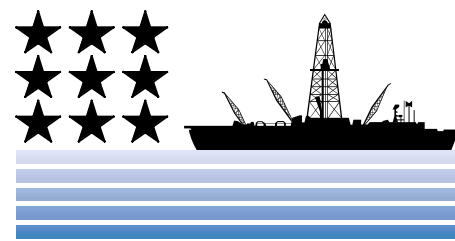


JOI/USSAC NEWSLETTER



News from the Joint Oceanographic Institutions/U.S. Science Support Program associated with the Ocean Drilling Program • Winter 2001 • Vol. 13, No. 3

KEEPING OUR SCIENTIFIC DREAMS AFLOAT

contributed by Mike Underwood and Jon Martin

Can you imagine a world without scientific ocean drilling? Many of us take it for granted and assume someone else will make sure that it continues. As it turns out, by agreeing to serve as members of USSAC, we volunteered to be that "someone." Now, it is our privilege to report to you, "the US scientific ocean drilling community," on our efforts to keep scientific ocean drilling afloat for our collective future—and to solicit your input.

For several years, dedicated scientists from many nations have been working on a science plan to become the basis of the Integrated Ocean Drilling Program (IODP). The details of this process have been reported extensively in past newsletter issues, so we'll cut to the chase. Although the US has been a key player in the planning phase, US participation in the IODP hinges upon approval by the National Science Board (NSB), the advisory board to the National Science Foundation (NSF). First, the NSB must approve the concept, and second, it must authorize the use of NSF program funds to support the activity.

Later this year, the NSB will receive the IODP Initial Science Plan for 2003-2013, titled *Earth, Oceans, and Life: Scientific Investigations of the Earth System Using Multiple Drilling Platforms and New Technologies*, and then consider the document for conceptual approval. An international committee drafted this science plan; therefore, a document that focuses

solely on US needs for scientific ocean drilling must also be developed to accompany the science plan. This so-called "companion document" is essentially a proposal to the NSB for US participation in IODP. Developing this important proposal is consuming most of

*UNDERSTANDING OUR
PLANET THROUGH OCEAN
DRILLING WILL BE AVAILABLE
FOR YOUR REVIEW AT
WWW.JOI-ODP.ORG/USSSP/
UNTIL APRIL 12.*

USSAC's attention this winter and spring as we strive to submit it to NSF by June.

The IODP Initial Science Plan has not yet been finalized, but it is far enough along, including a review by a "blue-ribbon panel," to allow USSAC to independently evaluate and vigorously endorse its scientific framework. The US companion document, to be titled *Understanding Our Planet through Ocean Drilling* (UPOD), must explain why the US should endorse both the international plan and a multi-platform scientific ocean drilling program. To accomplish this, it is intended to: (1) convey the intellectual rigor and excitement of the IODP Initial Science Plan; (2) portray the breadth, depth, and importance of US research affiliated with ocean drilling; and (3) emphasize the link of scientific ocean drilling to national priorities for science funding.

Because *Earth, Oceans, and Life* explores and describes in detail the new program's scientific goals, the companion document will merely highlight the plan's three fundamental themes: (1) The Deep Biosphere and the Sub-Seafloor Ocean; (2) Environmental Change, Processes, and Effects; and (3) Solid Earth Cycles and Geodynamics. For each theme, we will: (1) reiterate the scientific foundation (with references to *Earth, Oceans, and Life*); (2) explain why this science is critical with respect to national issues and US leadership goals; (3) describe links to broader US science initiatives (NSF and beyond); and (4) demonstrate why the proposed IODP platforms are necessary to accomplish the science.

When complete, UPOD will be a concise document (the equivalent of about 15 single-spaced pages) that underscores the compelling
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CREATING THE FUTURE

contributed by Steve Bohlen

As I accept responsibility for guiding Joint Oceanographic Institutions (JOI) forward during this exciting period of transition, I am sure there are many questions about who I am and what my aspirations for JOI and the oceans community might be. As I am a firm believer in the adage, “the best way to predict the future is to create it,” I shall try to answer some of these questions in the context of thinking big and planning for success.

Despite several years of leading science programs at the US Geological Survey (USGS), I consider myself first and foremost a research scientist who is energized by the excitement of discovery and progress toward understanding how the Earth works. For twenty years I have conducted research on the evolution of the continental crust and subcontinental mantle. I have worked to quantify the chemical and physical evolution of the continental crust and upper mantle and to understand the formation of regional granulite terrains and the lowermost continental crust. My students and I have attempted to deconvolute the inextricable relationships of magmatic underplating of the continental crust, high-grade metamorphism, crustal growth and the formation of continental cratons, by integrating field observations with experimental results and theoretical approaches. Recently, my research interests have turned to the role of kinetics of mineral reactions such as gabbro to eclogite or coesite to quartz in both driving and recording continental-scale processes. Overall, my work and the work of my students and postdocs has spanned a broad range of topics from extensive field work on three continents, to geochemistry, geochronology, experimental petrology, crystallography, and thermodynamics.

As Associate Chief Geologist at the USGS for the past five years, I led the scientific work of the Geologic Division which covers many fields. These included earthquake, volcano,

“THE BEST WAY TO PREDICT THE FUTURE IS TO CREATE IT.”




DR. STEVE BOHLEN BECAME THE NEW PRESIDENT OF JOINT OCEANOGRAPHIC INSTITUTIONS ON NOVEMBER 27, 2000.

and landslides hazards reduction; the global seismographic network; mineral and energy resource assessment; geologic mapping; climate history; and coastal and marine geology. In these research areas, I led the Division to a broader scientific vision of interdisciplinary research with greater focus on the interactions of humans with the surface of the Earth. I also worked extensively at the interface between scientific research and the politics of the legislative and executive branches, explaining the value of our work and arguing successfully for enhanced funding for major research programs at the USGS.

JOI attracted me because of the excitement, challenges, and opportunities for the future—especially with the Integrated Ocean Drilling Program (IODP) taking shape. As you know better than I, great strides have been made in our understanding of the complexities of the Earth's oceans in the last few decades. Yet there remains a great deal of important work

to be done to develop a thorough, integrated understanding of the processes operating among the solid earth, the atmosphere and the oceans. Differentiating among these processes will yield information essential for us to enjoy—rather than endure—the coming century. I am excited by the opportunity to help make this the century of the ocean sciences and challenged by the chance to help bring about and help manage the IODP.

Presidential panels and commissions as well as legislation presage the era of the oceans. In the coming decade we will see the realization of new ocean observing networks and process research at scales heretofore precluded by the lack of technology and funding. The opportunities for oceans research are enormous, but the greatest rewards lie in working much more closely and actively with our colleagues in the solid earth, atmospheric, and biologic sciences and focusing attention on the atmosphere-water-human-land system. I intend to be a catalyst for such enhanced interactions and research. Together we can produce scientific results that will have a significant impact on public policy. As our impact on public policy grows, so should our research funding.

I look forward to working with you. I understand the passions and commitment that drive you. I share them. As a player in the Washington scene for the past five years, I understand the complex interplay between the Executive Branch and the Congress and what it takes to secure funding for large science programs. Finally, I believe that the future success of the oceans sciences lies in working with others and together impacting public policy in significant and highly visible ways. JOI is an institution dedicated to service to the oceans community and to success in the areas I have just outlined. I look forward to getting to know you, and together creating the future of scientific ocean drilling. 

PRESERVING THE PAST

contributed by Betsy Fish


Documenting the bibliographic legacy of scientific ocean drilling in a way that does it adequate justice is a formidable project. The impact of the Deep Sea Drilling Project (DSDP) and the Ocean Drilling Program (ODP) on science in the twentieth century is vast. To begin chipping away at this iceberg of a task, the "Bibliographic Legacy Project" was begun in June 2000 to compile the scientific, engineering, and technological accomplishments of ODP and DSDP into a searchable database. This bibliographic database will serve a variety of purposes, such as (1) a research and educational tool for scientists and students; (2) an assessment of ODP's accomplishments against ODP's Long Range Plan; (3) support for the successor of ODP, the Integrated Ocean Drilling Program; and (4) an aid in public affairs. Development of the database was initiated as a project during my JOI/USSSP Internship. Over time, the project grew to include ODP staff in the Publication and Information Services departments at ODP-TAMU, ODP's Science Operator.

