
# UNITED STATES IMPLEMENTING ORGANIZATION

## FY14 Quarterly Report 2

1 January–31 March 2014

NSF Contract OCE-0352500

Submitted by the USIO

to

The National Science Foundation

15 May 2014

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# Introduction

The organization of this quarterly report reflects activities and deliverables that are outlined in the International Ocean Discovery Program (IODP) U.S. Implementing Organization (USIO) FY14 Annual Program Plan to the National Science Foundation (NSF) as implemented by the USIO, which comprises the Consortium for Ocean Leadership, Inc. (Ocean Leadership), and its partners, Texas A&M University (TAMU) and Lamont-Doherty Earth Observatory (LDEO) of Columbia University. In this document, references to TAMU include Texas A&M Research Foundation (TAMRF). When appropriate, this quarterly also reports on contract activities conducted for IODP's predecessor, the Integrated Ocean Drilling Program.

# Management and Administration

The USIO provides integrated management that is led by Ocean Leadership in coordination with LDEO and TAMU. Management and Administration functions include planning, coordinating (with other IODP-related entities), overseeing, reviewing, and reporting on IODP activities.

## USIO reports

### FY14 Q1 IODP-USIO Quarterly Report

The USIO report for the first quarter of FY14 (October–December 2013) was submitted to NSF on 14 February 2014 (http://iodp.tamu.edu/publications/AR/FY14/FY14_Q1.pdf).

### FY15 Annual Program Plan

Planning and preparation began for the FY15 Annual Program Plan.

## Reporting and liaison activities

The USIO reports to and liaises with funding agencies and IODP-related agencies (e.g., facility boards), advisory panels, Program Member Offices (PMOs), and other national organizations, and participates in facility board, advisory panel, and IODP forum meetings.

### Meetings

Standard facility board, advisory panel, and other special meetings are listed in the Conference and Meeting Schedule below. USIO attendees to all meetings are listed in "Appendix B: Travel." Minutes from the facility board meetings will be made available online (http://www.iodp.org/facility-boards).

### Conference and meeting schedule

| Conference/Meeting* | Date | Location |
|---|---|---|
| *JOIDES Resolution* Facility (JRF) Science Evaluation Panel (SEP) Meeting | 6–9 January 2014 | La Jolla, CA |
| European Consortium for Ocean Research Drilling (ECORD) Facility Board Meeting | 4–6 March 2014 | Bremen, Germany |
| *JOIDES Resolution* Facility Board (JRFB) Meeting | 18–20 March 2014 | Washington, DC |
| IODP-Workshop: "Scientific Drilling in the South Atlantic" | 22–28 March 2014 | Rio de Janeiro, Brazil |

*Implementing organization meetings, advisory panel meetings, and Program-sponsored conferences.

## Contract services

### Ocean Leadership

#### *Contract activity*

Ocean Leadership received the following modifications during the reporting period.

**NSF Contract OCE-0352500 with Ocean Leadership**

- Modification 64: Changed the Program title to "International Ocean Discovery Program" effective 1 October 2013, and provided incremental funding in the amount of $12,930,000.

**IODP-MI Subcontract IODP-MI-05-03 with Ocean Leadership**

- Modification 47: Reduced the FY13 Annual Program Plan by $262,166 from $2,996,719 to $2,734,553 and closed the subcontract at the fully funded amount of $49,466,884.

#### *Subcontract activity*

Ocean Leadership issued no subcontract modifications during the reporting period.

### LDEO

#### *Subcontract activity*

LDEO issued the following subcontract modifications during the reporting period.

**LDEO subcontract with Schlumberger**

- Amendment 12: Provided FY14 incremental funding in the amount of $1,400,000.

**LDEO subcontract with LGL**

- Amendment 2: Provided FY14 incremental funding in the amount of $26,000.
- Amendment 3: Provided FY14 incremental funding in the amount of $24,500.

**LDEO subcontract with Howard and Associates**

- Amendment 5: Provided FY14 incremental funding in the amount of $22,000.

### TAMRF

#### *Contracts/procurement activity ($100,000 or greater)*

- 28 February 2014: Issued a purchase order to Pyramid Tubular in the amount of $141,545.27 for the purchase of 10-3/4 inch and 16 inch casing
- 21 March 2014: Issued a purchase order to South Bay Cable Corporation in the amount of $386,400 for the purchase of two (2) electro-optical mechanical cables.

#### *Miscellaneous activity*

- 4 March 2014: Submitted a prior approval letter to Ocean Leadership for the purchase of two (2) electro-optical mechanical cables.

## Personnel status

### Ocean Leadership

The following positions were vacated during the quarter:

- Team Lead, Contracts and Grants (Caren Matzin): 5 February 2014
- Sr. Technical Expert, Engineering and Technology (Greg Myers): 13 February 2014.

The following positions were opened and advertised during the quarter:

- Sr. Manager, Contracts and Grants

There were no positions filled during the quarter.

### LDEO

There were no positions opened, advertised, or filled during the quarter.

The following positions were vacated during the quarter:

- Research Scientist (Gerardo Iturrino): 11 March 2014

Dr. Iturrino passed away unexpectedly on 12 March 2014. Among his many professional accomplishments, Dr. Iturrino at different times managed both the Science Services and Engineering divisions at the LDEO Borehole Research Group (BRG).

### TAMU

The following positions were vacated during the quarter:

- Senior Imaging Specialist (John Beck): 24 January 2014
- Supervisor of Graphics (Deborah Partain): 31 January 2014
- Senior Systems Support Specialist (Michael Petersen): 21 March 2014
- Marine Laboratory Specialist I (Matthew Knight): 26 March 2014
- Graphic Specialist III (Timothy Fulton): 29 March 2014

The following positions were opened and advertised during the quarter:

- Supervisor of Engineering Support: 16 January 2014

- Graphics Specialist II: 20 February 2014
- Research Specialist II: 26 February 2014
- Information Technology Professional II: 24 March 2014
- Marine Laboratory Specialist I: 24 March 2014

The following positions were filled during the quarter:

- Marine Laboratory Specialist I (Beth Novak): 21 January 2014
- Marine Laboratory Specialist I (Nicole Bilsley): 23 January 2014
- Marine Laboratory Specialist I (Kevin Werts): 23 January 2014
- Research Specialist II (Zenon Mateo): 29 March 2014
- Imaging Specialist (Timothy Fulton): 30 March 2014

## USIO web services

The USIO websites are hosted at TAMU, LDEO, and Ocean Leadership. In addition to internal USIO web page updates and additions, new content is regularly added to IODP expedition web pages at iodp.tamu.edu/scienceops/expeditions.html.

### USIO website statistics

| USIO website | FY14 Q2 page views* | FY14 Q2 site visits* |
|---|---|---|
| www.iodp-usio.org | Not available | Not available |
| iodp.ldeo.columbia.edu | 15,062 | 4,163 |
| iodp.tamu.edu | Not available | Not available |
| **Total** | **15,062** | **4,163** |

*Where possible, visits by USIO employees and search engine spiders were filtered out.

## Legacy documentation

The USIO routinely archives electronic copies of documents and reports produced on behalf of IODP and the Integrated Ocean Drilling Program.

### Legacy digital archive

Legacy preservation activities include storing electronic copies of relevant management and administration–related documents and reports produced by the USIO. Documents and publications archived this quarter in a dedicated Content Management System (CMS) included contract modifications and the FY14 Q1 IODP-USIO Report to NSF.

### Legacy web services

Key data, documents, and publications produced during the Deep Sea Drilling Project (DSDP) and Ocean Drilling Program (ODP) are preserved in the legacy websites, which highlight the scientific and technical accomplishments of these ground-breaking precursors to the Integrated Ocean Drilling Program. The legacy websites contain downloadable documents that cover a wide spectrum of Program information, from laboratory and instrument manuals to all of the Program's scientific publications, journals, and educational materials.

The ODP Science Operator website and the DSDP Publications website are hosted at TAMU. The ODP legacy website is hosted at Ocean Leadership.

### *Legacy website statistics*

FY14 Q2 legacy website statistics were not available at the time of this report.

## Other projects and activities

### TAMU Project Portfolio Management program

The *JOIDES Resolution* Microscope Laboratory Infrastructure Renovation project was completed in January 2014 (see "Maintenance period activities" in "Technical, Engineering, and Science Support"). The Shore Web Architecture Update (Phase I) was also completed in January, and the Thin Section Form Report and Image Tagging and Length projects were completed in late March (see "Software development" in "Data Management").

# Technical, Engineering, and Science Support

The USIO is responsible for planning, managing, coordinating, and performing activities and providing services, materials, platforms, and ship- and shore-based laboratories for USIO expeditions; long-range operational planning for out-year USIO expeditions; and technical advice and assistance for European Consortium for Ocean Research Drilling (ECORD) Science Operator (ESO) and Center for Deep Earth Exploration (CDEX) expeditions.

## USIO expedition schedule

| Expedition | | Port (Origin) | Dates[1, 2] | Total Days (Port/ Sea) | Days at Sea (Transit[3]/ Ops) | Co-Chief Scientists | USIO Contacts[4] |
|---|---|---|---|---|---|---|---|
| Dry Dock/Non-IODP [27 September 2013–26 January 2014] | | | | | | | TAMU: M. Malone |
| South China Sea (CPP)[5] | 349 | Hong Kong | 26 January–<br>30 March 2014 | 63 (3/60) | 60 (6/54) | C.-F. Li<br>J. Lin | TAMU: D. Kulhanek*<br>LDEO: T. Williams^ |
| Izu Bonin Mariana (IBM): Rear Arc | 350 | Keelung | 30 March–<br>30 May 2014 | 61 (5/56) | 56 (4/52) | Y. Tamura<br>C. Busby | TAMU: P. Blum*<br>LDEO: G. Guerin^ |
| IBM Arc Origins | 351 | Yokohama, Japan | 30 May–<br>30 July 2014 | 61 (5/56) | 56 (5/51) | R. Arculus<br>O. Ishizuka | TAMU: K. Bogus*<br>LDEO: L. Drab^ |
| IBM Fore Arc | 352 | Yokohama, Japan | 30 July–<br>29 September 2014 | 61 (5/56) | 56 (7/49) | J. Pearce<br>M. Reagan | TAMU:<br>K. Petronotis*<br>LDEO: S. Morgan^ |
| Dry Dock/Non-IODP [29 September–29 November 2014] | | | | | | | M. Malone |
| Indian Monsoon | 353 | Singapore | 29 Nov 2014–<br>29 January 2015 | 61 (5/56) | 56 (7/49) | S. Clemens<br>W. Kuhnt | L. LeVay |
| Bengal Fan | 354 | Singapore | 29 January–<br>31 March 2015 | 61 (5/56) | 56 (6/50) | C. France-Lanord<br>T. Schwenk | A. Klaus |
| Arabian Sea Monsoon (CPP)[5] | 355 | Colombo, Sri Lanka | 31 March–<br>31 May 2015 | 61 (5/56) | 56 (5/51) | D. Pandey<br>P. Clift | D. Kulhanek |
| Dry Dock/Non-IODP [31 May–31 July 2015] | | | | | | | M. Malone |

| Expedition | | Port (Origin) | Dates[1, 2] | Total Days (Port/ Sea) | Days at Sea (Transit[3]/ Ops) | Co-Chief Scientists | USIO Contacts[4] |
|---|---|---|---|---|---|---|---|
| Indonesian Throughflow | 356 | Fremantle, Australia | 31 July–15 September 2015 | 61 (5/56) | 56 (4/52) | S. Gallagher<br>C. Fulthorpe | K. Bogus |

