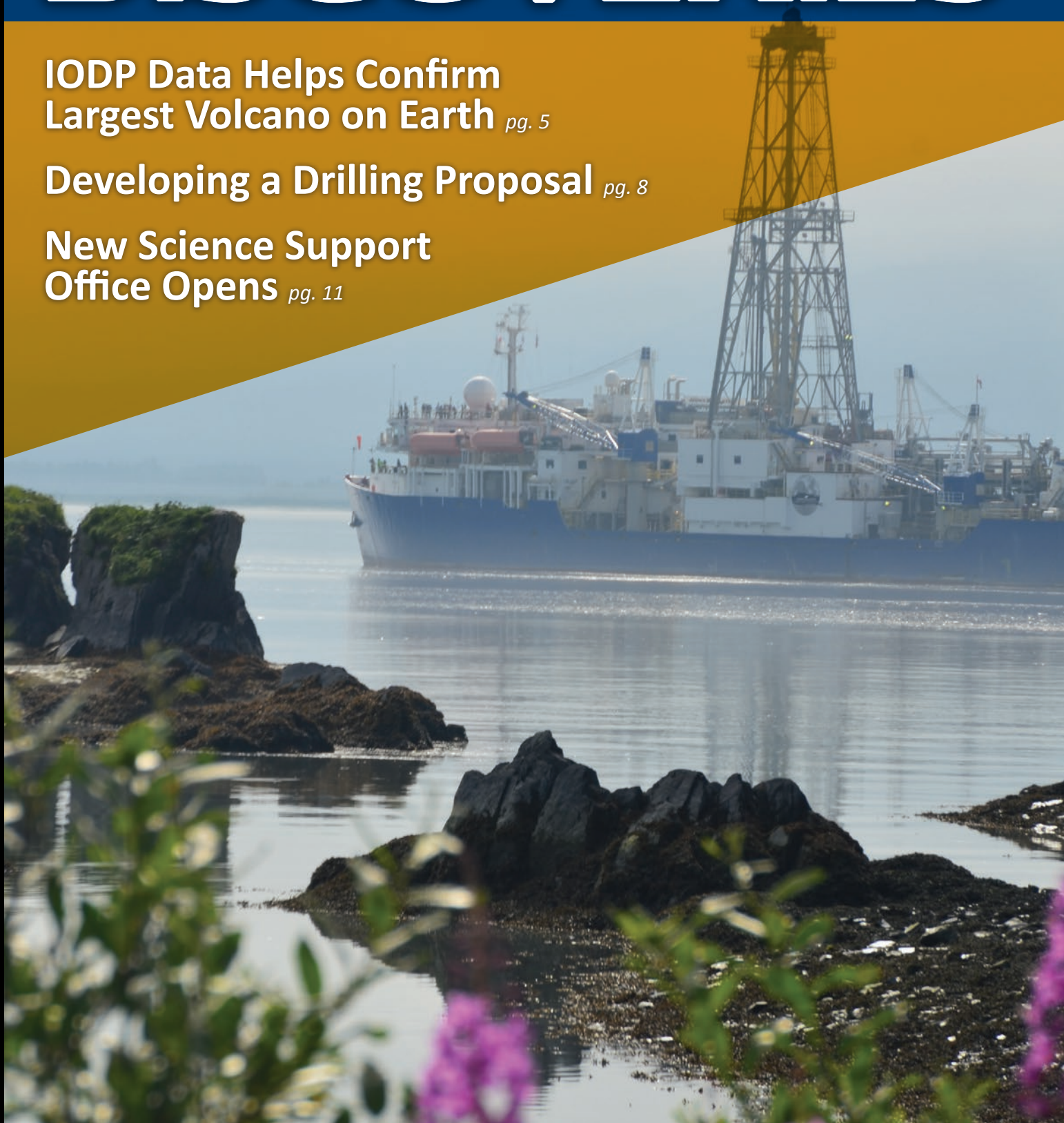
SUMMER 2013

CORE DISCOVERIES

The Newsletter for US Scientific Ocean Drilling



INSIDE THIS ISSUE

On the cover: The JOIDES Resolution *sits docked in the port of Valdez, Alaska, between Expedition 341 (Southern Alaska Margin Tectonics, Climate and Sedimentation) and Expedition 346 (Asian Monsoon) in late July, 2013.*

The Integrated Ocean Drilling Program (IODP) is an international research program dedicated to advancing scientific understanding of the Earth through drilling, coring, and monitoring the subseafloor. The U.S. Science Support Program (USSSP) supports the involvement of the U.S. scientific community in IODP and is funded by the National Science Foundation (NSF). The *JOIDES Resolution* is a scientific research vessel managed by the U.S. Implementing Organization of IODP (USIO). Together, Texas A&M University, Lamont-Doherty Earth Observatory of Columbia University, and the Consortium for Ocean Leadership comprise the USIO. IODP is supported by two lead agencies: the U.S. NSF and Japan's Ministry of Education, Culture, Sports, Science, and Technology (MEXT). Additional program support comes from the European Consortium for Ocean Research Drilling (ECORD), the Australia-New Zealand IODP Consortium (ANZIC), India's Ministry of Earth Sciences, the People's Republic of China (Ministry of Science and Technology), and the Korea Institute of Geoscience and Mineral Resources.