To back track a bit, in 1999, the Publication Services Department at ODP-TAMU began working with the American Geological Insti-

tute (AGI) to produce a DSDP/ODP-related publication database to generate statistics and reports. To do this, ODP-TAMU purchased the use of a subset of "GeoRef," an electronic database compiled by AGI from over 3,500 geologic journals, books, and maps that span the duration of DSDP and ODP. The subset was sorted from the GeoRef master database by using a predefined set of DSDP/ODP-related keywords. The resulting DSDP/ODP subset is stored on one CD-ROM that contains over 16,000 DSDP/ODP-related citations. However, this single-user database is proprietary and cannot be used by individuals. Also, ODP-TAMU is limited in how it can make reports from this database available to the public.

Coincident with ODP-TAMU's efforts, JOI was searching for ways to catalog the legacy of ODP's accomplishments. Scientists' publications are the most concrete representation of those accomplishments. Thus, ODP/TAMU's existing single-user database became the launching point for the new Legacy Project Database. Permission was granted by AGI for ODP-TAMU to post the database on the web in a format that allowed searches by author's name only. This allowed scientists to deter-

mine which of their citations were missing and to submit new or corrected data. In November 2000, an announcement went out to the scientific drilling community over various listservers, calling for individual scientists to visit this specially designed website to assure that they were aware of publications included.

The community response was enormous; 973 "missing" citations were identified and submitted. These citations were routed to AGI to be added to the DSDP/ODP Legacy Project Database. Currently, specialists at AGI are reviewing each citation to double check DSDP/ODP relevance and to determine why it was not initially included in ODP-TAMU's original database subset. Upon its completion, the final DSDP/ODP database will be available to the ODP scientific community on the web, and it will be maintained and updated by AGI. The web address for database access will be posted in this newsletter, on the JOI/USSSP listserv, and on the JOI website. 


THE AUTHOR

Following her JOI/USSSP Internship, Elizabeth "Betsy" Fish became a full-time JOI employee in December 2000.

KEEPING DREAMS AFLOAT, CONTINUED FROM PAGE 1

ling reasons for US participation and leadership in IODP. It will show the connection and relevance of IODP to an ever-broadening range of scientific disciplines. It will also demonstrate that through education, information technology, economic development, and hazard mitigation, IODP participation is vital to US national interests. Full US participation in all aspects of IODP is required, and capitalization and operation of a non-riser vessel by the US is essential.

The purpose of this article is both to inform you and to encourage your involvement. Until

April 12, 2001, a draft version of *Understanding Our Planet through Ocean Drilling* will be available for your review at www.joi-odp.org/USSSP/ along with instructions for submitting your comments. USSAC is proud to be the "someone" championing the future of US participation in scientific ocean drilling, but we are only a few individuals in a large community so we heartily welcome your support and ideas. The contact information for the entire USSAC membership is on page 15 of this newsletter. You are encouraged to contact any and all of us regarding UPOD or other issues that may concern you. 

THE AUTHORS

Mike Underwood, University of Missouri, and Jon Martin, University of Florida, are co-chairing a USSAC subcommittee to write *Understanding Our Planet through Ocean Drilling*. The other subcommittee members are Tim Bralower, University of North Carolina, Chapel Hill; John Sinton, University of Hawaii; and Debbie Smith, Woods Hole Oceanographic Institution.

ODP SHIPBOARD MICROBIOLOGY COMES OF AGE

contributed by Thomas Davies

The progressive integration of microbiology into the ongoing scientific activity aboard the *JOIDES Resolution* allows ODP pioneers to tackle the microbial frontier beneath the seafloor. Since Rick Murray et al. reported on Leg 185 microbiology efforts (*JOI/USSAC Newsletter* v. 12, n. 2, p. 8), an expansion of the lab stack has enabled microbiology to be permanently housed among the other shipboard labs. Furthermore, a successful proposal from Andreas Teske (WHOI) and colleagues to the U.S. National Science Foundation's LexEN Program is contributing more than \$200,000 towards furnishing equipment for the new lab.

Following a strong recommendation from the JOIDES Scientific Measurements Panel (SciMP), the microbiology lab was moved from a temporary van, used on Leg 185, to permanent space on the forecastle deck, across from the paleontology lab. To create space, the XRF was removed, and the thin section preparation equipment was relocated to the new lab level atop the lab stack that was constructed during the ship's 1999 dry dock visit. The XRF was replaced by a J-Y Horiba Inductively Coupled Plasma spectrometer (ICP), purchased with the aid of funds from the U.S. Department of Energy and installed in the chemistry lab. The relocation of equipment and other changes were completed

during Leg 191. Although the X-ray diffraction unit remains in its old location due to concerns about that instrument's ability to withstand movement, considerable space was made for microbiology research. Also, microbiology and chemistry, which share many tools and types of measurements, are now adjacent.

Figure 1 approximates the layout of the new microbiology space. The lab contains an anaerobic chamber (glove box) with rock splitting and other sampling equipment for taking uncontaminated samples from the cores. This is a two-person, medium-sized model with gloves on opposite sides of the polymer glove bag. Plumbed into the glove box are both nitrogen and an anaerobic gas mixture of 5% hydrogen, 5% carbon dioxide, and the balance nitrogen. A laminar flow hood is set up for preparing uncontaminated samples for study, and there are facilities for incubating samples. There is also an epifluorescence microscope that was purchased with the LexEn grant funding, along with a Barnstead Nanopure water system, autoclave, hydrogen headspace gas chromatograph, Shimadzu TOC solid phase analyzer and various miscellaneous high pressure gauges, pumps, connectors, etc. Freezers (-80°C) and pressure vessels allow storage of samples for future shorebased studies. A complete list of

shipboard equipment available for microbiological work is available at www-odp.tamu.edu/sciops/labs/microbiol/. In addition to sampling and labwork, routine procedures also have been well established for conducting tracer experiments to quantify the extent of downhole contamination of the cores (by drilling fluid pumped down from the sea surface).

The new lab is a benchmark representing significant progress on the JOIDES' Deep Biosphere Initiative (*ODP Long Range Plan*, 1996). This was made possible by the dedicated efforts of David Smith, Andreas Teske, and Kate Moran, as well as the members of the JOIDES Deep Biosphere PPG, BUGSCOM, and SciMP, and the technical support staff of ODP/TAMU.

The Deep Biosphere PPG was disbanded at the end of 1999, and its advisory role taken over by SciMP, marking the "coming of age" of microbiological work as a routine ODP activity. However, much fine-tuning remains. Microbiologists discovering the opportunities offered by *JOIDES Resolution*, have an enormous range of expectations and understanding, both in terms of how ODP works and what is feasible in the ship's multidisciplinary environment. Since drydock, microbiology has been an important component of Legs 187, 190, and 191, and each case has been very different. Some microbiologists simply want to collect clean samples for future study on shore; others have visions of extensive lab research conducted on board the ship. As a next step, ODP/TAMU will work with SciMP to address these issues and establish a reasonable base level of technical support and routine lab equipment and supplies that microbiologists can expect when they sail. 🐟

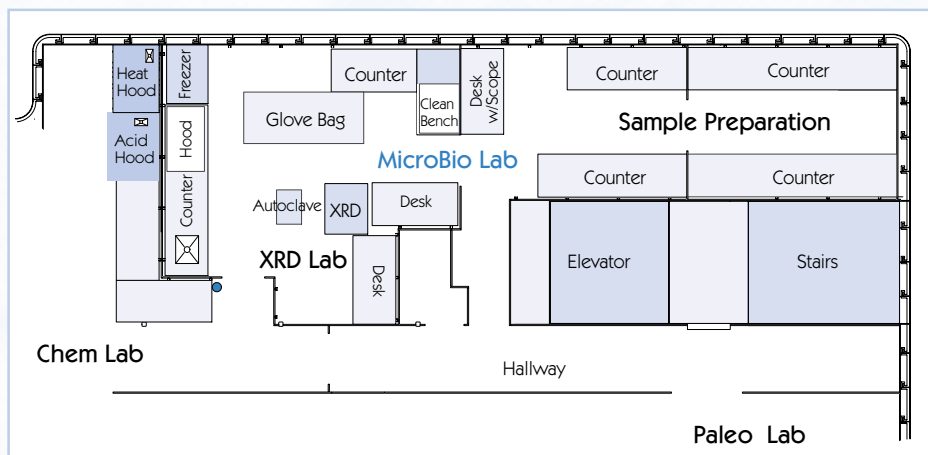


Fig. 1: Approximate layout of the new microbiology lab on board the *JOIDES Resolution*.

