JOI/USSAC
NEWSLETTER

News from the Joint Oceanographic Institutions/U.S. Science Support Program associated with the Ocean Drilling Program • Spring 2000 • Vol. 13, No. 1

SEEING DOUBLE: IPSC PLANS THE FUTURE OF SCIENTIFIC OCEAN DRILLING

contributed by James A. Austin, Jr.

Multiple drilling platforms are envisioned for the Integrated Ocean Drilling Program (IODP), which is on deck to succeed the Ocean Drilling Program (ODP) in October 2003. Plans to make this multi-platform international scientific drilling program a reality are being developed by the IODP Planning SubCommittee (IPSC, pronounced "ip-sic"). In early 1999, the Joint Oceanographic Institutions for Deep Earth Sampling (JOIDES) advisory structure created IPSC and charged it with conceptualizing all aspects of IODP. IPSC presents periodic reports to the JOIDES Executive Committee (EXCOM) and Science Committee (SCICOM), as well as to the International Working Group (IWG) for IODP. IPSC also interacts with the U.S. Science Advisory Committee (USSAC) and the Japanese government initiative known as "Ocean Drilling in the 21st Century" (OD21), which is spearheaded by the Japan Marine Science and Technology Center (JAMSTEC). As you may recall from earlier newsletter updates, JAMSTEC is building a riser-equipped drillship that will be the centerpiece of the Japanese contribution to IODP.

I'm writing this article from my perspective as an IPSC member. I serve on the committee with Ted Moore (U. Michigan), its Chair and the second U.S. member. Other members are: Jimmy Kinoshita (JAMSTEC, Japan), Ako Taira (Ocean Research Institute, Univ. Tokyo, Japan), Hans-Christian Larsen (Danish Lithosphere Center, Denmark), Jörn Thiede (Alfred Wegener Institute, Germany), and Dieter Eickelberg (retired drilling superintendent, Germany). To date, IPSC has met five times: Tokyo (April 1999), Vancouver (May 1999), Copenhagen (October 1999), San Francisco (December 1999), and Washington (February 2000). The most recent IPSC meeting was held in conjunction with a joint meeting of SCICOM and EXCOM. The next IPSC meeting will be May 12-14, in Ann Arbor, Michigan.

For additional background information on post-2003 planning activities for scientific ocean drilling, please refer to John Farrell's article, "2003, An Ocean Odyssey," in the Spring 1999 issue (Vol. 12, No. 1) of the *JOI/USSAC Newsletter*. (www.joi-odp.org/JOI/Publications.html).

IPSC'S AGENDA

IPSC's three-year charge is to develop IODP "from soup to nuts." That's a short time between courses! Within the next year to 18 months, we hope to provide a unified concept for a decadal IODP program to the IWG. As a reminder, the IWG is composed of potential sponsor organizations for the IODP and is co-chaired by senior representatives of JAMSTEC and the U.S. National Science Foundation (NSF). (See page 9 for an article about the new IWG Support Office.) IWG's purpose is to stimulate science planning for IODP; IWG will use IPSC's plans, and community-based review of those plans over the next year or so, to address technical, organizational, and financial arrangements by which it may prove feasible to implement IODP.

IPSC is working on the broadest possible front in considering a future program. How should the new program be guided by science input and advice? That is, what should replace the JOIDES advisory structure? How should the program be managed? What are the characteristics of possible successors to Joint Oceanographic Institutions (JOI)? What about developing technology? How will the most advanced drilling technologies be applied, on multiple drilling platforms, to address front-line scientific problems? How will the projects and projects/platforms be supervised? Specifically, what are the defining characteristics of possible successors to the

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present JOI subcontractors, ODP/TAMU and BRG/LDEO?

> *"Certain guiding principles of ODP should be maintained and carried into IODP"*

IPSC thinks that certain guiding principles of ODP should be maintained and carried into IODP. First and foremost, IODP must be a coherent international entity, responsive to peer-reviewed scientific proposals from a multi-national community, and IODP must be responsible to that community for its efficient long-term management and operation.

What's the science source?

The CONference on Cooperative Ocean Riser Drilling (CONCORD) in July 1997 and the COnference on Multiple PLatform EXploration of the Ocean (COMPLEX) in May 1999 provided a scientific foundation for IODP and a framework for IPSC's science planning. These conferences gave the international drilling community opportunities to define the most important scientific frontiers to be tackled with both "riserless" and "riser-based" drilling from dynamically positioned drillships. Copies of the CONCORD and COMPLEX reports are available on the respective websites (www.joi-odp.org/JOI/Publications.html, www.oceandrilling.org/COMPLEX/draft4-1.doc).

IPSC has charged an international Scientific Planning Working Group co-chaired by Mike Coffin (UTIG) and Judy McKenzie (ETH, Switzerland) with integrating reports from CONCORD and COMPLEX (and others, as necessary and appropriate) into an IODP Initial Science Plan (ISP). The working group completed an initial draft of the ISP in January. Both IPSC and an EXCOM-based external committee, composed of 12 international scientists, reviewed this draft. The working group and IPSC members just completed a revision of that draft which is posted on the IODP website at www.iodp.org/ipsc/isp_v2.2/default.htm. An implementation strategy has also been developed by an international IPSC subcommittee chaired by Taira. The second draft of the ISP has gone out to a broad international community for external mail-review. Based upon that review, a third version of the ISP will be prepared by IPSC this coming spring. IPSC plans to have the ISP revised and submitted to IWG in October 2000. A final version will be published and distributed broadly in May 2001.

What will happen to JOIDES?

IPSC members feel strongly that one of scientific ocean drilling's most enduring legacies is its scientific advisory structure. JOIDES has been very successful, for over 30 years of scientific ocean drilling.

> *"One of ocean drilling's most enduring legacies is its scientific advisory structure"*

Although IPSC is tinkering with the conceptual constitution of JOIDES, we do not plan to recommend significant changes. We hope that the advisory structure flourishes through the transition from ODP to IODP. IPSC's most important goal is to maximize science planning efficiency, while maintaining the nurturing link between IODP's science advisory groups and the research proponents, the lifeblood of any drilling program.

A primary challenge is how best to "map" the science flowing from the community to the appropriate platform. Riserless drilling within IODP may proceed much as it has within ODP—as individual "leg-type" expeditions sited across the globe with a continually changing disciplinary focus. In contrast, riser drilling is likely to concentrate for months (even years) on a particular problem in one place. For example, we know that the OD21 vessel will spend its first serious block of science time studying the "seismogenic zone" off eastern Japan.

IPSC recognizes that some important science (e.g., high-resolution climate records from corals, sea-level history from continental shelf sediments) may not be accommodated using either vessel, but will instead have to be addressed using "as needed" alternative drilling platforms of opportunity, e.g., jack-up and semi-submersible drilling rigs. IPSC plans to build enough flexibility into our vision for IODP to accommodate such "alternate platform" science on a systematic basis, as proposals to use such technology are submitted, reviewed, and "rise" in IODP. An IPSC Technology Working Group, chaired by Ted Bourgoyne (formerly of Louisiana State Univ.), has been established to advise IPSC on many of these considerations.

An important perspective on IODP may come from new interactions between the international academic community and industry. To this end, IPSC has convened an Industrial Liaison Working Group, co-chaired by John Armentrout (formerly of the Mobil Oil Corporation) and Felix Gradstein (formerly of Saga Petroleum), to chart a course towards such a systematic dialog with our industry colleagues.

Where are we now?

Our Japanese colleagues are blazing the trail in providing IODP with a riser-based drilling capability. Most of the funding for the construction of the OD21 vessel (US$500 million, give or take a few yen!) is already in hand or committed by the Ministry of Finance of the Japanese government. We should all support them in that ambitious effort! Simultaneously, USSAC's Conceptual Design Committee (CDC), chaired by Peggy Delaney (UC, Santa Cruz), is providing NSF with the details necessary to consider possible robust replacements for the *JOIDES Resolution*. (See the CDC Report article on page 8.)

> *"IPSC plans to incorporate the legacy of the* JOIDES Resolution *as a 'floating laboratory' into all dedicated IODP platforms"*

An important component of drilling platform capability is laboratory layout and functionality, both at sea and ashore. The appropriate balance of shipboard versus shore-based facilities in the IODP is still being debated. IPSC plans to incorporate the legacy of the

JOIDES Resolution as a "floating laboratory" into all dedicated IODP platforms.

IPSC is drawing heavily on the expertise of the JOIDES Scientific Measurements Panel (SCIMP) for this part of its charge. SCIMP's chair, Tom Janecek (Univ. Florida), and the rest of the committee have been invaluable in providing IPSC with details on everything from vibration tolerances of lab equipment to input on optimal core flow through lab spaces. Thanks, Tom and SCIMP!

How can you help?

IPSC is a small group working furiously to paint a picture of a new, integrated drilling effort that will be attractive enough so that IWG can garner the international funding to put IODP on-line as ODP draws to a close. Clearly, the best way to support IPSC's planning efforts is for the international community, led by the U.S., to continue to support drilling, now and into the future! I have just rotated off the JOIDES Science Steering and Evaluation Panel for the Dynamics of Earth's Environment (ESSEP), and from that viewpoint, I can say that I have never seen so many strong science proposals being submitted to JOIDES. Keep up that flow of good science! Exciting new proposals are perhaps the best way to convince funding agencies that scientific ocean drilling should continue beyond 2003.

