International Ocean Discovery Program

JOIDES Resolution Science Operator

FY24 Q3 Operations and Management Report

1 April–30 June 2024

Cooperative Agreement OCE-1326927

Submitted by the JRSO

to

The National Science Foundation

and

The *JOIDES Resolution* Facility Board

29 July 2024

Contents

1. Introduction

This quarterly operations and management report reflects activities and deliverables outlined in the International Ocean Discovery Program (IODP) *JOIDES Resolution* Science Operator (JRSO) FY23 Annual Program Plan to the National Science Foundation (NSF), as implemented by Texas A&M University (TAMU), acting as manager and science operator of the research vessel *JOIDES Resolution* as a research facility for IODP. Administrative services in support of JRSO activities are provided by the Texas A&M Research Foundation (TAMRF) through TAMU Sponsored Research Services (SRS).

2. Expedition operations

This section provides information on the following aspects of JRSO expedition support:

- Planning (including logistics and engineering development);
- Staffing (including a staffing table for expeditions implemented during this quarter);
- Clearance, permitting, and environmental assessment activities;
- Expedition operations, including a site map, a coring summary table, and preliminary science results for each expedition completed during this quarter); and
- Postexpedition activities (including postcruise editorial meetings).

Table 2.1. JRSO expedition schedule

Expedition		Port (origin)	Dates[1]	Total days (port/ sea)	Days at sea (transit[2]/ ops)	Co-Chief Scientists	Expedition Project Manager/ Contact
Tyrrhenian Continent-Ocean Transition	402	Napoli, Italy	9 February– 8 April 2024	59 (5/54)	54 (2/52)	N. Zitellini A. Malinverno	E. Estes
Transit/Tie up (maintenance) 402T (8 April–4 June 2024; Napoli, Italy, to Amsterdam, Netherlands) (57 days)							
Eastern Fram Strait Paleo-Archive	403	Amsterdam, Netherlands	4 June– 2 August 2024	59 (3/56)	56 (14/42)	R. G. Lucchi K. St. John	T. Ronge
Tie up/Demobilization 404D (2 August–30 September 2024; Amsterdam, Netherlands) (59 days)							

[1]The start date reflects the initial port call day. The vessel will sail when ready.
[2]Preliminary total estimated transit (i.e., to and from the operational area and between sites).

Expedition 399: Building Blocks of Life, Atlantis Massif

Postexpedition activities

A postcruise editorial meeting was held 22–26 April at the JRSO office, followed by a shore-based sampling party held 27 April–3 May at the Gulf Coast Repository (GCR) in College Station, TX.

Expedition 400: NW Greenland Glaciated Margin

Postexpedition activities

A postcruise editorial meeting was held 3–7 June at the JRSO office in College Station, TX.

Expedition 401: Mediterranean-Atlantic Gateway Ocean Transition

Postexpedition activities

A postcruise editorial meeting was held 13–17 May at the JRSO office in College Station, TX. Programmatic X-ray fluorescence (XRF) scanning took place at the GCR. A shore-based sampling party is planned for 1–7 July at the Bremen Core Repository (BCR) in Bremen, Germany.

Expedition 402: Tyrrhenian Continent–Ocean Transition

Table 2.2. Expedition 402 science party staffing breakdown

Member country/consortium	Participants	Co-Chief Scientists
USA: United States Science Support Program (USSSP)	11	1
Japan: Japan Drilling Earth Science Consortium (J-DESC)	3	
Europe and Canada: European Consortium for Ocean Research Drilling (ECORD) Science Support and Advisory Committee (ESSAC)	7	1
People's Republic of China: IODP-China	2	
Australia and New Zealand: Australia/New Zealand IODP Consortium (ANZIC)	1	
India: Ministry of Earth Science (MoES)	1	

Note: the science party also included two observers from Italy.

Figure 2.1 Expedition 402 site map.

