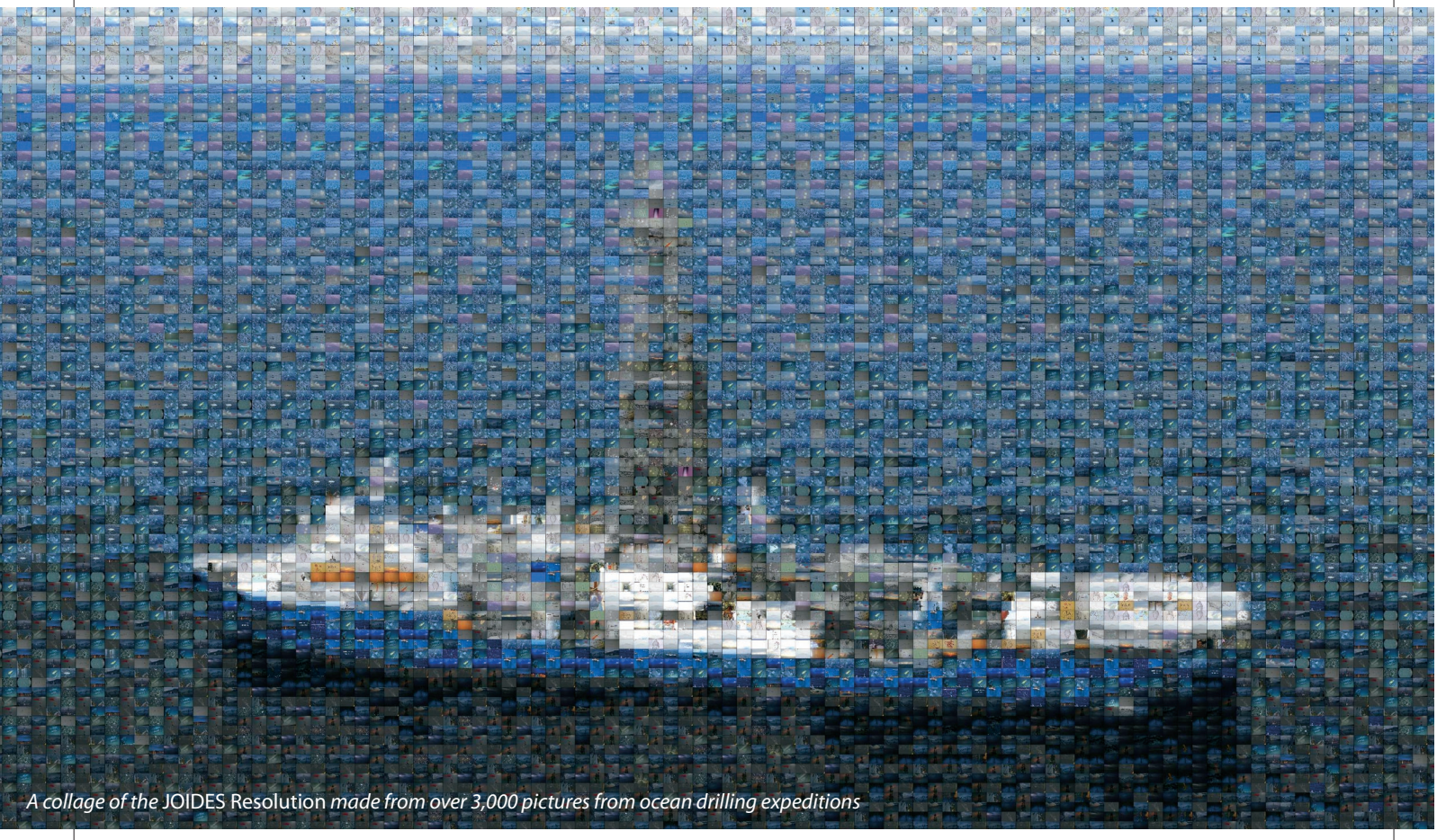
JOI/USSAC Newsletter

News from the Joint Oceanographic Institutions/U.S. Science Support Program associated with the Integrated Ocean Drilling Program • Spring 2005 • www.joiscience.org

Preliminary IODP Expedition Schedule Set Through January 2006



A collage of the JOIDES Resolution *made from over 3,000 pictures from ocean drilling expeditions*

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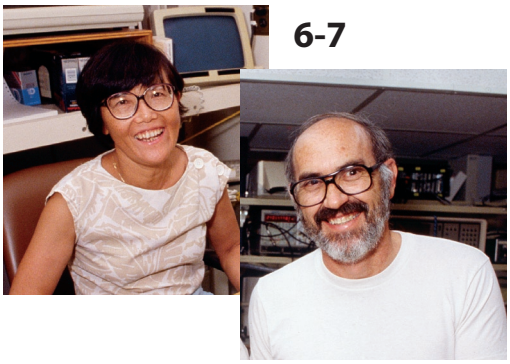

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JOI/USSAC Newsletter

Executive Editor: Holly Given
Managing Editor: Andrea Johnson
Layout & Design: Jennifer Anziano

The *JOI/USSAC Newsletter* is issued by the Joint Oceanographic Institutions (JOI) and is available free of charge.

Joint Oceanographic Institutions (JOI) is a consortium of U.S. academic institutions which brings to bear the collective capabilities of the individual oceanographic institutions on research planning and management of the ocean sciences. Established as a private, nonprofit corporation in 1976, JOI facilitates and fosters the integration of program and facility requirements for the oceanographic community, makes the case for support, and arranges for appropriate management either through individual institutions or by JOI itself. JOI manages the U.S. Science Support Program (USSSP) associated with the Integrated Ocean Drilling Program (IODP). Funding for USSSP-IODP is provided through a cooperative agreement between JOI and the National Science Foundation (NSF). The U.S. Science Advisory Committee (USSAC) offers guidance to JOI regarding the needs of the U.S. scientific community.

To subscribe, contact:
JOI/USSAC Newsletter
Joint Oceanographic Institutions
1201 New York Avenue, NW, Suite 400
Washington, DC 20005 USA
telephone: 202-232-3900
e-mail: info@joiscience.org

For more information about JOI and USSSP, visit: www.joiscience.org.

Drill Bits

William Brian Jonasson

December 24, 1945 – January 18, 2005

Brian Jonasson, Manager of Tools and Analytical Services for the Integrated Ocean Drilling Program (IODP) at Texas A&M University, died in a car accident on January 18, 2005 while driving to Houston, Texas. Brian was both an intellectual force and a physical presence, and he provided key leadership and engineering contributions that were vital to the scientific successes of the Ocean Drilling Program (ODP) and IODP. These engineering enhancements will certainly benefit IODP for many years. As a friend and colleague, Brian will be long remembered.

Brian previously worked for ODP for eight years as Manager of Drilling Services responsible for operations, engineering, and materials management. Born in Gimli, Manitoba, Canada, he spent 22 years in the Canadian oil industry before working at Texas A&M. This experience gave him a broad background in drilling operations, engineering, safety and quality management, offshore regulations, rig construction, and subsea and floating production systems. Survivors include his wife and two sons; and a brother and sister-in-law in Sault St. Marie, Ontario, Canada.

Tobin becomes US Chief Project Scientist for NanTroSEIZE

The U.S. Science Support Program has issued a sub-award to Harold Tobin of the New Mexico Institute of Mining and Technology to serve as the U.S. Chief Project Scientist (CPS) for IODP's first Complex Drilling Project, the Nankai Trough Seismogenic Zone Experiment (NanTroSEIZE). Tobin will share CPS duties with Masataka Kinoshita of the Center for Deep Earth Exploration (CDEX), Japan Marine-Earth Science and Technology (JAMSTEC).

The Chief Project Scientist role is a new concept within IODP. It was designed to ensure that planning and implementation across multiple expeditions of Complex Drilling Projects are coordinated and compatible with the overall science goals. Duties include working with IODP Management International (IODP-MI), Implementing Organization staff scientists and engineers, and expedition Co-Chiefs to design detailed implementation plans; facilitating communication and coordination among international scientific groups, IODP's Science Advisory Structure, and principal PIs; acting as the primary scientific contact for outreach and public relations; and serving as Vice-Chair of the Project Scoping Group (an IODP-MI entity).

Tobin was unanimously recommended by the U.S. proponent group of NanTroSEIZE—an ambitious project to drill through the Nankai Trough plate interface, drill multiple reference sites in cross section perpendicular to the trench, and install quasi-permanent downhole observatories. Tobin is also a member of USSAC and a 2005-2006 Distinguished Lecturer.

Your Thoughts on This Newsletter?

Many things in the U.S. Science Support Program for the new IODP have changed, including the *JOI/USSAC Newsletter*. But should it change more? To help us evaluate its current relevance, please complete and mail the postage-paid survey attached to this issue. We want the newsletter to meet your needs, and your feedback will make a difference! We are also looking for suggestions for a new title. For more in-depth questions/comments, please contact the newsletter editors, Holly Given (hgiven@joiscience.org) or Andrea Johnson (ajohnson@joiscience.org).

