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# CORE DISCOVERIES

The Newsletter for  
US Scientific Ocean Drilling

Determining Seawater's Impact on  
Young Oceanic Crust *pg.5*

NSF Welcomes NRC Report on Scientific  
Ocean Drilling *pg.7*

Expedition Staffing Process  
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*On the cover: The JOIDES Resolution docked in Curaçao, as seen from atop Fort Beekenburg, built in 1701. (Photo courtesy of IODP-USIO).*

The Integrated Ocean Drilling Program (IODP) is an international research program dedicated to advancing scientific understanding of the Earth through drilling, coring, and monitoring the seafloor. The U.S. Science Support Program (USSSP) supports the involvement of the U.S. scientific community in IODP and is funded by the National Science Foundation (NSF). The *JOIDES Resolution* is a scientific research vessel managed by the U.S. Implementing Organization of IODP (USIO). Together, Texas A&M University, Lamont-Doherty Earth Observatory of Columbia University, and the Consortium for Ocean Leadership comprise the USIO. IODP is supported by two lead agencies: the U.S. NSF and Japan's Ministry of Education, Culture, Sports, Science, and Technology (MEXT). Additional program support comes from the European Consortium for Ocean Research Drilling (ECORD), the Australia-New Zealand IODP Consortium (ANZIC), India's Ministry of Earth Sciences, the People's Republic of China (Ministry of Science and Technology), and the Korea Institute of Geoscience and Mineral Resources.

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For more information about IODP, visit: [www.iodp.org](http://www.iodp.org)

For more information about USIO and USSSP, visit:  
[www.oceanleadership.org/programs-and-partnerships/](http://www.oceanleadership.org/programs-and-partnerships/)



## UPCOMING EVENTS/ MEETINGS/WORKSHOPS

### IODP Primer: An Introduction to the Ocean Drilling Programs

Sunday, December 4, 2011; 1:00 – 5:00 pm  
Marriott Marquis San Francisco, San Francisco, CA

[iodp-ussp.org/workshop/iodp-primer-agu2011/](http://iodp-ussp.org/workshop/iodp-primer-agu2011/)

### AGU Short Course: Teaching About Earth's Climate History

December 4, 2011; 8:00 am – 5:00 pm  
San Francisco, CA

<http://sites.agu.org/fallmeeting/town-halls-and-workshops/workshops/>

### Mini-Workshop: Integrating CRISP IODP Drilling and 3D Seismic Study

Wednesday, December 7, 2011; 6:00 - 9:30 pm  
Grand Hyatt, San Francisco, CA

<http://www.geoprisms.org/mini-workshop>

### Workshop on Drilling on Circum-Arctic Shelves and Upper Continental Slopes

December 10-11, 2011  
San Francisco, CA

<http://iodp-ussp.org/workshop/catching-climate-change/>

### U.S. Science Advisory Committee for Scientific Ocean Drilling Meeting

January 31-February 2, 2012  
Santa Cruz, CA

<http://iodp-ussp.org/committees/usac/>

### Building U.S. Strategies for 2013-2023 Scientific Ocean Drilling

April 30 – May 2, 2012  
Denver, CO

<http://iodp-ussp.org/workshop/strategies/>

### Upcoming SAS Meetings

#### Proposal Evaluation Panel

December 1-3, 2011  
San Francisco, California

#### Science Implementation and Policy Committee

January 19-20, 2012  
Goa, India

# EXPEDITION UPDATES

## Investigating Microbial Life Beneath ‘North Pond’

An international team of researchers led by co-chief scientists Katrina Edwards (University of Southern California) and Wolfgang Bach (University of Bremen, Germany) set out on IODP Expedition 336: Mid-Atlantic Ridge Microbiology ([http://iodp.tamu.edu/scienceops/expeditions/midatlantic\\_ridge\\_microbio.html](http://iodp.tamu.edu/scienceops/expeditions/midatlantic_ridge_microbio.html)) in September 2011 from Bridgetown, Barbados to investigate the microbial communities in the ocean crust along the flanks of the undersea Mid-Atlantic Ridge. The development of microbial life in this region may provide insight into the effects of genetic isolation on the development of life in the Earth's crust.

During the voyage (also known as the ‘North Pond’ expedition), long-term microbiologic experiments (to be run on CORK observatories) were installed into boreholes that penetrate deep into the oceanic crust. The flanks of mid-ocean ridges, like the North Pond area, are believed to have the largest flowing-water aquifer on Earth. By placing CORKs to gather data, scientists expect to learn more about how this aquifer works and how seafloor life develops.