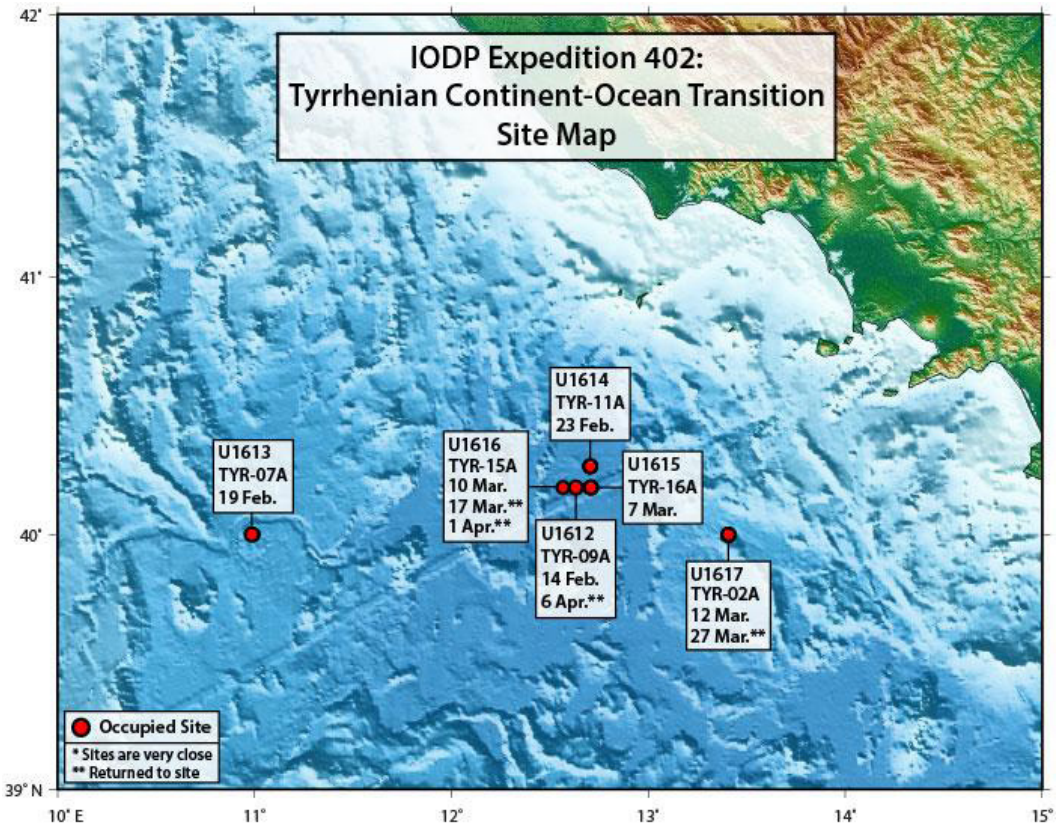

Table 2.3. Expedition 402 coring summary

Site	Hole	Latitude	Longitude	Water depth (mbsl)	Cores (N)	Total penetration (DSF)	Interval cored (m)	Core recovered (m)	Recovery (%)
U1612	U1612A	40°11.0320′N	12°37.9460′E	3573.8	39	348.7	348.7	75.41	22
	U1612B	40°11.0329′N	12°37.9598′E	3573.8	3	334.9	16.8	3.80	23
Site U1612					**42**	**683.6**	**365.5**	**79.21**	**22**
U1613	U1610A	40°0.0593′N	10°59.1732′E	2706.8	44	223.6	236.6	99.63	44
Site U1613					**44**	**223.6**	**236.6**	**99.63**	**45**
U1614	U1614A	40°15.9781′N	12°42.3164′E	3579.0	34	280.1	280.1	179.36	64
	U1614B	40°15.9792′N	12°42.3174′E	3579.0	0	65.5	0	0	0
	U1614C	40°15.9683′N	12°42.3174′E	3579.0	27	410.6	160.6	71.58	45
Site U1614					**61**	**756.2**	**440.7**	**250.94**	**57**
U1615	U1615A	40°11.0430′N	12°40.6299′E	3568.6	34	300.0	300.0	115.09	38
Site U1615					**34**	**300.0**	**300.0**	**115.09**	**38**
U1616	U1616A	40°11.0637′N	12°34.0295′E	3567.0	6	50.2	50.2	47.72	95
	U1616B	40°11.0628′N	12°34.0381′E	3567.0	28	302.6	271.4	156.57	58
	U1616C	40°11.0491′N	12°34.0397′E	3567.0	0	76.9	0	0	0
	U1616D	40°11.0520′N	12°34.0260′E	3567.0	0	66.1	0	0	0
	U1616E	40°11.0506′N	12°33.9972′E	3567.0	28	427.2	148.2	31.11	21
Site U1616					**62**	**923.0**	**469.8**	**235.40**	**50**
U1617	U1617A	40°0.0211′N	13°24.4662′E	2822.3	47	339.9	339.9	304.20	89
	U1617B	40°0.0317′N	13°24.4662′E	2822.3	21	370.4	120.4	68.91	57
Site U1617					**68**	**710.3**	**460.3**	**373.10**	**81**
Expedition 402 totals					**291**	**3,596.7**	**2,259.9**	**1,153.10**	**51**

Science summary

The key objective of Expedition 402 (Tyrrhenian Continent-Ocean Transition) (9 February–8 April 2024) was to determine the nature of the geological basement in the central Vavilov Basin of the Tyrrhenian Sea, where exhumed mantle peridotites were expected, and in the conjugate margins to the west (Cornaglia Terrace) and east (Campania Basin).

Earth's mantle rocks, known as peridotites, are generally inaccessible to direct sampling because they are buried tens of kilometers below Earth's crust. Consequently, even though Earth's mantle makes up 84% of the volume of our planet, our direct knowledge of it is still inadequate. In some continental margins, faults active during the separation of the continents uplifted the deep mantle rocks to the seafloor. However, access to these peridotites is still a challenge because, after continental separation, the margins are buried by sediments that can be several kilometers thick. The geologically young Tyrrhenian Sea is an ideal target for attempting to sample these mantle rocks because not enough time has passed to deposit thick sediments.

