Council Chair, October 2009 to March 2010

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The ECORD Newsletter is published twice a year by the ECORD Outreach Team - Patricia Maruéjol (EMA), Alan Stevenson and Albert Gerdes (ESO) and Jenny Lezius (ESSAC) - who are grateful to all authors who have contributed to this issue.

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<http://www.ecord.org>

Front cover: All pictures are from the Great Barrier Reef Environmental Changes Expedition operated by ECORD from February 11 to April 6, 2010. Clockwise: Greatship Maya, the drillship of the expedition (Dave Smith©ECORD/IODP), Coral Sea sunset and cores lying in racking inside the reefer (Carol Cotterill©ECORD/IODP).

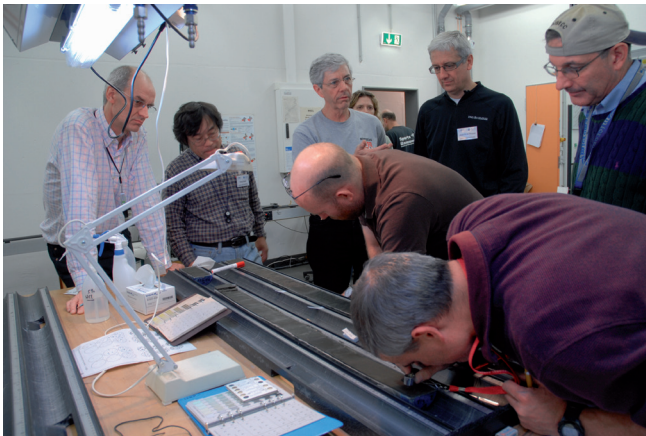


David McInroy



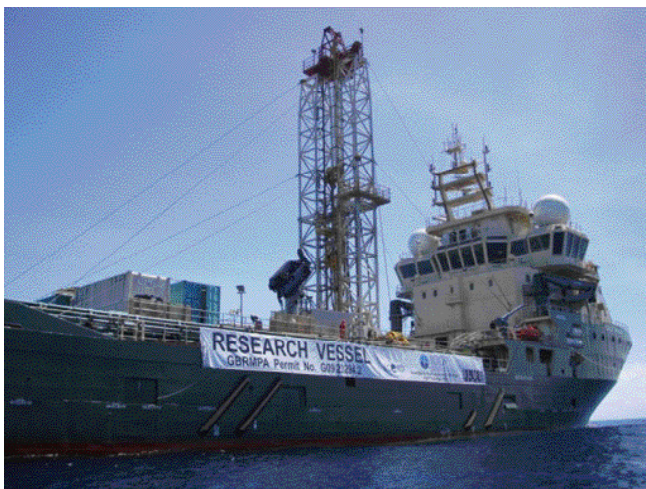
Alan Stevenson

The last few months have been a busy period for ESO, and there have been some changes in the management structure. In the last issue of the ECORD Newsletter we mentioned that the New Jersey Shallow Shelf (NJSS) Expedition Onshore Science Party had just started at the beginning of November. Ursula Röhl provides a full report of the OSP below and Albert Gerdes describes some of the outreach activities that took place while the scientists were in Bremen. NJSS Staff Scientist Dave McInroy provides an update on the progress made by the scientific team since the OSP ended.



The Onshore Science Party of the New Jersey Shallow Shelf Expedition.

The Great Barrier Reef Environmental Changes (GBREC) Expedition was due to start about the same time that the NJSS Onshore Science Party was taking place, however due to a change in the vessel that was contracted to carry out the coring, the GBREC expedition was postponed. The work finally got underway in February 2010, when the ESO team and members of the science party left Townsville, Queensland to embark on their 7 week expedition. A full report on the expedition and the OSP, which is scheduled for



The Greatship Maya, drillship of the GBREC Expedition.

July 2010, will be included in the next ECORD Newsletter. At the time of writing, the expedition has about another 7-8 days to go. Despite some technical difficulties and some unfavourable weather, the Co-Chief Scientists Jody Webster and Yusuke Yamamoto report that they are pleased with the coring results that have been obtained.

A significant change in management of ESO has recently taken place. At the end of April 2010, Dan Evans will retire from the British Geological Survey. Dan has been Science Manager with overall responsibility for co-ordination of ESO since it was established in 2003. Dan's expertise and companionship will be greatly missed by all of his colleagues in ESO, and throughout the broader IODP community, and we wish him well in his retirement. Dan has agreed to remain as an adviser to ESO, similar to the arrangement made with former ESO Operations Manager Alister Skinner, so we will continue to see him occasionally and will be able to draw on his vast experience in IODP.



Dan's departure has resulted in a slight re-organisation of the management structure of ESO; as of March 15, day-to-day management and the ESO Science Manager role was taken over by David McInroy. Dave has also been involved in ESO since its inception and has taken part in the ACEX, Tahiti and New

Jersey MSP expeditions - the latter two as Staff Scientist. Dave has also represented ESO on a number of IODP/ECORD committees and so is well known to the ocean drilling community. To assist Dave during the transitional phase following Dan's retirement, Robert Gatliff has been appointed as ESO Chair. As Head of Marine Geoscience, Robert is a senior member of the BGS management team - he has more than 30 years experience in marine science and spent a large part of his early career overseas. Robert will assist Dave in the co-ordination role within the ESO consortium and will represent ESO at some of the IODP Committees, such as the Science Planning Committee, and will be involved in IWG+. The new Science management team is expected to hit the ground running and will of course be assisted by the very experienced ESO Managers with responsibility for the Bremen Core Repository, European Petrophysics Consortium and the Operations, Data and Outreach Managers at BGS.

Alan Stevenson, ESO Outreach Manager
David McInroy, ESO Science Manager

A Farewell from Dan Evans

Time has passed very quickly since 2003 when I began my role with ESO and attended my first IODP meeting which was an initial Implementing Organization meeting held at the unlikely location of Bozeman, Montana. On landing in Minneapolis and telling the US Immigration Official that I was going to attend a meeting about ocean drilling his response was "I'll be real impressed if you can drill the ocean from Bozeman, Montana!"



Dan Evans, ESO Science Manager, at the first Onshore Science Party - Arctic Coring Expedition - held in Bremen.

ESO was thrown in at the deep end to implement its first mission-specific (MSP) expedition in 2004. This was the logistically complex Arctic Coring Expedition (ACEX), a high-risk coring expedition to a previously undrilled and ice-covered part of the Arctic Ocean where the nature of the sub-seabed was virtually unknown. Unfortunately, despite the success of ACEX, it is unlikely that another scientific drilling expedition to the ice-covered Arctic will take place for a few years, and indeed the pioneering aspect of ACEX is emphasised by the fact that to my

knowledge only the one comparable expedition that has taken place since (and that was led by industry) used the same specifically converted drilling vessel and leaned heavily on the operational experience of ACEX.

Subsequently ESO has been able to overcome a list of wide-ranging obstacles too great to mention in order to successfully implement the Tahiti Sea Level, New Jersey Shallow Shelf and Great Barrier Reef Environmental Changes expeditions. Each has used a different platform and although as I write the GBREC offshore expedition is not completed, it is clear that MSPs have brought an important new dimension to both the science and operations of scientific ocean drilling, as well as introducing the concept of Onshore Science Parties. I believe that this success is now being recognised in the increasing number of MSP proposals in the system and in a continuing demand for MSPs in the New Program that was evident from discussions at INVEST.

Despite the challenges, it has been a fascinating journey (albeit not quite finished yet) and it has been a privilege to work with such knowledgeable and committed ESO colleagues at BGS, the University of Bremen and at the European Petrophysics Consortium. It has also been a great experience to work with Catherine Mével, the Director of EMA, and indeed with the ECORD Council, ESSAC and within the whole IODP structure. I take away a lot of good memories of places and particularly of people.

I would like to extend every good wish for the future to the IODP in general and particularly to ESO and those of you participating in whatever way under the ECORD banner.

Dan Evans

Prograding clinoforms and Oligo-Miocene eustatic variations: First results of the New Jersey Shallow Shelf Expedition

The New Jersey margin, because its geology is known and is easily accessible, is an especially attractive location for documenting sedimentation during times of large sea-level change. Equipped with the mission-specific platform *L/B Kayd*, IODP Expedition 313 attempts to make fundamental discoveries concerning the workings of this complex and fundamental set of Earth processes. Despite its importance, knowledge of the basic amplitudes and rates of sea-level variations on timescales of tens of thousands to millions of years is surprisingly limited. Expedition 313 helps address this deficiency in the way endorsed by several study groups: by sampling key facies across the prograding deposits of a passive continental margin, such as New Jersey.

IODP Expedition 313 took place from April 30 to July 17, 2009 on the shallow shelf between 46 and 60 kilometres off the New Jersey coast. The associated Onshore Science Party took place from November 6 to December 4, 2009 at the IODP Bremen Core Repository and laboratories in the MARUM building on the campus of Bremen University in Germany.