The successful installation of these CORKs will allow future expeditions to collect long-term microbiological, biogeochemical, and hydrological data, while helping to guide future studies of undersea microbial communities. The expedition ended on November 17, 2011 in Ponta Delgada, São Miguel, Azores. Initial results from the expedition will be available in the *Preliminary Report* this winter.

## Deciphering Volcanism Along Island Arcs

Despite the fact that roughly 50% of volcanism along the Pacific Ring of Fire is associated with island arcs, questions still abound about island arc volcanic processes. Given the potential for major geohazards created by volcanism, more needs to be understood regarding the dynamics, development, and diversity of magmatism and eruptive activity of island arcs. This is the goal of IODP Expedition 340: Lesser Antilles Volcanism & Landslides.

Led by co-chiefs Anne Le Friant (Institut de Physique du Globe de Paris, France) and Osamu Ishizuka (Geological Survey of Japan [AIST]), scientists on this expedition will seek to enhance understanding of the processes related to volcanism along island arcs. The expedition will take place from February 6 – March 18, 2012, sailing from St. John's, Antigua to Curaçao, Dutch Antilles.

By documenting the evolution of three volcanic centers of the Lesser Antilles arc, expedition scientists will attempt to represent the full range of observed volcanic behavior, and will examine more closely the processes responsible for large volcanic debris avalanche deposits in this region. By retrieving cores that cover more than the last million years of magmatic activity and directly through volcanic debris avalanche deposits, Lesser Antilles Volcanism & Landslides will provide longitudinal data that helps scientists develop a more comprehensive understanding of the dynamics of island arc volcanism.

To learn more about this expedition, visit: [http://iodp.tamu.edu/scienceops/expeditions/antilles\\_volcanism\\_landslides.html](http://iodp.tamu.edu/scienceops/expeditions/antilles_volcanism_landslides.html).

# EDUCATION & DIVERSITY NEWS

## IODP-USIO Rolls Out Two New Diversity Initiatives

As part of its strong commitment to engaging ethnic and racial minority university and college students, the Integrated Ocean Drilling Program-U.S. Implementing Organization (IODP-USIO) recently launched two new diversity initiatives: the Minorities in Scientific Ocean Drilling Fellowship and the IODP-USIO Diversity Internship.

The *Minorities in Scientific Ocean Drilling Fellowship*, which replaces the Historically Black Colleges and Universities (HBCU) Fellowship, was developed to (1) broaden and increase the participation of ethnic and racial groups beyond those represented at HBCUs and (2) to provide support for minority graduate students enrolled full-time in a geoscience or engineering program at any U.S. university or college to complete research – or develop technology – related to scientific ocean drilling. The fellowship will begin during the spring 2012 semester for an 8-month period (\$20K award). Subsequent

fellowships will begin in the fall semester for a 12-month period (\$30K award). For detailed information, see: [www.oceanleadership.org/education/diversity/minorities-in-scientific-ocean-drilling-fellowship/](http://www.oceanleadership.org/education/diversity/minorities-in-scientific-ocean-drilling-fellowship/)

The *IODP-USIO Diversity Internship* is designed to expose minority students to careers in scientific ocean drilling via a 10-12 week paid internship at an IODP-USIO member institution. The program also aims to encourage interns to pursue advanced studies in earth system sciences or careers in scientific ocean drilling. The first intern worked on science communications in the Ocean Leadership office this summer. An internship focused on engineering is scheduled to start January 2012; if funding is available, an internship focused on scientific research will follow in summer 2012. For detailed information, see: [www.oceanleadership.org/education/diversity/iodp-usio-diversity-internship/](http://www.oceanleadership.org/education/diversity/iodp-usio-diversity-internship/)

## Exciting Results from 2011 School of Rock Review

Deep Earth Academy recently hosted a review of the first five years of School of Rock (SOR) onboard the *JOIDES Resolution* in Curaçao. SOR offers hands-on research experiences for science educators onboard the ship, giving participants an opportunity to learn more about geosciences by conducting experiments and analyses of real scientific data. To date, more than 70 individuals have participated in the program – from middle school teachers and undergraduate faculty to informal science educators. SOR is funded by the IODP U.S. Implementing Organization (IODP-USIO).

