JOI/USSAC Newsletter

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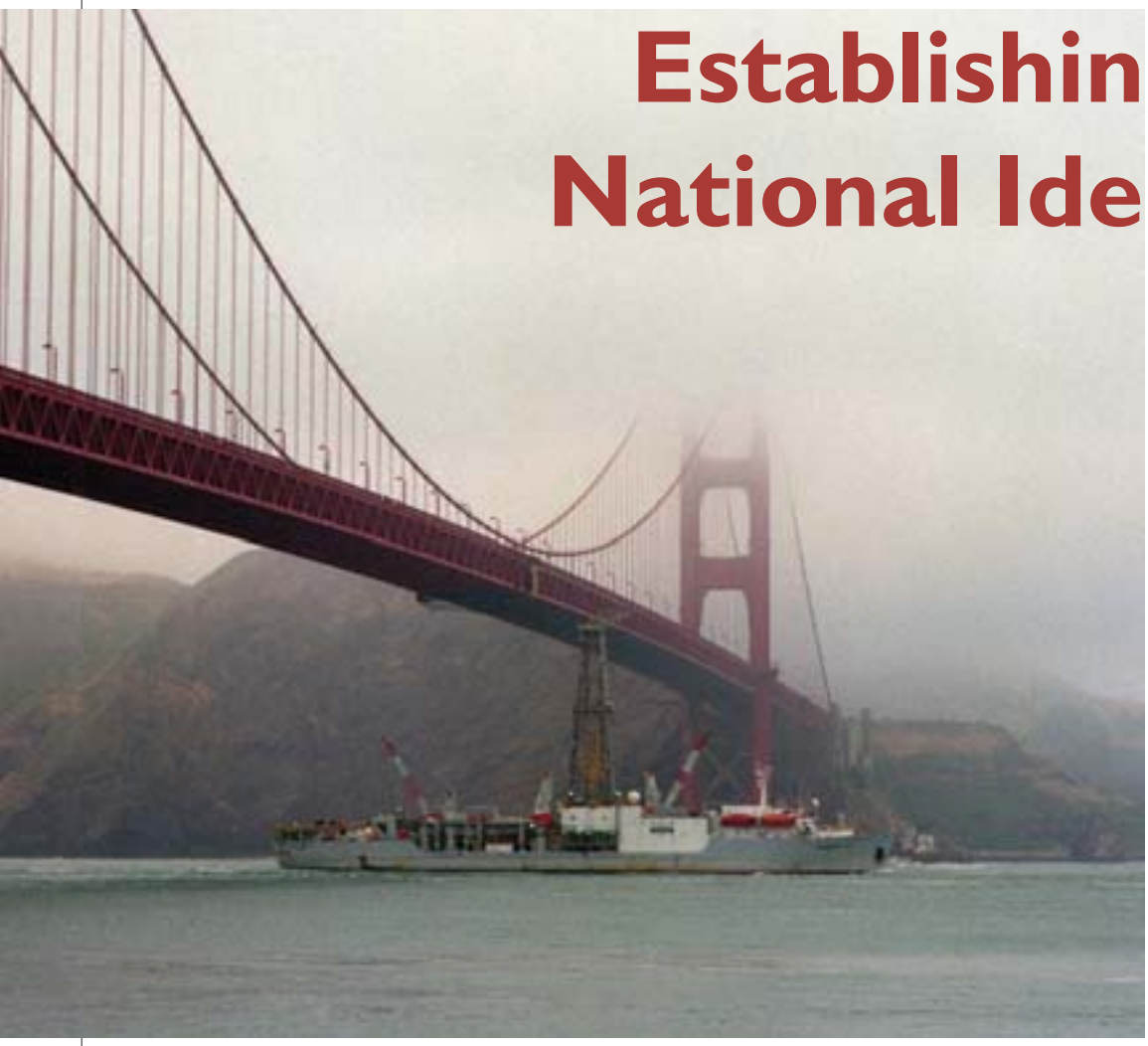

Establishing a National Identity

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-Steve Bohlen, President, JOI

article on page 4

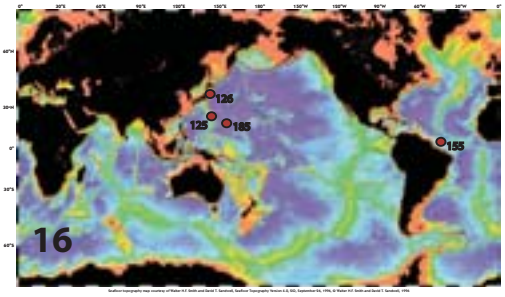
Inside

Contents

Spring 2004

Features

Departments



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JOI/USSAC Newsletter

Executive Editor: Holly Given
Managing Editor: Andrea Johnson
Assistant Editor: Matthew Niemitz
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, non-profit 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. Currently, JOI manages the U.S. Science Support Program (USSSP) which supports U.S. participation in 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.

Any opinions, findings, conclusions, or recommendations expressed in this publication do not necessarily reflect the views of NSF or JOI.

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

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Drill Bits

ODaSSI Workshop

To prepare researchers to meet the diverse and complex scientific objectives of IODP, JOI/USSSP sponsored a workshop, Ocean Drilling and Site Survey Introduction (ODaSSI), which was held on December 7, 2003 in conjunction with the annual meeting of the American Geophysical Union in San Francisco, California. Led by Jeff Gee and Greg Mountain, the workshop summarized the framework and structure of IODP, the capabilities of each of the three drilling platforms, the necessary site survey activities, and the drilling proposal submission and review process. In two breakout sessions, 57 participants—including scientists and students—discussed the challenges and requirements of proposals for both riser and non-riser drilling and the related site survey requirements of each.

Down Hole Tools Workshop

A JOI/USSSP-sponsored workshop on Autonomous Down Hole Tools in IODP took place on May 24-25, 2004 in Washington, D.C. Autonomous Down Hole Tools (DHTs) are essential to address high-priority IODP scientific objectives. Autonomous DHTs are self-contained instruments that make *in situ* measurements or collect samples over short depth intervals, in a single sample or "burst" sampling mode. The workshop addressed three questions: 1) What down hole measurements and sampling by autonomous tools are essential to address IODP scientific goals? 2) What capabilities exist for use on the various IODP platforms and what technologies are needed for future success? and 3) How can IODP and the various scientific and technical partners nurture development of new tools, and facilitate the transfer of technology from the development stage to become part of standard operations? Workshop participants developed a "blueprint" that identified priorities in tool development, highlighted potential new technologies, and identified one or more processes to guide future tool development. Please direct questions to Peter Flemings, flemings@geosc.psu.edu.

Student Trainee Program

The IODP Undergraduate Trainee Program offers students a unique and exciting educational opportunity to participate on a scientific expedition. Undergraduate students who are selected as trainees are exposed to the wide variety of scientific and technical activities that occur on the *JOIDES Resolution*, gaining hands-on experience that will contribute to their scientific growth and career development. While on board, trainees will work under the guidance of a mentor from among the science party.

The first Undergraduate Student Trainee in IODP is Lisa Hawkins, Western Washington University, who is sailing on the Juan de Fuca Expedition in June 2004.

Additional opportunities to be a student trainee are available. JOI is currently accepting applications for U.S. trainees to sail on the Core Complex II and North Atlantic II cruises (see cruise schedule on page 9). For more information and to obtain an application see www.usssp-iodp.org/education/undergrad_trainee.html or contact Robert Burger, rburger@joiscience.org.