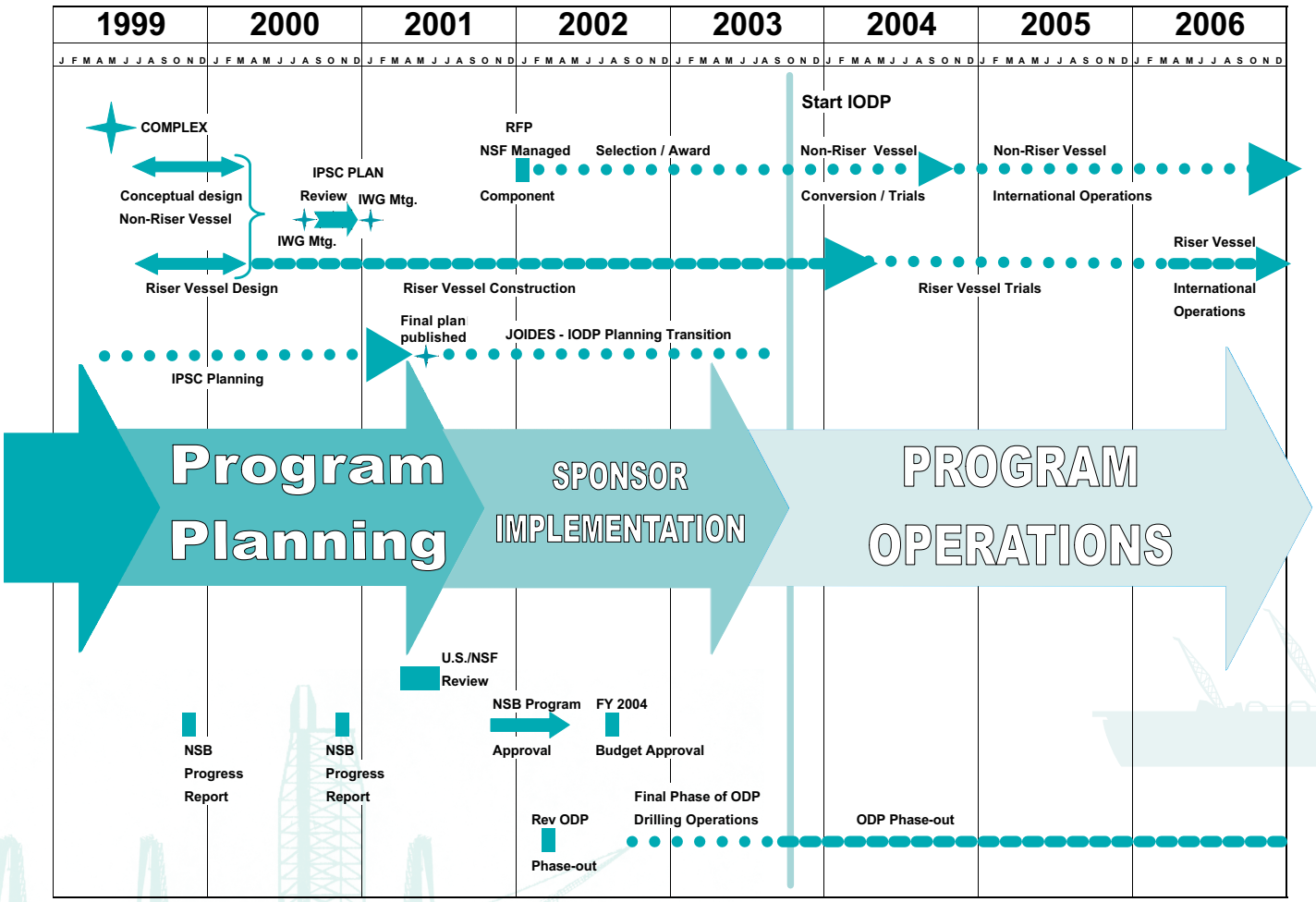
Also, don't give up hope for our vision of multiple drilling platforms on the horizon. Yes, IODP will be expensive—perhaps three times the cost of ODP. That amounts to $100-150 million per year. IPSC is well aware of the cost, but the entire committee feels that the science summarized by CONCORD and COMPLEX (and the proposals in the JOIDES system now, not all of which can be drilled by ODP) makes the potential pay-off of a large and capable program worth the cost. We have to trust that our colleagues in the funding agencies around the world will recognize that, too.

And if we don't ask...

The Author

Jamie Austin, when not dedicating himself as a member of IPSC or on some other JOIDES panel, is a Senior Research Scientist at The University of Texas at Austin Institute for Geophysics (UTIG).

Planning Schedule for the Integrated Ocean Drilling Program



RECENT ACTIVITY BY THE JOI BOARD OF GOVERNORS

contributed by the JOI Board of Governors

JOI, A CONSORTIUM OF U.S. OCEANOGRAPHIC INSTITUTIONS, WAS ESTABLISHED NEARLY 25 YEARS AGO TO FOCUS ITS COLLECTIVE CAPABILITIES ON LARGE OCEANOGRAPHIC RESEARCH PROJECTS

On March 9, the Joint Oceanographic Institutions (JOI) Board of Governors (BoG) met to address improved management practices that could be brought to bear in this dynamic period of transition from the Ocean Drilling Program (ODP) to the Integrated Ocean Drilling Program (IODP). A March 15th email, from C. Barry Raleigh, Chair of the JOI BoG, summarized the outcomes of this meeting and stated in part:

> "The JOI BoG is committed to the success of the ODP and to working towards a new IODP. At the June 1999 BoG meeting in Sydney, the JOI BoG committed their institutions to the support of the IODP, to its management and its operation, and to work to create a smooth transition between the programs. At the March 9th meeting, the Board has recently taken a number of additional actions."

JOI PRESIDENCY

Recognizing the critical importance of the ODP and the IODP to the U.S. science community and the critical administrative role played by the Director of ODP, the Board, with the support of Admiral James Watkins, USN (Ret.), President of JOI, passed the following resolution:

> "Whereas strong scientific and managerial leadership is required by ODP, especially during the transition to IODP, and whereas, the BoG believes that a structural change may be required to effect this transition, it is therefore the intent of the JOI BoG to combine the Presidency of JOI with the ODP Directorship into a single position at a competitive salary with direct reporting to the JOI BoG."

This resolution recognizes that JOI and CORE will have separate Presidents and that a complete separation of JOI and CORE support and administrative functions will occur no later than October 1, 2000. Additional changes to the internal programmatic structure at JOI are also anticipated as a result of this resolution. The search for a new JOI President/Executive Director has begun, and a copy of the announcement that will be widely advertised (e.g., in *Science*, *Eos*, *Nature*, and the April 23 issue of the *Washington Post*) is on-line at www.joi-odp.org.

MANAGEMENT OVERSIGHT COMMITTEE

Also as a result of the meeting, a Management Oversight Committee (MOC) was established as a Standing Committee of the JOI BoG. The MOC is charged with assisting in the management of the ODP. Their responsibilities include: offering advice and assistance to the current JOI President, and the Acting ODP Director (John Farrell); helping them in their relations with JOI subcontractors, including the JOIDES Office; and providing information to the President, and to the Board as appropriate, on the management of the ODP contract and the USSSP cooperative agreement with the US National Science Foundation (NSF).

The MOC is composed of Bob Detrick (Chair; WHOI), Dennis Kent (Rutgers), and Neil Opdyke (University of Florida), with Jim Gill (University of California, Santa Cruz) as an alternate. The terms of reference for the MOC have been drafted and finalized by the BoG. They are as follows:

DEFINITION:

The ODP MOC is a Standing Committee of the JOI BoG with a specified mandate.

PURPOSE:

The MOC's purpose is to represent the BoG in assisting and advising the President and the Director of ODP and USSSP on matters relating to the management of the ODP contract and the USSSP cooperative agreement with the U.S. National Science Foundation (NSF).

MEMBERSHIP:

The MOC will consist of three BoG-appointed members, including a Chair, plus an alternate member. MOC members must be Governors or Alternate Governors of the JOI Board and must be knowledgeable about the ODP and its international scientific community. MOC members must be from institutions without conflicts of interest, such as a contractual relationship with JOI.

TERM:

Unless otherwise extended by the BoG, the MOC will terminate upon assignment of a permanent ODP Executive Director. However, the need for the MOC will be reassessed by the BoG on the appointment of, and in consultation with, the new JOI President/ODP Executive Director and may be continued for a transition period or longer if an extension is determined by the BoG to be beneficial.

Joint Oceanographic Institutions

University of California, San Diego, Scripps Institution of Oceanography
University of California, Santa Cruz
Columbia University, Lamont-Doherty Earth Observatory
University of Florida
University of Hawaii, School of Ocean and Earth Science and Technology
University of Miami, Rosenstiel School of Marine and Atmospheric Science
University of Michigan, College of Literature, Science & the Arts
Oregon State University, College of Oceanic and Atmospheric Sciences
University of Rhode Island, Graduate School of Oceanography
Rutgers, The State University of New Jersey, Institute of Marine and Coastal Studies
Texas A&M University, College of Geosciences
University of Texas, Institute for Geophysics
University of Washington, College of Ocean and Fishery Sciences
Woods Hole Oceanographic Institution

Mandate:

The MOC shall be responsible for:

- offering advice and assistance to President and the Director;
- assisting the President and the Director in their interactions, and in their communications with JOI subcontractors, including the JOIDES Office;
- providing information to the President, and to the BoG as appropriate, on matters relating to the management of the ODP contract and the USSSP cooperative agreement;
- advising the President and Director on prioritization of management tasks, and on options for accomplishing these tasks if available personnel resources are insufficient; and
- advising the President concerning recommendations for possible future changes in JOI's management structure for consideration by the BoG; any other tasks as mutually agreed with the President and the BoG.

Reporting/Meetings:

The MOC will report to the BoG twice a year, or more frequently as needed. The MOC will regularly (nominally biweekly) consult with the Acting Director by conference phone call, and will meet with the President and Acting Director, and at their request with JOI subcontractors. The Director may communicate directly with the MOC on any matter relating to the management of the ODP contract or the USSSP cooperative agreement.

ODP-to-IODP Transition

A third outcome of the March 9th BoG meeting was John Orcutt's assignment to develop an over-arching plan for the transition from ODP to IODP. This plan will be presented to EXCOM at their June 2000 meeting. As ODP begins to wind down its current programmatic activities, and the IODP Planning SubCommittee (IPSC) gears up efforts to establish a successor program, Orcutt will consult with appropriate and knowledgeable parties, including former JOIDES PCOM/SCICOM chairs (Susan Humphris and Nick Pisias) and the current and future SCICOM chairs (Bill Hay and Keir Becker) to determine how best to proceed during the next few years. Orcutt had his first meeting with this group on April 3 at JOI to begin discussion of the transition plan from the ODP to the IODP. They were joined for the discussions by JOI's John Farrell, Frank Rack, and Adm. Watkins. The next day, Orcutt met with Paul Dauphin, Bruce Malfait, and Mike Purdy at the NSF.

The topics covered during these meetings were quite broad and included the goals for transition planning within the JOIDES advisory structure, IPSC, the U.S. Science Support Program (USSSP), the International Working Group (IWG), the NSF, and the phasing of existing contracts and grants. A number of significant questions arose during the first day of discussions with the past, present, and future Chairs of SCICOM. The NSF was able to provide answers to many of these in the meeting on the second day.

For example, planning guidance from the NSF for the drilling program has indicated that the contribution from U.S. funds to ODP will remain fairly constant for the remainder of the program. If the President's budget for FY 2001 is accepted, however, the U.S. program for drilling will increase significantly,

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DRILL BITS

NEW JOIDES OFFICE

JOI is pleased to announce the selection of the University of Miami, Rosenstiel School of Marine and Atmospheric Science (RSMAS), as the follow-on contractor to provide support services for the JOIDES advisory activities of the Ocean Drilling Program. The new contract incorporates a phase-in period from October 1, 2000, through December 31, 2000, and is followed by a two-year period of performance from January 1, 2001, through December 31, 2002. The phase-in period will allow a smooth transition from the current JOIDES Office at GEOMAR in Germany to the new office located at RSMAS. Under the new contract, Christopher G.A. Harrison will serve as Chair of EXCOM and Keir Becker as Chair of SCICOM/OPCOM.

The selection of RSMAS, University of Miami, for the JOIDES Office was based on a best value assessment of technical, cost, and past performance factors. Contact information for the new JOIDES Office will be available in a future newsletter.

CD COMPLETED AT GLACIAL PACE

The *Gateways to Glaciation* interactive educational CD-ROM will arrive at Joint Oceanographic Institutions (JOI) in June! This new CD-ROM—a follow-up to the enormously popular *ODP: From Mountains to Monsoons* CD created by JOI/USSSP in 1995—exposes high school and undergraduate students to scientific problem solving and to basic geologic and oceanographic principles. During the process, students also learn about the Ocean Drilling Program (ODP) and can virtually tour ODP's drillship, *JOIDES Resolution.*

The CD-ROM simulates how teams of ODP scientists work together on the drillship to collect and evaluate data from seafloor cores in search of the "big picture." The CD-ROM guides students through the analytical processes of using core data to explore the closing of the Panamanian gateway as one of the possible triggers of northern hemisphere glaciation about 2.6 million years ago. Using real ODP data in virtual shipboard laboratories, students analyze sedimentological and isotopic evidence for glaciation within the sediments; date the glacial onset through paleomagnetics and biostratigraphic labs; and explore evidence for Milankovitch cycles within the cores. The lab exercises culminate in a climatology lab where students explore the paleoceanographic and paleoclimatic consequences of the Panamanian gateway closure as interpreted from their data.