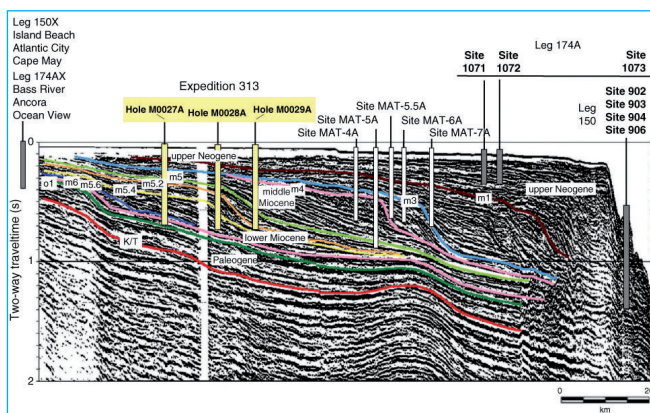
The overriding reason to return to the New Jersey margin was to recover the lowstand sediments that are missing in the coastal plain, have been dated at slope boreholes, and can be tied to the arrangement of composite siliciclastic packages seen in seismic profiles. Continuous cores from Holes M0027A–M0029A will

provide estimates of eustatic amplitudes, a testable record of eustatic variations, and the opportunity to evaluate models that predict the nature and distribution of facies in passive margin strata.

Holes M0027A–M0029A targeted upper Oligocene to middle Miocene seismically imaged prograding clinoforms that were deposited in inner–middle neritic paleodepths (based on coeval onshore strata deposited in nearshore/prodelta settings). Prior to the Expedition, we obtained excellent seismic profiles of these clinoforms at locations that are most likely to record the full amplitude of sea-level change: directly landward of and near the toes of the clinoforms (i.e., across the clinoform inflection point). Modern water depths in Holes M0027A–M0029A are

holes, as well as in several older intervals (sometimes several tens of metres thick) in Holes M0027A and M0028A. The value of a drilling transect strategy was demonstrated by the many thin (10–20 m) topset units drilled in one or both of Holes M0027A and M0028A that could be matched by age, facies, log, and/or seismic correlation to the toset strata seaward of clinoform rollovers. An additional purpose of drilling a transect of holes was to improve the chance of more nearly continuous accumulation in a basinward, deeper setting than is found in the more landward, shallower holes; initial geochronology shows this has worked exactly as planned.

Mollusk fragments and benthic foraminifers have thus far provided more than 100 ⁸⁷Sr/⁸⁶Sr age dates. Calcareous nannofossils are

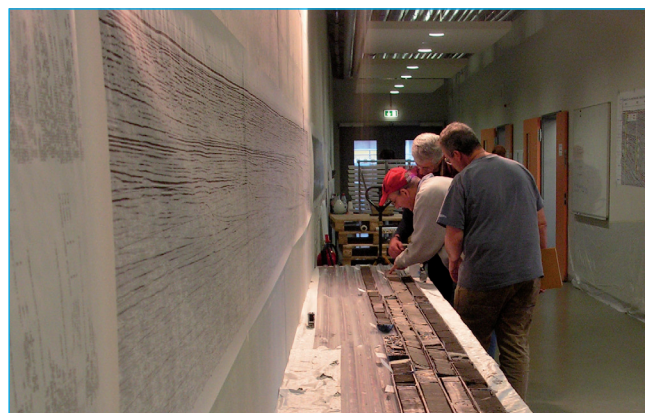


Ew9009 Line 1003 through Holes M0027A, M0028A, and M0029A (yellow subsurface columns). Generalized locations of ODP boreholes onshore and offshore (gray columns) and previously proposed but undrilled Sites MAT-4A to MAT-7A (white columns) are also shown. Several key surfaces (colored lines; K/T boundary = -65 Ma, o1 = -33.5 Ma, m5 = -16.5 Ma, m4 = -14 Ma, m3 = -13.5 Ma, and m1 = -11.5 Ma) have been traced from the inner shelf to the slope. The clinoform shape of sediments bracketed by these unconformities is thought to be the result of large sea-level fluctuations (Vail and Mitchum, 1977).

34–36 m, a fortunate "crossover" depth between being too far landward for detailed control on sequence geometry (i.e., thorough seismic control on land is not possible) and too far seaward for affordable commercial drill rigs. Holes M0027A–M0029A were optimally located to sample several clinoform packages across a 22 km transect.

The two overarching goals of Expedition 313 were to (1) recover a complete and measurable record of Oligocene–Miocene eustatic variation and (2) evaluate models of sedimentation on siliciclastic continental shelves during a time of known eustatic oscillations. Achieving both goals will require considerable shore-based analysis and integration among disciplines, and it is too early to gauge how successful we will be. Nonetheless, there are several positive indications.

Despite penetrating the Miocene/Oligocene boundary in only Hole M0027A, the key target interval of middle to lower Miocene sediments was cored in all three holes with 80% recovery. Core quality is generally very good to excellent; poorly lithified sand was a drilling and coring challenge in the post-middle Miocene section above roughly 200 mbsf at all



Cores and seismic lines being discussed by Greg Mountain (Co-Chief Scientist), Ken Miller (Modeler/Stratigraphic Correlator) and Donald H. Monteverde (Modeler/Stratigraphic Correlator) during the Onshore Science Party.

often abundant and provide ages largely consistent with Sr isotope ages. Dinocysts and pollen prepared prior to the OSP are common in many intervals, and additional studies will be beneficial; the presence of distinctive pollen assemblages restricted in time are present in all three holes, potentially providing narrow and unexpected correlation markers. Shore-based preparation of planktonic foraminifers showed they are common in some intervals, and post-OSP analysis will provide additional age control. Although additional demagnetization of low-susceptibility sediments is required to measure remanent inclination values, certain fine-grained intervals have shown that magnetostratigraphy will assist in our final age control.

Benthic foraminifer assemblages are found in fine-grained intervals in each hole, providing an indication of water depths (relative sea levels) at the time of deposition. Thanks to excellent core quality, primary sedimentary structures (e.g. low-angle cross-bedding indicating a shoreface environment, storm beds preserved as fining-upward sharp-based sands, etc.) provide an independent measure of paleobathymetry. Vertical facies successions across surfaces and within sequences yield trends in paleodepths that provide broad-scale indicators of depositional environments and suggest a range of sediment transport mechanisms.

Gamma-ray response was logged through the pipe for 98% of the 2065 m of drilled hole, vertical seismic profiles were acquired in 83%, and a combination of five logging tools deployed in open



Ursula Röhl

New Jersey Shallow Shelf Expedition completed Onshore Science Party held at BCR

The IODP Expedition 313 New Jersey Shallow Shelf (NJSS) was the third mission-specific platform (MSP) expedition organised and carried out by ECORD. In the summer of 2009 three boreholes 45 to 67 km off the coast of New Jersey were cored in ~ 35 m water depths with the aim of providing new information on dating the late Paleogene - Neogene depositional sequences, estimating corresponding amplitudes, rates, and mechanisms of sea-level change, and evaluating sequence stratigraphic facies models that predict depositional environments, sediment compositions, and stratal geometries in response to sea-level change (*page 5*). During the offshore phase of the NJSS expedition onboard the *L/B Kayd*, three primary scientific activities were conducted: ephemeral properties (pore-water chemistry, microbiology, physical properties) were measured and/or selected samples were preserved; core logging and downhole logging was carried out; and near real-time core description was performed on cores through the liners and on core-catcher samples. The 1311 m of recovered cores (with 80% recovery), covering the period ~10 - 35 Myr of Earth history, were then sealed and stored in temperature-controlled containers and shipped to Bremen, Germany.



Scott Renshaw (ESO Core Technician) and Katharina Hochmuth (Core Laboratory Technician, student) during core splitting (© ECORD/IODP).

Due to the nature of MSPs, e.g. space and time restrictions cores usually are not split at sea and the main part of the science has to be conducted onshore. Therefore the third IODP MSP Onshore Science Party (OSP) was held from November 6 to December 4, 2009, in the IODP Bremen Core Repository (BCR), located in the MARUM building, Bremen University.

The science party was welcomed at an icebreaker party in the hotel on the evening before the start of the OSP. The first day was used for science meetings, presentation of offshore results, review of core processing and post-cruise science (including sample requests), and inspection of and training at the facilities. In contrast to standard IODP/ODP sampling parties, it was another extended experience to split cores and also acquire all the data for the IODP minimum and standard measurements during the following four weeks. About 65 people (scientists and operator personnel) worked in two shifts processing the New Jersey cores. All participants worked hard, helped each other, and came up with solutions as required.

This was a critical aspect in making this onshore party highly successful and to satisfactorily complete it within the schedule, as was the enthusiasm of everybody involved.



Discussion in the core lab (Johanna Lofi, Greg Mountain, Dayton Dove (Staff Scientist in Training) and Jean-Noël Proust.

The participants used different labs in the MARUM 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 extensive core description of the freshly split cores including the visualisation system CoreWall for core images and data, digital imaging, color reflectance measurements, split-core logging, petrophysical analyses, detailed core sampling, and stratigraphic correlation including core - seismic integration. Further analytical laboratories were available in the same building (i.e., micropaleontology and physical properties laboratories) and the Department of Geosciences (specifically the geochemistry, paleomagnetism, and palynological laboratories) in the campus.

Overall it was a very well functioning system, and the work flow was very smooth.

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 (including the Bremen Christmas market) as well as excellent Bremen restaurants, all of which offer very good German beer. 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 and sea-level history of the planet will soon be available.

The IODP Bremen Core Repository (BCR) has been operating for the past almost 16 years and now archives a collection of presently 142 km of deep-sea sediment from 83 expeditions. More than 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 619,000 samples have been taken by the visitors and BCR staff and distributed world-wide.