THE AUTHOR

Dr. Thomas Davies is the Manager of Science Services at the Ocean Drilling Program, Texas A&M University.

IESX JOINT PILOT STUDY INTEGRATES SEISMIC DATA


contributed by Dan Quoidbach and Gilles Guerin

A shining achievement of ODP has been to make accessible an unprecedented amount of data with just a few clicks of a mouse. Readily available core and log data on board the *JOIDES Resolution* and on shore allow data and results to be combined with ease. Integrating data is a natural way to analyze all shipboard measurements. For example, the juxtaposition of sample and log measurements with a core photo or an electrical FMS image may explain certain features. In the past, among scads of digital leg data, one major type has often been omitted—seismic. Also, comprehensive data integration in a well's vicinity has usually been deferred to post-cruise research. Individual scientists have produced synthetic seismograms and time/depth conversions, but these studies are rarely performed at sea. Fortunately, commercial software and the ever-increasing power of workstations have made the shipboard integration of these data types possible: the GeoQuest IESX seismic interpretation package, part of the GeoFrame software used to process log data, is now available for routine drillship use.

IESX use was successfully initiated during Legs 180, 182, and 188, which highlighted some of the software's features that are most useful to ODP scientists: 1) basemap display of seismic lines and wells to monitor the distribution of data; 2) interactive 2-D visualization/interpretation of individual seismic lines; 3) 2-D visualization of intersecting seismic lines; 4) generation of synthetic seismograms from log data and their superposition on seismic lines; and 5) 3-D interactive visualization of seismic lines and wells. Figure 1 highlights some of these tools and illustrates how they are dynamically linked. IESX is also available for post-cruise work at the five shorebased facilities affiliated with ODP logging services: Columbia Univ. (USA), Univ. of Leicester (UK), Univ. of Aachen (Germany), Univ. of Montpellier (France), and Univ. of Tokyo (Japan), as well as at several other university-based locations.

As recommended by the Scientific Measurement Panel (SciMP), a joint Borehole Research Group (BRG) and Site Survey Data Bank (SSDB) pilot study is underway to determine procedures and tools to enhance ODP's routine seismic data integration with IESX. The study will determine SSDB guidelines for digital data submission that allow ready data conversion into IESX "projects." Ways to insure data integration early in cruise planning and the nature of the output for post-cruise archiving will also be addressed. The level of effort needed to prepare projects and ways to secure their integrity onboard and post-cruise will also be identified. An ad hoc SciMP working group is monitoring issues related to the pilot study.

The IESX pilot study is focused on two legs. Leg 194, in January 2001, investigated the development of the carbonate platforms of northeast Australia. Before the leg, IESX was used to evaluate the available seismic data at all of the proposed drilling sites. Next, pre-cruise efforts defined a "project" containing all seismic data and site locations and pro-

vided the basic framework for shipboard data integration. Core and log data collected during the leg were progressively added into the project. Leg 196 will drill on the Nankai accretionary prism using Logging-While-Drilling (LWD) tools prior to the deployment of two advanced CORKS for long-term monitoring of fluid processes. During the leg, LWD data will be tied to the seismic surveys in the area by their progressive addition into the Leg 196 IESX project. The confidentiality of some of these data will be maintained by password-restricted access to each project. We are confident that this study will generate a significant improvement in the shipboard use of seismic data and well-to-seismic integration, leading to their becoming an essential and routine ingredient in most ODP legs. 

THE AUTHORS

Dan Quoidbach is the Director of the ODP Site Survey Data Bank, and Gilles Guerin is the Technical Analyst at the Borehole Research Group. Both are at Columbia University's Lamont-Doherty Earth Observatory.

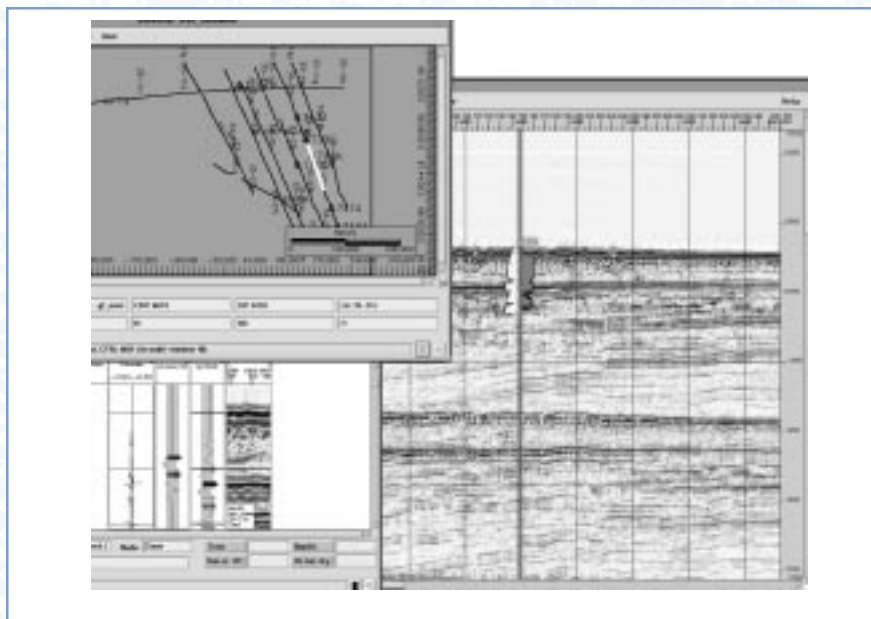


Fig. 1: Example of an IESX interpretation session from ODP Leg 188. The basemap (upper left) summarizes the relative location of the wells and seismic lines. The extension of seismic line displayed in the right panel is highlighted in the basemap. The synthetic seismogram and log data that overlay the seismic line are calculated in a separate window (lower left).

DRILL BITS

JOI FISHES FOR INTERN

Joint Oceanographic Institutions (JOI) is searching for qualified applicants to intern at the JOI Office in Washington, DC. The JOI/USSAC Internship Program's goal is to introduce science students (ranging from undergraduates to graduate students) to the career possibilities of science management. Interns will work full-time on site, and dedicate fifty percent of their time to a specific ocean drilling project. Their remaining time will be used to support US Science Support Program (USSSP) activities.

The JOI Intern position is scheduled to last for three months, although JOI may extend the internship for up to six months. The start and end dates of the internship will be negotiated between the intern and JOI (ideally it will be over Summer 2001 with a term beginning in June). A stipend is available. Interested applicants should submit a cover letter, CV, and the names and contact information, including phone number and email address, of four references to the JOI Office by March 30, 2001. Interviews with finalists will be scheduled in early April, and a decision will be made by mid-April. Please send your application to: Brecht Donoghue, JOI, 1755 Massachusetts Avenue, NW, Suite 700, Washington, DC 20036. If you have questions, email Brecht at bdonoghue@brook.edu.