Copies of the new CD-ROM will be available, free of charge, from the JOI office (joi@brook.edu). A Teachers Guide to accompany this program will also be available from JOI later this year, following the release of the CD-ROM.

PEC-V REPORTS

The Fifth Performance Evaluation Committee (PEC-V) has completed their evaluation of ODP management. The report was generally favorable and stated:

> "The new [JOIDES] Advisory Structure implemented in 1998 has generally been well received and has increased the number of individuals and institutions involved in the Ocean Drilling Program. The number of people on Panels has decreased, but overall participation has increased because of the Program Planning Groups and external proposal reviewers."

The PEC-V report and the subcontractor responses have been submitted to the U.S. National Science Foundation. The report and the response will be discussed during the June 2000 JOIDES EXCOM meeting.

THE DLS: SPREADING THE WORD

The JOI/USSAC Distinguished Lecturer Series (DLS) is gearing up for the 2000/2001 year. Applications to host lectures during the next academic year were received from over 70 colleges, universities, and non-profit institutions. The selection of host institutions will be completed in May 2000 and hosts will be contacted soon after. For a complete list of lecturers and host institutions, please visit the JOI website: http://www.joi-odp.org/USSSP/DLS/DLS.html

ANOTHER JOIFUL SMILE

This March, JOI welcomed Trish Kellermann into the fold. Trish works halftime as an Administrative Assistant supporting the U.S. Science Support Program, and halftime assisting the new IWG Support Office. Previous experience at Digital Equipment Corporation and a Maryland school system foreign languages office has given Trish a strong background in office support and international programs. JOI is happy to have her aboard.

PARTNERS IN GRIME

JOI/USSSP and Conoco jointly funded a planning workshop held in Houston, Texas, on March 3, 2000, titled "ODP-Industry Workshop on GeoFluids of Overpressured Strata in the Gulf of Mexico." Its purpose was to unite the industry and academic community to tackle a problem of importance to both communities. Peter Flemings (The Pennsylvania State University) and Alan Huffman (Conoco, Inc.) convened the meeting. Approximately 40 scientists participated. Spe-

cific objectives of the workshop were to: (1) define the important technical problems in geo-pressure for basic and applied science, and (2) define how the drillship *JOIDES Resolution* could be used to solve these problems.

Detailed information about this workshop and the list of attendees is available on the WWW at: http://hydro.geosc.psu.edu/odp/odp.html. A workshop report will be available from JOI in the summer.

Geochemistry to come

JOI/USSSP will co-sponsor an international planning workshop titled "Opportunities in Geochemistry for Post-2003 Ocean Drilling," which is tentatively scheduled for the Fall of 2000. The workshop convenors are Rick Murray (Boston University), Dan Schrag (Harvard University), and Geoff Wheat (University of Alaska, Fairbanks). The meeting will task members of the geochemical community with identifying research questions in both low- and high-temperature geochemistry fields that can be addressed within the context of a multi-platform scientific drilling program. A formal announcement, to be published in *Eos*, will provide details and logistical information about the workshop.

Coring corals

JOI/USSSP will co-sponsor an international planning workshop titled "Submerged Coral Drilling." Terrence Quinn (University of South Florida) and Sandy Tudhope (Edinburgh University) will convene the workshop, which is tentatively scheduled for September 2000. The workshop's purpose is to: (1) identify the site survey and technology requirements needed to optimize core recovery in submerged coral sequences; (2) define and prioritize the scientific objectives of submerged coral drilling; (3) define sample handling, data management, and analytical protocols for post-drilling activities; and (4) identify groups of investigators that will focus their efforts on specific objectives and/or localities. A formal announcement, to be published in *Eos*, will provide additional information about the workshop.

Hobnobbin' in Hobart

ODP's achievements were highlighted March 12-15, during the *JOIDES Resolution's* port call in Hobart, Tasmania following Leg 188 to Prydz Bay. The ODP/Australia Secretariat and the Antarctic Cooperative Research Centre in Hobart collaborated with the ODP/TAMU Public Information Office to host several events and conduct tours of the ship for Tasmania's science community, government officials, and students.

The special events included: a party (hosted by ODP/TAMU and Transocean Sedco Forex) for all crew members, technical staff, and Leg 188/189 scientists; tours of the local science institutions and facilities; and a reception at Government House in Hobart for the Tasmania science community and ODP scientists. Over 500 scientists, students, and government officials toured the ship during the port call. Governor Sir Guy Green was given a special tour by Patrick Quilty, a Leg 188 science participant and a retired professor from the University of Tasmania.

A slew of media reports resulted. The Australian Broadcast Corporation produced a national radio and television news story discussing Leg 188 results and Leg 189 objectives, as well as the *JOIDES Resolution's* capabilities. A national news story by WIN Television—highlighting Leg 188 science results—and a statewide news story by Southern Cross Television—outlining Leg 189 objectives—were also aired. Don Woolford, a science writer with Australian Associated Press, developed an article about ODP's achievements and recent expeditions, and Neville Exon, Australian Geological Survey and Leg 189 co-chief scientist, was interviewed for an article that was distributed on the Australian newswire to newspapers and magazines nationwide. Several other articles were written also by science writers representing: *The Australian*; *The Age*; *Sydney Morning Herald*; an online Antarctic news service (www.antarctican.com), and Lycos Environment News (ens.lycos.com), as well as state and local newspapers (*The Mercury*, *The Examiner*, and *The Advocate*).

New JOIDES Directory

A new, downloadable JOIDES personnel directory is available. To obtain your personal copy, go to: www.joides.geomar.de/directories/jd_rtf.htm.

The electronic format will allow the JOIDES Office to maintain an up-to-date version in this world of ever changing contact information. Please check your own address and provide any corrections to the JOIDES Office as necessary.

Corrections!

The newsletter editors offer our sincere apology to Michael Helgerud, a JOI/USSAC Fellow who was profiled in the previous issue of the newsletter. Mike is a student at Stanford University, not another California school as we incorrectly printed.

We also erred in the list of co-chief scientists for future ODP cruises. Please see the schedule on page 13 of this newsletter for correct and up-to-date co-chief information.

THE CDC DEFINES SPECIFICATIONS FOR A NON-RISER DRILLING VESSEL

Amidst the first waves of spring tourists, the arrival of the Conceptual Design Committee (CDC) report in DC has not surprisingly gone unheralded by the general public. This report, however, represents a very important step for the U.S. scientific drilling community in focusing on the future. In vision and planning documents, both the U.S. and international science community has consistently identified an integrated, multi-platform strategy as key to the design of a new scientific ocean drilling program, and critical to successful progress on fundamental scientific questions in the earth and ocean sciences. The contribution of a riser vessel by Japan's Science and Technology Agency (STA) addresses one component, and the U.S. National Science Foundation (NSF) has indicated its intention to seek the necessary resources to bring a non-riser vessel to the program. Such a vessel will constitute a major capital asset of the future Integrated Ocean Drilling Program (IODP). If you haven't already, it's time to read about the planning process and the IODP Planning SubCommittee (IPSC) on page 1 of this newsletter!

As you may recall from the previous *JOI/USSAC Newsletter* (Vol.12, No. 2, NSF Report, page 18), the CDC was established by USSAC to address a charge set forth by NSF. Background on the committee, including its mandate and membership, can also be found within the CDC report itself. This report, which was presented to the NSF in March 2000, is officially titled, "The Non-Riser Drilling Vessel for the Integrated Ocean Drilling Program: A Report from the Conceptual Design Committee." The report is available at: www.joi-odp.org/usssp/cdc/.

For the planning process to move forward, the operational and scientific capabilities of the non-riser drilling vessel, as well as its possible limitations and the resulting need for additional platforms, must be carefully identified. It is expected that the vessel would be as versatile as the present *JOIDES Resolution* but with significantly enhanced capabilities. Therefore, the purpose of the CDC's report is to define the performance specifications for this platform in a form that can be used to solicit international comment and criticism in the context of planning for the IODP.

The Non-Riser Drilling Vessel
for the
Integrated Ocean Drilling Program:
A Report from the
Conceptual Design Committee

www.joi-odp.org/USSSP/cdc/

To define the performance specifications for the non-riser vessel, the CDC—led by their fearless Chair, Peggy Delaney (UCSC)—constructed nine synthesis target drilling sections, encapsulating the scientific objectives of various planning documents in a description of the locations to be drilled and their characteristics. The synthesis target sections represent the following scientific themes: (1) observatory; (2) rifting processes; (3) convergent margin; (4) large igneous province; (5) oceanic crust; (6) hydrothermal and massive sulfide deposit; (7) deep ocean sediment; (8) passive margin stratigraphy; and (9) carbonate reef, atoll, or bank. The CDC used the target sections to define the range of platform capabilities (Table 1).

Taking the target sections into consideration, the CDC provided recommendations on the types and amount of on board scientific measurement capabilities necessary for conducting initial shipboard studies. Next, the committee conducted a survey of drilling vessels suitable for modification and conversion. They defined basic screening criteria for narrowing the list of potential platforms, and in their report, they provide initial guidance on how screening criteria might be applied in selecting a non-riser platform. They also discuss briefly other types of platforms, and provide an overview of drilling and sampling systems, emphasizing their importance to the scientific success of IODP.

The enthusiastic responses from the scientific community to the CDC's requests for target sections and the helpful responses of vessel owners and managers to the CDC letter soliciting information about drilling platforms is both positive and encouraging for the prospects for the future program. The CDC wishes to thank everyone who participated in this important process!

TABLE 1: SUMMARY OF PLATFORM CAPABILITIES DEFINED BY THE CDC TARGET SECTIONS

Water Depth Range (m)
Maximum Penetration below Seafloor (m)
Total Drillstring Length (m)

Lithology

Possible Conditions
Thermal gradient
Degree of fractures
Porosity
Pore pressure
Existence of volatiles

Sampling and Logging Needs
Core sampling
Core sample diameter
Down-hole logging

Endurance and Capacity
Environmental Conditions
Other Program Requirements

The IWG Support Office Sets Sail

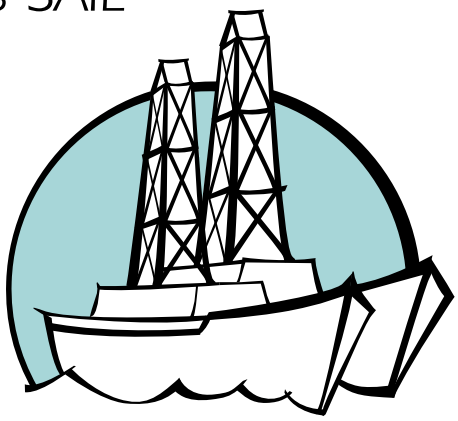

Fig. 1: The two ships of the IWG Support Office logo represent the joint efforts of Japan and the U.S.—unified in their partnership to launch a new scientific drilling program.

