



INTEGRATED OCEAN DRILLING PROGRAM
United States Implementing Organization

FY09 Quarterly Report 4

1 July–30 September 2009

NSF Contract OCE-0352500

Submitted by the USIO
to
The National Science Foundation
and
IODP Management International, Inc.



Integrated Ocean Drilling Program
United States Implementing Organization.

7 December 2009

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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) FY08 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.¹

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 39: Provided incremental funding of \$7,746,079 for the FY09 Annual Program Plan, thereby fully funding FY09.
- Modification 40: Provided approval of a \$25 million FY10 Annual Program Plan Supplement titled American Recovery and Reinvestment Act Funds Spending Plan, fully funded this Supplement, and added or updated various contract clauses and provisions.
- Modification 41: Approved the FY10 Annual Program Plan submitted on 24 July 2009 for \$35,999,774 and provided \$7,205,111 in incremental funding.

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

- Modification 22: Reduced Ocean Leadership's FY09 Annual Program Plan for science operating costs (SOC) Non-operations by \$101,238, from \$3,905,489 to \$3,804,249, and fully funded the FY09 Annual Program Plan.

Subcontract Activity

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

Ocean Leadership Subcontract JSC 4-03 with LDEO:

- Modification 29: Approved the revised April 2009 FY09 Annual Program Plan in the amount of \$7,015,627 and provided incremental funding in the amount of \$740,841.
- Modification 30: Modified the subcontract's Small Business Subcontract Plan clause by requiring the submission of a separate subcontracting plan for SOC Nonoperations activities effective 1 July 2009. In addition, this modification required the subcontractor to make electronic submissions of the ISR and SSR via the Electronic Subcontracting Reporting System (eSRS).
- Modification 31: Provided incremental funding in the amount of \$362,551 toward FY09 activities.

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

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- Modification 32: Provided incremental funding in the amount of \$1,453,829 toward FY09 activities.
- Modification 33: Provided incremental funding in the amount of \$38,525 toward FY09 activities, thereby fully funding the FY09 Annual Program Plan budget.

Ocean Leadership Subcontract JSC 4-02 with TAMRF:

- Modification 38: Approved the revised April 2009 FY09 Annual Program Plan in the amount of \$47,344,669, increased incremental funding by \$1,223,632, and de-obligated FY08 unobligated SOC Nonoperations funding in the amount of \$219,465.
- Modification 39: Modified the subcontract's Small Business Subcontract Plan clause by requiring the submission of a separate subcontracting plan for SOC NonOperations activities effective 1 July 2009. In addition, this modification required the subcontractor to make electronic submissions of the Individual Subcontracting Report (ISR) and Summary Subcontract Report (SSR) via the eSRS.
- Modification 40: Provided incremental funding in the amount of \$2,531,523 toward FY09 activities.
- Modification 41: Provided incremental funding in the amount of \$5,729,454 toward FY09 activities.
- Modification 42: Provided incremental funding in the amount of \$192,205 toward FY09 activities, thereby fully funding the FY09 Annual Program Plan budget.

LDEO

Subcontract Activity

LDEO issued the following subcontract modifications during the reporting period.

LDEO Subcontract with Schlumberger:

- Modification 9: Provided the fourth FY09 funding increment in the amount of \$553,951.

LDEO Subcontract with Leicester University:

- Modification 12: Provided the fourth FY09 funding increment in the amount of \$137,483.

TAMRF

Miscellaneous Activity

- 4 August 2009: Received the audit results of a Defense Contract Audit Agency (DCAA) audit of FY06 and FY07 financial transactions under the TAMRF/Ocean Leadership subcontracts JSC 4-02 (IODP) and JSC 5-02 (SODV). There were no findings.
- 6 August 2009: Submitted a request for prior approval to Ocean Leadership to dispose of a National Science Foundation (NSF)-owned engineering copy machine.
- 6 August 2009: Received the audit results of a DCAA audit of government owned equipment/property under the TAMRF/Ocean Leadership subcontracts JSC 4-02 (IODP) and JSC 5-02 (SODV). There were no findings.
- 24 September 2009: Submitted the vehicle cost/mileage data for NSF-owned vehicles purchased and used by IODP for FY09, FY10, and FY11 and submitted the Annual Motor Vehicle Report summary to NSF.

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- 30 September 2009: Completed the FY09 annual ship and shore inventories.

Insurance Related to Ocean Leadership Subcontracts

USIO and TAMRF representatives met with insurance underwriters in London on 10 and 11 September 2009 and made presentations illustrating the difference between *JOIDES Resolution* operations and those of an oil and gas exploration vessel, highlighting the ship's safety procedures. These meetings help in determining premium rates for the *JOIDES Resolution*.

Personnel Status Ocean Leadership

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

The following position was filled during the quarter:

- Director, Science Communications (Sarah Saunders): 31 August 2009

LDEO

The following positions were vacated during the quarter:

- Graphic/Web Artist (Kazuko Nagao): 30 September 2009

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

TAMU

The following positions were vacated during the quarter:

- Interim Director, IODP-USIO, TAMU (Steve Bohlen): 28 August 2009

The following positions were opened and advertised during the quarter:

- Graphics Specialist II
- Temporary Systems Support Specialist
- Applications Developer
- IODP-USIO Manager of Business Services

The following positions were filled during the quarter:

- Director, IODP-USIO, TAMU (Brad Clement): 3 August 2009
- Research Specialist (Thomas Gorgas): 17 August 2009
- Graphics Specialist II (Rhonda Kappler): 24 August 2009
- Production Specialist II (Crystal Wolfe): 24 August 2009
- Editor II (Erin O'Roke): 1 September 2009

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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.

FY09 Q4 USIO Web Site				
Parameter	www.iodp-usio.org	iodp.ldeo.columbia.edu	iodp.tamu.edu	Total
Page views	16,038	7,010	235,192	258,240
Site visits	10,419	1,261	51,082	62,762

New and updated Web pages	Release date	URL
Science Operations: Expedition 323 Bering Sea science reports	July–August	http://iodp.tamu.edu/scienceops/sitesumm/323
Science Operations: Expedition 323 friends and family photos	July–August	http://iodp.tamu.edu/scienceops/gallery/exp323
Science Operations: Expedition 324: Shatsky science reports	September 2009	http://iodp.tamu.edu/scienceops/sitesumm/324
Science Operations: Expedition 324: Friends and family photos	September 2009	http://iodp.tamu.edu/scienceops/gallery/exp324
Laboratories: laboratory manuals	August 2009	http://iodp.tamu.edu/labs/ship.html
Newsroom: news releases	ongoing	http://www.iodp-usio.org/Newsroom/Releases.html
Newsroom: IODP in the news	ongoing	http://www.iodp-usio.org/Newsroom/news.html
Travel: port call travel information	ongoing	http://iodp.tamu.edu/travel/portcall.html
Travel: freight shipping information	ongoing	http://iodp.tamu.edu/travel/portcall.html
Travel: per diem rates	ongoing	http://iodp.tamu.edu/travel/perdiem.html
JOIDES Resolution Web site	ongoing	Inaccessible from shore

IODP Publications Web Site

The IODP Publications Web site is hosted at TAMU. New online publications are shown in the “Publications” section of this report.

FY09 Q4 IODP Publications Web Site	
Parameter	publications.iodp.org
Page views	95,467
Site visits	29,615

U.S. IODP Educational Web Sites

FY09 Q4 Deep Earth Academy Web Sites*		
Web domain	www.joidesresolution.org	www.oceanleadership.org/education/deep-earth-academy
Page views	52,311	5,820
Site visits	11,937	3,828

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

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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	FY09 Q4 ODP Web Site			FY09 Q4 DSDP Web Site
	www-odp.tamu.edu	www.odplegacy.org	Total ODP	www.deepseadrilling.org
Page views	1,125,033	7,800	1,132,833	106,018
Site visits	227,490	3,781	231,271	17,936

Stakeholder Web Sites

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

Other Activities

Supervisory training

IODP-USIO, TAMU conducted an evaluation of roles and responsibilities under the new Phase 2 business model. Planning began for providing training to employees with supervisory responsibilities.