The Arctic Fleet Is Complete

A new chapter in the history of scientific ocean drilling opens in August 2004 when the six-week Arctic Coring Expedition (ACEX) begins. The expedition, which will drill the Lomonosov Ridge, is a bold venture into the central Arctic Ocean and IODP's first Mission Specific Platform effort. To meet the technological and logistical challenges, the operational plan will involve three icebreakers. The Swedish registered *Vidar Viking*, 84 meters in length and equipped with a 27-meter tall derrick, will serve as the coring vessel. The Swedish vessel *Oden*, a 108-meter-long research icebreaker, will stand watch nearby. And, last but not least, the Russian vessel *Sovetskiy Soyuz*, a powerful 148-meter-long nuclear ice breaker, will be stationed a mile or more upstream in the ice floes. Together, the two protecting vessels will break and push apart ice floes and ridges, enabling the *Vidar Viking* to stay on location until the cores have been recovered.

The fleet will depend on the most modern satellite and communication technology available. Satellite data on weather and ice conditions will be transmitted regularly from *Oden's* base in Sweden, and helicopters will deploy global positioning system (GPS) transmitters on ice floes to estimate the speed and direction of the drifting ice. Following years of planning, we can only hope for good weather—and some luck—to expose the secrets of the Mare Incognitum.

JOI Staff Changes

A number of staff changes have taken place at JOI in recent months. **John Farrell** departed in March to become the Assistant Dean of the Graduate School of Oceanography at the University of Rhode Island, and **Holly Given** has replaced him as the Director of USSSP at JOI. See page 6 for more about Holly.

Other employees have arrived at JOI to fill new positions:

- Martin Kleinrock, Associate Director, Ocean Drilling Programs
- Kelly Kryc, Assistant Director, Ocean Drilling Programs
- Nancy McGuirk, Travel Associate
- Morvika McIntyre, Staff Accountant

Please join us in wishing John well and welcoming the new staff members to JOI.

One of the fleet: the Russian nuclear ice breaker Sovetskiy Soyuz

Establishing a National Identity

Steve Bohlen, President, JOI

Of all of the changes evident as we navigate the transition from the Ocean Drilling Program (ODP) to the Integrated Ocean Drilling Program (IODP), perhaps none are more subtle yet profound as those taking place within the U.S. Science Support Program (USSSP). Certainly one significant change is obvious—JOI welcomed Holly Given as the USSSP Program Director in February (page 6) to replace John Farrell who left JOI to become the Assistant Dean of the Graduate School of Oceanography at the University of Rhode Island. However, beyond this important change in leadership, IODP offers new challenges for the USSSP and for the U.S. ocean drilling community.

With these challenges come three new requirements:

- The need to establish an identity as the U.S. national program in scientific ocean drilling;
- The need for greater autonomy between the activities of the U.S. Implementing Organization for IODP and USSSP; and
- The need to connect U.S. activities in scientific ocean drilling with other elements of the Nation's scientific and education enterprise.

A National Identity

Over the 20 years that JOI managed the ODP an inextricably interwoven relationship evolved between the international program (ODP) and the program that supported U.S. scientist's participation in ODP (USSSP). This close relationship was inevitable, primarily because the U.S. was the majority partner in ODP and held half of the positions on panels in the JOIDES Advisory System. In addition, the U.S.-based JOI Board of Governors provided oversight of the program. As a consequence, the management imperatives encouraged this integrated relationship—so intertwined that many within the U.S. ocean drilling community were unaware of any distinction between activities funded by the international versus the national program. In reality, except for the requirements of program management and funds accounting, as the majority partner in ODP, a clear U.S. distinction—a national identity—was perhaps not necessary. Indeed, such a separate identity might have worked against the successful JOIDES effort, as the U.S. might have been perceived as overtly hegemonic.

In IODP, the U.S. community faces a different reality. The JOI Alliance as the U.S. Implementing Organization (USIO) takes direction from the U.S. National Science Foundation (NSF) and from IODP Management International which itself is advised by the IODP Science Advisory Structure (SAS). Instead of a majority position, the U.S. is a partner with Japan and together, Japan and the U.S. are partners with the European Consortium and other countries (at the moment only the People's Republic of China).

"... the voice of the U.S. community must have greater clarity, visibility, and independence from the international program than in the past."

For several reasons, including the U.S. now having a minority of seats on advisory panels and berths on platforms, we are mindful at JOI that the voice of the U.S. community must have greater clarity, visibility, and independence from the international program than in the past. Hence, as USSSP-IODP develops, the USSSP program director and staff will be working with USSAC to forge a focused and defined national program for scientific ocean drilling, akin in some ways to the national programs that existed in many member nations during ODP. However, even with this new more visible and independent identity, it is essential that the U.S. program be highly coordinated with the other national programs, the USIO, and the other Implementing Organizations.

As a practical matter, how will the changes we envision affect the U.S. community? For those sailing during Phase 1, U.S. scientists will recognize that travel and other aspects of shipboard participation will be handled through JOI rather than through Texas A&M as they were in ODP. Beyond these process oriented changes, USSAC is expected to become more proactive in advising JOI on a broad array of issues, including: aspects of the new riserless vessel, the nature of USSSP-sponsored educational initiatives, the composition of U.S. delegations to the IODP SAS panels, and the development of new activities to further the scientific objectives of the IODP and the U.S. ocean drilling community.

Research and Education

Beyond the changes engendered by evolution of management structures and partnerships from ODP to IODP, we also face new and different realities within the domestic science and education arenas. Enhanced funding at NSF comes increasingly through new multidisciplinary initiatives (biocomplexity, nanotechnology, cyberinfrastructure, computational mathematics in geophysics, complex environmental systems) rather than through the core science programs. Consequently, incentives are increasing for programs such as IODP and USSSP to derive some of their funding from these initiatives for program enhancements and advancement. At the same time, there are growing expectations for programs such as IODP and USSSP to have robust integrated educational and outreach programs. However, much of the funding necessary for healthy and visible education and outreach efforts will necessarily have to come from sources beyond the core NSF science programs. The message is clear: the full success of USSSP and IODP can only be realized if we are proactive in reaching out to new communities and developing multidisciplinary activities in science and education.

In light of these realities, in its proposal for the USSSP-IODP program, JOI articu-

lated five general goals that will help guide USSSP activities and the U.S. ocean drilling community. These are:

- Create new knowledge and understanding of the Earth's deep biosphere, environmental change, and solid Earth cycles and geodynamics;
- Encourage the development of new avenues of research through partnerships with biologists, physicists, chemists, engineers, and social scientists;
- Build connections between ocean drilling and other national and international science initiatives;
- Develop a fresh generation of ocean science leaders; and
- Help create an ocean science literate society.

The first goal speaks to the primary purpose of USSSP—to ensure the maximum scientific return from IODP for the U.S. community. Goals two and three address the need for us to encourage a broader array of scientists to become engaged with scientific ocean drilling, and conversely for the ocean drilling community to enhance the value of the results of IODP by becoming engaged with peripheral but related scientific endeavors. Goals four and five speak to the growing expectations for education and outreach of all large science programs such as IODP.

In light of the importance of educational components to the overall ocean drilling research effort, JOI will be hiring an Education Coordinator, funded in part through the USSSP-IODP Cooperative Agreement with NSF. This individual will lead USSSP education and outreach activities and build a broader program in partnership with new and existing educational initiatives and programs.

Even though there is an obvious need for leadership in developing a strong educational program within USSSP that supports national science education objectives, a similarly compelling need exists for the ocean drilling community to develop new research initiatives and funding streams to support fruitful connections with other scientific disciplines. Such efforts are important because the success of IODP will likely be measured only in part on the basis of extending and broadening the knowledge gained from the research foci central to ODP. IODP's success will also be measured by the extent to which the research results from the program have catalyzed new research endeavors with biology, hydrology, ecology, information technology, ocean engineering, and atmospheric science, to name a few. Such connections will extend the reach of scientific ocean drilling in the development of a more complete understanding of the Earth System—a concept and research focus that is rapidly becoming the central science priority of our time.

All of us at JOI look forward to working with USSAC and the ocean drilling community to chart a path through this broader research agenda, to better define the U.S. national program, and to create the future. The waters may be unknown, but with your continued input and participation, along with a bit of judicious tacking, we are confident that our course will become clear.

