



**IODP**  
INTEGRATED OCEAN  
DRILLING PROGRAM



**Integrated Ocean Drilling Program**  
United States Implementing Organization

# **INTEGRATED OCEAN DRILLING PROGRAM**

## **United States Implementing Organization**

### **FY10 Quarterly Report 1** **1 October–31 December 2009**

for

**NSF Contract OCE-0352500**

and

**IODP-MI Contract IODP-MI-05-03**

**Submitted by the USIO**

to

**The National Science Foundation**

and

**IODP Management International, Inc.**

**22 February 2010**



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## USIO FY10 Quarterly Report 1

## INTRODUCTION

The organization of this quarterly report reflects activities and deliverables that are outlined in the Integrated Ocean Drilling Program (IODP) U.S. Implementing Organization (USIO) FY10 Annual Program Plan 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.<sup>1</sup>

## MANAGEMENT AND ADMINISTRATION

### Contractual Activities

#### Ocean Leadership

##### *Contract Activity*

Ocean Leadership received the following modifications during the reporting period.

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

- Modification 42: Updated Ocean Leadership's indirect cost rates, revised the contract's key personnel section, and approved a revised Subcontracting Plan.
- Modification 43: Provided incremental funding in the amount of \$25,000,000 for the FY10 Annual Program Plan.

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

- Modification 23: Provided initial funding in the amount of \$520,000 toward preliminary FY10 science operating costs (SOC) Nonoperations activities.
- Modification 24: Approved the FY10 Annual Program Plan SOC Nonoperations in the amount of \$3,961,102.
- Modification 25: Provided incremental FY10 Annual Program Plan SOC Nonoperations funding in the amount of \$1,500,000.

##### *Subcontract Activity*

Ocean Leadership issued the following subcontract modifications during the reporting period.

##### **Ocean Leadership Subcontract JSC 4-03 with LDEO**

- Modification 34: Approved the FY10 Annual Program Plan dated 24 July 2009 in the amount of \$6,328,874 (excluding SOC Nonoperations) and provided incremental FY10 funding in the amount of \$1,266,681.
- Modification 35: Added the preliminary FY10 SOC Nonoperations budget of \$717,399 to the FY10 Annual Program Plan and provided incremental FY10 funding in the amount of \$125,000.
- Modification 36: Provided formal approval of the FY10 SOC Nonoperations budget of \$717,399, thereby revising the FY10 Annual Program Plan budget to \$7,046,273, and provided incremental FY10 funding in the amount of \$271,666.

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<sup>1</sup> In this document, references to TAMU include Texas A&M Research Foundation (TAMRF).

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### **Ocean Leadership Subcontract JSC 4-02 with TAMRF**

- Modification 43: Approved the FY10 Annual Program Plan Supplement titled American Recovery and Reinvestment Act Funds Spending Plan for \$25,000,000, incorporated additions and updates to specific clauses and American Recovery and Reinvestment Act (ARRA) requirements, and provided incremental ARRA funding in the amount of \$12,500,000.
- Modification 44: Approved the FY10 Annual Program Plan dated 24 July 2009 in the amount of \$27,232,940 (excluding SOC Nonoperations) and provided incremental FY10 funding in the amount of \$5,450,489.
- Modification 45: Added the preliminary FY10 SOC Nonoperations budget of \$2,947,063 to the FY10 Annual Program Plan and provided incremental FY10 funding in the amount of \$300,000.
- Modification 46: Provided formal approval of the FY10 SOC Nonoperations budget of \$2,947,063, thereby revising the FY10 Annual Program Plan budget to \$30,180,003, and provided incremental FY10 funding of \$1,116,001.

### **LDEO**

#### ***Subcontract Activity***

LDEO issued the following subcontract modifications during the reporting period.

#### **LDEO Subcontract with Leicester University**

- Modification 10: Provided the first FY10 funding increment in the amount of \$100,000.

#### **LDEO Subcontract with Schlumberger**

- Modification 13: Provided the first FY10 funding increment in the amount of \$600,000.

### **TAMRF**

#### ***Contracts/Procurement Activity (\$100,000 or Greater)***

- 4 December 2009: Purchase of sepiolite and barite for use on Expedition 327 (Wilkes Land Glacial History) in the amount of \$129,700.
- 21 December 2009: Purchase of 10 3/4 inch casing hangers and pups, 16 inch casing hangers and pups, 20 inch casing hanger and pups, and center landing rings in the amount of \$257,840.

#### ***Miscellaneous Activity***

- 19 October 2009: Submitted the FY09 Annual Inventory results and Federal Supply Number (FSN) Report.
- 20 October 2009: Submitted a revised Small Business Plan for platform operating costs (POC)/SOC Operations/major research equipment and facilities construction/systems integration contract costs (SIC) and a new Small Business Plan for SOC Nonoperations. The purpose of this submission was to create (1) a revised plan that excluded SOC Nonoperations (IODP Management International [IODP-MI]) funding and (2) a new, separate plan for only SOC Nonoperations (IODP-MI) funding.

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- 30 October 2009: Submitted the small business Individual and Summary Subcontract Reports (ISR/SSR) for FY09 via the Electronic Subcontracting Reporting System (eSRS).
- 20 November 2009: Submitted the Federal Automotive Statistical Tool (FAST) FY09 Motor Vehicle Report to the National Science Foundation (NSF).
- 9 December 2009: Submitted a request for prior approval to Ocean Leadership for the purchase of casing hangars, pups, and center landing rings.
- 9 December 2009: Submitted a request for prior approval to Ocean Leadership to allow the TAMU Mechanical Engineering Department to use the IODP test facility (derrick and associated equipment). The Mechanical Engineering Department had requested approval to include use of the IODP test facility in their proposal titled “Experimental Based Characterization, Model Verification, Vibration, Suppression, and Education for Drillstring Dynamics” to the Qatar National Research Foundation.

### **Insurance Related to Ocean Leadership Subcontracts**

Texas A&M Research Foundation’s (TAMRF’s) insurance provider (ANCO) is pursuing possible credits on certain FY10 premiums to reflect the lower risk factors during the ship’s upcoming tie-up period.

### **Personnel Status**

#### **Ocean Leadership**

No positions were vacated during the quarter.

The following position was opened and advertised during the quarter:

- Data Management Technical Expert

The following positions were filled during the quarter:

- Senior Technical Expert, Engineering and Development (Greg Myers): 14 December 2009
- Data Management Technical Expert (Douglas Fils): 7 December 2009
- Communications Manager (Kristin Ludwig): 9 November 2009

#### **LDEO**

The following positions were vacated during the quarter:

- Graphic Artist (Kazuko Nagao): 30 September 2009
- Staff Associate (Tarik Hussein): 23 October 2009
- Supervisor, Science Operations (Gerardo Iturrino): 1 November 2009
- Manager, Engineering and Technical Services (Eric Meissner): 1 November 2009

The following position was opened and advertised during the quarter:

- Staff Associate

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The following positions were filled during the quarter:

- Manager, Engineering and Technical Services (Gerardo Iturrino): 1 November 2009
- Senior Engineering Project Manager (Eric Meissner): 1 November 2009
- Supervisor, Science Operations (Alberto Malinverno): 1 November 2009

### TAMU

No positions were vacated during the quarter.

The following position was opened and advertised during the quarter:

- Senior Marine Instrumentation Specialist

The following positions were filled during the quarter:

- Curatorial Specialist II (Lara Miles): 15 October 2009
- Staff Engineer (Robert Aduddell): 26 October 2009
- Interim Manager, Technical and Analytical Services (Jay Miller): 1 December 2009
- Manager of Development, IT, and Databases (James Rosser): 1 December 2009
- Applications Developer III (Timothy Blaisdell): 31 December 2009

## USIO Web Services

### Web Site Statistics

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

#### *USIO Web Site*

The USIO Web site is hosted at TAMU, LDEO, and Ocean Leadership. In addition to USIO Web page updates and additions, new content is regularly added to IODP expedition Web pages at <http://iodp.tamu.edu/scienceops/expeditions.html>.

FY10 Q1 USIO Web Site				
Parameter	www.iodp-usio.org	iodp.ldeo.columbia.edu	iodp.tamu.edu	Total
Page views	15,553	7,957	290,697	324,207
Site visits	9,819	1,317	57,604	68,740

#### *IODP Publications Web Site*

The IODP Publications Web site is hosted at TAMU. New online publications are shown in the “**IODP Scientific Publications**” table in “Publications.”

FY10 Q1 IODP Publications Web Site	
Parameter	publications.iodp.org
Page views	110,465
Site visits	28,041



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### USIO Educational Web Sites

FY10 Q1 Deep Earth Academy Web Sites*		
Web domain	www.joidesresolution.org	www.oceanleadership.org/education/deep-earth-academy
Page views	55,309	7,457
Site visits	13,026	5,225

\*Ocean Leadership's educational Web sites are funded jointly by the USIO and USSSP.

### Legacy Web Sites

The Ocean Drilling Program (ODP) Science Operator Web site and the Deep Sea Drilling Project (DSDP) Publications Web site are hosted at TAMU. The ODP Legacy Web site is hosted at Ocean Leadership.

Parameter	FY10 Q1 ODP Web Site			FY10 Q1 DSDP Web Site
	www-odp.tamu.edu	www.odplegacy.org	Total ODP	www.deepseadrilling.org
Page views	2,669,641	9,067	2,678,708	100,942
Site visits	265,962	4,116	270,078	27,272

### Stakeholder Web Sites

New and updated Web pages	Release date	URL
JOIDES Resolution Transocean	ongoing	<a href="http://deepwater.com/fw/main/JOIDES-Resolution-128.html">http://deepwater.com/fw/main/JOIDES-Resolution-128.html</a>
JOIDES Resolution TAMU College of Geosciences	ongoing	<a href="http://geosciences.tamu.edu/communications/geosciences-highlights/ocean-drilling">http://geosciences.tamu.edu/communications/geosciences-highlights/ocean-drilling</a>
TAMU ODASES	ongoing	<a href="http://odases.tamu.edu/">http://odases.tamu.edu/</a>

### Other Activities

#### USIO Organizational Structure Update

The USIO's implementation efforts in support of ongoing restructuring resulted in Ocean Leadership hiring G. Myers as the new Senior Technical Expert, Engineering and Development, and D. Fils as the new Data Management Technical Expert. Myers has been involved with ODP and IODP for more than 14 years and brings hands-on engineering development and operational experience coupled with extensive experience in managing science and oil and gas industry projects. He will oversee USIO engineering development efforts and coordinate non-IODP funding activities. D. Fils has wide experience with developing and implementing computer architectures for the delivery of data and services, including six years working with data from the ODP/IODP Janus system and derivative works. Fils will interact with IODP-MI and coordinate with the USIO to develop and implement approaches to data management needs.