TECHNICAL, ENGINEERING, AND SCIENCE SUPPORT

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	
Deployment, mobilization, sea trials, transit ⁵	NA	Singapore	25 January–5 March 2009	39 (1/38)	27/11	NA	TAMU: J. Miller*
Pacific Equatorial Age Transect (PEAT)	320	Honolulu, Hawaii	5 March–5 May 2009	61 (5/56)	12/44	H. Pälike, N. Nishi	TAMU: A. Klaus* LDEO: H. Evans^
PEAT/Juan de Fuca Remedial Cementing Operations ⁶	321/321T	Honolulu, Hawaii	5 May–5 July 2009	61 (5/56)	20/36	M. Lyle, I. Raffi/A. Fisher ⁶	TAMU: K. Gamage* LDEO: A. Malinverno^
Bering Sea	323	Victoria, British Columbia	5 July–4 September 2009	61 (5/56)	17/39	K. Takahashi, C. Ravelo	TAMU: C. Alvarez Zarikian* LDEO: G. Guerin^
Shatsky Rise	324	Yokohama, Japan	4 September–4 November 2009	61 (5/56)	17/39	W. Sager, T. Sano	TAMU: J. Geldmacher* LDEO: G. Iturrino^
Canterbury Basin	317	Townsville, Queensland	4 November 2009–4 January 2010	61 (5/56)	10/46	C. Fulthorpe, K. Hoyanagi	TAMU: P. Blum* LDEO: A. Slagle^
Wilkes Land ⁷	318	Wellington, New Zealand	4 January–9 March 2010	64 (5/59)	16/43	C. Escutia, H. Brinkhuis	TAMU: A. Klaus* LDEO: T. Williams^

Notes:

¹ Dates for expeditions may be adjusted pending final vessel delivery date from shipyard or 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 (*), the primary contact for the expedition, and the Logging Staff Scientist (^). In addition, further expedition information is available at www.iodp-usio.org.

⁵ An intermediate Guam port call is targeted for approximately 5 February 2009. Sea trials will be conducted at ODP Site 807.

⁶ Expedition consists of operations in both the Equatorial Pacific and Juan de Fuca Ridge. PEAT scientists are tentatively scheduled to disembark the vessel in San Diego, California, on approximately 23 June 2009. Lyle and Raffi are Co-Chief Scientists on the PEAT Expedition; Fisher is Chief Scientist on Juan de Fuca Cementing Operations.

⁷ Wilkes Land activities include operations at Adelie Drift (638 APL).

Expedition Planning and Implementation Activities USIO Pacific Equatorial Age Transect Expeditions

Postexpedition Activities

Intensive planning for the first Pacific Equatorial Age Transect (PEAT) postexpedition meeting and sampling party continued throughout the quarter.

USIO Bering Sea Expedition

Expedition Staffing

Expedition Staffing Breakdown	
Member Country/Consortium	Bering Sea
United States Science Support Program (USSSP)	8
Japan Drilling Earth Science Consortium (J-DESC)	8
European Consortium for Ocean Research Drilling (ECORD)	8
Korean IODP (K-IODP)	1
IODP-China	1
Australia-New Zealand IODP Consortium (ANZIC)	1
India	1

Clearance and Permitting

Clearance from Russia to drill two primary sites was not obtained despite U.S. State Department efforts that continued into the expedition until it was no longer operationally feasible to occupy the sites.

Expedition Implementation

Despite not being able to occupy the Russian sites, the Bering Sea Expedition successfully cored at seven sites, recovering 5741 m of sediments (97% recovery). Bering Sea Expedition operations also shattered the advanced piston coring (APC) penetration records of 414.8 m set during the PEAT expeditions and the previous long-term record (398.3 m) set during Ocean Drilling Program (ODP) Leg 145 more than 17 years ago. The new continuous APC coring record is 458.4 m. Efforts continued during the expedition to troubleshoot and improve science systems and applications. The very high recovery rate revealed additional areas that need improvement for more efficient core processing through the laboratories during high-recovery expeditions.

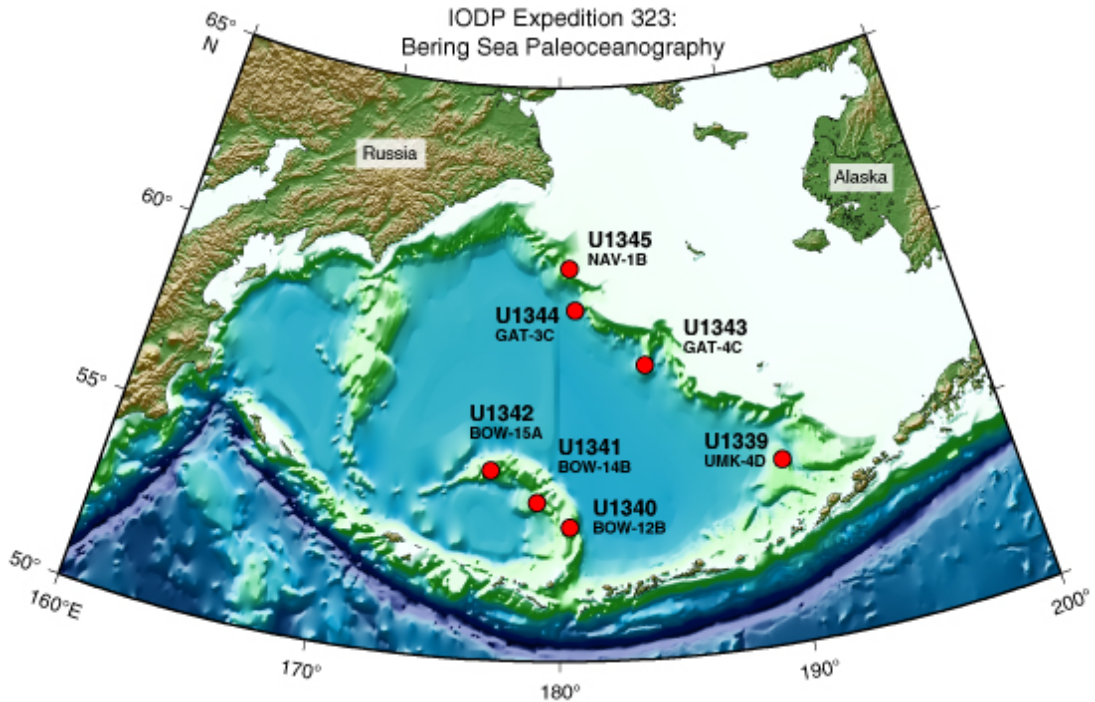
Logging Summary: Four of the Bering Sea Expedition sites were logged with a standard suite of wireline logging tools to record in situ physical and lithological properties. The logged sites were chosen to record the diversity of the environments drilled during the expedition. Hole U1339D was located on the Umnak Plateau in the easternmost part of the Bering Sea; Hole U1341D was located on the western side of the Bowers Ridge, in the southern part of the Bering Sea; and Holes U1343E and U1344A were in locations proximal to the gateways to the Arctic Ocean along the edge of the continental shelf.

All logging operations took place under very favorable sea conditions, with the heave never exceeding 1 m. As a result, all the tool deployments were highly successful and generated high-quality data, but there was no opportunity to evaluate the heave compensation system and the significant improvements that were made to its software following the PEAT expeditions.

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Expedition Operations

Bering Sea Paleoceanography Expedition Site Map.



Bering Sea Expedition Coring Summary.