Ursula Röhl, Laboratory and Curation Manager

Communicating science of mission-specific platform (MSP) expeditions

New Jersey Shallow Shelf Expedition

Two outreach events were organised during the Onshore Science Party of the New Jersey Shallow Shelf Expedition (NJSS). On November 11, 2009, 15 science writers visited MARUM and the Bremen Core Repository (BCR) facilities. The writers were attending a congress on science journalism in Bremen, which was attended by about 450 participants from German-speaking Europe. Following a welcome by Gerold Wefer, Head of MARUM, Ursula Röhl presented the BCR. Co-Chief Scientist Greg Mountain gave an insight on first results of the NJSS. Finally Staff Scientist Carol Cotterill described the Great Barrier Reef Environmental Changes Expedition. A guided tour of the BCR and the labs where the NJSS cores were being analysed followed. Both Greg Mountain and Jean-Noël Proust, and other OSP scientists elucidated the ongoing investigations and the background of the expedition, other ECORD activities and the IODP in general.

The OSP media conference was held on November 27. Three TV teams, a news agency reporter, three print-media journalists, two radio reporters, and two photographers attended the conference. Albert Gerdes welcomed the participants, Greg Mountain and Ursula Röhl presented first results and logistics etc. of the OSP. Co-Chief Scientist Jean-Noël Proust and a number of OSP scientists were available to address immediate questions. Following the presentations, Greg Mountain, Jean-Noël Proust, and Ursula Röhl led a guided tour of the reefer, labs and other MARUM facilities. Selected cores were presented to the journalists, who were very busy in making interviews in various parts of the BCR (1). Accordingly three TV reports, one nationwide radio report, and a national news agency report nationwide (with a number of newspaper reports in its wake) were published. Regarding print media, all-in-all there were 17 reports in German newspapers appeared, most of them including photos. The circulation of these newspapers totals of 1.73 million copies. A media release was published in German and English in which the first results were communicated.

Great Barrier Reef Environmental Changes Expedition

On February 11, 2010, the *Greatship Maya* left the harbour of Townsville for the Great Barrier Reef Environmental Changes Expedition (GBREC). A media conference was held on the same day at the Jupiters Hotel (2). On the podium were Co-Chief Scientists Jody Webster and Yusuke Yokoyama, Staff Scientist Carol Cotterill, and ANZIC representative Neville Exon. Three

camera teams, print media, and photographers showed up. A delegation from the Great Barrier Reef Marine Park Authority also attended the event. An official IODP press kit was handed out which contained leaflets on GBREC, ECORD, and the Australia New Zealand IODP Consortium (ANZIC) along with a fact sheet on the *Greatship Maya*, and an information sheet "Why drill the Great Barrier Reef?" The expedition participants gave overviews of the GBREC Expedition and ANZIC's involvement in IODP was explained by Neville Exon.



After a short lunch break all participants drove to the harbour (3) and were given a tour of the vessel. The captain welcomed the journalists, who were then able to visit the bridge, the drill floor and the science containers. Further individual interviews were given. Along with the news conference a media release entitled "Unlocking the Secrets of Sea-Level Change - Great Barrier Reef Expedition starts" was released to Australian/international media and IODP outreach colleagues.

Given that Townsville is not a major media hotspot the media event was very well attended. Interviews given by the Co-Chief Scientists before the media conference helped to spread the news about the expedition. Accordingly the media response (TV, print, radio, online) was good. Numerous articles appeared online, in local and regional Australian and international newspapers. A newswire report was widely spread. A radio report was widespread on both ABC National News and the longer program AM morning current affairs programme. TV reports went on air in Australia and New Zealand and BBC Rado Five Live featured an interview about the expedition. The expedition was covered by a number of media groups including the BBC web site.

During the expedition three posters were on display in the ReefHQ aquarium, Townsville, which explained the objectives and scope of the expedition, the relationship between climate change and fossil coral reef studies, and the involvement of ANZIC within IODP.

An expedition logbook with daily and weekly entries was maintained on the ESO web site - <http://www.eso.ecord.org> as well as a [facebook](#) page with more than 90 pictures of the expedition and a [twitter](#) link. Moreover a media partnership with Deutsche Welle Word (TV/Online) was organised, where the logbook is maintained in German and English at <http://blogs.dw-world.de/science-log>.

Albert Gerdes, ESO Public relations Manager
Alan Stevenson, ESO Outreach Manager



Albert Gerdes



Alan Stevenson

ECORD Outreach and Education Activities



Patricia Maruéjol



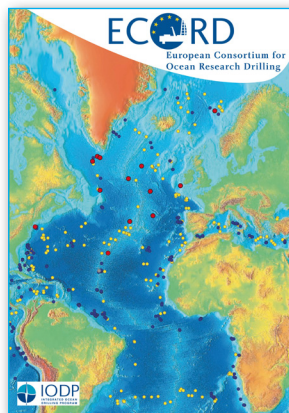
Jenny Lezius

News from the Outreach Team

The Outreach team met in Edinburgh on February 25-26, 2010, to organise ECORD outreach activities until mid 2010, in particular at EGU 2010 in Vienna (joint IODP-ICDP booth and Townhall meeting and IODP press conferences) and to draw out the new ECORD folder brochure (*inset*). The team has also been busy with developing outreach activities at the start of the GBREC expedition and during the OSP in Bremen (*page 7*).

Past Conferences and Meetings

- **AGU 2009, San Francisco, USA:** more than 16,000 scientists from all over the world attended the conference from December 14 to 18, 2009. Jenny Lezius helped to staff the IODP booth and met IODP colleagues and scientists. Catherine Mével and Dan Evans took part in the IODP Townhall meeting.
- **Planet Earth Lisbon Event 2009, Portugal:** at the 'Pavilion of Knowledge' / Pavilhão do conhecimento - Ciência Viva', visitors were very interested in seeing the foraminifers and diatoms under the microscope and also fascinated with the photo mosaic of the *JOIDES Resolution* and 'Stories in a Core' coloring sheets presented by IODP Portugal.
- **GeoItalia 2009, Rimini, Italy:** during the VII Forum Italiano di Scienze della Terra 'Geoitalia 2009', IODP-Italia organised a booth dedicated to ECORD/IODP/IODP-Italia, which attracted a large number of scientists, from universities as well as



research institutions, ca. 250 signatures as expression of interest have been collected, as well as TV and radio media.

- **12th ASF Rennes, France:** ECORD took part in the meeting of French sedimentologists held in Rennes to meet the scientists, students and teachers and provide them with the first results of the New Jersey Shallow Shelf Expedition given by Co-Chief Scientist Jean Noël Proust.

- **'Arctic Venue', Copenhagen, Denmark:** Aarhus University collaborated with the Geological Survey of Denmark and Greenland at the exhibition called 'Arctic Venue' to promote the Arctic climate research to policy makers and general public during COP15, the UN conference on climate, by using the ACEX core replica, as well as microscopes with foraminifera and a slide show explaining past climate studies.

- **Oceanology International 2010, London, UK:** the ESO contribution to IODP was

described in the posters presented at the BGS booth at the IO conference from March 9-11.

ECORD on line

You can now follow ECORD Outreach on [twitter](#) as well as ESO Outreach for MSP Expeditions on [twitter](#) and [facebook](#) (*page 7*).

ECORD Outreach Team: Patricia Maruéjol, EMA, Alan Stevenson and Albert Gerdes, ESO and Jenny Lezius, ESSAC
<http://www.ecord.org/pi/promo.html>

During the last six months, the five IODP core replicas have been extensively used for educational purpose, displayed at exhibit booths but also presented within education courses.

Julia Gottschalk, a Masters student from Bremen University provides with overview of how a replica was used in her class project.

"Within the framework of my master studies of Marine Geoscience at Bremen University I arranged a school project on paleoclimate research at the high school of Wittstock from January 26 to 28, 2010. My aim was to teach the importance of sediment cores as valuable climate archives. During the project I placed particular emphasis on the ICDP expedition to lake El'gygytgyn in 2009, as well as self-cored lacustrine sediments from a pond in Wittstock and additional ODP cores that I brought to the school. Besides the study of sediments from different climatic regions represented by three ODP core sections from Western Spitzbergen, the Eastern Mediterranean and offshore Namibia, I also showed and discussed the replica core of the ODP core containing the K/T-boundary in my introductory lesson on the first day of the project.

My intention was to catch the students' attention and awaken interest in sediment cores. I assumed that the extinction of the dinosaurs and its cause was familiar to the approximately 60 students, who have been involved in that project, and that it would be really impressive for the students to "directly observe" the sedimentary result of the meteorite impact that led to the mass extinction. My purpose was to impress on the students that major and important events in climate and Earth history are recorded in sediment cores. To my mind, the replica core completely fulfilled my intention. The students were very interested and engaged in the discussion. They seemed to be surprised and astonished at the fact that the sediment core reveals processes that were working 65 Ma ago. The school project was a complete success. I would like to thank all responsible persons for providing the possibility to loan the replica core of ODP core showing the K/T boundary."