LDEO has also undergone organizational changes. G. Iturrino took on the role of Manager of Engineering Services, with E. Meissner stepping in as Senior Engineering Project Manager. Having served as the U.S. Scientific Ocean Drilling Vessel (SODV) LDEO project manager, Iturrino brings a strong understanding of the new capabilities of the drillship. With Iturrino moving to Engineering Services, A. Malinverno has agreed to manage the Science Services group. Malinverno will retain his title of Principal Scientist, but his role will be expanded to include the responsibility for routine management of the Science Services group.

TAMU began implementing a new organizational structure, filling two new positions to round out the TAMU leadership team. J. Rosser from the TAMU College of Geosciences joined IODP-TAMU as the Manager of Development, Information Technology (IT), and Databases, bringing

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a strong background in U.S. Naval IT operations and a strong record of project management. J. Miller agreed to serve as Interim Manager of the newly formulated Technical and Analytical Services, bringing an intimate knowledge of shipboard operations, a strong reputation within the scientific community, and a demonstrated ability to bring large, complex projects to completion.

### TECHNICAL, ENGINEERING, AND SCIENCE SUPPORT

#### USIO Expedition Schedule

Expedition		Port (Origin)	Dates <sup>1,2</sup>	Total Days (Port/Sea)	Days at Sea (Transit <sup>3</sup> /Ops)	Co-Chief Scientists	USIO Contacts <sup>4</sup>
Shatsky Rise Formation	324	Yokohama, Japan	4 September–4 November 2009	61 (5/56)	56 (17/39)	W. Sager, T. Sano	TAMU: J. Geldmacher* LDEO: G. Iturrino^
Canterbury Basin Sea Level	317	Townsville, Queensland	4 November 2009–4 January 2010	61 (5/56)	56 (10/46)	C. Fulthorpe, K. Hoyanagi	TAMU: P. Blum* LDEO: A. Slagle^
Wilkes Land Glacial History <sup>5</sup>	318	Wellington, New Zealand	4 January–9 March 2010	64 (5/59)	59 (16/43)	C. Escutia, H. Brinkhuis	TAMU: A. Klaus* LDEO: T. Williams^
Transit/Maintenance <sup>6</sup>		Hobart, Australia	9 March–5 July 2010				
Juan de Fuca Hydrogeology	327	Victoria, British Columbia	5 July–4 September 2010	61 (5/56)	56 (2/54)	A. Fisher, T. Tsuji	TAMU: K. Gamage* LDEO: S. Mrozewski^
Cascadia CORK	328	Victoria, British Columbia	4 September–18 September 2010	15 (5/10)	10 (2/8)	TBD	TAMU: K. Petronotis*
Transit	N/A	Victoria, British Columbia	18 September–8 October 2010	20 (2/18)			
South Pacific Gyre	329	Papeete, Tahiti	8 October–12 December 2010	65 (4/61)	61 (9/52)	S. D'Hondt, F. Inagaki	TAMU: C. Alvarez-Zarikian* LDEO: H. Evans^
Louisville	330	Auckland, New Zealand	12 December 2010–11 February 2011	61 (5/56)	56 (8/48)	A. Koppers, T. Yamazaki	TAMU: J. Geldmacher* LDEO: J. Inwood^
Transit		Auckland, New Zealand	11 February–15 March 2011	32 (5/27)			
CRISP	TBD	Balboa, Panama	15 March–16 April 2011	32 (4/28)	28 (3/25)	TBD	TAMU: P. Blum* LDEO: TBD^
Superfast	TBD	Puntarenas, Costa Rica	16 April–19 May 2011	33 (2/31)	31 (6/25)	TBD	TAMU: P. Blum* LDEO: TBD^
Non-IODP							
Mid-Atlantic Microbiology	TBD	TBD	mid-September–mid-November 2011	TBD	TBD	TBD	TAMU: A. Klaus* LDEO: TBD^

Notes: TBD = to be determined; N/A = not applicable.

<sup>1</sup> Dates for expeditions may be adjusted pending non-IODP activities.

<sup>2</sup> The start date reflects the initial port call day. The vessel will sail when ready.

<sup>3</sup> Transit total is the transit to and from port call and does not include transit between sites.

<sup>4</sup> 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 [www.iodp-usio.org](http://www.iodp-usio.org).

<sup>5</sup> The Wilkes Land Expedition includes operations at Adelie Drift (Ancillary Project Letter [APL] 638).

<sup>6</sup> The maintenance period will be in Victoria, British Columbia (~13 April–5 July)

## Expedition Planning and Implementation Activities

### USIO Pacific Equatorial Age Transect Expeditions

#### *Postexpedition Activities*

The first postexpedition meeting for Expedition 320/321: Pacific Equatorial Age Transect (PEAT) was held 12–16 October 2009 in College Station, Texas, immediately followed by the PEAT postexpedition sampling party at the Gulf Coast Repository (GCR) (see “**Core Curation**” for details). The PEAT Operational Review Task Force met on 3 and 4 December 2009 in College Station, Texas.

### USIO Bering Sea Paleoceanography Expedition

#### *Postexpedition Activities*

The postexpedition sampling party for Expedition 323: Bering Sea Paleoceanography was held 30 November–9 December 2009 at the Kochi Core Center (KCC) in Kochi, Japan (see “**Core Curation**” for details).

### USIO Shatsky Rise Formation Expedition

#### *Expedition Staffing*

Expedition Science Party Staffing Breakdown	
Member Country/Consortium	Shatsky Rise Formation
USA: United States Science Support Program (USSSP)	8
Japan: Japan Drilling Earth Science Consortium (J-DESC)	8
Europe and Canada: European Consortium for Ocean Research Drilling (ECORD) Science Support and Advisory Committee (ESSAC)	8
South Korea: Korea Integrated Ocean Drilling Program (K-IODP)	1
People’s Republic of China: IODP-China	1
Australia and New Zealand: Australia-New Zealand IODP Consortium (ANZIC)	1
India: Ministry of Earth Science (MoES)	0

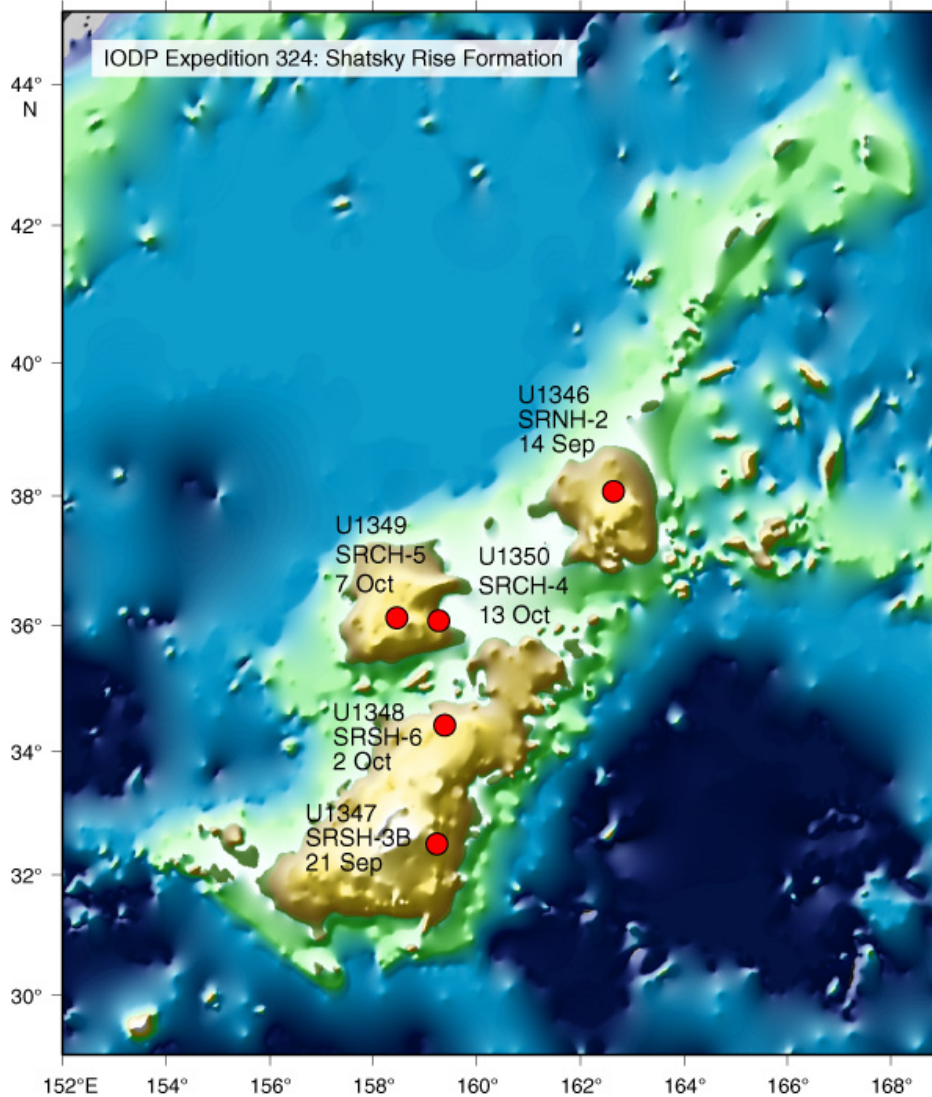
A Historically Black Colleges and Universities (HBCU) Educator at Sea (see “**HBCU Educator-at-Sea Pilot Program**” in “Education” for more information) and a Japanese museum educator also sailed as participants during Expedition 324: Shatsky Rise Formation.

#### *Expedition Operations*

Expedition 324 successfully completed operations at five sites. Of the 923 m cored, 473 m was in basement (average recovery of 53%) and >120 m in volcanoclastics.

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### Expedition 324: Shatsky Rise Formation Site Map



### Expedition 324: Shatsky Rise Formation Coring Summary

Site	Hole	Latitude	Longitude	Water depth (m)	Cores (N)	Interval cored (m)	Core recovered (m)	Recovery (%)
SRNH-2	U1346A	38° 00.401'	162° 38.710'	3630.0	16	91.3	25.8	28.2
SRSH-3B	U1347A	32° 30.475'	159° 14.078'	3461.0	28	246.5	116.0	47.1
SRSH-6	U1348A	34° 24.940'	159° 22.907'	3275.0	26	239.9	80.9	33.7
SRCH-5	U1349A	36° 06.945'	158° 27.527'	3138.0	16	134.4	65.9	49.0
SRCH-4	U1350A	36° 04.491'	159° 17.065'	4067.0	26	211.2	75.2	35.6
<b>Expedition 324 Totals:</b>					<b>112</b>	<b>923.3</b>	<b>363.8</b>	<b>38.7</b>

### **Science Results**

Oceanic plateaus are giant volcanic features whose existence implies an extraordinary flux of magma from mantle to lithosphere. These large igneous provinces can be important indicators of fundamental processes of mantle convection and geodynamics. It is widely thought that oceanic plateaus arise from massive eruptions resulting from the arrival of a deep mantle plume head at the lithosphere. An alternative explanation is that plateau eruptions are related to decompression melting of unusually fusible mantle beneath fast-spreading ridges. Shatsky Rise is a unique oceanic plateau formed during the Late Jurassic and Early Cretaceous at a rapidly spreading triple junction, with characteristics that could be attributed to either model of formation. Shatsky Rise is also a monster volcanic construct with a poorly understood formation style. The goal of Expedition 324 was to core the igneous rocks of Shatsky Rise and the sediments above to examine the age, physical volcanology, geochemistry, and tectonic evolution of the rise, as well as the sedimentation history.