Site	Hole	Latitude (deg/min)	Longitude (deg/min)	Seafloor (m DRF)	Number of Cores	Meters Cored	Meters Recovered	% Recovered	Meters Drilled
U1339 (UMK-4D)	U1339A	54° 40.2001' N	169° 58.9017' W	1878.0	4	33.4	34.87	104.3%	0.0
	U1339B	54° 40.2103' N	169° 58.9106' W	1878.9	22	196.0	204.45	104.3%	0.0
	U1339C	54° 40.2063' N	169° 58.8852' W	1878.9	21	194.8	199.40	102.4%	0.0
	U1339D	54° 40.1891' N	169° 58.8909' W	1879.4	22	200.0	206.03	103.0%	0.0
Site U1339 Totals:					69	624.2	644.75	103.3%	0.0
U1340 (BOW-12B)	U1340A	53° 24.0008' N	179° 31.2973' W	1306.0	70	603.5	535.89	88.8%	1.0
	U1340B	53° 24.0002' N	179° 30.9815' W	1308.5	6	53.9	55.53	103.0%	0.0
	U1340C	53° 23.8113' N	179° 31.2975' W	1304.7	3	28.5	30.00	105.3%	0.0
	U1340D	53° 23.8004' N	179° 31.2974' W	1304.7	3	26.3	27.23	103.5%	0.0
Site U1340 Totals:					82	712.2	648.65	91.1%	1.0
U1341	U1341A	54° 2.0025' N	179° 0.4999' E	2150.9	41	359.2	373.23	103.9%	0.0
	U1341B	54° 1.9984' N	179° 0.5171' E	2150.9	71	600.0	594.54	99.1%	0.0
	U1341C	54° 2.0010' N	179° 0.5390' E	2150.9	27	228.0	242.06	106.2%	2.0
Site U1341 Totals:					139	1187.2	1209.83	101.9%	2.0
U1342 (BOW-15A)	U1342A	54° 49.6987' N	176° 55.0027' E	829.7	8	50.3	57.39	114.1%	3.0
	U1342B	54° 49.7004' N	176° 55.0232' E	830.4	5	43.3	44.83	103.5%	0.0
	U1342C	54° 49.7017' N	176° 55.0411' E	830.3	6	45.4	47.06	103.7%	0.0
	U1342D	54° 49.7018' N	176° 55.0581' E	829.7	18	109.1	86.37	79.2%	18.6
Site U1342 Totals:					37	248.1	235.65	95.0%	21.6

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Site	Hole	Latitude (deg/min)			Longitude (deg/min)			Seafloor (m DRF)	Number of Cores	Meters Cored	Meters Recovered	% Recovered	Meters Drilled
U1343 (GAT-4C)	U1343A	57°	33.3993'	N	175°	48.9659'	W	1962.4	22	201.5	204.03	101.3%	0.0
	U1343B	57°	33.4156'	N	175°	48.9951'	W	1962.4	4	35.5	34.56	97.4%	0.0
	U1343C	57°	33.3982'	N	175°	49.0275'	W	1964.2	26	234.2	231.04	98.7%	0.0
	U1343D	57°	33.3817'	N	175°	48.9971'	W	1965.7	1	8.5	8.53	100.4%	0.0
	U1343E	57°	33.3814'	N	175°	48.9974'	W	1967.5	82	741.3	700.27	94.5%	3.0
Site U1343 Totals:								135	1221.0	1178.43	96.5%	3.0	
U1344 (GAT-3C)	U1344A	59°	3.0005'	N	179°	12.2011'	W	3183.4	79	745.0	648.10	87.0%	0.0
	U1344B	59°	3.0112'	N	179°	12.2051'	W	3184.7	1	4.8	4.80	100.0%	0.0
	U1344C	59°	3.0116'	N	179°	12.2052'	W	3184.4	4	35.6	33.51	94.1%	0.0
	U1344D	59°	3.0224'	N	179°	12.2030'	W	3185.8	32	286.5	286.10	99.9%	0.0
	U1344E	59°	3.0339'	N	179°	12.2029'	W	3185.7	23	199.8	202.68	101.4%	3.0
Site U1344 Totals:								139	1271.7	1175.19	92.4%	3.0	
U1345 (NAV-1B)	U1345A	60°	9.1917'	N	179°	28.2036'	W	1019.1	16	146.9	148.49	101.1%	0.0
	U1345B	60°	9.2003'	N	179°	28.2127'	W	1019.3	4	36.7	38.24	104.2%	0.0
	U1345C	60°	9.2097'	N	179°	28.2229'	W	1020.5	16	148.5	152.85	102.9%	0.0
	U1345D	60°	9.2175'	N	179°	28.2283'	W	1020.0	16	150.0	154.62	103.1%	0.0
	U1345E	60°	9.2264'	N	179°	28.2407'	W	1018.8	16	150.0	154.15	102.8%	0.0
Site U1345 Totals:								68	632.1	648.35	102.6%	0.0	
Expedition 321 Totals:								669	5896.5	5740.85	97.4%	30.6	

Science Results

Over the last 5 m.y., global climate has evolved from being warm with only small Northern Hemisphere glaciers to being cold with major Northern Hemisphere glaciations (NHG) every 100–40 k.y. The ultimate reasons for this major transition are unknown. Over the last hundreds of thousands of years, Milankovitch- and millennial-scale climate oscillations have occurred. Although the regional environmental changes that are reflected in the sediment are known in some regions, the mechanisms by which they propagate globally are not understood. Possible mechanisms responsible for both the long-term evolution of global climate as well as the generation of high-frequency climate oscillations involve processes such as intermediate water ventilation and sea ice formation in the North Pacific. However, the paucity of data in critical regions of the Pacific, such as the Bering Sea, has prevented an evaluation of the role of North Pacific processes in global climate change. Because North Pacific Intermediate Water (NPIW) is known to form in the Bering Sea and because of the potential far-field impacts of sea ice, the Bering Sea may be critically involved in causing major climate changes. Thus, drilling in the Bering Sea may help answer questions not only about the global extent of climate trends and oscillations but also about the mechanisms that produce them. In addition to having important sedimentary records of past climate change, the Bering Sea is also a region of relatively high surface productivity, elevated intermediate and deepwater nutrient concentrations, and, presumably, microbial-mediated biogeochemical cycling. Thus, IODP Expedition 323 was dedicated to the first examination of subseafloor biomass and microbial processes in high-productivity regions.

The Bering Sea Expedition's seven sites covered three different areas: Umnak Plateau, proximal to the modern Alaskan Stream entry; Bowers Ridge, proximal to the glacial Alaskan Stream entry; and the Bering Sea shelf region, proximal to the modern sea ice extent. Four holes were drilled that ranged in depth from 600 to 745 m below seafloor, spanning 1.9 to 5 Ma in age. The water depths ranged from 818 to 3174 m below seafloor

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in order to characterize past vertical water mass distribution and circulation. Highlights of our findings include the following:

1. An understanding of the long-term evolution of surface water mass distribution during the past 5 m.y., including the expansion of seasonal sea ice to Bowers Ridge between 3.0 and 2.5 Ma and the intensification of seasonal sea ice at both Bowers Ridge and the Bering slope from ~1.0 Ma leading into the 100 k.y. cycles of the late Pleistocene ice ages.
2. The characterization of intermediate and deep water masses, including evidence from benthic foraminifers and sediment laminations, for episodes of low-oxygen conditions in the Bering Sea throughout the last 5 m.y.
3. The terrigenous and biogenic sedimentary history of the Bering Sea, including evidence for strong climatological and sea level control of siliciclastic deposition at all sites. Records of lithostratigraphic variations indicate that Bering Sea environmental conditions were strongly linked to global climate change; this is apparent both in long-term million-year trends and in the orbital, millennial, and shorter oscillations within the lithostratigraphic records generated at sea.
4. A large range of inferred microbial activity with notable site-to-site variations, including significant activity as deep as 700 m core depth below seafloor (m CSF) at the Bering slope sites and, in contrast, very low rates of microbial-mediated sulfate reduction at Bowers Ridge.

USIO Shatsky Rise Expedition

Expedition Planning

The third-party magnetometer was received and inspected, and staff reviewed planning for deployment and implementation of data collection. Planning continued for port call activities, including public relations and tours coordinated by Japan Agency for Marine-Earth Science and Technology (JAMSTEC)/Center for Deep Earth Exploration (CDEX). Preparations continued for implementing laboratory and database issues specifically related to the first hard-rock expedition.