IODP Needs YOU!

Call for U.S. Volunteers and Nominations to Scientific Ocean Drilling Panels and Committees

Deadline: June 30, 2004

Both experienced and new members are urgently needed. Young scientists are strongly encouraged to become involved.

United States Science Advisory Committee (USSAC)

USSAC will nominate five new members at its July 2004 meeting. Members are appointed by the Joint Oceanographic Institutions (JOI) Board of Governors (BoG), and will serve three-year terms beginning October 1, 2004. USSAC is the U.S. national committee for scientific ocean drilling, representing the interests of the U.S. scientific community to the Integrated Ocean Drilling Program (IODP). USSAC provides guidance to JOI in managing the U.S. Science Support Program (JOI/USSSP), which supports U.S. participation in the IODP.

IODP Science Advisory Structure

USSAC invites expressions of interest and nominations to join more than 50 U.S. scientists and engineers serving in the Science Advisory Structure (SAS) of the IODP. At its July 2004 meeting, USSAC will appoint new U.S. SAS members for the following panels:

- Science Steering and Evaluation Panels (SSEPs) (for Earth's environment, ESSEP, and Earth's interior, ISSEP)
- Technology Advice Panel (TAP)
- Site Survey Panel (SSP)
- Scientific Measurement Panel (SciMP)

USSAC will also make recommendations to the JOI BoG for 3 of the 7 U.S. Science Planning Committee (SPC) members.

Please see www.joiscience.org/usssp/panel_nominations.html for more detailed information concerning these panels, their roles in the SAS, and terms and commitments of panel members.

U.S.-based scientists willing to represent the U.S. ocean drilling community should send a two-page CV and a cover letter to: Betsy Fish, JOI/U.S. Science Support Program at efish@joiscience.org. Letters should briefly document previous experience (if any) in scientific leadership, a description of interests in ODP/IODP science and related activities, and an indication of preferred panel assignment. The nomination deadline is June 30, 2004.

For more information about this opportunity, please contact Warren Prell, USSAC Chair, at warren_prell@brown.edu, David Christie, USSAC Nominations Subcommittee Chair, at dchristie@coas.oregonstate.edu, or Holly Given, USSSP Director, at hgiven@joiscience.org.

About the New USSSP Director

Holly Given arrived at JOI in February 2004 following a varied career in academia and scientific program management. A native of the Chicago suburbs, she holds a B.S. in physics from the College of Engineering at the University of Illinois and earned her Ph.D. in geophysics with thesis advisor Hiroo Kanamori at Caltech's Seismological Laboratory.

Holly Given

From 1986 to 1997, she held various academic appointments at the Institute of Geophysics and Planetary Physics, Scripps Institution of Oceanography. She began as a post-doc on a joint project sponsored by the Natural Resources Defense Council and the Soviet Academy of Sciences to install seismic instrumentation around the Kazakh and Nevada nuclear test sites during the Reagan-Gorbachev era. Given was featured for her work in the Soviet Union in publications as diverse as *Ms. Magazine*, *Ranger Rick*, and *Trud*, the daily newspaper of Soviet Labor. Eventually she was asked by the department to become the Executive Director of Project IDA—Scripps's global seismic network—which began with gifts from the philanthropists Cecil and Ida Green and is now part of the Global Seismographic Network, managed by IRIS (for NSF) and the U.S. Geological Survey. Under her guidance, the IDA network established new stations in the former Soviet Union, Africa, the South Pacific, and on many Atlantic islands.

In 1997, Given took her station-building expertise to the Comprehensive Nuclear-Test-Ban Treaty Organization in Vienna, a UN-affiliated organization formed to implement the Treaty after its signature by the U.S. and over 70 other nations in September 1996. She became the highest-ranking American in the International Monitoring System Division responsible for building over 300 facilities worldwide. As one of the first technical officers, she developed procedures for site surveys, procurement of equipment and services, certification of monitoring stations against international standards, and did field work in numerous signatory States. In a supplementary assignment, she served for one year as the substantive Secretary of the Technical Working Group, where she drafted the Organization's 1998 $80M budget and edited the Group's formal reports that were accepted by consensus of over 50 delegations. "The international aspect of this job was fascinating. We were doing technical work in a political environment, which added a layer of complexity as one had to consider the different motivations of individual nations in seeking consensus decisions. Also, since the Organization selected its permanent staff from the Treaty's 150 member nations, multi-cultural considerations were important not just during delegation meetings but in the day-to-day interactions with one's closest colleagues. The Organization probably did not run as efficiently as one in which all workers share a common culture; but on the other hand we were able to work with understanding and insight in countries as different as Russia, Iran, Kenya, Indonesia, Japan, or the United States—a powerful benefit of organizational diversity."

In what she refers to as her "career experiment," Given was lured back to the U.S. in 2002 by an offer from Science Applications International Corporation (SAIC), a large systems integration company, to work on a $60M, 10-year contract with the U.S. Air Force to install, upgrade, and maintain seismic stations of the U.S. Atomic Energy Detection System. As the contract's Program Manager, Given was responsible for a technical staff of 30 people and became well-versed in formal systems engineering and corporate program management concepts. Missing the intellectual camaraderie of the academic world, she began a job search to find a senior technical position with an international or academically based project. "I did not find much room for creativity within the defense contracting culture, at least at the levels where I was working. Still, I value my time at SAIC and the exposure to more formalized procedures in technical management."

About her role in IODP, Given says, "I have always preferred the facilitation role in science, which I view as my niche specialty. It gives me immense satisfaction to provide the framework or infrastructure that helps deliver a new result. The science potential of IODP is huge, addressing large-scale, 'whole planet' issues. Listening to summaries of proposals to explore the Nankai and Costa Rican subduction zones at the recent Science Planning Committee meeting really brought this home to me. Twenty years ago at our 'coffee breaks' at Caltech, we speculated on the role of seafloor topography and subducted sediments in characterizing why subduction zones generated different kinds of characteristic earthquakes; now we really might find out."

Holly is married to fellow geophysicist Jeffrey Given; the couple has two daughters ages 10 and 13.

A New U.S. Science Support Program for IODP

Holly Given, Director, USSSP

A new Cooperative Agreement between the National Science Foundation (NSF) and Joint Oceanographic Institutions (JOI) for a U.S. Science Support Program (USSSP) became effective March 1, 2004. The agreement outlines how $15M will be invested over the next three years to support the participation of U.S.-based scientists in the new Integrated Ocean Drilling Program (IODP). It follows the successes of the USSSP-ODP, under which JOI administered approximately $90M to over 150 different institutions in support of 1,400 U.S. berths on 110 expeditions and to fund associated post-cruise activities from 1984 through 2003. I would like to acknowledge John Farrell, my predecessor at JOI as the USSSP Program Director, the JOI staff past and present, and the scientists who have served on the U.S. Science Advisory Committee (USSAC) over the years for building a solid foundation from which to launch the new program.