Five sites were cored during Expedition 324 and four were logged, with one site (U1346) on the summit of Shirshov Massif and two sites each on Ori (Sites U1349 and U1350) and Tamu (Sites U1347 and U1348) massifs. Basaltic lava flows recovered at four of these sites complement the previous ODP Site 1213 (south flank of Tamu Massif) record of lava flow emplacement on Shatsky Rise. Instead of lava flows, cores from Site U1348 recovered a thick sequence (~120 m) of volcanoclastic sediments topped with shallow-water carbonaceous sandstones. Lavas recovered at Sites U1347 and U1350 are fresh enough to be suitable for high-quality radiometric age dating and planned geochemical/isotopic studies. Although lavas from Sites U1346 and U1349 were moderately to highly altered, it is expected that they will provide important age information with suitable treatment and will be useful for most geochemical studies. Even though the volcanoclastic rocks of Site U1348 are highly altered, a single interval containing relatively fresh glass shards will provide valuable constraints on magma source characteristics.

Shatsky Rise lava flows occur primarily as packages of pillow basalt and massive inflation units, frequently interbedded with volcanoclastic sediment. The richest massive inflation flows, up to ~23 m thick, occur on Tamu Massif at Sites 1213 and U1347. They are similar to massive flows cored on Ontong Java Plateau and found in continental flood basalt provinces. At Site U1347, the relationship of pillows and massive flows suggests magmatic cycles that began with the emplacement of massive sheet flows and waned with pillow lavas. Moreover, paleomagnetic inclination trends at Sites 1213 and U1347 imply that little time passed between the emplacement of individual flows. The implication is that Tamu Massif concluded with massive, high-effusion rate eruptions. Massive flows are also found at Sites U1349 and U1350 on Ori Massif's summit and flank, respectively, but the entire 53 m succession of igneous rocks cored at Site U1346 on the Shirshov Massif summit consists of pillow lavas. The massive flow units are thinner at Ori Massif than most flows penetrated on Tamu Massif. Moreover, Site U1350 geochemical and paleomagnetic inclination trends imply greater time and more eruptive variability. The simplest conclusion from the observed trends in lava flow style across the three main edifices of Shatsky Rise is that the average eruptions become smaller and less effusive from Tamu to Ori to Shirshov massifs.

Recovered basement rocks from the two summit sites (U1346 and U1349) on Shirshov and Ori massifs show the most severe alteration, apparently from both low and moderately higher temperature fluid-rock interaction, the latter especially for Site U1349. In contrast, lavas cored on the deeper flanks of the massifs show evidence of only light to moderate low-temperature alteration. Although these highly altered sites represent only two individual cases, this dichotomy

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suggests that alteration and fluid-rock interaction was more intense on plateau summits. Apparently, the summits were a focus of heat and water circulation. Rocks at the flank sites (1213, U1347, and U1350) were apparently affected by lesser fluid flow and temperatures. Lavas at these sites seem to have been rapidly paved over by subsequent flows and thereby sealed from extensive seawater contact/circulation.

Several sites attest that volcanic debris is more important on Shatsky Rise than anticipated. A significant portion (~40 m) of the Site U1349 section, located on a summit ridge on Ori Massif, consists of volcanoclastic breccia. Site U1348, which is situated on a buried volcanic high on Tamu Massif, yielded a succession consisting entirely of volcanoclastic material, mainly hyaloclastic sediment. In addition, volcanoclastic sediments were found at Sites U1346 and U1347. These observations indicate that volcanoclastic eruptions made an important contribution to the formation of Shatsky Rise, especially on the higher, shallower parts of the volcanoes.

Shipboard geochemical data show that the lava flows consist of variably evolved tholeiitic basalt. Site U1347 and U1350 lavas, least affected by alteration, have broad similarities with Site 1213 basalts and display compositional ranges overlapping those of Ontong Java Plateau basalts and mid-ocean-ridge basalt (MORB), although more with the latter. Samples from Site U1347 and many samples from Site U1350 resemble enriched-type ocean ridge basalts. A broad generalization is that Shatsky Rise basalts are slightly enriched in incompatible elements compared to normal MORB (N-MORB). This suggests a mantle source slightly richer in the more incompatible elements than N-MORB source mantle and/or that Shatsky Rise magmas were formed by slightly lower degrees of partial melting and possibly in the presence of residual garnet. Alteration-resistant element ratios indicate that basalts from Sites U1346, U1348, and U1349 are also tholeiites. Site U1349 basaltic flows appear to represent significantly less differentiated magmas than those recovered from other sites and have similarities to picritic Ontong Java Plateau basalts (i.e., the high-Mg Kroenke type).

Multiple lines of evidence indicate that Shatsky Rise volcanoes had summits at or above sea level. Benthic foraminifers and/or sediment facies at all sites except Site U1350 (a lower flank site) show evidence of shallow-water deposition. Lavas at Site U1349 have alteration and flow structures consistent with subaerial eruption and weathering, as well as intercalations of shallow-water sediments (e.g., oolites). Most of the volcanoclastic deposition at Site U1348 occurred below sea level, but the succession was topped with shallow-water sediment. Two of the sites that show evidence of shallow-water deposition (Sites U1347 and U1348) are significantly downslope from today's highest points of basement level on Tamu Massif, implying that the summit was a large, emergent island. All together, evidence from Expedition 324 strongly implies that Shatsky Rise was an archipelago of large volcanic islands during Jurassic and Cretaceous times.

**Logging Summary:** Downhole logging data obtained during Expedition 324 included gamma ray, density, neutron porosity, photoelectric factor, electrical resistivity, and sonic measurements, as well as oriented borehole images from the Formation MicroScanner (FMS). Downhole logs were used to identify logging units in the Shirshov, Ori, and Tamu massifs in sedimentary sequences and in the basaltic basement. The sedimentary sequences throughout the Shatsky Rise sites show prominent gamma ray anomalies associated with uranium and potassium enrichments. Some of the most prominent anomalies are found at the sediment-basement interface and in the most altered sites. They may indicate focused hydrothermal fluid flow, whereas shallower anomalies (recorded through the bottom-hole assembly [BHA]) may correlate to oceanic anoxic events previously observed in this area.

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High potassium content in the basement section also indicates a high degree of alteration in several of the Expedition 324 sites when compared to oceanic crustal sections drilled elsewhere. Electrical resistivity measurements in the basaltic basement show distinctive high resistivity zones that likely represent massive flows and pillow flow units interspersed with low-resistivity zones of interbedded sediments and highly altered zones. FMS images show intervals of distinctive pillow lavas; zones with high fracture and vein densities; vesicular, brecciated, and volcanoclastic intervals; intervals of massive lava flows; flow contacts; and variable dipping beds throughout the Shatsky Rise sites.

### USIO Canterbury Basin Sea Level Expedition

#### Expedition Staffing

Expedition Science Party Staffing Breakdown	
Member Country/Consortium	Canterbury Basin Sea Level
USA: United States Science Support Program (USSSP)	7*
Japan: Japan Drilling Earth Science Consortium (J-DESC)	8
Europe and Canada: European Consortium for Ocean Research Drilling (ECORD) Science Support and Advisory Committee (ESSAC)	8
South Korea: Korea Integrated Ocean Drilling Program (K-IODP)	1
People's Republic of China: IODP-China	1
Australia and New Zealand: Australia-New Zealand IODP Consortium (ANZIC)	3**
India: Ministry of Earth Science (MoES)	0

\*The 8th USSSP scientist failed to get proper travel documentation to enter Australia and could not sail.

\*\*The 2nd ANZIC scientist was invited when another Program Member Office (PMO) relinquished a berth. The 3rd ANZIC scientist was staffed when other PMOs could not fill the expertise for a required position.

An onboard Education Officer also sailed as a participant in Expedition 317: Canterbury Basin Sea Level (see **“Onboard Educator Program”** in “Education” for more information).

#### Environmental Assessment

In November 2009, the USIO submitted additional data and information regarding Expedition 317 to NSF that resulted in final approval to conduct vertical seismic profile (VSP) operations at all primary and alternative Canterbury Basin sites with either the dual-G gun cluster or the single G gun.

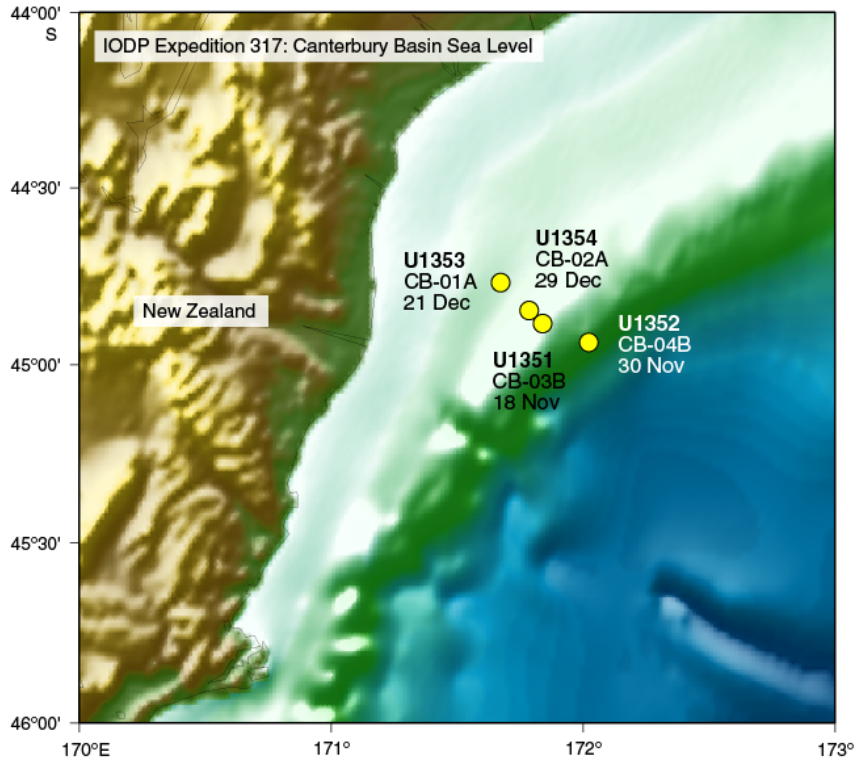
#### Expedition Operations

Expedition 317 set a number of scientific ocean drilling records, including the following:

- The deepest hole drilled in a single expedition (Hole U1352C; 1927 m) and the second deepest hole in DSDP, ODP, and IODP history;
- The deepest hole on the continental shelf (Hole U1351B; 1030 m);
- The shallowest water depth for a site drilled by the R/V *JOIDES Resolution* for scientific purposes (Site U1353; 84.7 m water depth); and
- The deepest sample taken by scientific ocean drilling for microbiological studies (1925 m at Site U1352).

