JOI/USSAC
NEWSLETTER
News from the Joint Oceanographic Institutions/U.S. Science Support Program associated with the Ocean Drilling Program • Fall 2000 • Vol. 13, No. 2

# Scientific Ocean Drilling: One of the Best Kept Secrets

contributed by John Fogarty

The Ocean Drilling Program (ODP) is entering its final stages, and the plans for a successor program—the Integrated Ocean Drilling Program (IODP)—are rapidly falling into place. Congress, the National Science Foundation (NSF), the scientific community, the news media, industry and the taxpayers will be taking a close look at ODP's accomplishments to determine if scientific ocean drilling should evolve into this new and bigger program. A program that admittedly will be more complex and more expensive but will offer rich scientific returns. ODP has delivered an enormous bang for relatively few bucks over its 32-year history. The problem is that ODP's significant contributions to increasing scientific knowledge are not widely known. A friend who serves on the board at Woods Hole Oceanographic Institution recently told me that ODP is one of the best kept secrets in the world.

In 1995, JOIDES endorsed the creation of the position of director of public affairs at JOI and developed a comprehensive strategy for communicating ODP's goals and accomplishments to five core audiences:

- The scientific community, especially the scientific disciplines and scientists working on the fringes of ocean drilling;
- Funding entities, both those who seek and those who appropriate program funds;
- The public, whose taxes pay to support the program;
- Members of Congress, congressional staff members and others whose interest in scientific ocean exploration could assist in establishing and maintaining support for the program with the public, government agencies and Congress; and
- Industry, whose strategic use of ODP findings can be translated into strong support for the existing and future programs.

It is important for ODP to communicate to all constituent groups that we are moving ahead with both the existing program and with plans for IODP. To this end, and as we approach the final stages of the ODP, efforts are afoot to build up the "ODP legacy," beyond the obvious components, such as the leg-based "Proceedings of the Ocean Drilling Program" published by TAMU. For example, the Joint Oceanographic Institutions for Deep Earth Sampling (JOIDES) advisory structure is firming up plans to write a document titled, "Achievements and Opportunities of Scientific Ocean Drilling." This will highlight dynamics of Earth's environment and Earth's interior from two perspectives. One, which summarizes ODP's results up to now, and another, which offers a vision of what would be possible in a new program. As another example, Joint Oceanographic Institutions (JOI) and the ODP Science Operator at Texas A&M University (ODP/TAMU) are working together to construct a comprehensive bibliographic database of all Deep Sea Drilling Project (DSDP) and ODP-related publications. This database will be made available to all in 2001 (either via the WWW or by CD-ROM), and will serve as a useful tool for a variety of purposes, including research and education.

An effort has been launched to familiarize the press with ODP research. Emphasis is being placed on results that relate to issues that are currently topical, such as energy, climate change, volcanoes, earthquakes, gas hydrates, microbiology, observatories and the like. Research results from recent expeditions should be re-examined to identify scientific accomplishments that lend themselves to publicity. Port-call activities conducted by TAMU (e.g., tours, media visits) will be increased to the maximum extent possible.

We plan to obtain local coverage of shipboard scientists conducting research on the *JOIDES*

## Inside

*Resolution* by making them available for interviews with local newspapers, radio, and television stations before, during, and after they spend two months at sea. At times, the focus will be human interest more than scientific, but that will serve to get the program's name and some of the findings out in media markets around the U.S. and the world.

To help spread the word, JOI's former president, Admiral James Watkins, gave a speech at the National Press Club on September 28th (see www.nationalpressclub.com). The nationally broadcast address focused on "The Future of the Oceans" and included specific mentions of the ODP and the IODP. We expect the incoming JOI President will speak about the program at other major forums including the Detroit Economic Club, Commonwealth Club in San Francisco., Town Hall in Los Angeles., as well as venues near JOI/ODP's major partners in Texas and New York.

In addition to program changes, JOI is seeing a change in leadership. It was recently announced that Admiral James Watkins will be

> "Be sure to cite and acknowledge the Ocean Drilling Program in your publications and in your presentations, both to your peers, in scientific communications, and to the media"

succeeded by Dr. Steven Bohlen as the JOI President. Admiral Watkins concluded nearly seven years as president on September 30th. Dr. Bohlen's tenure begins November 1, 2000. Dr. John Orcutt, an alternate governor from Scripps on the JOI Board of Governors, served as an interim president in October. The change is not just in personnel; the position has evolved as well. At a March 9th meeting, the JOI Board of Governors changed the position title from "JOI President" to "JOI President and Executive Director of the ODP." This change resulted in a restructuring of JOI's program management. One outcome, which parallels the change in the president's title, is that the position formerly known as the "ODP Director" has now been changed to the "ODP Deputy Director." The specific roles and responsibilities of this and other positions are being determined and a formal search to fill the deputy director position and possibly others will begin soon.

Web sites are being re-evaluated to provide more relevant news about the programs (ODP and IODP) and to make it more readily available. We will also look into using the internet and web site to "broadcast" from the ship (e.g., www.abc-news.go.com/sections/science/dailynews/exped_schinasea-990319_partl.html). A TAMU pilot program—the Ocean Drilling Distance Learning Initiative—aimed at Texas middle school children may help in this regard. Details are available at http://oceandrilling.coe.tamu.edu/. ODP should also explore the possibility of broadcasting interviews from the ship and/or doing online internet e-mail interviews from ship-to-shore. Woods Hole Oceanographic Institution broadcasts from at least one of its ships.

Contacts are being made with National Geographic television, the Discovery Channel and other broadcast sources to see where ODP can fit into their programming. Similar approaches are also being made to magazines and science writers at major news organizations such as Reuters and Knight-Ridder, among others. Outreach efforts are being conducted with the Marine Advanced Technology Education Center (www.marine-tech.org) and the Geological Society of America (www.geosociety.org).

Relationships need to be cemented with various caucuses and institutes within Congress. These groups, made up of members and staff, meet regularly and are always looking for speakers who can educate them on issues that affect their districts and states. ODP will provide these groups with speakers on climate change, earthquakes, energy, microbiology and other initiatives. This is a version of the ODP seminars already held on the Hill (www.oceandrilling.org/odss/) and will provide ODP the opportunity to build relationships with more U.S. Representatives, Senators and key staff. There are also think tanks

> "When talking with reporters, try to put yourself in their shoes. Explain your science without jargon, and in a way that will be understandable to a broad audience"

and business-based groups that meet for lunch once or twice a month which are looking for speakers. The USSSP Distinguished Lecturer Series is a fine example of what is possible, especially if the audience is broadened.

The program's partners should make similar presentations to groups in their areas. Such appearances would support ODP by spreading the word about its mission and accomplishments. The effort to publicize ODP and IODP should not be limited to JOI and TAMU. Everyone who cares about the future of scientific ocean drilling should look for opportunities to make our various target publics aware of these programs.

As mentioned above, ODP has been described as one of the world's best kept secrets. That description is more flippant than fair. ODP has brought forward major scientific information in a manner that is widely accessible and interesting; one example being *ODP's Greatest Hits* brochure. Scientific results of the ODP have received significant press coverage. However, the stories tended to be basically one-shot in the media: First in daily newspapers, radio and TV, then in popular scientific and general interest magazines and, finally, in scientific journals. But even as these significant discoveries are reported, a problem arises—the role played by ODP. The discoveries are not always clearly presented, and sometimes "ODP" is not mentioned at all. There is confusion in the media about the roles

played by TAMU, NSF, JOI, LDEO, scientists on cruises, the scientists' affiliated universities, and ODP institutional and international partners. I am unaware of a sustained effort to promote the importance of ODP as a cohesive program as opposed to relying on port calls and leg reports to discuss that expedition's scientific results. One might say of ODP what Gertrude Stein said of Oakland, "There is no there"—at least not to the vast majority of the general public and perhaps some of Congress and the scientific community.

What can you do? Several things. First, be sure to cite and acknowledge the Ocean Drilling Program in your publications and in your presentations, both to your peers, in scientific communications, and to the media, when the opportunity arises. For example, JOI's contractual obligation with NSF requires the following acknowledgement and disclaimer in any ODP-related publication JOI publishes:

"The Ocean Drilling Program is sponsored by the National Science Foundation and participating countries. Any opinions, findings and conclusions or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the National Science Foundation."