Following NSF's proposal solicitation, the new Cooperative Agreement spells out six distinct program objectives:

- To support travel and salary for U.S. scientists to participate in IODP drilling expeditions and post-expedition activities;
- To support U.S. participation in the IODP planning process via its international Science Advisory Structure as well as workshops to consider new avenues of research;
- To encourage advance activities that further the planning and development of ocean drilling proposals and expeditions. These pre-drilling activities (formerly called "Site Augmentation") may include supporting U.S. participation on non-U.S. sampling expeditions or site surveys, analyzing data sets for integration into mature drilling proposals, and innovative downhole measurements or experiments;
- To develop educational and community engagement programs that expose the U.S. populace, especially students and educators, to the science arising from ocean drilling research. Through such programs, JOI seeks to fully engage and expand the research community participating in scientific ocean drilling;
- To develop or refine unique or innovative instrumentation for core or borehole analysis and experiments that may be required in IODP;
- To develop an effective administrative and coordination structure to interact with the U.S. and international scientific community and to disseminate drilling results;

The three-year budget is planned around 13 IODP expeditions. JOI staff is currently arranging support for the scientific parties named to the first two. An expedition to the Juan De Fuca Ridge—under Co-Chiefs Andy Fisher, University of California, Santa Cruz, and Tetsuro Urabe, University of Tokyo—will conduct multi-dimensional, cross-hole experiments to evaluate the formation-scale hydrogeologic properties within the oceanic crust and study an active hydrothermal system with respect to fluid circulation, alteration, geomicrobial processes, and seismic anisotropy. This expedition, planned to depart Astoria, Oregon in late June, will use the *JOIDES Resolution* operated by Texas A&M University Research Foundation (TAMRF) of the JOI Alliance as the U.S. Science Operator. The Arctic Coring Expedition (ACEX)—under Co-Chiefs Kate Moran,University of Rhode Island, and Jan Backman, Stockholm University—aims to retrieve sediment and underlying bedrock cores from the Lomonosov Ridge to acquire first-order knowledge about paleoceanographic history of the central Arctic Ocean and to decipher the tectonic history of the Lomonsov Ridge and the formation of the Eurasian Basin. This expedition is due to leave Tromsø, Norway, in early August with the drillship *Vidar Viking* and other ships arranged by the British Geological Survey as the European Consortium for Ocean Research Drilling (ECORD) Science Operator. Currently, scientific parties are being considered for the next four IODP expeditions in the Atlantic, which will all use the *JOIDES Resolution* as the Phase 1 riserless vessel.

"... there will obviously be increased need overall for participation by U.S.-based scientists as the program stabilizes with three operating platforms."

The Same ...

The new program may, at first glance, seem very familiar to scientists who participated via USSSP-ODP. We plan to provide at least the same levels of support for participation in the scientific parties. As an example, for an expedition of normal (two-month) duration, members of the scientific party can generally expect three months of salary support and Co-Chiefs can generally expect six months to support their wider responsibilities. Support levels may differ somewhat for expeditions using the riser and mission-specific platforms because expeditions may vary in length. As in ODP, members of the scientific party will be eligible to apply for post-expedition support via USSSP's peer-reviewed small grants program, intended to facilitate further sample characterization or developing the summaries needed by the entire scientific party. Scientists may seek more significant support for expedition-specific, individual research directly from NSF, via the new Expedition Objective Research proposal category (see page 14). Expedition-specific meetings such as sampling parties and post-expedition meetings will be supported when appropriate through USSSP.

USSSP-IODP will retain the successful research-enhancing mechanisms from USSSP-ODP, such as support for work-

continued on page 10

Scientific Drilling of the Indian Ocean's Submarine Fans

Peter Clift and Peter Molnar

India's collision with Asia is an outstanding laboratory for understanding continental collisions and provides the most dramatic example of solid earth-atmospheric coupling in the recent geologic past. Mountain building in South Asia induced changes in atmospheric circulation leading to regional climate changes that altered the rates of continental erosion. These changes may have affected the chemistry of the atmosphere and oceans, and in turn global climate. Erosion in the Himalaya and adjacent terrain also formed the world's two largest submarine sediment masses, the Indus and Bengal submarine fans. Together these fans contain records of both the tectonic development of the collision zone and the resulting environmental changes. On July 23-25, 2003 a USSSP-funded workshop was held to address scientific objectives for coring these fans. The Cooperative Institute for Research in Environmental Science (CIRES) at the University of Colorado at Boulder, Colorado hosted the event.

Approximately simultaneous tectonic and climatic change seem to have occurred around 8 Ma, implicating the role of tectonics in climate change. At 8 Ma, winds associated with the Indian summer monsoon appear to have strengthened and loess deposition in China abruptly increased. Concurrently, folding occurred within the Indian plate south of India, and slip occurred on the largest dated normal fault within Tibet. In addition, there was a rejuvenation of the Main Central Thrust of the Himalaya. What is unclear is how the association of the Indian monsoon with heavy rains fits into the picture because there is little geologic evidence to imply a change in precipitation at ~8 Ma. If erosion and/or chemical weathering concurrently increased when the monsoon strengthened, evidence should be detectable in fan sedimentation rates and changes in clay mineralogy. In this respect, the two fans—one draining the relatively arid Indus watershed and the other the moist Brahmaputra and Ganges Basins—may record very different signatures of a change in rainfall.

Thermochronometers suggest that much of eastern and central Asia experienced a widespread tectonic event at 25 to 17 Ma. Unfortunately, an incomplete on-land sedimentary record from ~50 Ma, when collision first occurred, to 20 Ma does not allow for convincing correlations among erosional, climatic, and tectonic processes. In contrast, the marine stratigraphic record for the same time period is basically complete, and a pulse in sedimentation between 25 and 17 Ma would support the occurrence of a widespread change in erosion, presumably due to a tectonic event.

Landsat image of the Indus Delta, Pakistan, the source of the Indus Fan.

In simple models of continental collision and crustal thickening, initiation of the Main Central Thrust marks the birth of the Himalaya. In turn this event should be recorded in the submarine fans by the deposition of sediment derived from Indian rather than Eurasian rocks. Constraining when the Himalaya emerged and began shedding sediment is key to answering basic questions of: 1) how much continental crust is subducted, and 2) how strain is accommodated during continental collision. Coring these fans through scientific drilling offers the only hope of obtaining evidence to determine when the Himalaya were born.

Initial Drilling Priorities

The workshop discussions identified the following science objectives for drilling in the Indian Ocean:

- *Compare high-resolution climate records from regions of high pelagic sedimentation to records of erosion in the fans.* This can be achieved by drilling the Indus Fan, which would allow collecting a long, detailed record of sedimentation, and assessing erosional responses to short-term climate forcing within the Indus drainage basin.

- *Examine sedimentation processes at high resolution in the late Pleistocene.* This can be achieved by drilling on seismic lines that sharply define channel-levee complexes, such those already seen on the Bengal Fan.

- *Assess possible climate change at 8 Ma to test monsoon strengthening models.* This can be achieved by drilling in the Bay of Bengal, where monsoon rain is strongest.

- *Reach Paleogene sediment at shallow subseafloor depths where records should span the onset of rapid Himalayan sediment flux into the sea, which is currently poorly constrained.* This can be achieved by drilling the Murray Ridge in the Arabian Sea and on, or adjacent to, the 85-East and 90-East Ridges in the Bay of Bengal.

Furthermore, integrating future IODP data with shore-based climatic and tectonic research, including the International Continental Drilling Program (ICDP) in the Qinghai Lake, is a priority to successfully complete the scientific goals identified at this workshop. A full report of the meeting is available online (www.usssp-iodp.org/science_support/workshops/past_workshops.html).

Authors

Peter D. Clift, Woods Hole Oceanographic Institution
Peter Molnar, University of Colorado

Apply to Sail

Information for U.S. Participation on IODP Expeditions

New Application Procedure

JOI now coordinates staffing of U.S. participants on IODP vessels. Staffing decisions are made in consultation with the U.S. Science Advisory Committee (USSAC), Co-Chief scientists, the Implementing Organizations (JOI Alliance - non-riser vessel, ECORD Science Operator - mission specific platforms, CDEX - riser vessel, *Chikyu*), and the IODP Central Management Office. Staffing for expeditions begins six to nine months pre-cruise.

Who Can Apply?

USSSP-sponsored participation on IODP expeditions is open to scientists and engineers (professors, research scientists, technologists, graduate students, etc.) affiliated with U.S. institutions (U.S. academic institutions, government labs, U.S.-based corporations, etc.). Applications are currently being accepted for the Ocean Core Complex I, Ocean Core Complex II, and North Atlantic II expeditions.