The 2011 School of Rock Review (July 31 – August 3, 2011) brought together fifteen SOR alumni to help assess the program and plan for the future. Three participants were selected from each of the five cohorts, along with one international educator. The team helped to compile and analyze data from two online surveys, and provided feedback to Deep Earth Academy regarding their own experiences and suggestions for the future.

Preliminary results of this evaluation and earlier survey results confirm that SOR has succeeded in expanding educators' awareness of scientific ocean drilling and communicating its importance to science instruction. All survey participants said they had incorporated their SOR experience into their education plans, with 96% integrating new science content, 72% adding scientific process skills, and more than 60% assimilating new instructional strategies learned from the program.

Since the program's inception in 2005, participants have produced 106 activities, 21 posters, 59 demonstrations, and 73 lab investigations related to their experiences, while an additional 113 presentations have been given to students and members of the public. It is estimated that as many as 45,000 teachers, students, and members of the public have now been reached through SOR.

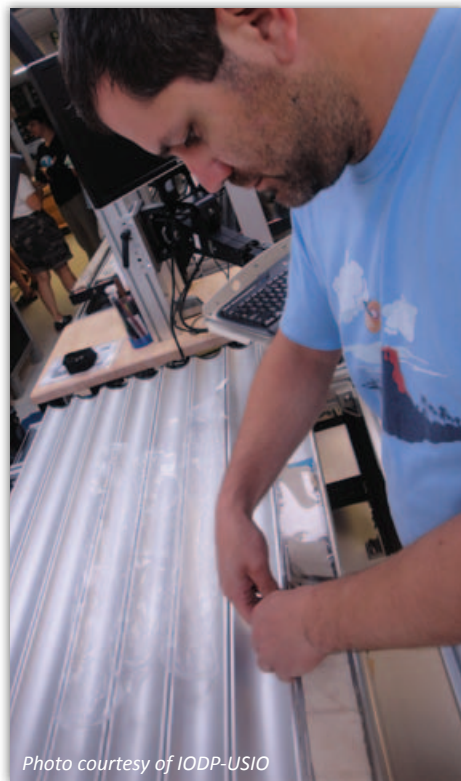


Photo courtesy of IODP-USIO



# RESEARCH HIGHLIGHTS

## Hydration of Young Oceanic Crust – Views from IODP Drilling, Logging, Borehole Monitoring, and Core/Log/Seismic Integration

by Donna Blackman, Scripps Institution of Oceanography

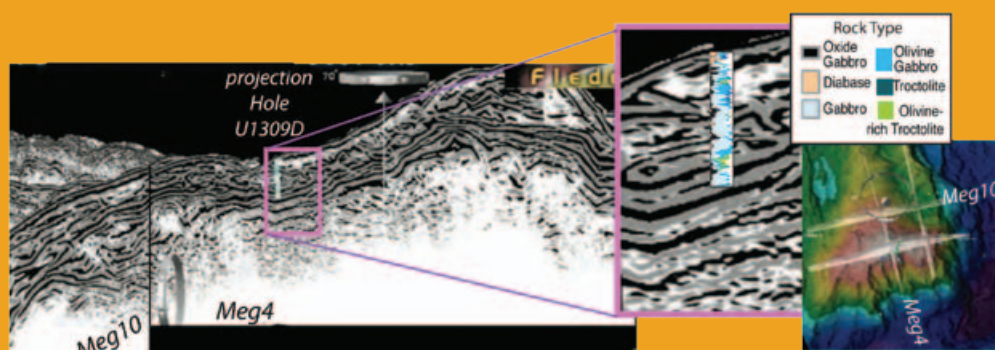
Alteration of young oceanic crust through reaction with seawater has become a focus of research as recent studies document the rheologic impacts of the resulting metamorphic minerals (talc, serpentine, e.g., Escartín et al. 2001; 2008) and models of global cycling aim to quantify ocean-crust chemical exchange (e.g., Vance et al, 2009). The Integrated Ocean Drilling Program is playing a key role in this research through a combination of approaches applied in settings that include lithosphere formed at slow, intermediate, and fast spreading rates.

IODP Expeditions 301 and 327, and associated ROV work, elucidate fluid-rock interactions in the upper crust and the extent to which variations in permeability of basalts in the upper several hundred meters can isolate seawater hydrothermal cells.