Notes: TBD = to be determined.
[1] Dates for expeditions may be adjusted pending non-IODP activities.
[2] The start date reflects the initial port call day. The vessel will sail when ready.
[3] Transit total is the transit to and from port call and does not include transit between sites.
[4] The USIO contact list includes both the Expedition Project Manager (*), who is the primary contact for the expedition, and the Logging Staff Scientist (^). In addition, further expedition information can be obtained at http://iodp.tamu.edu/scienceops/expeditions.html.
[5] Complementary Project Proposal (CPP) dependent on substantial financial contribution outside of normal IODP funding.

# USIO expeditions

## Expedition 349: South China Sea

### *Planning*

Supplies and hardware were shipped to the *JOIDES Resolution* and loaded in the Philippines before the vessel transited from Subic Bay to Hong Kong (China) in preparation for the expedition. Final arrangements and preparations were made for port call logistics and public relations activities. Two Expedition 349 scientists attended the Core Description Workshop and training session for new core describers held 14–16 January at IODP-TAMU in College Station, TX.

### *Staffing*

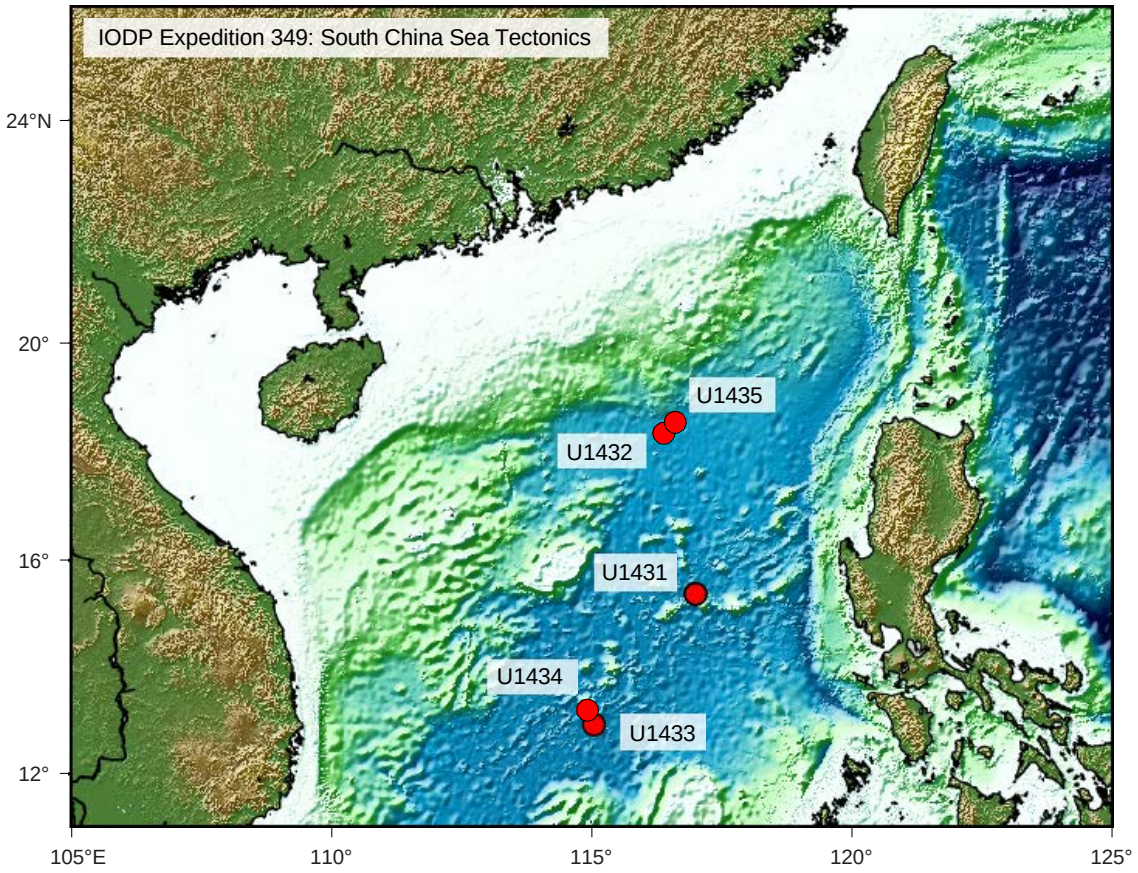
| Expedition 349 Science Party staffing breakdown | | |
|---|---|---|
| **Member country/consortium** | **Participants** | **Co-Chief Scientists** |
| USA: United States Science Support Program (USSSP) | 6 | 1 |
| Japan: Japan Drilling Earth Science Consortium (J-DESC) | 2 | |
| Europe and Canada: European Consortium for Ocean Research Drilling (ECORD) Science Support and Advisory Committee (ESSAC) | 3 | |
| Republic of Korea: Korea Integrated Ocean Drilling Program (K-IODP) | 1 | |
| People's Republic of China: IODP-China | 11* | 1 |
| Australia and New Zealand: Australia/New Zealand IODP Consortium (ANZIC) | 1 | |
| India: Ministry of Earth Science (MoES) | 0^ | |
| Brazil: IODP-Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES)/Brasil | 1 | |

*IODP framework staffing numbers were adjusted to accommodate the Complementary Project Proposal–negotiated staffing allotment for IODP-China. One IODP-China participant withdrew immediately prior to the expedition and could not be replaced.
^One MoES participant withdrew immediately prior to the expedition and could not be replaced.

### *Clearance and permitting activities*

Authorization to operate in Vietnamese waters was received from Vietnam on 3 February 2014. The USIO provided assistance to Vietnam in preparing an observer to sail and coordinating a Vietnamese vessel to transfer the observer to the *JOIDES Resolution*. The observer was transferred onboard on 27 February.

## *Site map*




## *Coring summary*

| Site | Hole | Latitude | Longitude | Water depth (m) | Cores (n) | Interval cored (m) | Core recovered (m) | Recovery (%) |
|---|---|---|---|---|---|---|---|---|
| U1431 | U1431A | 15° 22.5491'N | 117° 00.0009'E | 4,237.3 | 3 | 28.4 | 28.39 | 100.0 |
| | U1431B | 15° 22.5480'N | 117° 00.0125'E | 4,236.7 | 2 | 17.0 | 17.16 | 101.0 |
| | U1431C | 15° 22.5371'N | 117° 00.0108'E | 4,239.5 | 2 | 14.2 | 14.45 | 102.0 |
| | U1431D | 15° 22.5379'N | 117° 00.0022'E | 4,240.5 | 67 | 617.0 | 402.11 | 65.0 |
| | U1431E | 15° 22.5380'N | 116° 59.9903'E | 4,240.3 | 47 | 443.5 | 242.35 | 55.0 |
| | | | | **Site U1431 totals:** | **121** | **1,120.1** | **704.46** | **62.9** |
| U1432 | U1432A | 18° 21.1051'N | 116° 23.4504'E | 3,829.0 | 0 | 0 | 0 | 0 |
| | U1432B | 18° 21.1062'N | 116° 23.4512'E | 3,829.0 | 0 | 0 | 0 | 0 |
| | U1432C | 18° 21.0831'N | 116° 23.4504'E | 3,829.0 | 12 | 110.0 | 88.74 | 81.0 |
| | | | | **Site U1432 totals:** | **12** | **110.0** | **88.74** | **81.0** |
| U1433 | U1433A | 12° 55.1380'N | 115° 2.8345'E | 4,379.4 | 20 | 188.3 | 168.79 | 90.0 |
| | U1433B | 12° 55.1313'N | 115° 2.8484'E | 4,379.3 | 74 | 672.4 | 443.04 | 66.0 |
| | | | | **Site U1433 totals:** | **94** | **860.7** | **611.83** | **71.1** |
| U1434 | U1434A | 13° 11.5080'N | 114° 55.4005'E | 4,009.0 | 14 | 115.5 | 26.43 | 23.0 |
| | | | | **Site U1434 totals:** | **14** | **115.5** | **26.43** | **23.0** |
| U1435 | U1435A | 18° 33.3466'N | 116° 36.6174'E | 3,252.5 | 32 | 300.0 | 171.37 | 171.4 |
| | | | | **Site U1435 totals:** | **32** | **300.0** | **171.37** | **171.4** |
| **Expedition 349 totals:** | | | | | **273** | **2506** | **1603** | **64.0** |

## *Logging summary*

During Expedition 349, the two deepest sites (U1431 and U1433) were logged with the triple combination (triple combo) and Formation MicroScanner (FMS)-sonic tool strings. Hole U1431E was logged to a depth of 460 meters below seafloor (mbsf), where an obstruction prevented further progress downhole. Hole U1433B was logged to total depth into the basement rocks at 840 mbsf. Clear FMS images and logs of the carbonate turbidites that formed up to half of the sediment sequences at these sites will assist in reconstructing the lithostratigraphy. FMS logs also imaged basalt pillows in the volcanic basement interval of Hole U1433B. FMS calipers showed that the long axis of the borehole cross-section in Hole U1431E had a consistent orientation, giving the horizontal stress direction. Photoelectric factor logs showed high concentrations of heavy minerals (e.g., hematite) in the brown clay above basement in Hole U1433B. Sonic logs were used to make a depth–traveltime transform and correlate borehole depths to the seismic profiles.