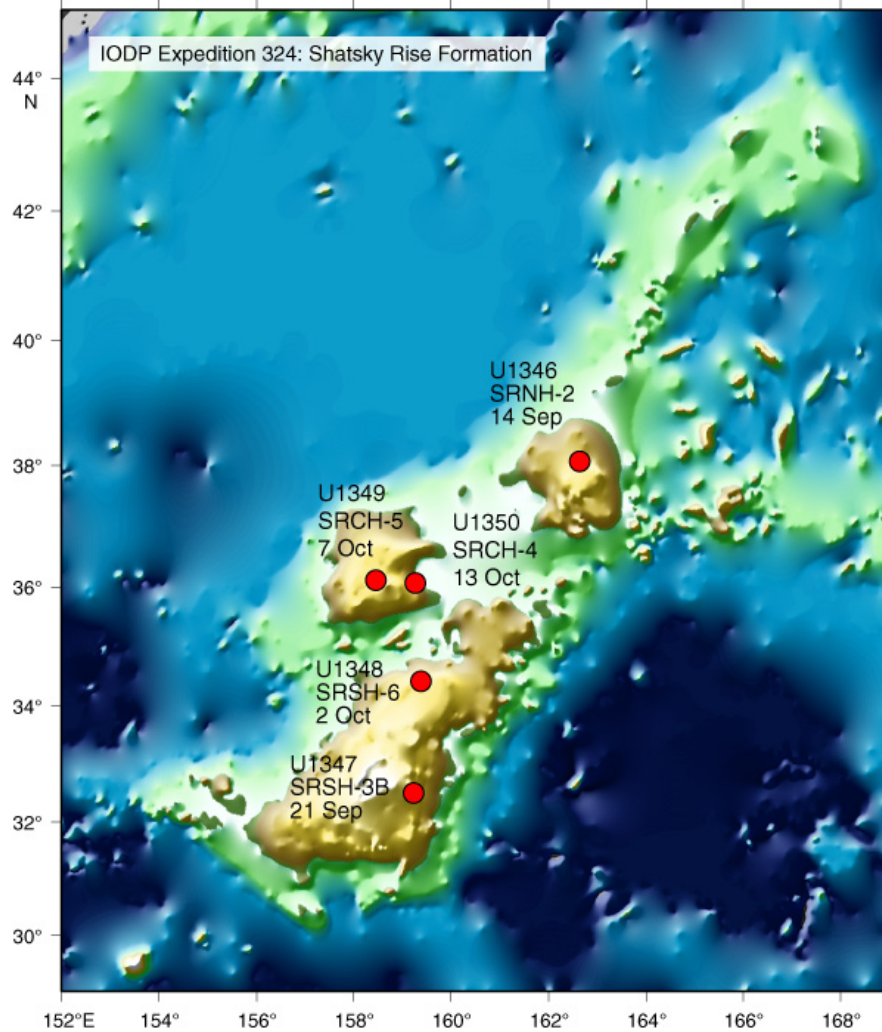
Expedition Staffing

Expedition Staffing Breakdown	
Member Country/Consortium	Shatsky Rise
United States Science Support Program (USSSP)	8
Japan Drilling Earth Science Consortium (J-DESC)	8
European Consortium for Ocean Research Drilling (ECORD)	8
Korean IODP (K-IODP)	1
IODP-China	1
Australia-New Zealand IODP Consortium (ANZIC)	1
India	0

A Historically Black Colleges and Universities (HBCU) educator and a Japanese educator sailed as participants in the Shatsky Rise Expedition.

Expedition Operations

Shatsky Rise Expedition Site Map.



Two of the Shatsky Rise Expedition sites were occupied during the reporting period.

Site U1346: Site U1346 initiated rotary coring at 100.5 meters drilling depth below seafloor (m DSF), deepening the hole to 191 m DSF with an average recovery rate of 29% overall and a recovery rate of 39% for basement. The hole was successfully logged with the triple combo but hole conditions and sea state were not appropriate for deployment of the Formation MicroScanner (FMS)-sonic tool.

Site U1347: Site U1347 was drilled and washed ahead to 71 m DSF and rotary coring was initiated. Coring advanced the hole to 242.17 m DSF, and a free-fall funnel was deployed to change the bit. Coring with the new bit deepened the hole to 317.5 m DSF. The average recovery for basement was 62%. Preparations for logging were under way at the end of the reporting period.

USIO Canterbury Basin Expedition

Expedition Planning

Approval was secured from the New Zealand Department of Conservation (DOC) to use only USIO marine mammal observers (i.e., no external observers required) based on type and extent of work proposed and detail of proposed mitigation measures meeting DOC guidelines. Sample, data, and research planning was initiated and began addressing nonroutine laboratory requests. Logistical implementation was fully engaged.

Expedition Staffing

Science staffing was completed during the quarter.

USIO Wilkes Land Expedition

Expedition Planning

Hobart, Australia, was confirmed as the end port for the expedition. A weather observer was contracted for the expedition, and the search continued for an ice observer with a mate license. Sample, data, and research planning was initiated.

Expedition Staffing

Science staffing was completed during the quarter.

Environmental Assessment

Work was initiated on an environmental report that would detail acoustic source use for check shot surveys and associated marine mammal mitigation measures.

Projects and Other Activities

Sediment Temperature Tools

Assembly was completed for one sediment temperature and pressure (SETP) tool to be loaned to CDEX. The SETP tool was shipped to Japan in mid-July 2009 along with two sediment temperature (SET) tools and one colleted delivery system (CDS) for use on the *Chikyu* during Expedition 322.

Lockable Flapper Valve Project

The USIO inaugurated the Lockable Flapper Valve (LFV) Task Force (LFVTF), which comprised key personnel from LDEO, TAMU, Transocean, Schlumberger, and Stress Engineering. The LFVTF was charged with exploring different options of addressing the recurring problem of the LFV unlatching. The task force compiled a list of LFV failure-related issues and developed, discussed, and refined a roster of potential prevention and/or mitigation strategies. A static 3D model of the LFV was adapted for dynamic simulation. Further investigation and action items are pending.

Motion Decoupled Hydraulic Delivery System Telemetry Project

Key personnel from TAMU, LDEO, the University of Texas, and Stress Engineering attended a kickoff meeting at Mohr Engineering, where USIO representatives presented a development plan for a multi-functional telemetry module (MFTM). The MFTM would allow communication from the motion decoupled hydraulic delivery system (MDHDS) to a

surface panel in order to monitor health and status of downhole tools deployed by the MDHDS.

Wireline Heave Compensating System

After Wireline Heave Compensator (WHC) equipment failures during Expedition 320, the Schlumberger winch transmission and the hydraulic valve that controls pressure to the compensator were returned to their respective manufacturers for failure analysis. During the quarter, the USIO received a fluid analysis report on the hydraulic valve that showed high levels of water, oxidized metal, silica, fiber, and silt in the transmission hydraulic fluid. A mechanical analysis of the transmission is expected in the near future.

An Electro-Wave engineer was present to provide engineering and software support during the port call in Victoria, British Columbia. Logging operations were successfully completed during Expedition 323 and performance data for the WHC were collected.

ENGINEERING DEVELOPMENT

There are no Engineering Development deliverables scheduled for FY09.

DATA MANAGEMENT

IODP Databases

LIMS Database

Data collected during Expedition 321 were successfully transferred to shore, merged with the cumulative laboratory information management system (LIMS) database, and made available online to the participating scientists. These data are in moratorium and not yet available to the public.

Log Database

Data from USIO Expeditions 301 through 324 and European Consortium for Ocean Research Drilling (ECORD) Science Operator (ESO) Expeditions 302 and 310 are available online on both the shore-based and shipboard databases.

Data from Expeditions 323 and 324 were fully processed for inclusion in the IODP online database, as follows:

- Expedition 323: Standard and FMS data for Holes U1339D, U1341B, U1343E, and U1344A
- Expedition 324: Standard data for Hole U1346A

Finally, the vertical seismic imaging data from Expedition 321 Holes U1337A and U1338B were converted into SEG Y format and added to the database.

**IODP Database Data Requests
LIMS Database**

Top 10 Countries Accessing LIMS Web Database*		
Rank	Country	Visitor Sessions
1	United States	47
2	Japan	18
3	United Kingdom	10
4	Germany	6
5	France	2
6	Oman	1
7	Brazil	1
8	Canada	1
9	Australia	1
10	India	1
	Other	1
	Total	89

*Excluding access from TAMU.

Top LIMS Web Queries*		
Rank	Query	Uploads
1	LIMS homepage	82
2	Samples	76
3	Science data	55
	Total	213

*Excluding access from TAMU.

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Janus Database

Top 10 Countries Accessing Janus Web Database*		
Rank	Country	Visitor Sessions
1	United States	806
2	Germany	507
3	United Kingdom	330
4	Japan	268
5	Western Europe	151
6	The Netherlands	115
7	China	99
8	France	87
9	New Zealand	55
10	Australia	42
	Others	401
	Total	2,861

*Excluding access from TAMU.