Second, when talking with reporters, try to put yourself in their shoes. Explain your science without jargon, and in a way that will be understandable to a broad audience (including the reporter) that is often not well-versed in science, let alone your geology subdiscipline. Return calls promptly and provide the information sought, for reporters are almost always working under firm deadlines. Realize that reporters will often try to pin scientists down on specifics, not to annoy you, but because that's how the business works. Third, seize opportunities to promote scientific ocean drilling to others, such as your fellow scientists not already intimately involved with ODP, to students, to your government representatives, and to the general public. The best proponents are those who know and care about the program.

While there is a need to link ODP to past and present scientific discoveries through the creation of a legacy, we also need to present a vision of what ODP and its successor program IODP can accomplish, and why it is important to do so. We need to link the work of the present and future program to climate change, earthquakes, energy resources (gas hydrates, others), medicine, environment, industrial processes, and microbiology. This is by no means a complete list, but it is a start. The 2,000-plus ODP holes have barely scratched the surface of what needs to be done to understand our planet. The first steps have been taken. A draft of the *Initial Science Plan* for that Program is on the web (www.iodp.org), and the final version will be finished in May and distributed in June. Similarly, the COMPLEX document, resulting from the international planning meeting in Vancouver last year, is finished and will be printed and mailed in November.

Those working on public affairs need to have ample lead-time on ODP-related articles that will appear in scientific journals, so we have time to properly present them to the appropriate news outlets. We need to link the scientific findings of different legs, scientists need to draw conclusions, and speculate on what their findings mean for the future. We need to establish a list of ODP scientists who are ready to comment on breaking news that is ODP-related. We need to identify ODP as providing the means and opportunity to conduct fundamentally important science. Lastly, we need to make English the official language of ODP, so we clearly state the accomplishments and promise of the programs, and why IODP is needed to carry on and improve on the work already accomplished.

"SEIZE OPPORTUNITIES TO PROMOTE SCIENTIFIC OCEAN DRILLING TO OTHERS, SUCH AS YOUR FELLOW SCIENTISTS NOT ALREADY INTIMATELY INVOLVED WITH ODP, TO STUDENTS, TO YOUR GOVERNMENT REPRESENTATIVES, AND TO THE GENERAL PUBLIC"

ODP is a great program with a solid record of scientific achievement. The program and its scientists need a forum in which to get out the word. The present U.S. federal budget package is front-loaded to get through the 2000 presidential election, and, to a lesser extent, the 2004 election. But, around 2005 or earlier, if the economy sours significantly, budgets will have to be cut. The programs that survive will be the ones that can demonstrate their worth and have strong constituencies. Our efforts must be directed at building on the program's past to ensure that scientific ocean drilling not only survives, but also grows and thrives.

## AUTHOR

John Fogarty, a veteran Washington journalist and public affairs adviser, joined the Ocean Drilling Program in May 2000, on a consulting basis, as the program's Public Affairs Counsel. Since 1978, Fogarty has been an adjunct professor of journalism at George Washington University. He has also served as President of the National Press Club and of the U.S. Senate Press Secretaries Association. As a journalist, he has reported on government and politics in the Nation's Capital and served as an editor of *The Kiplinger Letters*. He was previously Washington bureau chief of the *San Francisco Chronicle* and a reporter with the Associated Press and *Baltimore News-American*. In the U.S. Senate, he was Press Secretary and senior adviser to Senator Charles Mc Mathias, Jr. (R-MD), where he was also involved in crafting major legislation. In addition to serving as president of the Senate press secretaries' association, he was a member of the Standing Committee of Correspondents of the U.S. Congress. In the Executive Office of the President, he was a senior assistant to the chairman of the Council on Environmental Quality, responsible for public information, press relations and regulatory issues. He also served as special assistant to the Administrator of the U.S. Environmental Protection Agency where he managed public and congressional relations.

# CHIRP SONAR REVEALS HUDSON RIVER CHANNELS ON THE NEW JERSEY INNER SHELF

contributed by Laurie Duncan, John Goff, and Neal Driscoll

Marine sediment sampling without adequate core siting relegates stratigraphers to the circumstance of the blind men and the elephant. Sophisticated samples require the context of equally sophisticated, high-resolution geophysical images. The learned men in the parable each examined the elephant, and proceeded to argue amongst themselves that the beast was a wall, a tree, a spear, a snake or a rope. They were unable to identify the elephant's side, legs, tusks, trunk or tail without seeing the whole animal. In the end, "…each was partly in the right, and all were in the wrong!" New chirp sonar data from the New Jersey margin (Figure 1), collected in June 1999 aboard the *R/V Onrust*, provide a stratigraphic framework for inner shelf cores at an appropriate level of seismic resolution.

The main objective of our ~400 line-km survey was to characterize three inner shelf sites along the "Mid-Atlantic Transect" (MAT) (Figure 1) for placement of jack-up rigs. The chirp data overlap a high-resolution multichannel seismic reflection survey (Mountain et al., 1999), a Simrad EM1000 swath sonar map

*It was six men of Indostan*
*To learning much inclined,*
*Who went to see the Elephant*
*(Though all of them were blind),*
*That each by observation*
*Might satisfy his mind…*
*—John Godfrey Saxe*

(Goff et al., 1999), and ~300 sediment grab sample sites (Goff et al., 2000) near the proposed drill sites. Additional chirp profiles collected on the middle shelf, in water depths greater than ~45 m, duplicate tie lines within a 2D/3D Huntec boomer survey (Davies and Austin, 1997). This overlap allows us to extend middle shelf stratigraphy (e.g., Duncan et al., in press) to the inner shelf, as well as to compare technical attributes of these two ultra-high resolution seismic systems.

Optimal core siting requires dense, "nested-frequency" geophysical data to characterize heterogeneous stratigraphy—common on sediment-starved, siliciclastic margins—and frequency-dependent seismic reflectors of varying spatial scales (e.g., Austin et. al., 1996). We are using these chirp data, in conjunction with the seafloor swath map and grab samples, to better characterize the stratigraphic record of the last eustatic sea level cycle, from ~120 ka to Present. Highlights include images of shallowly-buried incisions interpreted as channels carved during the last lowstand, and images of the mid-shelf wedge, a deposit interpreted as a delta lobe emplaced during the Holocene transgression (Figures 2 and 3). The data also provide evidence that the mid-shelf scarp is a depositional feature, and not an erosional paleoshoreline as previously interpreted. These discoveries will help us fine-tune the scientific questions we wish to answer with core samples from carefully selected sites.

The Edgetech full spectrum sub-bottom profiler proved an excellent tool for investigating this stratigraphy. It penetrated ~30 m sub-seafloor in sandy sediment and deeper in silts and clays. We were able to operate the deep-tow profiler, as well as a dual-frequency side-scan sonar, with a science party of four and a ship's crew of two, a number close to

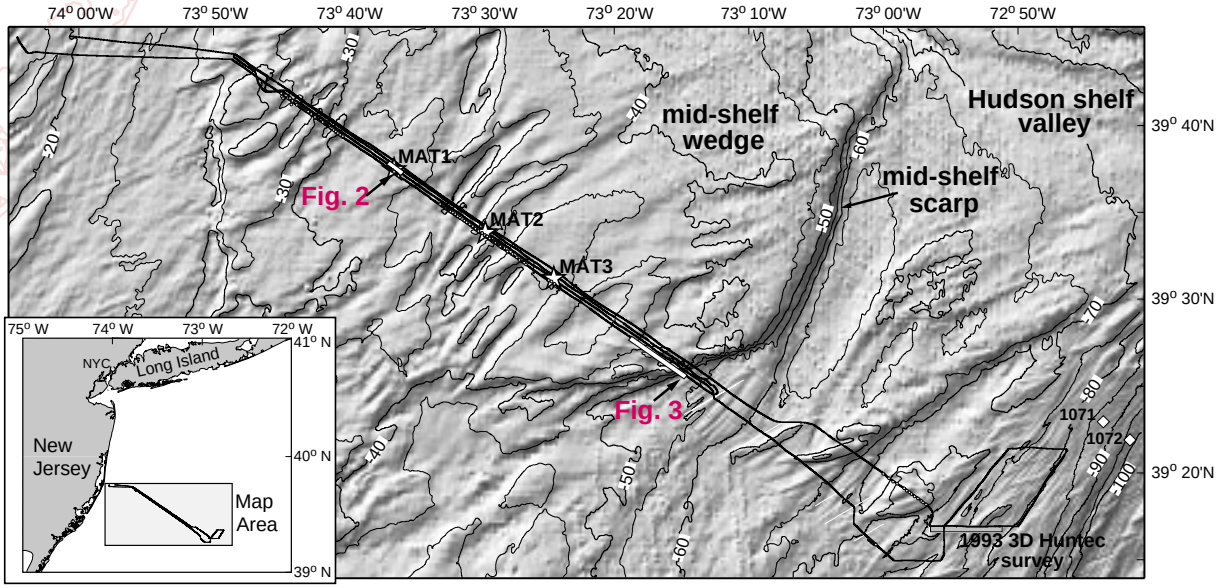


Fig. 1: Bathymetry of the New Jersey inner and middle shelf (inset shows location), artificially illuminated from the northwest. The grid is a compilation of the Simrad EM1000 multibeam survey and NGDC regional bathymetry. Contours are shown in meters. The solid black line indicates the chirp sonar track. White diamonds are ODP Leg 175A drill sites and stars are proposed MAT sample sites.