Sites on the sedimented eastern flank of the Juan de Fuca Ridge include a recharge area where influx of seawater occurs at a basement protrusion and proximal sites where cross-hole pumping experiments quantify flux through the basement units. Long-term observations using CORK instrumentation are tracking fluid flow and properties over time.

IODP Expeditions 309, 312, and 335 have brought unique insights on seawater penetration into the base of the upper crust, where sheeted dikes transition into intrusive gabbroic rock. Hole 1256D penetrates ~1160 m below the sediment-basement interface in crust formed when the East Pacific Rise was spreading >200 mm/yr. The basal dikes underwent several phases of seawater reaction, starting with syn-formation hydrothermal alteration. Intrusion of gabbro and associated contact metamorphism later resulted in recrystallization. Subsequent cooling and fracturing enhanced fluid circulation, amphibole veins formed followed by retrograde metamorphic minerals. This sequence of events has been recognized in ophiolites (e.g., Gilles, 2008) and is inferred to mark the conductive boundary between a magma lens and the overlying hydrothermal system.

IODP Expeditions 304 and 305 extended insights from Hole 735B and ODP Leg 209, further documenting processes responsible for oceanic core complex formation. Rather than a footwall dominated by altered peridotite, as was inferred from nearby seafloor mapping, sampling, and geophysics, Expedition 304 and 305 scientists working just west of the slow-spreading Mid-Atlantic Ridge axis recovered a gabbroic sequence extending 1.4 km below the exposed detachment fault on the Central Dome. Isotopic and mineralogical alteration was intense in the upper 100 m, likely evidence of the once-active, fluid-cooled detachment zone, but it decreases in intensity with depth. Below 800 m, alteration is restricted to narrow zones around faults, veins, igneous contacts, and to an interval of locally intense serpentinization in olivine-rich troctolite. Seismic tomography shows that gabbroic bodies are asymmetrically distributed toward the east within the central and southern domes but the footwall is characterized throughout by reflectivity at depth. One hypothesis is that highly altered, olivine-rich intervals give rise to such impedance contrasts. Another hypothesis is that fractured, narrow fault zones with past, possibly current, fluid flow have sufficiently different density/porosity to reflect seismic energy. IODP Expedition 340T (scheduled for three days onsite in early 2012) aims to test these hypotheses. Seismic logging and core/log/seismic integration will be the main studies and equilibrated (since 2005) borehole fluid temperatures will document any zones of present-day fluid flow from permeable faults.



*Seismic sections and Expedition 304/305 drill core at Atlantis Massif. Map shows seafloor (blue deep, red shallow) and seismic line locations. Perspective view of wide-angle seismic sections (Singh et al., 2004) shows approximate relation to Hole U1309D lithology (depth converted to travel-time using average velocity).*

## All I Need to Know About Science I Learned from Scientific Ocean Drilling

by Andrew Fisher, Demian Saffer, Peter deMenocal, Susan Humphris



Photo courtesy of C. Geoff Wheat (UAF)

Scientific ocean drilling has helped to train generations of students, researchers, and faculty from across the U.S. and around the world. Those of us who were introduced as students to exploration and discovery through ocean drilling have been particularly influenced by this experience. The approaches and attitudes needed to plan and complete challenging drilling projects often seem routine to those immersed in ocean drilling culture. Scientific ocean drilling teaches valuable lessons, many of which are applicable to the world beyond the drillship. Here are a few examples.

### (1) Collaborate

The drilling crew works around the clock; welders come out when called upon to repair equipment, technicians trade shifts or just keep working when they are needed, and scientists routinely collect samples for each other. It is common for scientists, technicians, core techs, officers, and the rig crew to be on deck in the middle of the night, helping to reconfigure instruments at the last minute. Everyone falls into place, literally working side by side – not because a particular experiment matters to each individual alone, but because everyone is personally engaged in the success of the entire project.

### (2) Improvise

On many expeditions, plan A switches to plan B to plan C....eventually to plan Q. We have seen complex drilling systems re-engineered on the fly, pieces machined from raw stock, and drilling sites shifted at the last minute based on results determined from cores or logging data collected only a few hours before. We have participated in unexpected meetings of scientific, technical, engineering, and operational personnel, who gather to solve complex operational problems through innovative and creative thinking.

### (3) Speak your mind

Scientific drilling brings together an eclectic assortment of scientists, drillers, technicians, ship's officers, and other highly skilled specialists. Shipboard personnel come from diverse backgrounds, speak different languages, and often meet for the first time as a drilling expedition begins. Success on the drillship depends on personnel being willing to raise difficult questions, communicate clearly, and share expertise.