To contact the editor or subscribe to *Core Discoveries*, contact: *mwright@oceanleadership.org*; 202-448-1254

For more information about IODP, visit: *www.iodp.org*

For more information about USIO and USSSP, visit: *www.oceanleadership.org/programs-and-partnerships/*

UPCOMING EVENTS/ MEETINGS/WORKSHOPS

IODP Drilling Proposal Deadline
October 1, 2013
www.iodp.org/submitting-proposals

Geological Society of American Annual Meeting
October 27-30, 2013
Denver, Colorado
http://community.geosociety.org/2013AnnualMeeting

Workshop on Marine Seismic Data
November 4-6, 2013
Austin, Texas
www.ig.utexas.edu/seismic_workshop/

Antarctic Geologic Drilling Workshop
November 7-8, 2013
Houston, Texas
http://eas.uh.edu/agdw

Workshop on Multidisciplinary Transect Drilling During Transits
November 11-13, 2013
College Station, Texas
http://usssp-iodp.org/workshop/transect/

Micropaleontology and IODP: Past, Present, and Future Applications
November 18-19, 2013
London, United Kingdom
www.tmsoc.org/agm2013.htm

American Geophysical Union Fall Meeting
December 9-13, 2013
IODP Town Hall: Dec. 10, 5:30pm
Marriott Union Square, Main Ballroom
San Francisco, California
http://fallmeeting.agu.org/2013/

Science Evaluation Panel
January 6-9, 2014
La Jolla, California
www.iodp.org/sas-science-advisory-structure

EXPEDITION UPDATES

Scientists and engineers stand by ready to deploy the SCIMPI observatory, seen here on the deck of the JOIDES Resolution. *The white nodes are buoyant floats, designed to keep the cable precisely aligned in the borehole, and the silver nodes are instrument clusters.*

Innovative New Observatory Deployed Near Cascadia Margin

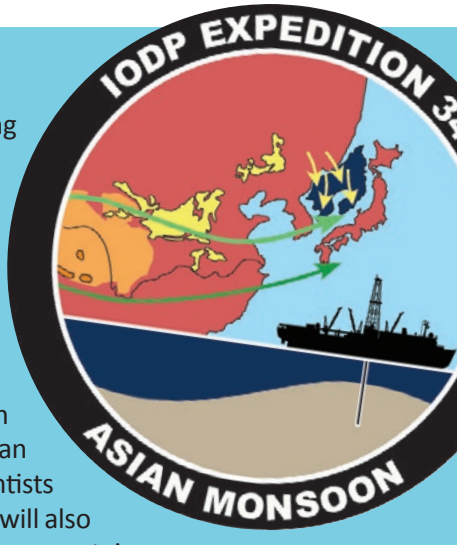
In May, the *JOIDES Resolution* set out from Victoria, British Columbia for a ten-day engineering expedition to the Cascadia Margin. The goals of Expedition 341S were twofold: to replace a CORK observatory in Hole 858G, and to deploy the new Simple Cabled Instrument for Measuring Parameters In Situ (SCIMPI). Although the crew was unable to remove the existing CORK, thus preventing installation of the replacement, deployment and initial testing of the SCIMPI observatory was highly successful.

Designed as a stand-in for CORKs in certain settings, SCIMPI can provide high-value measurements in a lower-cost instrument. In addition to temperature and pressure, SCIMPI can also track resistivity in the host formation – a capability CORKs cannot offer. The format is relatively simple: a cable with instrument modules placed at specific intervals, customizable based on scientific goals. The Expedition 341S test carried nine such modules, lowered into a borehole approximately 250m deep.

In order to acquire meaningful data, the instruments need to maintain contact with the host sediments. As such, ideal SCIMPI deployment targets are loose, unconsolidated formations, such that the borehole walls collapse following the release of the instruments. SCIMPI is well suited for studying overpressured sediments and regions where gas hydrates are often found. For example, Hydrate Ridge off the coast of Oregon and Ursa Basin in the Gulf of Mexico would provide ideal conditions.

IODP Management International (IODP-MI) funded the initial SCIMPI development, and plans are underway to connect the instrument to the NEPTUNE Canada network later this year.

Reading the History of the Asian Monsoon



The East Asian Monsoon is a significant force in global weather and climate, affecting nearly one third of the world's population in Japan, Korea, China, and beyond. It has two phases: a warm, wet summer monsoon and a cold, dry winter monsoon. Often, the timing of the monsoon cycle is predictable. But many complex interactions between the ocean and land have an influence on the atmospheric system and can cause dramatic changes in the monsoon's behavior. Discovering more about these interrelationships should help predict how the monsoon will react to climate change in the future.