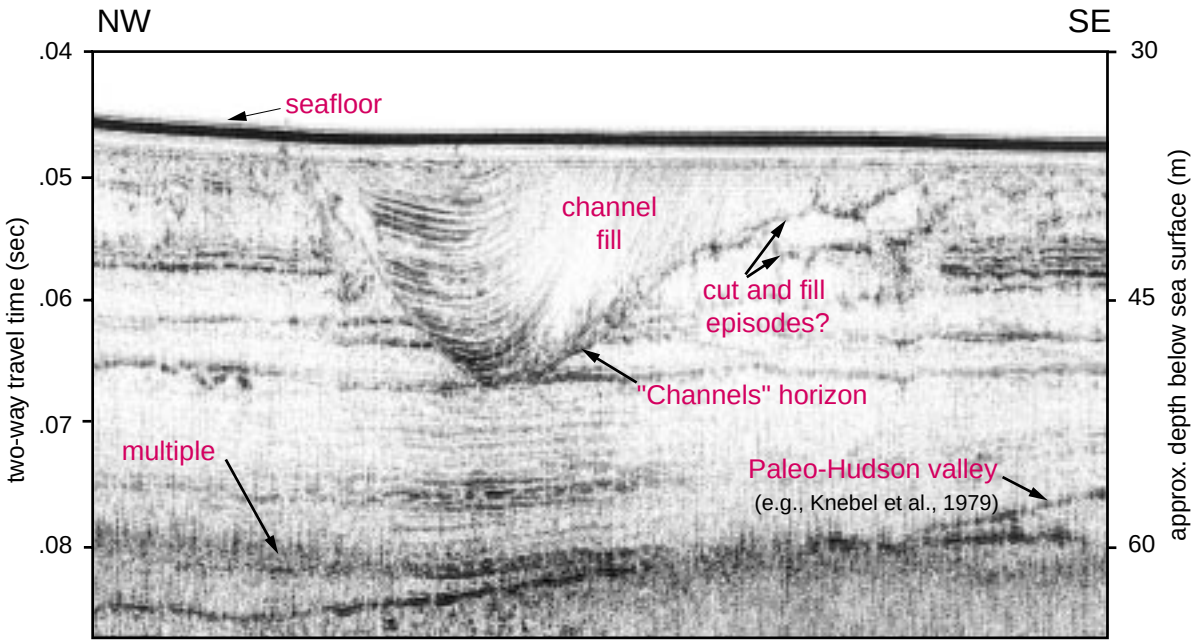


Fig. 2: Chirp sonar profile across an inner shelf channel.

the maximum passenger capacity of the *R/V Onrust*. The sub-bottom profiler sweeps across a broad frequency band (1-15 kHz) with 10 ms pulse length and has a maximum theoretical resolution of about 25 cm. We used the real-time profiler record and winch to control fish depth, generally keeping the profiler ~10-15 m off the seafloor—with the exception of one unplanned dredge sample taken from the mid-shelf scarp with the sturdy towfish…The Edgetech acquisition and processing software recorded continuously during our 2.5 day voyage, with the exception of small data gaps at file and tape changes. The standard SEGY format of the data allowed us to process these relatively unusual seismic data with our conventional seismic processing software packages and to display and interpret the records using Schlumberger's IESX seismic interpretation software (Figure 2).

The results are fantastic. Seismic resolution in the chirp profiles is somewhat better than in similar-frequency (500-3500 Hz) Huntec data, and seismic artifacts such as multiples and near-seafloor ringing are much less noticeable. Compared to 3.5 kHz records, minisparker and boomer records available on the inner NJ shelf prior to this effort, the chirp data are a vast improvement in resolution, penetration, and overall data quality. For example, Knebel et al., 1979 interpreted a Pleistocene path of the paleo-Hudson River along the trend of the channels we see in the chirp data, but their data did not resolve the channels. Using the chirp data, not only can we see the Knebel et al., 1979 paleo-Hudson valley seismic horizon, but also the channel system from the last lowstand, the beds within the channel fill, and the stratigraphic relationship between the channels and the mid-shelf wedge (Figures 2 and 3). In conjunction with high-resolution swath maps, samples, and lower frequency seismic data, the chirp data—along with deeper cores—hold the key to unraveling shallowly-buried marine stratigraphy. The more ultra-high resolution data of this type we collect, the better we will be able to identify appropriate core sites and harvest the wealth of information available in core samples.

## Authors

Laurie Duncan is a graduate student and John Goff is a Research Scientist at the University of Texas Institute for Geophysics at UT Austin. Neal Driscoll is a Associate Scientist at Woods Hole Oceanographic Institution. The authors are collaborators in the Office of Naval Research's STRATAFORM initiative. This study was funded by JOI/USSSP and ONR.

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Knebel, H.J., et al., *Geology, 7*, 254-258, 1979.

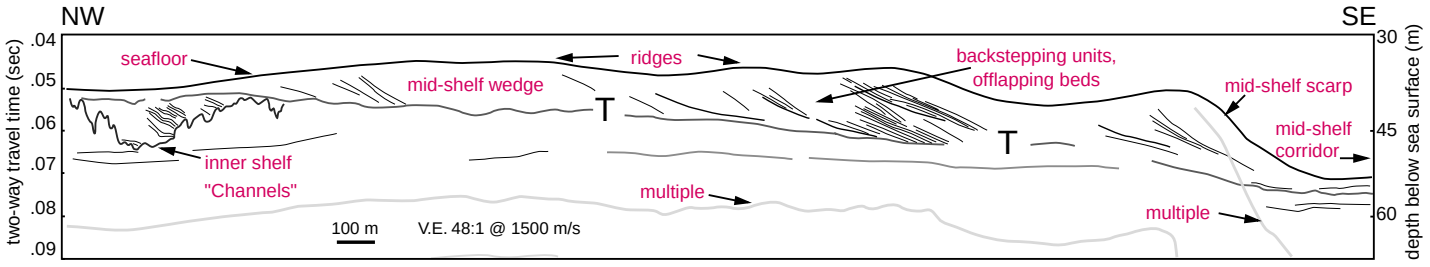


Fig. 3: Line drawing interpretation of a chirp sonar profile showing the mid-shelf wedge, the inner shelf "Channels" horizon, and the mid-shelf scarp.

# Drill Bits

## Searching for Life

Many biologists are just now learning that ODP offers a new window on the lively world visible only beneath their microscopes. To promote communications with this broader science community, an ODP booth made its debut at the annual meeting of the American Society for Microbiology (ASM) May 18-21, 2000 in Los Angeles, CA. The booth was well received and will make a return appearance at the ASM meeting next year.

## Earth Science Week 2000

The American Geological Institute's (AGI) Earth Science Week (October 8-14) provides a focal point for public education concerning how the earth sciences are part of our daily lives. JOI/USSSP—as a proud "champion" of this event—supplied 25,000 "Blast from the Past" posters and "Gateways to Glaciation" educational CD-ROMs to be included in AGI's Earth Science Week kits. Single copies of the kit are available free. Visit www.earthsciweek.org for information about the kits as well as for ideas and activities to celebrate the earth sciences every week of the year.