## *Science summary*

The South China Sea provides an outstanding opportunity to better understand complex patterns of continental margin breakup and basin formation. Despite extensive studies, the lack of sampling of basement rock and directly overlying basal sediment in the deep basin leaves a large margin of error in estimated ages of the South China Sea opening and closing, rendering various hypotheses regarding its opening mechanism and history untested.

Five sites were drilled in the deep basin of the South China Sea during Expedition 349, recovering a total of 1,524 m of sediment/sedimentary rock and 78 m of oceanic basalt. Three of these sites (U1431, U1433, and U1434) cored into oceanic basement near the fossil spreading center. The two remaining sites (U1432 and U1435) are proximal to the northern continent/ocean boundary. Extensive examination and discussion of the recovered materials and downhole geophysical log data led to the following principal result conclusions on the opening of the South China Sea.

1. Based on shipboard dating of microfossils in the sediment immediately above the basaltic basement and between the lava flow units, the preliminary cessation age of spreading in both the East and Southwestern subbasins is around the early Miocene (16–20 Ma). Further postexpedition radiometric dating of basement basalt from these sites plus additional calibration with magnetic anomalies and paleomagnetic measurements will further refine the age range. Overall, a large difference is not apparent in the terminal ages of seafloor spreading between the two subbasins.
2. Operations at Site U1345 drilled into a basement high standing along the continent/ocean boundary. Coring at this site recovered a sharp unconformity at ~33 Ma, above which is marine sediment and below which are poorly sorted sandstone and black mudstone interpreted as littoral deposits. Environmental interpretation will require further shore-based studies because the sequence is almost entirely barren of marine fossils. Nevertheless, this unconformity is interpreted to be directly related to the continental break-up during the initial opening of the South China Sea. The onset of seafloor spreading is therefore estimated to be at ~33 Ma.
3. All sites contain deep-marine deposits but show significant areal variations in postspreading sedimentary environment and provenance. Site U1431 records evidence for deep-marine

turbidite deposition from terrestrial sources. These coarser silt turbidites may have a source in Taiwan or other surrounding blocks, whereas interbedded calcareous turbidites at this site could be transported from local sources, such as nearby seamounts topped by carbonate-rich environments. In contrast, the source for upper Miocene clay and silt turbidites at Site U1433 could be from Borneo or mainland Southeast Asia, with the source of interbedded carbonate turbidites being likely from the southerly Dangerous Grounds or Reed Bank area.

4. Sites U1431 and U1434 are close to seamounts developed along the relict spreading center. Occurrences of volcaniclastic sand and breccia reveal the history and magma-source evolution of the seamounts and potentially their relationship with the terminal processes of spreading. The volcaniclastic breccia and sandstone at Site U1431 are dated as late middle Miocene to early late Miocene (~8–13 Ma), suggesting a 5 m.y. duration of seamount volcanism starting a few million years after the cessation of seafloor spreading. At Site U1434, volcaniclastic breccia and sandstone are most likely sourced from the adjacent seamount ~15 km to the north. The age of this recovered unit is late Miocene (younger than 9 Ma). Further postexpedition sedimentological and geochemical studies, as well as radiometric dating of potassium-bearing volcanic crystal fragments, will refine the ages and sequences of these seamount activities and reveal how magma sources at the dying spreading center evolve through time.
5. Expedition 349 successfully cored into ocean basement in the South China Sea for the first time and recovered basalt at three sites. This basalt has variable phase assemblages of plagioclase, olivine, and clinopyroxene and is concluded to be typical mid-ocean-ridge basalt based on petrological and geochemical evidence. Postexpedition isotopic dating research will determine the absolute age of the basaltic basement units.

## Expedition 350: Izu-Bonin-Mariana: Rear Arc

### *Planning*

An Izu-Bonin-Mariana (IBM) Core Description Workshop was conducted 14–16 January in College Station, TX, to integrate and standardize classification schemes and methods among the three IBM expeditions. In addition, a training session for new core describers was conducted in conjunction with the workshop.

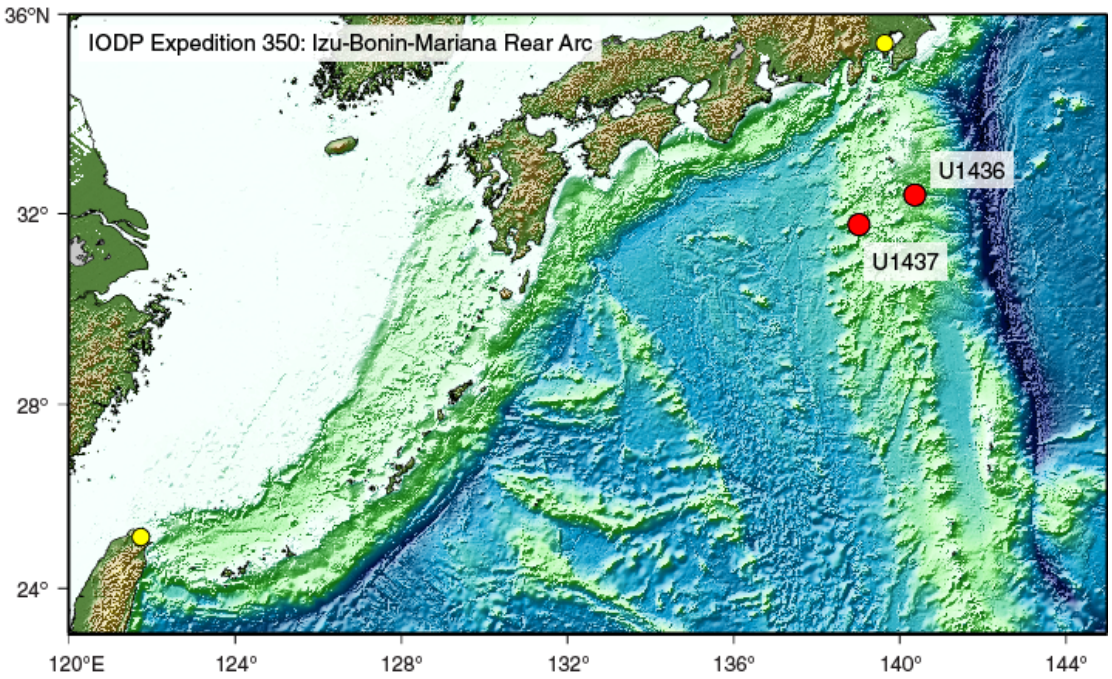
### *Clearance and permitting activities*

Final agreement was reached with a consortium of submarine cable companies on sites that could be safely occupied by the *JOIDES Resolution*; the agreement was sent to the U.S. State Department on 17 January. Japan's authorization to operate in Japanese waters was issued 22 January, but it included clearance requirements for submarine cables that were in excess of the requirements negotiated with the cable companies. An amended authorization without the excessive cable restrictions was received on 28 March. In addition, a new site that was developed out of the pre-expedition meeting was electronically reviewed by the EPSP and the TAMU Safety Panel.

### *Environmental assessment*

A single environmental evaluation for the three IBM cruises was submitted to NSF for review this quarter, and NSF comments were received on 25 March. The requested changes were made and the document will be resubmitted in early April.

### *Site map*




## Expedition 351: Izu-Bonin-Mariana: Arc Origins

### *Planning*

An IBM Core Description Workshop was conducted 14–16 January in College Station, TX, to integrate and standardize classification schemes and methods among the three IBM expeditions. In addition, a training session for new core describers was conducted in conjunction with the workshop. Detailed planning with Science Party members to address shipboard laboratory requirements was conducted this quarter in preparation for the upcoming shipping deadline early in the next quarter, as were other preparations for supplies and hardware needed for the expedition. Initial planning was initiated for port call outreach activities.

### *Staffing*

Staffing was completed except for replacement of two scientists who withdrew.

### *Clearance and permitting activities*

Final agreement was reached with a consortium of submarine cable companies on sites that could be safely occupied by the *JOIDES Resolution*; the agreement was sent to the U.S. State Department on 17 January. Japan's authorization to operate in Japanese waters was issued 22 January, but it included clearance requirements for submarine cables that were in excess of the requirements negotiated with

the cable companies. An amended authorization without the excessive cable restrictions was received on 28 March. In addition, a new site that was developed out of the pre-expedition meeting was electronically reviewed by the EPSP and the TAMU Safety Panel.

### *Environmental assessment*

A single environmental evaluation for the three IBM cruises was submitted to NSF for review this quarter, and NSF comments were received on 25 March. The requested changes were made and the document will be resubmitted in early April.

## Expedition 352: Izu-Bonin-Mariana: Fore Arc

### *Planning*

An IBM Core Description Workshop was conducted 14–16 January in College Station, TX, to integrate and standardize classification schemes and methods among the three IBM expeditions. In addition, a training session for new core describers was conducted in conjunction with the workshop. Review of sample, data requests, and research plans began in February.

### *Staffing*

One scientist withdrew and was replaced in January.

### *Clearance and permitting activities*

The application for marine scientific research in Japanese waters was submitted on 7 January. Sites will be reviewed at the EPSP meeting in May.

### *Environmental assessment*

A single environmental evaluation for the three IBM cruises was submitted to NSF for review this quarter, and NSF comments were received on 25 March. The requested changes were made and the document will be resubmitted in early April.

## Expedition 353: Indian Monsoon

### *Planning*

The Expedition 353 precruise meeting was held at IODP-TAMU in College Station, TX, on 24 and 25 March 2014.

### *Staffing*

The second Co-Chief Scientist accepted the invitation to sail on 21 January. The majority of nominations were received in mid-March, and review of applications was initiated.

### *Clearance and permitting activities*

The EPSP will review the sites at the May meeting, and the marine scientific research application will be submitted immediately after the EPSP meeting.

### *Environmental assessment*

No vertical seismic profiles (VSPs) are planned for this expedition.

## Expedition 354: Bengal Fan

### *Planning*

The Expedition 354 precruise meeting was held at IODP-TAMU in College Station, TX, on 16 and 17 January 2014. The *Scientific Prospectus* was published 24 February.

### *Clearance and permitting activities*

All sites were reviewed by the EPSP and the TAMU Safety Panel. Sites were confirmed to be in international waters.

## Expedition 355: Arabian Sea Monsoon CPP

### *Planning*

The Expedition 355 precruise meeting was scheduled for 1 and 2 May at IODP-TAMU in College Station, TX.

### *Clearance and permitting activities*

All sites were confirmed to be in international waters. The EPSP will review sites at their May meeting.