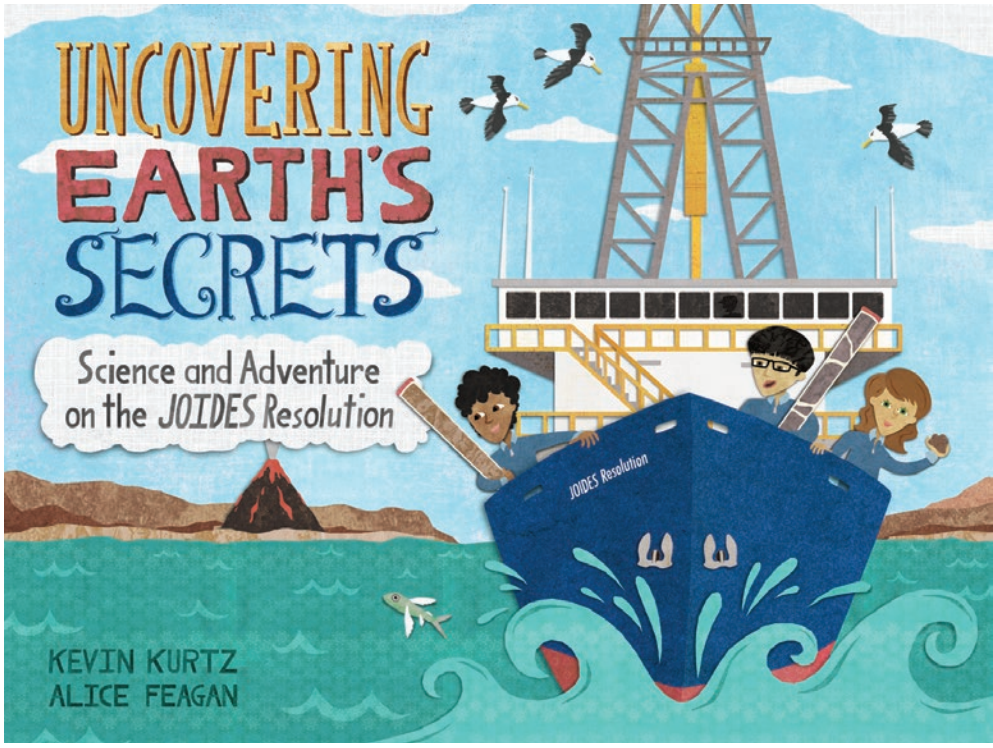
To that end, the *JOIDES Resolution* embarked on Expedition 346 (Asian Monsoon) in early August. Led by co-chief scientists Ryuji Tada (University of Tokyo) and Rick Murray (Boston University), the expedition will collect samples and generate data from seven sites in the Japan Sea/East Sea and one in the northern East China Sea. The ship's international team of 34 scientists will study the seasonality and intensity of the monsoons as a function of Earth's climate. They will also document the long-term effects in the monsoon's behavior caused by uplift of the Himalaya mountains and the Tibetan Plateau, beginning about 10 million years ago. Signals recorded in the sediments from both the atmospheric jet stream and the discharge of the Yangtze River will yield previously hidden clues about this vast monsoon system.

For more information, visit: *http://iodp.tamu.edu/scienceops/expeditions/asian_monsoon.html*

EDUCATION & DIVERSITY NEWS

JOIDES Resolution Featured in Children's E-Book

Deep Earth Academy is pleased to announce the release of its first e-book, *Uncovering Earth's Secrets: Science and Adventure on the* JOIDES Resolution. Written for elementary age children, the book explains how the *JOIDES Resolution* has enabled scientists to learn a great deal about the Earth, including volcanoes, earthquakes, extinction of the dinosaurs, and much more. Written in rhyming verse by Kevin Kurtz, Education Officer on Expedition 330 (Louisville Seamount Trail) and beautifully illustrated by Alice Feagan, the book is available as a free download from the *JOIDES Resolution* website (*http://bit.ly/16XGhTr*) or via iTunes (*http://bit.ly/19ERbTK*).



Diversity Interns at Columbia University

Co-sponsored by USIO and Lamont-Doherty Earth Observatory's Summer Internship Program at Columbia University, undergraduate Diversity Interns Nishaila Porter (Wesleyan University) and Ernesto Martinez (University of California, Berkeley) worked on research projects that use scientific ocean drilling data and/or core samples this summer.

A Busy Summer for Teachers' Professional Development Training

This summer, Ocean Leadership hosted the second annual Regional Rocks professional development program for teachers. Educators from District of Columbia Public Schools and other area districts joined Jennifer Collins (Deep Earth Academy) and geoscientist Debbie Thomas (Texas A&M University) for a three-day hands-on professional development workshop that focused on IODP climate science and the Next Generation Science Standards. This workshop was one of several local events facilitated by Deep Earth Academy this summer. Others included trainings for Howard County Public Schools, Challenger Space Centers, and Smithsonian Science Education Academy.