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Expedition 317: Canterbury Basin Sea Level Site Map



Expedition 317: Canterbury Basin Sea Level Coring Summary

Site	Hole	Latitude	Longitude	Water depth (m)	Cores (N)	Interval cored (m)	Core recovered (m)	Recovery (%)	Drilled interval (m)
CB-03B	U1351A	44°53.0307'S	171°50.4037'E	133.3	6	28.0	27.33	97.6	0.0
	U1351B	44°53.0422'S	171°50.4065'E	132.7	116	1030.6	304.52	29.5	0.0
	U1351C	44°53.0572'S	171°50.4057'E	132.7	0	0.0	0.00	0.0	967.3
<b>Site U1351 Totals:</b>					<b>122</b>	<b>1058.6</b>	<b>331.85</b>	<b>31.3</b>	<b>967.3</b>
CB-04B	U1352A	44°56.2440'S	172°1.3615'E	354.8	5	42.2	43.92	104.1	0.0
	U1352B	44°56.2558'S	172°1.3630'E	354.6	94	830.9	613.87	73.9	0.0
	U1352C	44°56.2662'S	172°1.3630'E	354.6	146	1296.4	655.02	50.5	631.1
	U1352D	44°56.2326'S	172°1.3611'E	355.4	14	127.0	130.84	103.0	0.0
<b>Site U1352 Totals:</b>					<b>259</b>	<b>2296.5</b>	<b>1443.65</b>	<b>62.9</b>	<b>631.1</b>
CB-01A	U1353A	44°46.1079'S	171°40.4368'E	95.5	8	56.0	56.38	100.7	0.0
	U1353B	44°46.1203'S	171°40.4407'E	96.0	98	614.3	211.48	34.4	0.0
	U1353C	44°46.0982'S	171°40.4380'E	96.0	0	0.0	0.00	0.0	529.0
<b>Site U1353 Totals:</b>					<b>106</b>	<b>670.3</b>	<b>267.86</b>	<b>40.0</b>	<b>529.0</b>
CB-02A	U1354A	44°50.8281'S	171°47.2096'E	121.2	18	83.4	84.43	101.2	2.0
	U1354B	44°50.8367'S	171°47.2069'E	124.9	15	77.2	77.52	100.4	0.0
	U1354C	44°50.8487'S	171°47.2080'E	124.9	35	319.2	133.37	41.8	65.0
<b>Site U1354 Totals:</b>					<b>68</b>	<b>479.8</b>	<b>295.32</b>	<b>61.5</b>	<b>67.0</b>
<b>Expedition 317 totals:</b>					<b>555</b>	<b>4505.2</b>	<b>2338.68</b>	<b>51.9</b>	<b>2194.4</b>



### **Science Results**

Expedition 317 was devoted to understanding the relative importance of global sea level (eustasy) versus local tectonic and sedimentary processes in controlling continental margin sedimentary cycles. The expedition recovered sediments from the Eocene to recent periods, with a particular focus on the sequence stratigraphy of the late Miocene to recent, when global sea level change was dominated by glacioeustasy. Drilling in the Canterbury Basin on the eastern margin of the South Island of New Zealand took advantage of high rates of Neogene sediment supply, which preserves a high-frequency record (0.1–0.5 m.y.) of depositional cyclicality. The Canterbury Basin provides an opportunity to study complex interactions between processes responsible for the preserved stratigraphic record of sequences because of the proximity of an uplifting mountain chain, the Southern Alps, and strong ocean currents. Currents have locally built large, elongate sediment drifts within the prograding Neogene section. We did not drill into one of these elongate drifts during Expedition 317, but currents have strongly influenced deposition across the basin, including locations lacking prominent mounded drifts. Upper Miocene to recent sedimentary sequences were cored in a transect of three sites on the continental shelf (landward to basinward, Sites U1353, U1354, and U1351) and one on the continental slope (Site U1352). The transect provides a stratigraphic record of depositional cycles across the shallow-water environment most directly affected by relative sea level change. Lithologic boundaries, provisionally correlative with seismic sequence boundaries, have been identified in cores from each site and provide insights into the origins of seismically resolvable sequences. This record will be used to estimate the timing and amplitude of global sea level change and to document the sedimentary processes that operate during sequence formation. Sites U1353 and U1354 provide significant, double-cored, high-recovery sections through the Holocene and late Quaternary for high-resolution study of recent glacial cycles in a continental shelf setting.

Continental slope Site U1352 represents a complete section from modern slope terrigenous sediment to hard Eocene limestone, with all the associated lithologic, biostratigraphic, physical, geochemical, and microbiological transitions. The site also provides a record of ocean circulation and fronts during the last ~35 m.y. The early Oligocene (~30 Ma) Marshall Paraconformity was the deepest target of Expedition 317 and is hypothesized to represent intensified current erosion or nondeposition associated with the initiation of thermohaline circulation and the proto-Antarctic Circumpolar Current.

**Logging Summary:** Downhole logging for Expedition 317 took place at four sites on a transect from the shallow shelf to the slope of the Canterbury Basin. Two holes were logged at Site U1351 with the triple combination (triple combo) and FMS-sonic tool strings, characterizing the formation from the seafloor to ~1030 meters wireline log depth below seafloor (m WSF). The log character shows good agreement with lithology from cores, indicating a change from alternating sand- and clay-rich intervals in the shallow section to more homogenous, fine-grained lithologies at depth. Gamma ray, resistivity, and sonic logs correlate well with shallow, sand-rich intervals and suggest the presence of sandy sediments in areas of poor core recovery.

Two holes were also logged at Site U1352 with the triple combo and FMS-sonic tool strings. The interval between seafloor and ~490 m WSF was characterized by logging; collapsing hole conditions prevented logging deeper depths. Shallow sediments at this site were characterized by low-amplitude variations in gamma ray, resistivity, and acoustic velocities, with a change to

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higher amplitude variability below ~250 m WSF. Sharp peaks in uranium from spectral gamma ray associated with high resistivity values correspond to distinct green calcareous sandy intervals below 250 m WSF.

Hole U1353C was logged with a modified triple combo (no radioactive sources were used because of unstable hole conditions) and FMS-sonic tool strings. Shallow sediments at this site are characterized by intervals of low gamma ray and peaks in resistivity and acoustic velocity interpreted as sandy intervals, corresponding to sand or gravel in sediment cores. A synthetic seismogram constructed for the interval logged with the FMS-sonic tool string at this site (seafloor to ~250 m WSF) indicates good correspondence between these features and significant reflections that mark sequence boundaries in seismic data.

Hole U1354C was logged between the seafloor and ~380 m WSF with a sonic combo tool string (gamma ray, sonic velocity, resistivity) to maximize data collection with a single deployment in a potentially unstable hole. Log character at this site was very similar to that of Site U1353 and a synthetic seismogram showed good correspondence between high-amplitude features in logs, coarser grained intervals in cores, and significant seismic reflectors.

All three shelf sites (U1351, U1353, and U1354) show similar trends in log character, suggesting a laterally continuous stratigraphy. Postexpedition research will further investigate correlations between logs at these three shelf sites, as well as between the shelf sites and slope Site U1352.

### **USIO Wilkes Land Glacial History Expedition**

#### ***Expedition Planning***

The USIO identified and contracted an ice observer to sail during Expedition 318: Wilkes Land Glacial History. Review continued on the sample, data, and research plan. Technical support and logistics requirements were finalized, and the USIO continued efforts to refine and finalize port call public relations and outreach efforts with the Australia-New Zealand IODP Consortium (ANZIC) New Zealand office. Work continued on organizing extensive shipboard outreach efforts and projects with the shipboard videographer.

#### ***Expedition Staffing***

A shipboard scientist had to withdraw two weeks before the start of the expedition because of medical issues. The USIO, Co-Chief Scientists, and the Program Member Office (PMO) worked together to successfully find and staff a replacement scientist.

#### ***Environmental Assessment***

The Environmental Assessment (EA) for Expedition 318 was revised to address new requirements for seismic activities and add new sites to be occupied. The revised EA was submitted to NSF at the end of the quarter.

### **USIO Juan de Fuca Hydrogeology Expedition**

#### ***Expedition Planning***

The third engineering planning meeting for the Expedition 327: Juan de Fuca Hydrogeology was held on 2 December 2009 in College Station, Texas, with four members from the proponent team and the USIO expedition project management team. In addition, the design process neared completion for three circulation obviation retrofit kits (CORKs) for the Juan de Fuca

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Hydrogeology Expedition, set to begin in July 2010. Orders or requests for quotes (RFQs), if required, were sent out for a variety of parts, equipment, and supplies.

### ***Expedition Staffing***

Co-Chief Scientist invitations were issued and accepted, and a call for applications was issued for the remaining Science Party members.

## **USIO Cascadia CORK Expedition**

### ***Expedition Planning***

Detailed scoping of proposed Ancillary Project Letter (APL) 734 (Cascadia CORK), including recommendations for implementation and schedule placement, were provided to the Operations Task Force (OTF). In addition, the design process began for an advanced CORK (ACORK) scheduled for deployment in the Cascadia Margin.

## **USIO South Pacific Gyre Expedition**

### ***Expedition Planning***

Initial scoping of proposed APL 757 (South Pacific Gyre) was provided to the OTF.

### ***Expedition Staffing***

Co-Chief Scientist invitations were issued with one acceptance and one decline. A third invitation was issued with an acceptance, completing Co-Chief Scientist staffing, and a call for applications was issued for the remaining Science Party members.

## **USIO Louisville Seamounts Expedition**

### ***Expedition Staffing***

Co-Chief Scientist invitations were issued and accepted, and a call for applications was issued for the remaining Science Party members.

## **USIO Mid-Atlantic Microbiology Expedition**

### ***Expedition Planning***

The second engineering planning meeting was held on 11 December 2009 in College Station, Texas, with four members from the proponent team and representatives of the USIO expedition project management team.

## **Projects and Other Activities**

### **Large Diameter Pipe Handling Infrastructure**

Negotiations with Howard and Associates, Inc., began for their involvement in

1. Crafting an RFQ for vendors to fabricate the necessary infrastructure for safely and efficiently handling large diameter (6 5/8 inch) pipe on board the *JOIDES Resolution*;
2. Identifying vendors for fabrication of the proposed hardware and assisting in the final selection of vendors for the fabrication of the necessary components;
3. Overseeing potential modification and testing of elevator handler and bails, as necessary;

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4. Determining what additional infrastructure will be need to be procured or modified as part of this project; and
5. Providing advice and assistance to the USIO during installation of the system on board the *JOIDES Resolution*, as necessary.