IWG Support Office

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A fresh spring breeze is blowing in D.C. and a new office to aid the planning process for the Integrated Ocean Drilling Program (IODP) is setting sail for the future (Figure 1). The International Working Group (IWG) Support Office was established on November 30, 1999, by the Japan Marine Science and Technology Center (JAMSTEC) and Joint Oceanographic Institutions, Inc. (JOI) under the guidance of the Japanese Science and Technology Agency (STA) and the U.S. National Science Foundation (NSF).

Affectionately called IWGSO (pronounced "ig-so"), the Support Office is an interim office created to provide administrative, clerical, contractual and financial support for the IODP which is scheduled to begin its voyage of discovery in October 2003. The Support Office also functions as a communication center for coordination among the United States, Japan, and other potential IODP partners.

Fig.2: The IWG Support Office staff are ready for action. From left to right: Carol Kokinda (Director of Contracts and Grants), Masanori Shinano (JAMSTEC Management Representative), Bridget Chisholm (Travel Coordinator), Tad Gladczenko (Technical Program Associate), Yan Xing (Director of Finance), John Farrell (JOI Management Representative), Sue Siegel (Contract Specialist), Trish Kellermann (Administrative Assistant), and Jennifer Peterson (Office Manager).

At the helm are John Farrell, as the Management Representative to the Support Office from JOI, and Masanori Shinano, as the Management Representative from JAMSTEC. Jennifer Peterson, Office Manager, joined the IWG Support Office in January, and Trish Kellermann was hired as the new Administrative Assistant in March. Several other part-time support staff already at JOI complete the IWGSO crew (Figure 2).

To date, the Support Office has developed an annual work plan, provided support for the February IWG meeting in Washington, DC, distributed materials to the IODP Planning SubCommittee (IPSC) and IWG members, and established email and web communications. The Support Office staff members are also developing an informational and introductory IODP brochure that will be published in several languages.

For more information on the status of IODP planning activities please visit the new IODP website: www.iodp.org or contact the IWG Support Office: email: iwgso@brook.edu, tele: (202) 232-3900 x262, fax: (202) 232-3426. The Support Office is co-located at Joint Oceanographic Institutions. Its postal address is: IWGSO, 1755 Massachusetts Avenue, NW, Suite 800, Washington DC, 20036-2102 USA.

RENOVATING THE *RESOLUTION*: 1999 DRYDOCK REPORT

contributed by Paul J. Fox

Since 1985, when the *JOIDES Resolution* ventured on its first expedition to the Gulf of Mexico, the vessel has undergone three drydock periods for refurbishment. However, never has more work been accomplished during a drydock visit than during the Fall 1999 undertaking in Singapore. The 58-day stay at the Keppel Shipyard enabled the Ocean Drilling Program to both improve the safety and efficiency of the *JOIDES Resolution's* working environment and upgrade its operational capabilities to better achieve the scientific objectives stated in ODP's 1996 Long Range Plan.

The activities conducted during the vessel's Singapore shipyard visit fall in three categories. The first, and by far the most extensive, included repairs and upgrades of the ship and its equipment. These activities were supported primarily by funds from the National Science Foundation (NSF) and by supplementary funds from Overseas Drilling Limited (ODL), the ship's operator. The second group of activities included repairs and upgrades to the ship's scientific infrastructure. These projects were supported by ODP commingled funds. Two major projects in this category were the expansion of the labstack's seventh level and the modification of the core handling and description area on the sixth level of the labstack.

The third group of activities consisted of three major projects scheduled during the Singapore yard period because they represented complex and demanding installations that could best be accommodated during an extended period of time when the ship was out of service. Two of the projects, involving the Active Heave Compensation (AHC) system and Rig Instrumentation, were overseen by ODP/TAMU. The goal of both projects was to enhance the ship's ability to make hole and to recover better sections of core by using new drilling technologies. The third project, the installation of a synchronous generator, was carried out by ODL. It is anticipated that this system will significantly reduce fuel consumption by enabling the ship to operate more efficiently.

The extensive drydock refurbishment witnessed the dedicated efforts of many ODP staff members who worked long and hard dismantling and reassembling parts of the *JOIDES Resolution*.

SHIP SAFETY, MAINTENANCE AND UPGRADE ACTIVITY

The most extensive drydock activities included repairs, maintenance, and upgrades to the ship and its equipment to ensure continued safety and maximum performance during the upcoming ODP expeditions. These projects included the following:

- Refurbishment to the ship's hull, thrusters, thruster wells, tanks, propulsion gear box, and rudder;
- Replacement of all sanitary piping within the accommodations;
- A thorough inspection of the ship's drilling equipment;
- Installation of a new data management system (DMS) to better regulate the ship's power, in order to reduce fuel costs;
- Installation of a new automatic station keeping (ASK) system to provide a dual redundancy for maintaining station under a greater range of environmental conditions; and
- Installation of a new breathing system in the core lab, the core handling catwalk area and the drill floor to facilitate the safe handling of H_2S-laden cores.

All of these projects were completed during the drydock period and have enhanced the *JOIDES Resolution's* ability to operate safely and efficiently.

SHIPBOARD LABORATORY ENHANCEMENTS

The 1996 ODP Long Range Plan identified "Earth's Deep Biosphere" as a pilot project to explore the nature and extent of the subseafloor biosphere. The plan states that ODP will target specific drillsites when opportunities arise to recover bacteria. To address this objective, a temporary microbiology van was installed aboard the ship prior to Leg 184, and the van was used extensively during Leg 185. Due to excellent Leg 185 results and the recommendations of the JOIDES advisory community, a new laboratory was installed during drydock on the seventh level of the labstack. This space will be used to establish a permanent microbiology facility, as well as to significantly enhance the Program's ability to implement a new generation of downhole experiments. The updated seventh level of the labstack (Figure 1) includes wet and dry laboratories, a new conference room, and an improved downhole measurements facility.

In addition, the core laboratory on the sixth level was redesigned to better manage core handling and flow (Figure 2). Also, a better venting system in the core splitting area will more effectively mitigate the affects of noxious gases. Other refurbished equipment includes the sonar dome, fantail winches, and

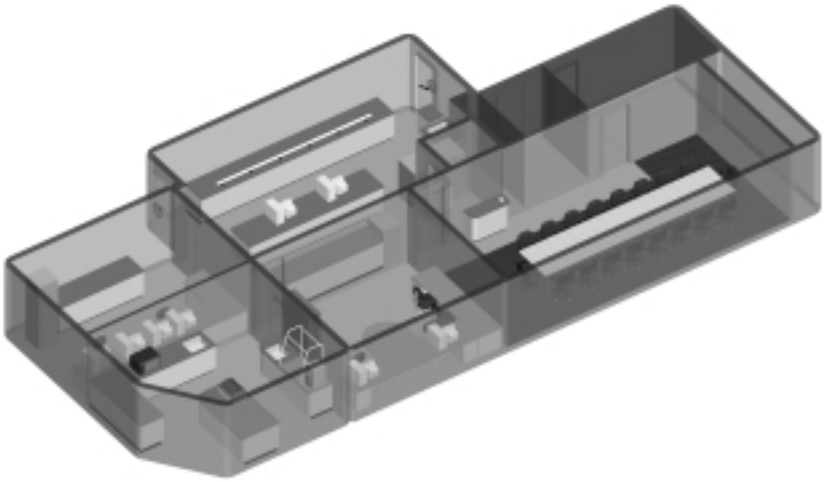

Fig. 1: During drydock, the seventh level of the labstack was expanded to accommodate a new microbiology facility and conference room.

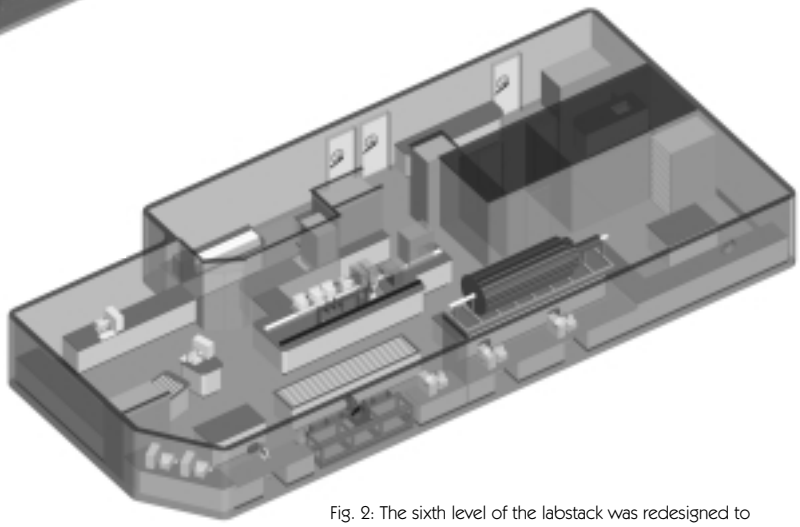

Fig. 2: The sixth level of the labstack was redesigned to better manage core handling and flow.

labstack foundation. All of these updates will increase safety and ensure improved service delivered aboard the ship.

Technology Upgrades

To take advantage of the drydock period, the Program installed an active heave compensation (AHC) system. Active heave will more efficiently decouple ship's heave from the drill string. It has been postulated that reduced heave may result in reduced variability in weight-on-bit. Good control of weight-on-bit results in better core quality, longer bit life, and greater control when landing equipment on the seafloor or in the hole.

Another new technological addition was a rig instrumentation system called "Fusion." This system represents a conversion of the 25-year old analog instruments that displayed salient drilling parameters (e.g., hook load, rate of penetration, torque, revolutions per minute depth, depth below seafloor) on charts and/or dials in the operations shack to a digital system. This permits more accurate readings and a continuous data stream that is displayed at key locations throughout the ship and recorded for later analysis and integration into drilling results. Both of these projects were considered a high priority by the JOIDES Technology and Engineering Development Committee (TEDCOM) because of the enhancement to drilling operations and the potential to improve core recovery.

Post-Drydock Shake-Down

The Singapore shipyard period represents the largest project undertaken by the Program since the ship was converted for ODP's use 16 years ago. Most of the drydock projects were completed and commissioned before the ship arrived in Fremantle to begin Leg 187, but it has taken a few legs to bring closure to some of the projects and to "shake-down" some of the new systems. The "shake-down" period was particularly challenging because Legs 187 and 188 were in the remote Southern Ocean where environmental conditions and logistical isolation made it difficult to respond to problems. Nevertheless, at this time, all systems are up and running and only two tasks are outstanding:

- The ASK system has not been deemed acceptable for shallow water conditions (<50m) and ODP is awaiting new shallow-water beacons from the manufacturer before a shallow-water test can be carried out; and

- The AHC system needs to be fine-tuned for a range of sea states before it will function optimally and this will take time. Moreover, one of the ODL drilling crews has not yet been trained with the AHC. This is scheduled to take place during the first few weeks of Leg 190. The AHC is presently in operation on Leg 189.

In summary, as a result of the drydock activities, the *JOIDES Resolution* is a more capable vessel, with extended water depth capabilities, improved operational efficiency, and the ability to routinely conduct microbiological research, downhole tool instrumentation, and gas hydrate research.