## Expedition 356: Indonesian Throughflow

### *Planning*

The Expedition 356 precruise meeting was scheduled for 2 and 3 May at IODP-TAMU in College Station, TX.

# Maintenance period activities

This year's maintenance period extended from the end of September through late January. Shipboard laboratories were completely shut down and boarded up for security during the extended dry dock. Remobilization of the laboratories proved to be particularly challenging, with failures of several key systems during start up. Instrument failure may result from offline status during maintenance periods, but the number of failed systems encountered in this case was almost certainly due to the extended, complete shutdown. Failed systems included color spectrophotometer, X-ray diffraction (XRD), nanopure water system, and various components from other systems. All systems but the XRD were repaired before the start of Expedition 349; the XRD was dismantled and returned to the vendor for repair.

Two significant efforts completed during the maintenance period were refurbishment of the sonar dome and reorganization of the microscope facility. The sonar dome was dismantled, cleaned, inspected, and repainted, and isolation mounts as well as the mounting hardware were replaced. Based on user feedback, the microscope laboratory was dismantled and reorganized to create a more ergonomic workspace accommodating both right- and left-handed personnel. Additional completed

tasks included improvements to contacts on the Whole-Round Multisensor Logger (WRMSL) *P*-wave transducers, replacement of the Carver presses, and installation of a new natural gas analyzer (NGA) and new gas chromatograph (GC). Counter tops throughout the core laboratory were refinished, oxygen and $H_2S$ sensors replaced, and new vibration isolation mounts for vent fans were ordered.

During the transit concluding this maintenance period, the routine restart team was engaged in preparing all shipboard laboratory systems for the upcoming expedition. In addition, a week-long training academy was held for staff on both crews (several members of the oncoming crew volunteered to come early to the Subic Bay and sail the transit to participate). This training exercise was aimed at overcoming repeated core logger systems failures that take place during crew changes. Both TAS technical staff crew rotations had the rare opportunity to refresh their understanding of the theory, operation, and programming of the core loggers. The shared learning experience also resulted in an effective team building exercise.

# Analytical systems

## Analytical Systems acquisitions and updates

No new analytical systems were ordered during this quarter. Two of the three new Zeiss Axioskop microscopes were sent to the ship for installation at the Expedition 351 port call; one was held at IODP-TAMU in College Station, TX, to reduce the risk of shipping all three together and to provide continuity to microscope capabilities on shore. Once the older Axioskop microscopes are back on shore, the third new microscope will be sent to the vessel.

## Laboratory working groups

The laboratory working groups (LWGs) provide oversight, research direction, and quality assurance for the methods, procedures, and analytical systems both on the *JOIDES Resolution* and on shore. The groups meet regularly to review cruise evaluations, expedition technical reports, and issues management communications to provide advice on corrective actions and potential developments for laboratories. The teams did not meet this quarter because there were no new expedition-related evaluations or reports to review and the maintenance period did not require review.

### *Geology*

Work continued on two Geology LWG projects:

- Automated thin section form creation. This system was tested on Expedition 349 and is available for use on Expedition 350; the LWG awaits comment from science users.
- Image tagging and length controls. Modifications to the section-half imaging logger (SHIL) were completed. In addition, a data flagging tool, an extension of the Laboratory Information Management System (LIMS) Editor (LIME) program, was created in order to manage the default display flag in the database; reports and programs will be modified to honor the display flag in order to ensure the correct image is used downstream.

Work on the stratigraphic correlation enhancements and 360-degree image capture projects will resume in the summer/fall timeframe.

### *Geophysics*

Work continued this quarter on two Geophysics LWG projects: creating a more robust reporting structure for large-scale data sets (e.g., RGB data derived from the high-resolution SHIL images) and purchasing a new helium-free Superconducting Rock Magnetometer (SRM).

## Projects and other activities

### *Geosciences Laboratory (ODASES)*

The TAMU Ocean Drilling and Sustainable Earth Science (ODASES) Geoscience Laboratory hosted three scientists during this period for XRF scanning projects. The upgrade of the instrument host computer took far longer than expected because of Netherlands customs issues for the return of the computer, but the XRF Core Scanner Facility is back in regular operation.

# Engineering support

## Engineering equipment acquisitions and updates

### *Vibration-isolated television system*

The color camera was added to the vibration-isolated television (VIT) frame and testing during the transit from Subic Bay to Hong Kong showed substantial improvement in resolution and clarity relative to any other previous system previously deployed on the *JOIDES Resolution*.

During Expedition 349 in deepwater operations, two of the three optical fibers failed. Analysis indicated the fibers broke near the drum suggesting strain accumulation during deepwater deployments, which should have been prevented by the armoring in the cable. Expedition 349 was completed with the one remaining fiber and Expedition 350 began operations with one fiber. If the remaining fiber fails during Expedition 350, the damaged portion of the cable will be removed, the cable will be re-terminated, and operations will continue. The back-up fiber optic cable will be shipped to the Expedition 351 port call to replace the damaged cable. Syntactic foam will be mounted to the VIT frame to lighten the frame in water to reduce the strain for the deepwater deployments planned for Expeditions 351 and 352. Replacement loose-tube fiber optic cables were ordered that should provide greater protection against strain in deepwater deployments.

## Projects and other activities

### *Large diameter pipe-handling infrastructure*

Blohm & Voss (B&V) equipment including the two prototype 500-ton elevators, elevator dolly (elevator handler), and stool were tested onboard the *JOIDES Resolution* during January 2014. LDEO, Howard & Associates, and B&V personnel sailed on transit from the Philippines to Hong Kong. The elevators, elevator handler, and stool were tested during the Subic Bay port call and discussions were held on board the *JOIDES Resolution* during transit concerning recommended modifications to the elevators and elevator dolly. At the end of the transit, the B&V equipment was shipped back from Hong Kong to the B&V facility in Willis, TX.

During February and March 2014, B&V engineers prepared drawings showing modified parts to be added to one of the prototype elevators for further fit/function testing. Plans were made for these parts to be machined at B&V Germany and for the elevator dolly to be shipped back to Germany for modifications based on the results of testing onboard the *JOIDES Resolution*.

### *Multisensor magnetometer module project*

The multisensor magnetometer module (MMM) is a magnetometer tool that will provide the capability to work in both strongly magnetized hard rock formations and in sediments with weaker magnetizations and will produce continuous records of the magnetic field in the borehole, from which magnetization and polarity of the rocks surrounding the borehole can be calculated. The tool will also provide borehole and tool orientation data and will measure the borehole field on three axes, allowing calculation of the full formation magnetization vector: inclination, declination, and total field intensity. This downhole magnetic information will complement core sample magnetic measurements and significantly enhance IODP's ability to magnetostratigraphically date sediment sequences. LDEO-BRG and Transendev personnel tested the MMM firmware at the LDEO facility in mid-January. The first bench test was successful, but issues were encountered during the first trial in the test well. The firmware was reconfigured to transmit data at 1 Hz; the well test was repeated successfully. Further testing and evaluation of the orientation of the Overhauser sensor and noise propagation along the wireline are needed, however, and may require additional modifications.

## Legacy documentation

The USIO routinely archives electronic copies of documents and reports produced on behalf of IODP and the Integrated Ocean Drilling Program. Legacy preservation activities for Technical, Engineering, and Science Support include storing electronic copies of expedition daily, weekly, and site summary reports; appropriate operations and engineering reports; and other technical documentation.

# Engineering Development

The USIO is responsible for utilizing IODP resources to oversee and/or provide engineering development projects in accordance with the long-term engineering needs of IODP as prioritized by the *JOIDES Resolution* Facility Board.

## USIO Technical Panel

The USIO Technical Panel (UTP) includes external members from industry and academia who will participate in bi-annual meetings to review engineering and operations issues within the USIO with the purpose of providing third-party advice to aid the USIO. The UTP is administered and operated by Ocean Leadership, the U.S. Systems Integration Contractor, with assistance from the USIO partners.

### Project status

There were no UTP activities during the quarter.

# Core Curation

The USIO provides services in support of Integrated Ocean Drilling Program and IODP core sampling and curation of the core collection archived at the Gulf Coast Repository (GCR).

## Policy and procedures

The USIO produced a new "IODP Samples, Data, & Obligations Policy" and implementation plan. The new policy was sent to the NSF for approval and a revised draft document was returned for further evaluation and comment.

## Sample and Data Requests application

The Sample and Data Request (SaDR) system replaced the Sample Material Curation System (SMCS) for USIO expeditions beginning with Expedition 346 and will be implemented for ESO expeditions at the end of the Expedition 347 moratorium period.

## Curation strategies and expedition core sampling

The USIO planned sample and curation strategies this quarter for upcoming USIO Expeditions 351 and 352. A USIO Curatorial Specialist supervised shipboard core sampling during Expeditions 349 and 350 and reviewed all shipboard and moratorium-related requests in coordination with the other members of the expedition Sample Allocation Committee (SAC).

## Curating the GCR core collection

All IODP core sample requests are handled by the GCR, Bremen Core Repository, and Kochi Core Center (KCC). The USIO conducts all responsibilities associated with curation of the GCR core collection and provides services in support of core sampling, analysis, and education.

### Repository activity

The following "Sample requests" table provides a summary of the 4,441 samples that were taken at the GCR during the quarter. Sample requests that show zero samples taken may represent cores that were viewed by visitors during the quarter, used for educational purposes, or requested for XRF analysis. Public relations tours and educational visits to the repository are shown in the "GCR tours/visitors" table.