IODP-MI Convenes Members and Governors

After operating for a full year as IODP's central management organization, IODP Management International (IODP-MI) convened its Member Representatives and Board of Governors in mid-February to review first-year outcomes. The Board elected new officers, including Chair Paul Stoffa (University of Texas), Vice Chair Hisatake Okada (Hokkaido University), Secretary Kiyoshi Suyehiro (JAMSTEC), and Treasurer Chris Harrison (University of Miami).

The Members welcomed a new institutional member, the European Institute for Marine Studies, which is part of the University of Western Brittany and founded by the French Ministry of Education. The Members also voted to change the corporate bylaws to officially recognize the central management organization's acronym as IODP-MI.

IODP Updates Its Look

IODP has a new program logotype! The updated symbol, suggestive of a compass or a derrick on the horizon was designed by Media Plus Design in Washington, DC. It replaces the previous symbol reminiscent of three blue waves. A corporate standards guidebook is nearly complete and will be distributed program-wide to help designers and other office personnel correctly apply the logo, particularly in tandem with other program logos and in various designs and materials. To receive a pdf of the guidelines, please send your request to Nancy Light (nlight@iodp.org).

IODP
INTEGRATED OCEAN DRILLING PROGRAM

Making a Splash at AGU

Research made possible by three generations of scientific ocean drilling—DSDP, ODP, and IODP—was presented in more than 200 papers at the fall meeting of the American Geophysical Union, from December 13-17, 2004. Conducted by scientists worldwide, the work ranged in discipline from paleoclimatology to volcanology. In addition, a Town Meeting coordinated by IODP Management International briefed over 300 scientists on IODP's inaugural expeditions and future opportunities.

Join the IODP Community

A new registration feature on www.iodp.org invites scientists to stand up and be counted as part of the IODP community. If you haven't done so, please visit the site's home page and register. An e-newsletter recently made its debut as one of the first information vehicles to be distributed to those registered on the IODP site. The distribution list which is generated by those who register online will eventually

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Preliminary Expedition Schedule Set Through January 2006

Frank Rack, JOI

Six Integrated Ocean Drilling Program (IODP) expeditions were recently scheduled, extending riserless drilling with the *JOIDES Resolution* into January 2006. These new cruises—operated by the JOI Alliance—are still contingent on lead agency approval. Combined with the Tahiti Sea Level Expedition using a mission-specific platform, this guarantees that 2005 will be an eventful year in scientific ocean drilling.

Brief descriptions of the expeditions follow; additional information is available at www.iodp.org. Interested candidates should apply to sail through national and regional IODP offices. U.S. candidates will find the necessary application information at www.usssp-iodp.org.

Expedition 307
Modern Carbonate Mounds – Porcupine Drilling

Expedition 307 will drill a transect of three sites on the eastern slope of Porcupine Seabight in the Porcupine Basin—west of Ireland—to investigate giant carbonate mounds. In addition to being possible models for prominent biosphere systems throughout earth history, these mounds may offer very high-resolution records of paleoenvironmental variability. The sites are centered on Challenger Mound, a 170-meter-high, partly buried carbonate formation, which is topped by dead cold-water coral rubble. The mound is part of the Belgica Mound Province, one of three carbonate-mound provinces in the basin, and one of the best documented in the world.

High-resolution seismic profiling, multibeam bathymetry and sidescan sonar imaging reveal that the mounds are rooted on a strongly eroded unconformity. Drilling at two sites will constrain the age of the unconformity and the importance of the hiatus. Drilling at the third site will assess environmental forcing factors and may reveal processes that controlled the mound's formation. Potential hypotheses are that venting fluids or gases may have triggered mound growth. Particular attention will be paid to microbiological and biogeochemical processes in mound genesis and development.

Expedition 308
Gulf of Mexico Overpressure and Fluid Flow Processes

This expedition will elucidate controls on passive-margin hydrogeology, specifically the coupling of overpressures, flow, and deformation. Drill sites were selected to characterize spatial variation in pressure, stress, and rock and fluid properties along a known flow-focusing structure, the Ursa Basin. The findings will be used to test a macro-scale (km-scale) model, developed by the proponents, that describes how sedimentation drives both compaction and fluid flow in settings where low-permeability mudstones load high-permeability aquifers.

The micro-scale material behavior of the shallow sediments will be established using two reference sites in the Brazos Trinity Basin, where pore pressures are normal for a range of *in situ* effective stresses. A primary component of the study will be laboratory-based geotechnical analysis of sediment properties to further constrain material behavior. Because the targeted sediments are type sections for studying continental-slope instability and failure processes, an extraordinary data set may be recovered for observing ponded and channelized turbidites as well as understanding the timing of sedimentation and slumping.

Expeditions 309 and 313
Superfast Spreading Crust I and II

The *JOIDES Resolution* will revisit Site 1256D in the Guatemala Basin twice in 2005 to study how oceanic lithosphere at fast spreading centers is formed. The purpose of progressively deeper drilling in this location, which was first drilled during ODP Leg 206, is to obtain a complete section of upper ocean crust—from dikes to gabbro—in a superfast (>200mm/yr) seafloor spreading zone. The observed relationship between ocean-ridge spreading rate and the depth to axial low-velocity zones, interpreted to be melt lenses, predicts that the dike-gabbro transition should be most shallow in crust formed at superfast spreading rates.

Previous drilling at the site reached 500 meters sub-basement (msb) and the dike-to-gabbro transition is expected to be somewhere between 900 and 1300 msb. A total drilling depth of ~1500 msb is estimated. Such a section will confirm the lithology of the Layer 2-Layer 3 seismic transition and the nature of high-level axial magma chambers. It should also define the relationship between magma chambers and their overlying lavas and dikes, as well as the interactions among magmatic, hydrothermal, and tectonic processes throughout the upper and middle ocean crust. These expeditions will reveal the ocean-crust geology expressed by seismic stratigraphy and will quantify the relative influence of different layers as sources of marine magnetic anomalies.

IODP Operations Schedule

for more information: www.iodp.org/expeditions

Expedition Name	Port of Origin	Dates
305: Ocean Core Complex 2	Ponta Delgada	Jan. 8 - March 2, 2005
306: North Atlantic Climate 2	Ponta Delgada	March 2 - April 26, 2005
307: Porcupine Carbonate Mounds	Dublin	April 26 - May 31, 2005
308: Gulf of Mexico Hydrogeology	Mobile	May 31 - July 6, 2005
309: Superfast Spreading I	Balboa	July 6 - Aug. 24, 2005
310: Tahiti Sea Level	TBD	June - Aug., 2005
311: Cascadia Margin Hydrates	Balboa	Aug. 24 - Oct. 7, 2005
312: Monterey Bay Observatory	Victoria	Oct. 7 - Nov. 24, 2005
313: Superfast Spreading II	Balboa	Nov. 24 2005 - Jan. 8, 2005

Expedition 311
Cascadia Margin Gas Hydrates

This expedition is designed to further constrain the models of marine gas-hydrate formation in subduction-zone accretionary prisms. The objectives include characterizing the deep origin of methane, its upward transport, its incorporation in gas hydrate, and its subsequent loss to the seafloor. A gas-hydrate-related bottom simulating reflector (BSR) occurs off Vancouver Island in a 30 km-wide band parallel to the coast beneath much of the continental slope. Expedition 311 will drill five sites along a margin-perpendicular transect representing different stages in the evolution of the gas-hydrate stability field.

The expedition objectives are to test gas-hydrate-formation models and constrain model parameters, especially focusing on the contrast between dispersed pervasive upward flow and focused flow of fluid and methane in fault zones. Geochemical measurements of gas hydrate, pore fluids, and sediments within and below the gas-hydrate stability zone will be essential. These measurements will be integrated with microbiological studies to provide a high-resolution characterization of biomass, diversity, structure and function of microorganisms at both community and population levels for different depths. Pressure coring, wireline logging and logging-while-drilling/measurement-while-drilling (LWD/MWD) techniques will be used extensively.

Expedition 312
Monterey Borehole Observatory

This expedition will install two cased reentry boreholes (~350 m) in Monterey Bay, California. These boreholes will allow new instrumentation to be developed and offer the capability to monitor subsurface conditions and collect time series data on natural changes that occur in the subsurface environment. One borehole will be configured for developing new tools and techniques necessary for monitoring subseafloor hydrological and geochemical conditions as well as for conducting marine hydrogeological and biological experiments. The second borehole will be configured for deploying and testing downhole seismometers.