IODP Data Helps Confirm Existence of the Largest Single Volcano on Earth

Massive underwater shield volcano rivals the largest in the Solar System

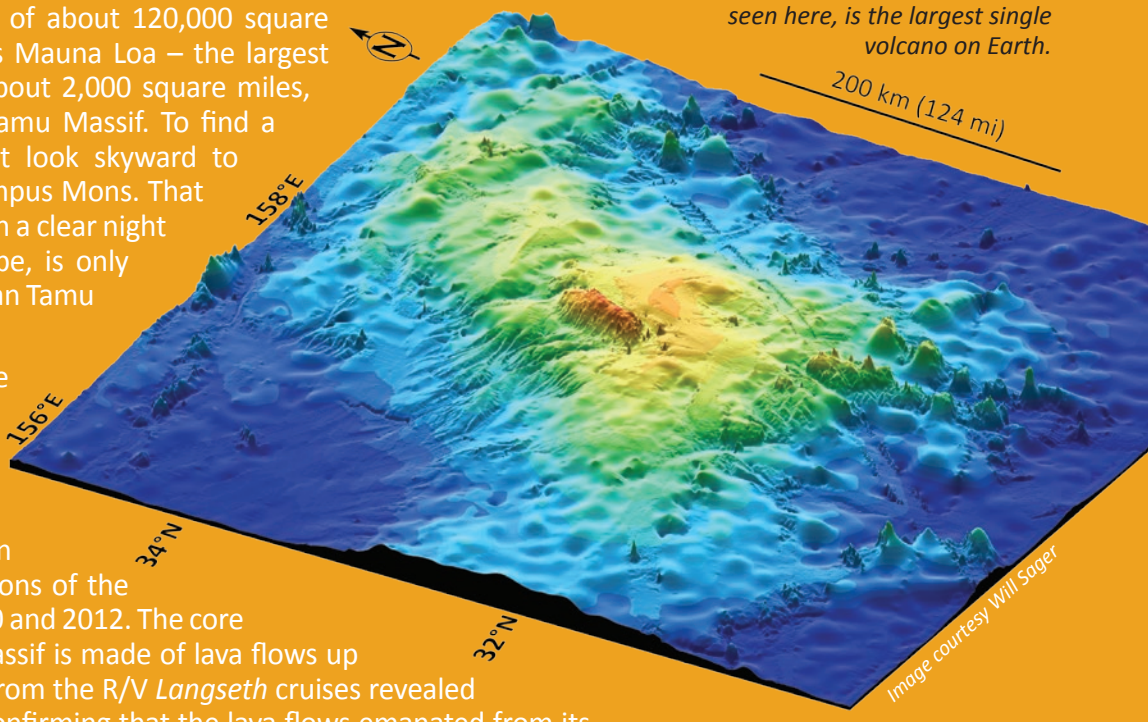
The summer blockbuster movie Pacific Rim told a fanciful tale of giant monsters rising from the deep in the middle of the Pacific Ocean. Now, scientists have confirmed that the northwest Pacific is home to a real-life giant of a different type: the largest single volcano yet documented on Earth. Covering an area roughly equivalent to the state of New Mexico, Tamu Massif is nearly as big as the giant volcanoes of Mars, placing it among the largest in the Solar System.

Located about 1,000 miles east of Japan, Tamu Massif is the largest feature of Shatsky Rise, an underwater volcanic mountain range formed 145-130 million years ago. Until now, it was unclear whether Tamu Massif was a single volcano, or a composite of many eruption points. By integrating several sources of evidence, including core samples and data collected on board the *JOIDES Resolution*, the authors have confirmed that Tamu Massif erupted from a single source near the center. The study appears in the September 8 issue of *Nature Geoscience*.

"Tamu Massif is the biggest single shield volcano ever discovered on Earth," says lead author Will Sager at the University of Houston. "There may be larger volcanoes, because there are bigger igneous features out there such as the Ontong Java Plateau. But we don't know if these features are one volcano or complexes of volcanoes."

The seafloor is dotted with thousands of underwater volcanoes, or seamounts, most of which are small and steep. Among these, Tamu Massif stands out not just for its size, but also its shape. It is low and broad, meaning that the erupted lava flows must have traveled long distances compared to most other volcanoes on Earth.

"The flank slopes are very gradual," Sager explains. "In fact, if you were standing on its flank, you would have trouble telling which way is downhill. Oceanic plateaus are huge features hidden beneath the sea. They have found a good place to hide."



IODP data helped determine that Tamu Massif, seen here, is the largest single volcano on Earth.

Tamu Massif covers an area of about 120,000 square miles. By comparison, Hawaii's Mauna Loa – the largest active volcano on Earth – is about 2,000 square miles, or less than 2% the area of Tamu Massif. To find a worthy comparison, one must look skyward to the planet Mars, home to Olympus Mons. That giant volcano, which is visible on a clear night with a good backyard telescope, is only about 25% larger by volume than Tamu Massif.

The study relies on core samples collected on Integrated Ocean Drilling Program (IODP) Expedition 324 (Shatsky Rise Formation) in 2009, and seismic reflection data gathered on two expeditions of the R/V *Marcus G. Langseth* in 2010 and 2012. The core samples showed that Tamu Massif is made of lava flows up to 75 feet thick. Seismic data from the R/V *Langseth* cruises revealed the structure of the volcano, confirming that the lava flows emanated from its summit and flowed hundreds of miles downhill.

"Other scientists care about this finding because it gives us new insights about oceanic volcanism, the way in which oceanic plateaus form, and the operation of the mantle-crust system," Sager explains. "Volcanologists debate about the eruptive centers of Large Igneous Provinces. I think most would tell you that they probably come from multiple, distributed fissure eruptions. But apparently not at Tamu Massif."