In the Vavilov Basin, Sites U1614 and U1616 recovered an exceptional variety of mantle rocks, including lherzolites, harzburgites, plagioclase-bearing lherzolites and harzburgites, dunites, and minor amounts of pyroxenites and mantle intrusions. The mantle peridotites are significantly hydrated and weathered, resulting in the formation of low-temperature serpentine and carbonate veins. In contrast, Site U1612 recovered at the sediment/basement interface an unconsolidated breccia with clasts of basalt, peridotite, and granite, followed by variably deformed mylonitic gneisses that transition downhole to granitoid

quartz-diorite rocks. On the western Tyrrhenian margin (Cornaglia Terrace), Site U1613 sampled a sediment sequence dating back to the Messinian (late Miocene), resting on much older sedimentary rocks akin to those outcropping in Sardinia, supporting the hypothesis that the margin consists of extended continental crust. On the conjugate margin to the east (Campania Terrace), Site U1617 did not reach the basement but recovered a complete Messinian sequence.

The samples and data collected during Expedition 402 will be used to understand the history of magma generation in the mantle peridotites, the chemical interactions between seawater and the mantle rocks, and the deformation processes that unroofed the deep mantle and led to the formation of the continent–ocean transition.

Postexpedition activities

Programmatic XRF scanning was initiated at the GCR.

Expedition 403: Eastern Fram Strait Paleo-archive

Planning

All port call activities were completed. The science party boarded the vessel on 4 June. Two ice navigators were included to assist with ice monitoring and operational decisions.

3. Management and administration

Management and administration (M&A) activities include planning, coordinating (with other IODP-related entities), overseeing, reviewing, monitoring, assuring compliance for, and reporting on IODP activities.

Progress reporting

The JRSO operations and management report for the second quarter of FY24 (January–March) was submitted to NSF on 22 April (**http://iodp.tamu.edu/publications/AR/FY24/FY24_Q2.pdf**).

Liaison activities

JRSO reports to and liaises with funding agencies and IODP-related agencies (e.g., *JOIDES Resolution* Facility Board [JRFB], JRFB advisory panels, Program Member Offices [PMOs], and other national organizations and facility boards) and participates in facility board, advisory panel, and IODP Forum meetings. Minutes from the facility board meetings are available online (**http://iodp.org/boards-and-panels/facility-boards**).

Project portfolio management

JRSO continued work on the New Rig Instrumentation System (iRIS), the Hyperspectral Line Scan Logger, and Google Migration projects.

New Rig Instrumentation System

Scope and deliverables

This project will provide a drilling/coring driller's display system (DDS) that will replace the existing RigWatch/Tru-VU with a modular DDS that meets the performance and end user experience–related

requirements as determined during the design and review phases of the project lifecycle. As much as possible, the system will use the sensor, cabling, computing, and data display infrastructure currently installed on the *JOIDES Resolution* rig instrumentation system. The project manager is John Van Hyfte (JRSO Supervisor of Engineering and Logistics Support).

Status

Acceptance testing conducted during Expedition 401 revealed significant flaws in the driller and operations interfaces. The Applications Development team recruited a member of the Engineering team with extensive LabVIEW experience to expedite completion of this project. The primary focus this period was to remove all dependencies on IRIS software/hardware from RigWatch and to bring the driller Interface to full functionality.

Hyperspectral Line Scan Logger

Scope and deliverables

The purpose of this project is to select a suitable hyperspectral camera and integrate it into a logger system to provide noncontact, ultrahigh-resolution spectral data to replace the current Ocean Optics spectrometer and, potentially, the existing image logger. The new hyperspectral camera will provide higher quality color data by removing artifacts caused by GLAD ClingWrap and will provide higher spatial resolution color spectral data because each pixel represents the full color spectrum of the base image. The project manager is Lisa Crowder (JRSO Laboratory Officer).

Status

Construction of the new track system is complete, and the focus this quarter was on programming, testing, and debugging new software components into the IMS system to incorporate camera control and calibration, lighting control, and motion control for the hyperspectral track. The project manager reports that the team is on track to complete this project by mid- to late August.

Google Migration

Scope and deliverables

The purpose of this project is to transfer all content (Google Sites, Google Drives, Google Docs, etc.) from the scientific-ocean-drilling Workspace to the TAMU Workspace. This will transfer primary responsibility for management of these resources from IODP to the TAMU Technology Services department, thus ensuring its availability to the science community beyond the termination of the IODP program.

Status

Courtney Landry (IODP Configuration Manager) is the project manager. We have recruited a team of Google experts in TAMU Technology Services to assist with this migration. The project team completed a comprehensive inventory of all content in the scientific-ocean-drilling Google Workspace, including users, domains, Google Sites, and MyDrives. That inventory was distributed to the functional groups of JRSO and they identified information that can be purged, information that needs to be archived, and content that needs to be migrated to a new Google Workspace under TAMU tenant. Much of the content has been either archived or migrated, work continues to migrate content for curation, project management, and the lab working groups.

4. Subcontract activities

JRSO continued to interact with ODL AS to ensure efficient and compliant operations of *JOIDES Resolution*. JRSO management meets with ODL AS biweekly to discuss operational and logistical issues.

JRSO continued to interact with Schlumberger to ensure that wireline logging operations aboard *JOIDES Resolution* continue in an efficient and compliant manner. JRSO and Schlumberger worked successfully to streamline travel, shipping, and maintenance activities. A new Accelerator Porosity Sonde (APS) tool was sent to the ship for use during Expedition 403.