## From Surf to Turf

Lucky students in rural Texas schools will soon be introduced to science at sea through ship-to-shore conferences with scientists on board the *JOIDES Resolution* as part of TAMU's Ocean Drilling Distance Learning Initiative. Funded by the Texas Telecommunications Infrastructure Board (TIFB) and the Colleges of Education and Geosciences at Texas A&M University (TAMU), the program is being used by the ODP Science Operator at TAMU as a pilot project to bring ODP into the classroom. The objectives of the program include: (1) increasing the technology hardware available in rural middle school science classrooms, (2) providing professional development on technology integration into classroom instruction for middle school science teachers, and (3) providing earth science instructional materials electronically to rural middle school science classrooms. The active ship-to-shore component of the initiative will be launched during ODP Leg 194 when an earth science teacher will join the shipboard scientific party to help students learn about ocean science and the drilling program. For more information visit: http://oceandrilling.coe.tamu.edu.

## Mechikang Jenny

"Mechikang." That's "farewell" in Palauan, the language of Jenny Ramarui's islander husband, Dante. Jenny, a twelve-year veteran of the ODP program staff at JOI, set a new course this past June to become the Executive Director of The Oceanography Society, where many of you will continue to have the pleasure of working with her. Jenny, in her position as a Program Associate, was a font of JOI corporate wisdom and a goddess of cheerfulness and organization. Jenny's keen wit and level head served the entire JOI staff well in riding the tides of corporate change at JOI over the years. We wish you well, Jenny.

## Do Widzenia Tad

"Do widzenia." That's goodbye in Polish, the first language of Tad Gladczenko, who was JOI's Technical Program Associate and international bon vivant. In June, Tad left the DC area to move to California where he is working at Adamation, an IT company in the Bay area. So this time, he's only swapped cultures not continents. In one short year, Tad became an important member of the JOI team, and he is greatly missed. However, he promises to visit us at the AGU meeting this winter.

## Fish Netted for Internship

JOI/USSSP's second internship was launched this past June when Elizabeth "Betsy" Fish joined the ODP program staff in the JOI office in Washington, DC. Betsy, a native of Binghamton, NY, graduated from Franklin and Marshall College in May 2000 with a Geosciences degree. The goal of her internship project is to compile ODP's scientific, engineering, and technological accomplishments—as recorded in the scientific literature—into a database that will serve as a legacy of ODP. Betsy's project was developed to build upon the results of JOI/USSSP's first intern, Alexandra Williamson who began this work last fall.

In the next newsletter, you'll hear a lot more about Betsy's project which has been folded into a much larger endeavor, known as the "Legacy Project." The ODP information being collected by the Legacy Project will be useful for a variety of purposes, including (1) a research tool for scientists and students; (2) an assessment of ODP's accomplishments against its Long Range Plan (LRP); (3) support for the planned successor to ODP, the Integrated Ocean Drilling Program; and (4) public affairs.

## Arctic Action

The JOIDES community was frozen in its tracks at the August SCICOM meeting when—following a closed ballot—the drilling proposal "Paleoceanographic and tectonic evolution of the Central Arctic Ocean" surged to a number one ranking among the proposal contenders. The snag is that the *JOIDES Resolution* is not capable of drilling the proposed sites at the Lomonosov Ridge which is literally in Santa Claus's front yard. As you may know, the *1996 ODP Long Range Plan* was developed with a broad scope to accommodate the multiplatform drilling required by this Arctic proposal. However, the budget and logistical issues of the program present an Iditarod of challenges. So, stock up on long underwear and stay tuned!

## Last Call

This is it folks, your chance to comment on the conceptual design of the U.S.-sponsored, second vessel for the IODP will be over at the end of the year. IPSC's response to the "The Non-Riser Drilling Vessel for the Integrated

Ocean Drilling Program: A Report from the Conceptual Design Committee (CDC)" is due to NSF in January 2001. Remember, this is the report that defines the performance specifications of a non-riser vessel for the next program. The CDC report and a questionnaire designed to help you evaluate it are currently available as PDF files on the JOI/USSSP web site (www.joi-odp.org/usssp). This is your opportunity to critique the report and pass your comments along to the ultimate decision makers. Just think, once you respond you'll be able to say you helped to build a ship and chart the course of the future program.

## Kerguelen in the Limelight

The findings of ODP Leg 183 transformed the Kerguelen Plateau from just another large igneous province (LIP) into a "lost continent." Alexandra Witze of *The Dallas Morning News* translated the excitement of this discovery for the public in her award-winning article "Paradise Submerged." Using the Leg 183 Co-chiefs—Mike Coffin and Fred Frey—and the ODP/TAMU staff as resources for her story, Witze entertained her readers while educating them about the wonders of voluminous mafic magmatism. Witze has been making waves as a science journalist for several years, however, her engaging account of Kerguelen as a lost Atlantis of the Indian Ocean is the piece that won her this year's prestigious Walter Sullivan Award for Excellence in Science Journalism. With this award, the American Geophysical Union recognizes a single article or a radio/television report that makes geophysical material accessible and interesting to the general public.

## IODP: Hot Off the Press

Since late November 1999, the IWG Support Office has provided administrative support to the International Working Group (IWG) and its designates in their efforts to build a new post-2003 drilling program, the Integrated Ocean Drilling Program (IODP).

To publicize the budding program, the Support Office recently released a new IODP brochure highlighting the planning process for post-2003 ocean drilling. This brochure, published in Japanese, English, French, and German, is now available from iwgso@brook.edu. Check out the IODP web site, www.iodp.org for additional information about upcoming IODP activities!

## IWG Meeting Scheduled

The International Working Group (IWG) for the Integrated Ocean Drilling Program (IODP) will next meet January 16-17, 2001, in the UK. For details, contact the IWG Support Office: iwgso@brook.edu. The draft meeting agenda will be posted on the IODP web site (www.iodp.org) in December 2000.

## JOI/USSAC Distinguished Lecturer Series 2000-2001 Institutions

**Timothy Bralower, UNC, CH**
*"It was the Best of Times, It was the Worst of Times": Biotic Consequences of the Late Paleocene Thermal Maximum*
Boston College
Florida International University
Western Washington University
Brigham Young University
Elizabeth City State University

**Eugene Domack, Hamilton College**
*Late Quaternary Sedimentation in Antarctica's Palmer Deep*
Northern Illinois University
Rice University
University of Alaska
Northwest Missouri State University
Scripps Institution of Oceanography

**Martin Fisk, Oregon State Univ.**
*Microbes Beneath the Ocean Floor and the Possibility of Extraterrestrial Life*
Iowa State University
Five Colleges Coastal & Marine Sci Prog
Muskingum College
Louisiana State University
Vassar College

**Garry Karner, LDEO**
*The Paradox of Low-Angle Crustal Faulting and Rupturing of Continents*
Michigan State University
New Mexico Tech
University of North Dakota
State University of New York
St. Louis University

**Delia Oppo, WHOI**
*Millennial Scale Climate Variability in the North Atlantic*
University of South Florida
Central Connecticut University
Middlebury College
University of Pennsylvania

**John Tarduno, Univ. of Rochester**
*Motion of the Hawaiian Hotspot During Formation of the Emperor Seamounts*
Franklin and Marshall College
University of Akron
University of Wisconsin, River Falls
University of Alaska
Idaho State University
University of Rhode Island

# ANNOUN

## JOI/USSSP Supported Shipboard Participants

**Leg 190: Nankai**
U.S. Co-Chief: Greg Moore, Univ Hawaii
ODP Staff Scientist: Adam Klaus, TAMU
Keir Becker, RSMAS
Luann Becker, Univ Hawaii
P. Allison Dean, West Wash Univ
Miriam Kastner, Scripps
Julia Morgan, Rice Univ
Demian Saffer, UC, Santa Cruz
Elizabeth Screaton, Univ Florida
David Smith, Univ Rhode Island
Arthur Spivack, UNC, Wilmington
Joan Steurer, U Missouri, Columbia
Harold Tobin, NM Inst Mining & Tech
Michael Underwood, U Missouri, Columbia