More Information

For expedition application forms and instructions as well as detailed operations schedule information visit:

www.usssp-iodp.org/science_support/sailing_information/default.html

Or email: staffing@joiscience.org

IODP Operations Schedule

Expedition Name	Port (Origin)	Dates	Days at Sea (transit/operations)	Description
NON-RISER VESSEL (JOIDES Resolution)				
Juan de Fuca	Astoria, Oregon	27 June - 21 August, 2004	2/52	Conduct hydrologic, microbiological, seismic, and tracer studies to evaluate formation-scale hydrogeologic properties within oceanic crust.
North Atlantic I	Bermuda	22 September - 14 November, 2004	5/43	Investigate Late Neogene-Quaternary stratigraphic records of millennial-scale environmental variability, and document the details of geomagnetic field behavior.
Oceanic Core Complex I	Ponta Delgada, Azores	14 November, 2004 - 7 January, 2005	7/40	Drill two sites on the Mid-Atlantic Ridge to document the conditions under which ocean core complexes develop and to characterize the nature of the alteration front within oceanic peridotite.
Oceanic Core Complex II	Ponta Delgada, Azores	5 January - 27 February, 2005	7/41	
North Atlantic II	Ponta Delgada, Azores	27 February - 22 April, 2005	4/45	Continuation of North Atlantic I. Also, install a borehole observatory in ODP Hole 642E to investigate bottom water temperature histories.
MISSION SPECIFIC PLATFORMS (Vidar Viking, Oden, & Sovetskiy Soyuz)				
Lomonosov Ridge	Tromsø, Norway	7 August - 19 September, 2004	19/21	Drill on the Lomonosov Ridge in the central Arctic Ocean to reconstruct the paleoceanographic history of the Arctic Ocean and the tectonic history of the Lomonosov Ridge and the Eurasian Basin.

U.S. IODP Expedition Participants

Juan de Fuca Expedition

Andrew Fisher (Co-Chief), University of California, Santa Cruz
Keir Becker, University of Miami–RSMAS
Samuel M. Hulme, San Jose State University
Michael Hutnak, University of California, Santa Cruz
Mark A. Lever, University of North Carolina
Mark E. Nielsen, Oregon State University–COAS
William Sager, Texas A&M University
Geoffrey Wheat, University of Alaska, Fairbanks

North Atlantic I Expedition

Jim Channell (Co-Chief), University of Florida

Ocean Core Complex I Expedition

Barbara John (Co-Chief), University of Wyoming

Lomonosov Ridge Expedition (ACEX)

Kate Moran (Co-Chief), University of Rhode Island
Thomas Cronin, U. S. Geological Survey
James Cullen*, Salem State College
Gerald Dickens, Rice University
John King*, University of Rhode Island
Rick Murray*, Boston University
Matthew O'Regan, University of Rhode Island
David Smith, University of Rhode Island
Kristen St. John*, Appalachian State University
*shorebased participants

Ocean Core Complex II Expedition

Donna Blackman (Co-Chief), Scripps Institution of Oceanography

A New U.S. Science Support Program for IODP continued from page 7

shops and pre-drilling activities. Via these programs, we hope to identify new research areas that take advantage of the expanded drilling capability of IODP and that encourage broader participation by the academic community. The popular Schlanger Ocean Drilling Fellowship Program and the Distinguished Lecture Series will also continue. Furthermore, USSSP-IODP will continue to seek and benefit from the guidance of the scientific ocean drilling community via the U.S. Science Advisory Committee (USSAC), a group of 15 peer-nominated members that meets biannually to consider specific issues. USSAC also provides intersessional assistance by reviewing applications for expedition participation and proposals for workshops, fellowships, site augmentation projects, and other activities intended to enhance ocean drilling science.

But Different

With the ascendance of Japan in IODP, the U.S. is no longer the majority stakeholder. Whereas one-half of the *JOIDES Resolution* berths were allocated to U.S.-based scientists in ODP, U.S. participation in IODP expeditions is set at a lower proportion by international agreements among funding agencies. However, because varied drilling technologies are needed to address the expanded scientific themes described in the *Initial Science Plan* for the IODP (www.iodp.org/isp.html), there will obviously be increased need overall for participation by U.S.-based scientists as the program stabilizes with three operating platforms. We envisage that this will be satisfied in part by including more scientists from the newer disciplines represented in IODP, such as geomicrobiology and hydrology, and from institutions that have not traditionally participated.

During ODP, JOI contracted TAMRF to administer USSSP science support subawards to institutions, which was a natural efficiency because TAMRF also operated the *JOIDES Resolution*. For IODP, JOI has decided to administer the science support tasks directly from the Washington, DC office. This way, U.S.-based expedition participants will always work with JOI for salary and travel support regardless of which drilling platform they are boarding; conversely, platform operators will all coordinate with the same organization for U.S.-based participants from applications through cruise completion. U.S.-based scientists can expect pre-expedition information from both JOI (on salary/travel support) and the platform operator (on expedition details). Together, we are striving to make scientist support services appear seamless through the transition into IODP.

USSSP-IODP will also have an enhanced and more formalized education component to be developed by a new Education Coordinator, currently being recruited by JOI. This person will be asked to form a cohesive vision for USSSP's many existing educational activities, to help coordinate with the IODP educational activities of international partners, and to look for opportunities to work with U.S.-based education programs in related disciplines. We hope to have this position filled this summer.

"We should also take the opportunity to check our established procedures through the new optics of IODP, modify them when appropriate, and build new efficiencies together with our international partners."

Initially, a significant investment will be needed to provide scientific coordination and guidance for the new program via international committee meetings. Scientific approaches developed under ODP should be reviewed to confirm that they are generic enough to apply to the multiple platforms of IODP, particularly as we gain experience from the first expeditions. The committees of the IODP Science Advisory Structure (SAS) will do much of this work. Functions of the various SAS panels are somewhat recognizable by analogy to ODP's advisory structure, but several panels are new entities. U.S. panel representation has decreased proportionally relative to ODP, with national participation approximately seven U.S., seven Japan, and four among the European consortium plus other members; yet the panels are currently very active, with many meetings, *ad hoc* working groups, and panel-to-panel liaisons. USSSP provides coordination and travel support for U.S.-based scientists to participate in the panel activities. While acknowledging the contributions of the dedicated people that serve in SAS, we will continue to encourage an efficient SAS meeting structure to maximize the resources available for other USSSP-funded support tasks.

JOI provided the central management functions for ODP under contract to NSF, either directly or by subcontracts to partners such as TAMRF (for publications) or the University of Miami (for the JOIDES Office), to coordinate science planning and policy. Beginning April 1, IODP Management International (IODP-MI or IMI) opened for business as IODP's new central management entity. IODP-MI's Washington office is headed by Manik Talwani, President, and supported by Tom Janecek, Vice-President for Science Operations. Its Sapporo office is headed by the Vice-President for Science Planning, Hans-Christian Larsen of Denmark. Yoichiro Otsuka of Japan will serve in the capacity of Senior Advisor to the IODP-MI president, and Keith Alverson has been named Director of Communications; both are in the Washington office.

IODP-MI will be responsible for scientific operations functions such as program-wide engineering development, publications, education and outreach activities, and core repository management. They will coordinate closely with the nationally based platform operators, and receive guidance on scientific goals and priorities from SAS. The Cooperative Agreement for USSSP-IODP requires JOI to use guidance and planning information from IODP-MI in developing the annual Program Plans for USSSP, so we anticipate a close and productive rela-

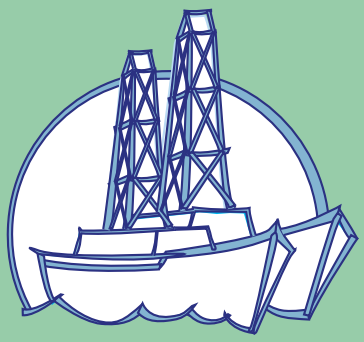
tionship with the new central management organization.

What About the Future?