5. Science operations

The Science Operations (SciOps) department provides scientific, operational, engineering, and logistical planning and implementation for *JOIDES Resolution* drilling expeditions in response to the IODP science planning structure. JRSO is responsible for scoping, planning, managing, and implementing science expeditions (see Expedition operations); providing services and materials for the platform and oversight to drilling and logging contractors; and utilizing IODP resources to oversee engineering development projects.

Expedition outreach support

One JRSO staff scientist supported the JR Academy that was held during the Expedition 402T April transit from Napoli, Italy, to Amsterdam, Netherlands. The same staff scientist returned to the Amsterdam tie up to support the School of Rock that took place in mid-May. Port call tours took place at the Naples April port call at the request of IODP-Italy. A three-person film crew joined Expedition 403.

Other projects and activities

JRSO staff scientists participated in the Expedition 391, 390/393, and 396 science postcruise meetings that took place in May–June in Spain and Iceland. The Manager of Science Operations attended the Science Evaluation Panel in June in Helsinki, Finland. Demobilization planning is in progress.

6. Technical and analytical services

The Technical and Analytical Services (TAS) department develops, maintains, and operates a diverse array of scientific equipment for analyzing cores and core samples; staffs the shipboard laboratories with skilled technicians; provides support for shipboard scientists; assists with downhole tools and measurements; and facilitates shipboard core curation, handling, and shipping.

Analytical systems

Hyperspectral Line Scan Logger

Work continues on the hyperspectral line scan logger (HyperScan) as described above in the “Project portfolio management” section.

Laboratory working groups

The laboratory working groups (LWGs) provide oversight, research direction, and quality assurance for the methods, procedures, and analytical systems both on *JOIDES Resolution* and on shore. The groups

meet regularly to review cruise evaluations, expedition technical reports, and any concerns raised by the IODP Issues Management Team to provide advice on corrective actions and potential developments for laboratories.

No LWG meetings were held this quarter because there were only minor issues to address, such as small bug fixes or updates to software like GEODESC. Final LWG meetings will be scheduled within the two months following the demobilization of *JOIDES Resolution* to resolve any remaining action items and issues, including any new matters from Expedition 403. The LWG leads have started archiving information from past meetings into legacy reports, which will be stored in MerlinOne, Confluence, or another platform, depending on which option offers the best long-term, cost-effective storage solution.

7. TAMU Technology Services

TAMU Technology Services oversees JRSO data collection/storage, management, and archiving; maintains information technology (IT) infrastructure on ship and shore; develops and maintains instrument-specific software for data acquisition; and manages the Program's extensive databases.

Expedition data

LIMS database

Data from Expedition 402 were added to the LIMS database on shore this quarter. Expedition 397 data were released from moratorium during this quarter with the exception of Site U1587 XRF data, which were granted a six month moratorium extension.

Expedition data requests

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

Table 7.1. Top 10 countries accessing JRSO web databases

	Janus database		LIMS database	
Rank	**Country**	**Visitor sessions**	**Country**	**Visitor sessions**
1	United States	991	United States	6,892
2	China	629	China	597
3	United Kingdom	183	United Kingdom	521
4	Germany	101	Germany	191
5	Canada	90	Japan	163
6	Japan	88	Italy	145
7	Sweden	77	France	128
8	Australia	62	Canada	125
9	Italy	53	India	85
10	Netherlands	52	Spain	80
11	Other	370	Other	590
	Total	**2,696**	**Total**	**9,517**

Table 7.2. Top 20 database web queries

Rank	Janus database		LIMS database*	
	Query	Views	Query	Views
1	Hole summary	6,083	Images—core photo	14,241
2	Core summary	6,033	Samples	2,048
3	Sample	2,441	Hole summary	1,624
4	Site summary	2,067	Images—section photo	1,579
5	Images—core photo	1,737	Section summary	1,321
6	Chemistry—carbonates	1,276	Core summary	1,094
7	Physical properties—GRA	971	X-ray—XRF	893
8	Physical properties—MAD	921	Physical properties—GRA	820
9	Images—prime data	723	Physical properties—NGR	729
10	Paleontology—age model	661	Chemistry—carbonates	679
11	Images—closeup	645	Physical properties—MAD	657
12	Special holes summary	624	Physical properties—MS	633
13	Physical properties—NGR	403	X-ray—XRD	604
14	Depth point calculator	332	Chemistry—interstitial water	542
15	X-ray—XRF	325	Paleomag—SRM section	534
16	X-ray—XRD	293	Images—thin section	501
17	Chemistry—interstitial water	285	Images—closeup	441
18	Paleomag—Cryomag	284	Physical properties—RSC	426
19	Physical properties—MS	141	Chemistry—ICP-AES	399
20	Physical properties—RSC	136	Paleomag—MSPOINT	393
	Other	1,943	Other	5,941
	Total	**28,324**	**Total**	**36,099**

Table 7.3. Data requests to the TAMU Data Librarian

Requests	Total
Images	5
Data	3
Data Correction	1
Total	9

Country	Total
USA	3
Netherlands	2
United Kingdom	2
Germany	1
Iran	1
Total	9

Network systems operation, maintenance, and security

JRSO conducted routine system maintenance in accordance with the TAMU IT security policy. The JRSO Security Analyst instituted weekly meetings with key IT team members to track progress on remediating risk assessment findings; the objective is to complete all work prior to the next TAMU risk assessment.