**Leg 191: W Pacific Ion/HD Engineering**
U.S. Co-Chief: William Sager, TAMU
ODP Staff Scientist: Carlota Escutia, TAMU
James Arney, Florida State U
Richard Carlson, TAMU
Benjamin Horner-Johnson, Northwestern U
Kevin Mandernack, Colorado School of Mines
Alex Meltser, LDEO
Ralph Moberly, Univ Hawaii
Ali Salimullah, consultant
Lindsay Smith, Rice Univ

**Leg 192: Ontong Java**
U.S. Co-Chief: John Mahoney, Univ Hawaii
ODP Staff Scientist: Paul Wallace, TAMU
James Bergen, UNC, Chapel Hill
Paterno Castillo, Scripps
William Chazey III, Univ Notre Dame
Millard Coffin, UTIG
Rachel Ellisor, Univ Idaho
Stuart Hall, Univ Houston
Loren Kroenke, Univ Hawaii
Ken MacLeod, Univ Missouri, Columbia
Clive Neal, Univ Notre Dame
James Ogg, Purdue Univ
Paul Sikora, Univ Utah
XiXi Zhao, UC, Santa Cruz

## Don't Get Lost!

Send Subscription Requests and Address Changes for the *JOI/USSAC Newsletter*, *JOIDES Journal*, & JOI/USSSP email listserve to JOI@BROOK.EDU

## NEWS FLASH!

JOI/USSSP welcomes

Dr. Steve Bohlen
(formerly of the USGS)

as the
New JOI President/
Executive Director of ODP

as of November 27, 2000

## COMPLEX

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American Geophysical Union
Fall Meeting
Booths 304-308, Moscone Center
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December 16-18, 2000

*for pretzels and the latest news about ODP and IODP*

## Schlanger Ocean Drilling Fellows

**Karen McClaughlin,** Stanford University
$\partial^{18}O$ of phosphate in organic matter from marine sediments: A tracer for paleoenvironmental conditions
(ODP Legs 100 and 167)
*one-year, shorebased fellowship*

**Kevin Theissen**, Stanford University
A Quaternary-Pliocene foraminifera stable isotope record for Prydz Bay, Antarctica (ODP Leg 188)
*one-year, shorebased fellowship*

**Thomas Werth**, Scripps Institution of Oceanography
Hunting the geomagnetic field (ODP Legs 138 and 162)
*one-year, shorebased fellowship*

Next fellowship deadline: November 15, 2000
For informatio: www.joi-odp.org/usssp/fellowship/fellowship.html

# CEMENTS

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ANNOUNCING AN

## ODP TOWN MEETING

AT THE
AMERICAN GEOPHYSICAL UNION (AGU)
2000 FALL MEETING

**Tentative Date: Saturday, December 16, 2000**
**5:30 pm - 7:30 pm**
**San Francisco Marriott, Golden Gate A**

Come for refreshments and a discussion of future ocean drilling.

## SCHEDULE FOR ODP LEGS 192-205

For more information: http://www.oceandrilling.org/Cruises/Cruises.html

| LEG | REGION | CO-CHIEFS | DEPARTURE PORT | DEPARTURE DATE | SCIENTIFIC OBJECTIVES |
|---|---|---|---|---|---|
| 192 | Ontong Java | Mahoney<br>Fitton | Guam | 9/00 | To determine the Ontong Java Plateau's age, paleolatitude, emplacement duration, vertical tectonic history, the effects of rift-related tectonism, and the range and diversity of magmatism. |
| 193 | Manus Basin | Binns<br>Barriga | Guam | 11/00 | To understand the chemical fluxes, fluid pathways, and ore deposition of felsic volcanic-hosted polymetallic massive sulfides by probing the active PACMANUS hydrothermal system. |
| 194 | Marion Plateau | Anselmetti<br>Isern | Townsville | 1/01 | To establish an accurate sea-level curve for the Phanerozoic to interpret continental margin sediment sequences, as well as for global stratigraphic correlation and basin analysis. |
| 195 | Mariana/<br>West Pacific ION | Shinohara<br>Salisbury | Guam | 3/01 | To emplace a seismic observatory to aid the study of earthquake dynamics, plate subduction processes, formation of island arcs, and their relation to mantle convection. |
| 196 | Nankai II | Becker<br>Mikada | Keelung | 5/01 | To conduct Logging-While-Drilling and to install CORK hydrologic observatories at sites drilled during Legs 131 and 190. Leg 196 is the second part of a two-leg Nankai Trough proposal. |
| 197 | Hotspots | Tarduno<br>Duncan | Yokohama | 7/01 | To penetrate basement (150-250 m) to obtain samples for paleomagnetic tests to determine the motion of the Hawaiian hotspot during the formation of the Emperor Seamounts. |
| 198 | Shatsky | Bralower<br>TBN | Yokohama | 8/01 | To explore extreme warmth and climatic transitions, both long-term and abrupt, in the Cretaceous and Paleogene by drilling a depth transect on Shatsky Rise, Central Pacific. |
| 199 | Paleogene | Lyle<br>Wilson | Honolulu | 10/01 | To extend high-quality paleoceanographic records, using APC/XCB coring, back to the Eocene to study the "hot house world" (hydrothermal activity, equatorial circulation, productivity, etc.). |
| 200 | $H_2O$ | Stephen<br>Kasahara | Honolulu | 12/01 | To create a long-term observatory to 1) study the fast-spreading Pacific crust, 2) serve as a high-priority link in the Ocean Seismic Network, 3) monitor geophysical and geochemical experiments in the crust. |
| 201 | Peru | D'Hondt<br>TBN | Panama City | 2/02 | To test whether or not different sedimentary geochemical regimes are characterized by different subsurface microbial communities—or merely by different degrees and kinds of community activity. |
| 202 | SE Paleoceanog. | Mix<br>Tiedemann | Valparaiso | 4/02 | To study Neogene and older sediments in latitudinal/depth transects of SE Pacific topographic rises to assess history of boundary currents and millennial-scale climate variability. |
| 203 | Costa Rica | TBN | Panama City | 6/02 | To test existing models and to develop an understanding of the processes associated with the seismogenic zone and with the workings of the subduction factory. |
| 204 | Gas Hydrates | Trehu<br>Bohrmann | San Francisco | 8/02 | To investigate the formation and physical properties of gas hydrates, as well as to calibrate their volume estimates, evaluate their role in slope stability, and identify paleo-proxies for methane release. |
| 205 | Eq. Pacific ION | TBN | San Francisco | 10/02 | To emplace a seismic observatory in the western equatorial Pacific, at a high-priority site for the International Ocean Network (ION) and the Ocean Seismic Network (OSN). |

# GEOFLUIDS OF PASSIVE MARGINS: AT THE INTERFACE OF THE PRACTICAL AND THE FUNDAMENTAL

contributed by Peter Flemings, Alan Huffman, Robert Bruce, Jean Benoit, and Paul Mayne

On March 3, 2000, representatives of the petroleum, geotechnical, and scientific ocean drilling communities met in Houston, Texas to participate in a workshop, co-sponsored by USSSP and Conoco, titled "GeoFluids of Overpressured Strata in the Gulf of Mexico." We set ourselves an ambitious goal of developing a "grand unified theory" to describe the hydrodynamics of continental slopes. To achieve this, we proposed that observational and theoretical work within the geological, hydrogeological, and the geotechnical communities be coupled with new observations from the deepwater continental slope to clarify the state and interactions of pressure, stress, sedimentation, and deformation in the upper 1000 m of the seafloor. Such a coupling will allow prediction of both hydrodynamic behavior and *in situ* conditions in continental slope sediments. These advances will increase our understanding of slope stability, fluid-flow in faults, margin-ocean fluxes, seep communities, and basinal fluid flow, and will allow the petroleum industry to optimize deepwater exploration and production. Finally, the proposed experiments will require drilling with both riser and riserless vessels within the post-2003 Integrated Ocean Drilling Program (IODP).

The workshop brought together 32 representatives of the petroleum industry, 3 geotechnical specialists, 8 ODP-affiliated academic scientists, and 2 ODP-TAMU representatives. The morning spent defining common technical problems and bridging disciplinary language divides. Industry representatives described their experiences drilling overpressured units in the shallow subsurface. Geotechnical specialists described the array of available geotechnical measurements. ODP veterans described the capability of the drillship *JOIDES Resolution*, and the successes and failures of previous hydro-geological experiments. In the afternoon, two major tasks were accomplished. First, technical questions of greatest common interest were ranked as a group. Second, three subgroups were formed to address: a) what do we want to measure? b) where do we want to measure it? and c) how will industry and ODP collaborate to achieve these measurements?