#### *Sample requests*

| Sample request number, name, country | Number of samples taken | Number of cores XRF scanned | Number of cores Imaged | Number of visitors |
|---|---|---|---|---|
| 21171B, Westerhold, Germany | 940 | | | |
| 23068A, Lambert, United Kingdom | 72 | | | |
| 22666B, Reghellin, Sweden | 150 | | | |
| 23048A, Belza, Belgium | 22 | | | 1 |
| 2109IODP, Ferreiro, Spain | 767 | | | |

| Sample request number, name, country | Number of samples taken | Number of cores XRF scanned | Number of cores Imaged | Number of visitors |
|---|---|---|---|---|
| 23052A, Martinez-Boti, United Kingdom | 265 | | | |
| 23062A, Bijl, Netherlands | 8 | | | |
| 23061A, Torres, USA | 35 | | | |
| 23070A, Fildani, USA | 18 | | | 3 |
| 22616A, Sibert, USA | 65 | | | |
| 22589C, Hauptvogel, USA | 120 | | | |
| 22735B, Kwiatkowski, USA | 250 | | | |
| 22488D, Edgar, United Kingdom | 81 | | | |
| 23041A, Blattler, USA | 50 | | | |
| 22822B, Dove, USA | 12 | | | |
| 23044A, Boomer, United Kingdom | 40 | | | |
| 22589B, Hauptvogel, USA | 191 | | | |
| 23046A, Tarduno, USA | 8 | | | |
| 2123IODP, Veenstra, Netherlands | 36 | | | |
| 2129IODP, LeVay, USA | 101 | | | 1 |
| 23037A, Purvis, United Kingdom | 1 | | | |
| 23038A, Minoletti, France | 50 | | | |
| 23033A, Orsi, USA | 1 | | | |
| 2212IODP, Raffi, Italy | 248 | | | |
| 23014A, Straub, USA | 37 | | | 1 |
| 1412IODP, Jutzeler, United Kingdom | 7 | | | 1 |
| 21945C, Ketterolf, Germany | 4 | | | 1 |
| 22928B, Stepanova, USA | 26 | | | 1 |
| 23016A, Beltran, New Zealand | 62 | | | |
| 22374F, Diester -Haass, Germany | 207 | | | |
| 23045A, Thomas, USA | 2 | | | 1 |
| 23039A, Misra, United Kingdom | 0 | | | |
| 23051A Glass, USA | 7 | | | |
| 2144IODP, McCanta | 49 | | | 1 |
| 2143IODP, McCanta, USA | 0 | | | |
| 1889IODP, Stoner, USA | 509 | | | 5 |
| 22953A, Schnur, USA | | 1585 | | 1 |
| Tours/demonstrations | | | | 81 |
| **Totals** | **4,441** | **1,585** | **0** | **98** |

### *GCR tours/visitors*

| Type of tour or visitor | Number of Visitors |
|---|---|
| Scientist visitors | 17 |
| Educational tours/demonstrations (4) | 70 |
| Public relations tours (2) | 11 |
| **Totals** | 98 |

## Use of core collection

The USIO promotes outreach use of the GCR core collection by conducting tours of the repository (see "GCR tours/visitors" table above) and providing materials for display at meetings and museums. The repository and core collection are also used for classroom exercises. This quarter the USIO provided information and cores for a display at the Bush Library in College Station, TX, and the GCR was used for practical exercises carried out in conjunction with the Core Description Workshop held at IODP-TAMU in February. In addition, four TAMU Geology classes held at the GCR used IODP cores as a basis for their practical work.

## Legacy documentation

The USIO routinely archives electronic copies of documents and reports produced on behalf of IODP, as well as Integrated Ocean Drilling Program, DSDP, and ODP legacy materials. Legacy preservation activities for Core Curation include the following projects.

### Thin section archive sample scanning

The USIO continued high-resolution digital imaging of all GCR thin section archive samples from DSDP through ODP to make them publicly available online. This project began in October 2010 with the oldest thin sections (DSDP Leg 1) and is progressing toward a target completion date this summer.

### Core working half imaging

The USIO conducted digital imaging of working half sections that were pulled for sampling or other scientific requests during the quarter. High-resolution images of core working halves are posted on the web for public viewing to show how much the working halves have been sampled to date (http://iodp.tamu.edu/curation/samples.html).

This routine procedure focuses on imaging only those sections that get sampled; therefore, the section list for imaging correlates with all sections that are pulled for sample requests (see the "Sample requests" table above). Resampling of previously imaged working halves also results in an updated image.

## Other projects and activities

### Expedition 346 Sampling Party

USIO curation staff attended the Expedition 346 Sampling Party at the KCC and supported the sampling effort, which generated more than 30,000 samples as well as several hundred U-channels and L-channels.

### Vacuum Sealing

The GCR acquired a vacuum sealer this quarter, the use of which will allow cores at risk of oxidation to be flushed with nitrogen (or other gas) before vacuum sealing. The system can also be deployed on the ship as required.

# Data Management

The USIO manages data supporting IODP activities, including expedition and postexpedition data, provides long-term archival access to data, and supports USIO Information Technology (IT) services. The USIO also provides database services for postmoratorium ESO and CDEX log data. Daily activities include operating and maintaining shipboard and shore-based computer and network systems and monitoring and protecting USIO network and server resources to ensure safe, reliable operations and security for IODP data and IT resources.

## Expedition data

### LIMS database

No new data were added to the LIMS database on shore. Expedition 342 (Paleogene Newfoundland Sediment Drifts) and Expedition 345 (Hess Deep Plutonic Crust) data were placed out of moratorium during this quarter.

### Log database

Data from Expedition 349 have been processed and included in the online database, including standard and FMS data for Holes U1431E and U1433B. The Expedition 344 (Costa Rica Seismogenesis Project A Stage 2) moratorium was lifted and the data is now in the public domain.

## Expedition data requests

The following tables provide information on USIO web data requests from the scientific community. Where possible, visits by USIO employees were filtered out.

| Top 10 countries accessing USIO web databases | | | | | | |
|---|---|---|---|---|---|---|
| | Janus database | | LIMS database | | Log database | |
| Rank | Country | Visitor sessions | Country | Visitor sessions | Country | Visitor sessions |
| 1 | USA | **1,095** | China | 5,169 | USA | 816 |
| 2 | Germany | **394** | USA | 1,690 | United Kingdom | 113 |
| 3 | United Kingdom | **332** | United Kingdom | 165 | China | 98 |
| 4 | China | **121** | Japan | 120 | Japan | 60 |
| 5 | Norway | **113** | Germany | 88 | Russia | 59 |
| 6 | Japan | **109** | Europe–country unknown | 68 | Germany | 53 |
| 7 | France | **77** | France | 47 | France | 40 |
| 8 | Italy | **51** | Unknown | 37 | Iran | 30 |
| 9 | Sweden | **50** | Netherlands | 31 | Canada | 28 |
| 10 | Netherlands | **36** | Canada | 20 | Australia | 27 |
| | Others | **269** | Others | 153 | Others | 250 |
| | **Total** | **2,647** | **Total** | **7,588** | **Total** | **1,574** |

| Janus database web queries | | |
|---|---|---|
| Rank | Query | Uploads |
| 1 | Images—core photographs | 1,847 |
| 2 | Physical properties—smear slides | 1,140 |
| 3 | Paleomag—age model | 878 |
| 4 | Samples | 856 |
| 5 | Site summaries | 633 |
| 6 | Chemistry—carbonates | 542 |
| 7 | Core summaries | 530 |
| 8 | Hole trivia | 419 |
| 9 | Physical properties—MSL | 403 |
| 10 | Hole summaries | 383 |
| 11 | Physical properties—MAD | 352 |
| 12 | Special holes | 344 |
| 13 | Physical properties—GRA | 342 |
| 14 | Paleomag—age profiles | 318 |
| 15 | Images—prime images | 313 |
| 16 | Site summary trivia | 250 |
| 17 | Images—close-ups | 242 |
| 18 | Physical properties—RSC | 225 |
| 19 | Point calculations | 206 |
| 20 | Chemistry—interstitial water | 199 |
| | Others | 3,078 |
| | **Janus database total** | **13,500** |

| LIMS database web queries | |
|---|---|
| Query type | Views |
| LIMS Reports | 25,385 |
| Web Tabular Reports data | 224 |
| Web Tabular Reports samples | 149 |
| Web Tabular Reports summaries | 82 |
| **LIMS database total** | **25,840** |

| Data requests submitted to the TAMU Data Librarian | |
|---|---|
| **Requests** | **Total** |
| How-to/problems | 9 |
| Physical properties—MS/GRA/PWL | 3 |
| Age questions | 2 |
| Core photo request | 2 |
| Paleomag | 2 |
| Carbonates | 1 |
| ICP-AES | 1 |
| Moisture and density | 1 |
| Prime images | 1 |
| Shear strength | 1 |
| Smear slides | 1 |
| Use for publications | 1 |
| MCD | 1 |
| **Total** | 26 |

| Countries submitting data requests to the TAMU Data Librarian | |
|---|---|
| **Country** | **Total** |
| USA | 14 |
| Unknown | 4 |
| United Kingdom | 3 |
| New Zealand | 2 |
| China | 1 |
| Germany | 1 |
| South Korea | 1 |
| **Total** | **26** |

| Other USIO web statistics | | | |
|---|---|---|---|
| | **Janus database** | **LIMS database** | **Log database** |
| ***Database query hits:*** | | | |
| Entire site (successful) | No data available | | 10,221 |
| Average per day | | | 113.57 |
| ***Visitor sessions:*** | | | |
| Total number of visitor sessions | 2,662 | 7,588 | 1,574 |
| Average per day | 29.6 | 80.4 | 17.49 |
| Average length of visit | No data available | | 7:41 |
| International visitor sessions | 57.81% | 79.01% | 48.16% |
| Visitor sessions of unknown origin | 1.05% | 0.32% | 0.00% |
| Visitor sessions from United States | 41.13% | 20.68% | 51.84% |
| ***Visitors:*** | | | |
| Unique visitors | 979 | 810 | 740 |
| Visitors who only visited once | No data available | | 683 |
| Visitors who visited more than once | | | 57 |
| Average visits per visitor | | | 2.13 |