### Lockable Flapper Valve Project

The Lockable Flapper Valve (LFV) Task Force outlined potential future work, including the following:

- Testing the precise latch/unlatch outer diameters for tubulars passing the LFV,
- Investigating the effect of welding on the LFV flapper,
- Creating a quick prototype of a new flapper design,
- Reviewing Core Technician notes on LFV operations from previous ODP and IODP expeditions,
- Testing the amount of force needed to cut the wireline cable clean,.
- Determining the relative costs of mechanical bit release and bits for advanced piston coring/extended core barrel systems,
- Investigating how sleeves are used in oilfield operations to actuate/lock BHA elements, and
- Reviewing the LFV “cookbook” manual.

### Motion Decoupled Hydraulic Delivery System Telemetry Project

USIO telemetry module development is progressing as scheduled. Three printed circuit boards were finalized for the multi-functional telemetry module (MFTM) sonde. Modification of the communication board, layout of the surface panel, and testing of the communication board began. Stress Engineering worked with the USIO to finalize the necessary hardware for control of the release motor in the electronic release system. Development continued for the firmware necessary to operate microcontrollers located in the MFTM sonde and surface panel.

### Wireline Heave Compensating System

Successful wireline heave compensator (WHC) tests were conducted during Expedition 324. The results from all IODP expeditions will be used for optimizing WHC performance and efficiency while operating in different water depths and sea states.

## ENGINEERING DEVELOPMENT

There are no Engineering Development deliverables scheduled for FY10.

## DATA MANAGEMENT

### IODP Databases

#### LIMS Database

Data collected during Expeditions 323 and 324 were successfully transferred to shore, merged with the cumulative Laboratory Information Management System (LIMS) database, and made

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available online to the participating scientists. These data are in moratorium and not yet available to the public.

### Log Database

The following IODP-Center for Deep Earth Exploration (CDEX) Expedition 314 data were processed and put online in November 2009, with updates to both the onshore and ship's databases:

- Holes C0001D, C0004B, and C0006B: logging-while-drilling (LWD) standard data
- Holes C0002A: LWD standard data and images

The following IODP-USIO expedition data were fully processed for inclusion in the IODP online database:

Expedition 317:

- Holes U1351B, U1352B, and U1353C: standard and FMS data
- Holes U1351C, U1352C, and U1354C: standard data

Expedition 324:

- Hole U1346A: standard data
- Holes U1347A, U1348A, and U1349A: standard and FMS data

### IODP Database Data Requests

#### LIMS Database

Visits by USIO-TAMU employees were filtered out.

Top 10 Countries Accessing LIMS Web Database		
Rank	Country	Visitor Sessions
1	United States	109
2	Japan	79
3	United Kingdom	25
4	Germany	14
5	Switzerland	10
6	France	6
7	South Korea	6
8	Australia	3
9	Denmark	3
10	Italy	3
	Other	14
	<b>Total</b>	<b>272</b>

Top LIMS Web Queries		
Rank	Query	Uploads
1	LIMS homepage	210
2	Samples	37
3	Science data	25
	<b>Total</b>	<b>272</b>

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### Janus Database

Visits by USIO-TAMU employees were filtered out.

Top 10 Countries Accessing Janus Web Database		
Rank	Country	Visitor Sessions
1	United States	886
2	Germany	416
3	United Kingdom	141
4	Japan	180
5	China	125
6	European Union (unspecified)	102
7	France	85
8	Italy	64
9	The Netherlands	53
10	Switzerland	51
	Other	349
	<b>Total</b>	<b>2,452</b>

Top 20 Janus Web Queries		
Rank	Query	Uploads
1	Sample	1,100
2	Images–photographs	942
3	Point calculations (depths)	483
4	Chemistry–interstitial water	413
5	Site summaries	405
6	Hole trivia	364
7	Core summaries	260
8	Requests	237
9	Age models	207
10	Leg summaries	168
11	Chemistry–carbonates	160
12	Hole summaries	153
13	Site details	146
14	Site summaries trivia	146
15	Images–prime data	138
16	Chemistry–RockEval	132
17	Physical properties–color data	130
18	Physical properties–GRA data	119
19	Depth calculations	110
20	Physical properties–moisture and density	95
	Others	1,355
	<b>Total</b>	<b>7,263</b>

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<b>Other Janus Web Statistics</b>		
<b>Database query hits:</b>		
	Entire site (successful)	16,611
	Average per day	180
<b>Visitor sessions:</b>		
	Total number of visitor sessions	2,765
	Average per day	30
	Average length of visit	00:11:06
	International visitor sessions	67.92%
	Visitor sessions of unknown origin	0.04%
	Visitor sessions from United States	32.04%
<b>Visitors:</b>		
	Unique visitors	1,620
	Visitors who only visited once	1,220
	Visitors who visited more than once	400
	Average visits per visitor	1.71

<b>Data Requests to TAMU Data Librarian</b>	
Requests	Total
<b>Country:</b>	
United States	8
United Kingdom	2
Germany	2
Denmark	2
Japan	1
Norway	1
New Zealand	1
<b>Total</b>	<b>17</b>
<b>Data:</b>	
Photographs	4
Moratorium questions	3
Chemistry	2
Depth	2
Data problems	2
How to access data	2
Positioning information	1
Data usage question	1
<b>Total</b>	<b>17</b>

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### Log Database

Visits by USIO-LDEO employees were filtered out.

<b>Top 10 Countries Accessing Log Web Database</b>		
<b>Rank</b>	<b>Country</b>	<b>Visitor Sessions</b>
1	United States	392
2	United Kingdom	156
3	Japan	148
4	Germany	89
5	Venezuela	78
6	China	77
7	France	49
8	Brazil	22
9	Italy	17
10	Iran	17
	All others	267
	<b>Total</b>	<b>1,312</b>

<b>Other Log Web Statistics</b>		
<b>Database query hits:</b>		
	Entire site (successful)	7,957
	Average per day	6.04
<b>Visitor sessions:</b>		
	Total number of visitor sessions	1,317
	Average per day	9.80
	Average length of visit	00:06:19
	International visitor sessions	49.96%
	Visitor sessions of unknown origin	20.27%
	Visitor sessions from United States	29.76%
<b>Visitors:</b>		
	Unique visitors	772
	Visitors who only visited once	652
	Visitors who visited more than once	665
	Average visits per visitor	2.03

<b>Data Requests to Log Data Supervisor</b>		
<b>Expedition</b>	<b>Request Number, Name, Affiliation, Country</b>	<b>Type of Data</b>
	There were no data requests for this period.	



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**Janus Database Corrections to FY09 Q4 Report**

Visits by USIO-TAMU employees were filtered out.

<b>FY09 Q4 Top 20 Janus Web Queries</b>		
<b>Rank</b>	<b>Query</b>	<b>Uploads</b>
1	Samples	1,568
2	Images–photographs	1,191
3	Site summaries	481
4	Requests	405
5	Core summaries	347
6	Hole trivia	345
7	Chemistry–carbonates	305
8	Physical properties–moisture and density	293
9	Physical properties–magnetic susceptibility	252
10	Chemistry–interstitial water	208
11	Paleoceanography–range charts	204
12	Physical properties–GRA data	197
13	Hole summaries	182
14	Leg summaries	178
15	Point calculations	164
16	Paleoceanography–age models	156
17	Images–prime data	146
18	Physical properties–color data	143
19	Paleoceanography–paleo investigation	128
20	Physical properties–AVS pen torvane data	120
	Others	1,760
	<b>Total</b>	<b>8,773</b>

<b>FY09 Q4 Other Janus Web Statistics</b>		
<b>Database query hits</b>		
	Entire site (successful)	14,438
	Average per day	156
<b>Visitor sessions</b>		
	Total number of visitor sessions	2,861
	Average per day	31
	Average length of visit	0:11:55
	International visitor sessions	71.83%
	Visitor sessions of unknown origin	0%
	Visitor sessions from United States	28.17%
<b>Visitors</b>		
	Unique visitors	1,653
	Visitors who only visited once	1,260
	Visitors who visited more than once	393
	Average visits per visitor	1.73

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**CORE CURATION**

**Sample Requests**

IODP Expedition/ Repository	Visitors	Request Number, Name, Country	Number of Samples
<i>Gulf Coast Repository:</i>			
		20995A, Storkey, New Zealand	12
		21855A, Kato, Japan	3,472
		17532C, Elderfield, United Kingdom	56
	2	21356B, Romans, USA	170
		21839B, Stoll, USA	5
		21882A, van de Flierdt, United Kingdom	25
	1	21188B, Leon-Rodriguez, Spain	54
		21881A, Elderfield, United Kingdom	45
		21791A, Smith, USA	175
		21873A, Tominaga, USA	19
		21879A, Lawrence, USA	93
		21817A, Schuch, USA	5
		21901A, Rickaby, United Kingdom	14
		21917A, Greene, USA	5
		20479B, Swann, United Kingdom	296
		21877A, Chazen, USA	23
		21912A, Studer, Switzerland	51
		21905A, Verducci, Italy	45
		21919A, Walker, USA	2
		21635C, Schulte, Germany	48
		20469H, Fantle, USA	36
		21939A, Angly, USA	8
		21887A, McLean, USA	25
	1	21935A, Sawyer, USA	30
	1	21938A, Raymo, USA	No Samples
		21640B, Paytan, USA	55
		20815C, Spezzaferri, Switzerland	6
		21837A, Engelen, Germany	7
		21886A, Fantle, USA	54
		21903A, Frische, Germany	22
		18039B, Mix, USA	119
		21897A, Pagani, USA	39
		21921A, Voigt, Germany	695
		21930A, Quintana-Krupinski, USA	8
		21872A, McKay, New Zealand	688
		21341E, Rafter, USA	711
		21942A, Albarede, France	6
		21398C, Paquay, USA	19
		21209C, Wei, Taiwan	359
		21086C, Hull, USA (XRF)	54
		21884A, Kennett, USA (XRF)	49
	50	21892A, Olszewski, USA (Educational)	No Samples
	36	Expedition 320/321 sampling party	25,675
	19	Public Relations Tours (3)	No Samples

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IODP Expedition/ Repository	Visitors	Request Number, Name, Country	Number of Samples
<b>Expedition 324:</b>		25 sample requests	2853
<b>Expedition 317:</b>		46 sample requests	24,901
Total science	<b>41</b>	<b>112</b>	<b>61,034</b>
Total education:	<b>50</b>	<b>1</b>	<b>0</b>
Total public relations:	<b>19</b>	<b>0</b>	<b>0</b>
Total:	<b>110</b>	<b>113</b>	<b>61,034</b>

### Projects and Other Activities

#### Expedition 320/321 Sampling Party

The USIO hosted the PEAT postexpedition sampling party from 17 to 23 October 2009 at the GCR in College Station, Texas, assisting Expedition 320/321 Science Party members in collecting 25,675 samples.

#### Expedition 323 Sampling Party

USIO staff instructed KCC curatorial staff on how to prepare for and organize the Expedition 323 Bering Sea postexpedition sampling party held at the KCC between 30 November and 10 December 2009. The Expedition 323 Project Manager and the USIO Curator prepared the sample lists and traveled to Kochi to supervise and help implement the sampling party. The Expedition 323 Science Party took 32,000 samples during the official sampling party period.