Other projects and activities

As part of the ongoing initiative to modernize JRSO systems and bring them into compliance with TAMU and NSF security protocols, the IT team migrated from Liquit endpoint management software to Microsoft MECM. IT also signed up for the new TechHub procurement system for obtaining new IT equipment. We are currently in the beginning phase of onboarding for TeamDynamix, the ticketing and issues

tracking system TAMU is implementing across all of its operational entities. Additionally, work continues on the migration from an antiquated tape backup system to a newer cloud-base service and moving from an Open Enterprise Server (OES) to Microsoft Active Directory.

8. Core curation

JRSO provides services in support of Integrated Ocean Drilling Program and IODP core sampling and curation of the core collection archived at the GCR.

Sample and curation strategies

This quarter, JRSO planned sample and curation strategies for Expeditions 401 and 402. GCR staff also prepared sample lists and traveled to the BCR to assist with the Expedition 401 postexpedition sample party, which was held 1–7 June in Bremen, Germany. The Expedition 399 postexpedition sample party was held 27 April–3 May in a mobile trailer in the JRSO parking lot because of hazardous asbestiform minerals naturally occurring in these cores. Personal protective equipment and engineering controls were used to reduce dust exposure to JRSO staff who were cutting samples.

Sample requests and core sampling

The following table provides a summary of the 6,772 legacy (postmoratorium) samples taken at the GCR during this quarter. Sample requests that show zero samples taken may represent cores that were viewed by visitors during this quarter, used for educational purposes, or requested for XRF analysis. For public relations or educational visits/tours, the purpose of the visit is shown in brackets in the "Sample request number, name, country" column, and no number is recorded in the "Number of samples taken" column if no new samples were taken.

Table 8.1. GCR sample requests

Sample request number, name, country	Number of samples taken	Number of visitors
105150IODP, Friedrich, Germany	545	1
105194IODP, Nirenberg, USA	96	
105213IODP, Groenveld, Taiwan	521	
105241IODP, Kimble, USA	443	
105137IODP, Hudak, USA	333	
105247IODP, Mishra, USA	1,001	
105275IODP, Hu, China	77	
105288IODP, Nirenberg, USA	28	
105292IODP, Liu, China	24	
105296IODP, Zaferani, Canada	17	
105299IODP, Zehetner, Austria	40	
105305IODP, Kuppusamy, India	163	1
105311IODP, Kuppusamy, India	121	
105317IODP, Penman, USA	37	
105324IODP, Remirez, USA	257	
105334IODP, Sinton, USA	1	
105341IODP, Lam, USA	382	

Sample request number, name, country	Number of samples taken	Number of visitors
105365IODP, Wade, UK	98	2
105212IODP, Marx, Australia	45	
105371IODP, Tian, UK	70	
105375IODP, Rie, Japan	5	
105380IODP, Zhong, China	828	
105392IODP, Jacobel, USA	144	
105404IODP, Bojue, China	132	
105408IODP, Cheviet, France	29	
105143IODP, Laya, USA	0	15
105402IODP, Tandy, USA	33	1
105407IODP, Jiang, China	23	
105419IODP, Si, USA	122	
105417IODP, Haoyufei, China	107	
104735IODP, Nadar, Norway	15	
105410IODP, Chaudhari, India	34	
105464IODP, Ram, India	64	
105258IODP, Combs, USA	3	
099910IODP, Wang, China	120	
105528IODP, McKenzie, USA	40	
105530IODP, Agterhuis, UK	16	
105546IODP, Kimble, USA	62	
105571IODP, Borrelli, USA	17	
105591IODP, Henehan, UK	4	
105626IODP, Stoll, Switzerland	64	
105688IODP, Yakushi, Japan	110	
105707IODP, Tang, China	93	
105710IODP, Borrelli, USA	250	
105699IODP, Jepsen, USA	55	
105727IODP, Bhattacharya, USA	58	
105728IODP, Bhattacharya, USA	10	
105750IODP, Kennett, USA	6	
105784IODP, Saenger, USA	29	
Tours/demonstrations (3)	3	35
Totals	**6,772**	**55**

Use of core collection and education and outreach support

JRSO promotes outreach use of the GCR core collection by conducting tours of the repository and providing materials for display at meetings and museums. The repository and core collection are also used for classroom exercises. This quarter, the GCR hosted a laboratory exercise for the TAMU undergraduate carbonate sedimentology class and gave a tour to an undergraduate historical geology class. Additionally, the GCR hosted a tour for the TAMU president and lent a model K/Pg boundary core to a JRSO staff member who presented on scientific ocean drilling to over 100 elementary school children.

Onshore XRF scanning

During this quarter, 1,094 core sections were scanned on the XRFs at the GCR. Documentation relating to the operation, advanced configurations, maintenance, and troubleshooting of the XRF is available at **https://sites.google.com/scientific-ocean-drilling.org/xrf-iodp/home**.

Table 8.2. Core sections scanned

Request type	Expedition, name, country	XRF 1	XRF 2	SHIL	WRMSL*
Programmatic	401, Williams, USA	585	440		
Programmatic	402, Estes, USA	22	22		
Personal	397, Zarikian, USA		25		
Totals		**607**	**487**		

Notes: XRF = X-ray fluorescence, SHIL = Section Half Imaging Logger, WRMSL = Whole-Round Multisensor Logger.
*The WRMSL is currently unavailable because it is serving as the development track for a new X-ray system.