TIMES THEY ARE A CHANGIN'

There have been changes at JOI over the past few months that, while they may have gone unheralded, have had enormous positive impact on the office. Many of you may be familiar with Betsy Fish as a JOI/USSSP intern working on the ODP Bibliographic Legacy Project (see page 3). Although her term as an intern ended in December, she agreed to stay and take on the dual role of Administrative Assistant to both the IWG Support Office and the USSSP Director. She has handled the added responsibility with her usual aplomb and has

even managed to master our new postal machine—a feat that inspires awe and admiration throughout the office. Robert Wright, formerly the webmaster at Johns Hopkins/SAIS, recently accepted JOI's Technical Program Associate position. As such, he has undertaken responsibility for JOI's web presence (and for pretty much anything else at JOI that boasts an electrical cord). Nicole Eisen is JOI's new Human Resources Assistant. Nicole graduated from Smith College last spring and is now hard at work beating JOI's corporate policies and procedures into submission. And finally, Eldon "The Check Is In the Mail" Hayman, formerly JOI's Accounting Manager, has been named as JOI's Director of Finance. We are very pleased to have them all aboard.

SCIENCE SYMPOSIUM

A joint JOI/USSSP and SCOR/IMAGES sponsored science symposium titled "Asian Monsoon Variability on Milankovitch & Sub-Milankovitch Time Scales" will be held in Beijing, China on May 9-11, 2001. The symposium's goal is to present, discuss, and integrate paleoclimate records and modeling studies of monsoon variability at Milankovitch and Sub-Milankovitch time scales in an effort to better understand linkages among: (1) oceanic, atmospheric, and terrestrial component of the monsoon system; (2) linkages between orbital-scale and abrupt-change variability in the monsoon record; and (3) the physical mechanisms driving monsoon variability at these time scales. If you would like more information please contact: Dr. Steven C. Clemens, Geological Sciences, Brown University, email: steven_clemens@brown.edu.

ARCTIC DRILLING PLANS HEAT UP

Planning for scientific drilling in the Arctic Ocean heated up last August when a proposal for drilling the Lomonosov Ridge received SCICOM's highest ranking. The proposal hasn't yet been scheduled. However, SCICOM started the snowball rolling by forming a De-

tailed Planning Group (DPG) to investigate the operational logistics requirements of drilling the Lomonosov Ridge.

At its first meeting in January 2001, the DPG began addressing a score of tasks that were either self-imposed or assigned by SCICOM. According to the DPG Chair Jan Backman (Stockholm Univ.) the exciting outcome of the meeting is that three viable scenarios for Arctic drilling were identified with preliminary cost estimates of US\$5.6M to \$7.7M—price tags similar to that of ODP Legs. These estimates are for full expedition support, including all vessels and helicopters, necessary ship refits, and airborne radar imagery. Sweden has already offered to contribute nearly \$1M to this endeavor in the form of the *Oden*, a Swedish icebreaker identified as a participant in all three scenarios. The expedition is envisioned to spend 35 days "in the ice." This includes 10 days in roundtrip transit through 1000 nautical miles of ice and 25 days on site.

All three scenarios include the *Oden* and a Russian Nuclear Icebreaker (NIB). In the first scenario, the multipurpose *Botnica*, which has a large moonpool and dynamic positioning, would be the actual drilling platform. Built in 1998, the *Botnica* spends winters keeping southern Finland's waterways and coastlines open to commercial traffic. Its owners will permit the *Botnica* to venture to the high Arctic in the summer months with the additional icebreaker support of the *Oden* and a NIB. A second option for drilling the Lomonosov Ridge is to use the Canadian barge, *Sea Sorceress*, as the drilling platform with ice support from three icebreakers: the *Oden*, a NIB, and the Canadian *Terry Fox*. The third scenario is to refit the *Oden* and to use it as the primary drilling platform with ice support from a NIB and the *Terry Fox*. The DPG will continue exploring options and will meet again this June in Washington, DC. They will submit their final report to SCICOM in August.

IODP: FULL STEAM AHEAD

IWG ACTIVITY

Planning activity for the post-2003 Integrated Ocean Drilling Program (IODP) continues to move forward at a fast pace. The International Working Group (IWG), which is composed of funding agency representatives from those international funding entities that have declared an intent to become a member of the future IODP, met for the eighth time on January 16-17 in Southampton, UK to hammer out the principles upon which IODP will ultimately be based. Current IWG membership includes representatives from Japan, the United States, Australia, Canada, China, the European Commission, the European Science Foundation (ESF) Consortium on Ocean Drilling, France, Germany, and United Kingdom. At the meeting, the new co-chairs of the IWG, Margaret Leinen, US National Science Foundation (NSF), and Yoichiro Otsuka, Ministry of Education, Culture, Sports, Science, and Technology (MEXT) of Japan were formally introduced. The IWG said goodbye and offered a heartfelt thanks to the former co-chairs, G. Michael Purdy, NSF, and Satoshi Tanaka, STA, for their successful tenure.

At the Southampton meeting the members discussed the "Principles Documents" that will guide IODP drilling platforms, program, membership, implementation, and management. As the Principles currently stand, the US and Japan, (Lead Agencies) will share equally in the IODP program costs. To be considered a "Lead Agency" a country or consortium must make a contribution to the Program that is equal to that of other Lead Agencies. The US will be legally and fiscally responsible for the non-riser vessel; Japan will be likewise responsible for the riser vessel. Ways to encourage the contribution of a "third leg" or mission specific platforms (e.g., arctic or shallow-water capabilities) to the new program are being discussed. Representatives from NSF and MEXT estimated that the new program will cost approximately US\$140 M/year to oper-

ate two drilling vessels and that the yearly membership dues will be around US\$5 M. For additional information, you may download the Executive Summary of the Southampton IWG meeting from the IODP website, www.iodp.org.

IODP INITIAL SCIENCE PLAN

The Initial Science Plan (ISP) for IODP, "Earth, Oceans, and Life: Scientific Investigations of the Earth System using Multiple Drilling Platforms and New Technologies," will be available in May 2001. Drs. Frank Rhodes, Cornell University, US, and Seiya Uyeda, Institute of Physical and Chemical Research (RIKEN), Japan, co-chaired a blue-ribbon panel of international scientists who carefully reviewed the ISP. The Review Committee members praised the ISP and stated that "the scientific significance, technical feasibility and societal benefits of the ISP make it of exceptional importance and timeliness...the benefits of the program described in the ISP far outweigh the costs and technical uncertainties."

A draft version of the ISP is available at www.iodp.org. For a bound copy of the ISP, or a CD ROM containing the high-resolution ISP graphics, please contact the IWG Support Office iwgso@brook.edu and the item(s) will be sent when they become available in May.

iSAS: PREPARING FOR IODP

In January, the IWG approved the draft mandates for the iSAS (interim Science Advisory Structure) panels and committees along with the draft processes for scientific drilling proposal development and review. The IWG requested that the OD21 and JOIDES advisory structures collaborate to form iSAS. Both advisory structures will nominate members for several iSAS committees and panels in February and March 2001. The panel structure and proposal review process will be similar to the current JOIDES structure. Final evaluation, ranking, and scheduling, however, will be con-

ducted by the formal IODP Science Advisory Structure, which will be established on 1 October 2003. Further development of the iSAS structure will likely occur once key panels and committees are formed in May and June. iSAS panel members will attend upcoming JOIDES panels as observers to maintain scientific continuity and momentum. The iSAS panel membership and the proposal review guidelines will be in effect, pending approval of the IWG, for the interim period before IODP begins in October 2003.

The IWG also approved the formation of an iSAS Support Office that will be established by June 1, 2001. Japan has offered to sponsor this office. The iSAS Support Office will work closely with the JOIDES office and the IWG Support Office to manage logistics during the interim period before IODP officially starts. All JOIDES drilling proposals that will not be drilled as part of ODP will be passed on to iSAS for consideration in IODP. A public call for new IODP drilling proposals will be made in June.

IPSC will finish its tasks this spring. In its wake and an interim Planning Committee (iPC) will begin. Drs. Hajimu Kinoshita and Ted Moore will co-chair the iPC, which will report directly to the IWG on the status of iSAS issues. The first iPC meeting is planned for August.