Information about the five IODP core replicas, which are available for display at temporary exhibitions, conferences and summer schools in Europe can be found at:
<http://www.ecord.org/pi/core-replicas.html>



Catherine Mével

From the ECORD Managing Agency Director

As I write these lines, the *Greatship Maya* is drilling the Great Barrier Reef Environmental Changes expedition. It is always a challenge for ESO to organise a mission-specific platform expedition and this particular one has accumulated a number of unexpected problems resulting in successive delays. I am particularly pleased that the vessel has finally reached the Australian shores. Hopefully, it will bring exciting results on sea-level variations during the last deglaciation, complementing the Tahiti expedition.

An important step for the program was the consolidation of the two the IODP-MI offices (Washington DC and Sapporo) into a single office in Tokyo ([page 20](#)). I had the opportunity to visit the new office last March. It is nicely located in the Tokyo University campus. We are all grateful to the new IODP-MI President, Kiyoshi Suyehiro, to have organised this move that went quite smoothly. The new office will reach its full speed as soon as the staffing is completed.

Meanwhile, ECORD has just experienced two important changes at the management level.

First, the ESO Science Manager, Dan Evans, is retiring this spring ([pages 3-4](#)). Dan played a major role in setting up ESO and in implementing the first four MSP expeditions. He largely contributed to making ECORD a key player in IODP. Dan and I worked very closely and participated in countless meetings around the world. It is hard to imagine that he will not be around any more. I am sure he will enjoy his free time, although I understand he may still give a hand if necessary. With Dan leaving,

the ESO management has been slightly modified ([pages 3 and 20](#)). Secondly, my assistant Rosa Bernal-Carrera has moved to another position. I really enjoyed working with Rosa, and appreciated her dedication, efficiency and permanent good temper. I wish her well in her new job and I welcome Mohammed Benchikh who took over her position in March.

Although the program has still more than three years to go, preparation for the next phase is actively being pursued under the leadership of IWG+ ([page 16](#)). At the ECORD level, the Council decided to organise an independent evaluation of the ECORD scientific achievements using ocean drilling, and of future prospects in a new program of sub seafloor science. This evaluation should be available within a year. It will help the funding agencies in Europe and Canada make their decision regarding their participation in the new phase. The last years of IODP will also be extremely important to facilitate the renewal. The validity of the MSP concept has been fully demonstrated through the first four expeditions. ECORD is planning to implement two more before the end of the program. The refitted *JOIDES Resolution* has now successfully returned to regular activities and we expect, in particular, major advances in our understanding of the deep biosphere. It is my great hope that the *Chikyu* will be able to reach the seismogenic zone and fulfill the expectations of the scientific community before the end of the current phase.

Catherine Mével, ECORD Managing Agency Director
<http://www.ecord.org/ema.html>

Continued from page 5

hole covered roughly 46% of the entire drilled section; these data provide properties of the sediment and pore fluids even in the ~20% of the cored intervals not recovered. The MCSL provided continuous measurements of core properties and core-wireline log correlation to confirm accurate ties between these data. Excellent quality seismic reflection images provide stratal geometry that, with accurately depth-registered physical characteristics from logs and MCSL data, will lead to confident seismic-core correlation.

These results suggest we will be able to date the lower to middle Miocene section with accuracy sufficient to compare breaks in the record with times of sea level-lowering predicted by the ages of $\delta^{18}\text{O}$ glacio-eustatic proxy. We are confident we will be able to match these breaks to seismic sequence boundaries that have been traced to drill holes dated on the slope and to the shoreline where extrapolation to sediments in the modern coastal plain have also been dated in drill holes. We already know we have recovered sediment (mostly in our most basinward Hole M0029A) not found previously in the coastal plain, presumably because of

nondeposition/erosion during times of sea-level lowstand at those updip locations. Dating and matching sediments to the seismic record is only part of the objective; incorporating estimates of paleobathymetry, compaction history, and basin subsidence will be needed to backstrip this transect and arrive at estimates for the magnitude of eustatic (global) sea-level change. This task lies ahead, but for now we know we have datable, nearly continuously deposited sediment of the right age to compare to a sea-level proxy. Furthermore, we will have the ability to build on (1) excellent core quality and continuity, (2) firm core-log-seismic integration, and (3) a transect across several clinofolds in developing a model of siliciclastic successions during a time of known large eustatic variations.

The IODP Expedition 313 Preliminary Report is available at
http://publications.iodp.org/preliminary_report/313/index.html

Dave McInroy, Staff Scientist, Greg Mountain and Jean-Noël Proust, Co-Chief Scientists and Expedition 313 Scientists.



Rüdiger Stein



Science Support & Advisory Committee

Updates



Jenny Lezius

Since I took over the ESSAC chairmanship on October 1, 2009, the ESSAC Office has been located at the Alfred Wegener Institute for Polar and Marine Research in Bremerhaven, Germany. The relocation of the ESSAC Office from Aix en Provence in France to Bremerhaven had no negative impact on ESSAC activities. The new ESSAC Science Coordinator, Jenny Lezius, started her work immediately in preparing the 13th ESSAC meeting, which was held in Oulu, Finland, on November 3-4, 2009.

Over the last month we have issued calls for four expeditions: **Juan de Fuca Flank Hydrogeology II Expedition (327)**,

South Pacific Gyre

Microbiology

Expedition (329) and

Louisville Seamount

Chain Expedition (330)

with *JOIDES Resolution*

and NanTroSEIZE Plate

Boundary Deep Riser 1

Expedition (326) with

Chikyū. However the

schedule of the Chikyū

is not yet firm. ESSAC

has recently completed

the selection of the

ECORD scientists

for these expeditions.

Upcoming calls will be

for CRISP, Superfast

and Mid-Atlantic

Microbiology Expeditions (all with *JOIDES Resolution*). More

information about the scientific objectives, precise dates, and

official notification of these expeditions can be found in the

table below and on the IODP web site at:

<http://www.iodp.org/expeditions/>.

As a full complement of scientists is not required to achieve the science objectives of the Juan de Fuca Hydrogeology II Expedition, ESSAC (as well as the other PMOs) had the unique opportunity to utilise berths for other priority initiatives such as education/outreach, engineering, and/or training. Thus, ESSAC issued a special call for engineers, educators and/or science communicators to join this expedition. We received a great response and many applications from engineers and teachers for this special call. Two engineers and two teachers have been selected by ESSAC to participate in the expedition.

Within the **Science Advisory Structure (SAS)**, Dave Hodell has been nominated as the new ECORD SSEP member replacing Heiko Pälke who rotated off ([page 14](#)). The ECORD Council has already approved this change. Several calls for SAS have been issued to replace five ECORD members in SSP, SPC, EDP and STP. ESSAC is recently evaluating the applications.

The second phase of the **ECORD Distinguished Lecturer Programme** is still running very successfully with the ECORD Distinguished Lecturers Peter Clift (Aberdeen University, UK) ([page 17](#)), Achim Kopf (Bremen University, Germany) and

John Parkes (Cardiff University, UK). This

phase will be active

until June 2010. ESSAC

has already issued a

call for lecturers for

the next phase of the

DLP. Applicants were

recently evaluated by

ESSAC.

After a call for

applications for

ECORD Scholarships,

the ESSAC Office

received 47 applications

- including applications

from the non-ECORD

countries Poland and

New Zealand - to attend one of the three ECORD-sponsored

summer schools. This year's ECORD-sponsored summer

schools will be focused on:

1) the Dynamics of Past Climate Changes in Bremen (September 2010),

2) Past Global Change Reconstruction & Modelling Techniques in Urbino (July 2010), and

3) Ocean and climate changes in polar and subpolar environments in Canada (June/July 2010).

Up to 15 young scientists from ECORD countries or European non-ECORD countries will be sponsored by ECORD to attend one of these summer schools. ESSAC has already started to review these applications.

In 2009, young scientists from seven countries were selected from 64 applicants from 15 ECORD and non-ECORD countries to receive an ECORD scholarship. Furthermore, the ESSAC Office has issued a new call for ECORD-sponsored summer schools in 2011.

IODP Expeditions Drilling Schedule

Expedition	Drillship	Dates
Great Barrier Reef Environmental Changes-325	Greatship Maya	Offshore Feb 11-April 6, 2010 OSP early July 2010
Juan de Fuca-327	JR	July 5 - Sept 4, 2010
Cascadia CORK-328	JR	Sept 4-18, 2010
South Pacific Gyre-329	JR	Oct 8 - Dec 12, 2010
Louisville-330	JR	Dec 12, 2010 - Feb. 11, 2011
CRISP	JR	March 15 - April. 16, 2011
Superfast IV	JR	April 16 - May. 19, 2011
Mid-Atlantic Microbiology	JR	mid-Sept.-mid-Nov. 2011

from <http://www.iodp.org/expeditions> - OSP: Onshore Science Party, JR: *JOIDES Resolution*

For the first time, we have issued a call for applications for **ECORD Research Grants**, merit-based awards for outstanding graduate students to conduct research related to the IODP. These consist of small and short-term grants, which should cover travel and lab expenses. ESSAC has started to review these applications.

ESSAC has been active in the very successful **ESF Magellan Workshop Series**. Two ESF Magellan-sponsored workshops were held in late 2009 (*pages 12-13*). A workshop on “Pliocene Climate” was held in Bordeaux, France (October 23-25, 2009; Convenors Johan Etourneau and Nabil Khelefi), and a workshop on “IODP Drilling of the ‘Shackleton sites’ on the Iberian Margin” was held in Lisbon, Portugal (November 9-10, 2009; Convenor Fatima Abrantes).