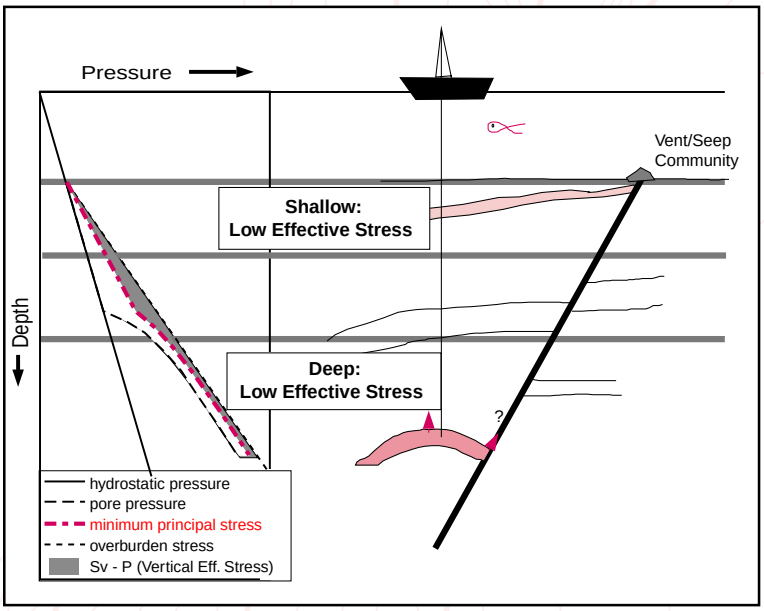



Fig. 1: The upper 1000 m of the sea floor on the continental slope of the Gulf of Mexico is a zone of fluid expulsion, biological communities, faulting, and slumping. Scientific drilling within the shallow, low effective stress zone will sample rocks that are in a stress state similar to deeper overpressured systems.

## THE SCIENCE

In certain regions of the continental slope, the uppermost 1000 m is considered a "low effective stress zone," which means that only a small difference exists between pore pressure and confining stress (Figure 1). In this regime, scientists can observe and study the coexistence of overpressure, slope failure, fluid migration, and biological vent communities. Our goal is to better understand where sediments are overpressured, what their rheology is, what their permeability is, how permeability couples with stress, and how overpressure and seeps are coupled. By understanding how overpressure controls fluid expulsion and debris flows, scientists may be more inclined to risk the probability that these geohazards will occur. The analyses proposed at the workshop will yield insight into other low effective stress zones such as accretionary prisms (fluid flow in faults) and deep overpressured basins (basinal fluid flow).

Industry will benefit from a better understanding of this hydrodynamic system. Greater knowledge will: 1) improve our understanding of hydrocarbon migration, hydrocarbon trapping, and rock rheology in deeper low effective stress zones; 2) strengthen our ability to design wells so we can safely and economically reach hydrocarbon targets; and 3) lower the cost of developing deepwater deposits, where single structures can cost billions of dollars.

"Shallow-water flow" is a particularly vexing drilling problem that occurs when overpressured and unconsolidated sands are encountered in the first 1000 m below the sea floor (Ostermeier et al., 2000). In this zone, it is difficult to control the fluid pressure in the well bore, so that it lies between the formation's pore pressure and the fluid pressure that fractures the rock. Drilling these overpressured sands without proper pressure balance can

result in uncontrolled flows, formation compaction, and structural well damage. The "shallow-water flow" problem has cost the petroleum industry hundreds of millions of dollars. Although less well known, the ODP has experienced poor core recovery, low penetration, and drilling problems that may have resulted from shallow-water flow, such as at Sites 948, 1071 and 1072.

## Where and What to Measure

Workshop participants selected five criteria and/or phenomena to examine with scientific drilling: 1) fluid expulsion features; 2) slump features and slope failures; 3) known zones of shallow water flow; 4) locations with different deposition rates; and 5) sites that are worldwide analogs for these phenomena. Five Gulf of Mexico locations were identified that met some or all of these criteria (Figure 2).

To fully understand the hydrodynamic behavior of these systems, a range of traditional (e.g., whole core, wireline logs, logging-while-drilling) and less traditional (e.g., pore pressure, stress, permeability) measurements are necessary. Industry and academic presentations described application of the piezocone, the piezoprobe, the cone-pressuremeter, and the wireline packer. Together, these tools yield a range of geotechnical measurements including state of stress, strength, stiffness, and permeability. Workshop participants concluded that although the *JOIDES Resolution* had limited geotechnical measurement capability, there was extraordinary opportunity to use existing technology to make shipboard geotechnical measurements.

## Industry/Academia Partnership

Workshop attendees concluded that a joint industry-ODP leg in hydrodynamics of the continental slope should be aggressively pursued because it would impact an important fundamental and applied science problem.

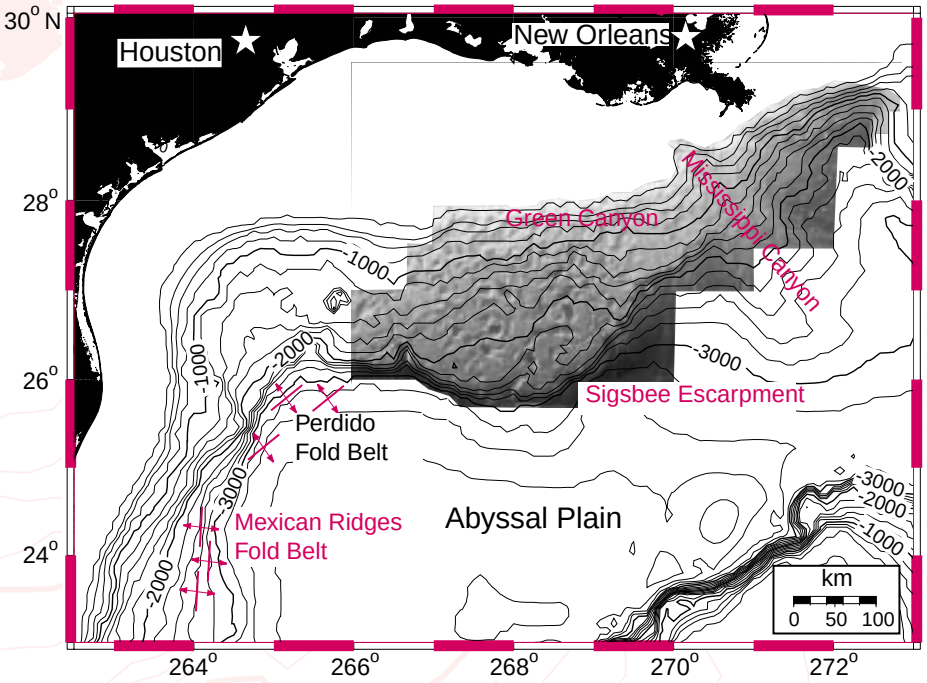



Fig. 2: The workshop identified five high-priority sites in the Gulf of Mexico for scientific drilling. These are: 1) the Mississippi Fan, where sediments are young and are deposited rapidly; 2) the Mississippi Canyon slope, a region where shallow water flows occur; 3) the Sigsbee Escarpment , which records the interaction of salt deformation, slumping, turbidite deposition and fluid flow; 4) the Mexican Ridge Fold Belt, which has experienced low and variable sedimentation rates; and 5) the Green Canyon Region, marked by moderate sedimentation rates and where higher near-sea floor structural relief are present.

The following list describes some areas of further collaboration that were identified at the March workshop.

1) Discuss the possibility of developing and applying geotechnical tools and PWD (pressure-while-drilling) on the *JOIDES Resolution.* Where contractor tools exist, consider pursue lease arrangements.
2) Work with industry to release pre-drill site data (e.g., seismic, drilling, previous geotechnical measurements). Bring to bear industry drilling experience in deepwater.
3) Integrate the research efforts of industry and academia. Pursue possibility of limited shipboard stays for industry scientists.