### (4) Be prepared

First-timers on an expedition of the *JOIDES Resolution* are frequently amazed to see all the spare parts that are stocked so that damage to critical systems won't prevent the attainment of primary goals. From extra computers to drill bits to collars to o-rings to fittings for magnetometers, you can't go to sea on the *JOIDES Resolution* without lots of spare parts. This requires a mindset opposite to the one associated with most other travel, where the standard rule is often, "don't bring anything unless you're sure you'll need it." Instead, we seem to live by the motto, "don't leave behind anything you think you might need."

What lessons have you taken away from participation in scientific ocean drilling? We would like to hear from readers who have stories about how ocean drilling practices have influenced other kinds of research. Please email your ideas and stories to: [lessons@oceanleadership.org](mailto:lessons@oceanleadership.org).



Photo courtesy of Andy Fisher (UCSC)

***Community input is important as we work towards a new scientific ocean drilling program. We will keep you updated as this process continues, and welcome your help, input, and ideas on how to spread the word and galvanize the scientific community towards ensuring the future of scientific ocean drilling beyond 2013!***



# COMMUNITY SPOTLIGHT

## BILL RHINEHART

Originally employed under the Ocean Drilling Program (ODP) as a student worker while attending Texas A&M University, Bill Rhinehart was hired as a full-time engineer in 1991 and sailed his first full stint on ODP Leg 143 Northwest Pacific Atolls and Guyots. "There was so much to learn," he recalled. "We drilled in almost 5,000 m of water – far beyond the standard deepwater drilling of the time. I was amazed."

Bill has other fond memories of sailing with IODP – from seeing hundreds of sea otters swimming alongside the ship and witnessing the northern lights, to dodging icebergs and 60 ft swells on his first Greenland mission.

Since his initial voyage, Bill has sailed on five expeditions with the IODP and its predecessors; his most recent was IODP Expedition 336: Mid-Atlantic Ridge Microbiology. Today, serving as the Supervisor of Engineering Services for the IODP, Bill oversees the design, development, and deployment of downhole tools – making the contributions of his team crucial to the successful deployment of APC and XCB coring instruments and CORK observatories.

When asked about his plans for the future, Bill replied, "I only hope to continue, from a technological standpoint, the advancement of scientific ocean drilling – to have some small successes that contribute to our overall body of knowledge and that build on the legacy of the program."

## LETTER FROM THE NSF

Dear Colleagues,

NSF/ODP welcomes the recent publication of "Scientific Ocean Drilling: Accomplishments and Challenges" by the National Research Council, written by a committee co-chaired by Bob Duce and Art Goldstein and available from the National Academies Press (<http://dels.nas.edu/osb>). This study identified scientific accomplishments of the Deep Sea Drilling Project, the Ocean Drilling Program, and the Integrated Ocean Drilling Program and then examined whether the recently published International Ocean Discovery Program science plan, "Illuminating Earth's Past, Present, and Future," would lead to additional significant and transformative research. The committee determined that these U.S.-supported scientific programs have been very successful in contributing to a broad range of earth science disciplines, and identified numerous examples of scientific accomplishments that would not have been achieved without scientific ocean drilling. Of particular value was the careful cataloguing of accomplishments, significance, science fields enabled, and unaccomplished goals for each of the three themes of the Integrated Ocean Drilling Program initial science plan, "Earth, Oceans, and Life." Significantly, the committee underlined the importance of strong international collaboration for achieving this success.

The study then proceeded to systematically examine the four research themes of the International Ocean Discovery Program science plan (2013-23), noting that "each of the four themes within the Science Plan identifies compelling challenges with potential for transformative science that can only be addressed by scientific drilling." A critical finding was that challenges identified within the four themes range in potential for transformative science, thereby requiring prioritization by the science community. NSF will soon begin engaging the U.S. community to help evaluate how best to accomplish this prioritization. The study also noted the value of improving program efficiency through optimal use of legacy materials and addressing multiple science objectives on single expeditions, and emphasized that support for technological research, innovation, and development has proved crucial in the past for transformative science achievement, and will continue to be required to ensure transformative advances in the future.