## PUBLICATIONS

### USIO Reports

#### FY09 Q4 IODP-USIO Quarterly Report

The USIO report for the fourth quarter of FY09 (July–September 2009) was submitted to NSF and IODP-MI on 7 December 2009.

#### FY09 Annual Report

Production of the IODP-USIO FY09 Annual Report continued. A first draft of the completed report was prepared and submitted to the USIO Systems Management Team for review.

#### FY10 IODP-USIO Annual Program Plan to IODP-MI

On 4 December 2009, the USIO submitted to IODP-MI for review and evaluation a revised version of the IODP-USIO FY10 Annual Program Plan for SOC and POC. To simplify this Annual Program Plan, costs that were previously identified as SOC Operations were combined with the POC category, and costs that were previously identified as SOC Nonoperations were combined with the SOC category.

The IODP-USIO FY10 Annual Program Plan to IODP-MI outlines requests for SOC and POC costs including the Shatsky Rise Formation Expedition, Canterbury Basin Sea Level Expedition, Wilkes Land Glacial History Expedition, 115-day transit/tie-up period, Juan de Fuca Hydrogeology Expedition, and APL 734/transit to Tahiti; long-lead time planning costs for expeditions proposed for FY11; and continuing SOC shore-based activities during FY10. The IODP-USIO FY10 Annual Program Plan to IODP-MI budget totals \$66,965,187, with

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\$3,952,852 in SOC requested from IODP-MI and \$63,012,335 requested from NSF to support platform operating costs.

### **FY10 IODP-USIO Annual Program Plan to NSF**

On 4 December 2009, the USIO submitted to NSF for review and evaluation a new Annual Program Plan that combines the revised IODP-USIO FY10 Annual Program Plan for SOC and POC and the Appendix to the FY10 Annual Program Plan for U.S. Systems Integration Contract costs into a single IODP-USIO FY10 Annual Program Plan to NSF.

In this simplified Annual Program Plan, costs that were previously identified as SOC Operations, POC, and SIC were combined into a single budget containing all NSF-funded costs in a category newly defined as IODP-USIO U.S. Systems Integration Contract costs (SIC) (see **“Appendix A: Finance Report”** for more information).

The IODP-USIO FY10 Annual Program Plan to NSF outlines requests for costs including the Shatsky Rise Formation Expedition, Canterbury Basin Sea Level Expedition, Wilkes Land Glacial History Expedition, 115-day transit/tie-up period, Juan de Fuca Hydrogeology Expedition, and APL 734/transit to Tahiti; long-lead time planning costs for expeditions proposed for FY11; and USIO efforts for education and outreach and associated management and administrative support.

The IODP-USIO FY10 Annual Program Plan to NSF budget totals \$39,375,966.

### **IODP Scientific Publications**

Publication	Release Date	Digital Object Identifier	Comments
<b><i>Scientific Prospectus:</i></b>			
Expedition 325 (Great Barrier Reef environmental changes: the last deglacial sea level rise in the South Pacific: offshore drilling northeast Australia) Addendum	October 2009	<a href="https://doi.org/10.2204/iodp.sp.325add.2009">doi:10.2204/iodp.sp.325add.2009</a>	Edited and formatted for ESO
<b><i>Preliminary Reports:</i></b>			
Expedition 322 (NanTroSEIZE Stage 2: subduction inputs)	December 2009	<a href="https://doi.org/10.2204/iodp.pr.322.2009">doi:10.2204/iodp.pr.322.2009</a>	Edited and formatted for CDEX
<b><i>Proceedings of the Integrated Ocean Drilling Program:</i></b>			
<b>Volume 303/306</b>			
Data report: Quaternary calcareous nannofossil datums and biochronology in the North Atlantic Ocean, IODP Site U1308	November 2009	<a href="https://doi.org/10.2204/iodp.proc.303306.210.2009">doi:10.2204/iodp.proc.303306.210.2009</a>	
<b>Volume 304/305</b>			
Data report: spatial and temporal evolution of slow spread oceanic crust—graphic sections of core recovered from IODP Hole U1309D, Atlantis Massif, 30°N, MAR (including Pb/U zircon geochronology and magnetic remanence data)	December 2009	<a href="https://doi.org/10.2204/iodp.proc.304305.205.2009">doi:10.2204/iodp.proc.304305.205.2009</a>	

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Publication	Release Date	Digital Object Identifier	Comments
<b>Volume 309/312</b>			
Data report: trace element geochemistry of oceanic crust formed at superfast-spreading ridge, Hole 1256D	October 2009	<a href="https://doi.org/10.2204/iodp.proc.309312.202.2009">doi:10.2204/iodp.proc.309312.202.2009</a>	

### IODP Scientific Publication Deadline Extension Requests

The IODP Sample, Data, and Obligations Policy requires all Science Party members to conduct research and publish the results of their work. To fulfill this obligation, scientists must have their papers published 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 FY10 Q1	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	8
307	13 June 2008		4	3
311	27 June 2008		12	8
309/312	28 August 2008		9	9
310	4 November 2008		16	6

#### Synthesis papers

Expedition	Submission Deadline (26 Months Postmoratorium)	Deadline Extensions Approved in FY10 Q1	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	
303/306	10 November 2008		1	1
307	15 December 2008		1*	
311	29 December 2008		1	1
309/312	27 February 2009		1*	
310	4 May 2009		1*	

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

## Scientific Publication Distribution

Publication	Number Distributed
<b>ODP Publications:</b>	
<i>Proceedings of the Ocean Drilling Program, Initial Reports</i>	4
<i>Proceedings of the Ocean Drilling Program, Scientific Results</i>	4
<b>DSDP Publications:</b>	
DSDP <i>Initial Reports</i> (books)	3

## IODP Digital Object Identifiers

IODP is a member of CrossRef, the official digital object identifier (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 ODP and DSDP scientific reports and publications. CrossRef tracks the number of times a publication is accessed, or resolved, through the DOI system. Statistics for the reporting quarter are shown in the table below.

Reports and Publications	DOI Prefix	Number of Resolutions			
		October 2009	November 2009	December 2009	FY10 Q1 Total
IODP	10.2204	1,353	1,637	1,586	4,576
ODP/DSDP	10.2973	2,931	2,586	3,001	8,518

## EDUCATION

U.S. education activities are supported by NSF through SIC funding.

### Deep Earth Academy

#### Education Visual Identity—Deep Earth Academy Web Site

Deep Earth Academy staff continued to redesign old *JOI Learning*-branded activities and migrate them to the new site ([www.oceanleadership.org/education/deep-earth-academy](http://www.oceanleadership.org/education/deep-earth-academy)). Planning continued and was almost completed for a new searchable function for Web site activities.

### JOIDES Resolution Web Portal and Social Networking

Deep Earth Academy staff responded to comments on blogs and coordinated answers to Ask a Scientist questions that were posted on the [joidesresolution.org](http://joidesresolution.org) Web site. They also added Web site content, including front page slide-show photos, home page videos, updates to the ship's position during transit, new ship's tour pages, expedition-specific pages, expedition Science Party information, and dozens of new technical staff and crew profiles.

Educators on board the *JOIDES Resolution* coordinated blogging and social networking activities during the Shatsky Rise and Canterbury Basin expeditions, posting blogs and assisting other participants in posting their blogs to [joidesresolution.org](http://joidesresolution.org). They also posted updates, videos, and photos regularly on Facebook and posted Twitter updates and videos to YouTube. The *JOIDES Resolution* Facebook fan base has reached more than 1,200 and the ship has more than

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200 Twitter followers. These numbers continue to grow steadily as Deep Earth Academy staff engage in learning new ways to take advantage of the social networking tools.

### Educational Materials Distribution

Deep Earth Academy distributed materials at conferences and outreach activities and in response to requests received through the Deep Earth Academy Web site. During this quarter, Deep Earth Academy distributed 4,398 posters, 2,323 bookmarks, 3,857 pencils, and 127 inflatable globes. Materials were distributed at the following meetings.

Conference/Meeting/Workshop	Date	Location
Geological Society of America (GSA) Annual Meeting	31 October– 3 November 2009	Denver, Colorado
Distinguished Lecture Series, University of Georgia Marine Extension Service Aquarium	October 2009	Savannah, Georgia
California Science Teachers Association (CSTA) 2009 California Science Education Conference	22–25 October 2009	Palm Springs, California
Centers for Ocean Sciences Education Excellence (COSEE) Ocean Awareness Day	November 2009	Raleigh, North Carolina
Science Teachers Association of New York State (STANYS) Annual Conference	31 October– 3 November 2009	Rochester, New York
Math/Science Partnerships – Cobb County Teacher Workshop	October 2009	Cobb County, Georgia
<i>JOIDES Resolution</i> Videoconference with Maryland Science Center	November 2009	Baltimore, Maryland
National Council of Teachers of Mathematics (NCTM) Regional Conference	November 2009	Lebanon, Tennessee
National Ocean Sciences Bowl (NOSB) Preparations	December 2009	Hummelstown, Pennsylvania
Wilkes Science Party presentation to an elementary classroom	December 2009	Golden, Colorado
New Zealand Institute for Geological and Nuclear Sciences (GNS) IODP Holiday Programme	December 2009	Wellington, New Zealand

### Materials Development and Education Programs

#### **Materials Development**

Deep Earth Academy produced several videos through its partnership with ZceneMovingMedia. “Core on the Shore,” the final video in a series about drilling and core processing, was filmed during the PEAT sampling party in October 2009. A new instructional DVD titled “The New *JOIDES Resolution* in Film” was completed for distribution to schools, universities, and museums. A promotional video about the School of Rock program was also produced.

Deep Earth Academy conducted its first art contest, J-aRT, through the [joidesresolution.org](http://joidesresolution.org) Web site. About 30 new pieces of art focusing on the *JOIDES Resolution* were submitted to the contest and the judging process began.

Deep Earth Academy staff also created a new refrigerator magnet to promote [joidesresolution.org](http://joidesresolution.org).

#### **Videoconferencing**

Interest in live videoconferencing from the *JOIDES Resolution* continued to grow. During the Shatsky Rise Formation and Canterbury Basin Sea Level expeditions, 20 videoconferences were conducted to universities, middle schools, high schools, museums, and festivals. These conferences reached an estimated 600 students.

## Educational Outreach

### **School of Rock**

Preliminary planning began for the School of Rock 2010 workshop to be conducted on board the *JOIDES Resolution* during the Cascadia CORK Expedition, which is tentatively scheduled for September 2010. School of Rock alumni continue to conduct outreach activities, including presentations, workshops, and events on behalf of the Program.

### **Port Call Educational Activities**

Deep Earth Academy staff facilitated crossover activities between the Shatsky Rise Formation and Canterbury Basin Sea Level expedition Educators during the 2–8 November 2009 Expedition 317 port call in Townsville, Australia. They also gave ship tours to local school groups, distributed Deep Earth Academy materials to the Science Party, and assisted with the press conference.