## FY14 Q1 data unavailable at the time of the quarterly report publication

| Top 10 countries accessing USIO web databases | | | | |
|---|---|---|---|---|
| | Janus database | | LIMS database | |
| Rank | Country | Visitor sessions | Country | Visitor sessions |
| 1 | USA | **1,014** | USA | 423 |
| 2 | United Kingdom | **457** | United Kingdom | 191 |
| 3 | Germany | **350** | Germany | 187 |
| 4 | Japan | **291** | Unknown | 176 |
| 5 | China | **257** | Japan | 134 |
| 6 | Russia | **151** | China | 53 |
| 7 | Italy | **105** | South Korea | 49 |
| 8 | Norway | **102** | Australia | 33 |
| 9 | France | **91** | Singapore | 16 |
| 10 | Unknown | **90** | Spain | 15 |
| | Others | **646** | Others | 95 |
| | **Total** | **3,554** | **Total** | **1,372** |

| Janus database web queries | | |
|---|---|---|
| Rank | Query | Uploads |
| 1 | Images—photographs | 2,319 |
| 2 | Samples | 819 |
| 3 | Core summaries | 691 |
| 4 | Site summaries | 550 |
| 5 | Hole trivia | 413 |
| 6 | Chemistry—carbonates | 354 |
| 7 | Requests | 292 |
| 8 | Hole summaries | 279 |
| 9 | Site details | 274 |
| 10 | Point calculations | 259 |
| 11 | Images—close-ups | 249 |
| 12 | Paleo—age models | 209 |
| 13 | Physical properties—downhole temperature | 202 |
| 14 | Site trivia | 193 |
| 15 | Physical properties—GRA | 187 |
| 16 | Physical properties—MSL | 183 |
| 17 | Leg summaries | 182 |
| 18 | Chemistry—interstitial water | 174 |
| 19 | Chemistry—rock eval | 159 |
| 20 | Physical properties—moisture and density | 158 |
| | Others | 1,937 |
| | **Janus database total** | **10,083** |

| LIMS database web queries | |
|---|---|
| Query type | Views |
| LIMS Reports | 20,033 |
| Web Tabular Reports data | 5,157 |
| **LIMS database total** | **25,190** |

| Other USIO web statistics | | |
|---|---|---|
| | **Janus database** | **LIMS database** |
| ***Database query hits:*** | | |
| Entire site (successful) | 37,328 | 94,899 |
| Average per day | 406 | 1,031 |
| ***Visitor sessions:*** | | |
| Total number of visitor sessions | 3,561 | 1,852 |
| Average per day | 39 | 20 |
| Average length of visit | No data available | |
| International visitor sessions | 69.00% | 57.78% |
| Visitor sessions of unknown origin | 2.53% | 11.56% |
| Visitor sessions from United States | 28.48% | 30.67% |
| ***Visitors:*** | | |
| Unique visitors | 2,002 | 1,223 |
| Visitors who only visited once | 1,135 | 703 |
| Visitors who visited more than once | 867 | 520 |
| Average visits per visitor | 1.8 | 1.5 |

# Software development

## Shore Web Architecture Update

### *Project scope and deliverables*

The goal of this project is to replace TAMU's current web infrastructure with a modern, less complex system that supports more responsive patch management to protect against the constantly growing list of security holes identified by the information technology industry. The system will provide support for future web content and services, and include migration of current services such as the Integrated Ocean Drilling Program, ODP, DSDP, and Publications web sites. The new system must be

- Able to host the current web content and services, including Integrated Ocean Drilling Program, ODP, DSDP, and Publications web sites;
- Accomplished with the least amount of downtime possible for current services;
- A secure system that conforms to the current best practice and security standards;
- Adaptable to the ship environment in order to keep the two locations as similar as possible;
- Able to provide for future web based projects and services, including content management systems;
- Able to provide software/hardware maintainability, and simplify patching and upgrades; and
- Reliable.

### *Project status*

Phase I (load balancer) of this project was completed during this quarter. Phase II is scheduled for completion in October 2014.

### Thin Section Form Report

### *Project scope and deliverables*

The goal of this project is to create a program that generates batches of form reports, one per thin section, for thin section data collected via DESClogik and exported to Excel workbooks.

### *Project status*

This project was completed this quarter.

### Image Tagging and Length

### *Project scope and deliverables*

The goal of this project is to enhance the routine section half imaging workflow by (1) tagging one image as the display image in the case of replicate images of a section, and modifying the LIMS2Excel and VirtualCoreTable programs to use the display tag during image retrieval; (2) capturing the cropped image size into the database so it can be used for accurate image plotting in core summary graphics; and (3) providing some type of alert to the user if the cropped image length is significantly different from the section length registered in the database.

### *Project status*

This project was completed this quarter.

## Legacy documentation

Legacy preservation activities for Data Management this quarter included storing electronic copies of materials documenting all information technology architecture and corresponding services configurations.

### IODP-LDEO inventory and online database update

The data inventory includes data from IODP Expeditions 301–349, including ESO Expeditions 302, 310, 313, and 325 and CDEX Expeditions 314, 319, 322, and 332.

# Publications

IODP Publication Services provides publication support services for IODP and Integrated Ocean Drilling Program riserless, riser, and mission-specific drilling expeditions; editing, production, and graphics services for all required reports, technical documentation, and scientific publications as defined in the USIO contract with NSF; and warehousing and distribution of Integrated Ocean Drilling Program, ODP, and DSDP publications.

# IODP scientific publications

## USIO publications

### *Scientific Prospectus*

- France-Lanord, C., Schwenk, T., and Klaus, A., 2014. Bengal Fan: Neogene and late Paleogene record of Himalayan orogeny and climate: a transect across the Middle Bengal Fan. *IODP Sci. Prosp.,* 354. doi:10.14379/iodp.sp.354.2014

### *Preliminary Reports*

- Expedition 345 Scientists, 2013. Hess Deep plutonic crust: exploring the plutonic crust at a fast-spreading ridge: new drilling at Hess Deep. *IODP Prel. Rept.,* 345. doi:10.2204/iodp.pr.345.2013
- Expedition 346 Scientists, 2014. Asian Monsoon: onset and evolution of millennial-scale variability of Asian monsoon and its possible relation with Himalaya and Tibetan Plateau uplift. *IODP Prel. Rept.,* 346. doi:10.2204/iodp.pr.346.2013

### *Proceedings*

- Norris, R.D., Wilson, P.A, Blum, P., and the Expedition 342 Scientists, 2014. *Proc. IODP*, 342: College Station, TX (Integrated Ocean Drilling Program). doi:10.2204/iodp.proc.342.2014
- Gillis, K.M., Snow, J.E., Klaus, A., and the Expedition 345 Scientists, 2014. *Proc. IODP,* 345: College Station, TX (Integrated Ocean Drilling Program). doi:10.2204/iodp.proc.345.2014

### *Data Reports*

- Villaseñor, T., and Jaeger, J.M., 2013. Data report: quantitative powder X-ray diffraction analysis from the Canterbury Basin, Expedition 317. *In* Fulthorpe, C.S., Hoyanagi, K., Blum, P., and the Expedition 317 Scientists, *Proc. IODP,* 317: Tokyo (Integrated Ocean Drilling Program Management International, Inc.). doi:10.2204/iodp.proc.317.205.2014

## CDEX publications

### *Proceedings*

- Strasser, M., Dugan, B., Kanagawa, K., Moore, G.F., Toczko, S., Maeda, L., and the Expedition 338 Scientists, 2014. *Proc. IODP*, 338: Yokohama (Integrated Ocean Drilling Program). doi:10.2204/iodp.proc.338.2014

### *Data Report*

- Riedinger, N., and Brunner, B., 2014. Data report: concentration and sulfur isotope composition of iron monosulfide and pyrite from sediments collected during IODP Expedition 316. *In* Kinoshita, M., Tobin, H., Ashi, J., Kimura, G., Lallemant, S., Screaton, E.J., Curewitz, D., Masago, H., Moe, K.T., and the Expedition 314/315/316 Scientists, *Proc. IODP,* 314/315/316: Washington, D.C. (Integrated Ocean Drilling Program Management International, Inc.). doi:10.2204/iodp.proc.314315316.223.2014

# USIO reports

IODP Publication Services produces the USIO quarterly reports, annual reports, Annual Program Plans, and other reports as requested (see "USIO Reports" in "Management and Administration" for details on these documents).

# Program-related citation statistics

## Citations submitted to AGI

The USIO submits Program-related ocean drilling citations to the American Geological Institute (AGI) for inclusion in the GeoRef database and the subset Ocean Drilling Citation Database, which includes publication records related to DSDP, ODP, the Integrated Ocean Drilling Program, and IODP. During this quarter, the USIO submitted 199 citations to AGI.

## Special citations requests

The USIO provided data on program-related publications authored by scientists representing Australia and New Zealand to N. Exon at the Australian National University this quarter for use in the Australian and New Zealand IODP Consortium (ANZIC) Final Report.

# Publications management

## Integrated Ocean Drilling Program scientific publication deadline extension requests

The requirement of all Science Party members to conduct research and publish the results of their work is detailed in the Integrated Ocean Drilling Program Sample, Data, and Obligations Policy (www.iodp.org/program-policies/). To fulfill this obligation, scientists publish their papers in a peer-reviewed scientific journal or book that publishes in English, or as a peer-reviewed data report in the *Proceedings of the Integrated Ocean Drilling Program*. Manuscripts must be submitted within 20 months postmoratorium (26 months for synthesis papers). Science Party members may request a deadline extension of up to one year. The Platform Curator reviews and approves these extension requests, and IODP Publication Services monitors fulfillment of the publishing obligation. The tables below show extensions requested during the quarter and the status of all deadline extensions approved during the life of each volume.

### *Initial papers/data reports*

| Expedition | Submission deadline (20 months postmoratorium) | Deadline extensions approved in FY14 Q2 | Overall extension status | |
|---|---|---|---|---|
| | | | Number approved | Number fulfilled |
| 301 | 20 April 2007 | | | |
| 302 | 23 July 2007 | | | |
| 304/305 | 4 February 2008 | | 14 | 12 |
| 308 | 7 March 2008 | | 8 | 7 |
| 303/306 | 9 May 2008 | | 13 | 9 |
| 307 | 13 June 2008 | | 4 | 2 |

| Expedition | Submission deadline (20 months postmoratorium) | Deadline extensions approved in FY14 Q2 | Overall extension status | |
|---|---|---|---|---|
| | | | Number approved | Number fulfilled |
| 311 | 27 June 2008 | | 12 | 8 |
| 309/312 | 28 August 2008 | | 9 | 9 |
| 310 | 4 November 2008 | | 16 | 13 |
| 313 | 4 August 2012 | | 4 | 2 |
| 314/315/316 | 4 October 2010 | | 27 | 22 |
| 317 | 4 September 2012 | | 11 | 5 |
| 318 | 2 March 2013 | | 4 | |
| 319 | 30 April 2012 | | 6 | 3 |
| 320/321 | 30 June 2012 | | 26 | 25 |
| 322 | 10 June 2012 | | 11 | 7 |
| 323 | 10 August 2012 | | 6 | 4 |
| 324 | 4 July 2012 | | 10 | 8 |
| 325 | 16 March 2013* | | 31 | 7 |
| 327 | 5 May 2013 | 1 | 2 | 1 |
| 330 | 11 October 2013 | 1 | 10 | 1 |
| 333 | 18 January 2014 | | | |
| 334 | 13 December 2013† | | 31 | |
| 335 | 3 February 2014 | 4 | 4 | 1 |

*A 6 month extension was granted to the entire Science Party.
†A 1 year extension was granted to the entire Science Party.