Sincerely,

**The NSF Team**

(Rodey Batiza, Jamie Allan, and Tom Janecek)

## LETTER FROM THE USAC CHAIR



Dear Colleagues,

Now that the current IODP program is finishing and we are moving toward renewal by the end of 2013, many exciting things are happening! As part of the renewal process, the National Research Council (NRC) has issued a report (<http://dels.nas.edu/osb>) on the scientific significance of ocean drilling over the past four decades. This report provides a very exciting read, to say the least. It carefully lays out the massive impact ocean drilling has had on the whole of the

earth sciences through a broad range of transformative accomplishments – which would never have been possible without drilling. We might not think about these highlights every day, but it is just a remarkable feat that ocean drilling was central in verifying seafloor spreading and plate tectonics, the development of an accurate geological time scale, the discovery of the subseafloor microbial biosphere, and the reconstruction of global climate history and associated sea level changes.

The NRC report also made some recommendations about the new science plan for 2013-23. It urges the U.S. community to establish a mechanism to prioritize the challenges outlined in this science plan and to increase the program's efficiency through integration of multiple objectives into single expeditions. To help achieve these goals, the U.S. Advisory Committee for Scientific Ocean Drilling (USAC) and the U.S. Science Support Program (USSSP) are organizing a U.S. IODP workshop in Denver from April 30 through May 2, 2012. An important pre-workshop online community survey is taking place now. I encourage everyone with an interest in scientific ocean drilling to take a few minutes to complete the survey at <http://iodp-ussp.org/workshop/strategies> to help us demonstrate the breadth and vitality of the U.S. community. The survey results will guide us in finalizing the Denver workshop agenda and in selecting the meeting participants.

Finally, as incoming chair, I would like to invite you to share your comments, worries, and suggestions about IODP and the renewal process with me and the other USAC members. Write us an email or meet with us at the IODP Town Hall Meeting (Tuesday evening, December 4) during the 2011 AGU Fall Meeting in San Francisco.

All the best,

**Anthony Koppers**  
Chair, U.S. Advisory Committee  
for Scientific Ocean Drilling

## USAC MEMBERS

**Anthony Koppers (Chair)**

Oregon State University

**Gary Acton**

University of California, Davis

**Ivano Aiello**

Moss Landing Marine Laboratories

**Gail Christeson**

University of Texas at Austin

**Gerald Dickens**

Rice University

**John Jaeger**

University of Florida

**Jon Lewis**

Indiana University of Pennsylvania

**Heath Mills**

Texas A&M University

**J. Casey Moore**

University of California, Santa Cruz

**Craig Moyer**

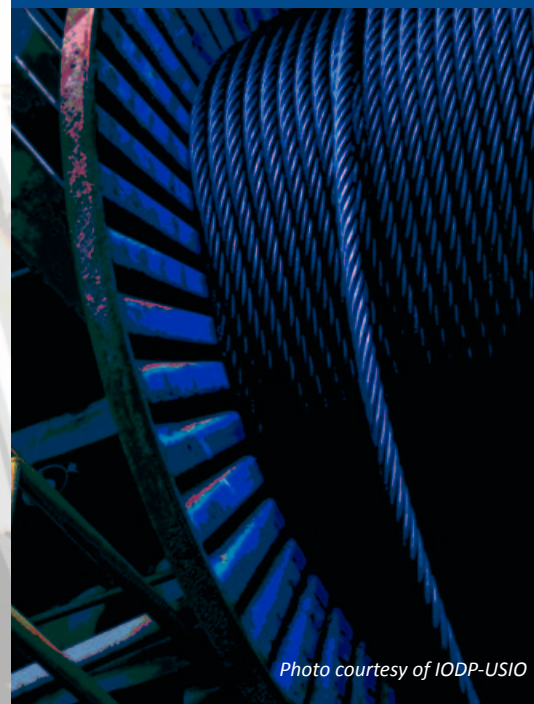
Western Washington University

**Yair Rosenthal**

Rutgers University

**Anja Schleicher**

University of Michigan







# DRILL BITS

## IODP Indian Ocean Workshop

A workshop was held October 17-18, 2011, in Goa, India to promote and strengthen existing drilling proposals in the Indian Ocean and formulate new proposals that meet the goals of the 2013-23 IODP science plan. As the *JOIDES Resolution* has not worked in the Indian Ocean in many years, the workshop provided a timely opportunity to organize a strong set of targets. Funded by IODP Management International, the Indian Ministry of Earth Science, the Australia-New Zealand IODP Consortium, and the Consortium for Ocean Leadership, the workshop also aimed to promote the integration of scientists from new IODP member countries into the global community. The workshop focused on four themes – Cenozoic oceanography and climate change, monsoon history, tectonics and volcanism, and the deep biosphere – with the meeting participants prioritizing topics within each theme and forming the collaborations necessary to develop successful scientific drilling campaigns. A workshop report will be posted on <http://iodp-ussp.org> when complete.