## Results and Path Forward

Three major results from this workshop are complete or are in progress. First, an ocean drilling proposal was submitted to the JOIDES advisory structure (http://www.joides.geomar.de/cgi-bin/abstracts.cgi?number=589-Full). Second, workshop participants are preparing a detailed report that outlines the scientific vision, the current capabilities, and the desired capabilities for the scientific drilling in the hydrodynamics of the continental slope. Third, workshop participants are working with ODP engineers and scientists to evaluate the possibility of using industry geotechnical tools on the *JOIDES Resolution.* Workshop results are available at: http://hydro.geosc.psu.edu/Odp/odp.html.

## Reference

Ostermeier, R.M., Pelletier, J.H., Winker, C.D., Nicholson, J.W., Rambow, F.H., and Cowan, K.M., Dealing with Shallow-Water Flow in the Deepwater Gulf of Mexico. Offshore Technology Conference Paper #11972. 2000 Offshore Technology Conference, May 1-4, 2000.

## Authors

Peter Flemings is an Associate Professor in the Department of Geosciences at The Pennsylvania State University. Alan Huffman is the Manager of the Seismic Imaging Technology Center of Conoco. Bob Bruce is a Geophysical Advisor for BHP Petroleum. Jean Benoit is a Professor in the Department of Civil Engineering at the University of New Hampshire. Paul Mayne is a Professor in the School of Civil & Environmental Engineering at the Georgia Institute of Technology.

# ERICKA'S EXCELLENT ADVENTURE

contributed by Ericka Olsen

My jaw dropped to the dock as I stood staring at the *JOIDES Resolution*. The Japanese taxi driver seemed as overwhelmed as I was by sight of the imposing drillship. I tried to thank him in his language and then confused him by giving him a tip. The vessel seemed deserted. I made my way to the gangplank and continued to stare. Electrician Bob leaned over the rail and, though he laughed at my wonder, he offered assistance. I found my bunk and discovered that most of the crew was meeting in Yokohama at that moment, so I spent the next few hours exploring, lost in the hull of the great vessel.

Within days, I could navigate through the ship's hotel and research laboratory stack. I met most of the people I was to be stuck with at sea for the rest of the summer and began learning. The primary purpose of the expedition to the Japan Trench was to establish long-term borehole geophysical observatories in the western Pacific to provide information about subduction zone earthquakes and the mechanics of the subduction process. Dr. Gary Acton, the Staff Scientist for Leg 186, had agreed to take me on as his assistant in the magnetics lab during the cruise. While the *JOIDES Resolution* cut through the blue seas on her way to the first site, he introduced me to the cryogenic magnetometer (Figure 1), an instrument I soon came to know well.

*Applications and information about the ODP Undergraduate Student Trainee Program are available at www-odp.tamu.edu/sciops/trainee_info.html. There are trainee openings on ODP legs 195, 196, 197 and 200.*

As the first ODP Undergraduate Student Trainee in a new program, my duties were half-technical and half-scientific. I assisted the shipboard technicians in core retrieval, sampling, and processing while also working as a Paleomagnetist in the lab. As I learned the intricacies of paleomagnetic sediment sampling, experimentation, and analysis, I also wrote "A Paleointensity Chronology Spanning the Past 200 kyr as Determined from Sediments of the Japan Trench" for my senior honors thesis at the University of Pennsylvania. Under the apprenticeship of Gary Acton, I performed several experiments on long core and discrete sediment samples in order to obtain an accurate paleointensity chronology. The paleointensity of the sediments from Hole 1150A were compared to a global paleointensity record compilation (Fig. 2). The strong correlation made it possible to utilize the chronology in age control of paleoclimate proxies and volcanic activity. In my opinion, the project was a great success. I will continue paleomagnetic research in graduate school in the near future.

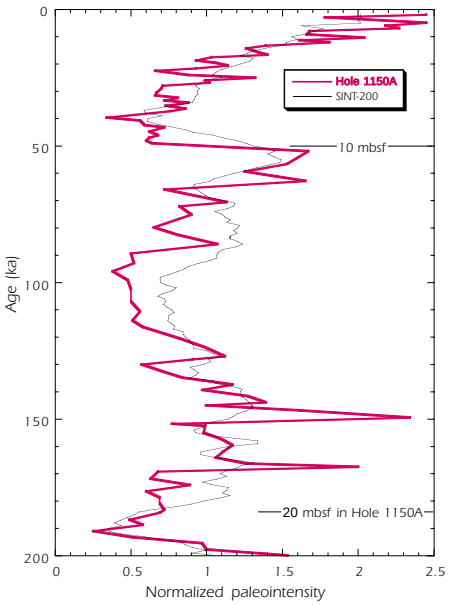
By the end of the leg, the once huge vessel had become much smaller and cookie breaks had become a bit longer. The voyage was an amazing educational and personal experience for me. I am grateful for the chance to have participated in the trainee program. It is an excellent way to learn first hand how scientific exploration is executed. Thanks to all who made it possible.

Since graduation I have been working as a hydrographic technician at David Evans and Associates, Inc., a firm in Portland, Oregon. Among other things, we use multibeam and singlebeam sonar acquisition systems to create precise marine topographic charts.


Fig. 1: ODP Undergraduate Student Trainee, Ericka Olsen, bonds with the cryogenic magnetometer on board the *JOIDES Resolution*.

*"In her main function as a paleomagnetist, Ericka completed more measurements than any of the other paleomagnetists, and perhaps more than the rest of us put together."*
*—Gary Acton, Staff Scientist, Leg 186*

**Fig. 2: Paleointensity Chronology**



# Interesting Times… Institutions, Individuals, and Change

The Ocean Drilling Program (ODP) shines as an example of successful, international science—exemplary in its grassroots-based structure. ODP's overarching themes, its scientific goals, and their implementation all rely on an international advisory structure, with U.S. funding and U.S. scientists playing leading roles. The U.S. science community's interests in scientific ocean drilling are also represented by the United States Science Advisory Committee (USSAC), advising JOI in the operation of the United States Science Support Program (USSSP). Among other activities, USSSP pays the salaries of U.S. shipboard scientists and funds initial post-cruise research. Midway through my two-year term as chair of USSAC, I want to reflect on the interesting transition we now approach.

This is a critical time for the vitality and future of scientific ocean drilling, with major hurdles ahead. Drilling operations of the ODP will end no later than September, 2003. The U.S. and Japan are leading planning efforts for a new Integrated Ocean Drilling Program (IODP), a multi-platform program for scientific ocean drilling, to begin October 1, 2003. The U.S. and international scientific communities have clearly demonstrated our scientific need for ocean drilling to address fundamental questions in the Earth and ocean sciences. Consequently, we have enthusiastically supported and participated in planning efforts for a new program, including the *CONference on Cooperative Ocean Riser Drilling* (CONCORD) and the *Conference On Multiple PLatform EXploration of the Ocean* (COMPLEX). This fall, the COMPLEX report will be widely distributed as a *JOIDES Journal* special issue.

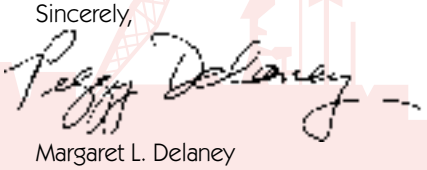
The international community is planning the IODP, primarily through the activities of the IODP Planning Sub-Committee (IPSC), chaired by Prof. Ted Moore of the University of Michigan (for information: www.iodp.org/ipsc, ipsc@umich.edu or tel: 734-615-3055). What role can you play? There are many opportunities during the IPSC planning process for input into and reviews of its products. For example, to solicit international advice and comment, IPSC will widely distribute the report from the Conceptual Design Committee (CDC) for the Non-Riser Vessel for IODP (a subcommittee formed by USSAC in response to a charge from NSF). The report and a questionnaire to focus your response are available (www.joi-odp.org/USSSP). IPSC's response to NSF is due in January 2001. The *IODP Initial Science Plan, 2003-2013* is currently being revised by IODP, and now is the time for your input. You can review recent versions of the document on the IPSC web site. The International Working Group will evaluate the mature version of this document in October 2000. Broad input is crucial, including your views as individual scientists and as members of your various scientific communities.