HOW IT WORKS

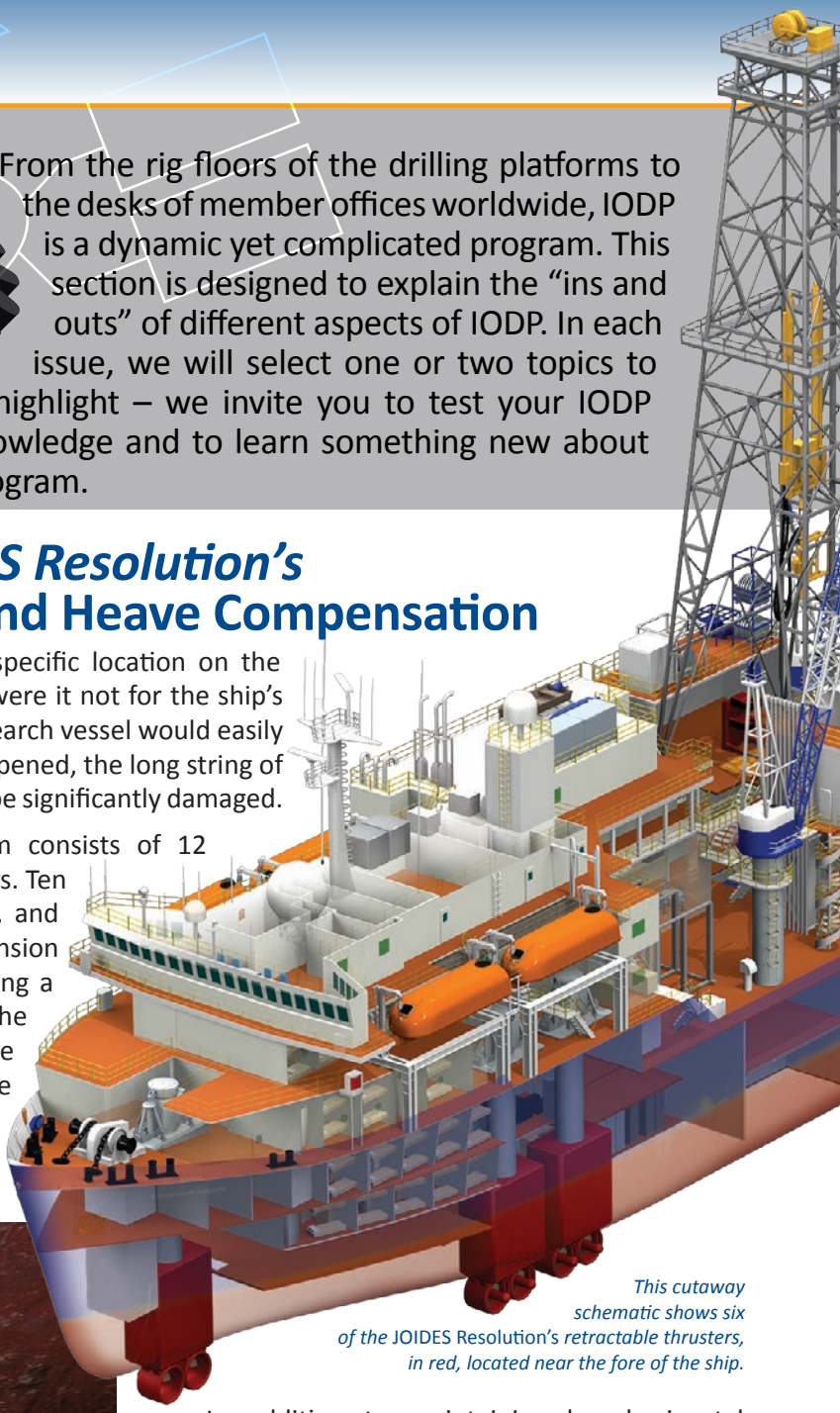
From the rig floors of the drilling platforms to the desks of member offices worldwide, IODP is a dynamic yet complicated program. This section is designed to explain the "ins and outs" of different aspects of IODP. In each issue, we will select one or two topics to highlight – we invite you to test your IODP knowledge and to learn something new about the program.

Steady as She Drills: the *JOIDES Resolution's* Dynamic Positioning System and Heave Compensation

Maintaining the *JOIDES Resolution's* position over a specific location on the seafloor while drilling a deep hole would be impossible were it not for the ship's Dynamic Positioning System. Without it, this 470-foot research vessel would easily be moved off site by ocean currents and winds. If this happened, the long string of drill pipe would be pulled out of the hole, and/or it would be significantly damaged.

The computer-controlled Dynamic Positioning System consists of 12 powerful 750-horsepower thrusters, or auxiliary propellers. Ten of them are retractable, mounted underneath the ship, and the remaining two are fixed in the skeg, a sternward extension of the keel. The system maintains a precise position using a GPS signal or an acoustic beacon set on the seafloor. The thrusters make adjustments when necessary, allowing the system to react to environmental forces while keeping the ship stabilized over the drill hole. This precision system enables the *JOIDES Resolution* to hold her position within 2% of the depth of the water beneath her.

Technicians work to refurbish a pair of the JOIDES Resolution's *thrusters during a drydock repair.*



This cutaway schematic shows six of the JOIDES Resolution's *retractable thrusters, in red, located near the fore of the ship.*

In addition to maintaining her horizontal position over a site, the *JOIDES Resolution* must also maintain the drill bit at the bottom of the hole while the ship rises and falls on waves at the surface. A passive heave compensator located in the derrick acts as a giant shock absorber to isolate the drill pipe from the ship's up-and-down motion, allowing cores to be cut and lifted smoothly. The heave compensator enables the *JOIDES Resolution* to work in swells as high as 15 feet. Without it, drilling could only be done in extremely calm seas.

To learn more about the *JOIDES Resolution*, including its labs, accommodations, and drilling capabilities, see: *http://iodp.tamu.edu/labs/ship.html*

COMMUNITY SPOTLIGHT

CASEY MOORE

For some people, retirement means more time for hobbies. For Casey Moore, retirement means more time for research. "I don't want to stay at home and just fix stuff around the house," he said. "Geology is more interesting!"

Moore's enthusiasm for science and discovery is contagious. His inquisitive nature, enthusiastic drive, and sage guidance has influenced countless researchers – from students at his home institution, the University of California, Santa Cruz, to colleagues the world over.

Moore first sailed with the Deep Sea Drilling Project in 1972. With thirteen expeditions under his belt, the excitement has yet to wear off. Focused on the structural evolution of subduction zones, he most recently sailed on Expedition 343 (Japan Trench Fast Drilling Project; JFAST) and is actively involved in the Nankai Trough Seismogenic Zone Experiment (NanTroSEIZE).