The Author

Dr Paul J. Fox (Jeff) is the Director of the Ocean Drilling Program Science Operations at Texas A&M University.

ANNOUN

JOI/USSSP Supported Shipboard Participants

Leg 188: Prydz Bay

U.S. Co-Chief: Alan Cooper, Stanford Univ/USGS
ODP Staff Scientist: Carl Richter, TAMU
Steven Bohaty, Univ Nebraska, Lincoln
George Claypool, consultant
John Damuth, Univ Texas, Arlington
David Handwerger, Univ Utah
Kelly Kryc, Boston Univ
Sandra Passchier, Ohio State Univ
James Pospichal, Florida State Univ
Kevin Theissen, Stanford Univ
Detlef Warnke, California State Univ, Hayward
Jason Whitehead, Hamilton College
Patricia Whalen, consultant

Leg 189: Southern Gateways

U.S. Co-Chief: James Kennett, UC, Santa Barbara
ODP Staff Scientist: Mitchell Malone, TAMU
Logging Scientist: Ulysses Ninnemann, LDEO
Michael Fuller, Univ Hawaii, Manoa
Thomas Janecek, Florida State Univ
D. Clay Kelly, WHOI
Jennifer Latimer, Indiana Univ/Purdue Univ
Kristeen McGonigal Roessig, Florida State Univ
Stephen Pekar, Rutgers, State Univ of NJ
Stephen Schellenberg, Smithsonian Inst
Amelia Shevenell, UC, Santa Barbara
Wuchang Wei, Scripps Inst Oceanog, UCSD
Timothy White, Univ Iowa

Call for Nominations to USSAC

JOI is seeking nominations for U.S. positions on the U.S. Science Advisory Committee (USSAC). USSAC provides guidance to JOI in managing the JOI/U.S. Science Support Program (JOI/USSSP), which in turn provides support for U.S. involvement in ODP. New members of USSAC will be appointed by the JOI Board of Governors in August 2000. The three-year term for the new USSAC members will begin October 1, 2000.

If you are interested in serving on USSAC, please send a CV (no more than two pages) and a letter of interest to the attention of: Andrea Johnson, JOI/U.S. Science Support Program, Joint Oceanographic Institutions, 1755 Massachusetts Avenue, NW, Suite 800, Washington, DC 20036-2102. Scientific leadership and a keen interest in ODP science and related activities must be demonstrated. The deadline for nominations is July 1, 2000.

For more information about JOI/USSSP and USSAC duties and responsibilities visit www.joi-odp.org/usssp or contact Dr. Peggy Delaney, USSAC Chair at delaney@cats.ucsc.edu or tel: 831-459-4736.

Schlanger Ocean Drilling Fellows

Joan Steurer
University of Missouri, Columbia
Composition, intrinsic shear strength, physical properties, and texture of sediment at the Nankai Trough, Leg 190: An integrated approach
(one-year, shorebased)

Aradhna Tripati
University of California, Santa Cruz
Tropical Sea Surface Temperature Reconstruction for the Early Paleogene using Mg/Ca Ratios of Planktonic Foraminifera ODP Leg 143, DSDP Legs 22 and 86
(one-year, shorebased)

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

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ARE YOU IN THE LOOP?

A JOI/USSSP listserver will soon be launched to serve the U.S. ocean drilling science community. If you want to receive the latest news and announcements from JOI/USSSP via email, it's time to make sure you're on board.

Contact joi@brook.edu to be added to the list.

(Please also send us your updated mailing address so you don't miss any issues of the *JOI/USSAC Newsletter.*)

SCHEDULE FOR ODP LEGS 190-201

LEG	REGION	CO-CHIEFS	DEPARTURE PORT	DEPARTURE DATE	SCIENTIFIC OBJECTIVES
190	Nankai	Moore Taira	Guam	5/00	To model fluid-linked diagenetic and tectonic processes in a rapidly deforming accretionary prism by comparing two different wedge tapers and structural geometries within the Nankai Trough.
191	W Pacific Ion	Sager Kanazawa	Yokohama	7/00	To emplace a permanent observatory (downhole seismometer) in the tectonically active Western Pacific at a high-priority area identified by the International Ocean Network (ION).
192	Ontong Java	Mahoney 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 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 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	West Pacific Ion	Shinohara TBN	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 Mikada	Kaohsiung	4/01	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 (see Leg 190).
197	Hotspots	Tarduno TBN	Yokohama	6/01	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	Paleogene	Lyle TBN	Honolulu	8/01	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.).
199	Gas Hydrates	Trehu Bohrmann	Victoria	10/01	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.
200	H_2O	Stephen Kasahara	San Francisco	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	SE Paleoceanog.	Mix Tiedemann	Panama City	1/02	To obtain Neogene and older sediments from latitudinal and depth transects of topographic rises in the SE Pacific in order to test hypotheses on global ocean circulation, chemistry, and climate change.

ODP DEBUTS ON CAPITOL HILL

It's not everyday that scientists from the Ocean Drilling Program (ODP) community rub shoulders with Washington, DC's movers and shakers. But on February 16, 2000, the Canadian Embassy shook to its rafters as members of JOIDES advisory committees hobnobbed with members of the DC press corps, congressional staffers, and international embassy representatives. The reception, held in conjunction with the final lecture in the "Ocean Drilling Seminar Series," was a valuable opportunity for scientists to articulate their views about ODP to many of the people who will influence the evolution of ODP's successor, the Integrated Ocean Drilling Program (IODP). In the evening's opening remarks to the group of almost 200, the hosts for the evening, Robert Webb, Science and Technology Counselor for the Canadian Embassy, and Admiral James D. Watkins, President of Joint Oceanographic Institutions, both touched on the importance of ODP's research and the ongoing need for international scientific collaboration.

The lecture series began back in September 1999, as the brainchild of Kate Moran, Director of the ODP. To celebrate 30 years of excellence in ocean research and exploration, the ODP would sponsor a lecture series in Washington, DC. This series of four lectures, located on or near Capitol Hill, would highlight aspects of ODP's cutting-edge science and its relevance to societal needs. Concentrating each talk on a different ODP topic, the goal of the series was twofold: To make ODP's complex scientific research accessible to the general public and to educate policymakers and potential IODP sponsors about ODP's scientific achievements and its importance to the future of science.

The series kicked off with a lecture by Alan C. Mix, Oregon State University, on November 16. His talk, titled *A Tropical Trigger for Natural Climate Fluctuations? Evidence from Deep-Sea Sediments,* focused on how ODP science may be used to predict future climate change. Suggesting that conditions similar to current day La Niña events may have existed over 20,000 years ago during the last ice age, Mix emphasized that changes in tropical circulation have far reaching and hitherto unknown effects which could trigger global changes in climate.

A New Bacterial World in Deep Ocean Sediments, the next talk in the series, was presented a few weeks later on December 7 by John Hayes, Woods Hole Oceanographic Institution. Hayes discussed ODP's groundbreaking research into the role and significance of recently discovered vast sub-seafloor bacteria populations. He emphasized that these bacteria are fascinating, not only in their ability to sustain themselves in extreme temperatures and to subsist on uncommonly meager food supplies, but for their ability to produce antibiotics and heat-stable enzymes which may one day have pharmacological applications. Furthermore, other recently discovered bacteria have metabolic capabilities and environmental tolerances which may be applicable to the cleanup of complex pollutants in ground water.

The third lecture, *Gas Hydrates – Linking Energy, Climate, and the Biosphere,* by W. Steven Holbrook, University of Wyoming, on January 10, explored the potential of methane hydrates as a possible future fuel source. Holbrook explained that hydrates, ice-like crystals of water and trapped methane gas, play a significant, but poorly understood role in the global carbon cycle, climate change, and seafloor stability. Although the viability of methane hydrates as a clean fuel source remains unknown, ODP continues to conduct hydrate research to investigate the central role they play in ocean and climate processes.

The final talk, *The Future of Scientific Ocean Drilling: New Opportunities for Science and Industry*, was presented by Ted Moore, University of Michigan, and John Armentrout, Mobil Corporation, on February 16 in association with the reception at the Canadian Embassy. Moore and Armentrout outlined plans for the IODP, a successor program to ODP, and possible future alliances with the petroleum industry. Overlapping scientific and industry interests would make a new collaborative initiative mutually beneficial. An integrated approach to deepwater research could lead to enhanced scientific achievements, cost-effective deepwater oil exploration, and ultimately, better management of the world's petroleum resources.

The Ocean Drilling Seminar Series was an important first step in educating the public and policymakers about the importance and relevance of ODP's research. Although the science accomplished by ODP may often seem complex and theoretical, it is critical for scientists to explain its practical applications and far-reaching societal implications. In a time of competing political and budgetary priorities, ensuring that decisionmakers understand ODP's true societal value will be crucial in gaining support for a new scientific ocean drilling program.

Industry and Academia: Not such Strange Bedfellows

contributed by John Armentrout and Felix Gradstein

The early achievements of scientific ocean drilling—through the Deep Sea Drilling Project (DSDP)—were instrumental in developing our present understanding of plate tectonics. Today the achievements continue in the Ocean Drilling Program (ODP), DSDP's successor. With plate tectonics serving as a framework, ODP scientists use the drillship *JOIDES Resolution* to test hypotheses to better understand the dynamics of Earth's interior and environment. Scientific drilling has focused our vision of the dynamic Earth system, convincing researchers that drilling must continue after the end of ODP in 2003.

To maximize the success of a future scientific ocean drilling program, industry and academic scientists agree that they must collaborate to develop mutually beneficial program objectives. As a first step in this process, the U.S. Science Support Program (USSSP) sponsored the workshop "Cooperation in Scientific Ocean Drilling: Forging Industry-Academic Partnerships." This workshop was held October 15-16, 1999, in Houston, TX. John Armentrout, formerly of Mobil (now ExxonMobil), chaired the workshop and Felix Gradstein, formerly of Saga Petroleum, served as the international facilitator. Nearly 50 scientists attended the workshop with 19 participants from academia, 25 participants from industry and 12 liaisons from various parts of the current ODP. Details are available at: www.joi-odp.org/usssp/meetings/mtg_hous-ton.html.

The workshop's primary goal was to identify basic research issues shared by the academic ocean drilling community and industry scientists, and to develop linked strategies to gather data (seismics and borehole), interpret data, assess geological processes, and develop models. Subsequently, the results of this workshop are being considered in planning the next phase of scientific ocean drilling, known as the Integrated Ocean Drilling Program (IODP). By clarifying shared objectives and identifying possible drill sites, academic and industry scientists established a common vision addressing both basic science and resource issues. Additional workshops are anticipated to develop detailed plans for cooperative projects in the current and future ocean drilling programs.

The vision for scientific ocean drilling includes multiple platforms, such as a riser drillship, and riser-less platforms for drilling in shallow and deepwater environments. The scientific community (see the COMPLEX report) would like a new program to include studies of: the unexplored Arctic Ocean basin; the deep biosphere; climate change prediction; earthquakes in the seismogenic zone; gas hydrates; the global carbon budget; and the seafloor hydrologic system. Many of these topics are also important to the international oil industry, but they are normally framed in a different context: oil exploration, development, and production. For example, both industry and academia want to understand stratigraphic signals of major forcing functions (climate, ocean circulation, paleogeography, and tectonics) that affect the evolution and history of continental margins. Despite these common science interests, language often hinders cooperation. Establishing a common vocabulary was an important aspect of the workshop (Table 1).