Top 20 Janus Web Queries*		
Rank	Query	Uploads
1	Database overview	3,245
2	Samples	1,970
3	Core photos	1,378
4	Site summaries	685
5	Sample requests	405
6	Core summaries	428
7	Hole summaries	321
8	Hole trivia	347
9	Chemistry carbonates	375
10	Sample requests	403
11	Leg summaries	181
12	Gamma ray attenuation porosity	271
13	Moisture and density	374
14	Magnetic susceptibility	308
15	Special holes	134
16	VCD scanned images	213
17	Core close-up photos	142
18	Age models	177
19	Paleontology	264
20	Site summaries	113
	Others	2,704
	Total	14,438

*Excluding access from TAMU.

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Other Web Statistics*		
Database query hits:		
	Entire site (successful)	14,438
	Average per day	156
Visitor sessions:		
	Total number of visitor sessions	2,861
	Average per day	31
	Average length of visit	00:11:55
	International visitor sessions	71.83%
	Visitor sessions of unknown origin	0.00%
	Visitor sessions from United States	28.71%
Visitors:		
	Unique visitors	1,551
	Visitors who only visited once	1,163
	Visitors who visited more than once	388
	Average visits per visitor	1.84

*Excluding access from TAMU.

Data Requests to Data Librarian*	
Requests	Total
Country:	
United Kingdom	5
USA	3
Germany	2
Canada	2
China	1
France	1
Others	4
Total	18
Data:	
Photos	3
Depths	2
Logging	2
Magnetic	2
Palynology	2
Samples	1
Paleontology	1
Paleomagnetism	1
Seismic	1
Several	1
Oil test	1
Total	18

*Excluding access from TAMU.

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Log Database

Top 10 Countries Accessing Log Web Database*		
Rank	Country	Visitor Sessions
1	United States	391
2	United Kingdom	122
3	Japan	112
4	Spain	97
5	Germany	55
6	China	53
7	Brazil	42
8	Canada	26
9	Romania	18
10	Venezuela	17
	All others	368
	Total	1,301

*Excluding access from LDEO.

Other Log Web Statistics*		
Database query hits:		
	Entire site (successful)	7,010
	Average per day	5.66
Visitor sessions:		
	Total number of visitor sessions	1,261
	Average per day	13.70
	Average length of visit	5:24
	International visitor sessions	41.66%
	Visitor sessions of unknown origin	28.29%
	Visitor sessions from United States	30.05%
Visitors:		
	Unique visitors	686
	Visitors who only visited once	568
	Visitors who visited more than once	693
	Average visits per visitor	1.86

*Excluding access from LDEO.

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

CORE CURATION

Sample Requests

All core sample requests were handled by the Bremen Core Repository (BCR), Gulf Coast Repository (GCR), and Kochi Core Center (KCC). Sample requests handled by the GCR are reported in this table.

IODP Expedition/ Repository	Visitors	Request Number, Name, Country	Number of Samples
<i>Gulf Coast Repository:</i>			
		21844A, Hermann, Switzerland	40
		21865A, Weiss, Canada	68
		21863A, Quann, USA	31
		20842D, Shimada, Japan	313
		21856A, Barrera-Sanson, Spain	99
		17956D, Tiedermann, Germany	35
		21861A, Murakama, Japan	83
	1	16222B, Swann, United Kingdom	161
		17532B, Elderfield, United Kingdom	22
		21866A, Moore, USA	191
		21851A, Rennie, United Kingdom	41
		21875A, Johnson, USA	338
		21836A, Chen, Germany	2,060
		21791A, Smith, USA	178
	1	21875A, Johnson, USA	338
	1	21873B, Tominaga, USA	19
	1	21902A, Herridge, USA	86
	1	21904A, Hague, USA	86
		21877A, Chazen, USA	23
	1	21802A, Nielsen, United Kingdom	64
	1	20999A, Talling, United Kingdom	6
	3	21855A, Kato, Japan	3,472
		21879A, Lawrence, USA	93
		21881A, Elderfield, United Kingdom	45
	2	Public relations tour (1)	No samples
Total science	10	24	7,892
Total education:	0	0	0
Total PR:	2	0	0
Total:	12	24	7,892

PUBLICATIONS

USIO Reports

FY09 Q3 IODP Quarterly Report

The USIO report for the third quarter of FY09 (April–June 2009) was submitted to NSF and the IODP central management office (IODP Management International, Inc. [IODP-MI]) on 14 August 2009.

FY09 Annual Report

Production of the IODP-USIO FY09 Annual Report was initiated with planning meetings and development of a table of contents, preliminary design template, and production schedule. Photographs and graphic images were collected for potential use in the report, and efforts began toward developing report content.

FY10 Annual Program Plan and Appendix

On 23 July 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 platform operating costs (POC). The IODP-USIO FY10 Annual Program Plan consists of requests for SOC Nonoperations, SOC Operations, and POC costs to complete three expeditions, cover a 114-day tie-up period of the *JOIDES Resolution*, conduct two to-be-determined expeditions, and fund continuing shore-based activities. The IODP-USIO FY10 Annual Program Plan budget totals \$38,533,777, with \$3,961,102 in SOC Nonoperations requested from IODP-MI and \$8,877,009 in SOC Operation and \$25,695,665 in POC requested from NSF.

On 23 June 2009, the USIO submitted to NSF a revised version of the 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 (SIC). The Appendix to the IODP-USIO FY10 Annual Program Plan outlines requests related to the IODP-USIO U.S. Systems Integration Contract, which include costs that cover USIO efforts for education and outreach and associated management and administrative support. The FY10 Annual Program Plan Appendix to NSF includes a SIC budget totaling \$1,427,100 and also provides SOC Operations, SOC Nonoperations, and POC budget details, and appendixes detailing the USIO IT Security Summary and the Recommended IODP-USIO Program of Insurance.

2009 Ocean Drilling Citation Report

The 2009 Ocean Drilling Citation Report was completed this quarter. The Ocean Drilling Citation Database, a subset of the American Geological Institute's (AGI's) GeoRef database, is produced by AGI in collaboration with IODP-MI. Compilation of this database began in 1999, and it has been online since August 2002. A review of the records in the database provides information on how Program-related research is disseminated into the scientific community through publications and can therefore indicate the impact of Program science.

IODP Publication Services produces annual studies of the Ocean Drilling Citation Database based on the records in the database as of February of each calendar year. This year the database contained 24,729 citation records related to DSDP, ODP, and IODP. The 2009 study is available online at http://iodp.tamu.edu/publications/citations/AGI_study.pdf.

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IODP Scientific Publications

Publication	Release Date	Digital Object Identifier	Comments
<i>Scientific Prospectus:</i>			
Expedition 325 (Great Barrier Reef environmental changes: the last deglacial sea level rise in the South Pacific: offshore drilling northeast Australia)	August 2009	doi:10.2204/iodp.sp.325.2009	Edited and formatted for ESO
<i>Preliminary Reports:</i>			
Expedition 320 (Pacific Equatorial Age Transect)	July 2009	doi:10.2204/iodp.pr.320.2009	
Expedition 321 (Pacific Equatorial Age Transect)	July 2009	doi:10.2204/iodp.pr.321.2009	
Expedition 321T (Juan de Fuca hydrogeology: cementing operations at the Hole U1301A and Hole U1301B borehole observatories (CORKs))	August 2009	doi:10.2204/iodp.pr.321T.2009	
<i>Proceedings of the Integrated Ocean Drilling Program:</i>			
Volume 303/306			
Data report: calcareous nannofossils from upper Pliocene and Pleistocene, Expedition 306 Sites U1313 and U1314	7 July 2009	doi:10.2204/iodp.proc.303306.206.2009	
Data report: late Quaternary calcareous nannofossil assemblages at Site U1304	8 July 2009	doi:10.2204/iodp.proc.303306.202.2009	
Data report: magnetic properties of unconsolidated deep-sea sediments from the North Atlantic, IODP Expedition 303 Sites U1302–U1304 and U1308	17 July 2009	doi:10.2204/iodp.proc.303306.209.2009	
Data report: late Quaternary ostracodes at IODP Site U1314 (North Atlantic Ocean)	21 July 2009	doi:10.2204/iodp.proc.303306.213.2009	
Data report: digital core images as data: an example from IODP Expedition 303	22 July 2009	doi:10.2204/iodp.proc.303306.201.2009	
Volume 304/305			
Data report: electrical properties of gabbroic and troctolitic rocks from IODP Hole U1309D, Atlantis Massif	8 September 2009	doi:10.2204/iodp.proc.304305.204.2009	
Volume 307			
Data report: dolomite in Neogene sediments of the Belgica carbonate mound province, Porcupine Seabight, North Atlantic	3 July 2009	doi:10.2204/iodp.proc.307.207.2009	
Data report: carbon and oxygen isotopes of bulk sediments from the off-mound site, Hole U1318B	15 July 2009	doi:10.2204/iodp.proc.307.202.2009	