Due to his extensive seagoing experience and his penchant for collaborative research, Moore was nominated to serve on the first *Chikyu* IODP Board – the vessel's advisory body for the International Ocean Discovery Program. His insights gained from JFAST and NanTroSEIZE alone will prove invaluable, since both employed the unique capabilities of the Chikyu while balancing ambitious science objectives with significant technical challenges. As Moore explained, "it's hard drilling in actively deforming sediments in an environment pummeled by typhoons."

When asked what keeps him involved, Moore's answer is simple. "At the end of the day, I like the earth sciences because I like the people," he said. "I've been retired for six years now, and I had to retire to find the real value of work."

LETTER FROM THE NSF

Dear Colleagues,

There are several updates on the NSF-ODP front. First, an award has been made to UC San Diego's Scripps Institution of Oceanography for operation of the new International Ocean Discovery Program Science Support Office. The PI for this award is Richard Norris and the Executive Director is Holly Given. The office supports the *JOIDES Resolution* Facility Board and the Advisory Panels that report to it, and handles the submission and review process of IODP proposals and associated site survey data. An important goal for this new Support Office will be the consolidation of drilling proposal and site survey databases to streamline the submission process.

On August 15, 2013, NSF-OCE Division Director David Conover presented an Information Item to the National Science Board's Committee on Programs and Plans regarding the status of the *JOIDES Resolution* in the new IODP. Conover told the Board that the solicitation for operations and management of the *JOIDES Resolution* beyond FY14 resulted in a highly recommended proposal. However, changes in the budgetary landscape, including inflationary costs, budget sequestration, expected flat or declining budgets, and operations and maintenance associated with new OCE-funded facilities coming online in FY15 have the potential to skew the facilities and science balance in OCE beyond supportable levels. Any decision regarding future operations of the *JOIDES Resolution* must now be considered in the context of this science/facilities balance.

In relation to this context of balance, a Decadal Survey of Ocean Sciences commenced in May 2013, and is being conducted by a National Research Council committee. The Decadal Survey will analyze the current portfolio of OCE investments in infrastructure and science, and will recommend priorities for the next decade in a report due May 2015.

In the next few months, NSF will engage in internal deliberations and negotiations regarding operation of the *JOIDES Resolution* in the future. In November, NSF will present the NSB with its plans for the *JOIDES Resolution* beyond FY2014.

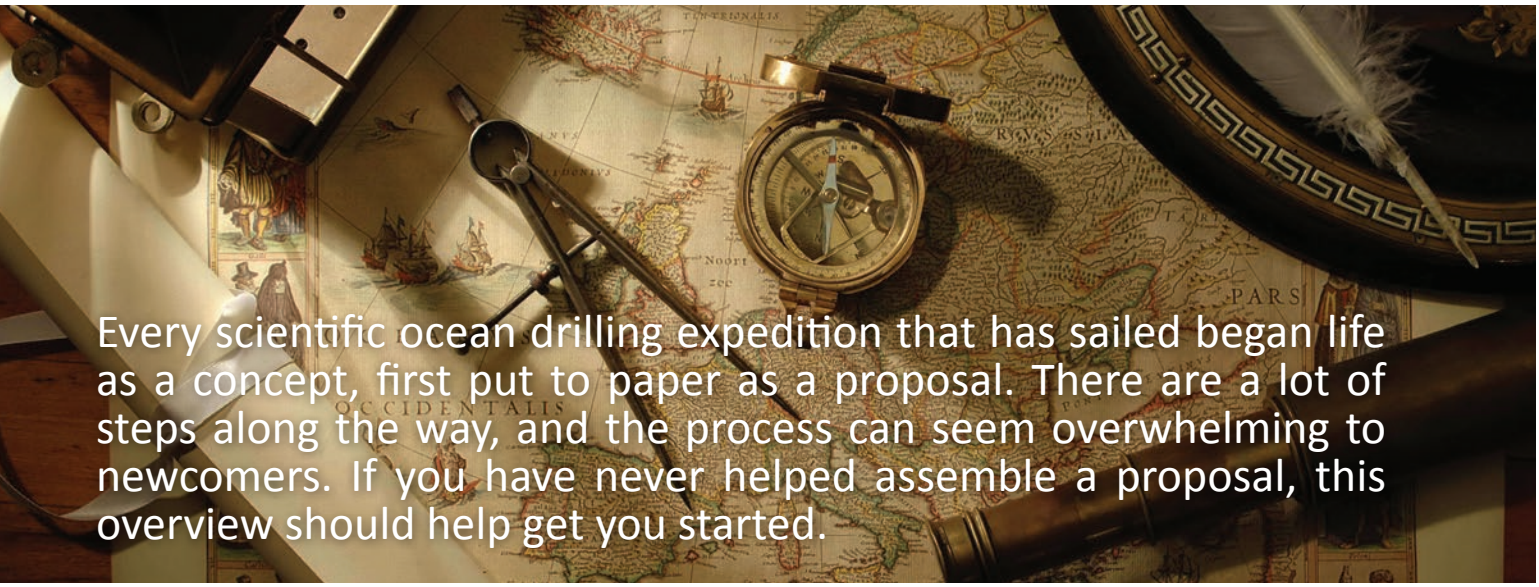
Sincerely,

The NSF-ODP Team

James Allan, James Beard, Thomas Janecek

DEVELOPING A DRILLING PROPOSAL:
What You Need to Know

Gabriel Filippelli
Indiana University – Purdue University Indianapolis (IUPUI)



Every scientific ocean drilling expedition that has sailed began life as a concept, first put to paper as a proposal. There are a lot of steps along the way, and the process can seem overwhelming to newcomers. If you have never helped assemble a proposal, this overview should help get you started.