During EGU 2010 in Vienna, we will organise **EuroFORUM 2010**, an Interdivision Session dealing with major achievements and perspectives in ocean and

continental drilling. Oral presentations are scheduled for Tuesday May 4 from 15.30 to 17.00h, followed by a poster session.

In conclusion, while preparing the next ESSAC meeting, which will be held on May 26-27, 2010 in Tromsø, we – Jenny as Science Coordinator and myself as Chair – would like to mention that we are very satisfied with the smooth transition of the ESSAC Office from Aix en Provence to Bremerhaven, and we thank all the ESSAC delegates and the other IODP/ECORD bodies for active cooperation during the last months. We hope that this constructive and efficient cooperation between all of us will continue during the coming months which are so important for the planning of the new post-2013 scientific drilling program.

Rüdiger (Rudy) Stein, ESSAC Chair

Jeannette (Jenny) Lezius, ESSAC Science Coordinator
<http://www.essac.ecord.org>

Sönke Neben (1962 - 2009)

Sönke Neben unexpectedly passed away on November 13, 2009, at the age of only 47. Sönke served as German and later ECORD representative in the Site Survey Panel (SSP) for almost 6 years. He is survived by his wife Gabi Uenzelmann-Neben, present ECORD representative in the SSP, and his son Leif (15).



Sönke began his academic career as a geophysics student at the Christian-Albrecht University in Kiel, where he graduated in 1993. In the same year he was employed at the Federal Institute for Geoscience and Natural Resources (BGR) in Hannover. He took part in numerous marine expeditions, often as chief scientist. His scientific achievements, especially those focussing on the South Atlantic and Antarctic passive continental margins, are internationally respected milestones. Sönke was a true and perfect networker. His technical and logistical knowledge made him the perfect member of scientific commissions such as the DFG Senate Commission for Oceanography, the *R/V Sonne* review panel, and commissions planning the *R/V Maria S. Merian* and the *I/B Aurora Borealis*. Consequently, Sönke moved to

Bremerhaven in 2009 to lead the logistics group of the Alfred Wegener Institute for Polar and Marine Research (AWI), with responsibility for all of the ship logistics of AWI. After 16 years of commuting between his home in Bremerhaven and Hannover, this was not only a logical step in his career, it also gave Sönke the opportunity to spend more time with his loved family. He was so happy about this change in his life, which then lasted for less than a year...

Sönke was a modest, sometimes quiet but always helpful colleague. He loved a cold glass of Northern German Pils beer, had a great sense of humour, and probably was never among the first to leave the traditional pub crawls in harbour after coming home from a month-long expedition. His profound smile will never be forgotten.

Sönke will be sorely missed by his colleagues and friends from ECORD, IODP and many others in the marine scientific community worldwide.

Jochen Erbacher, BGR Hannover and Rüdiger Stein, AWI Bremerhaven.

Workshop and Conference Announcements

- ◆ ESF Magellan Series Workshops - <http://www.esf.org/magellan>
 - Volcanic basins: scientific, economic and environmental aspects, May 7-10, 2010, Vienna, Austria
 - The GOLD project - drilling in the Western Mediterranean Sea - October 4-7, 2010, Banyuls, France
- ◆ 2010 Mohole Workshop, June 3-5, 2010, Kanazawa, Japan
<http://earth.s.kanazawa-u.ac.jp/~Mohole/>
- ◆ Deep-water Circulation- Processes and products, June 16-18, 2010, Baiona, Spain
<http://www.facultadeccdomar.es/contourites/>
- ◆ ECORD Distinguished Lecturer Programme
<http://www.essac.ecord.org/index.php?mod=education&page=dlp>
- ◆ AGU 2010, December 13-17, 2010, San Francisco, USA - <http://www.agu.org/meetings/fm10>
- ◆ JpGU 2010, May 23-28, 2010, Chiba, Japan - http://www.jpгу.org/meeting_e
- ◆ AOGS 2010, July 5-9, 2010, Hyderabad, India - <http://www.asiaoceania.org>
- ◆ IODP-MI Workshops - <http://www.iodp.org/workshops>

Reports of Magellan Series Workshops

◆ Workshop on Pliocene climate, October 23-25, 2009, Bordeaux, France

Convenors: Johan Etourneau-je@gpi.uni-kiel.de, Nabil Khélifi-nk@gpi.uni-kiel.de, Philippe Martinez-p.martinez@epoc.u-bordeaux1.fr, Ralph Schneider-schneider@gpi.uni-kiel.de, Christina Ravelo-acr@pmc.ucsc.edu, Antoni Rosell-Melé-antoniosell@uab.cat

A workshop on Pliocene climate, sponsored by the European Science foundation (ESF) through the Magellan Workshop Series, the Université Bordeaux 1, the Observatoire Aquitain des Sciences de l'Univers (OASU), the Institut des Sciences de l'Univers (INSU), with considerable financial support from Prof. Gerald Haug (ETH Zürich, Switzerland), was organised in Bordeaux (France) on October 23-25, 2009 - <http://www.plioclimworkshop.com>. It was a great opportunity to bring together sixty-three participants from eleven countries specialised on Pliocene climate. During the three days, a series of talks and posters focused on six different, but complementary topics:

- (1) oceanic gateways (Panama and Indonesia Seaways),
- (2) changes in Plio-Pleistocene atmospheric CO₂,
- (3) changes in the North Atlantic Circulation and the impact of Mediterranean outflow water on the formation of North Atlantic Deep Water (NADW),
- (4) North Pacific and Southern Ocean reorganisation,
- (5) tropical/subtropical Pacific conditions (continental precipitation/aridification, sea surface temperatures, upwelling activity, ...),
- (6) modeling the Pliocene climate.

Following these presentations, seven discussion groups were tasked with reviewing the main causes for and consequences of the major climate switch occurring between the warm Pliocene and the cold Pleistocene, and to draw new directions for future research, including drilling targets to be integrated in the IODP objectives. The discussions gave rise to unanimous consensus: more data spanning the last 5 million years are urgently needed to better understand the evolution of seafloor and sea-surface temperatures, sea level, monsoon systems, the intertropical convergence zone (ITCZ) position, water-mass origin, biological production, ocean mixing, and CO₂ levels across the



Wind-eroded landforms in the Yadan National Geological Park, Gansu Province (China), resulting from the dryness of a paleolake during the Pliocene-Pleistocene climate transition. Decreasing regional rainfall is supposed to be tied to the Himalayan uplift associated with changes in the atmospheric pattern (photo J. Etourneau).

Plio-Pleistocene climate transition, and what the role of these parameters may have had on controlling the global climate cooling. After three days of conclusive discussions, several participants suggested that a workshop on Pliocene climate should become a regular event. This would be an excellent opportunity to improve the interactions between data and modellers. The workshop also strongly encouraged participants to submit proposals for future IODP expeditions targeting critical locations (e.g. Western Equatorial Pacific) to understand Pliocene climate changes.

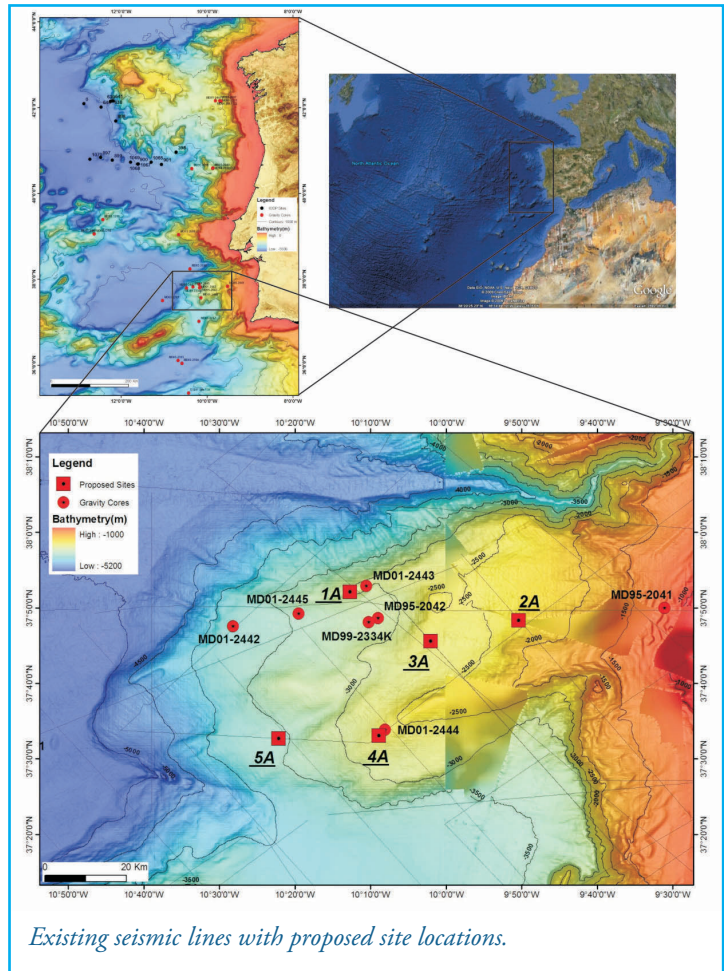
◆ IODP Drilling of the “Shackleton sites” on the Iberian Margin: In Search of a Plio-Pleistocene Marine Reference Section
 Convenors: Fatima Abrantes - fatima.abrantes@ineti.pt and David Hodell - dhod07@esc.cam.ac.uk

The Workshop 'IODP Drilling of the “Shackleton sites” on the Iberian Margin: In Search of a Plio-Pleistocene Marine Reference Section', funded by the ESF Programme Workshops on Marine Research Drilling - Magellan Workshop Series, took place in Lisbon on November 9-10, 2009.