## IODP at SACNAS

The U.S. component of IODP organized a booth at the 2011 Society for Advancement of Chicanos and Native Americans in Science (SACNAS) national conference held in San Jose, California October 27-30, 2011. SACNAS is a national nonprofit organization dedicated to fostering the success of Hispanic/Chicano and Native American college students and professionals. An estimated 3,700 people attended the largest conference in SACNAS history with approximately 58-60% of the participants consisting of undergraduate and graduate students. The booth featured IODP science, as well as educational and career opportunities in IODP, particularly for university and college students.

## Assessing the History of the Greenland Ice Sheet

The response of the Greenland Ice Sheet to global warming represents one of the greatest uncertainties in predicting future sea-level rise. Observations extend back only decades and terrestrial geologic records rarely exist beyond the last deglaciation. Therefore, a marine-based paleo perspective is required to elucidate the response of this ice sheet to climate change. Based on the emphasis put forward in the 2013-23 IODP science plan, a workshop was convened November 7-9, 2011, in Corvallis, Oregon, to discuss the utility and application of ocean drilling in reconstructing the paleohistory of the Greenland Ice Sheet. The workshop participants discussed methodologies, technologies, and drilling locations needed to constrain the sensitivity of the Greenland Ice Sheet to past climate changes, particularly during interglacial and earlier climate periods. A workshop report will be posted on <http://iodp-ussp.org> when complete.



From the rig floors of the drilling platforms to the desks of member offices worldwide, IODP is a dynamic yet complicated program. This section is designed to explain the “ins and outs” of different aspects of IODP. In each issue, we will select one or two topics to highlight – we invite you to test your IODP knowledge and to learn something new about the program.

## Expedition Staffing

Sailing as a shipboard scientist with the Integrated Ocean Drilling Program is a unique professional experience that exposes the researcher to intense scientific investigation and international collaboration. Scientists from any IODP member country may sail on any IODP drilling platform, with the berth distribution set by program policy and international agreements.

The process begins with an international call for applications. The application period typically opens and closes globally on the same dates. Scientists who wish to apply must do so through their country’s program member office, which in the U.S. is the U.S. Science Support Program (USSSP) at the Consortium for Ocean Leadership. USSSP processes, reviews, and prioritizes the applications in consultation with the U.S. co-chief (or senior scientist if there is not a U.S. co-chief), and the U.S. Advisory Committee for Scientific Ocean Drilling (USAC), a peer-elected committee of representatives.

Applications are evaluated on a number of criteria, including experience, expertise, and quality of the participation plans. USSSP strives to balance experience on each expedition by sailing as many as three graduate

students. Graduate students should feel encouraged to apply and think carefully about how they could contribute to an expedition’s objectives. Expeditions need multi-disciplinary support to achieve success, so there are often openings that might not seem obvious at first – for example, an expedition that will sample oceanic crust might need a micropaleontologist to analyze the overlying sediments.

The prioritized U.S. applications are forwarded to the platform operator, who works with the expedition project manager and co-chiefs to evaluate the applications from all member countries. Expertise and experience continue to be important factors for evaluating applications, but so are the priorities assigned to each applicant by the member country and the berth quotas set by the international agreements. To achieve a balanced science party, the platform operator usually issues invitations to join the expedition’s science party in stages; there may be several rounds of invitations issued over several months.

If you have questions about applying to sail or would like us to notify you about calls for applications, please contact the U.S. Science Support Program at [usspp@oceanleadership.org](mailto:usspp@oceanleadership.org).