NSF's solicitation for the new Cooperative Agreement stated that the nature and development for the new U.S. Science Support Program should be based in large part on the recommendations provided in the report "Committee on U.S. Participation in IODP" (CUSP; *JOI/USSAC Newsletter*, Fall 2002). JOI in consultation with USSAC submitted an option budget for additional support above the $15M ceiling intended to fully implement the CUSP recommendations. This option budget envisaged a doubling of the budget in the Education and Community Engagement area, 50% higher support for Planning Activities in support of ocean drilling projects, and more funds for post-expedition research. In the end, only $15M was awarded, most likely due to the general budget situation at the Foundation. Looking toward the future, we should reconsider what arguments best equip NSF program managers to compete against other areas of meritorious scientific research within the larger funding pool. Put another way, how can we most clearly prioritize our goals as a scientific community?

The former USSSP-ODP Cooperative Agreement between JOI and NSF had a ten-year duration, as does the new contract between NSF and the JOI Alliance (comprising JOI, TAMRF, and Lamont Doherty Earth Observatory) to be the U.S. Implementing Organization for the IODP riserless vessel. In contrast, the new USSSP-IODP Cooperative Agreement will end in February 2007. Is there a message here? One interpretation is that the lead agencies want to retain some flexibility to structure future science support mechanisms differently as the new program develops. Yet, as the most mature national program, USSSP is in a unique position to play a lead role in driving new science via the expertise on USSAC and its program activities. In the lead article of this newsletter, Steve Bohlen advocates developing a national identity distinct from the international management of IODP. Given the proportional decrease in U.S. participation on international panels and expeditions, our national identity will be established via a pro-active, rather than de facto, process.

My personal goal in managing the new USSSP-IODP is to demonstrate that we are good shepherds of the allocated resources while strategically articulating our science focus and optimizing the scientific return: in the use of NSF resources and IODP products to develop new scientific themes; in the inclusion of scientists from new disciplines or institutions; in a more focused outreach to the education community; in our coordination with IODP-MI to ensure the most efficient and flexible management framework possible. We should also take the opportunity to check our established procedures through the new optics of IODP, modify them when appropriate, and build new efficiencies together with our international partners. I look forward to being part of your community and the exciting discoveries we all anticipate via IODP, and to being well-poised to both continue and expand the U.S. Science Support Program beyond 2007.



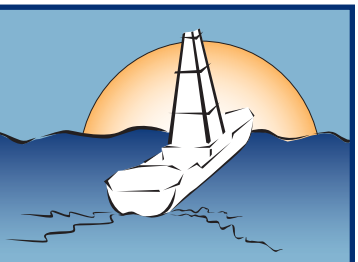
Wanted: IODP Science Proposals

The Integrated Ocean Drilling Program needs you! Pre-proposals are encouraged.

For details, visit: www.isas-office.jp

Next deadline:
October 1, 2004

JOI Alliance Operational Phases of IODP



Phase 1
2004 to 2005
"Riserless" drilling expeditions using the *JOIDES Resolution*
(see scheduled expeditions on page 5)

Phase 2
2006 to 2013
Expeditions conducted with an updated riserless drillship

More Accurate Composite Depth Scales and an Analysis of Core Deformation

Lorraine Lisiecki
Brown University

Faculty Advisor:
Timothy Herbert

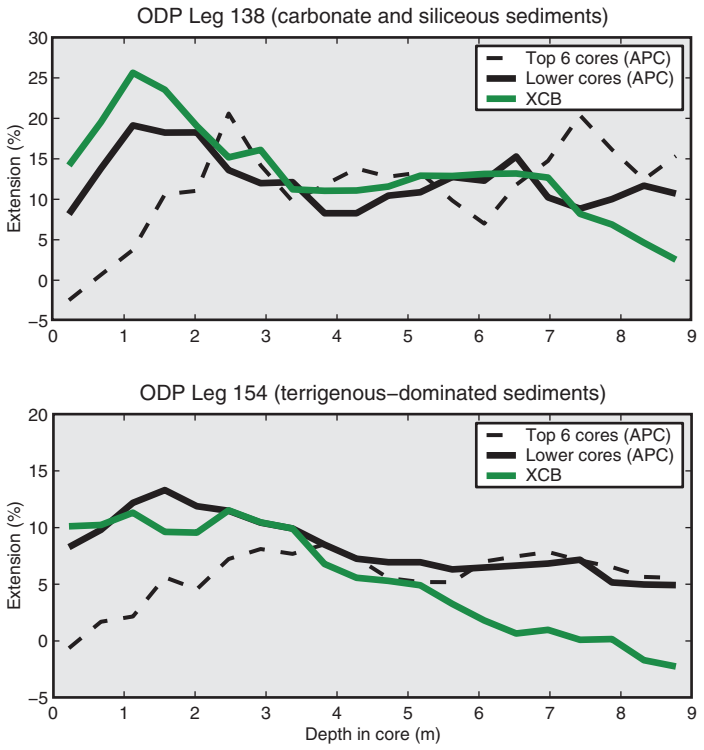
A composite depth section reconstructs a continuous record of the sediment at a drilling site by splicing together cores from different holes. Its corresponding composite depth scale describes the correlation of the sediments between holes. Both are important tools for analyzing the sediment recovered from a drilling site. However, the standard splicing technique for creating composite depth sections (Hagelberg et al., 1992) has two shortcomings. First, it does not correct for distortion within cores, so that a sedimentary feature may have a slightly different composite depth in each hole. Secondly, the splicing technique often results in composite depths which are over 10% greater than recorded drill depths. Theories for the cause of this accumulation in depth offset include core extension, duplicate sampling, and human bias (MacKillop et al., 1995).

The goals of my Schlanger Fellowship research were to develop a new, automated technique for creating composite depth scales that address these two problems, and to characterize the deformation that occurs within cores due to the drilling and recovery process. The resulting software is available on-line using the "Data & Software" link at www.geo.brown.edu/georesearch/esh/paleo.html.

The new compositing technique involves three basic steps. In the first, the sediment from each hole is correlated with the sediment of a target hole using the lithologic characteristics (e.g., reflectance, magnetic susceptibility, and bulk density) of the recovered cores. An automated graphic correlation program (Lisiecki and Lisiecki, 2002) performs correlations, correcting for core deformation. During my fellowship I modified this software to handle core gaps more realistically and added a user-friendly graphical interface. In the second step, an automated program creates a continuous composite section by pasting together segments from each hole. This is done in such a way as to avoid gaps and sediment that is likely to be highly deformed. In the third step, the same software assigns a composite depth scale to the composite section. The previously selected segments are placed end-to-end by assigning offsets to their original meters below seafloor (mbsf) depths. Portions of the composite record are then stretched or compressed to fit between the corresponding core top depths in the target hole. This prevents any significant drift between the meters composite depth (mcd) and mbsf depth scales. Finally, the graphic correlation software aligns each hole to the new composite section to create a conversion from mbsf to the new mcd.

I applied this new technique to data from Sites 846, 849, and 851 of ODP Leg 138, which recovered carbonate and siliceous sediments, and Sites 925, 926, 927, and 929 of ODP Leg 154, which recovered terrigenous-dominated sediments. The alignment of features across holes by the new composite depth scales was compared to the performance of the original mcd scales (Mayer et al., 1992; Curry et al., 1995) by finding the correlation coefficient of reflectance versus composite depth across holes. The new technique increases the interhole correlation of reflectance from 0.69 to 0.77 for ODP Leg 138 and from 0.70 to 0.76 for ODP Leg 154. Furthermore, this new technique eliminates the average depth inflation of 15% and 10% for the two legs respectively.