9. Publication services

The Publication Services (Pubs) department provides publication support services for IODP riserless and riser drilling expeditions (see Expedition operations) and editing, production, and graphics services for required Program reports (see Management and administration), technical documentation (see Technical and analytical services), and scientific publications as defined in the JRSO cooperative agreement with NSF. The Pubs department also maintains legacy access and archiving of Integrated Ocean Drilling Program, Ocean Drilling Program (ODP), and Deep Sea Drilling Project (DSDP) publications.

Scientific publications

Table 9.1. Newly published content on the IODP Publications website

Reports and publications	JRSO	Other
Scientific Prospectuses		
Preliminary Reports	10.14379/iodp.pr.401.2024 10.14379/iodp.pr.395.2024	10.14379/iodp.pr.389.2024
Expedition Reports	10.14379/iodp.proc.397.2024 10.14379/iodp.proc.397.101.2024 10.14379/iodp.proc.397.102.2024 10.14379/iodp.proc.397.103.2024 10.14379/iodp.proc.397.104.2024 10.14379/iodp.proc.397.105.2024 10.14379/iodp.proc.397.106.2024	

Reports and publications	JRSO	Other
Data Reports	10.14379/iodp.proc.382.201.2024 10.14379/iodp.proc.371.201.2024 10.14379/iodp.proc.390393.201.2024 10.14379/iodp.proc.390393.202.2024 10.14379/iodp.proc.390393.203.2024 10.14379/iodp.proc.390393.204.2024 10.14379/iodp.proc.390393.205.2024 10.14379/iodp.proc.390393.206.2024 10.14379/iodp.proc.390393.207.2024 10.14379/iodp.proc.390393.208.2024 10.14379/iodp.proc.390393.209.2024 10.14379/iodp.proc.390393.210.2024	

Notes: Other = European Consortium for Ocean Research Drilling Science Operator (ESO), The Institute for Marine-Earth Exploration and Engineering (MarE3), Integrated Ocean Drilling Program US Implementing Organization (USIO), and Oman expedition publications.

Web services

In addition to internal JRSO web page updates and additions, new content is regularly added to IODP expedition web pages at **http://iodp.tamu.edu/scienceops/expeditions.html**.

During the third quarter of FY24, the IODP TAMU website received 593,282 page views and 119,352 site visits, and the IODP Publications website received 433,226 page views and 45,893 site visits. Where possible, visits by JRSO employees and search engine spiders were filtered out of the counts. Visitors to the IODP TAMU website came from more than 218 countries.

The ODP science operator, ODP legacy, and DSDP publications websites are hosted at TAMU. Key data, documents, and publications produced during DSDP and ODP are preserved in these legacy websites that highlight the scientific and technical accomplishments of these ground-breaking precursors to the Integrated Ocean Drilling Program and IODP. These legacy websites contain downloadable documents that cover a wide spectrum of Program information, from laboratory and instrument manuals to Program scientific publications, journals, and educational materials.

Table 9.2. Legacy website statistics

Legacy website	FY24 Q3 page views*	FY24 Q3 site visits*
www-odp.tamu.edu	290,061	64,343
www.odplegacy.org	3,928	2,714
www.deepseadrilling.org	195,866	12,874
Total	**489,855**	**79,931**

Note: *Where possible, visits by JRSO employees and search engine spiders were filtered out.

Discovery and accessibility

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. CrossRef tracks the number of times

a publication is accessed, or resolved, through the CrossRef DOI resolver tool. Program statistics for this quarter are shown in the tables below.

Table 9.3. Number of online DOI resolutions

Reports and publications	DOI prefix	April 2024	May 2024	June 2024	FY24 Q3 total
IODP	10.14379	23,931	22,064	20,073	66,068
Integrated Ocean Drilling Program	10.2204	18,609	17,043	15,987	51,639
ODP/DSDP	10.2973	57,797	54,116	30,604	142,517

Table 9.4. Top 10 IODP DOIs resolved during FY24 Q3

DOI (10.14379)	Resolutions	Title
10.14379/IODP.PROC.390393.2024	846	*Proceedings* Volume 390/393: South Atlantic Transect
10.14379/IODP.PROC.396.2023	782	*Proceedings* Volume 396: Mid-Norwegian Margin Magmatism and Paleoclimate Implications
10.14379/IODP.PROC.367368.103.2018	686	*Proceedings* Volume 367/368: Site U1499
10.14379/IODP.PROC.367368.105.2018	684	*Proceedings* Volume 367/368: Site U1501
10.14379/IODP.PROC.367368.2018	658	*Proceedings* Volume 367/368: South China Sea Rifted Margin
10.14379/IODP.PROC.359.101.2017	616	*Proceedings* Volume 359: Expedition 359 summary
10.14379/IODP.PROC.361.108.2017	451	*Proceedings* Volume 361: Site U1479
10.14379/IODP.PR.389.2024	440	*Preliminary Report*: Expedition 389 Hawaiian Drowned Reefs
10.14379/IODP.PR.396.2022	406	*Preliminary Report*: Expedition 396 Mid-Norwegian Margin Magmatism and Paleoclimate Implications
10.14379/IODP.PROC.385.2021	379	*Proceedings* Volume 385: Guaymas Basin Tectonics and Biosphere

ScienceOpen

Integrated Ocean Drilling Program and IODP expedition reports and data reports are indexed at ScienceOpen.