The main objective of the workshop was to assemble researchers who have worked on the Portuguese Margin, and especially the Shackleton sites, to discuss the development of an IODP proposal to extend these remarkable records into the Plio-Pleistocene by drilling using the *JOIDES Resolution*. The workshop provided a forum for invitees to summarise past work and present new data, identify key unanswered questions, and discuss the best drilling strategy for reaching the overall goals.

We originally envisioned that the workshop would be solely focused on paleoceanography, but during its organisation we were approached by Portuguese and Italian colleagues from the tectonics community. This group's interest is to establish a borehole observatory (i.e., “CORK” and instrumented hole) in the region of the fault that is believed to have caused the devastating Lisbon earthquake and tsunamis in 1755. Given the societal relevance and importance of this geohazard objective, we invited seven scientists with tectonic interests to join the workshop.

Following oral presentations and discussion of the possible strategies, the consensus was to submit separate but parallel proposals because of the different “drilling readiness” of the two objectives. All necessary site survey data is available to propose the Shackleton sites (*see figure*), whereas there are a host of issues with the borehole observatory site that will require additional time to resolve.



Fatima Abrantes-fatima.abrantes@ineti.pt, Gabriela Carrara-grabriela.carrara@ineti.pt, Henrique Duarte-henrique.duarte@ineti.pt, Jorge Miguel Miranda, Teresa Rodrigues-teresa.rodrigues@ineti.pt, Zuzia Stroynowski-zuzia.stroynowski@ineti.pt, Pedro Terrinha-pedro.terrinha@ineti.pt, Antje Voelker-antje.voelker@ineti.pt, Joao Pais-jpp@fct.unl.pt, Paulo Lagoinha-pal@fct.unl.pt, David Hodell-dah73@cam.ac.uk, Chronis Tzedakis-P.C.Tzedakis@leeds.ac.uk, Joan Grimalt-joan.grimalt@idaea.csic.es, Jaime Frigola-jfrigola@ub.edu, Susana Martin Lebreiro-susana.lebreiro@igme.es, Francisco Sierra-sierra@usal.es, Ornella Amore-f.amore@unisannio.it, Laura Beranzoli-beranzoli@ingv.it, Francesco Chierici-chierici@ira.inaf.it, Angelo De Santis-angelo.desantis@ingv.it, Alessandro Incarbona-alessinc@unipa.it, Paula Diz-paula.diz@ineti.pt, Hipolito Monteiro-hmont@netcabo.pt, Silvia Nave-silvia.nave@ineti.pt, Cristina Roque-cristina.roque@ineti.pt, Emilia Salgueiro-emilia.salgueiro@ineti.pt, Isabelle Gil-isabelle.gil@ineti.pt, Luis Batista-luis.batista@ineti.pt

Full reports of the Magellan workshops are posted on:
<http://www.esf.org/magellan>
 (click on 'Science Meetings')

Coming out soon...

Late last summer the INVEST Conference on the future of ocean research drilling was held in Bremen. Camera teams documented plenary sessions, discussions, and the general atmosphere. Currently a short conference video is being produced, which will communicate a taste of the spirit of the conference and will be available on DVD soon.

Contact: Albert Gerdes - agerdes@marum.de

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A Letter from Spain

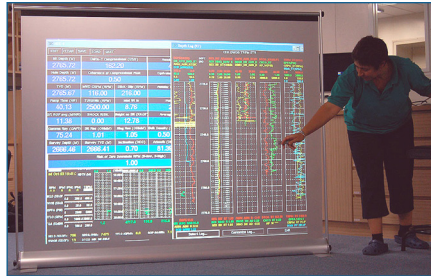
Spain's participation in IODP

Spanish research groups involved in IODP science belong to prestigious Universities and Research Institutes in Spain. At national level, they conduct offshore explorations and geological and geophysical investigations in continental margins and basins using a multidisciplinary approaches to address the main questions in geosciences. Their tasks comprise assessments on policy of socio-economic relevance such as environmental and climate changes, geohazards, and natural resources. Our scientific approach also tackles intricate onshore-offshore correlations, which are of special interest when studying the enclosed or semi-enclosed basins that bound the Iberian Peninsula. Current areas of research include the Western Mediterranean (from the Alboran to Tyrrhenian Seas), the Atlantic Ocean (north and west off Iberia), the Arctic, the Antarctic, the Pacific and the Eastern Indian oceans.

Spain joined the 'saga' of international ocean drilling programs in the 1980s when OPD started. Drilling Spanish territorial waters during ODP Leg 103 (Galicia Margin) and ODP Leg (161, Alboran Sea) led to pro-active support for strong involvement in ODP of Spanish institutions. During the transition from the ODP to IODP, Spain joined with other 'small countries' from the former ECOD to bring a single European voice within IODP. Spain has therefore been part of IODP within ECORD since the start of the Consortium in December 2003.

Spanish scientists have participated in some interesting IODP Expeditions by taking up a berth (according to our membership quota) onboard the *JOIDES Resolution* (Exp. 306-North Atlantic Climate-2, Exp. 307-Modern Carbonate Mounds: Porcupine Drilling, Exp. 308-Gulf of Mexico Hydrogeology, Exp. 321-Pacific Equatorial Age Transect II - Juan de Fuca, Exp. 318-Wilkes Land), the *Chikyu* (Exp. 314-NanTroSEIZE Stage 1: LWD Transect), and the *MSP Greatship Maya* (Exp. 325-Great Barrier Reef Environmental Changes). However, Spain benefits from IODP not just in the

number of allowed berths, but also by other research and learning opportunities that the IODP offers to our scientific community. Our geoscientists, according



Logging Specialist Maria-Jose Jurado (Earth Science Institute-CSIC, Barcelona) explaining real-time log data from the first NanTroSEIZE LWD hole during IODP Exp. 314 on the Chikyu (©JAMSTEC/IODP).

to their individual interests and expertise, have also profited from shore-based studies on data and relevant core samples. IODP data and samples are frequently used as science subjects for PhD work and are taken into account in competitive



IODP Exp. 318 Wilkes Land: Co-Chief Scientists Carlota Escutia (Andalusian Earth Science Institute, CSIC and University of Granada), and Henk Brinkhuis (University of Utrecht) on the JOIDES Resolution (©IODP-USIO).

national and international R&D projects. Our most recent participation in Exp. 318-Wilkes Land Glacial History (in which a Spaniard was Co-Chief Scientist for the first time in IODP) and Exp. 325-Great Barrier Reef Environmental

Changes is expected to motivate and promote the prominent involvement of Institutions and scientists from Spain in IODP. Although there are difficult times ahead for IODP and ECORD because of the global economic crisis, Spain looks towards continuing its contributing to any future drilling program post-2013 and to contributing to the excellence of its science.

IODP España: A National Organisation for IODP

To manage and monitor IODP scientific matters, Spain has a Secretariat and an Advisory Science Committee. The IODP-Spain Secretariat http://carpe.usal.es/~iodp/iodp_esp endeavours to regularly inform the community of



IODP opportunities and activities, and to assist Spanish scientists to participate in IODP. The IODP-Spain Science Advisory Committee aims to promote IODP science and related research in Spain, and to ensure that our scientific interests are under consideration in IODP. Members of this committee are qualified scientists, with diverse expertise, representing Spanish Universities (Barcelona, Granada, Salamanca, Vigo) and Public Research Organisations involved in marine geosciences (the High Council for Scientific Research-CSIC, the Spanish Geological Survey-IGME, and the Spanish Institute of Oceanography-IEO).

The Spanish Ministry of Science and Innovation (MICINN, <http://www.micinn.es>) funds our participation in ECORD/IODP as the access of Spanish scientists to organisations is a key element of the policy of this Ministry.

Menchu Comas (ESSAC Delegate) and José-Ramón Sanchez Quintana (ECORD Council Delegate)



Catherine Mével

Towards a New Phase of Ocean Drilling: the Role of IWG+

The International Working Group + (IWG+) was set up by IODP Council in January 2009 to prepare for the new phase of ocean drilling. The vision of the IWG+ is to frame a new multinational program architecture that promotes delivery of the best possible and most exciting and relevant science to the broad science community and the public through scientific ocean drilling.

IWG+ is co-chaired by NSF, MEXT and ECORD. Its members represent all funding agencies currently participating in IODP or interested in participating in the future program.

IODP-MI, the Implementing Organizations, representatives of the scientific community (SASEC Chair and Vice-Chair), and others as required, contribute to the meetings as observers.

IWG+ has met three times and is making excellent progress, although there are still important decisions to come. Four major issues have been identified and are currently being discussed:

- Multinational program architecture and financial contribution,
- Program management and money flow,
- Science advisory structure (SAS) and
- Transition to the new programme.

Major decisions have already been made. In the new phase, platform providers will cover all costs associated with operating their platforms. No more SOCs and POCs! But the Central Management Office will continue to carry out integrated activities such as planning, core curation, data management, publications etc. To smooth the transition, IODP-MI will be maintained as the CMO for two to three years into the new phase.