## *Synthesis papers*

| Expedition | Submission deadline (26 months postmoratorium) | Deadline extensions approved in FY14 Q2 | Overall extension status | |
|---|---|---|---|---|
| | | | Number approved | Number fulfilled |
| 301 | 22 October 2007 | | 1 | 1 |
| 302 | 21 January 2008 | | 1 | 1 |
| 304/305 | 4 August 2008 | | 1 | 1 |
| 308 | 8 September 2008 | | 1 | 1 |
| 303/306 | 10 November 2008 | | 1 | 1 |
| 307 | 15 December 2008 | | 1* | 1 |
| 311 | 29 December 2008 | | 1 | 1 |
| 309/312 | 27 February 2009 | | 1* | |
| 310 | 4 May 2009 | | 1* | |
| 313 | 4 February 2013 | | | |
| 314/315/316 | 5 April 2011 | | 1* | |
| 317 | 4 March 2013 | | | |
| 318 | 2 September 2013 | | | |
| 319 | 30 October 2012 | | | |
| 320/321 | 30 December 2012 | | | |
| 322 | 10 December 2012 | | | |
| 323 | 10 February 2013 | | | |

| Expedition | Submission deadline (26 months postmoratorium) | Deadline extensions approved in FY14 Q2 | Overall extension status | |
|---|---|---|---|---|
| | | | Number approved | Number fulfilled |
| 324 | 4 January 2013 | | 1 | |
| 325 | 16 September 2013 | | | |
| 327 | 5 November 2013 | | | |
| 329 | 13 February 2014 | | | |
| 330 | 11 April 2014 | | | |
| 331 | 4 December 2013 | | | |
| 332 | 11 February 2014 | | | |

*Requests for submission deadline extensions beyond 38 months postmoratorium were received and referred to the respective Platform Curator.

## Publications website

FY14 Q2 publications website statistics were not available at the time of this report.

## IODP digital object identifiers

IODP is a member of CrossRef, the official digital object identifiers (DOI) registration agency for scholarly and professional publications. All IODP scientific reports and publications are registered with CrossRef and assigned a unique DOI that facilitates online access. DOIs have also been assigned to Integrated Ocean Drilling Program, ODP, and DSDP scientific reports and publications. CrossRef tracks the number of times a publication is accessed, or resolved, through the CrossRef DOI resolver tool. Statistics for the reporting quarter are shown in the table below.

| Reports and publications | DOI prefix | Number of resolutions | | | |
|---|---|---|---|---|---|
| | | January 2014 | February 2014 | March 2014 | FY14 Q2 total |
| IODP | 10.14379 | 5 | 7 | 4 | **16** |
| Integrated Ocean Drilling Program | 10.2204 | 3,311 | 3,614 | 4,631 | **11,556** |
| ODP/DSDP | 10.2973 | 11,107 | 4,106 | 9,548 | **24,761** |

# Publications support

The USIO hosted the postexpedition editorial meeting for USIO Expedition 346 this quarter, and provided a Publications Specialist to support the ESO Expedition 347 Onshore Science Party Meeting.

# Technical documentation

Technical documents produced by the USIO are available to users via the Cumulus web client (iodp.tamu.edu/tasapps/) once they reach the technical draft stage. Current versions of chemistry and physical properties user guides are undergoing standard revision cycle by shipboard laboratory personnel. In addition, ~20 user guides have been deployed in draft in RoboHelp web help format for evaluation by the laboratory technicians. Usability and formatting comments on RoboHelp are due in June for partial shipboard deployment during Q4 and deployment of the remaining appropriate user guides in FY15.

## Legacy documentation

The USIO routinely archives electronic copies of documents, reports, and scientific publications produced on behalf of IODP and the Integrated Ocean Drilling Program. Documents archived this quarter included all scientific publications produced during the quarter, the IODP-USIO FY14 Q1 report, and planning documentation for reporting deliverables.

# Education

The USIO is responsible for developing and disseminating expedition-specific and thematic education activities and materials for elementary through post-secondary and free choice–learning audiences, promoting diversity programs and partnerships, and supporting legacy resources.

The USIO facilitates education activities through Deep Earth Academy (funded jointly by the USIO and the United States Science Support Program [USSSP]) in cooperation with other U.S. education and outreach groups, conducting teacher education activities; developing, testing, and disseminating educational curriculum that highlights IODP science programs; and implementing live and near-real-time programs that highlight and use the *JOIDES Resolution* as a platform for education.

## Professional development

USIO staff hosted an educator working group to complete work on a number of curriculum pieces that are now posted or will be published on the joidesresolution.org website within the next few months. The activities will be used by the Onboard Education Officers and School of Rock workshop participants.

### 2014 Schools of Rock

Plans are underway for two upcoming School of Rock programs. The first one will be 8–15 June at Indiana University of Pennsylvania. It will focus on undergraduates, mainly pre-service teachers. The second will be held at the University of Delaware 10–16 August and targets teachers in the District of Columbia and others implementing Next Generation Science Standards. More will be reported on these programs in future reports.

### Onboard educator program

The staffing process was completed this quarter for Onboard Education Officers who will sail on Expeditions 350, 351, and 352—each expedition will sail two or three educators. An intensive 3-day training session held 2–4 February at IODP-TAMU in College Station, TX, was attended by all 2014 Onboard Education Officers, including five sponsored by the USIO and two European teachers selected by the ECORD Science Support and Advisory Committee (ESSAC). During the training, the Education Officers met some of the staff with whom they'll be sailing, toured the core repository, learned how to operate the website for blogging and more, and practiced video broadcasting. They also further developed the education plans for their expeditions and had a chance to work with their team members in person.

There were no Onboard Education Officers on board during Expedition 349; USIO shore-based and shipboard staff worked together to provide new web content, social media postings, and educational outreach. Expedition 350 began at the end of this quarter with two Education Officers, L. Allen (Truro College, U.K.) and J. DeMarines (Blue Marble Space Institute of Science). Both have extensive plans in place for the expedition, which will be reported next quarter.

### Educational outreach events

USIO staff gave an oral presentation at the American Geophysical Union (AGU)/Association for the Sciences of Limnology and Oceanography (ASLO) Ocean Sciences meeting held 23–28 February in Honolulu, HI. The presentation focused on the work of the Ship-to-Shore Science (STSS) grant (see "Outside funding and sponsorships"). USIO staff also gave a presentation about USIO educational activities to a visiting delegation of 22 Chinese educators on 12 March at the Ocean Leadership office in Washington, DC.

## Expedition-based learning activities and materials

The USIO links school and public audiences to activities on board the *JOIDES Resolution* via advanced web technologies, the *JOIDES Resolution* website (joidesresolution.org), and video broadcasting. The USIO also produces new expedition-specific and thematic video and learning materials based on legacy material and science and life at sea during USIO expeditions.

### *JOIDES Resolution* website and social networking

Each USIO expedition is promoted on joidesresolution.org with expedition pages, blogs, videos, images, and more, and joidesresolution.org serves as the hub for Program social networking on Facebook, Twitter, and YouTube sites. During this quarter, joidesresolution.org featured content from Expedition 349. The effort to transfer all content and resources from deepearthacademy.org to joidesresolution.org was also completed this quarter.

### USIO educational website statistics

| USIO educational website* | FY14 Q2 page views | FY14 Q2 site visits |
|---|---|---|
| www.joidesresolution.org | 46,182 | 16,280 |
| www.oceanleadership.org/education/deep-earth-academy | 7,762 | 6,015 |
| **Total** | **53,944** | **22,295** |

*Ocean Leadership's educational websites are funded jointly by the USIO and USSSP.

### Videos and video broadcasts

During Expedition 349, USIO staff coordinated events with shipboard scientists and shore-based groups, resulting in 58 events with 13 different countries.

### Educational materials development and distribution

Materials developed this quarter included the following new activities:

- "How Scientists Conduct Research" is a collaborative effort with Dr. T. Quan (Oklahoma State University) and E. Cohen (science consultant) that helps students understand how science works (http://joidesresolution.org/node/3495).
- "Tale of the Resolution Reading Activities" is a series of questions and activities written by School of Rock alumnus M. Passow (Dwight Morrow High School, Englewood, NJ) for use with our *Tales of the Resolution* graphic novel series. These activities help students develop common core skills and are a part of the Earth2Class project (http://joidesresolution.org/node/3521).
- "Core Stories: Recognizing Patterns in Earth's Climate History" is an activity designed to accompany our glacial/interglacial core model. Written by a host of School of Rock alumni and IODP scientists, this activity helps students make core observations and follow a series of activities to make interpretations about the sediment layers (http://joidesresolution.org/node/3524).
- "Video Guide JR Time Machine" is an activity designed to accompany the third episode of the Expedition 342: Newfoundland video series. Comprising a student questionnaire and a detailed teachers' guide, the package will enable students to identify how the *JOIDES Resolution* helps to study the past. They will also be able to list the steps of the coring process and identify three major scientific properties that are studied from core samples (http://joidesresolution.org/node/3397).

New promotional postcards about the 2014 expeditions and the Adopt-a-Microbe curriculum were also produced for distribution to educators and the public at events. In addition, three new banner stands for IODP education were developed for conferences and events.

Materials were distributed this quarter at conferences and outreach activities and in response to requests received through the website. The office no longer sends extensive materials through the mail but primarily distributes materials at events run by staff or volunteers. During this quarter, materials were distributed at the Onboard Education Officer training in College Station, at the Ocean Sciences meeting in Honolulu, and at the presentation for the Chinese delegation in Washington, DC.

## Scientists as educators

The USIO provides regular opportunities for scientists to participate in educational programming. During this quarter, K. St. John (James Madison University) and L. Sautter (College of Charleston) participated in the IODP Education Working group in January. Scientists A. Haddad (Arizona State University), K. Johnson (University of Hawaii), and K. Bogus (TAMU) are partners on the Advancing Informal STEM Learning (AISL) proposal submitted to NSF (see "Outside funding and sponsorships" below).

## Strategic partnerships

### Center for Dark Energy Biosphere Investigations

The USIO continued to partner with the Center for Dark Energy Biosphere Investigations (C-DEBI) to produce microbiology-related materials and projects. During this quarter, USIO staff assisted scientist

B. Orcutt (Bigelow Laboratories) in completing the Adopt-a-Microbe curriculum and assembled kits for various related activities that can be loaned out to teachers.