Table 9.5. ScienceOpen collection statistics (**https://www.scienceopen.com/collection/IODP_Publications** and **https://www.scienceopen.com/collection/8b0582f6-47bf-4988-b90a-8533135e6fcc**)

Collection	Number of articles	Article views	Number of authors	Referenced articles
Proceedings of the International Ocean Discovery Program collection	842	28,647	2,063	9,953
Scientific Ocean Drilling Expedition Research Results collection	10,974	79,9843	22,985	111,662

Legacy activities

Closeout

Integrated Ocean Drilling Program publications closeout activities continued during the reporting period. Data reports published during this quarter in the *Proceedings of the Integrated Ocean Drilling Program* are listed above in Scientific publications.

Publications archiving

The main IODP publications website (**http://publications.iodp.org/index.html**), which includes full content from all Integrated Ocean Drilling Program and IODP volumes, and other publications pages are archived at the Internet Archive, a long-term archive specializing in full website backups. Currently, our collection houses 2 TB of data and more than 8.5 million files. Integrated Ocean Drilling Program *Proceedings* volumes for Expeditions 313–348 were uploaded to Zenodo this quarter.

Citation management

IODP Pubs contracts with the American Geosciences Institute (AGI) to maintain the Scientific Ocean Drilling Citation Database, a subset of the GeoRef database that contains more than 40,800 records for Program-related scientific ocean drilling publications from 1969 to the present.

Table 9.6 Scientific Ocean Drilling Bibliographic Database statistics

Program-related publications	April 2024	May 2024	June 2024	FY24 Q3 total
Searches	179	369	271	819
Citation views	106	169	148	423

Downloadable IODP bibliographies

IODP Pubs also maintains a current PDF list of publications and conference presentations/abstracts authored by JRSO staff and Research Information Systems (RIS)–format citation data lists for IODP program publications and staff-authored journal articles (**http://iodp.tamu.edu/staffdir/indiv.html**). RIS is a standardized tag format that enables citation programs to exchange data. Users can import the content of the RIS files into most bibliographic software. RIS-format citation data lists are also available for expedition-related bibliographies for Expeditions 301–405. The IODP program publication and JRSO staff-authored publication lists are updated quarterly. Expedition-related bibliography lists are updated monthly.

Abstracts authored by JRSO staff

Abstracts of conference presentations during this quarter authored by JRSO staff include the following. Bold type indicates JRSO staff.

European Geosciences Union General Assembly 2024

- **Acton, G.**, **Childress, L.**, and **Percuoco, V.**, 2024. Using the LIMS with Lithology (LILY) database to probe IODP density, porosity, and P-wave velocity data. Presented at the EGU General Assembly 2024, Vienna, Austria, 14–19 April 2024. **https://doi.org/10.5194/egusphere-egu24-13796**
- Argenio, C., Flores, J.-A., Balestra, B., Amore, F.O., Hodell, D., Abrantes, F., **Alvarez Zarikian, C.**, and the Expedition 397 Scientific Party, 2024. Paleoceanographic and paleoclimatic analyses throughout the MIS 5 interval: preliminary results from calcareous nannoplankton. Presented at the EGU General Assembly 2024, Vienna, Austria, 14–19 April 2024. **https://doi.org/10.5194/egusphere-egu24-16409**
- Du, M., Crowhurst, S., Mleneck-Vautravers, M., Hodell, D., Abrantes, F., **Alvarez Zarikian, C.**, and the Expedition 397 Scientific Party, 2024. Late Pliocene onset of millennial climate variability during the intensification of Northern Hemisphere glaciation. Presented at the EGU General Assembly 2024, Vienna, Austria, 14–19 April 2024. **https://doi.org/10.5194/egusphere-egu24-13153**