The proposed sites for Expedition 312 will be located on Smooth Ridge in Monterey Bay, offshore California, in water depths of 831 m and 1008 m, respectively, where drilling will penetrate Neogene hemipelagic sediments. The sites will also be located near the proposed terminus of the Monterey Accelerated Research System (MARS) cabled observatory, which is to be an NSF-funded test facility for developing oceanographic instrumentation, experimental protocols, operational procedures, management policies, data archiving strategies, and educational outreach programs for future

Expedition Information

Expedition 303: North Atlantic Climate

Expedition 303 to the North Atlantic (September 25 to November 17, 2004) sampled high-sedimentation-rate "drifts" that yielded high-resolution archives of climate change for the last few million years. The six sites cored during the expedition are distributed from the mouth of the Labrador Sea (Eirik Drift and Orphan Knoll) to the southern tip of the Gardar Drift, and include a re-drill of DSDP Site 609, the classic site in the central Atlantic "ice rafted debris" belt. The expedition objective was to place North Atlantic Pliocene to Quaternary climate records into a millennial-scale stratigraphy based on stable isotope and geomagnetic paleointensity records. The sites were chosen based on the importance of their climate record (in terms of the composition and structure of surface or bottom waters and detrital layer stratigraphy indicative of ice sheet instability), adequate sedimentation rates in the 5-to-20 cm/ky range, and attributes for a stratigraphic template based on relative geomagnetic paleointensity and oxygen isotope data.

It will take years to sift through the details of the 4.6 km of sediment core recovered during the expedition. It is, however, already clear that a unique archive of climate change has been recovered. The cores provide a record, at an unprecedented resolution, of changes in surface and deep-water conditions and ice sheet instability during a range of glacial and interglacial conditions since the intensification of northern hemisphere glaciation about 2.7 million years ago. Initial shipboard observations of the recovered sediments indicate that the major ice sheets surrounding the North Atlantic have been unstable, not only in the last glacial interval, but during most glacial intervals over the last million years, possibly longer.

- Jim Channell, Expedition 303 Co-Chief

U.S. IODP Expedition Participants

Expedition 306: North Atlantic Climate 2
Robert Harris, University of Utah
Gary Acton, University of California, Davis
Helen Evans, University of Florida
Harunur Rashid, Massachusetts Institute of Tech.
Denise Kulhanek, Florida State University
Shelley Judge, Ohio State University
Simon Nielsen, University of Florida
USIO Staff Scientist: Carlos Zarikian
USIO Logging Staff Scientist: Sean Higgins

Expedition 310: Tahiti Sea Level
Terrence Quinn, University of South Florida
Jody Webster, Monterey Bay Aquarium Research Inst.
Richard Fairbanks, Columbia University - LDEO
Anne Cohen, Woods Hole Oceanographic Inst.
Kenneth Verosub, University of California, Davis
Julia Cole, University of Arizona
Paterno Castillo, University of California, San Diego

Expedition 310: Tahiti Sea Level

This expedition is tentatively scheduled for Summer 2005 and more information will soon be available at: **www.iodp.org**. The expedition proposal is at: **www.ecord.org/pa/Tahiti-call.pdf**.

Changing of the Guard

Andrea Johnson, JOI

The New Year marked the retirement of two scientific ocean drilling veterans, Michiko Hitchcox and Jerry Bode. Each served the Deep Sea Drilling Project (DSDP), the Ocean Drilling Program (ODP), and the Integrated Ocean Drilling Program (IODP) for many years: Michiko as a shipboard Yeoperson for over 20 years and Jerry as a Curatorial Technician and Superintendent of the West Coast Repository for 35 years. We thank them for their dedication and wish them well in their future pursuits.

These articles are the first in a series about the unsung heroes of scientific ocean drilling. If you have stories or memories about Michiko, Jerry or other program heroes, staff and scientists, please send them to Andrea Johnson (ajohnson@joiscience.org). If the response warrants it, material beyond what can be published in the newsletter will be made available elsewhere.

Home at Sea:
Michiko Hitchcox, Yeoperson Extraordinaire

After spending years at sea as a yeoperson, Michiko Hitchcox has retired to Colorado to spend more time with her family. If you've been aboard the *JOIDES Resolution*, it is likely that you know Michiko who worked a staggering 57 cruises. In fact, Michiko never missed a cruise on her rotation during 20 years with ODP. That is, she never "stood down" for illness or personal reasons but sailed on every other leg from Leg 100 to 210—a truly remarkable feat.

Michiko first became involved with scientific ocean drilling when Jerry Winterer, Scripps Institution of Oceanography, hired her to help publish the *JOIDES Journal*. Then, in 1982, she had the opportunity to sail as Yeoperson on the *Glomar Challenger* for DSDP Leg 87 to the Nankai and Japan troughs. Shipmates recall that amid a typhoon, Michiko was found quietly snuggled up under her desk. Obviously comfortable at sea, she became a technician when ODP was launched; the rest is history. Sailing as a Yeoperson over the years, she provided support for scientific reports and publications, assisted in the shipboard laboratories, and acted as liaison between scientific participants and other shipboard personnel.

One of first things people recall about Michiko is her knack for making the *JOIDES Resolution* more welcoming. Mindful of special events, deadlines, and protocol, Michiko has an exceptional talent for making scientists feel at home at sea. Ever ready to whip up brownies or to hostess a Thai soup gathering, she created a variety of situations for people to be relaxed and together. She would also bring aboard local cheeses to savor and share; and for those with a sweet tooth she would have chocolate and ginger candies. Born in Japan and fluent in Japanese she helped ease many Japanese scientists and technicians into shipboard life with a stockpile of sticky rice. Michiko always did the little things—like decorating the lounge for the holidays—that mean so much to people who spend months a year at sea, away from loved ones. If you have ever spent Thanksgiving, Christmas and New Years on the ship, then you appreciate Michiko's holiday spirit.

"I really enjoyed being at sea, and the added bonus of being able to travel in so many different parts of the world. ODP treated me very well."
– Michiko Hitchcox

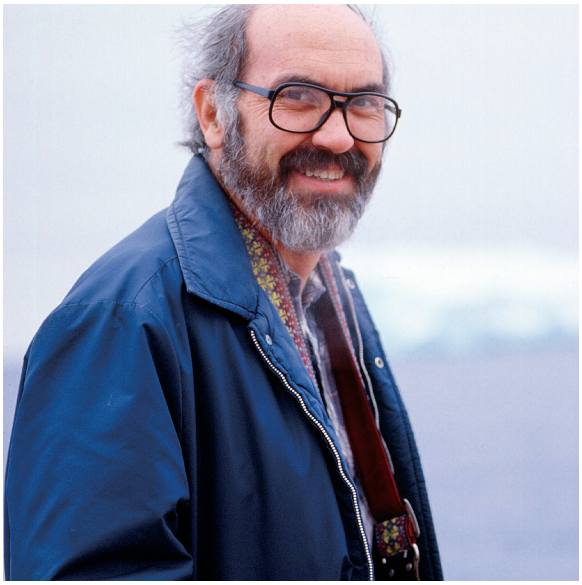
Those who continue to sail will miss Michiko's strong background support: contributing, refining, organizing, and planning. Over the years, her critical eye spotted a myriad of irregularities in the data and the writing. Her celebration of life helped make going to sea fun for all. Long hours and numbing work can tire even the best but she always found ways to lighten things up. She would have the CATAMAR catering crew bake birthday cakes to help us feel special on our birthdays, at sea, in the middle of nowhere. She also taught the CATAMAR crew how to make chocolate chip cookies and excellent stir fry. These are simple pleasures to look forward to after being on shift for over 12 hours—running the entire time—on a high-recovery leg.

Michiko's attention to detail is unprecedented; she can read your mind about what is needed. Need a stamp or change? She has it. On the ship, she kept busy even during slow periods. When things were hectic, she still found time to help others. Although a professional, she wasn't above exchanging a few wet sponges during lulls, and she always had time to listen or to make a cup of coffee for a tired soul. Brad Julson recalls, "She may be the only tech that I ever told to get some sleep because her shift started in a few hours. She is the archetypal example of an unselfish marine technician."

Michiko used her career as a gateway to travel far and wide, visiting the numerous international friends she made on the ship and exploring the world's outbacks to collect minerals and to appreciate the beauty of the lands and cultures. In the words of Burney Hamlin, "Michiko's successors must fill small shoes and a large void—and have a big heart." Michiko, thank you. Best wishes for a long, healthy and full retirement from the ocean science community. Now get busy on that endless list of projects you've long put off.

A Sedimental Journey: *Jerry Bode, Keeper of the Cores*

Following 35 years as a curatorial technician and Superintendent of the West Coast Repository (WCR), Jerry Bode has retired from scientific ocean drilling. Officially, that is, because he remains ready to sail again should any last minute vacancies ever arise. Although Jerry has been the mainstay of the WCR for decades, he has spent years at sea, sailing on ten DSDP cruises and nine legs and two transits for ODP. On the beach, Jerry has carefully tended the WCR, located at the Scripps Institution of Oceanography, and its treasury of DSDP cores—sharing their legacy with numerous scientists and visitors alike.