Nearly 20 potential research projects for academia-industry cooperation were identified that could be addressed by ODP drilling. The workshop participants deemed the following five topics as the highest priority:

1) Latitudinal variation in C-cycle: Is there a relationship between the geographic distribution of carbon and paleoproductivity (production) & source rocks (preservation)?

2) Distribution of gas hydrates: What parameters control their distribution? What is the availability of hydrocarbon for these deposits related to?

3) Overpressure-mechanisms and generation: What is the relationship of overpressure to compaction, disequilibrium, and other possible generative causes? May they be structurally induced? Are there contrasts in the over-

continued on page 24

Table 1
Breaking the Language Barrier: Different Words, Similar Meanings

While not synonyms, the science behind these two sets of words share common research elements.

ODP	INDUSTRY
Geophysical attribute analysis	Direct hydrocarbon indicator
Paleo-productivity	Source rock
Heat flow & kinetic models	Maturation
Fluid flow	Migration
Sedimentary processes	Reservoir, seal, source rock
Physical properties	Seal
Deformation style	Traps & migration avenues
Geochronology	Timing & basin modeling
Microbial biology	Biodegradation
Basin analysis	Exploration
Margin architecture	Petroleum systems

SOURCE TO SINK STUDIES

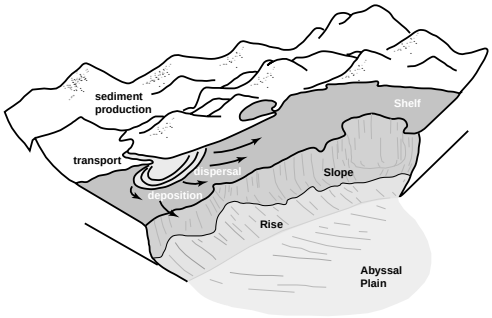
contributed by Charles Nittrouer and Neal Driscoll

Continental margins—including the sediment dispersal systems that traverse and shape them—are inhabited by a significant portion of the world's population. In the United States alone, some 80% of the population is estimated to live within 100 km of the coastline. Yet pollution and coastal erosion threaten sustainable development in these key areas, which also contain important resources such as hydrocarbon fuels, groundwater and agricultural lands as well as coastal wetlands, fisheries and marine algae. In addition, these diverse regions are subject to various environmental hazards such as earthquakes, tsunamis, floods, and landslides.

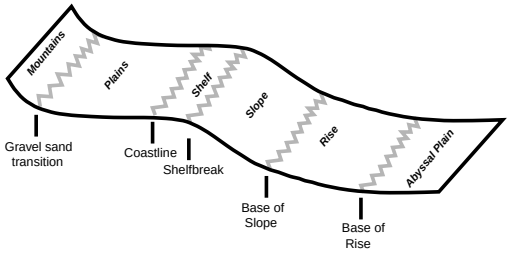
The material dispersal systems of margins convey water, sediment, and associated chemicals from the continent to the sea via rivers, mass movements, and turbidity currents. Typically, on a geological time scale, all the components of the system are in a state of change. The temporal and spatial evolution of margins involves strong interactions among the zones of the sediment dispersal system (Figure 1). Understanding and predicting these changes requires empirical knowledge of the links and feedbacks among the components. At present, we have some understanding of the individual units constituting margins, but we have little ability to link them in a quantitative and predictive way. The MARGINS Source to Sink Initiative was conceived upon the premise that significant improvements in both our understanding and predictive ability can be obtained by studying the links. A ten-year program of concerted research, with a holistic philosophy fully integrating field, experimental, and modeling elements, should produce a major breakthrough toward achieving predictive ability. The intertwining of sediment flux, morphodynamics, and stratigraphy offers an unprecedented opportunity for research synergism.

Fig. 1: "Source to Sink"

Sediment production, transport, and accumulation



(Modified from Hedges and Keil, Marine Chemistry, 49, 81-115, 1995)



The program's research goal is to discern the relationships among margins processes—relevant to sediment production, transport, accumulation, and preservation—on multiple temporal scales (turbulence to tectonics) and spacial, scales (from sedimentary fabric to sequence stratigraphy and basin analysis). An expected outgrowth of the program is an improved ability to quantitatively interpret the stratigraphic record of change in both terrestrial and submarine settings. This approach should extend the existing record of environmental changes over time that have affected human populations and ecosystems along continental margins.

A Source to Sink Workshop—funded by NSF and JOI/USSSP—was held at Lake Quinault, WA, from September 28 to October 1, 1999. The purpose of the workshop, which was convened by Chuck Nittrouer and Neal Driscoll, was to create the science plan for the MARGINS sedimentology and stratigraphy community. This plan suggests important directions for future research; recommends strategies for accomplishing this research; and considers candidate sites for detailed interdisciplinary studies. This plan provides a blueprint for taking geomorphologic, sedimentary, and stratigraphic processes to a substantially higher level of understanding.

MARGINS Source to Sink Strategy

The MARGINS effort encapsulates several conceptual innovations. The first of these is the recognition of margins as entities extending from a sediment source to sediment sink. This idea is best illustrated as a physiographic curve, extending from eroding continental highlands to the portions of the oceans that constitute the ultimate sediment sink (Figure 1). The second conceptual innovation divides this curve into five discrete units separated by four discrete boundaries that are dynamic and shift in response to perturbations. These are delineated below.

Unit	Boundary
Continental uplands	
	Transition from gravel-bed to sand-bed streams
Continental plains	
	Coast (estuaries, lagoons, deltas and shoreline)
Continental shelf	
	Shelf-slope break
Continental slope	
	Slope base
Continental rise and beyond	

Thus, margins, as conceived here, contain two terrestrial units and three submarine units, as well as four boundaries. One of these boundaries, the plains-shelf boundary, contains considerable internal structure. Each of the units may contain subunits, such

as bedrock and alluvial subunits, within the continental uplands zone. Also, each unit may produce sediment through erosion and/or act as a sediment sink through deposition, either temporarily or permanently. The zones are linked by the flux of sediment through the boundaries.

The third, and perhaps most important, of the innovations is the recognition that all of the boundaries are dynamic and shift in response to climatic, tectonic, and anthropogenic perturbations. This motion is perhaps most dramatically illustrated in the major changes to shoreline position in response to sea-level change. For example, the shoreline of the U.S. East Coast has migrated over 100 km landward since the end of the last glaciation. It is essential to understand, however, that every other boundary is also dynamic. For example, the shelf-slope break migrates seaward due to clinoform progradation and the gravel-sand transition migrates downstream in response to tectonically driven inputs of coarse sediment.

Each unit has a characteristic morphology which interacts with sediment flux through the laws of morphodynamics. Wherever there is net deposition within a unit, a stratigraphic section records this interaction. The units "talk" to each other by communicating sediment across the moving boundaries. The "solution" to how each unit responds to perturbation is intimately linked with the "solution" of boundary migration. Thus, at the scales of interest to the MARGINS program, no unit can be viewed in isolation, rather the units must be examined as part of a linked system. Central to the goal of MARGINS is the dynamic quantification of unit interaction in response to the triad of forcing functions: climate change, tectonics, and eustasy.

The linking of the five units allows for even the most distal components to interact with each other — albeit with time lags and filtering of the signal as it propagates through the intermediate units. Thus, rejuvenated tectonism in the continental uplands may ultimately result in increased sedimentation on submarine fans. On the other hand, the increase in sediment supply generated by tectonism may not cause a submarine response if there is sufficient accommodation created by subsidence on the continental plain. Conversely, rapid base-level drop can cause knickpoint migration up bedrock streams on the continental uplands, but only if the effect can propagate through the coastal plain.

The fourth conceptual innovation of the MARGINS program recognizes the power of the analogy between the subaerial and submarine world. The continental uplands are in many ways loosely analogous with the submarine continental slope. The continental plains are likewise loosely analogous to the submarine fans found at and below the continental rise. More specifically the following analog structures stand out.

Subaerial	Subaqueous
Incised bedrock channels	Submarine canyons
Alluvial fans	Submarine fans
Meandering rivers	Meandering channels on fans
Subaerial debris flows	Submarine debris flows
Deltaic tributary channels	Channel networks on submarine fans

In no case is the analogy perfect. The degree of similarity, however, is sufficient to suggest that they represent different expressions of the same set of physical laws. The pursuit of these analogies links the terrestrial and submarine worlds, and goes beyond the already powerful link of sediment transport across moving, dynamic boundaries. The MARGINS program is unique in viewing subaerial and submarine processes, morphology, and stratigraphy as linked pieces of the same fundamental unit, and viewing each unit, subaerial, or submarine, as one realization of a unified underlying structure.

This unified conceptualization demands an interdisciplinary approach to studying margins. Field research provides the baseline empirical base and the overall perspective. Experimental research allows for the testing of hypotheses that cannot be directly tested in the field. Theoretical and numerical research builds the basis for predictive capabilities. This framework requires cooperation among geomorphologists, stratigraphers, and oceanographers, and requires them to cross the shoreline between the terrestrial and submarine environment. There is unprecedented potential for synergism between communities that are not typically in close communication. This is why it is essential to involve both terrestrial and marine earth scientists in the MARGINS Source to Sink Initiative.

Ocean Drilling

One of the major objectives of the Source to Sink Initiative is to assess the morphologic and stratigraphic response of continental margins to a number of environmental forcing functions acting over a variety of scales. To understand the links between fundamental physical processes and the evolution of landscapes and seascapes requires sampling and imaging strategies spanning entire margins, from the mountain tops to the deep sea. Rapid advances in technology have greatly improved the accuracy and precision with which we can image the Earth, both the subaerial and submarine environments. However, marine coring technology available to the research community has not kept pace with geophysical advances, especially in shallow-water environments. Hole stability in, and core recovery of, unconsolidated sediments remains poor, which greatly limits groundtruthing/correlating capability. Addressing fundamental questions about the development and evolution of dispersal systems on continental margins requires platforms for shallow-water drilling (<100 m) that complement the strengths and capabilities of the *JOIDES Resolution*. New coring and downhole logging technology developed for industry offers exciting prospects for continuously coring and logging unconsolidated sediments in diverse environments (e.g., continental shelf and slope). The MARGINS program views ocean drilling, which optimizes drilling and recovery capabilities and develops additional platforms to drill shallow-

continued on page 18

JOI Management Oversight Committee, continued from page 5

and everyone hopes that the funding for ODP/IODP can increase regularly for the next 6-8 years. The additional funds will be used to fund U.S. science programs related to the drilling program, but not operations. The NSF is understandably reluctant to have its contribution to the international program exceed the current level, approximately 66% (not counting the cost ($6M) of the recent refit which was borne entirely by U.S. funds).

There are remaining concerns about the length of the drilling hiatus between ODP and IODP and the impact on US science planning. However, in a recent letter from Bruce Malfait to Ted Moore (Chair of IPSC), an ambitious program for the transition timing was reiterated. The letter states in part:

> "Funding permitting, it is NSF's intent to begin the selection process for the non-riser vessel, and operator in January of 2002, and make an award for vessel acquisition/modification/conversion by October 2003. Conversion would occur in fiscal year 2004, and the vessel would, hopefully, be available to commence international operations no later than early fiscal year 2005."