Different groups are looking in parallel into the Science Advisory Structure: IWG+, the Triennium review committee appointed by IODP-MI, a subcommittee of SASEC. Although their final conclusions are not yet available, they all converge in the same direction towards simplification. Hopefully, a decision on the new SAS will be made next June.

Organising the transition period is also crucial. To be ready to start drilling in FY14, a number of planning activities need to start soon. It has been decided to set up the new SAS soon as possible, likely in the fall of 2011, while the current SAS panels will be progressively phased out. Existing proposals are the intellectual wealth of the program. Obviously the new phase will have to start with projects already in the system. But to be considered in the new phase, existing proposals will have to fit with the new science plan.

But if deciding the structure of the new program is essential, the most important aspect is of course the science. Following the very successful INVEST meeting, a Science Plan Writing Committee (SPWC) has been appointed to deliver a focused science and implementation plan. Based on nominations from the science community, IODP-MI and SASEC finalised the membership that received the approval of IWG+ (*table below*). The new science plan will be constructed on the basis of ship time availability: 5-10 months of *Chikyu* riser drilling, 8-12 month of *JOIDES Resolution* and one MSP expedition per year. It will emphasise societal relevance and identify specific high priority riser projects for the *Chikyu*.

Mid-2011 will be a major step forward. The next program structure should then be decided, and the new science plan should be available. This will allow the funding agencies to make a decision on their future participation. ECORD member countries will be invited to submit an expression of interest for participating in the new phase before the end of 2011, and the plan is to sign the new ECORD Memorandum of Understanding (MoU) in 2012.

The overall schedule is very tight. But all the interested parties (funding agencies, implementing organizations and scientists) are working hand in hand to make sure that we will be ready for a start in 2014.

Catherine Mével, IWG+ Co-Chair

Richard Arculus	ANZIC	Arc magmatism, global geochemical cycle
Peter Barrett	ANZIC	Sedimentology, arctic paleoenvironments, societal impacts, IPCC linkages
Mike Bickle (Chair)	ECORD	Petrology, geophysics, geodynamics and tectonics, climate change
Gilbert Camoin	ECORD	Sea-level reconstruction, carbonate sedimentology
Rob DeConto	USA	Climate modeling, ice-sheet modeling, Antarctic climate history
Katrina Edwards	USA	Microbiology
Andy Fisher	USA	Marine hydrogeology, borehole observatories, fluid flow modeling
Fumio Inagaki	Japan	Geomicrobiology, biogeochemistry
Shuichi Kodaira	Japan	Structural seismology, crustal evolution, geophysics
Naohiko Ohkouchi	Japan	Organic geochemistry/biogeochemistry
Heiko Pälike	ECORD	Cenozoic climate change, stable isotopes, time scales
Christina Ravelo	USA	Neogene climate change, isotope geochemistry
Demian Saffer	USA	Marine hydrology, subduction faults, modeling
Damon Teagle	ECORD	Ocean crust, hydrothermal systems, global geochemical cycles

http://www.ecord.org/post_2013.html



Peter Clift

Report on a 2008-2009 DLP Lecturer

I was very happy to have the chance to act as a touring “Distinguished Lecturer” for ECORD for the period of late 2008 to early 2010. Not only was this a great honour, but was a terrific opportunity to meet activists in the ocean sciences, and especially the IODP community, across Europe and even further afield. At the start of my lectureship I had little idea how much travelling and talking I would end up doing on the subject on monsoons, mountain building and the European contribution to IODP. Indeed I had little idea how much time I would spend at the airport. This year the DLP rules had changed slightly compared to the first round of DLP lectures in 2007-2008. ECORD had mandated that my fellow lecturers and I should visit non-European universities as well as those in the consortium, provided those expenses were met by these hosts. As a result I was able to publicize the drilling program, the European contributions to IODP and climate-tectonic science beyond our own community to those in the United States, in Malaysia, in China and in Australia. By the end of the tour I had given my presentation 29 times, including 20 times in ECORD countries, which now includes our friends in Canada, a fact of which I had been only vaguely aware of before getting my first invitation from the very friendly folk in St. Johns, Newfoundland, a city I had not visited since disembarking from ODP Leg 152, way back in 1993. At least geologically St. Johns is in Avalonia and on the European side of the Iapetus suture, which is more than can be said of my home institution! Because the travelling was necessarily time consuming I tried hard to talk in two institutions for each journey

I made, where I could arrange this with neighbouring universities. Because I visited so many places it is not really feasible to recount

the many gracious hosts and inquisitive audiences I encountered, although I will cherish memories of the good people I met for a long time. As well as stimulating science the DLP programme was certainly a chance to eat some interesting food, spanning curries in the February drizzle of Liverpool, to pizza in the warm October light of Florence, hearty sausages in chilly November in Jena, baked cod in exotic Lisbon and 'nouvelle cuisine' moose in the bright but frigid Ottawa March. Attendances at the presentations were encouragingly high and students in particular seemed enthused to take part in future IODP cruises, perhaps even some in the Indian Ocean if and when that drilling occurs. One particular benefit for me was the chance to air views to a really large and diverse audience and to hear questions that I had not heard in the specialist sessions at the normal large meetings. As well as thanking all the hosts who gave up so much of their own time to make the visits a success, I want to thank the excellent staff in the ECORD offices and especially Bonnie Wolff-Boenisch and Jenny Lezius for getting the paper work done so quickly and advising me very patiently with expense forms that were then processed with great efficiency. I would recommend the DLP to any member of the IODP

community both to take part in as a lecturer or to invite as a host. The programme is an asset to ECORD and to IODP.

Peter Clift, University of Aberdeen UK



St Johns Harbour



Utrecht canal scene



Dinner in Lisbon

ECORD Distinguished Lecturer Programme

Since 2007 ECORD sponsors a Distinguished Lecturer Programme designed to bring the exciting scientific discoveries of the IODP to the geosciences community in ECORD and non-ECORD European countries.

<http://www.essac.ecord.org/index.php?mod=education&page=dlp>



Sarah Davies

A successful integrated approach for petrophysics during IODP mission-specific platform expeditions

Petrophysics involves the measurement and interpretation of the physics and chemistry of rocks and fluids on a variety of scales. During Integrated Ocean Drilling Program (IODP) expeditions, these measurements are made downhole in the borehole and on core, enabling multiple scales of investigation in the same geological environment. The European Petrophysics Consortium (EPC) is responsible for the acquisition, quality assurance and quality control of the downhole logging data and the core petrophysics measurements on mission-specific platform (MSP) expeditions organised by European Consortium for Ocean Research Drilling (ECORD). Once collected, EPC are involved with data interpretation and the development of collaborative research programmes that directly benefit the scientific objectives of IODP.

The European Petrophysics Consortium

EPC involves three European universities, Leicester (UK), Montpellier (France) and Aachen (Germany), with >25 years of experience in petrophysics research combining borehole geophysics, laboratory experiments and geology. More than 250 publications in major peer-reviewed journals have been generated through sailing over 50 scientists on ODP & IODP expeditions. Launched in 2003, the consortium provides a European focus for logging within IODP. EPC links into the international Logging Consortium, lead by the Lamont-Doherty Earth Observatory (US) that has been in existence since 1992, which also includes the University of Tokyo (Japan). Our combined petrophysical expertise is available to all scientists involved in IODP.

Dr Sarah Davies, at the EPC central office based at the University of Leicester, is responsible for management of the consortium and works closely with Head Scientist, Dr Philippe Pezard, at Montpellier and scientists, Professor Christoph Clauser and Dr Frank Bosch, at Aachen. Leicester represents the EPC within ECORD and IODP.



Fig.1: IODP Research Associates within the European Petrophysics Consortium. From left top Dr Jenny Inwood, Dr Louise Anderson, Dr Johanna Lofi, from bottom left Annick Febr and Dr Sally Morgan (photos Annick Febr, Johanna Lofi ©ECORD/IODP and John Beck IODP).

The current team of IODP Research Associates (Fig. 1) have developed extensive experience in downhole logging and core petrophysics on ECORD MSP Expeditions (Tahiti Sea Level, New Jersey Shallow Shelf and Great Barrier Reef Environmental Changes expeditions) and in downhole logging on USIO non-riser expeditions with the *JOIDES Resolution*

(sea-trials, and Pacific Equatorial Age Transect and Wilkes Land expeditions). Working on MSP expeditions and the *JOIDES*

Resolution ensures breadth and depth of knowledge, expertise and skills. Each Research Associate has their own research interests, including palaeomagnetism, siliciclastic sedimentology, oceanic hydrothermal systems, porosity and permeability and life in extreme environments. Specific research projects are addressed through the application and interpretation of petrophysical data.

In summary the EPC provides high-level scientific and technical support to the IODP and ECORD across the range of highly variable environments drilled by the non-riser and mission-specific platforms, including:

- Petrophysics Staff Scientists and Petrophysicists to MSP Expeditions,
- Logging Staff Scientists to the *JOIDES Resolution*,
- Expertise for development of tailored downhole logging and core petrophysics programmes,
- Dedicated equipment to acquire downhole logging data, including slimline geophysical borehole tools,
- Dedicated equipment for core logging and discrete measurements, including Geotek Multi-Sensor Core Loggers (standard and XYZ), a Geotek P-Wave Frame and a Thermal Conductivity Probe,
- Data calibration and quality control,
- Evaluation and interpretation of downhole log and core petrophysical data.