Jerry's own core story begins in the late 1960s. Although his professional career began as a research chemist for Rocketdyne, he was fascinated by Scripps and became

"I learned a little bit about a lot of things and learning is what it's all about."
- Jerry Bode

a chemistry technician there. Next, he was tempted by the opportunity to work for DSDP and soon found himself on Leg 12 aboard the *Glomar Challenger*. At that time, the shipboard labs had plenty of workspace. However, as scientific equipment became more reliable (seaworthy) and scientific interests became more focused, lab space became scarce and the battles for space began. (A similar trend occurred over the course of ODP.) Jerry recalls that during the *Challenger's* 15 years of scientific drilling, all ship-to-shore communication was by Morse code and even those exchanges were not encouraged. After one leg, where he served as the Lab Officer, he was chided for sending too many messages to the beach—all 68 of them. He fondly remembers the isolation because he could focus on his work, "Whatever happened on shore, there was nothing I could do about it. It simplified my life immensely and I liked it that way." Needless to say, times have changed!

During his career, Jerry derived his greatest professional satisfaction from helping scientists to attain their scientific goals. "In so doing," he says, "I learned a little bit about a lot of things and learning is what it's all about." Sampling policies early in ODP were still being formulated and honed, providing stimulating challenges to shipboard curators who needed to balance preserving core and aiding science. Jerry managed to achieve both with judicious planning and the cooperation of the scientists. His favorite expeditions were those on which he worked the hardest, specifically, DSDP Leg 42A and B to the Mediterranean and Black seas and ODP Leg 182 to the Great Australian Bight. Both cruises posed unusual challenges, which the technical staff—working as a team—surmounted thus contributing to the science.

On shore, Jerry regularly made time to give repository tours, introducing countless students to the secrets locked in cores and the wonders of ocean drilling. And what is Jerry's favorite core? At the WCR, the K/T boundary core from Hole 577A tops his list. He says, "It was the first complete K/T boundary core ever recovered by DSDP using piston coring techniques. The section is very plain and unspectacular, especially compared to the Leg 171 K/T boundary core. However, when I show visitors the fragments of melted crustal material and melted fragments of the meteorite itself that are easily seen in the carbonate ooze, I get a great deal of satisfaction seeing the growing amazement in their eyes."

Traveling to port calls worldwide is the source of other fond memories. For instance, in Valparaiso, Chile, on New Year's Eve prior to DSDP Leg 71, Jerry climbed a nearby mountain with locals to watch fireworks over the harbor. There he lent his tall shoulders to a distressed small boy who couldn't see over the crowd. His act of kindness, which made the boy ecstatic, was repaid by multiple party invitations that in turn led to a memorable New Year's celebration! In retirement, Jerry plans to continue his travels with his wife Faith, both abroad and in North America, with a newly acquired vintage RV. Fishing, backpacking in the Sierras, and woodworking are also on the agenda.

Although excited about retirement, Jerry will miss meeting scientists from around the world and hearing about frontier science firsthand. Most of all, he will miss his fellow technicians and their family-like camaraderie. Collectively, the techs with their broad range of personalities, skills, and eclectic interests make an awesome problem-solving force in the marine sciences.

Jerry Bode has always been ready to lend a hand, to discuss scientific and curatorial issues, and to provide insight into how policies, procedures, or technology has evolved over the course of DSDP and ODP. For instance, Frank Rack recalls how, on ODP Leg 113, Jerry helped him to understand the evolution of the GRAPE system for measuring bulk density. Jerry explained how Robert Boyce used to caliper core photographs to assess the quality of GRAPE data using the assumptions that if the core didn't fill the liner, the data wasn't very accurate. This illuminates how much work went into pioneering these measurement systems during the early days of DSDP—and the unwritten history that Jerry carries with him.

Thank you, Jerry, for your dedication and hard work. You helped make ocean drilling a success. The science community wishes you well in your new endeavors!

A Man of Many Ships: JOI's Vessel Acquisition Director

In September 2004, JOI welcomed Stuart Williams as Director for the Scientific Ocean Drilling Vessel (SODV) Acquisition Program. Much of Stu's experience—ranging from vessel design to program management—involves ships; lots of ships. His diverse career began with an interest in naval architecture, which was sparked by a required freshman lecture that highlighted the discipline's unique engineering challenges and links to oceanography. Subsequently, Stu earned a B.S.E. in Naval Architecture and Marine Engineering from the University of Michigan and a M.S.E. from the University of Newcastle with a focus on ship production technology.

Following college, Stu became a civilian member of the Navy's ship design group. He initially helped update a computer synthesis model that produced feasibility-level ship designs, but quickly moved into program management when the cable repair ship he was designing was selected for production. This project borrowed heavily from the technical capabilities incorporated in large drill ships. He then continued on as lead Naval Architect for a series of amphibious assault ships and mine warfare ships. Next, he became Deputy Program Manager for Special Mission ships, where he was responsible for 22 ship acquisition contracts worth approximately $10 billion.

Stu left the Navy to work for Propulsion Dynamics Inc., a company in Annapolis, which specialized in engineering and production of control systems for various military clients. There he led a team of hardware and software engineers that developed a full-fidelity control-room trainer for the latest class of Navy destroyers. Following this project, which included extensive testing and installation, he returned to government as Deputy Program Manager for the research ship modernization program at the National Oceanographic and Atmospheric Administration (NOAA).

The second half of Stu's federal career found him managing the planned construction and modernization of the entire NOAA research fleet. A prototype ship was developed and funded, but the political situation in the early 1990s stalled things there. During this period, Stu transferred positions to manage the $550 million acquisition of an information technology system for the National Weather Service. He helped rebaseline the requirements for the software and prioritized them; a prototype called the Pathfinder was also developed, tested and installed. Upon successful completion of three-million lines of code and the implementation of the system at 152 locations nationwide, Stu was named the Chief Information Officer for the Office of Finance and Administration. He also did double duty as Acquisition Manager responsible for a new class of Fisheries Research Vessels.

Taking an early out opportunity, Stu "retired" and worked as a consultant for Syntek Technologies. In this capacity he worked at Coast Guard Headquarters helping the government manage the Deepwater Program, which is a $17 billion, 30-year effort to replace all Coast Guard cutters, long-range helicopters and airplanes as well as the logistics and the information

technology command and control system. Stu served as the government's Risk Manager and on the Earned Value management team tracking progress by analyzing cost and schedule variances against the established baselines.

As for his involvement in the SODV acquisition at JOI, Stu has helped review and update the final Request for Proposal and also helped create the Source Selection process. Congress and the NSF have supported the Program with an initial block of $15 million in FY05. Although less than requested, this amount is adequate for initiating the project and the President's budget request for FY06 is promising. The design phase for the conversion will begin in the summer of 2005 and will be completed by 2006. After the vessel contract is awarded, Stu will be able to provide information on the ship selected and a schedule for when science activities will begin.

With his position at JOI and four children (and a puppy) at home, Stu rarely finds time for his hobbies, which include boating and restoring vintage cars!

Scientific Ocean Drilling Vessel Update

The JOI Alliance's efforts to obtain a new U.S. riserless Scientific Ocean Drilling Vessel (SODV) continue. In October 2004, the Request for Proposals for the SODV conversion was released to industry. Next, a Bidder's Conference was held at Texas A&M Research Foundation (TAMRF) in early December 2004 to answer questions from potential drilling contractors regarding the requirements contained in the Request For Proposal. These requirements will yield a substantial increase in the laboratory spaces on the SODV compared with those on the *JOIDES Resolution*. Plus, the new drilling system will provide better control of the drilling process, which should improve core recovery. The drilling contractor bids were due on February 4, 2005, and a formal source selection process is underway with a planned award in the summer of 2005.

The science community's opportunity to respond to the Briefing Book and the associated questionnaire regarding the new vessel is ongoing. The questionnaire and additional information are available online (www.joialliance.org/MREFC). Responses received prior to May 2005 will have the greatest impact on the initial engineering design phase, which will be initiated immediately after a contract is awarded. The community will continue to be involved with the design development of the SODV at several levels. At the working level each of

Missiles, a Mission to Mars, and a Drillship? How the Federal Budget Process Affects Science

Kasey White, JOI

The National Science Foundation (NSF) has long enjoyed bipartisan support in Congress. So much so, that the "National Science Foundation Authorization Act of 2002," which authorized the doubling of NSF's budget over five years, was signed into law. Although authorization bills do not actually provide funding—Congress conducts that through appropriations bills—this law was important for having the executive and legislative branches on record as supporting NSF.

Why then, was NSF's budget cut by 2% for Fiscal Year 2005? And, why is the drillship conversion process just now receiving $14.88 million to get started? The Congressional part of the federal budget process provides some insight to how seemingly disparate parts of the federal government interact and affect science funding. Several changes to the process may be implemented this year, potentially affecting funding for NSF and other scientific agencies.

Each February, soon after the State of the Union address, the President releases a budget request for the coming fiscal year. This budget reflects the Administration's overarching priorities, as well as priorities named by the agencies. Last year, the budget request emphasized homeland security, fighting the war on terror, and the economy by keeping discretionary spending low. The NSF request was $5.75 billion (an increase of 3%) and contained $40.85 million for the conversion of a scientific drilling vessel.