I characterized core deformation by averaging the extension versus core depth for each core relative to the composite section. Analysis of 618 cores shows that, on average, the drilling and recovery process stretched the carbonate and siliceous sediment cores of Leg 138 by 11.5% and the terrigenous-dominated sediment cores of Leg 154 by 6.3%. For both legs, average extension is greatest 1 to 2 m below the core top (see figure), but the exact patterns of deformation varied as a function of drilling depth and may be different for the advanced piston corer (APC) and extended core barrel (XCB). The standard deviation in extension is lowest at ~20% in the core middles and increases to ~35% at the core tops and bottoms. Because deformation has the least variability in the core middles, the compositing algorithm preferentially includes the middle sections of cores in the composite section.



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Lisiecki, L. E., and P. A. Lisiecki, *Paleoceanography*, 17(D4), 2002.

MacKillop, A. K., et al., *Proc. ODP, Sci. Results*, 138, 357-369, 1995.

Mayer, L. A., et al., *Proc. ODP, Init. Repts.*, 138, 1992.

ODP and IODP in the News

A news feature in the December 4, 2003 issue of *Nature* highlighted the new objectives and plans for IODP drilling platforms. **Jan Backman**, Stockholm University, spoke about the Arctic Coring Expedition (Lomonosov Ridge), for which he will be a Co-Chief scientist. Millard Coffin, University of Tokyo, discussed the *Chikyu's* scientific capabilities, while **Donna Blackman**, Scripps Institution of Oceanography, **Kiyoshi Suyehiro**, JAMSTEC, **Jim Mori**, Kyoto University, and **Kenji Kato**, Shizuoka University, commented on the scientific priorities of the *Chikyu* and *JOIDES Resolution*.

This summer's expedition to the Arctic was the focus of a short news piece in the December 12, 2003 issue of *Science*. **Millard Coffin** commented on this unique opportunity to study an area that is relatively unexplored and which holds vast potential for data on climate change, tectonic history, and paleoceanography.

A March 2004 *Geotimes* feature article by **Kasey White**, the Public Affairs Director at JOI, detailed the structure of IODP management and the scientific plans that the program has for all three platforms.

On January 10, the French newspaper *LeMonde* featured an article about IODP, highlighting the planned European contributions including the upcoming Arctic Coring Expedition planned for this summer. **Benoît Ildefonse**, president of IODP-France, remarked on the specific scientific plans of IODP.

In a Letter to *Nature* appearing in the March 4 issue, **Daniel Sigman**, Princeton University, **Samuel Jaccard**, Swiss Federal Institute of Technology, and **Gerald Haug**, Geoforschungszentrum Potsdam, reported on their work using deep-sea records from ODP Sites 882 and 1096. Using records of biogenic opal accumulation and sedimentary nitrogen isotopic composition, the researchers identified an increase in the vertical ocean stratification in the high latitudes 2.7 million years ago. This increase may have intensified global cooling by confining larger amounts of carbon dioxide in the deep ocean.

Kenneth Miller, Rutgers University, led a team of researchers in examining Upper Cretaceous sequences from ODP Leg 174AX, on the New Jersey Coastal Plain. Their work, published in the March/April issue of the *Geological Society of America Bulletin*, unveils a Late Cretaceous sea level estimate that shows large and rapid variations. They propose that Antarctic ice sheets caused these changes, even though this interval was previously thought to be ice-free.

Frank Rack, the Director of Ocean Drilling Programs at JOI, contributed an editorial to the February 2004 issue of *Sea Technology* that describes the history and legacy of the previous ocean drilling programs in light of the transition to IODP.

Using cores from many sites, including eleven DSDP and ODP sites, **Bradford Clement**, Florida International University, analyzed the four most recent magnetic polarity reversals. In a study that appeared in the April 8, 2004 issue of *Nature*, Clement presents evidence for a 7,000-year mean duration for magnetic directional change that varies according to latitude—shorter durations at low latitudes and longer durations at mid to high latitudes. The article generated stories worldwide, including website distribution on CNN, *New Scientist*, *Scientific American*, and *Discovery*.

Schlanger Ocean Drilling Fellowship

In January 2004, two one-year fellowships were awarded.

Jennifer Biddle
Penn State University
"Exploration of Subsurface microorganisms: FISH-SIMS and cultivation studies of sediment gathered on ODP Leg 201"

Xiaoli Lui
Penn State University
"Multiphase flow modeling of gas hydrate systems at Hydrate Ridge and Blake Ridge"
(ODP Legs 164 and 204)

The next fellowship deadline is
November 15, 2004
www.usssp-iodp.org/education/fellowship/default.html

Call for Contributions

Contributions and ideas for the *JOI/USSAC Newsletter* are always welcome!

Please contact Andrea Johnson: ajohnson@joiscience.org.

Want Less Paper?

If you are interested in an electronic only subscription to the *JOI/USSAC Newsletter*, please contact: info@joiscience.org

News and Views from NSF

The last few months have been eventful for Integrated Ocean Drilling Program (IODP) and the U.S. Science Support Program. Among the most important happenings have been the signing and initial funding of the IODP Central Management Organization (CMO) contract between NSF and IODP Management International (IODP-MI). This contract is for an estimated $429M over ten years. Approval has also been given to a subcontract between IODP-MI and the Advanced Earth Science and Technology Organization (AESTO) of Japan to provide science support services for the IODP-MI Sapporo office.

NSF Program Directors: Jamie Allan and Rodey Batiza

The 2005 budget request to Congress includes funds for non-riser vessel conversion. The converted vessel is expected to be be available around mid-2006.

In February, the European Consortium for Ocean Research Drilling (ECORD) joined the IODP as a Contributing Member, with the Centre National de la Recherche Scientifique-Institut National des Sciences de l'Univers (CNRS/INSU) acting as the ECORD Management Agency. Canada, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Switzerland, Sweden, and the United Kingdom are currently ECORD members. The European Science Operator (led by the British Geological Survey) has agreed to support "Mission-Specific" Platform activity.

Most recently, the People's Republic of China has joined IODP as an Associate Member, with the Ministry of Science and Technology (MOST) signing a Memorandum of Participation in late April with NSF and MEXT.

In March, a new Cooperative Agreement for the U.S. Science Support Program for IODP went into effect. This agreement with JOI (www.joiscience.org/USSSP/default.html) provides $15M over three years.

Of special interest to the U.S. community is the opportunity to submit proposals for Expedition Objective Research, as described in the announcement on this page and at the NSF ODP website (www.geo.nsf.gov/oce/programs/drilling.htm). Helping out with management of these proposals and with other NSF/ODP business is Ms. Laura Snow, who has recently joined us as a Science Assistant. She has a M.S. in Marine Geology from Oregon State University, and most recently was a John Knauss Fellow at the Environmental Protection Agency.

Sincerely,

Rodey Batiza
Program Director, NSF/ODP

James F. Allan
Program Director, NSF/ODP

NSF ODP Support for U.S. Participants in IODP Drilling Expeditions

In response to IODP planning recommendations from the U.S. drilling community, the Ocean Drilling Program at NSF intends to increase its support for research proposals to meet the scientific objectives of specific drilling expeditions. Grants resulting from these **Expedition Objective Research** (EOR) proposals will be for significant support to address the research objectives of the drilling expedition and are intended to begin in the period between the co-chief approval of the expedition sampling plan and the end of the sample moratorium period.

NSF ODP encourages potential applicants to submit EOR proposals in time for the existing Division of Ocean Sciences (OCE) target dates of **February 15** and **August 15**.

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

Other sources of support for U.S. participants in IODP can be found at: www.geo.nsf.gov/oce/programs/drilling.htm.