Given that ODP drilling will extend to approximately September 2003, the hiatus presently anticipated could be as short as a year, but not as long as 18 months. Peggy Delaney and the U.S. Science Advisory Committee (USSAC) have recently completed a report on the future non-riser drilling platform through the Conceptual Design Committee. The committee found a wide variety of suitable, existing ships, which meet the community's criteria. The report is on-line at:www.joi-odp.org/usssp/cdc/. See page 8 of this newsletter for additional information.

During the coming months, Orcutt will continue to meet with those with a stake in the transition from the ODP to IODP in an effort to develop a transition plan prior to the EXCOM meeting in late June. He will continue to update the community on progress and urges those in the community with questions, concerns, and suggestions about this transition to contact him via email at jorcutt@igpp.ucsd.edu or by telephone at (858) 534-2887.

Source to Sink Workshop, continued from page 17

water environments, as an essential tool for the success of MARGINS science, especially the Source to Sink Initiative.

Fall Education and Planning Workshop

A MARGINS Source to Sink Education and Planning Workshop will be held September 11-15, 2000, at Lake Tahoe. Participants in the workshop will examine the relationships among processes relevant to sediment production, transport, accumulation, and preservation on margins across a large range of temporal and spatial scales. Experts will be invited to speak about various aspects of the selected focus and allied study sites (e.g., New Zealand, New Guinea, and SE Alaska). This approach will provide an opportunity for scientists to submit competitive proposals to the MARGINS January 15, 2001 RFP, even if they were not familiar with the originally selected study sites.

The four-day workshop will begin with an overview of the study sites focusing on processes that affect landscape and seascape evolution. Day 2 will be devoted to examining the interaction and feedback among these processes along the path from the eroding continental highlands to the deep sea. The agenda for days 3 and 4 will accelerate progress on the Source to Sink theme by developing interdisciplinary approaches to research in the focus areas and by implementing a research strategy that maximizes synergy and use of facilities while minimizing dilution of effort. Applications to attend the workshop should be submitted to the MARGINS Office by June 15, 2000. Funds to cover lodging and meals, and to defray partial travel costs, of U.S. participants are available. Applicants should send a one-page email message to margins@soest.hawaii.edu containing (1) address and contact information and (2) a brief description of research interests. Inquiries may be addressed to the MARGINS Office (www.soest.hawaii.edu/margins) or to the convenors care of Chuck Nittrouer (cnittrouer@ocean.washington.edu) or Neal Driscoll (ndriscoll@whoi.edu).

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MODELING STRESS AND FLOW IN THE TOE REGION OF AN ACCRETIONARY PRISM

Philip Stauffer

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Faculty Advisors:
Casey Moore
Barbara Bekins

The purpose of the research I conducted for my JOI/USSAC Ocean Drilling Fellowship was to quantify the stress and pore pressure evolution of sediments as they approach and enter subduction zones. With guidance from my co-author and mentor, Barbara Bekins, I used a two-dimensional coupled fluid flow/consolidation model (SPIN-2D, Borja, 1984) to analyze consolidation of underthrust sediments in response to the accretionary loading process. This work combines existing drill core data, Logging While Drilling data from Ocean Drilling Program (ODP) Leg 171A, and previous modeling and data analysis studies to constrain the simulations and yield insight into consolidation processes near the toe of an accretionary prism.

High-resolution bulk density data from five boreholes drilled on ODP Leg 171A show that consolidation is not homogeneous within the Northern Barbados decollement. The results indicate that the decollement is well consolidated at some sites while other sites remain underconsolidated. Using SPIN-2D, we simulate loading of a 10-km-long by 680-m-thick slice of the incoming section at the estimated subduction rate (2.7 cm/yr) with the estimated effective stress of the overriding accretionary prism (3.8 degree taper angle) for a period of 185 ka. The simulation is thus equivalent to 5 km of subduction and provides a large enough domain to capture several exciting processes.

We compared model results of bulk density in the decollement 3.2 km arcward of the deformation front with the Leg 171A data. We found that when vertical prism permeability is high (kz = 10^{-17} m^2), high rates of seaward flux (14 cm/yr) are needed to maintain an underconsolidated decollement. When vertical prism permeability is reduced to kz = 10^{-18} m^2, underconsolidated decollement behavior is achieved with only 5 cm/yr seaward flux.

Our simulated seaward fluxes in the decollement (1 - 14 cm/yr) lie between previous estimates from steady state modeling (< 1 cm/yr) and transient modeling (> 1 m/yr). The fully coupled nature of the governing equations leads to simulation results that have more complex patterns of dewatering than previously shown. Figure 1 displays typical fluid sources generated by the model for both the well-consolidated and poorly-consolidated end-members. Maximum simulated instantaneous fluid sources (2.5 x10^{-13} s^{-1}) are comparable to previous estimates. The model predicts minor swelling of incoming sediment (fluid source = -3.2x10^{-15} s^{-1}) up to three kilometers before they are subducted. Swelling seaward of the deformation front, as predicted, may help to explain the small-scale shearing and normal faulting proximal to the proto-decollement that are observed in the seismic data. An article about this work has been submitted to the *Journal of Geophysical Research*.

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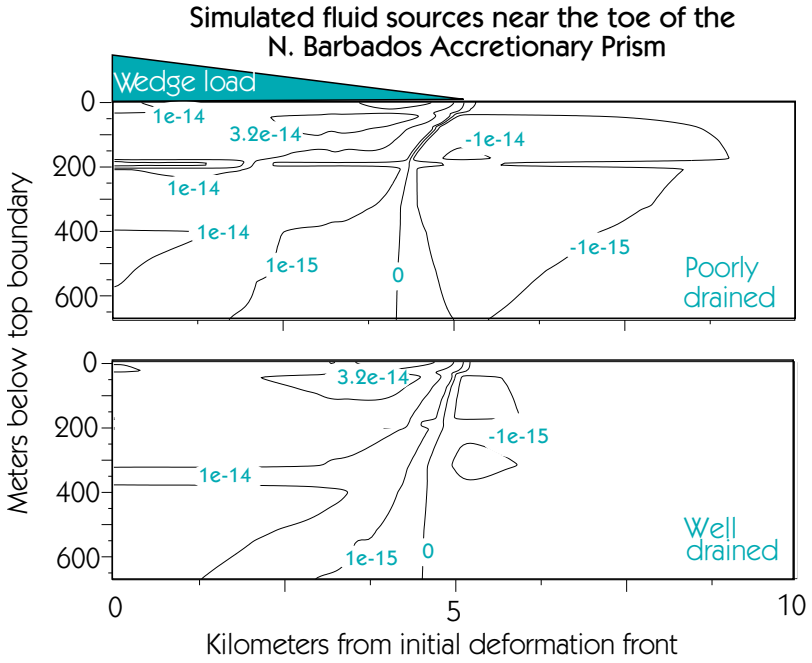

Fig. 1: Fluid sources are higher under the wedge for the well-drained simulation, however, swelling arcward of the deformation front is higher for the poorly-drained example. Negative fluid sources imply sediment swelling while positive fluid sources imply consolidation.

ROCK MAGNETIC INDICATORS OF ENVIRONMENTAL CHANGE ALONG THE ANTARCTIC PENINSULA

Stephanie Brachfeld

Ph.D. Institution: Univ. of Minnesota
Faculty Advisor: Subir Banerjee

The JOI/USSAC Ocean Drilling Fellowship supported my work to develop rock-magnetic indicators of environmental processes along the Antarctic Peninsula. For the past several decades, West Antarctica has experienced significant change in the state of its ice shelves, sea ice cover, and ecosystems (Smith et al., 1999). Coring operations and sediment trap studies were initiated to better understand the regional glacial and biogenic sedimentation processes and to investigate the natural environmental variability over time. The Ocean Drilling Program (ODP) visited the Palmer Deep, a shelf basin on the western margin of the Antarctic Peninsula, in March 1998, during Leg 178, and recovered two high-resolution Holocene records from Sites 1098 and 1099 (Barker et al., 1999).

Sediment cores from the Palmer Deep have a remarkable magnetic susceptibility profile, encompassing five zones in which the signal alternates between strong and weak values. This signal is characteristic of biosiliceous cores from shelf basins and fjords along the peninsula (Domack and Ishman, 1992). I have examined the concentration, grain size, and mineralogy of the magnetic material in each of the five zones and am attempting to understand the glacial, biogenic, and chemical processes that created each assemblage.

The Late Holocene portion of the record shows regularly spaced highs and lows in susceptibility. These have been interpreted as periodic diatom blooms that dilute the terrigenous material, resulting in low susceptibility values (Leventer et al., 1996; Brachfeld and Banerjee, in press). However, dilution with biogenic silica, which increases by a factor of three in the interval 7 to 29 meters composit depth (mcd) (R. Dunbar and C. Ravelo, personal communication), is insufficient to account for the factor of 50 drop in susceptibility at 7 mcd. It is also unlikely that this drop in susceptibility is a result of diagenesis. Interstitial water data indicate that organic matter degradation and sulfate reduction begin at 20 mcd (Barker et al., 1999). No chemical boundaries coincide with the susceptibility features.

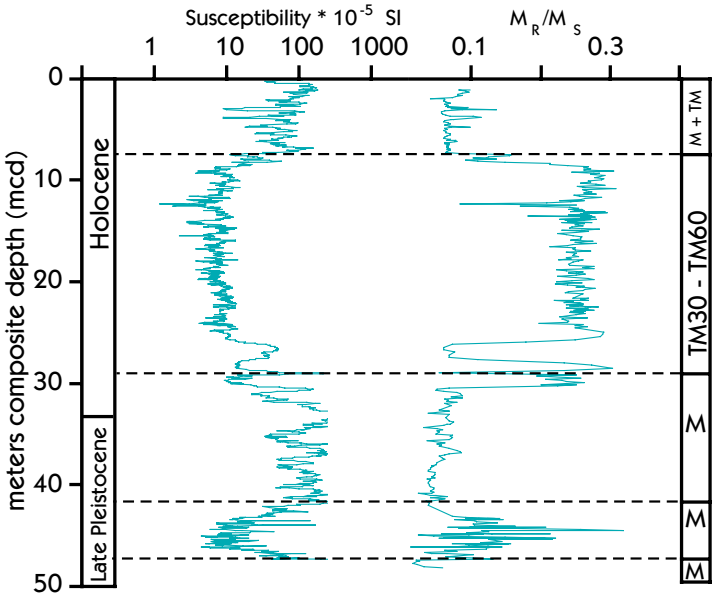

Fig. 1: Magnetic susceptibility, M_R/M_S, and magnetic mineralogy at ODP Site 1098. M denotes magnetite and TM denotes titanomagnetite. The magnetic susceptibility profile's shape is controlled by changes in the concentration, grain size, and mineralogy of the magnetic mineral assemblage. Intervals of low susceptibility are characterized by relatively higher values of M_R/M_S, suggesting finer grains. The Holocene is marked by the introduction of titanium-rich titanomagnetite, which is **not** a common constituent of the calc-alkaline intrusive rocks exposed along the Antarctic Peninsula.