In response to the President's budget request, Congress develops a budget resolution. Although it is not binding, the budget resolution outlines spending for categories that include science, and determines how much the individual appropriations bills can spend. This process, like the rest of the appropriations process, occurs in parallel in the House and Senate and differences between the two must be reconciled.

The 13 subcommittees of the Appropriations Committee cover the entire scope of discretionary spending. For years, NSF appropriations have been controlled by the subcommittee on Veterans Affairs (VA), Housing and Urban Development (HUD) and Independent Agencies, also known as the VA-HUD Subcommittee. This means that NSF competes with veterans groups, low-income housing, the Environmental Protection Agency (EPA), the National Aeronautics and Space Administration (NASA), and other agencies for funding.

Once the VA-HUD Subcommittee passes its spending bill, the bill must pass the full appropriations committee, then the full chamber of Congress. Last year, the House appropriated $5.47 billion for NSF, with $30 million for the drillship, while the Senate appropriated $5.7 billion, with no money for the drillship.

Although a conference committee with subcommittee members from each chamber of Congress was set up to iron out the differences, these discussions were part of a larger "omnibus bill"—a catch-all of appropriations bills that covers multiple subcommittees. This tact is often used when many bills are not completed by the October 1 start of the new fiscal year. During this interim period after October 1 when the differences between the chambers are resolved, Congress will pass continuing resolutions that keep the government operating at the previous years funding levels. Once agreement is reached, the bills are finally presented to the President, who may sign or veto them.

In the end last year, the increasing costs of a war in Iraq and tax cuts forced Congress to keep spending low. The increased needs of veterans and the focus on a manned mission to Mars within NASA made free funds within the VA-HUD subcommittee nearly nonexistent. While NSF was still supported, its funding fell 2%. In good news for the ocean drilling community, funding for the drillship was a compromise between the House and Senate appropriations and came to $15 million. All these numbers were then subject to a cut across all government spending of 0.9%, hence the $14.88 million.

As one year's process ends, another begins. The President's FY06 budget was released on February 7. The request for NSF was up 2.2% over last year to $5.605 billion, including $57.92 million for the drillship conversion process. Congress is also moving ahead with a plan to change the appropriations subcommittee structure. This significant restructuring proposal reduces the number of subcommittees from 13 to 10 in the House and to 12 in the Senate. Programs currently funded through the VA-HUD Subcommittee would be moved. NSF and NASA would move into a new subcommittee named "Science, State, Justice and Commerce." In this new structure—which still must be approved by the House and Senate—NSF funding would no longer be held in the same category as veterans, but instead with NASA, the Department of State, and other Department of Commerce agencies. While this move may encourage collaboration among these science agencies, time will tell if it is a more favorable climate for ocean science funding.

Your Input is Needed

The JOI Alliance seeks your input regarding the design requirements for the U.S. riserless Scientific Ocean Drilling Vessel to be used after FY06 operations.

A Briefing Book presenting a vision encompassing the vessel's drilling and coring capabilities, onboard research capabilities, and issues of habitability is available at:

www.joialliance.org/mrefc/briefing_book

An online questionnaire for your feedback accompanies the Briefing Book.

REVISED Deadline for Comment: May 31

the Conversion Design Teams will include members from the scientific community. At the review level, science community members will be represented on the Program Advisory Committee and the independent SODV Oversight Committee.

Other good news is that the President's budget request included substantial funding for the vessel conversion to proceed. See the article on this page to learn more about the federal budget process.

The Distinguished Lecturer Series Enters Its Fifteenth Year

The JOI/USSSP Distinguished Lecturer Series (DLS) was established in 1991 to bring discoveries made possible by scientific ocean drilling to students, researchers, and educators at the undergraduate and graduate levels as well as to the broader geosciences community. The program provides a mechanism for scientists to give presentations related to their research, but tailored to audiences without previous exposure to the technique of scientific ocean drilling. Currently, the U.S. Science Advisory Committee selects six lecturers each year, drawing from the community of U.S. scientists who havebeen recent expedition science party members or otherwise participated in Integrated Ocean Drilling Program (IODP) science activities. Particular attention is paid to striving for diversity among the speakers.

Host a Lecture!

Over the years, the number of speakers and lectures per speaker has increased to match the growing popularity of the program. At present, each lecturer agrees to give six talks at colleges and universities throughout the U.S. Each spring JOI seeks host institutions for the following academic year, and April 8, 2005 is the application deadline for the upcoming 2005-2006 lecture season. JOI expects the program's 15th year to be an exciting one! See the announcement below for the list of speakers and visit our website for lecture abstracts and an application. Program funds cover the lecturer's travel expenses.

Once applications are received, JOI selects the venue institutions, giving preference to applicants that have not hosted a DLS speaker previously or to those that serve minorities or underrepresented groups. The DLS also tries to reach small institutions with less active research programs, two-year colleges, and professional organizations. As ambassadors of IODP, the lecturers are encouraged to schedule informal gatherings with students and to provide information on opportunities associated with scientific ocean drilling.

Since the program's inception, 257 individual U.S. institutions have applied for lectures, of which 212 have been awarded at least one lecture. Prior to the current academic year, 82 individual U.S. scientists, 28% of whom are female, have given a total of 337 lectures.

Lectures Online

The USSSP continues its efforts to expand the visibility and reach of the DLS. A calendar of upcoming lectures was added to the USSSP website to make attendance opportunities known to the wider community. Additionally, beginning this year, each lecturer's presentation is recorded by JOI staff. These lectures, along with accompanying slideshows, will be archived as online webcasts to make them more widely accessible.

Because demand exceeds the supply of lecturers, the USSSP will continue to seek new and innovative ideas for exposure to ensure that the lecture series disseminates the results of scientific ocean drilling to the broadest possible audience. Stay tuned to our website (www.usssp-iodp.org/dls) for more information on changes to DLS and our other programs.

2005-2006 JOI/USSSP Distinguished Lecturer Series

Dr. Gabe M. Filippelli
Indiana University –
Purdue University Indianapolis

A Cure for Global Warming? A Critical Look at Iron Fertilization's Role in Climate Change Using ODP Cores

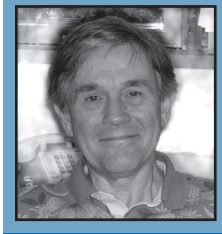
Dr. Albert C. Hine
University of South Florida – St. Petersburg

Big Waves, Extreme Aridity, Strange Reefs, and Poisonous Gas All Seen in the Cool-Water Carbonate Sediments of the Great Australian Bight

Dr. Barbara E. John
University of Wyoming

Understanding Slow Spreading Ridges: How Do They Work?

Dr. Theodore C. Moore, Jr.
University of Michigan



The Once and Future Warm Earth: A Paleoceanographic View

Dr. Kathryn Moran
University of Rhode Island

Arctic Coring Expedition (ACEX): A North Pole Discovery

Dr. Harold J. Tobin
New Mexico Institute
of Mining and Technology

Getting Inside the Plate Boundary: Subduction Zone Megathrusts in IODP

Apply by **April 8, 2005** to have a lecturer visit your institution.
For more information, visit www.usssp-iodp.org/dls

Eastern Pacific Temperature and $\delta^{18}O_{sw}$ during the Closure of the Panama Isthmus

Heather Benway
Oregon State University

Faculty Advisor
Alan Mix

Westward vapor transport across the Panama Isthmus regulates the Atlantic-Pacific salt balance, affecting thermohaline circulation and global climate. A regional moisture budget (Benway and Mix, 2004) indicates that paleosalinity changes in the eastern Pacific warm pool (EPWP) are sensitive to changes in cross-isthmus vapor transport. With my fellowship, I reconstructed EPWP surface ocean temperature and salinity ($\delta^{18}O_{sw}$) changes spanning the closure of the Panama Isthmus. Using samples from ODP sites 1241 and 1242, I focused on two Pliocene time slices spanning the final isthmus closure (3.5-3.7 Ma, 4.7-4.9 Ma) and two Pleistocene time slices (0-30 ka, ~1.4-1.6 Ma) spanning the mid-Pleistocene transition.

Combined stable isotope and Mg/Ca measurements (Benway et al., 2003) of mixed-layer-dwelling planktonic foraminifera (*G. ruber*, *G. obliquus*, *G. extremus*) yield a record of surface ocean $\delta^{18}O_{sw}$ changes. $\delta^{18}O_{sw}$ was calculated from the high light *O. universa* paleotemperature equation (Bemis et al., 1998) using measured $\delta^{18}O_c$ and Mg/Ca temperatures (Anand et al., 2003). Ice-volume corrections were estimated for Pleistocene intervals (Waelbroeck et al., 2002; Mix et al., 1995). The age model for Site 1242 is based on radiocarbon dates and benthic isotope stratigraphy. Pliocene age intervals from 1241 are based on the orbitally tuned age model of Tiedemann et al. (submitted).