IODP EXHIBIT BOOTHS

Look for the IODP Exhibit Booth at two international meetings this spring:

- The European Union of Geosciences (EUG) Meeting in Strasbourg, France (April 8-12, 2001)
- The Geological Society of America - Geological Society of London (GSA-GSL) Joint Meeting in Edinburgh, Scotland (June 24-26, 2001).

ANNOUN

JOI/USSSP SUPPORTED SHIPBOARD PARTICIPANTS

Leg 193: Manus Basin

ODP/TAMU Staff Scientist: Jay Miller
LDEO Logging Staff Scientist: Gerardo Iturrino
Wolfgang Bach, WHOI
David Vanko, Georgia State Univ
Lizet Christiansen, Johns Hopkins Univ

Leg 194: Marion Plateau

US Co-Chief: Alexandra Isern, NAS/NRC
ODP/TAMU Staff Scientist: Peter Blum
JOIDES Logging Scientist: Gregor Eberli, RSMAS
Tefaye Birke, Univ of Hawaii, Manoa
Stephen Burns, Univ of Massachusetts
Guido Bracco-Gartner, RSMAS
Brandon Dugan, Pennsylvania State Univ
Michael Fuller, Univ of Hawaii, Manoa
Pamela Hallock Muller, USF, St. Petersburg
Albert Hine, USF, St Petersburg
Michael Howell, Univ of S Carolina
Garry Karner, LDEO
Brooke Olson, Univ of Massachusetts
Wuchang Wei, Scripps Institution
Timothy White, Pennsylvania State Univ

OCEAN GEOSCIENCE LECTURES

The JOI/USSAC Distinguished Lecturer Series brings the results of ODP research to students at the undergraduate and graduate levels and to the earth science community in general. JOI is now accepting applications from US colleges, universities, and nonprofit organizations to host talks given by the speakers listed below in the upcoming the 2001-02 season. Applications are available online at www.joi-odp.org/USSSP/DLS/DLS.htm or from JOI (phone: 202-232-3900, email: joi@brook.edu). Applications are due **April 6, 2001**.

Southern Ocean Impacts on Global Climate: Clues from the Antarctic Margin
Dr. Robert Dunbar, Stanford University

Late Pleistocene Evolution of the Ocean's Carbonate System: A Serendipitous Result from ODP Leg 177
Dr. David Hodell, University of Florida

Methane Hydrates: Boon or Bane?
Dr. W. Steven Holbrook, University of Wyoming

The Nature, Origin, and Fate of a Giant Oceanic Plateau: Ontong Java Plateau
Dr. John Mahoney, University of Hawaii

Hunting the Earth's Magnetic Field
Dr. Lisa Tauxe, University of California, San Diego

Subduction Zone Megathrusts: Why Stratigraphy and Sedimentology Matter
Dr. Michael Underwood, University of Missouri

Educational Resources

A Teachers' Guide
to accompany the interactive
educational CD ROM:

ODP
GATEWAYS TO
GLACIATION

is now available at
[http://www.joi-odp.org/USSSP/
CurrEnr/Curriculum.html](http://www.joi-odp.org/USSSP/CurrEnr/Curriculum.html)

(Email joi@brook.edu for your
complimentary CD ROM.)

JOIDES OFFICE 2001-2003

As of January 1, 2001, the JOIDES Office rotated from GEOMAR in Kiel, Germany to its new location at the Rosenstiel School for Marine and Atmospheric Sciences (RSMAS) at the University of Miami.

The scientific staff in the new office are

EXCOM Chair	Chris Harrison
SCICOM/OPCOM Chair	Keir Becker
International Liaison	Elspeth Urquhart
Science Coordinator	Aleksandra Janik

The contact information is

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CEMENTS

SCHLANGER OCEAN DRILLING FELLOWSHIP

In January 2001, a two-year shorebased fellowship was awarded to:

Kristen Averyt, Stanford University
"Marine Barite as a Monitor of
Seawater Sr/Ca Ratios"
(multiple DSDP/ODP legs)

Next fellowship deadline:

April 15, 2001

For information: www.joi-odp.org/USSSP/fellowship/fellowship.html

ODP and USSSP Director Positions

JOI is seeking a highly qualified scientist, with established leadership and management skills, to fill the vacancy of Director, Ocean Drilling Program. Contingent upon the results of the search for a Director, JOI may also be seeking a candidate, also a highly qualified scientist with leadership and management skills, to become the Associate Director for ODP and the US Science Support Program Director.

For additional information, visit:

www.joi-org/joi/employment/employment.html

SCHEDULE FOR ODP LEGS 193-205

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

LEG	REGION	CO-CHIEFS	DEPARTURE PORT	DATE	SCIENTIFIC OBJECTIVES
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 Cenozoic to interpret continental margin sediment sequences, as well as for global stratigraphic correlation and basin analysis.
195	Mariana/ West Pacific ION	Shinohara Salisbury	Guam	3/01	To emplace a seismic observatory to aid the study of earthquake dynamics, plate subduction processes, formation of island arcs, and their relation to mantle convection.
196	Nankai II	Becker Mikada, & Moore	Keelung	5/01	To conduct Logging-While-Drilling and to install CORK hydrologic observatories at sites drilled during Legs 131 and 190. Leg 196 is the second part of a two-leg Nankai Trough proposal.
197	Hotspots	Tarduno Duncan	Yokohama	7/01	To penetrate basement (150-250 m) to obtain samples for paleomagnetic tests to determine the motion of the Hawaiian hotspot during the formation of the Emperor Seamounts.
198	Shatsky	Bralower Premoli Silva	Yokohama	8/01	To explore extreme warmth and climatic transitions, both long-term and abrupt, in the Cretaceous and Paleogene by drilling a depth transect on Shatsky Rise, Central Pacific.
199	Paleogene	Lyle Wilson	Honolulu	10/01	To extend high-quality paleoceanographic records, using APC/XCB coring, back to the Eocene to study the "hot house world" (hydrothermal activity, equatorial circulation, productivity, etc.).
200	H ₂ O	Stephen Kasahara	Honolulu	12/01	To create a long-term observatory to 1) study the fast-spreading Pacific crust, 2) serve as a high-priority link in the Ocean Seismic Network, 3) monitor geophysical and geochemical experiments in the crust.
201	Peru	D'Hondt TBN	Panama City	1/02	To test whether various sedimentary geochemical regimes are characterized by different subsurface microbial communities—or merely by different degrees and kinds of community activity.
202	SE Paleocanog.	Mix Tiedemann	Valparaiso	4/02	To study Neogene and older sediments in latitudinal/depth transects of SE Pacific topographic rises to assess history of boundary currents and millennial-scale climate variability.
203	Costa Rica	Morris TBN	Panama City	6/02	To test existing models and to develop an understanding of the processes associated with the seismogenic zone and with the workings of the subduction factory.
204	Gas Hydrates	Trehu Bohrmann	San Francisco	7/02	To investigate the formation and physical properties of gas hydrates, as well as to calibrate their volume estimates, evaluate their role in slope stability, and identify paleo-proxies for methane release.
205	Eq. Pacific ION	Orcutt TBN	San Francisco	9/02	To emplace a seismic observatory in the western equatorial Pacific, at a high-priority site for the International Ocean Network (ION) and the Ocean Seismic Network (OSN).

OPPORTUNITIES IN GEOCHEMISTRY FOR POST-2003 OCEAN DRILLING

contributed by Rick Murray, Dan Schrag, and Geoff Wheat

Throughout the history of scientific ocean drilling, geochemistry has played an important role in advancing a variety of research programs. A broad suite of topics—ranging from the earliest efforts of the Deep Sea Drilling Project (DSDP) to radiometrically date altered sea-floor basalts during the testing of the plate tectonic hypothesis, to studies involving accretionary prisms, the deep biosphere, chemical paleoceanography, mid-ocean ridge hydrology and other important subjects—have each relied upon and simultaneously contributed to our understanding of chemical inventories, chemical sources and sinks, and chemical mass balances.