USSAC in the IODP Era

A Letter from the Chair

As a new ocean drilling era begins, the U.S. Science Advisory Committee (USSAC) is evolving into the national committee for IODP. Although its name remains the same, USSAC is assuming new roles. Its primary function remains representing the U.S. ocean-drilling community and to encourage U.S. participation in IODP activities. However, to meet increased and more complex IODP needs, USSAC has established the following standing committees to conduct business between meetings:

- Educational activities
- Staffing U.S. members on expeditions
- Nominations of U.S. members to the SAS
- Workshops and site augmentation

Through these committees, USSAC seeks to meet the continuous operational demands of IODP and to respond more quickly to the needs of the U.S. community. For example, applications to sail on IODP expeditions now flow through JOI, and the USSAC Staffing Committee—along with the U.S. Co-Chief Scientist—will develop and forward the initial list of nominations to the platform operator. Staffing is an ongoing task and will become more complicated as IODP operates three separate platforms (upcoming expeditions, page 9).

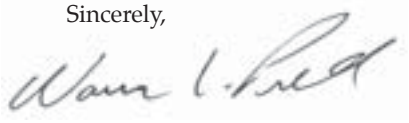
To improve communications within IODP, USSAC has established liaisons with all the Scientific Advisory Structure (SAS) panels. These USSAC members will maintain contact with the U.S. Co-Chairs to identify issues that require action or impact the U.S. community. USSAC members will also serve as standing alternates for the U.S. Science Planning Committee (SPC) members. Maintaining full U.S. participation is essential because SPC makes the highest-level science decisions, such as global ranking of drilling proposals and approving schedules. Previously, conflicts of interest and absences have required *ad hoc* searches for suitable alternates. Alternates will now be identified well ahead of time and kept abreast of SPC activities. The added benefit is that USSAC will better understand the workings of the international SPC.

Another issue recently addressed is the time required for scientists to receive post-cruise research funds. USSAC has developed review teams—composed of the JOI program manager, USSAC members, and the Co-Chief scientist—to rapidly evaluate the post-expedition proposals and recommend support levels. Our goal is to have all awards made within three months following the expedition.

Although USSAC has made much progress, much is left to do. Unfortunately, the three-year USSSP budget is very tight (see page 7). Many recommendations from the Conference on U.S. Participation (CUSP) in IODP were not achieved in the $15M USSSP-IODP budget. In particular, CUSP recommended greatly increased educational activities and scientist support, but both are meager in relation to the levels of commitment and obligation incurred by U.S. scientists. In response to CUSP, USSAC sponsored a workshop to explore possible educational activities in IODP. Many workshop suggestions (www.usssp-iodp.org/education/default.html) were requested but were not funded in the new Cooperative Agreement. In addition, the educational role of USSAC/USSSP versus the U.S. platform Operator (JOI Alliance) remains to be defined with respect to serving the U.S. community. As many of you are educators, we solicit your views on how educational programs should be handled on behalf of the U.S. community. Likewise, the roles of the IODP Management International (IMI), the national programs and the platform operators are evolving as the program matures.

I urge you to consider serving on USSAC or the SAS panels and solicit your letters of interest and nominations (page 5). The success of U.S. participation in IODP lies with those who write drilling proposals, serve on advisory panels, and sail on the expeditions. USSAC seeks to encourage and enable these activities and looks to your feedback to better serve the ocean drilling community.

Sincerely,



Warren Prell, USSAC Chair

USSAC Members

Nathan Bangs (term ends 9/30/04)
The University of Texas at Austin
nathan@utig.ig.utexas.edu; (512) 471-0424
Workshops/Pre-Drilling Activities Sub-Committee

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

Earl Doyle (term ends 9/30/04)
ehdoyle@alltel.net; (281) 494-1037
PPSP Liaison

Gabe Filippelli (term ends 9/30/05)
Indiana University - Purdue University Indianapolis
gfilippe@iupui.edu; (317) 274-3795
Nominations Sub-Committee

Al Hine (term ends 9/30/04)
University of South Florida
hine@seas.marine.usf.edu; (727) 553-1161
Education Sub-Committee

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

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

Ellen Martin (term ends 9/30/06)
University of Florida
emartin@geology.ufl.edu; (352) 392-2141
Workshops/Pre-Drilling Activities Sub-Committee
SSPS Liaison

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

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

Warren Prell, Chair* (term ends 9/30/04)
Brown University
warren_prell@brown.edu; (401) 863-3221

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

Ellen Thomas (term ends 9/30/04)
Wesleyan University
ethomas@wesleyan.edu; (860) 685-2238
Education Sub-Committee

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

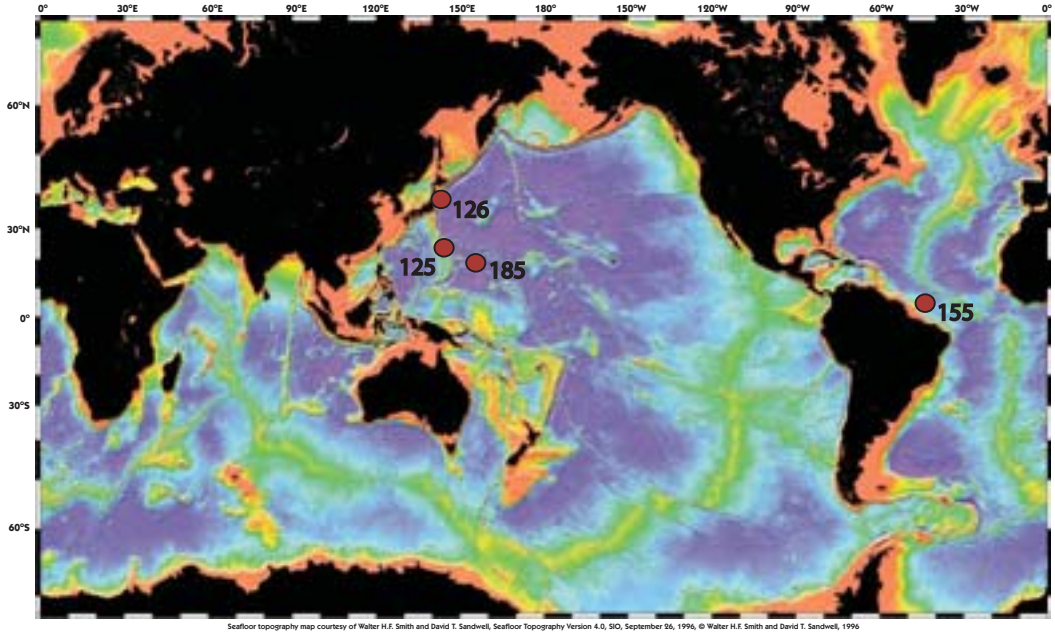
Jill Whitman* (term ends 9/30/05)
Pacific Lutheran University
whitmaj@plu.edu; (253) 535-8720
Education Sub-Committee

*USSAC Executive Committee

JOI/USSAC Newsletter

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

5... 10... 15 Years Ago in ODP



Seafloor topography map courtesy of Walter H.F. Smith and David T. Sandwell, Seafloor Topography Version 4.0, SIO, September 96, 1996, © Walter H.F. Smith and David T. Sandwell, 1996

1999

Leg 185: Izu-Mariana Margin

Two sites drilled into the oldest crust in the Pacific Ocean provided an important reference site for fast-spreading, Mesozoic Pacific crust and the first continuous sedimentary section to the basement of sediments subducting along the Izu-Bonin Margin. Leg 185 also marked the first ODP leg to examine the Deep Biosphere and paved the way for establishing ODP as a new platform for microbiological studies.

1994

Leg 155: Amazon Deep-Sea Fan

ODP achieved the first-ever coring of the entire thickness of a debris flow on the mid-fan and of the sandy fill of an active aggrading channel in a modern deep-sea fan. This work provided a reference for the interpretation of channel processes and a link to studies of modern and ancient sedimentary processes and sequences.

1989

Leg 125/126: Izu-Bonin-Mariana Region

Legs 125 and 126 uncovered the origin and evolution of the Izu-Bonin-Mariana arc-trench system, the world's type example of intra-oceanic arc-trench systems. The drilling in this region helped scientists better understand arc rifting, arc/forearc magmatism and structure, arc/forearc stratigraphy and vertical tectonics, and forearc serpentinite seamounts.