## Outside funding and sponsorships

This section describes grant proposal submissions, awarded grants, and subsequent grant-supported activities that complement USIO science and education activities.

### New grants

#### *Advancing Information STEM Learning*

USIO staff submitted a $2.9 million proposal to NSF's AISL solicitation this quarter. The proposal involved a continuation and combination of the programs that were started under the NSF Informal Science Education Pathways STSS grant. If funded, the informal science initiative titled "Pop-Up/Drill Down Science" will work with Girl Scout councils in diverse communities to bring mobile *JOIDES Resolution*–related exhibits to libraries, museums and outdoor fairs.

#### *Student Expression of Achievement*

USIO staff also submitted a proposal to the Toyota Foundation to fund Student Expression of Achievement (SEA), a regional program that will expand upon the School of Rock.

### Activities related to existing grants

#### *C-DEBI grant*

The USIO partnered with C-DEBI during FY11 on the education and outreach components of the R/V *Atlantis* Expedition AT18-07, which collected samples and data from subseafloor observatories (CORKS) installed during IODP Expedition 327: Juan de Fuca Ridge-Flank Hydrogeology. This partnership continued with the USIO leading education and outreach components of the R/V *Thompson* Expedition AT26-03, which returned to the same sites in July 2013. During this quarter, USIO staff made arrangements for the production of several C-DEBI scientist video profiles to accompany other resources. These videos will be completed in the next quarter.

#### *Ship-to-Shore Science grant (NSF Informal Science Education Pathways)*

During this quarter, staff worked with all STSS partners to gather final data and reports and assemble the new 5-year AISL proposal. Planning also continued for a second phase of several of the projects begun under STSS, including a new, revised version of the *Uncovering Earth's Secrets* e-book, an expanded interactive core game, and several regional outreach events.

## Legacy documentation

The USIO routinely archives electronic copies of documents, reports, and materials produced on behalf of IODP.

### Legacy digital archive

Legacy preservation activities include storing electronic copies of relevant educational products and materials produced by the USIO each quarter in a dedicated CMS. Products and materials archived this quarter include the activities outlined in "Educational materials development and distribution."

# Outreach

USIO Outreach activities are designed to build an easily accessible foundation of knowledge about IODP, to raise the visibility of the connection between the emerging scientific knowledge and its positive contribution to society worldwide, and to encourage interest in the Program. To accomplish these goals, the USIO targets informational outreach to the general public, science and general-interest media, legislators, scientists and engineers from within the IODP community and beyond, and decision makers at the national level.

## Communications activities: media and public outreach

### Port call outreach

The USIO hosted tours and outreach activities at two separate ports of call this quarter: On 26 and 27 January in Hong Kong prior to Expedition 349 and on March 31 and April 1 in Keelung, Taiwan, at the expedition's conclusion. In Hong Kong, approximately 175 reporters, VIPs, scientific colleagues, and students toured the *JOIDES Resolution* and a media conference was held with approximately 25 journalists from both Hong Kong and mainland China. In Keelung, nearly 30 VIPs, scientific colleagues, and students also toured the ship.

### Global outreach activities

In early February, USIO representatives attended the ECORD Outreach Task Force meeting held at the University of Bremen. Attendees discussed international outreach collaborations and strategies for the next several years going forward in the new program.

### *Communications tools*

The USIO's outreach-focused Twitter account, @SeafloorSci, gained many followers by posting news from expeditions and links to related media. At the end of March, the account had approximately 580 followers and more are being added regularly.

### Program-related publications

### *Articles authored by USIO staff*

Program-related science and other articles authored by USIO staff published during this quarter include the following. Bold type indicates USIO staff. Other Program-related science articles are available online through the ocean drilling citation database (iodp.tamu.edu/publications/

citations/database.html) and the IODP Expedition-related bibliography (iodp.tamu.edu/publications/citations.html).

- Chen, M.-H., Zhang, Q., Zhang, L.-L., **Alvarez Zarikian, C.,** and Wang, R.-J., 2014. Stratigraphic distribution of the radiolarian *Spongodiscus biconcavus* Haeckel at IODP Site U1340 in the Bering Sea and its paleoceanographic significance. *Palaeoworld*, 23(1):90–104. doi:10.1016/j.palwor.2013.11.001
- Dorador, J., Rodríguez-Tovar, F.J., and IODP Expedition 339 Scientists (including **Alvarez Zarikian, C.A.**), 2014. Digital image treatment applied to ichnological analysis of marine core sediments. *Facies,* 60(1):39-44. doi:10.1007/s10347-013-0383-z
- Holbourn, A., Kuhnt, W., Lyle, M., **Schneider, L.,** Romero, O., and Andersen, N., 2014. Middle Miocene climate cooling linked to intensification of eastern equatorial Pacific upwelling. *Geology,* 42(1):19–22. doi:10.1130/G34890.1
- Blackman, D.K., **Slagle, A., Guerin, G.,** and Harding, A., 2014. Geophysical signatures of past and present hydration within a young oceanic core complex. *Geophys. Res. Lett.,* 41(4):1179–1186. doi:10.1002/2013GL058111

### *News articles, news programs, media citations, or public commentary*

The following citations comprise examples of news articles, news programs, media citations, or public commentary related to USIO expeditions and/or science. See the "IODP in the news" web page (www.iodp-usio.org/Newsroom/news.html) for other articles that raise the profile of the Program.

- Ghose, T., 2014. Deep-sea expedition could reveal how continents form. *Livescience,* 9 January 2014. http://www.livescience.com/42470-voyage-to-deep-trench.html
- Qiu, J., 2014. Sea drilling project launches: international expedition hopes to unravel mysteries of the South China Sea, one of the world's most geologically important seas. *Nature (London, U. K.),* 505(7484):466–467. doi:10.1038/505466a
- White, J., 2014. We're drilling back in time to tell a tale of the sea. *NewScientist,* 3 February 2014. http://www.newscientist.com/article/mg22129544.800-were-drilling-back-in-time-to-tell-a-tale-of-the-sea.html#.U0YLDVdnCSo

## Legacy documentation

The USIO routinely archives electronic copies of documents, reports, and materials produced on behalf of IODP.

### Legacy digital archive

Legacy preservation activities include storing electronic copies of relevant outreach products and publications produced by the USIO each quarter in a dedicated CMS. Products and publications archived this quarter include port call plans and outreach materials/documents.

# Appendix A: FY14 Q2 finance report

Please contact info@oceanleadership.org for hard copies of financial pages.

# Appendix B: Travel

| Purpose* | Category | Dates | Location | Institution: Personnel |
|---|---|---|---|---|
| Earth Science Information Partners (ESIP) Winter Meeting | Conference | 4–6 January 2014 | Washington, DC | Ocean Leadership: D. Fils |
| *JOIDES Resolution* Facility (JRF) Science Evaluation Panel (SEP) Meeting | Panel meeting | 6–10 January 2014 | La Jolla, CA | Ocean Leadership: D. Divins<br>TAMU: P. Blum, A. Klaus, L. LeVay |
| Work onboard the *JOIDES Resolution* to prepare for re-start of laboratories | Port call activities | 6–26 January 2014 | Manila | TAMU: P. Gates, P. Foster, T. Wick |
| Relocation | Relocation | 10–12 January 2014 | College Station, TX | TAMU: N. Bilsley |
| Relocation | Relocation | 12–18 January 2014 | College Station, TX | TAMU: B. Novak |
| Discuss NSF Cooperative Agreement | Meeting | 14 and 15 January 2014 | Washington, DC | TAMU: B. Clement, B. Neyses |
| Expedition 349 port call | Port call activities | 26–29 January 2014 | Hong Kong | Ocean Leadership: D. Divins, M. Wright<br>TAMU: B. Clement, J. Miller, R. Mitchell |
| Core Description Workshop | Training | 12–16 January 2014 | College Station, TX | TAMU: S. Hyun, K. Dadd, M. Jutzeler, S. Kutterolf, J. Schindlbeck, S. Whattam |
| Expedition 347 Onshore Science Party Meeting | Postexpedition meeting | 22 January–20 February 2014 | Bremen, Germany | TAMU: A. Stephens |
| NSF Workshop: IODP Drilling Proposals in the Brazilian Equatorial Margin | Workshop | 4–6 February 2014 | Sao Paulo, Brazil | TAMU: P. Blum |
| Agilent Gas Chromatograph training | Training | 9–14 February 2014 | Chicago, IL | TAMU: R. Gray |
| Underwater Intervention 2014 (UI2014) Conference and Exhibition | Conference | 11–13 February 2014 | New Orleans, LA | TAMU: M. Meiring |
| NSF Panel Review | Panel meeting | 12–14 February 2014 | Washington, DC | TAMU: J. Miller |
| European Consortium for Ocean Research Drilling (ECORD) Facility Board Meeting | Facility board meeting | 2–7 March 2014 | Bremen | TAMU: M. Malone |
| FY15 Annual Program Plan development and publications meetings | Meeting | 2–13 March 2014 | College Station, TX | TAMU: G. Lowe |
| Expedition 346 sampling party | Meeting | 13–29 March 2014 | Kochi, Japan | TAMU: C. Alvarez Zarikian, C. Broyles, J. Firth, P. Rumford |
| Performance evaluations and Science Operations meetings | Meeting | 17–28 March 2014 | College Station, TX | TAMU: M. Storms |
| IODP-workshop "Scientific Drilling in the South Atlantic" | Workshop | 22–28 March 2014 | Rio de Janeiro, Brazil | TAMU: K. Bogus |

| Purpose* | Category | Dates | Location | Institution: Personnel |
|---|---|---|---|---|
| Gordon Research Conference: Natural Gas Hydrate Systems | Conference | 23–28 March 2014 | Galveston, TX | LDEO: D. Goldberg, A. Malinverno |
| National Contract Management Association (NCMA) Subcontract Management Training Forum (SMTF) 2014 | Training | 27 and 28 March 2014 | San Diego, CA | TAMUS: B. Neyses |
| Expedition 350 port call | Port call activities | 28 March–2 April 2014 | Keelung, Taiwan | Ocean Leadership: D. Divins<br>TAMU: J. Gracia, B. Julson, M. Malone, J. Miller, R. Mitchell, D. Partain |
| Expedition 350 educational outreach | Education/ Outreach | 30 March–30 May 2014 | Keelung, Taiwan | Onboard Education Officer: J. DeMarines |

*Travel associated with meetings, conferences, training, port call work, and nonroutine sailing activities.

# Appendix C: USIO quarterly report distribution

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