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Publication	Release Date	Digital Object Identifier	Comments
Volume 308			
Data report: stress orientations from borehole breakouts, IODP Expedition 308, Ursa area, Mississippi Fan, Gulf of Mexico	1 September 2009	doi:10.2204/iodp.proc.308.212.2009	
Volume 309/312			
Data report: microstructure of chilled margins in the sheeted dike complex of IODP Hole 1256D	9 July 2009	doi:10.2204/iodp.proc.309312.205.2009	
Data report: whole-rock major and trace elements and mineral compositions of the sheeted dike-gabbro transition in ODP Hole 1256D	21 July 2009	doi:10.2204/iodp.proc.309312.203.2009	
Volume 310			
Data report: geochemistry of volcanoclastic sediments drilled during IODP Expedition 310 in Tahiti	14 July 2009	doi:10.2204/iodp.proc.310.202.2009	Edited and formatted for ESO
Data report: petrophysical properties of "young" carbonate rocks (Tahiti Reef Tract, French Polynesia)	24 August 2009	doi:10.2204/iodp.proc.310.203.2009	Edited and formatted for ESO

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 FY09 Q4	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

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Synthesis papers

Expedition	Submission Deadline (26 Months Postmoratorium)	Deadline Extensions Approved in FY09 Q4	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	

Scientific Publication Distribution

Publication	Number Distributed
IODP Publications:	
<i>Proceedings of the Integrated Ocean Drilling Program Expedition Report DVDs</i>	66
ODP Publications:	
<i>Proceedings of the Ocean Drilling Program, Initial Reports</i>	2
DSDP Publications:	
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 fourth quarter are shown in the table below.

Reports and Publications	DOI Prefix	Number of Resolutions			
		July 2009	August 2009	September 2009	FY09 Q4 Total
IODP	10.2204	2,159	1,792	2,538	6,489
ODP/DSDP	10.2973	4,450	19,538	19,150	43,138

EDUCATION

U.S. education activities are supported by NSF through SIC funding. These activities are not included in the POC and SOC budgets.

Deep Earth Academy

Education Visual Identity—Deep Earth Academy Web Site

Deep Earth Academy continued to improve its Web site and reformat or update activities that were still in old templates.

JOIDES Resolution Web Portal

The number of hits on www.joidesresolution.org continues to grow; during the fourth quarter, page views and site visits increased by more than 70%. Teachers at Sea continued to feed content into the site daily, updating the ship's position, posting blogs, and facilitating blog postings by other scientists and crew. USIO staff have also added content, including information and photos on the ship's tour, polls, new videos, and a slide show and announcements on the home page.

An art contest featuring the *JOIDES Resolution*, entitled J/aRt, was initiated. This contest generated excitement among students and will produce art work to be used on the Web site and for future posters.

Social Networking

The *JOIDES Resolution* Facebook and Twitter pages were updated frequently, and fan lists continued to grow on both of these sites. Teachers at Sea, Educators at Sea, and Deep Earth Academy staff regularly posted photos, video, and comments to these sites. In addition, Peat News Network (PNN) video clips and other videos produced by the Educators at Sea were posted and regularly viewed on the Ocean Leadership YouTube channel.

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 928 posters, 2,265 bookmarks, 1,049 pencils and 507 inflatable globes. Materials were distributed at the following meetings.

Conference/Meeting/Workshop	Date	Location
School of Rock 2009	23 June–5 July 2009	Expedition 301 Transit
National Marine Educators Association (NMEA) Annual Meeting	29 June–3 July 2009	Monterey, California
Smithsonian Teacher Education Program	30 July 2009	Washington, DC
Deep Earth Class at Maryland Science Center	11 September 2009	Baltimore, Maryland
Deep Earth Class at Maryland Science Center	18 September 2009	Baltimore, Maryland
Deep Earth Class and Videobroadcast at Maryland Science Center	25 September 2009	Baltimore, Maryland
Smithsonian Sant Ocean Hall Anniversary	26 September 2009	Washington, DC

Materials Development and Education Programs

Materials Development

Deep Earth Academy produced a new DVD of the PNN videos that were made during the PEAT 2 Expedition. These DVDs will be distributed as part of Deep Earth Academy's regular suite of materials, as will individual photo books documenting School of Rock participants' experiences during the expedition.

Videoconferencing

Interest in live videoconferencing from the *JOIDES Resolution* has grown tremendously. During this quarter, Educators at Sea facilitated 16 videoconferences to such diverse audiences as the Maryland Science Center, South Cobb High School in Georgia, the University of the Virgin Islands, and the National Museum of Nature and Science in Tokyo. The USIO partnered with IOCOM, Ocean Leadership's videoconferencing provider, to allow any educational venue wishing to do live videoconferences with the *JOIDES Resolution* to download and use the necessary software free of charge. Many School of Rock alumni and informal science institutions began taking advantage of this arrangement.

Educational Outreach

School of Rock 2009

From 22 June through July 6 2009, the School of Rock 2009 returned to sea and the *JOIDES Resolution* for the first time since the pilot program in 2005. The 2009 participants were selected from more than 120 applicants and included 11 teachers from the United States, 2 from Japan, and 1 each from France and Portugal, making this the first School of Rock workshop to include international teachers.

School of Rock faculty was headed by USIO staff members. Additional instructional staff included K. Inderbitzen (University of Miami's Rosenstiel School of Marine and Atmospheric Science), L. Sautter (College of Charleston), A. Fisher (IODP Expedition 301 Co-Chief Scientist from University of California, Santa Cruz), and L. Anderson (University of Leicester, United Kingdom).

Sailing from San Diego, California, to Victoria, British Columbia, during IODP Expedition 321T, this year's curriculum focused on seafloor observatories (circulation obviator retrofit kits [CORKS]) in Holes U1301A and U1301B and the hydrogeologic, monitoring, and sampling experiments conducted there. Participants worked in teams to access and analyze data, sample cores, conduct investigations, and discuss their conclusions in exactly the same expeditionary setting and manner as IODP scientists. The transit and cementing operations allowed plenty of time for an immersive introduction to 100 cores and data from 42 sites (mostly Eastern Pacific) and the workings of an important Earth and ocean science research vessel.

Port Call Educational Activities

USIO staff worked to assist the Teachers at Sea in preparing for their respective expeditions and in crossing over between expeditions. Ocean Leadership's Education Director visited the National Museum of Nature and Science in Tokyo to view their scientific ocean drilling exhibit and explore future partnerships.

Teacher-at-Sea Program

During Expedition 323, Teacher-at-Sea D. LaVigne facilitated blogs from several contributors, posted video and comments regularly on Facebook and Twitter, produced 6 videoconferences, added crew profiles to www.joidesresolution.org, and communicated regularly with shore-based Deep Earth Academy staff. LaVigne developed plans for postexpedition activities, including attending the Expedition 323 first postexpedition meeting.

In addition, Educator-at-Sea N. Idrisi sailed on Expedition 324 (Shatsky Rise). In August 2009, Deep Earth Academy provided a two-day training session to prepare Idrisi for his

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expedition and teach him how to use the Web tools. Please see the “**HBCU Educator-at-Sea Pilot Program**” for more information.

Teacher-in-Residence Program

The Ocean Leadership Teacher in Residence continued to facilitate drilling-related programs (including hands-on activities and videoconferences) at museums and other informal science institutions, and worked on a long-term project to develop teaching kits of samples for educators at all levels to gain easier access to IODP data.

Educational Outreach Events

Event*	Target Audience	Date	Location
Smithsonian Teacher Education Program	Teachers	30 July 2009	Washington, DC
Smithsonian Sant Ocean Hall Anniversary	General public	26 September 2009	Washington, DC

*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 Fellowship

HBCU Educator-at-Sea Pilot Program

N. Idrisi (University of the Virgin Islands [UVI] Center for Marine and Environmental Studies) sailed on the *JOIDES Resolution* as the first Historically Black College and University (HBCU) Educator at Sea. Idrisi participated in Expedition 324 (Shatsky Rise Formation), which began in Yokohama, Japan, on 4 September 2009 and was scheduled to end in Townsville, Australia, on 4 November 2009.