### **Onboard Educator Program (formerly Teacher-at-Sea Program)**

Beginning in FY10, the Teacher-at-Sea program will have a new name. Educators selected to sail will have the title of Onboard Education Officers during expeditions.

N. Idrisi (University of the Virgin Islands [UVI] Center for Marine and Environmental Studies) completed his term as the first HBCU Educator at Sea during the Shatsky Rise Formation Expedition. See “**HBCU Educator-at-Sea Pilot Program**” in “Diversity Support Activities” below for more information on Idrisi’s work.

J. Pollard (Birdville Independent School District, Texas), a middle school science teacher, sailed as the Education Officer for the Canterbury Basin Sea Level Expedition. Pollard was featured on two news broadcasts—one in Baltimore, Maryland, after conducting a videoconference at the Maryland Science Center, and one in Texas after a videoconference to her own students. This news coverage was a first for our Education Officers.

### **Teacher-in-Residence Program**

The Ocean Leadership Teacher in Residence facilitated drilling-related programs (including hands-on activities and videoconferences) for home-school events, school groups, museums, and other informal science institutions and continued to work on a long-term project to develop traveling teaching kits of samples for educators at all levels to provide easier access to IODP data. Each kit will contain a core replica, smear slides and/or microfossil samples, portable microscopes, and suggested activities.

### **Educational Outreach Events**

Event*	Target Audience	Date	Location
Cypress Grove Intermediate School visit and videoconference with the <i>JOIDES Resolution</i>	Students	October 2009	College Station, Texas
Geological Association of America (GSA) Annual Meeting	Scientists, undergraduate faculty	18–22 October 2009	Portland, Oregon
Virginia Association of Science Teachers (VAST) Professional Development Institute	Teachers	5–7 November 2009	Reston, Virginia
National Science Teachers Association (NSTA) regional	Teachers	12–15 November 2009	Ft. Lauderdale, Florida
American Geophysical Union (AGU) Fall Meeting	Scientists	14–18 December 2009	San Francisco, California



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Event*	Target Audience	Date	Location
Expedition 317 Port Call	Students, faculty	3–8 November 2009	Townsville, Australia

\*Teacher workshops, lectures, presentations, or meetings that were conducted by representatives of the Deep Earth Academy or at which representatives of Deep Earth Academy gave presentations.

### **Diversity Support Activities** **Historically Black Colleges and Universities Programs**

#### ***HBCU Educator-at-Sea Pilot Program***

N. Idrisi (UVI Center for Marine and Environmental Studies) completed his term as the first HBCU Educator at Sea on 4 November 2009. In October, Idrisi created additional blogs on the *JOIDES Resolution* Web site, posted videos and blogs on social networking sites, and conducted live videoconferences from the ship to science classes at UVI and to Cypress Grove Intermediate School in College Station, Texas. Videoconferences to the Smithsonian Institution and other HBCUs such as South Carolina State University were cancelled because of scheduling conflicts at these institutions.

As part of his postexpedition activities, Idrisi is scheduled to present “HBCU Educator at Sea: Integrated Ocean Drilling Program” at the March 2010 Ocean Sciences conference in Portland, Oregon. Idrisi will present his experiences as the first HBCU Educator at Sea on an ocean drilling research vessel conducting active research and discuss the use of ship to shore live broadcasts to classes at HBCUs in the United States.

#### ***HBCU Fellowship***

S. McKenzie, a graduate student from the UVI Center for Marine and Environmental Studies, was selected in November 2009 as the 2010 HBCU Fellow. Under the guidance of N. Idrisi (UVI Professor of Marine Sciences and the 2009 HBCU Educator at Sea), McKenzie will work on a project titled “Exploring the Links between Coral Reefs and Mangroves: Characterization of Hurricane Hole, Virgin Islands Coral Reef National Monument.” The objectives of the proposed research are to characterize and inventory the corals and sponges in the Hurricane Hole bays and to explore the patterns of water circulation and chemistry that may explain the high species richness and apparent resistance to bleaching and disease that have been observed in the area.

S. Compton, the 2009 HBCU Fellow from Savannah State University, co-authored an abstract submitted in December 2009 for the Geological Science Association Joint Northeastern and Southeastern section meeting to be held in Baltimore, Maryland in March 2010. If accepted, Compton will present the results of her HBCU Fellowship-funded research. The title of her abstract is “Benthic Foraminifera Density and Distribution in the Savannah River Estuary and across the Georgia Shelf.”

The USIO continues to explore mechanisms that will improve the recruitment of faculty/research mentors and HBCU students in the USIO HBCU Fellowship initiative.

### **Strategic Partnerships**

Deep Earth Academy produced several videoconferences during the Canterbury Basin Sea Level Expedition through their partnership with Global Nomads Group.

National Ocean Sciences Bowl (NOSB) and Deep Earth Academy staff worked together to present an online course on marine technology to NOSB coaches. More than 300 teachers

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participated during the two-week course, which involved online posts of documents and links through our Moodle site, question and answer forums, and four live webinars using GoToWebinar. The webinars covered a variety of topics, including a session on drilling technology featuring a USIO Staff Scientist and USIO Logging Staff Scientist.

The Maryland Science Center partnered with Deep Earth Academy to provide a series of drilling-related programs to home school students and classrooms, several hands-on activity sessions and two live videoconferences.

### Outside Funding and Sponsorships

Deep Earth Academy and NOSB staff worked together on a proposal to the NSF Innovative Technology Experiences for Students and Teachers (ITEST) program solicitation 09-506.

## OUTREACH

### Public Affairs

USIO communications and outreach activities this quarter focused on opportunities to publicize scientific ocean drilling through related publications and events with the goal of raising public and media awareness.

Highlights include the following events:

- USIO representatives served on the NOSB Technical Advisory Panels to review and edit questions for scientific accuracy and content, and Deep Earth Academy and NOSB hosted a professional development webinar for NOSB coaches on 9–22 November 2009 (see “**Strategic Partnerships,**” above, for more information).
- More than 70 adults and local high school and university students toured the *JOIDES Resolution* during the 2–8 November 2009 Expedition 317 port call in Townsville, Australia. In conjunction with the port call, ANZIC and the USIO hosted a shipboard press conference for local media and dignitaries, including Member of Parliament James Bidgood and staff from the Australian Institute of Marine Science.
- The USIO developed and showcased a slide show titled “Celebrating Four Decades of Scientific Ocean Drilling” at the AGU Ocean Leadership booth in December 2009. The slide show was designed to celebrate the evolution of the people, the ship, and the science throughout the R/V *JOIDES Resolution*’s history as a scientific research vessel.

### Public Relations Materials

#### *USIO Media Advisories/News Releases*

The following listserv announcements were distributed this quarter:

- 30 October 2009: Apply for a Schlanger Ocean Drilling Fellowship
- 2 November 2009: Apply to sail: Juan de Fuca Hydrogeology II
- 2 November 2009: Apply to sail: Louisville Seamount Chain
- 2 November 2009: Apply to sail: South Pacific Gyre Microbiology
- 19 November 2009: NSF Directorate for Geosciences Community Meeting

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- 7 December 2009: Apply to sail: South Pacific Gyre Microbiology
- 7 December 2009: Apply to sail: Louisville Seamount Chain
- 7 December 2009: Apply to sail: Juan de Fuca Hydrogeology II
- 23 December 2009: Apply to sail: NanTroSEIZE Stage 3

The following news releases were distributed this quarter:

- Unlocking the secrets of the seafloor: the future of scientific ocean drilling, 1 October 2009.
- International group of scientists converge at IODP, 16 October 2009.
- Scientific ocean drilling vessel to make port call in Townsville, Australia, 2 November 2009.
- Texas science teacher sails the open seas to learn about sea level change, 2 November 2009.
- Ocean Leadership to Attend AGU Conference, 4 December 2009.

Note: Postexpedition press releases regarding the Bering Sea and Shatsky Rise expeditions were delayed to allow both science parties to pursue publication in *Science* and *Nature*.

### **News Articles, Programs, Media Citations, or Public Commentary**

News articles, programs, media citations, or public commentary published during this quarter resulting from IODP media and public awareness efforts included the following. See the “IODP in the News” Web page ([www.iodp-usio.org/Newsroom/news.html](http://www.iodp-usio.org/Newsroom/news.html)) for other articles that raise the profile of the Program.

- *Planet Earth*, 2009. Stuck in the mud. *Planet Earth*, Autumn 2009. <http://www.nerc.ac.uk/publications/planetearth/2009/autumn/aut09-stuck.pdf>
- *National Driller*, 2009. The future of scientific ocean drilling. *Nat. Drill.*, 7 October 2009. [http://www.nationaldriller.com/Articles/Industry\\_News/BNP\\_GUID\\_9-5-2006\\_A\\_1000000000000675858](http://www.nationaldriller.com/Articles/Industry_News/BNP_GUID_9-5-2006_A_1000000000000675858)
- *Inscienc.es.org*, 2009. Seafloor fossils provide clues on climate change. *Inscienc.es.org*, October 22, 2009. [http://inscienc.es.org/article.php?article\\_id=7275](http://inscienc.es.org/article.php?article_id=7275)
- *Drilling Exploration*, 2009. Drilling expedition to find cause of changing sea levels. *Drill. Exp.*, 6 November 2009. <http://www.drillingexploration.com.au/news/drilling-expedition-to-find-cause-of-changing-sea->
- Seven Local News (TV News, Townsville, Australia), 7 November 2009 6:05 PM (two minutes on the evening news regarding the *JOIDES Resolution* port call).
- *Townsville Bulletin*, 2009. Scientists drill in ocean for climate secrets. *Townsville Bull.*, 7 November 2009.
- *Utexas.edu*, 2009. Texas science teacher sails the open seas to learn about sea level change. *Utexas.edu*, 7 November 2009. <http://www.jsg.utexas.edu/news/rels/110609b.html>

## USIO INTERACTIONS WITH IODP-MI, ESO, AND CDEX

### Interactions

#### USIO Curatorial Support for Kochi Core Center

The USIO provided curatorial support to the KCC in preparation for and during their first postexpedition sampling party (see “**Core Curation**” for details).

#### Publications Staff Exchange between the USIO and CDEX

A Marine Works Japan (MWJ) technician who works on the *Chikyu* began onsite training with TAMU Publication Services in College Station, Texas, to learn about IODP seagoing and shore-based publications duties. The training period began in October 2009 and was scheduled for a minimum of six months.

#### Laboratory Technician Staff Exchange between the USIO and CDEX

An MWJ technician who works on the *Chikyu* sailed on board the *JOIDES Resolution* as a laboratory technician during Expedition 317 to learn about USIO shipboard laboratory practices.