- Ducassou, E., Flecker, R., **Williams, T.**, and the IODP Expedition 401 Participants, 2024. Gateway to a salt giant: a new record of the Messinian Salinity Crisis from the westernmost part of the Mediterranean. Presented at the EGU General Assembly 2024, Vienna, Austria, 14–19 April 2024. **https://doi.org/10.5194/egusphere-egu24-22574**
- Flecker, R., Ducassou, E., **Williams, T.**, and the IODP Expedition 401 Participants, 2024. Preliminary results of IODP Expedition 401, the first element of the Miocene Mediterranean-Atlantic Gateway (IMMAGE) Land-2-Sea drilling project. Presented at the EGU General Assembly 2024, Vienna, Austria, 14–19 April 2024. **https://doi.org/10.5194/egusphere-egu24-4237**
- Flores, J.-A., Balestra, B., Clark, W., Jiménez-Espejo, F.J., Kuroda, J., Salgueiro, E., Grimalt, J., Herbert, T., Bárcena, M.A., Abrantes, F., Hodell, D., **Alvarez Zarikian, C.**, and the Expedition 397 Scientific Party, 2024. Paleoproductivity and surface water dynamics evolution during the MIS 31 in the Shackleton Site as revealed coccolithophores. Presented at the EGU General Assembly 2024, Vienna, Austria, 14–19 April 2024. **https://doi.org/10.5194/egusphere-egu24-15648**
- Gernigon, L., Knies, J., Schönenberger, J., Piraquive, A., van der Lelij, R., Huyskens, M.H., Planke, S., Berndt, C., Jones, M., Millett, J.M., Mohn, G., and **Alvarez Zarikian, C.A.**, 2024. Understanding volcanic margin evolution through the lens of Norway's youngest granite discovered by IODP Expedition 396. Presented at the EGU General Assembly 2024, Vienna, Austria, 14–19 April 2024. **https://doi.org/10.5194/egusphere-egu24-9699**
- Haygood, L., Riedinger, N., Hodell, D., Abrantes, F., **Alvarez Zarikian, C.**, and the Expedition 397 Scientific Party, 2024. Investigating North Atlantic deep-water ventilation changes: preliminary results from IODP Expedition 397 Hole U1586A. Presented at the EGU General Assembly 2024, Vienna, Austria, 14–19 April 2024. **https://doi.org/10.5194/egusphere-egu24-6679**
- Herbert, T., Abrantes, F., Brooks, H., Flores, J.-A., Hodell, D., McManus, J., Mitsunaga, B., Palone, C., Pang, X., Wu, J., Yu, J., **Zarikian, C.**, and the Expedition 397 Scientific Party, 2024. Precessional climate cyclicity on the Iberian margin: Miocene-recent. Presented at the EGU General Assembly 2024, Vienna, Austria, 14–19 April 2024. **https://doi.org/10.5194/egusphere-egu24-19840**
- Huang, H.-H. M., Deutsch, C., Cronin, T., **Alvarez Zarikian, C.**, Guedes Abrantes, F., Hodell, D., and the Expedition 397 Scientists, 2024. Body size variability of North Atlantic benthic fauna driven by bottom-water temperature and oxygen during late Quaternary glacial-interglacial cycles. Presented at the EGU General Assembly 2024, Vienna, Austria, 14–19 April 2024. **https://doi.org/10.5194/egusphere-egu24-13997**
- Satolli, S., Di Chiara, A., Friedman, S., Dwyer, D., **Acton, G.**, and the IODP Expedition 395 Science Party, 2024. Bottom ocean currents revealed by anisotropy of magnetic susceptibility in the North Atlantic Ocean: data from IODP Expeditions 384, 395C and 395. Presented at the EGU General Assembly 2024, Vienna, Austria, 14–19 April 2024. **https://doi.org/10.5194/egusphere-egu24-7946**
- Westerhold, T., Bohaty, S.M., Penman, D.E., Burkett, A., Dallanave, E., and the Expedition 392 Scientists [including **L.B. Childress**], 2024. A new deep sea reference record for the Paleocene-Eocene Thermal Maximum: IODP Expedition 392 Site U1580 (Agulhas Plateau, Southwest Indian Ocean). Presented at the EGU General Assembly 2024, Vienna, Austria, 14–19 April 2024.
- Wu, J., Chen, X., He, Z., Deng, Q., Zhong, L., Pang, X., Hodell, D., Abrantes, F., **Alvarez Zarikian, C.A.**, and the Expedition 397 Scientific Party, 2024. Strength variability of the Mediterranean Outflow Water during late Quaternary: preliminary results from IODP Site U1588. Presented at the EGU General Assembly 2024, Vienna, Austria, 14–19 April 2024. **https://doi.org/10.5194/egusphere-egu24-19442**

International Association of Sedimentologists Conference 2024

- Frank, T.D., and the IODP Expedition 400 Science Party [including **L.B. Childress**], 2024. Paleoenvironmental significance of glendonites (pseudomorphs after ikaite) in Neogene strata of the northwest Greenland margin. Presented at the International Meeting of Sedimentologists, Aberdeen, Scotland, 24–28 June 2024.

Articles authored by JRSO staff

- Articles published during this quarter authored by JRSO staff include the following. Bold type indicates JRSO staff (**http://iodp.tamu.edu/staffdir/indiv.html**).
- Sproson, A.D., Yokoyama, Y., Miyairi, Y., Aze, T., Clementi, V.J., Riechelson, H., Bova, S.C., Rosenthal, Y., **Childress, L.B.**, Aiello, I.W., Avila, A., Biggs, W., Charles, C.D., Cheung, A.H., deLong, K., Dove, I.A., Du, X., **Estes, E.R.**, Fuentes, U., García-Lasanta, C., Goldstein, S.L., Golub, A., Hagemann, J.R., Hatfield, R.G., Haynes, L.L., Hess, A.V., Irvali, N., Kiro, Y., Monteagudo, M.M., Lambert, J.E., Li, C., Longo, W.M., McGrath, S., Robinson, R.S., Sarao, J., Taylor, S., Wright, J.D., Yu, S.M., and the Expedition 379T Scientists, 2024. Near-synchronous Northern Hemisphere and Patagonian Ice Sheet variation over the last glacial cycle. Nature Geoscience, 17(5):450–457. **https://doi.org/10.1038/s41561-024-01436-y**

Appendix: JRSO quarterly report distribution

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