Comparing the Pliocene intervals indicates only minor changes in EPWP mean surface-ocean conditions (Fig. 1) in response to the final isthmus closure, suggesting that the initial Caribbean-Pacific isotopic gradient between 4.7 and 4.2 Ma (Haug et al., 2001) reflects changes in the Caribbean. Recent reconstructions (Steph et al., submitted; Groeneveld et al., submitted) confirm this result, revealing Caribbean surface temperature and salinity increases soon after the closure and a delayed salinity response (decrease) in the eastern tropical Pacific. Generally, Pleistocene surface-ocean changes in the EPWP show higher-amplitude variability relative to the Pliocene. Mean temperature is ~3°C higher and mean $\delta^{18}O_{sw}$ is comparable for the early Pleistocene relative to the Pliocene intervals. Mean temperature and salinity decrease significantly across the mid-Pleistocene transition.

Although eastern Pacific thermocline changes occur ~4.2 Ma (Cannariato and Ravelo, 1997), the negligible Pacific surface-ocean response immediately following the isthmus closure suggests some surface exchange with the Caribbean continued. The Pliocene to Pleistocene transition introduces higher-amplitude variability in these proxy records, which may suggest an increasingly important role for cross-isthmus vapor transport in colder, less-stable ice-age climates. However, higher-resolution Pliocene proxy records are necessary to make a more robust comparison.

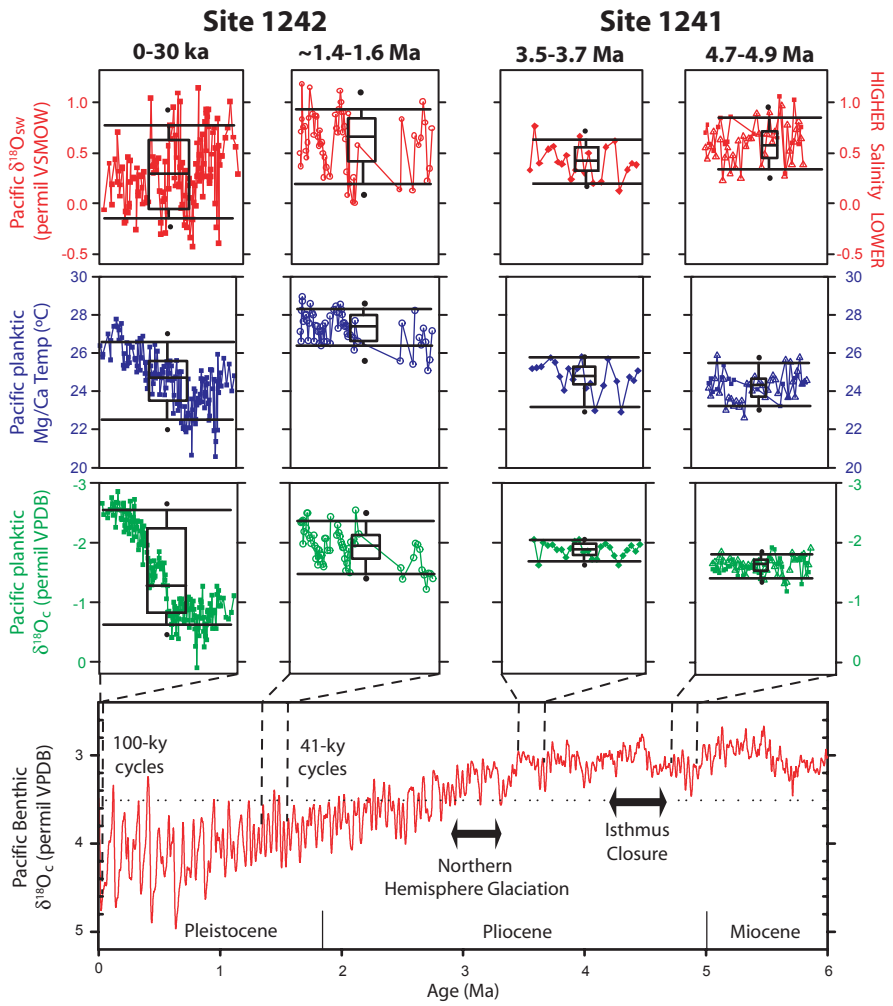


Figure 1. The benthic isotope record from ODP Site 849 (Mix et al., 1995) gives temporal context to records from ODP Leg 202 sites.

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Bemis, B., et al. 1998. *Paleoceanography* 13:150-160.

Benway, H., et al. 2003. *Geochem. Geophys. Geosyst.* 4, no. 2 doi: 10.1029/2002GC000312.

Benway, H. and Mix, A. 2004. *Earth Planet. Sci. Let.* 224:493-507.

Cannariato, K. and Ravelo, A. 1997. *Paleoceanography* 12:880-820.

Groeneveld, J., et al. Submit. *Proc. ODP, Sci. Res.* 202.

Haug, G., et al. 2001. *Geology* 29:207-210.

Mix, A., et al. 1995. *Proc. ODP, Sci. Res.* 138:371-412.

Steph, S., et al. Submit. *Proc. ODP, Sci. Res.* 202.

Tiedemann, R., et al. Submit. *Proc. ODP, Sci. Res.* 202.

Waelbroeck, C., et al. 2002. *Quat. Sci. Rev.* 21:295-305.

Education Opportunities Abound

JOI Education Staff Expands

The tide of education activities at Joint Oceanographic Institutions is rising! Leslie Peart's title has been changed to Education Director (from Education Coordinator) to better position JOI for community-wide relationships in the education field. Matt Niemitz, a former JOI Intern, has been named Education Program Assistant to help Leslie develop educational initiatives for the U.S. Science Support Program and the U.S. Implementing Organization.

Undergraduate Supplements

JOI has launched a new program element to directly involve undergraduates in IODP research as part of the U.S. Science Support Program (USSSP). Successful JOI sub-awardees can apply for supplemental funds of up to $5000 to involve an undergraduate student in work funded under any USSSP sub-award. So far six applications have been received, accompanying an instrument development proposal for osmotic-pump-coupled growth chambers and post-expedition activity proposals for IODP expeditions 301, 302, and 303. Appropriate undergraduate involvement would be as research assistants or lab technicians, or student work towards a senior thesis, publication, or presentation at a scientific meeting. JOI intends to pilot this activity for as long as the USSSP budget allows, using the level of interest to make the case for a larger program to funding agencies or foundations. For more information, visit www.joiscience.org or contact Holly Given, USSSP Director (hgiven@joiscience.org).

NSF Funding Opportunity: CCLI

The Course, Curriculum, and Laboratory Improvement (CCLI) Program seeks to improve the quality of science, technology, engineering, and mathematics (STEM) education for all undergraduate students. This National Science Foundation (NSF) program is administered through the Division of Undergraduate Education (DUE) in the Directorate for Education and Human Resources (EHR). Based on a cyclic model of knowledge production and improvement of practice, CCLI supports efforts that conduct research on STEM teaching and learning, create new learning materials and teaching strategies, develop faculty expertise, implement educational innovations, assess learning, and evaluate innovations. The program supports projects representing three different phases of development, ranging from small exploratory investigations to comprehensive projects.

The CCLI Program Solicitation has significantly been revised for FY06. The new solicitation (NSF 05-559) may be obtained through the Funding Opportunities link at www.nsf.gov. Proposals seeking to integrate discoveries from IODP into the undergraduate classroom are welcome. Investigators are encouraged to contact Jeff Ryan (CCLI-Geosciences: jryan@nsf.gov; 703-292-5323), or other CCLI program officers. Information on funded CCLI projects is available at www.ehr.nsf.gov/pirs_prs_web/search/, as well as at www.ccliconference.com.

CCLI is a perfect means for JOI to reach its priority undergraduate target audience. For that reason, JOI is seeking collaborations for one or more proposals in 2005. Contact Leslie Peart at 202-787-1603.

Do You Teach or Exhibit Ocean Drilling Discoveries?

Or do you know someone who does? To create a cohesive and useful education plan, JOI is conducting an inventory of existing classroom (Kindergarten to undergraduate level) and museum resources based on IODP discoveries and processes. Familiar examples include the "Blast from the Past" poster and "ODP: Mountains to Monsoons," an interactive educational CD. But did you know that ODP is featured in video at the Johnson Geo Centre in St. John's Newfoundland? Neither did we, until we stumbled across it. How much more is out there? Can we find more drilling science activities, curricula, education publications, videos and exhibits? Please share what you know by contacting Leslie Peart (lpeart@joiscience.org) or Matt Niemitz (mniemitz@joiscience.org).

New Pre-College Activities

Two new pre-college activities based on scientific ocean drilling are available at: www.iodp-usio.org/education/educ.htm. Both activities were produced by Leslie Peart, JOI's Education Director. The first, "A Reader's Guide to ODP Climate Change Highlights," is designed for use with high-level secondary classes or introductory undergraduate oceanography. The second, "Measure for Measure," is an active learning "manipulative" that introduces ocean drilling to middle school audiences through ratios, fractions and scale calculations taken from the *JOIDES Resolution* and ODP drilling statistics. Students can use a measuring tape printed especially for this activity. If you'd like one, e-mail Matt Niemitz at mniemitz@joiscience.org.