Downhole Logging Data Acquisition on MSP Expeditions

The Petrophysics Staff Scientist, in liaison with the Co-Chief Scientists, the Staff Scientist and the Science Party, develops the downhole logging and core petrophysics programme to meet the particular scientific objectives of an MSP expedition and conform to the IODP minimum measurement policy. EPC then contracts the appropriate logging services.

EPC Montpellier has undertaken the downhole logging on three MSP expeditions, Tahiti Sea-Level Expedition 310, New Jersey Shallow Shelf 313 and Great Barrier Reef Environmental Changes 325. The slimline tool suite (ca. 50 mm in diameter) includes spectral gamma ray, sonic, induction, acoustic imager, optical imager and magnetic susceptibility probes (Fig. 2). Deployment of slimline tools was a first for ODP/IODP during the Tahiti Expedition. For New Jersey Expedition 313, in addition to the EPC logging tools suite, EPC worked with a team from the University of Alberta to complete the vertical seismic profiling experiments required.

Why is downhole logging data important?

Logging data provide a continuous dataset, allows physical properties to be studied in-situ in the borehole and provides a crucial link between core, core petrophysics data and regional geophysical surveys. When combined with other geological data, downhole log measurements enable a full characterisation of the geology, 'fingerprinting' of key surfaces and packages and, where core recovery is lower or discontinuous, core-log integration can provide information on the characteristics of the missing succession. Vertical seismic profiling experiments enable key seismic reflection horizons to be tied directly to an individual borehole.

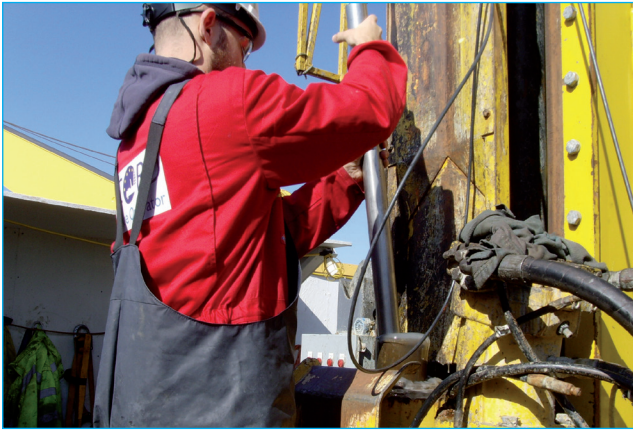


Fig. 2: Simon Barry, lead Logging Engineer from Montpellier, deploys one of the slimline logging tools during the New Jersey Shelf Expedition 313 (photo Jenny Inwood © ECORD/IODP).

In the Tahiti Sea-Level Expedition 310, high-resolution, mm-scale, optical and acoustic images combined with continuous borehole geophysical measurements enabled correct core depths to be established ensuring accurate sea-level reconstructions. The optical and acoustic image logs revealed the highly porous character of the formations drilled and cored. The data determined that true recovery was greater than 90%, much higher than the conventionally calculated average recovery of 54.5%.

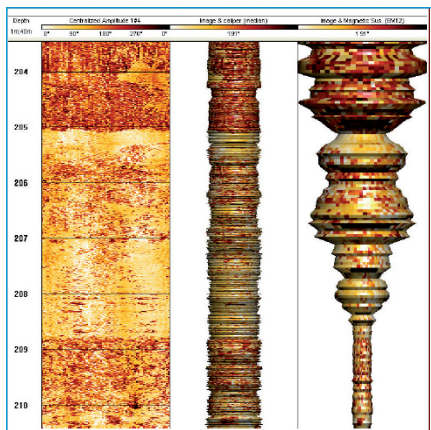


Fig. 3: Amplitude acoustic image (left) of the borehole wall revealing key lithological boundaries from successions on the New Jersey Shelf, logged as part of Expedition 313. The 3D images combine this acoustic image with (middle) mean travel time signal and (right) the magnetic susceptibility signal.

Preliminary analysis of logging data from New Jersey Shelf Expedition 313 demonstrates that down-depositional dip changes in individual sequences are characterised by changes in the physical properties of the sediments, including natural gamma radiation, magnetic

susceptibility and resistivity. Continuous spectral gamma logs enable assessment of lithologies in lower core recovery intervals. Acoustic image logs provided early information on the visual characteristics of key surfaces before the core was split (Fig.3).

Core Petrophysics on MSP Expeditions

Offshore core logging operations are carried out by an ESO Petrophysicist, from EPC, who works alongside petrophysicists from the Science Party. EPC Leicester supplies a Geotek Multi Sensor Core Logger (MSCL-S) system and MSCL-S measurements include gamma density, P-wave velocity, non-contact resistivity and magnetic susceptibility (Fig.4). The Petrophysics Staff Scientist completes any data processing required, the final depth shifting and correlation of repeat runs within a borehole and works with the ESO Petrophysicist to integrate the downhole logging and MSCL data sets.

A second data collection phase is conducted onshore at the University of Bremen, prior to and during the Onshore Science Party (OSP). EPC is responsible for a range of core measurements working closely with Bremen personnel and the Science Party petrophysicists. For the New Jersey Shallow Shelf Expedition 313, EPC was responsible for more than ten different measurements on around 1300 m of recovered core. Measurements on whole cores, prior to core splitting during the OSP, normally include natural gamma radiation, using EPC Leicester's Geotek MSCL-XYZ and discrete thermal conductivity measurements, using a system provided by EPC Aachen. Once the cores are split, colour reflectance spectrophotometry, high resolution line scanning and discrete measurements, including p-wave velocity and moisture and density, are undertaken.

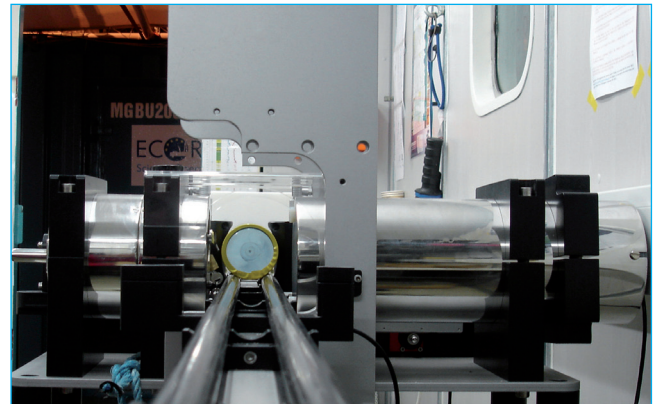


Fig. 4: The Geotek MSCL-S, housed in the Petrophysics container, provides high-resolution whole-core logging data including gamma density, P-wave velocity, non-contact resistivity and magnetic susceptibility (photo Frank Bosch).

Why take petrophysical measurements on core?

Core petrophysics data are used in tandem with the downhole logging and other geological data to help identify key boundaries and trends in individual boreholes, enable correlation between boreholes and formations. These data are used to develop lithostratigraphic frameworks for carbonate, siliciclastic and igneous successions. During New Jersey Shallow Shelf Expedition 313, the gamma density was used in the preliminary identification of key seismic reflectors in the recovered core. Magnetic susceptibility and spectral gamma ray data, measured during downhole logging, were directly compared with trends measured on the recovered core ensuring a precise and calibrated dataset.

The Future

At each EPC centre, researchers work within dedicated facilities using a range of software packages to optimise the evaluation and interpretation of downhole logging data and facilitate core-log integration. EPC applies IODP and archive ODP, downhole logging and core petrophysics data in a range of collaborative research projects, including using log and physical properties characterisation for the evaluation of facies, sediment composition and ocean crust lithostratigraphy. EPC will continue its active involvement with the IODP operations and research that have revolutionised our view of Earth history and global processes through ocean basin exploration.

Sarah Davies, EPC Co-ordinator

A new IODP-MI Office in Tokyo



IODP-MI has been very active over the past several months integrating most of its activities into a single office location. The IODP-MI headquarters office in Tokyo (Tokyo University of Marine Science and Technology Etchujima campus) started on December 29, 2009. The Washington DC headquarters office was closed in December 2009 and a small office opened across Farragut Square in the same month to continue its role in contracts and finance administration. The Sapporo office closed in mid-February 2010 and joined the Tokyo Office on March 1. The IODP-MI Tokyo office will assume responsibility for the science and operations planning, data management, engineering developments, communications and outreach, and publications activities formerly managed from Washington DC and Sapporo.



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this transition with IODP-MI. Their service in support of scientific ocean drilling is truly appreciated. The transition has also created new opportunities at IODP-MI and we hope you join us in welcoming aboard several new members in the IODP-MI Tokyo office.

The consolidation of the IODP-MI offices into a single location was a major transition for IODP-MI. The IODP community can now count on increased efficiency from the new organisational structure and from having all science planning and operations staff in a single office. We wish to give our sincere thanks to the IODP-MI staff that gave their dedication to the program for many years but did not make

In the coming months, a number of important IODP meetings will be held in Japan, including several SAS meetings, IODP-MI Board of Governors meeting, IODP Members meeting, and IWG+. We welcome your visit to the new Tokyo and Washington DC offices. Yokoso!

Kyoshi Suyehiro, IODP-MI President and CEO

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