Geochemistry will continue to be an important part of scientific ocean drilling in the Integrated Ocean Drilling Program (IODP). With the ongoing construction of the scientific themes and technological goals of multi-platform post-2003 drilling, the geochemical community thought it worthwhile to gather its

members to identify and target research questions to be addressed through ocean drilling.

In October 2000, the USSSP-sponsored workshop, “Opportunities in Geochemistry for Post-2003 Ocean Drilling,” assembled about 50 international geochemists with a diverse set of interests and orientations. Their purpose was to help develop a guiding “blueprint” for shipboard and shorebased geochemical studies during the next phase of scientific ocean drilling. Representatives from the US National Science Foundation and the ODP/IODP advisory structure also participated. The two-day workshop was held at the Boston University Corporate Education Conference Center in Tyngsboro, Massachusetts, which provided an ideal retreat setting for the exchange of ideas. An explicit goal of the workshop was to involve individuals who in the past have only had limited interactions with DSDP/ODP, in the hope of strengthening the ties to other members of the geochemical community. The pre-

liminary outcome from this workshop is described here, and a full report will be available in Spring 2001.

Plenary sessions, designed to encourage cross-fertilization between the different fields of geochemistry, alternated with Focus Group breakout sessions. These Focus Groups had four broadly overlapping themes: (1) Formation and Alteration of Crust; (2) Porewater and Sediment Chemistry; (3) Chemical Paleoceanography; and (4) Microbiology and Biogeochemistry.

A series of questions served as an initial framework for discussion and assisted in identifying commonalities among fields. Participants strived for consensus in prioritizing scientific issues that can and should be targeted by the new multiplatform program, and they developed specific recommendations that will contribute to the planning process for the future program. The initial questions were:

- (1) What scientific problems should be of highest priority?
- (2) What drilling objectives should be prioritized to address these problems?
- (3) What new technology is needed and/or what existing technology needs substantial improvement?
- (4) What operational and funding issues require attention?

COMMON ISSUES

Regardless of specialty, the geochemists present at the workshop identified several key approaches that would facilitate progress in geochemical research in the IODP.

Increase Commitment to Thematic Consistency. Recognizing that the DSDP and ODP have largely been single-platform endeavors (with associated practical and logistical limitations), the participants nonetheless strongly

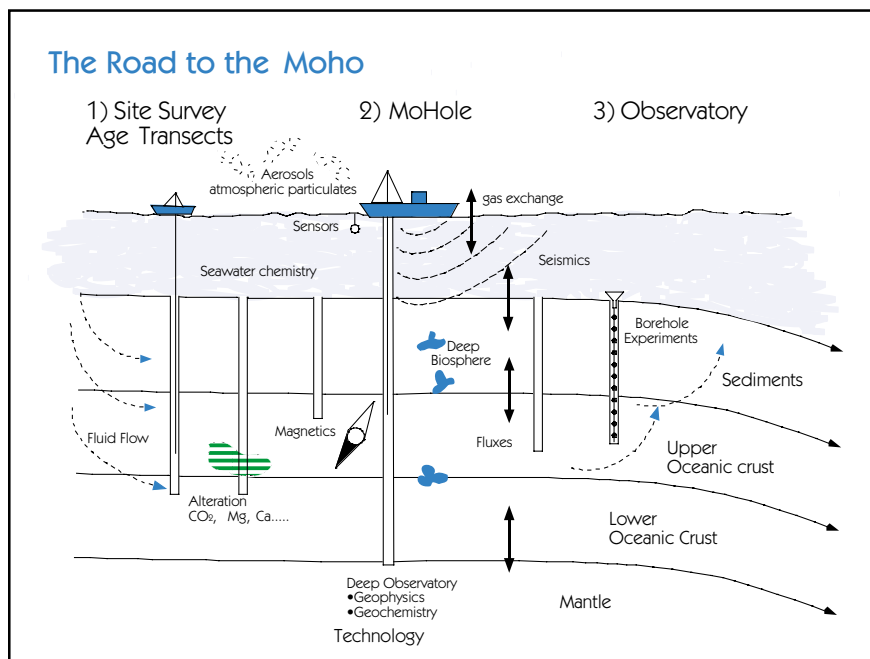


Fig. 1: One of the proposed post-2003 thematic initiatives that would require an interdisciplinary approach.

believe that increasing linkages among legs with closely allied scientific goals would encourage and facilitate consistent community involvement and result in greater scientific integration. While it is unclear whether or not the current, relatively rigid, "two-month leg" system will remain unchanged for the riser-less ship in the IODP, an increased flexibility in grouping highly-ranked research targets together to make a concerted "push" in a particular direction would be fruitful. Those in the geochemical community at the workshop identified several thematic thrusts that will by necessity involve an interdisciplinary approach, including "Continental Margins as Biogeochemical Reactors," "The Road to the Mohole" (Figure 1), and "Global Biogeochemical Cycles and Budgets." The complete workshop report will detail the initiatives and interests within these themes.

Expand the Scope of Research Targets. The DSDP and ODP together have a strong record of success in the earth and ocean sciences. With IODP, geochemists and other scientists have an opportunity to expand the scope of the targeted scientific problems and "think outside the box" in terms of the global-scale nature of scientific inquiry. The workshop participants projected that increasing the coordination with and ties to other marine geology and geophysical national and international initiatives (e.g., MESH, MARGINS, RIDGE, and GERM), as well as to terrestrial projects (e.g., continental drilling), would assist in achieving this expansion of scope. An additional benefit would be the recruitment of new geochemists into the marine drilling community.


Increase the Use, Development, and Quality of *In Situ* and Other Instrumentation. To date, the fundamental focus of scientific ocean drilling has been to recover solid and aqueous samples to be returned for shipboard and shorebased analysis. While logging, downhole tools, and other avenues of data acquisition have been increasing in utility in recent years, a concerted effort is necessary to facilitate integrating these data sets with the more tradi-

tional types of sample recovery. The ability to recover sediment, rock, and porewater samples at *in situ* temperatures and pressures should be of utmost priority in IODP. Greater flexibility is needed in order to improve sample archiving, to allow special sample handling for particular needs (shipboard and shorebased), and to allow larger sample sizes to accommodate the battery of geochemical techniques now available to the community.

Develop More Advanced Shipboard Laboratories. As chemical instrumentation becomes more robust and able to tolerate the shipboard environment, there is an opportunity for the new program to greatly expand its analytical capabilities. While the recent installation of an ICP-emission spectrometer on the *JOIDES Resolution* is a welcome addition, it should be considered as only one small example of the capability of the "next generation" of chemical instrumentation that should be routinely available. These acquisitions must be considered in the context of the increasing interdisciplinary nature of research targets.

For example, increased organic chemical apparatus will be essential for the Deep Biosphere research in both sedimentary and igneous environments. Great progress can be made with the integration of an onboard radioisotope isolation facility, installation of which is deemed essential for the success of Deep Biosphere initiatives. This capability will allow for tracer experiments that will yield estimated rates of biologically mediated geochemical transformations. While protocols for the coexistence of radiotracer techniques and radiocarbon-based geochronology need to be in place prior to installation of a radioisotope facility, these potentially conflicting interests currently coexist on UNOLS vessels, which can serve as useful models for future capabilities on board the drilling vessel. Finally, issues regarding post-cruise funding, technician support, and database construction and integration were discussed and will be described in the full Workshop Report.

CONCLUSION

This meeting endeavored to reach out to the entire geochemical community. Although the attendees represented many fields and written comments were solicited from persons who were unable to attend, we recognize that not all of the goals, ideas, and needs that represent the broad spectrum of geochemical research interest may have been incorporated into the workshop. We encourage additional thoughts pertaining to the four questions listed above while we compile and complete the workshop report. Please send responses to Rick Murray at rickm@bu.edu. Your continued input is greatly appreciated and required to strengthen the scientific purpose of ocean drilling during IODP and to maintain the highest standards for chemical study in the drilling environment. 