Schlanger Ocean Drilling Fellowship

January 2005 Awards

Graham Baines
University of Wyoming
"Thermal and Tectonic Evolution of Lower Oceanic Crust at an Ultra-Slow Spreading Ridge"
ODP Legs 118, 176, 179

Samuel Hulme
University of Hawaii, Manoa
"Lateral and Vertical Biogeochemical Fluxes in a Juan de Fuca Ridge Flank Hydrothermal Reservoir: Minor and Trace Element Systematics" ODP Leg 168, IODP Expedition 301

Heather McCarren
University of California, Santa Cruz
"Depth Dependent Variations in Deep Water Chemistry and Temperature Across the P/E Boundary"
ODP Leg 208

The next fellowship deadline is
November 15, 2005

Exciting changes are in store!
Look for more information in the next newsletter and on the website: www.usssp-iodp.org/schlanger

Drill Bits continued from page 3

replace the IODP listserve. Registering is an effective way to update your IODP listerve information and make sure you receive timely news, announcements, and other program information. Those interested in information specific to the US ocean drilling community should also update their information by email to info@joiscience.org

Sea-Level Change Symposium

An international symposium on "Sea Level Changes: Records, Processes and Modeling" (SealAIX'06) will be held September 25-29, 2006, in Aix-en-Provence on the French Riviera. Symposium details are available at: **www.cerege.fr/news/actualite.htm**. Major scientific themes include records, sedimentary processes, and modeling of sea-level changes (amplitude and timing) in multiple environments. The symposium will be structured around four themes corresponding to the modes of the Pherozoic earth system: 1) Quaternary sea-level changes, 2) Icehouse-Earth sea-level changes (last 33 my), 3) Paleozoic sea-level changes, and 4) Greenhouse-Earth sea-level changes (250-33 Ma).

There will be one thematic session per day consisting of scheduled presentations followed by discussion. Talks will be selected from among the submitted abstracts; all other scientific contributions will be presented as posters. Each day of the symposium will also include workshops on current knowledge, future issues, and controversies regarding sea-level records, processes, and modeling, as well as strategies to address sea-level topics within international geoscience programs (IODP, IMAGES, PAGES, MARGINS, etc.). Expected products of the meeting are special issues of international journals, including symposium contributions, and a synthesis volume based on the summarized workshop results.

Pre-register by May 31, 2005 with presentation titles (oral or poster) and/or suggestions for workshop themes. Sponsorship to lower costs is being sought so details regarding registration fees will appear in a circular that will be distributed in September 2005 to those who pre-register. Final presentation abstracts will be due March 1, 2006. Abstract volumes will be distributed at the meeting's start. Symposium conveners are Gilbert Camoin (CNRS, Aix-en-Provence, France), Andre Droxler (Rice University), Craig Fulthorpe (University of Texas, Austin), and Ken Miller (Rutgers University). Contact Gilbert Camoin (gcamoin@cerege.fr) with questions.

Bering Strait Workshop Scheduled

A JOI/USSSP-sponsored workshop titled, "The Bering Strait, Rapid Climate Change, and Land Bridge Paleoecology" is scheduled for June 20-22, 2005 in Fairbanks, Alaska, to discuss potential scientific ocean drilling in the Bering Sea Shelf basins. Reconstruction of the sea-level history of the Bering Strait, including the exact timing of the opening and closing of the land bridge and the rates of associated sea-level changes, is essential to understanding its role as a trigger, pacemaker, or benign observer of northern hemisphere climate changes. Strategic cores from the region will also help answer outstanding questions regarding Bering Land Bridge paleoecology and its impact the on migration of plants and animals between Asia and North America. The purpose of the interdisciplinary workshop is to formulate key scientific questions, identify relevant drilling sites, discuss drilling platform options, and to begin coordinating subsequent geophysical surveys, proposals, and multi-proxy analyses.

Sarah Fowell, University of Alaska Fairbanks, and David Scholl, Stanford University and the U.S. Geological Survey, are convening the workshop. Scientists from diverse geoscientific specialties including chemical and physical oceanography, geomorphology, paleoclimatology, sedimentology, stratigraphy, and geoarcheology are encouraged to apply. International participation and student/post-doc applicants are also encouraged.

To apply, contact Sarah Fowell (ffsjf@uaf.edu) by April 22, 2005 with the following items: name, institution, contact information, research specialty, and a brief statement of interest relevant to the purpose of the workshop. Limited JOI/USSSP travel support is available to U.S. participants.

Workshop Support Available

USSSP-IODP support is available for workshops to generate fresh ideas for advancing the study of earth processes and history through scientific ocean drilling.

USSSP-IODP encourages

- broad community involvement
- multidisciplinary approaches
- relevance to IODP's *Initial Science Plan*
- graduate student participation

To discuss ideas, contact

Holly Given,
USSSP Director
e-mail: hgiven@joiscience.org
phone: (202) 232-3900 x1611

Conveners receiving awards must produce a report summarizing the goals and results of the workshop.

Proposal Deadlines: **April 1 and October 1**
For more information: www.usssp-iodp.org/workshops

Downhole Tools in the IODP: Achieving Critical Goals of Scientific Ocean Drilling

P. Flemings, R. Murray, and A. Fisher

Full report at www.usssp-iodp.org/science_support/workshop/past_workshops.html

The Integrated Ocean Drilling Program (IODP) will explore previously unattainable environments and problems. To achieve the ambitious science goals outlined in IODP's *Initial Science Plan* (ISP), downhole tools (DHTs) are critical. Their role, however, is complex because 1) technology advances drive new measurement capabilities and scientific demands, and 2) DHTs are the responsibility of numerous implementing organizations and third-party developers.

Fifty-one scientists, engineers and program managers met in Washington, DC in May 2004 to discuss the state of the art in DHTs and to identify priorities for tool development. This USSSP-supported workshop was the first community-wide effort to assess DHTs within the context of IODP. For the workshop, the definition of downhole tools was limited to "instruments that are lowered into a borehole and are intended to collect samples, or make measurements of formation or fluid properties during a short period of time over a limited depth interval." To focus discussions, the topics of wireline logging and logging-while-drilling technologies were avoided.

Workshop Goals and Structure

Targeted Measurements: Three working groups—reflecting IODP's primary research themes—determined what DHT measurements were necessary. Next, they identified the gaps between essential measurements/sampling and current capabilities. Table 1 shows a subset of operations important to meeting a broad range of the ISP's scientific goals.

Tool Development: Workshop participants discussed tool-development case histories, identifying successes and failures in how tools progress from "concept" to "implementation." Two technical working groups (measuring physical state and sampling) suggested an appropriate development process to accomplish DHT measurements.

Table 1: High-Priority Downhole Tool Operations for Meeting IODP *Initial Science Plan* Goals

Deep Biosphere and Subseafloor Ocean	Environmental Change Processes and Effects	Solid Earth Cycles and Geodymanics
• Recover samples (solid, fluid, gas, bio) at *in situ* conditions, over a broad range of temp. and pressure regimes • Formation/fluid pressure • Formation/fluid temperature • *In situ* aqueous chemistry for specific analytes • High-return, high-quality core	• Detect millimeter-scale lithologic variability *in situ*, from 0 to 200 mbsf • Core in difficult environments (e.g., sand, carbonate, chert/shale) • Recover continuous core at the millimeter scale • Detect ash layers • Formation/fluid temperature	• Formation/fluid pressure • Formation/fluid temperature • Compressional and shear velocity, anisotropy and, absorbtion • Rheology (shear and compressive strength)

Technical Recommendations: Participants ranked high-priority technical needs that crosscut ISP science issues and are of a scale best championed by individual investigators. Table 2 outlines these "bottom-up" developments. Table 3 shows five critical needs that are best addressed with a "top-down" approach. These developments have broad application, but are not likely to be funded at a grassroots level.

Process Recommendations

Successful DHTs are developed in five steps: 1) idea, 2) design, 3) construction, 4) testing, and 5) implementation/institutionalization. As a science-driven program, IODP excels at generating ideas, conceptual designs, and initial fabrication. Yet, the process for testing and implementing DHTs can be strengthened. Ideal DHT development requires scientists and engineers to collaborate throughout extensive and repeated testing, during which tools should be progressively optimized, "ruggedized," and simplified. Although early testing should be independent, tools must be tested on IODP platforms to be effective when deployed on scientific expeditions.

Although some DHTs have limited applicability, tools addressing a range of objectives should be institutionalized for widespread and consistent IODP use. The process might include bridge grants where investigators and operators are specifically supported for the tool's implementation. In summary, we recommend that IODP take several steps:

1) Devote a modest number of days (~10) each year per platform for engineering tests. Develop a competitive proposal process for testing time. Support investigators to conduct these tests. (Time could revert to scientific use if justified.)
2) Develop a competitive process to support top-down tool development. Solicit the best individuals and/or institutions to meet specific technical needs.
3) Develop a process to institutionalize bottom-up developments critical to multiple ISP goals. Support investigators and contractors for transfer from "third party" to "standard" tool status.