The proposal process for the International Ocean Discovery Program is different from other processes you might be familiar with, such as those at NSF. Instead of an anonymous review with a clear "yes or no" answer at the end, IODP has a more open, iterative process. And for good reason. The cost and time commitment to implement an expedition is considerable, and operational time on the platforms is limited. As such, only those proposals with the right mix of strong science and practical, efficient logistics will make it through the system.

How to get started, then? The first step is to develop your idea. Because the program is strongly driven by the goals outlined in the *2013-2023 IODP Science Plan* (*http://iodp.org/science-plan-for-2013-2023*), you should give careful thought to how your concept aligns with one of the program's four main themes: climate, deep life, planetary dynamics, and geohazards. Then, discuss your idea with colleagues. A workshop can be an effective way to seek out new collaborators, foster interdisciplinary approaches, build an initial drilling plan, and get help writing a draft proposal.

IODP proposals come in two basic forms: pre-proposals and full proposals. It's a good idea to start with a pre-proposal. These are relatively short and focus on your science goals and questions. Deadlines come twice a year, with the next on October 1, 2013. You can find more information about the requirements at *http://iodp.org/drilling-proposals*. The Science Evaluation Panel (SEP) will review your pre-proposal and provide feedback and recommendations, which might include revisions or a suggestion to develop your ideas further and submit a full proposal.

What distinguishes an excellent proposal from the rest of the pool? Successful proposals are centered on a compelling science question. They are also creative, innovative, and have a high potential for success. To achieve this, first and foremost, you should pay close attention to the SEP's recommendations on your pre-proposal.

Some proposals don't move forward for a number of reasons. The science might be incremental, one-sided, or outside the scope of the *2013-2023 IODP Science Plan*. There might be a strong central science question, but the expedition itself might simply be undrillable.

Like the program itself, the proposal process is meant to be collaborative. If you're not sure whether your ideas are solid and drillable, ask someone! Turn to colleagues – especially those with experience in the program – and don't be shy about sharing your thoughts. Staff at the Science Support Office (*science@iodp.org*) can point you in the right direction and help with logistical concerns.

Submitting a proposal can be an excellent way to get involved with the program, make new contacts, and generate new ideas. So what are you waiting for?

LETTER FROM THE USIO

Dear Colleagues,

A primary goal of IODP is to disseminate its data and products to the worldwide scientific community. To achieve this, the U.S. Implementing Organization at Lamont-Doherty Earth Observatory (USIO-LDEO) maintains an online database that allows users to search and download log data from DSDP, ODP and IODP expeditions, including USIO, CDEX, and ESO sites. To enhance interoperability with other local, national and international data systems, a series of Web services also allow automated query and retrieval of log data and associated metadata. Links between the log database and other data systems in the Integrated Earth Data Applications (IEDA) facility at LDEO (*www.iedadata.org*) are well established. Additionally, community-developed, end-user tools such as GeoMapApp (*www.geomapapp.org*) and CoreWall (*www.corewall.org*) are able to directly query, retrieve, and visualize log data and metadata, and are available for routine use aboard the *JOIDES Resolution*.

With the integration of a number of data initiatives by NSF into the IEDA facility, USIO-LDEO is using these links to enhance the visibility and utility of IODP log data. IODP samples have previously been assigned unique International Geo Sample Number (IGSN) identifiers and are registered in the System for Earth Sample Registration (SESAR; *www.geosamples.org*), and published analyses are available in the SedDB global synthesis of sediment geochemistry data. This allows users to backtrack from published analyses to the appropriate IODP sample and discover other data within the IEDA facility, including USIO log data. With the strength of such connections, the use of logging results from IODP expeditions will continue to broaden substantially. Such connections further provide a robust and standard mechanism for tool developers and other data systems to link to IODP data in new ways – for instance, in keeping with the goals of the NSF EarthCube initiative.

As of July 2013, the USIO log database contains up-to-date information from a total of 569 holes at 190 locations during DSDP (87 holes), ODP (380 holes), and IODP scientific programs, including those drilled during expeditions on board the *JOIDES Resolution* (75 holes) and *Chikyu* (9 holes), as well as ESO (18 holes) expeditions. These programs have used 113 different logging tools to acquire 20 different types of measurements. Log data through Expedition 339 are in the public domain and are available online in a variety of common data and image formats via *brg.ldeo.columbia.edu/logdb*. Log data from IODP Expeditions 340, 341 and 344 remain under moratorium and will be available soon for distribution through these broadly accessible Web services. **Visit us online!**

Best Regards,

Dave Goldberg
Director, USIO-LDEO

LETTER FROM THE USAC CHAIR

Dear Colleagues,

After four busy and gratifying years serving on the U.S. Advisory Committee for Scientific Ocean Drilling (USAC) – including two as chair – this letter will be my last contribution to this column. I have greatly enjoyed serving on behalf of the U.S. scientific ocean drilling community and working with a wide cross-section of dedicated scientists to plan for the next program. For me it has been an honor and pleasure to represent such a vibrant science community.