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C. G. Wheat	Univ. of Alaska, Fairbanks

FOCUS GROUP COORDINATORS

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John Hayes	WHOI
Julie Morris	Washington University
Jim Natland	RASMAS, Univ. of Miami
Adina Paytan	Stanford University
David Smith	University of Rhode Island
Damon Teagle	Southampton, UK

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FISHING FOR THE TRUTH ABOUT THE LPTM USING SEAWATER ND ISOTOPIC RECORDS



Debbie Thomas

Ph.D. Institution:
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Faculty Advisor:
Tim Bralower

The Late Paleocene Thermal Maximum (LPTM) is one of the most spectacular examples of rapid climate change in the geologic record. Occurring ~55 million years ago, the LPTM was characterized by a ~4 to 6° sea surface temperature warming, while global deep ocean temperatures increased by ~8°C within the span of just a few thousand years (e.g., Rohl et al., 2000). Perhaps the most dramatic environmental change associated with the rapid warming was a 3-4 ‰ negative carbon isotope excursion within marine and terrestrial carbon reservoirs. A host of biotic responses accompanied the environmental changes, most notably the largest extinction of benthic organisms of the past 90 million years.

The warming of the deep oceans may have resulted from a change in the nature of thermohaline circulation in which deepwater source regions switched from cool, high-latitude areas to warmer, more saline, and lower-latitude deepwater sources. In order to investigate the potential role of a deep-sea circulation change associated with the LPTM intermediate and deep water warming, I used my JOI/USSAC Ocean Drilling Fellowship funding to generate high-resolution neodymium isotopic records across the LPTM using fossil fish teeth from deep-sea sedimentary sections recovered from six DSDP and ODP sites (401, 527, 549, 690, 865, and 1001).

Nd isotopes are a useful tracer of intermediate and deep water mass circulation because of the short residence time of Nd (~1000

years) with respect to oceanic mixing (~1500 years). Intermediate and deep water masses inherit the Nd isotopic signature (which is derived from continental weathering and runoff) of the region where waters downwell and maintain that isotopic signature during transit throughout the oceanic basins (with slight mixing with other water masses). For example, North Atlantic Deep Water (NADW) has a rather nonradiogenic Nd isotopic signature reflecting the ancient terranes draining into the Labrador Sea ($\epsilon_{Nd} \sim -13$), whereas the Pacific intermediate and deep waters have a highly radiogenic signal imparted by the weathering of circum-Pacific arc terranes ($\epsilon_{Nd} \sim -5$).

In order to reconstruct the Nd isotopic composition of the late Paleocene to early Eocene intermediate and deep water masses represented by the six DSDP and ODP sites, I analyzed the Nd contained within fossil fish teeth. A growing body of research indicates that fossil fish teeth (when the diagenetic oxide coating has been completely removed) record the Nd isotopic composition of the water mass overlying the sea floor upon which

they were deposited (Figure 1). Thus stratigraphic records of fish teeth Nd isotopes should yield a temporal record of the deep watermass bathing a particular location, and a geographically dispersed set of such stratigraphic records may enable us to reconstruct patterns of ancient thermohaline circulation.

The results of this investigation are significant for several reasons. The LPTM-interval Nd isotopic records exhibit changes which are stratigraphically correlative across very broad geographic and hydrographic ranges, and they coincide with the onset of the LPTM stable isotope excursions. Our results also indicate that significantly different water masses existed in the Atlantic basins during the early Cenozoic. Finally, these data are the first set of truly high-resolution paleo-seawater Nd isotopic records, and they reveal how complex Nd isotopic systematics are when examined in detail.



REFERENCES

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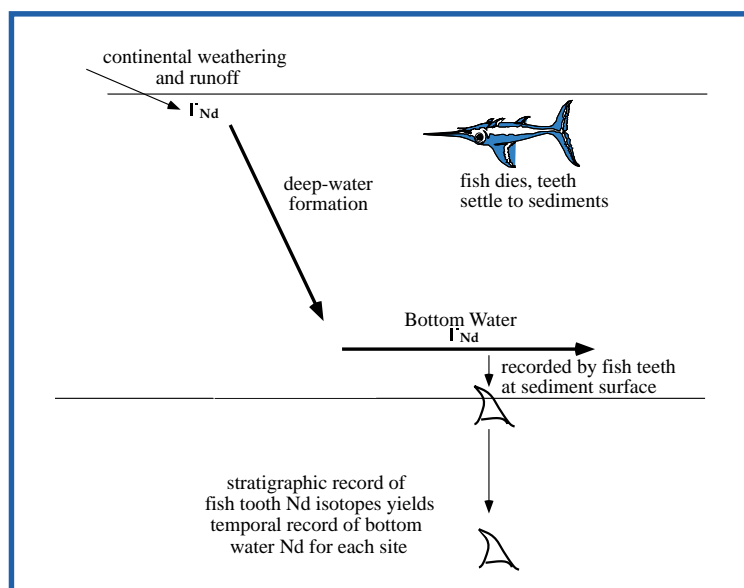


Fig. 1: Schematic of fish teeth Nd utility in reconstructing paleo-deepwater Nd isotopic composition.

NEW COMBINATIONS IN OUR ALPHABET SOUP... NEWS ABOUT THE ODP AND IODP

I find myself very encouraged at progress and good news about various aspects of scientific ocean drilling, both present and future. The past year has been a busy and productive time for USSAC, in defining, pursuing, and representing the US science community's interests in scientific ocean drilling. I'll use this column to share the good news, as well as tell you some of my views about the developments I describe. I'll begin with Joint Oceanographic Institutions (JOI) and the Ocean Drilling Program (ODP) and will follow with news about progress toward the Integrated Ocean Drilling Program (IODP), about the interim science advisory structure for IODP, and about US participation in IODP.

First, what are the important changes at JOI, Inc., the prime contractor managing the ODP? As you noticed in the late-breaking news in the last *JOI/USSAC Newsletter*, Dr. Steven Bohlen, formerly of the United States Geological Survey, is now the JOI President. I had a chance in an early November meeting to acquaint Steve with my views of US community concerns about ODP and JOI. Steve was also able to join us at our most recent USSAC meeting in January 2001, and this gave him a much broader perspective on the US community's role and interests in ODP. JOI is currently searching for a new Director of ODP at JOI, and I look forward to the outcome of that search as well.

A major focus of our recent USSAC meeting, and of our efforts over the past year, was on preparing *Understanding Our Planet through Ocean Drilling* (UPOD), the US companion document to the internationally-prepared science plan for IODP. (The lead article in this newsletter gives more information about the companion document.) The Initial Science Plan (ISP) for IODP—*Earth's, Oceans, and Life: Scientific Investigations of the Earth System Using Multiple Drilling Platforms and New Technologies*—has been successfully and

positively reviewed by a "blue-ribbon panel" of experts. The science plan is available on the web at http://www.iodp.org/pdf/IODP_ISP.pdf, while it continues to be refined and revised. We are working diligently to bring forward a draft version of the US document for community review and response, while meeting the ambitious goal of having the document ready before June 2001, in parallel with the final version of the ISP.

The other item of good news in progress toward IODP is the establishment of the interim Science Advisory Structure (iSAS). The International Working Group (IWG), the group of funding agency representatives from nations expressing interest in the continuation of scientific ocean drilling beyond 2003, has charged JOIDES and the OD21 Science Advisory Committee with peopling the interim Science Advisory Structure (iSAS). At our most recent meeting, USSAC provided advice to the JOIDES SCICOM Chair Keir Becker by providing nominations for membership in the various bodies of the iSAS.

The iSAS will have a structure paralleling that of the existing JOIDES Advisory Structure to the ODP. This includes an interim Planning Committee (iPC), an interim Site Survey Panel (iSSP), and an interim Scientific Measurements Panel (iSciMP). In particular, the most important avenue of contact with the community will be the interim Science Steering and Evaluation Panels (the iSSEPS), one in *Environmental Change, Processes, and Effects* (iESSEP) and one in *Solid Earth Cycles and Geodynamics* (iSSEP). As I understand it, these panels will be charged with interacting with proponents during the ODP-IODP transition to work with submitted drilling proposals (nurturing, initial assessment, recommending for external review, etc.). The iSAS panels should be officially created in June 2001 (this year!) and continue through the official start of IODP on October 1, 2003. (They will then be replaced

by the permanent advisory structure for the IODP.) The good news here is that you, as proponents, can continue to submit proposals that define and shape scientific ocean drilling objectives and priorities.