Changes in magnetic domain state occur in each of the five zones. The ratio of saturation remanent magnetization to induced saturation magnetization, M_R/M_S, is approximately 0.1–0.5 for pseudo-single-domain (PSD) magnetite (1-10 microns) and < 0.1 for large multidomain magnetite (>10 microns). At Site 1098 M_R/M_S has low values in the intervals where susceptibility is strong and high values where susceptibility is weak. Further, mineralogy changes occur in each zone. The Late Pleistocene portion of the record contains pure magnetite. The Holocene is marked by the introduction of titanium-rich titanomagnetite, composition TM30-TM60 (Brachfeld and Banerjee, in press).

Variations in magnetic grain size and magnetic mineralogy may yield clues about sediment provenance and sediment transport processes. For example, multidomain pure magnetite is a common constituent of the Andean Intrusive suite exposed all along the Antarctic Peninsula. The complete absence of multidomain pure magnetite in the early through middle Holocene sediment at Site 1098 suggests a reduction in locally derived IRD, resulting in a magnetic mineral assemblage dominated by titanomagnetite derived from further afield.

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THE GREATEST EARTH SCIENCE UNDERTAKING EVER…

Margaret L. Delaney
Professor, Ocean Sciences Department
University of California, Santa Cruz

The phrase above—the final one in Mike Arthur's last column as USSAC Chair, describing his view of scientific ocean drilling—is a wonderful heading for my first letter to you. I had the pleasure of taking over the reins of USSAC from Mike in October 1999. I'd like to start by thanking Mike for his fearless service as Chair. His calm and steady leadership helped propel USSAC forward, enlarging our role as the U.S. community voice for scientific ocean drilling. He served effectively as "cheerleader" (to use his term) for the benefits of U.S. participation in ODP and in future scientific ocean drilling. (In one of life's delicious ironies, Mike is now editor of the AGU journal *Paleoceanography*, taking over after I ended my four-year term as editor at the end of 1999.)

I wanted to touch briefly on issues of broad concern to the U.S. and international scientific community about program management of ODP at JOI. (For the record, JOI is a U.S. corporation that serves as the prime contractor to manage the international ODP under contract to the U.S. National Science Foundation.) There have been substantial changes at JOI recently, with more on the horizon. While I question the wisdom of some of these changes; others are healthy and forward looking in my view. The most dramatic change has been the departure of Kate Moran as ODP Director at JOI, to the deepest regret of myself and many others. John Farrell is serving as Acting Director, and we owe him enormous gratitude for his willingness to step forward at this critical time. The JOI Board of Governors (BoG) has recently named a Management Oversight Committee (MOC), a standing committee of the BoG, to assist in the management of ODP. (See the article about the MOC on page 4 this of newsletter.) I think this will help strengthen JOI management of ODP, and it should bring about stronger communications between the stakeholders in ODP and our current management structure. I plan to keep watch on these developments, and share my thoughts with you about them in future columns.

The importance of planning for future scientific ocean drilling is my major concern as USSAC Chair. Make no mistake about it, ODP drilling operations end in 2003. The time to ensure a successful future for U.S. scientific ocean drilling interests in the Integrated Ocean Drilling Program (IODP) is now. We have passed many significant milestones in progress toward a future international, multi-platform program, and we have a long road ahead of us still. I will highlight three areas of recent USSAC focus in this regard. First, I had the pleasure of serving as Chair of the Conceptual Design Committee (CDC) for the Non-Riser Vessel for IODP, a subcommittee formed by USSAC in response to a charge from NSF. You can read more about CDC on page 8 of this issue, and find our final report at www.joi-odp.org/usssp/cdc/. This report has now been transmitted by NSF to the IODP Planning SubCommittee (IPSC) to solicit and receive international (including U.S.) comment. I urge you to review the report and respond to the comment form available at the report website.

Second, USSAC is working on a U.S.-focused document to complement the IODP Science Plan. This document, with the working title "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 anticipate soliciting public comment and input over the next 6-12 months on the substance of this document. Third, we are envisioning how U.S. science support should be structured for IODP. In other words, we are busy inventing a successor program to the U.S. Science Support Program (USSSP) and a successor committee to USSAC! Your insights, advice, criticisms, reactions (and, of course, compliments!) will be critical to our success in these endeavors.

Sincerely,

Peggy Delaney

Margaret L. Delaney
Chair, USSAC

Stepping towards the Future

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

The first step to identify the non-riser drilling platform of the future Integrated Ocean Drilling Program (IODP) has been taken. The next step is to provide an opportunity for comment from any and all who wish to do so. An enhanced non-riser drilling vessel, compared to the present *JOIDES Resolution*, has consistently been identified, by numerous national and international planning documents, as an important requirement for a future scientific drilling program. The National Science Foundation (NSF) intends to vigorously pursue the resources required to supply such a vessel to the new program. To accomplish this, the characteristics and capabilities of such a vessel needed to be identified. As reported elsewhere, NSF approached USSAC for this input, and USSAC in turn formed the Conceptual Design Committee (CDC), which just completed its report and submitted it to NSF.

A detailed description of how the CDC report was produced can be found on page 8 of this newsletter. Now that it has been completed and received, NSF thinks that the crucial next step is to provide international and national scientific drilling communities with an opportunity to comment on the recommendations and specifications contained in the report. This will ensure that the vessel meets the broadest requirements of the scientific drilling community and can be fully integrated into the new program. To this end, NSF has asked IPSC, through the Co-Chairs of the International Working Group for IODP, to make the report widely available to the global scientific drilling community and collect comments. NSF anticipates receiving a report from IPSC by January 2000, which collates, synthesizes, and prioritizes these comments prior to moving forward with the acquisition of the non-riser drilling vessel. The timing provides a wide window for comment and allows for adjustment to the recommendations of the CDC. It is NSF's intent to begin the selection process for the non-riser vessel in January of 2002 and to make an award for vessel acquisition and conversion by October 2003. Vessel conversion would occur in fiscal year 2004 (i.e., beginning October 1, 2003), making it available for drilling operations no later than early fiscal year 2005. We encourage you to read the CDC report, which is available at the following Internet address: www.joi-odp.org/usssp/cdc/, and ask you to use the convenient comment form at this website to make your thoughts and comments known to IPSC.

On another note, we would like to comment on some personnel issues at NSF. As most of you may know by now, NSF has a new Assistant Director for Geosciences: Dr. Margaret Leinen. Many of you know Margaret and are familiar with her strong involvement with, and many contributions to, the marine geosciences. Margaret comes to NSF from the University of Rhode Island where she was Dean, Graduate School of Oceanography and Vice Provost for Marine and Environmental Programs. In addition to her responsibilities as the Assistant Director for Geosciences, Margaret will be responsible for coordinating environmental science and engineering research and education programs within NSF, and for cooperation and collaboration on environmental issues between NSF and other federal agencies. Margaret fills the position recently vacated by Dr. Robert Corell.

The Division of Ocean Sciences has been searching for a replacement for Dr. Michael Reeve as Head of the Research Section. This process is well under way and the results should be available by the next newsletter. Mike has taken over the position that Don Heinrichs recently occupied prior to his retirement as Head of the Facilities Section in Ocean Sciences.

Finally, we are pleased to announce that Dr. Jamie Allan has extended his tenure as a rotator with the Ocean Drilling Program at NSF for another year, starting this past January. However, because of NSF policy this will be Jamie's third and last year as a rotator. We are actively seeking a qualified replacement to fill the rotator position when Jamie leaves. This position is at the Associate Program Director level in the Ocean Drilling Program. The position is excepted from the competitive civil service and will be filled on a one- or two-year temporary basis. Responsibilities related to this position involve proposal evaluation, project development and support, program planning and budgeting, and related administrative duties.

Applicants for this position must have a Ph.D. or equivalent experience in marine geology or geophysics or a related disciplinary field. In addition, four or more years of successful research, research administration, and/or managerial experience beyond the Ph.D., are pertinent to the position. A broad understanding of the current status of the relevant U.S. academic scientific community and its relationship with NSF, other federal agencies, and international planning efforts is desirable. Previous involvement with ocean drilling would be an advantage, but is not required.

Interested applicants should submit a letter of recommendation and vita to National Science Foundation, Division of Human Resources Management, 4201 Wilson Blvd., Room 315, Arlington, VA 22230 USA; Attn: Myra Loyd and reference vacancy announcement EX00-49. For further information call 703-306-1185 x3027. For technical information call Dr. Bruce Malfait, Ocean Drilling Program, 703-306-1581. Hearing impaired individuals should call TDD 703-306-0189. NSF is an equal opportunity employer.

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JOI/USSAC NEWSLETTER

Editors: John Farrell, Andrea Johnson, and Brecht Donoghue

The *JOI/USSAC Newsletter* is issued three times a year by Joint Oceanographic Institutions (JOI) and is available free of charge. JOI manages the international Ocean Drilling Program (ODP) and the U.S. Science Support Program (USSSP) which supports U.S. participation in ODP. Funding for JOI/USSSP is provided through a cooperative agreement with the National Science Foundation (NSF).

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ACADEMIA AND INDUSTRY, CONTINUED FROM PAGE 15

pressure regimes of continental margin versus abyssal plain settings?

4) Predictive nature of sequence stratigraphy models: What is the predictive value of the Vail/Exxon "eustatic" curve, and can it be adequately tested?

5) Turbidite facies and architecture: What factors explain sand distributions, rates of failure and subsidence, migration of deep marine channels and resulting internal connectivity, and channel filling during bypass and abandonment phases? When do levees contain significant amounts of sand? Can we determine global base-level (versus climatic and tectonic) controls adequately? What is the origin of onlap patterns on basin margins? What is the distribution of, and what are the controls on, High-Amplitude Reflection Package deposition?

Furthermore, several topics were discussed during the workshop that were already configured as proposals or were ripe for submission as preproposals. "Champions" to nurture these existing and unborn proposals were identified and tips were given for developing JOIDES proposals. As a result, eight proposals and preproposals of interest to both industry and academia were either updated or submitted to JOIDES to enter the review process. Their titles follow: (1) Global sea level and the architecture of passive margin sediments: Shallow-water drilling of the New Jersey continental shelf, (2) Grand Banks off Newfoundland: Drilling an Atlantic margin from continental shelf to rise, (3) Scotian Shelf deep water (Cretaceous-Neogene), (4) Timing and amplitude of Oligocene/Miocene sea level fluctuations in the inner sea of the Maldive Archipelago: An intra-oceanic carbonate system (Equatorial Indian Ocean), (5) The Cretaceous gateway between the Arctic and Atlantic Oceans, (6) Northeast Greenland Shelf, (7) GeoFluids in the deepwater Gulf of Mexico, and (8) Gulf of Mexico mini-basin depostional processes, products, and stratagraphic evolution.

The forging of industry-academic partnerships has only just begun.

THE AUTHOR

John Armentrout, retired from the Mobil Oil Corporation, has left the oilpatch to spend time in academia and his native Northwest. He is currently a candidate for an affiliated professor with the Department of Earth Sciences at the University of Washington, Seattle. Felix Gradstein has also taken his industry savvy to academia and is currently in the Department of Geology at the University of Oslo, Norway.