Idrisi created blogs on the *JOIDES Resolution* Web site (joidesresolution.org), posted videos and blogs on social networking sites, and conducted live videoconferencing from the ship. In September, Idrisi conducted live videoconferences to the Maryland Science Center and science classes at UVI. Additional videoconferences were scheduled to take place with several middle schools in St. Croix and Texas, the Smithsonian Institution, and HBCUs such as South Carolina State University.

As the HBCU Educator at Sea, Idrisi helped the USIO reach out to HBCU institutions and minority-serving teachers and their students (eighth grade and high school), raising the profile of the HBCU Fellowship, creating educational materials related to the expedition, and promoting IODP science and the *JOIDES Resolution* as perfect vehicles for earth systems science education. Idrisi’s activities introduced science and science support careers to underserved minorities, particularly HBCU students, and promoted the exciting scientific capabilities and people involved in IODP research and operations.

Museum Partnerships

Deep Earth Academy staff continued working to develop an ongoing partnership with the Maryland Science Center to provide scientific ocean drilling-related programming several times throughout the year. During this quarter, staff conducted two programs of hands-on activities for home school families and one live videoconference. Future programs with school groups were planned for this school year.

The Exploratorium in San Francisco used blogs from D. LaVigne (Expedition 323 Teacher at Sea) as part of their International Polar Year Ice Stories Web site (<http://icestories.exploratorium.edu/dispatches/author/doug-lavigne/>).

Outside Funding and Sponsorships

Deep Earth Academy is partnering with the National Ocean Science Bowl (another Ocean Leadership program) to develop an NSF Innovative Technology Experiences for Students and Teachers (ITEST) proposal to be submitted in February 2010. Work on this proposal continued throughout the quarter. The proposed ITEST project will study the impact of yearlong school-based programs on increasing student interest in pursuing careers in the ocean sciences. Teachers, guidance counselors, and school IT specialists will be trained on ocean science career opportunities, how to bring awareness of these career opportunities into the school, and how to guide and support high school students that are interested in pursuing these opportunities.

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. These efforts included publicizing the Expedition 324 (Shatsky Rise Expedition) port call in Yokohama, Japan. The USIO worked with its JAMSTEC/CDEX counterparts to plan, coordinate, and execute a highly successful press conference on 5 September 2009, as well as tours of the *JOIDES Resolution* on 5 and 6 September 2009.

Highlights include the following events:

- The USIO promoted the School of Rock (Expedition 321T) and Teacher at Sea (Expedition 323) educational programs and the first HBCU Educator at Sea to sail on an IODP expedition (Expedition 324).
- During the Expedition 323 port call in Victoria, British Columbia, USIO staff conducted tours of the *JOIDES Resolution* for 130 oceanography students and faculty from the University of Victoria and Royal Roads University and staff from Natural Resources Canada.
- Media placements for the Expedition 324 port call in Yokohama, Japan, included *Science*, *Scientific American*, *Ships of the World*, three Japanese newspapers, and a Japanese television station.
- During the Expedition 324 port call on 5 and 6 September, USIO staff conducted tours of the *JOIDES Resolution* for approximately 150 visitors from the National Museum of Nature and Science, JAMSTEC/ CDEX, Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT), Kyushu University, Tokyo University of Marine Science and Technology, The University of Tokyo, Ibaraki University, Tokyo Institute of Technology, and the Agency for Natural Resources and Energy. In addition, NSF Program Director J. Allan led a ship tour for staff from the U.S. Embassy and the NSF Tokyo Regional Office.

Public Relations Materials

USIO Media Advisories/News Releases

The following listserv announcements were distributed this quarter:

- Antarctic Climate Evolution (ACE) symposium workshop, 7 July 2009.

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- Deadline approaching: host a distinguished lecturer, 21 July 2009.
- Faculty professional development opportunity at GSA, 4 August 2009.
- Call for nominations to write new science plan, 20 August 2009.

The following news releases were distributed this quarter:

- JR en route to Bering Sea climate change investigations, 7 July 2009.
- Teachers from around the world take part in hands-on School of Rock 2009 workshop, 7 July 2009.
- U.S. research vessel en route to Bering Sea Climate Change investigations, 8 July 2009. [Also published in Newswire, U.C. Santa Cruz Press, and Media Newswire.]
- USVI professor named educator at sea for Expedition 324, 14 July 2009.
- Researchers on *Chikyu* report successful riser drilling, 30 July 2009.
- New engineering initiative strives to meet Mohole objectives, 4 August 2009.
- Ocean-drilling expedition cites new evidence related to origin and evolution of seismogenic faults, 17 August 2009. [Also published in EurekaAlert!, ScienceDaily.com, rdmag.com, RedTram.com, OK4me2.net, Terra Daily, and Science Centric.]
- Scientific drilling vessel to make port call in Yokohama—*JOIDES Resolution* currently in Pacific heading to Japan, 25 August 2009.
- Scientists return from first ever riser drilling operations in seismogenic zone, 5 September 2009. [Also published in ScienceDaily, Science Codex, Earth-stream.com, physorg.com, dintz.com, BrightSurf.com, and National Driller.]
- 2009–2010 Schlanger Ocean Drilling Fellowship Program winners named, 9 September 2009.

Articles Authored by USIO Staff

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).

- Delaney, P., and **Higgins, S.**, 2009. “Core on deck!” The end of SODV and the return of the *JOIDES Resolution* as the IODP riserless vessel. *Sci. Drill.*, 8:38–40.
- Riedel, M., Collett, T., **Malone, M.J.**, and IODP Expedition 311 Scientists, 2009. Gas hydrate drilling transect across northern Cascadia margin—IODP Expedition 311. *Geol. Soc. Spec. Publ.*, 319:11–19. [doi:10.1144/SP3192](https://doi.org/10.1144/SP3192)

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) for other articles that raise the profile of the Program.

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 - *EurekAlert!*, 2009. IODP introduces technology to support deepwater crustal drilling. *EurekAlert.com*, 4 August 2009. http://www.eurekalert.org/pub_releases/2009-08/iodp-ii080309.php [Also published in *RedOrbit.com*, *BrightSurf.com*, *InterestAlert.com*, *ScienceDaily.com*, *RedTram.com*, *YourSubseaNews.com*, *NewTechnology Magazine*, and *National Driller*.]
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USIO INTERACTIONS WITH IODP-MI AND OTHER IMPLEMENTING ORGANIZATIONS

Interactions

Proposed Publications Staff Exchange between the USIO and CDEX

Since FY08, the USIO has provided publications support on the *Chikyu* during CDEX's IODP expeditions. To further develop this relationship, USIO, CDEX, and Marine Works Japan (MWJ) representatives met on 4 August 2009 in College Station, Texas, to finalize plans for a staff exchange for publications training. Arrangements were made for an MWJ technician who works on the *Chikyu* to be on loan to the USIO for a minimum 6 month period to learn about IODP seagoing and shore-based publications duties. The training was scheduled to begin in October 2009.

As part of his visit to TAMU, Y. Kawamura (IODP Director at CDEX) met with USIO representatives to discuss shipboard staffing on the *Chikyu* and the *JOIDES Resolution*.

Downhole Measurement Services to CDEX

The USIO loaned downhole measurement tools to CDEX for use during Expedition 322, and provided the services of a tool engineer to run the tools (see “**Projects and Other Activities**” in “**Technical, Engineering, and Science Support**” for more information).

Visit from IODP-MI President

K. Suyehiro, the new president of IODP-MI, met with USIO staff at TAMU and LDEO during the quarter to provide updates on IODP-MI organizational changes and to discuss implementing organization issues.

Meetings

Engineering Development Panel

An Engineering Development Panel (EDP) Meeting was held 15–17 July 2009 in Lulea, Sweden (see “Appendix C” for list of USIO attendees). A USIO representative presented updates on engineering projects including replacement of the magnetic susceptibility sonde (MSS) that was lost during Expedition 320 and development of the LFVTF. Progress reports were given on the WHC, MFTM, rig instrumentation system (RIS), passive heave compensator (PHC), sea trials, and the search for a new TAMU IODP director. The EDP requested and was given the incident reports for the lost MSS tool.

Site Survey Panel

A Site Survey Panel (SSP) Meeting was held 27–29 July 2009 in Austin, Texas (see “Appendix C” for list of USIO attendees). A USIO representative gave a presentation covering major current USIO operational and planning activities and issues.