What role do I see for USSAC? We focus U.S. input into the planning process, and we serve as a conduit of your views to our funding agencies. We welcome the opportunity to hear from you about your concerns. See the last page of this newsletter for contact information. As I mentioned in my last column, our primary task is preparing a U.S.-focused document to complement the *IODP Initial Science Plan*. This document—*Understanding Our Planet through Ocean Drilling: A Proposal for U.S. Participation in the Integrated Ocean Drilling Program*—will be used by NSF in pursuing support for IODP. We expect to have a substantive progress report on this document at a USSSP-sponsored Town Hall Meeting at the December AGU Meeting.

I had promised to share my thoughts with you about recent and ongoing changes at JOI. First and foremost, I want to acknowledge and honor Dr. Kate Moran's contributions as the ODP Program Director at JOI. Although her tenure at JOI was relatively brief (beginning in June 1998 and ending in February 2000), her contributions in this role were highly regarded by many members of the JOIDES scientific community. We were struck by her vision for ODP, and by her energy, enthusiasm, and dedication in implementing that vision. She brought deep knowledge of the science we do and want to do, and integrated that knowledge with extensive technical and engineering expertise in how best to achieve that science. Kate increased ties between the scientific drilling community and our industry colleagues, with whom we share many interests and goals. Kate was instrumental in moving forward ODP's microbiology program. She provided effective outreach publicizing the broad contributions of ODP, including developing the *ODP Seminar Series on Capitol Hill* and originating a special session on climate change and ODP at the AAAS Meeting in February 2000. Although no longer at JOI, Kate is very much a valued and respected member of the JOIDES community. I expect to see her talents and drive continue to serve us all as we move toward the future drilling program.

What of the changes at JOI? I think the new Management Oversight Committee (see the previous issue of this newsletter) has increased communication between the community and the JOI Board of Governors. Time will tell about the longer-term efficacy of this structure. In my opinion, the most critical step for the continued health and vitality of JOI, and of scientific ocean drilling managed by JOI, is the current recruitment of a new JOI President/Executive Director of ODP. I look forward to the outcome of this process, hoping a dynamic, visionary, and committed individual assumes these tasks.

Sincerely,



Margaret L. Delaney
Chair, USSAC

# Principals Develop Principles

contributed by J. Paul Dauphin, Associate Program Director, NSF/ODP

Reporting progress is always a pleasure, and this summer witnessed significant progress in the development of the policies and principles that will guide the Integrated Ocean Drilling Program (IODP), the future scientific drilling program post-2003. The Science and Technology Agency of Japan (STA) and the U.S. National Science Foundation (NSF) have agreed on a set of principles, which define their relationship with respect to IODP, their joint interaction with future international partners, and the operation of future scientific drilling assets. This important step paves the way for a program that makes it possible for the providers of the two major physical assets, the 'riser capable' and the 'non-riser' drilling platforms, to properly manage their legal and financial responsibilities. More significantly, it allows IODP's most important asset—the global intellectual capital of all its members—to govern the scientific activities of the future program. This will be executed through a centrally-managed structure implementing the best science possible, as recommended by a single science advisory structure.

The wide-ranging principles developed by STA and NSF, and agreed to this past August are contained in a set of four documents: IODP Program Principles, IODP Platform Principles, IODP Membership Principles, and IODP Implementation Principles. These documents form the foundation of the new program, and the principles are the basis for a formal understanding between STA and NSF. The Program Principles state that, first and foremost, IODP is a scientific research program, which is based on international cooperation. Also, it is to be guided by a science advisory structure composed of scientists and engineers representing IODP members, and the results of the Program's scientific and engineering activities will be openly available.

The Platform Principles state that two vessels will be at the core of IODP's capability: a riser capable platform made available by STA, owned and operated by the Japanese Marine Science and Technology Center (JAMSTEC), and the non-riser platform, supplied by NSF. Legal and financial responsibility—including mobilization, and operation costs—for the riser capable vessel will reside with Japan and for the non-riser vessel with the U.S.

The Platform Principles recognize that access, on an occasional basis, to additional drilling capabilities (beyond the two primary vessels) may be required to meet specific objectives of the science advisory structure. As with the two primary platforms, legal and financial responsibility, including mobilization and platform operation costs of additional drilling platforms is to reside with the organization, which decides to offer this additional capability to the Program. Provision of such a capability will not be considered a contribution *in lieu* of annual IODP membership contribution. Science operation costs for additional drilling capabilities will, however, be eligible for support from IODP program funds.

The Membership Principles, in addition to defining eligibility, spell out membership rights and responsibilities. IODP membership is to be open to national or government agencies (or their representatives) which have an interest and/or capability in geosciences research, and signing of a memorandum of understanding with STA and NSF, based on a ten-year commitment to participate. The financial contribution required for one participation unit has yet to be determined, however, financial contributions from international partners will be commingled to support science operation costs. It is understood that STA and NSF will contribute equally to total program cost and acquire additional units necessary to fully support the program.

STA and NSF agreed to the principles outlined above and then presented them to the International Working Group (IWG) to consider and discuss at their fifth meeting, August 2000 in Tokyo, Japan.

IODP officially begins October 1, 2003, at which time membership and implementing agreements will go into effect. The IWG has agreed that an Interim Science Advisory Structure (ISAS) be organized to operate from June 2001 until October 1, 2003. ISAS will be a joint working group representing JOIDES and the Japanese OD21 Science Advisory Committee (OD21-SAC) with an Interim Planning Committee (IPC) serving as its highest-level committee and management authority. IPC will be co-chaired by the present chairs of IPSC and the OD21-SAC. IPC will encourage the international community to submit drilling proposals for IODP. These will be reviewed by ISAS, however, final evaluation, ranking, and scheduling will be conducted by the formal IODP Science Advisory Committee, which will be established on October 1, 2003. The ISAS committees are expected to meet in conjunction with their equivalent JOIDES committees.

On another note, the riser vessel is under construction and the final piece of the budget for its completion, as announced by JAMSTEC, should be in place by 2001. So, as you can see, a lot has been accomplished over the summer, but there is much more to do.

## NSF/ODP

Meanwhile, NSF continues to seek the funds and authorization to implement the new drilling program. In December, the Geosciences Directorate will inform NSF's governing body, the National Science Board (NSB), of progress to date. In spring 2001, NSF will formally review the finalized science plan produced by IPSC and will seek preliminary program approval from the NSB by fall of 2001.

In preparation for NSF's formal review of the internationally-prepared IPSC science plan,

*continued on page 16*

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NSF has asked USSAC to prepare a companion document reflecting how well the plan meets the U.S. scientific community's requirements for a future scientific ocean drilling program as reflected in numerous U.S.-sponsored workshops and science planning activities.

USSAC is also engaged in a continuing effort, at NSF's request, to examine and recommend to NSF optimal models for the support of U.S. scientists in the future IODP.

The review of field projects proposed to NSF for calendar 2001 is now complete. This will be the last year in which data collection will significantly impact the JOIDES review of drilling proposals for the remainder of the ODP. For 2001, NSF/ODP has tentatively committed to support:

1. An MCS and OBS study of rifting processes in the Gulf of Aden directed by Neil Driscoll (WHOI), John Diebold (LDEO) and Brian Taylor (Hawaii).
2. An MCS study of megamullions on the Mid Atlantic Ridge by Brian Tucholke (WHOI).
3. A heat flow study of the eastern Cocos plate directed by Andy Fisher (UCSC).
4. A study of the geochemistry and structure of serpentinite diapers in the Marianas forearc directed by Patty Fryer (Hawaii).
5. A seismic study of gas hydrates on the Oregon margin by Ingo Pecher (U. Texas)
6. Construction and installation of instrumentation in the corks to be deployed at Nankai directed by Keir Becker (RSMAS).

Additional proposals are being evaluated in light of budget constraints and review comments. Beyond 2001, NSF funding will focus on research and data acquisition required for preparation of drilling proposals in IODP.

Unfortunately— although the process is almost complete—I have no news to report about the Division of Ocean Sciences (OCE) search to replace Dr. Michael Reeve as Head of Ocean Sciences Research Section. As reported previously, Mike is now Head of the Centers and Facilities Section.

Another personnel item of great importance to the Division is the announcement by Dr. Michael Purdy that he is leaving NSF in December 2000 as Director of OCE to assume the duties of Director at the Lamont-Doherty Earth Observatory. OCE will miss Mike's boundless energy and total devotion to the health and welfare of the Ocean Sciences. NSF is in the process of seeking a suitable replacement for Mike.