I want to end with an exhortation about ODP. In the past few years, we have often focused on the impending end of ODP, because the program operations officially end on September 30, 2003. (Post-cruise activities will have a much longer tail, obviously, as we complete research and publication related to ODP expeditions.) The focus on the end of ODP is important in spurring planning for the future program, but it should not be allowed to obscure the exciting drilling and related science being carried out in ODP right now and through 2003. There are still multiple opportunities to sail as a shipboard scientist and to carry out science on drilling-related samples and data within ODP. I encourage you to take advantage of these opportunities. If you don't know how, please—just ask! Any and all questions, suggestions, and advice are always welcomed by our representatives at JOI, by me, and by any USSAC member.

Sincerely,



Margaret L. Delaney
Chair, USSAC

NEWS AND VIEWS FROM NSF

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

Here's a bit of news about NSF, the present and future drilling programs, and some important events and changes here in the Division of Ocean Sciences.

Although the FY 2001 NSF budget was reduced by 4% from the President's original requested level, the overall increase finally approved by Congress (13.4%) represents the largest increase in the history of the agency. High-priority NSF initiatives (Biocomplexity, Information Technology, Nanotechnology, etc.) are likely to see significant growth. The Geosciences Directorate and the Division of Ocean Sciences expect to see increases roughly comparable to the overall Foundation increase. As this article is being written, internal distribution of NSF Program funds have not yet been announced. During the formulation of the 2001 budget, arguments for a higher budget—from an ODP perspective—were for increases in US ODP scientific research, including incremental support for drilling-related research under the MARGINS initiative.

Significant personnel and structural changes have occurred within the Division of Ocean Science. For starters, the Division has been reorganized into three sections. The first, the *Ocean Section*, comprises Biological Oceanography, Physical Oceanography and Chemical Oceanography. The second (and new) section is the *Marine Geosciences Section*, which contains the Marine Geology and Geophysics Program and the Ocean Drilling Program. The third section, the *Integrative Programs Section*, includes support for cross-Division activities, including ship operations, instrumentation and technical services, the Ocean Technology and Interdisciplinary Coordination Program, and education activities. Personnel changes have accompanied this reorganization. Larry Clark has been appointed the new head of the Ocean Section and Mike Reeve was named as the head of the Integrative Programs Section. Our Division Director,

Mike Purdy left NSF on November 30 to become the director of the Lamont-Doherty Earth Observatory. We wish him well in his new endeavor (Good luck Mike!). Don Heinrichs has emerged from his retirement to assume the position of interim Division Director (and acting head of the Marine Geoscience Section). Formal recruitment actions are ongoing to fill the Division Director and Marine Geosciences Section head positions. Within the Ocean Drilling Program, Jamie Allan has departed to become the department chair at Appalachian State University. He will be missed, and we wish him well in his new position. Brad Clement from Florida International University will be arriving in April to fill this position. We are also searching to fill a second visiting scientist/engineer position recently identified for the ODP Program. It is expected that this position will concentrate on IODP planning — specifically with respect to the acquisition of the non-riser drill ship. The position was announced in the November 16 issue of *Eos*.

Focused funding at NSF in support of ODP science is divided between the US Science Support Program (USSSP) administered by JOI (\$6.4M in FY 2000) and a separate unsolicited proposal/grant activity administered by NSF (\$9M in FY 2000). As most of you probably know, you can keep abreast of USSSP news by going to <http://www.joi-odp.org/USSSP/>. At NSF, ODP field programs supported for calendar year 2001 include: (1) an MCS and OBS study of rifting processes in the Gulf of Aden under the direction of Neil Driscoll (WHOI), John Diebold (LDEO) and Brian Taylor (UHawaii); (2) an MCS study of megamullions on the Mid Atlantic Ridge by Brian Tucholke (WHOI); (3) a heat flow study of the eastern Cocos plate under the direction of Andy Fisher (UCSC); (4) an MCS study of the Gulf of Corinth led by Brian Taylor (UHawaii); (6) construction and installation of instrumentation in the corks to be deployed at Nankai under the direction of Keir Becker

(RSMAS); and (7) installation of fly-in corks in eastern Pacific ODP holes. Additional proposals for field programs are under review. To view what is being funded through the NSF/ODP unsolicited proposal/grant activity you can go to: http://www.nsf.gov/home/grants/grants_awards.htm/. Emphasis for field programs in 2002 will shift to planning for IODP drilling; more on this soon in a future article.

The International Working Group (IWG) for the IODP continues to make solid progress towards developing the principles and framework for a new drilling program to be in place by October 1, 2003. The major events at the most recent IWG meeting in January included the following three discussions:

(1) Discussion of review comments on the IPSC IODP Science Plan. Following IPSC's submission of the draft initial science plan for the IODP in early October, the IWG commissioned an international blue-ribbon panel to review and evaluate the proposed program. Overall, the Committee was highly supportive of the Initial Plan, noting, "*the ISP is a bold interdisciplinary and international project of extraordinary importance, high promise and unique significance.*" Primary concerns raised with the Initial Science Plan included: (1) the lack of detail on the integration of mission specific platforms into the plan; (2) a need to clarify the strategies to encourage partnerships with other programs and industry; (3) a need to clarify the status of required technologies; and (4) further clarification on the cost estimates for the IODP. The committee also identified concerns with organization and implementation which need to be clarified in IWG-IODP planning. Based on these concerns, the IWG has requested IPSC to modify its Plan prior to publication on May 1.

(2) Discussion and acceptance of the basic principles (Platforms, Program, Membership, Implementation, and Management) for the

continued on page 16

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IODP. These were described in the last newsletter, and can be found on the IODP site at <http://www.iodp.org>. The IODP Principles are designed to be the basic definition of the IODP and its ground rules for operation, and will serve as the basis for the formal international agreements. Final consideration of the Management principle is scheduled for the next IWG meeting in June.

(3) Further consideration of a key provision in the Implementation Principle that calls for establishing an interim Science Advisory Structure (iSAS) to carry-on the planning initiated by IPSC until the formal IODP Science Advisory Structure is established on October 1, 2003. The iSAS will be a joint working group representing JOIDES and OD-21 science advisory committees, with approximately 1/3 Japanese, 1/3 US, and 1/3 other membership. JOIDES and OD-21 will cooperate in identi-

fying membership on the committees. The chairs of IPSC and OD-21 scientific advisory committees will co-chair iSAS and its governing interim Planning Committee (iPC) and report directly to the IWG. IPSC had submitted draft terms of reference and operational procedures for this new structure and IWG accepted them in January 2001. The IWG co-chairs have formally requested OD-21 and JOIDES advisory structures to form this new advisory mechanism by June of this year. It is expected that there will be significant overlap in membership between corresponding JOIDES and iSAS committees and that the committees will meet in conjunction with each other.

To catch-up further on planning activities for future scientific ocean drilling we recommend that you read about Post-2003 Planning on page 7 of this newsletter.

Before closing we would like to take this opportunity to issue a warm welcome to Drs. Chris Harrison and Keir Becker, as the new chairs of EXCOM and SCICOM respectively, with the move of the JOIDES office from the GEOMAR Research Center, University of Kiel, Germany to the University of Miami's Rosenstiel School of Marine & Atmospheric Science. We wish them well with their new responsibilities in this evolving and challenging period for scientific ocean drilling. At the same time, we would like to express a sincere debt of gratitude to the outgoing EXCOM and SCICOM chairs Drs. Helmut Beiersdorf (Bundesanstalt für Geowissenschaften und Rohstoffe, Germany) and Bill Hay for their efforts on behalf of JOIDES during the past two years. 