Science and Technology Panel

A Science and Technology Panel (STP) Meeting was held 17–19 August 2009 in Jeju, Korea (see “Appendix C” for list of USIO attendees). Most of the STP meeting was focused on completing the STP Technology Roadmap and in making preparations for INVEST meeting posters. USIO attendees participated in discussions regarding the use of digital references for sedimentology, the measurement of formation factor for microbiological potential evaluation, taxonomic name lists for paleontological work, microbiological legacy sampling and preservation, preservation of cuttings from riser sites, expedition quality assurance/quality control (QA/QC) reporting, and the panel’s request for a functioning demonstration of DescLogik at the next STP meeting.

Science Planning Committee

A Science Planning Committee (SPC) meeting was held 25–27 August 2009 in Kiel, Germany (see “Appendix C” for list of USIO attendees). The SPC reviewed and approved a sequence of expeditions for the end of FY10 through FY11, including Juan de Fuca (and APL 734: Cascadia simplified CORK replacement), South Pacific Gyre, Louisville, Superfast/CRISP A, and Mid-Atlantic Microbiology (North Pond). All expeditions will have 3 days reserved for an APL or approved engineering testing except Juan de Fuca, which already incorporates an APL, and Superfast/CRISP A, which is a hybrid expedition.

IODP New Ventures in Exploring Scientific Targets

The IODP New Ventures in Exploring Scientific Targets (INVEST) 2009 meeting was held 23–25 September 2009 in Bremen, Germany. INVEST was a multidisciplinary, international community meeting with the purpose of defining the scientific research goals of a new ocean drilling program, expected to replace IODP late in 2013. The outcome of the INVEST meeting will lead to a new science plan, enabling scientific ocean drilling to take on a central role in environmental understanding and stewardship of our planet in the 21st century.

The USIO sent 11 staff members to the meeting, where they participated in discussions of both established and new research fields, such as the co-evolution of life and the planet, processes in the Earth's core and mantle, climate change, and new approaches to capture and store the greenhouse gas carbon dioxide (CO₂) in Earth's crust. Additionally, USIO representatives presented the following 4 posters:

- “New downhole logging measurements in large-diameter drill pipe on the *JOIDES Resolution*.”
- “Analytical capabilities on the *JOIDES Resolution* provide expedition project teams with scientific information framework.”
- “The *JOIDES Resolution*—a versatile and proven riserless platform for scientific ocean drilling provided by the United States Implementing Organization.”
- “Online and ship-to-shore: value-added programming live from the *JOIDES Resolution*.”

APPENDIX A: FINANCE REPORT

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

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APPENDIX B: CONFERENCE AND MEETING SCHEDULE

Conference/Meeting*	Date	Location
Engineering Development Panel (EDP) Meeting	15–17 July 2009	Lulea, Sweden
Site Survey Panel (SSP) Meeting	27–29 July 2009	Austin, Texas
Science and Technology Panel (STP) Meeting	17–19 August 2009	Jeju, Korea
Science Planning Committee (SPC) Meeting	25–27 August 2009	Kiel, Germany
IODP New Ventures in Exploring Scientific Targets (INVEST) Meeting	23–25 September 2009	Bremen, Germany

*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
School of Rock 2009	23 June–6 July 2009	San Diego, California	Ocean Leadership: D. Divins, L. Peart
Expedition 323 Port Call	4–7 July 2009	Victoria, Canada	Ocean Leadership: D. Divins, S. Higgins LDEO: G. Iturrino, E. Meissner TAMU: D. DeShetler, C. Flores, D. Houpt, B. Julson, J. Miller, R. Mitchell, D. Partain, D. Ponzio, J. Rosser
Standards of Training, Certification, and Watchkeeping (STCW) 95 Training	6 and 7 July 2009	San Diego, California	TAMU: S. Prinz
Mohr Engineering Review	7 and 8 July 2009	Houston, Texas	LDEO: E. Meissner
Inductively Coupled Plasma (ICP) Instrument Training	13–17 July 2009	Manchester, New Hampshire	TAMU: L. Brandt
CDEX Expedition 319 Publications Assistant service	13 July–7 September 2009	Tokyo, Japan	TAMU: G. Lowe
Engineering Development Panel (EDP) Meeting	15–17 July 2009	Lulea, Sweden	LDEO: E. Meissner TAMU: K. Grigar
American Management Association (AMA) Conference	20–24 July 2009	Las Vegas, Nevada	TAMU: K. Johnson
Leadership Development Training	22–25 July 2009	Greensboro, North Carolina	TAMU: M. Malone
Presentation at Houston A&M Club	27 July 2009	Houston, Texas	TAMU: M. Malone
Site Survey Panel (SSP) Meeting	27–29 July 2009	Austin, Texas	TAMU: A. Klaus
Melting, Magma, Fluids and Life: Workshop for Scientific Ocean Drilling	27–29 July 2009	Southampton, England	TAMU: J. Miller
.NET Training	28–31 July 2009	Washington, D.C.	TAMU: D. Sims

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Pnalpina Ocean Freight Meeting	3 August 2009	Houston, Texas	TAMU: R. Mitchell
National Instruments NIWeek 2009	4–6 August 2009	Austin, Texas	TAMU: L. Chen
Helicopter Egress Training	4–6 August 2009	Galveston, Texas	TAMU: K. Grigar
USIO Meeting	10–13 August 2009	College Station, TX	Ocean Leadership: D. Divins
Lockable Flapper Valve Meeting	17 and 18 August 2009	College Station, Texas	LDEO: S. Mrozewski
Science Technology Panel (STP) Meeting	17–21 August 2009	Jeju, Korea	LDEO: T. Williams TAMU: D. Houpt
National Business Travel Conference	22–27 August 2009	San Diego, California	TAMRF: D. DeShetler
Skillpath Course	24–28 August 2009	Manchester, New Hampshire	TAMU: C. Haddick
Science Planning Committee (SPC) Meeting	25–27 August 2009	Keil, Germany	Ocean Leadership: D. Divins LDEO: A. Malinverno TAMU: M. Malone
Pick up TWIC card	26 August 2009	Houston, Texas	TAMU: K. Grigar
Mid-Ocean Ridge Workshop	26–28 August 2009	Austin, Texas	TAMU: R. Grout
CDEX Expedition 322 engineering assistance	29 August–24 September 2009	Nagoya, Japan	TAMU: L. Chen
CDEX Expedition 322 Publications Assistant service	29 August–30 September 2009	Tokyo, Japan	TAMU: K. Petronotis
USIO Expedition 324 Port Call	2–6 September 2009	Yokohama, Japan	Ocean Leadership: D. Divins, L. Peart, G. Schmidt TAMU: P. Gates, K. Grigar, D. Houpt, B. Julson, M. Malone, R. Mitchell
USIO Expedition 324 Seminar	7 September 2009	Beijing, China	LDEO: T. Liu
Insurance Underwriter Meeting	8–13 September 2009	London, England	TAMU: B. Clement, B. Wasson TAMRF: A. Davidson
Cybersecurity Summit 2009	14 and 15 September 2009	Arlington, Virginia	TAMU: C. Flores
HazMat Certification	13–19 September 2009	San Francisco, California	TAMU: S. Dillard
Audit with Ocean Drilling Limited (ODL)	16–18 September 2009	Houston, Texas	TAMRF: I. Kindt
IODP New Ventures in Exploring Scientific Targets (INVEST) Meeting	23–25 September 2009	Bremen, Germany	Ocean Leadership: D. Divins, M. Morell, L. Peart, S. Saunders LDEO: T. Williams TAMU: P. Blum, B. Clement, K. Gamage, A. Klaus, M. Malone, J. Miller
Administrative Professionals Retreat	23–27 September 2009	Boston, Massachusetts	TAMU: O. Berka

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USIO Joint Alliance Systems Integration Team (JASIT) Meeting	28 and 29 September 2009	College Station, TX	Ocean Leadership: D. Divins, R. Gagosian,
International Association of Information Technology Asset Managers (IAITAM) Conference	30 September–2 October 2009	Las Vegas, Nevada	TAMU: D. Ponzio
Process Mapping Class	29 September–1 October 2009	Austin, Texas	TAMU: A. Crane, K. Johnson

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

APPENDIX D: USIO QUARTERLY REPORT DISTRIBUTION LIST

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