- Get program updates and learn more about the future of Ocean Drilling
- Meet other IODP scientists active in the program and those leading IODP
- Participate in a Q&A session with scientists, program leaders and funding agency representatives

## Town Hall Meeting

Tuesday, December 6, 2011

Hilton San Francisco, Union Square

Reception: 5:30 to 6:30 pm

Meeting: 6:30 to 7:30 pm

Q&A Session Following





## LETTER FROM THE USIO

Dear Colleagues,

The success of scientific ocean drilling is rooted in many factors and all must combine to yield the high quality science we all now expect. The availability of appropriate technology is one such factor that enables the vital broadening of our scientific exploration. The delivery of appropriate technology to the scientific ocean drilling community is a core function of U.S. Implementing Organization (USIO). Recently, the Science Advisory Structure (SAS) was reformed without a standing engineering development panel. This void is now being filled by the implementing organizations with their own technical panels, which will have research and development as part of their scope. The USIO's Technical Panel (UTP) will serve the IODP by expanding the utilization of external technical experts to partner with USIO staff. The Consortium for Ocean Leadership will lead the UTP with its partners, Texas A&M University and the Borehole Research Group at the Lamont-Doherty Earth Observatory. Together, we will pursue international participation with our European and Japanese counterparts to continue the successful information exchange begun with the Engineering Development Panel. External experts will be invited to the UTP, which will meet twice per year to offer advice on existing engineering projects, identify technology gaps and consider potential future projects. Additionally, the UTP will review and provide advice on technically challenging drilling proposals.

The very difficult funding environment has led to dwindling resources for technology research and development but the resolve of the USIO to push the technological envelope remains unchanged. The UTP will help the scientific ocean drilling community achieve more science through attainable technology in new developments, equipment maintenance and upgrades while working within the financial constraints of IODP. The UTP will remain solidly engaged with industry and government agencies as we search for technological synergies to help bridge the



**David Divins**



**Greg Myers**

funding gap presently hindering a more robust research and development program.

As we prepare for the International Ocean Discovery Program in 2013, We would like to encourage the ocean drilling community to continue to submit proposals in line with the new science plan, "Illuminating Earth's Past, Present and Future" ([www.iodp.org/Science-Plan-for-2013-2023/](http://www.iodp.org/Science-Plan-for-2013-2023/)). As we move into the future, the USIO will be looking for ways to deliver as much science as we can for the precious funding we receive. Along this line we will be operating the *JOIDES Resolution* as efficiently as possible and in order to make that work we need a large pool of "ready to drill" proposals. More proposals will, hopefully, reduce the amount of transit the ship must do between expedition locations, reducing transit costs and thereby increasing the resources available for executing your science. The International Ocean Discovery Program will most likely start operations in the Western Pacific and Indian Ocean in fiscal year 2014; how long we stay there and where we go next is up to you.

Best regards,

**David Divins**

Vice President & Director,  
Ocean Drilling Programs

**Greg Myers**

Senior Technical Expert:  
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## IODP Expedition Schedule

Expedition	#	Port of Origin	Dates
<b>JOIDES Resolution</b>			
Mediterranean Outflow	339	Ponta Delgada, Azores	17 Nov. – 17 Jan., 2012
Atlantis Massif (779 APL)	340T	Lisbon, Portugal	17 Jan. – 6 Feb., 2012
Lesser Antilles Volcanism & Landslides	340	St. John's, Antigua	6 Feb. – 18 March, 2012
Tie-Up			18 March – 18 June, 2012
Newfoundland Paleogene Sediment Drifts	342	St. George, Bermuda	18 June – 17 Aug., 2012
Tie-Up			17 Aug. – 22 Oct., 2012
Costa Rica Seismogenesis Project (CRISP) 2	344	Curaçao	22 Oct. – 17 Dec., 2012
Hess Deep Plutonic Crust	345	Puntarenas, Costa Rica	17 Dec. – 16 Feb., 2013
Tie-Up			16 Feb. – 27 May, 2013
Southern Alaska Margin Tectonics, Climate & Sedimentation	341	Victoria, Canada	27 May – 27 July, 2013
Transit	346T	Victoria, Canada (TBD)	27 July – 18 Aug., 2013
Asian Monsoon	346	Hakodate, Japan	18 Aug. – 26 Sept., 2013
<b>Chikyu</b>			
Tohoku Rapid Response Drilling	343	Shimizu, Japan	1 April – 21 May, 2012
Deep Coalbed Biosphere off Shimokita	337	Hachinohe, Japan	6 July – 15 Sept., 2012
NanTroSEIZE Plate Boundary Deep Riser - 2	338	Shingu, Japan	19 Sept. – 31 Jan., 2013

*Expedition dates, ports of origin, etc. are subject to change.*

*Please see <http://iodp.tamu.edu/scienceops/> and <http://www.iodp.org/expeditions/> for the most up-to-date ship operations schedules.*