Authors

Peter Flemings, The Pennsylvania State University (flemings@geosc.psu.edu)
Rick Murray, Boston Univ. (rickm@bu.edu)
Andy Fisher, University of California, Santa Cruz (afisher@ucsc.edu)

Table 2: Top 5 Bottom-Up, Investigator-Driven, Development Needs	Table 3: Top 5 Top-Down, Program Development Needs
1 Solid/fluid/gas/microbiological samples at *in situ* conditions	1 Facilities for testing, calibration, and inter-comparison of tools
2 *In situ* permeability and stress	2 Rapidly deployable, live, weight-bearing, umbilical
3 Pore pressure and temperature in sediments, indurated sediments, and hard rock with high precision to high temperature	3 Seabed or re-entry cone frame with camera
4 Analyte-specific *in situ* sensors	4 Consider larger pipe diameter (or other approach) to allow use of more commercial tools
5 Sidewall sampling (sampling after primary drilling)	5 Improve drilling/coring/sampling highly fractured and/or high-temperature rock

Seize the Opportunity

A Letter from the Chair

As you may know by now, the *JOIDES Resolution* will be parked in mid-January 2006. The ship is completely scheduled with expeditions until this demobilization date. Plans for procuring a new vessel—or refurbishing an existing one—are well underway, but this next generation riserless vessel will not be afloat for more than a year after the *JR* is tied up. This hiatus in riserless activities provides both challenges and opportunities. The challenges are obvious—those with great drilling proposals in the system for the riserless vessel will have to wait longer, and a hiatus may seem like a loss of momentum.

Given IODP's *Initial Science Plan* and the promise of riser, riserless, and mission-specific platform operations going full-steam ahead shortly, I suggest that any "loss of momentum" is in appearance only. In fact, the operational break allows us time as a community to step forward and seize the opportunity to reach inward and outward. Some bold suggestions:

Apply New Ideas to Old Cores

The lure of fresh wet mud, newly cut basalt, and recently-sampled hydrothermal fluids contributes to the sense of discovery that drives many of us to participate in expeditions and write drilling proposals. One can easily overlook the program archives—an untapped resource and legacy of scientific ocean drilling efforts. Of course, when I have received samples from DSDP/ODP/IODP, I have returned the unused portions within a reasonable time (cough, cough). But recently, when I noticed a not-yet-returned bag (OK, several boxes) on my lab shelf, I decided to run mercury analyses on them. Why mercury? No good reason, except that I have never seen mercury data on ODP samples; but the point is that archived samples hold many untold stories.

Although some tracers are transient and not easily applied to older physical material, a number of newer instruments and techniques now aboard the *JR* were not present earlier, and thus, many measurements were not made on the cores stored in repositories. Perhaps your next expedition should be to College Station or Bremen, armed with a good idea, a novel technique, and, needless to say, permission!

Synthesize and Synthesize

A synthesis can be achieved in many ways—individuals in their offices, amid papers, writing books, or experts at workshops compiling results for a special journal issue. However conducted, syntheses are vital but often overlooked activities as we strive to obtain and publish new results.

Syntheses serve three functions. First, they can integrate information and ideas that are spatially, temporally, disciplinarily separated when developed by individuals or research teams. Second, they can summarize where a field stands, effectively elucidating findings and clarifying aspects that are not yet understood. Third, they can function as an excellent educational and outreach tool by organizing, in one place, specific and overarching results on a given topic and providing interested individuals an entry to the science community.

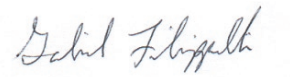
Syntheses in the form of workshops are supported by USSSP, but USSAC appreciates your suggestions for maximizing our ability to synthesize past science efforts. We also welcome input regarding how best to synthesize research results for a variety of audiences, including specialists, general scientists, media, and students at all levels.

And finally…

Write Drilling Proposals!

Given the relatively long process for a proposal to mature into a drilling expedition, the proposals being written now might be among the first scheduled when a shiny, new riserless ship sails.

Cheers,



Gabe Filippelli, USSAC Chair

USSAC Members

Jen-hwa Chen (term ends 9/30/07)
ChevronTexaco Energy Technology Company
jenc@chevrontexaco.com; (281) 596-3232
Workshops Subcommittee

Dave Christie* (term ends 9/30/05)
Oregon State University
dchristie@coas.oregonstate.edu; (541) 737-5205
Nominations Subcommittee

Gabe Filippelli, Chair* (term ends 9/30/06)
Indiana University - Purdue University Indianapolis
gfilippe@iupui.edu; (317) 274-3795
Nominations Subcommittee

Mark Leckie (term ends 9/30/05)
University of Massachusetts, Amherst
mleckie@geo.umass.edu; (413) 545-1948
Education Subcommittee

John Mahoney (term ends 9/30/05)
SOEST-University of Hawaii
jmahoney@soest.hawaii.edu; (808) 956-8705
Staffing Subcommittee

Ellen Martin (term ends 9/30/06)
University of Florida
emartin@geology.ufl.edu; (352) 392-2141
Workshops Subcommittee, SSEPs Liaison

Peter Molnar (term ends 9/30/07)
University of Colorado
molnar@cires.colorado.edu; (303) 492-4936
Workshops Subcommittee

Greg Mountain* (term ends 9/30/05)
Rutgers, The State University of New Jersey
gmtn@rci.rutgers.edu; (732) 445-0817
Workshops Subcommittee, ILP Liaison

Larry Peterson* (term ends 9/30/06)
RSMAS-University of Miami
lpeterson@rsmas.miami.edu; (305) 361-4692
Staffing Subcommittee, SSP Liaison

Ana Christina Ravelo (term ends 9/30/07)
University of California, Santa Cruz
acr@ucsc.edu; (831) 459-3722
Nominations Subcommittee

Lisa Robbins (term ends 9/30/07)
U.S. Geological Survey, St. Petersburg, FL
lrobbins@usgs.gov; (727) 803-8747 x3002
Education Subcommittee

Will Sager (term ends 9/30/07)
Texas A&M University
wsager@ocean.tamu.edu; (979) 845-9828
Staffing Subcommittee

David Smith (term ends 9/30/06)
GSO-University of Rhode Island
dcsmith@gso.uri.edu; (401) 874-6172
Staffing Subcommittee, SciMP Liaison

Harold Tobin (term ends 9/30/06)
New Mexico Institute of Mining and Technology
tobin@nmt.edu; (505) 835-5920
Nominations Subcommittee, TAP Liaison

Jill Whitman* (term ends 9/30/05)
Pacific Lutheran University
whitmaj@plu.edu; (253) 535-8720
Education Subcommittee

*USSAC Executive Committee

JOI/USSAC Newsletter

Joint Oceanographic Institutions
1201 New York Avenue, NW, Suite 400
Washington, DC 20005

National Science Foundation News

Acquisition of a long-term riserless drillship (the Scientific Ocean Drilling Vessel or SODV) for the Integrated Ocean Drilling Program (IODP) continues to be a top-priority activity for the National Science Foundation (NSF). The SODV acquisition remains NSF's highest priority for use of major equipment and facilities funds. The FY05 budget provides for $15 million in funds to begin this activity, with evaluation of vender bid responses to a drillship solicitation already underway. It is expected that the SODV will begin IODP drilling sometime in FY07. NSF has given notice to the JOI Alliance that it expects the *JOIDES Resolution* to be off-contract by February 1, 2006.

On another front, NSF's Division of Ocean Sciences (OCE) has recently released guidelines for scientists planning proposals for active source seismic experiments. The IODP community relies heavily on such experiments for acquisition of "site survey" data, and the guidelines are therefore expected to have a major impact on IODP scientists. The guidelines can be found at: www.geo.nsf.gov/geo/oce/pubs/seismic_reflection_equip_policy.jsp. Two of the most important changes involve the NSF-OCE procedures for handling seismic cruises that require foreign clearances and the timing of proposal submissions for such projects. For additional information, contact Carolyn Ruppel (cruppel@nsf.gov).

Rodey Batiza and Jamie Allan, Program Directors, NSF/ODP

Expedition Objective Research Funding Available

NSF/ODP has increased its support for U.S. participants on IODP drilling expeditions!

NSF encourages Expedition Objective Research (EOR) proposals to address the scientific objectives of specific drilling expeditions. Resulting EOR grants may begin in the period between the Co-Chief Scientists' approval of the expedition sampling plan and the end of the sample moratorium period.

EOR Proposal Deadlines:
August 15, 2005
February 15, 2006

For questions and/or additional information, please contact:
Carolyn Ruppel (cruppel@nsf.gov) or
Rodey Batiza (rbatiza@nsf.gov)

www.geo.nsf.gov/oce/programs/drilling.htm