I highly recommend serving on an IODP committee. It introduces you to new colleagues whose dedication to the collaborative nature of the program is inspiring. It also forces you to broaden your viewpoint from your own scientific questions to community-wide research directions. Engaging with the community in program planning has been a highlight of my service, particularly at last year's Building U.S. Strategies workshop in Denver, Colorado, where we determined our priorities within the context of the *2013-2023 IODP Science Plan* and discussed new mechanisms to efficiently plan expeditions. Furthermore, we engaged a large group of early-career researchers, who I see as the vanguard of the new program.

During my time on USAC, I saw the program transition from the early expeditions of the *Chikyu* and the retrofitted *JOIDES Resolution* to the final expedition of the Integrated Ocean Drilling Program. On October 1, IODP will become the International Ocean Discovery Program, and John Jaeger from the University of Florida will take over as USAC Chair. John is a sedimentologist who recently sailed as a Co-Chief Scientist on Expedition 341 (Southern Alaska Margin Tectonics, Climate and Sedimentation). I wish him a productive tenure at the helm of USAC with IODP on the cusp of exciting times and new challenges. Looking at the IODP community of today, I hold high hopes for the success of the new program and the future of scientific ocean drilling.

All the best,

Anthony Koppers
Chair, U.S. Advisory Committee
for Scientific Ocean Drilling

USAC MEMBERS

Anthony Koppers (Chair)
Oregon State University

Ivano Aiello
Moss Landing Marine Laboratories

Gail Christeson
University of Texas at Austin

John Jaeger
University of Florida

Heath Mills
University of Houston, Clear Lake

J. Casey Moore
University of California, Santa Cruz

Richard Norris
University of California, San Diego

Beth Orcutt
Bigelow Laboratory for Ocean Sciences

Yair Rosenthal
Rutgers University

Peter Sak
Dickinson College

Anja Schleicher
University of Michigan

DRILL BITS

New Science Support Office Opens

The National Science Foundation has awarded the new IODP Science Support Office to the Scripps Institution of Oceanography. Within the International Ocean Discovery Program, the IODP Science Support Office will provide some of the functions previously administered by IODP Management International, including managing the submission and review process for drilling proposals, managing the Site Survey Data Bank, and maintaining the IODP website. In addition, this new office will support the *JOIDES Resolution* Facility Board and its advisory panels and the IODP Forum, and serve as a liaison with the *Chikyu* IODP Board and the ECORD Facility Board. Richard Norris will direct the IODP Science Support Office, with Holly Given as executive director. The transition to the new office has already begun and should proceed with minimal disruption to the IODP community. The next deadline to submit a drilling proposal is October 1, 2013; proponents should visit *www.iodp.org/drilling-proposals* or contact *science@iodp.org* for more information.

C+10 Decadal Planning for the *Chikyu*

The Chikyu+10 Workshop, which took place this past spring in Tokyo, concentrated on decadal planning for the *Chikyu* and set the stage for more focused planning of specific projects. 397 participants, representing 21 countries, identified a range of projects that require the unique capabilities of the *Chikyu* and addressed top priorities in the *2013-2023 IODP Science Plan*. Multiyear projects will investigate the conditions and limits of microbial life at depth, the dynamics and range of fault slip behavior strongly linked to geological hazards, the island arc origins of continents, the composition of the mantle, and environmental changes during ocean basin desiccation. Partial year projects will target hydrothermal arc volcano systems, extreme fault slip of great earthquakes, environment-altering large volcanic eruptions, and global anoxic events. The workshop proceedings are available at *www.iodp.org/workshops*.

2013-2014 Schlanger Ocean Drilling Fellows Announced

The U.S. Science Support Program is pleased to announce the 2013-2014 Schlanger Ocean Drilling Fellows. Each year, the program awards $30,000 stipends to several outstanding graduate students who conduct research related to scientific ocean drilling. This year's fellows – selected for the quality of their proposed projects – will focus on topics that include seamounts, methane hydrates and microbiology. Next summer, the fellows will travel to the Ocean Leadership headquarters in Washington, D.C. to present their results. The 2013-2014 Schlanger Fellows are:

Wei-Li Hong Oregon State University	**Hannah Liddy** University of Southern California	**Hannah Rabinowitz** Columbia University	**Susan Schnur** Oregon State University	**Elizabeth Trembath-Reichert** Caltech
				

Interested in applying for a Schlanger Fellowship? The next application deadline is November 15, 2013:
http://iodp-usssp.org/research/schlanger-fellowships/

CONSORTIUM FOR
Ocean Leadership
1201 New York Avenue, NW, 4th Floor
Washington, DC 20005

INDICIA

FSC INFO

IODP Expedition Schedule

Expedition	#	Port of Origin	Dates
JOIDES Resolution			
South China Sea	349	Hong Kong	26 Jan. – 30 Mar. 2014
Izu Bonin Mariana Rear Arc	350	Keelung, Taiwan	30 Mar. – 30 May 2014
Izu Bonin Mariana Origins	351	Yokohama, Japan	30 May – 30 July 2014
Izu Bonin Mariana Forearc	352	Yokohama, Japan	30 July – 29 Sept. 2014
Chikyu			
NanTroSEIZE Stage 3, Plate Boundary Deep Riser	348	Shimizu, Japan	13 Sept 2013 – 20 Jan. 2014
Mission-Specific Platforms			
Baltic Sea Paleoenvironment	347	Kiel, Germany	Begins 7 Sept, 2013

Expedition dates, ports of origin, etc. are subject to change. Please see http://iodp.tamu.edu/scienceops/ and http://www.iodp.org/expeditions/ for the most up-to-date ship operations schedules.