### Meetings

IODP working group, task force, and other special meetings are described in this section. Standard Science Advisory Structure (SAS) committee and panel meetings are listed in “**Appendix B: Conference and Meeting Schedule.**” USIO attendees to all meetings are listed in “**Appendix C: Travel.**”

#### IODP Data Management Coordination Group

An IODP Data Management Coordination Group (DMCG) meeting was held 16–21 November 2009 in Bremen, Germany (see “**Appendix C: Travel**” for list of USIO attendees). USIO representatives presented updates on several topics related to data management efforts, including a report on the distribution of Scientific Earth Drilling Information Service (SEDIS) metadata via open geospatial consortium–compliant Web feature services and distribution of CDEX logging data. USIO representatives were also involved in discussions regarding the Sample Materials Curation System (SMCS) and plans were made for talks with IODP-MI in early 2010 to discuss the best ways to update this system.

Reports on legacy data efforts related to age models, core descriptions, and core image strips were presented, along with approaches to the distribution of publication data. Other elements of the meeting included discussion on developing taxonomic name lists, digital references material and archiving requirements, and approaches of the various implementing organizations. The meeting concluded with discussions on SEDIS Phase 3 to the depth and extent possible given the state of the Request for Proposal and IODP-MI review process at the time of the meeting.

## APPENDIX A: FINANCE REPORT

### Finance Report Changes

The first quarter of FY10 marks a change in how the USIO quarterly report's **Appendix A: Finance Report** is organized.

From FY04 through FY09, the USIO Annual Program Plan budget request was partitioned into categories determined by a complex set of cost definitions. Over the years, these definitions have been adjusted and finally simplified to the current structure. The FY10 quarterly report **Appendix A: Finance Report** correlates to the FY10 Annual Program Plans to NSF and IODP-MI in a structure that dramatically reduces the number of pages in the appendix. To accommodate this correlation, the prior years' costs in the finance report appendix have been combined as noted in the table below.

FY10 Definition	Prior Years' Definitions
Science Operating Costs (SOC)	SOC, SOC nonoperations
Platform Operating Costs (POC)	POC, SOC operations
Other Program Integration Costs (OPIC)	U.S. Systems Integration Contract costs (SIC) demobilization, SIC nondemobilization
Systems Integration Contract (SIC) costs	POC, SOC Operations, SIC demobilization, SIC nondemobilization

Adjustments were also made within and between work breakdown elements (WBEs). Prior years' costs from the defunct Education and Outreach WBE have been merged with the Education WBE, and prior years' costs from the DSDP/ODP Core Redistribution Project have been rolled up into the Core Curation WBE. In addition, the line-item FY08 budget adjustments reported in the FY09 Q4 report have been rolled up into the Salaries and Wages line item within their relative WBEs.

Beginning with the FY10 Q1 report, the finance report appendix provided to NSF will include SIC costs as defined above and the finance report appendix provided to IODP-MI will include SOC and POC costs as defined above.

Please contact [info@oceanleadership.org](mailto:info@oceanleadership.org) for hard copies of financial pages.

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### APPENDIX B: CONFERENCE AND MEETING SCHEDULE

Conference/Meeting*	Date	Location
Geological Society of America (GSA) Annual Meeting	18–21 October 2009	Portland, Oregon
Site Steering and Evaluation Panel (SSEP)	16–18 November 2009	Melbourne, Australia
IODP Data Management Coordination Group (DMCG) Meeting	16–21 November 2009	Bremen, Germany
American Geophysical Union (AGU) Fall Meeting	14–18 December 2009	San Francisco, California

\*Implementing organization meetings, IODP-MI task force meetings, Science Advisory Structure (SAS) panel meetings, Program-sponsored conferences, and scientific and educational conferences at which the USIO had a booth or exhibit.

### APPENDIX C: TRAVEL

Purpose*	Dates	Location	Institution: Personnel
FY09 Annual Report and Publications meetings	27 September–10 October 2009	College Station, Texas	TAMU: G. Lowe
Center for Dark Energy Biosphere Investigations (C-DEBI) Meeting	5–8 October 2009	Los Angeles, California	Ocean Leadership: S. Cooper
TAM International/Stress Engineering Meeting	10 October 2009	Houston, Texas	TAMU: B. Aduddell, K. Grigar, M. Storms
Mid-Atlantic Expedition Planning Meeting	10–12 December 2009	College Station, Texas	TAMU: J. Cowen, K. Edwards, C. Wheat
Management Consultancy International (MCI) Training/Critical Thinking	11–16 October 2009	Washington, D.C.	TAMRF: I. Kindt
Human Resources Conference and Exposition	13–16 October 2009	Dallas, Texas	TAMU: K. Johnson
WebWorks Conference	18–21 October 2009	Austin, Texas	TAMU: J. Gracia
Geological Society of America (GSA) Annual Meeting	18–21 October 2009	Portland, Oregon	LDEO: M. Reagan
Subseafloor Ocean Biosphere Meeting	18–22 October 2009	Kona, Hawaii	TAMU: J. Miller
FY10 Annual Program Plan planning meetings	25–28 October 2009	Washington, D.C.	TAMU: G. Lowe
American Management Association (AMA) Process Management Training	26–31 October 2009	Arlington, Virginia	TAMU: A. Crane
Association of Earth Science Editors (AESE) Annual Meeting	28 October–1 November 2009	Houston, Texas	TAMU: E. O’Roke, L. Peters, C. Wolfe
Offshore Communications 2009 Conference	4 and 5 November 2009	Houston, Texas	TAMU: C. Flores
Expedition 317 port call activities	27 October–10 November 2009	Townsville, Australia	Ocean Leadership: S. Cooper, D. Divins, S. Saunders,  TAMU: B. Clement, P. Gates, B. Julson, J. Miller, R. Mitchell, J. Rosser

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Purpose*	Dates	Location	Institution: Personnel
Multiple Projects Conference/Training	10 November 2009	Austin, Texas	TAMU: P. Edwards, K. Sherar
Writing Policies and Procedures Training	10 November 2009	Austin, Texas	TAMU: A. Crane
Management Concepts Team Building Training	15–18 November 2009	Washington, D.C.	TAMRF: R. Watkins
Site Steering and Evaluation Panel (SSEP)	16–18 November 2009	Melbourne, Australia	LDEO: H. Evans TAMU: C. Alvarez-Zarikian
IODP Data Management Coordination Group (DMCG) Meeting	16–21 November 2009	Bremen, Germany	Ocean Leadership: D. Fils, S. Higgins LDEO: D. Quoidbach TAMU: P. Foster, J. Rosser
Measurement/Improving Processes Training	18 and 19 November 2009	Austin, Texas	TAMU: A. Crane
Expedition 313 Postexpedition Meeting	18 November–9 December 2009	Bremen, Germany	TAMU: T. Fulton
Expedition 323 Sampling Party	27 November–8 December 2009	Kochi, Japan	TAMU: J. Firth, C. Alvarez-Zarikian
Juan de Fuca Planning Meeting	1–3 December 2009	College Station, Texas	TAMU: K. Becker, A. Fisher, C. Wheat
IODP-USIO Meeting	2 and 3 December 2009	College Station, Texas	Ocean Leadership: B. Gagosian
Dangerous Goods International (DGI) HazMat Training	2–6 December 2009	Las Vegas, Nevada	TAMU: C. Peng
DGI HazMat Training	5–11 December 2009	Las Vegas, Nevada	TAMU: B. Julson, S. Prinz
Advanced Configuration Meeting Training	6–11 December 2009	San Francisco, California	TAMU: D. Ponzio
Oracle Database 11g Workshop	13–19 December 2009	San Diego, California	TAMU: A. Trefethen
American Geophysical Union (AGU) Fall Meeting	12–18 December 2009	San Francisco, California	Ocean Leadership: J. Farver, B. Gagosian, S. Higgins, K. Ludwig, L. Peart, S. Saunders LDEO: C. Brenner, H. Evans, A. Malinverno, M. Reagan TAMU: B. Clement, J. Geldmacher, A. Klaus, M. Malone
Expedition 318 port call logistics and activities	28 December 2009–11 January 2009	Wellington, New Zealand	TAMU: B. Julson, M. Malone, M. Mefferd, R. Mitchell

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

\*\*USIO funded this trip for USIO representative(s) to attend an SODV Project meeting.

## APPENDIX D: USIO QUARTERLY REPORT DISTRIBUTION LIST

J. Allan, NSF, [jallan@nsf.gov](mailto:jallan@nsf.gov)  
R. Batiza, NSF, [rbatiza@nsf.gov](mailto:rbatiza@nsf.gov)  
M. Rouse, NSF, [mrouse@nsf.gov](mailto:mrouse@nsf.gov)  
J. Emmitte, IODP-MI, [jemmitte@iodp.org](mailto:jemmitte@iodp.org)  
K. Suyehiro, IODP-MI, [ksuyehiro@iodp.org](mailto:ksuyehiro@iodp.org)  
D. Divins, Ocean Leadership, [ddivins@oceanleadership.org](mailto:ddivins@oceanleadership.org)  
J. Hubler, Ocean Leadership, [jhubler@oceanleadership.org](mailto:jhubler@oceanleadership.org)  
M. Morell, Ocean Leadership, [mmorell@oceanleadership.org](mailto:mmorell@oceanleadership.org)  
G. Myers, Ocean Leadership, [gmyers@oceanleadership.org](mailto:gmyers@oceanleadership.org)  
Y. Xing, Ocean Leadership, [yxing@oceanleadership.org](mailto:yxing@oceanleadership.org)  
D. Goldberg, LDEO, [goldberg@ldeo.columbia.edu](mailto:goldberg@ldeo.columbia.edu)  
D. Grames, LDEO, [grames@ldeo.columbia.edu](mailto:grames@ldeo.columbia.edu)  
M. Purdy, LDEO, [purdy@ldeo.columbia.edu](mailto:purdy@ldeo.columbia.edu)  
M. Reagan, LDEO, [reagan@ldeo.columbia.edu](mailto:reagan@ldeo.columbia.edu)  
M. Respo, LDEO, [mrespo@admin.ldeo.columbia.edu](mailto:mrespo@admin.ldeo.columbia.edu)  
L. Cifuentes, TAMU, [cifuentes@tamu.edu](mailto:cifuentes@tamu.edu)  
B. Clement, TAMU, [clement@iodp.tamu.edu](mailto:clement@iodp.tamu.edu)  
A. Crane, TAMU, [crane@iodp.tamu.edu](mailto:crane@iodp.tamu.edu)  
S. Garrett, TAMRF, [srg@rf-mail.tamu.edu](mailto:srg@rf-mail.tamu.edu)  
B. Lancaster, TAMRF, [lancaster@iodp.tamu.edu](mailto:lancaster@iodp.tamu.edu)  
K. Miller, TAMU, [kcmiller@tamu.edu](mailto:kcmiller@tamu.edu)  
L. Schulze, TAMRF, [schulze@iodp.tamu.edu](mailto:schulze@iodp.tamu.edu)  
W. Wasson, TAMU, [wasson@iodp.tamu.edu](mailto:wasson@iodp.tamu.edu)