# International Ocean Discovery Program

# *JOIDES Resolution* Science Operator

# FY22 Q3 Operations and Management Report

1 April–30 June 2022

Cooperative Agreement OCE-1326927

Submitted by the JRSO

to

The National Science Foundation

and

The *JOIDES Resolution* Facility Board

29 July 2022

JOIDES Resolution Science Operator

IODP INTERNATIONAL OCEAN DISCOVERY PROGRAM

NSF

# 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) FY22 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 under way during this quarter);
- Clearance, permitting, and environmental assessment activities;
- Expedition operations (including a site map for each expedition under way during this quarter, a coring summary table for each expedition completed during the quarter, 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)[1] | Dates[2] | Total days (port/sea) | Days at sea (transit[3]/ ops) | Co-Chief Scientists | Expedition Project Manager/ Contact |
|---|---|---|---|---|---|---|---|
| Agulhas Plateau Cretaceous Climate | 392 | Cape Town, South Africa | 5 February–7 April 2022 | 61 (5/56) | 56 (6/50) | G. Uenzelmann-Neben<br>S. Bohaty | L. Childress |
| South Atlantic Transect 1 | 390 | Cape Town, South Africa | 7 April–7 June 2022 | 61 (5/56) | 56 (17/39) | R. Coggon<br>J. Sylvan | E. Estes |
| South Atlantic Transect 2 | 393 | Cape Town, South Africa | 7 June–7 August 2022 | 61 (5/56) | 56 (17/39) | D. Teagle<br>J. Reece | T. Williams |
| Non-IODP (Tie up and maintenance) (7 August–10 September 2022) (34 days) | | | | | | | |
| Transit and Return to Walvis Ridge Hotspot | 397T | Cape Town, South Africa | 10 September-11 October | 31 (2/29) | 29 (22/7) | W. Sager<br>K. Hoernle | P. Blum |
| Iberian Margin Paleoclimate | 397 | Lisbon, Portugal | 11 October–11 December 2022 | 61 (5/56) | 56 (4/52) | D. Hodell<br>F. Abrantes | C. Alvarez Zarikian |
| Hellenic Arc Volcanic Field | 398 | Tarragona, Spain | 11 December 2022–10 February 2023 | 61 (5/56) | 56 (6/50) | T. Druitt<br>S. Kutterolf | L. LeVay |
| Non-IODP (Transit and maintenance) (10 February–12 April 2023; Heraklion, Greece to Ponta Delgada, Portugal) (61 days) | | | | | | | |

| Expedition | | Port (origin)[1] | Dates[2] | Total days (port/sea) | Days at sea (transit[3]/ ops) | Co-Chief Scientists | Expedition Project Manager/ Contact |
|---|---|---|---|---|---|---|---|
| Building Blocks of Life, Atlantis Massif | 399 | Ponta Delgada, Portugal | 12 April–12 June 2023 | 61 (5/56) | 56 (8/48) | A. McCaig<br>S. Lang | P. Blum |
| Reykjanes Mantle Convection and Climate | 395 | Ponta Delgada, Portugal | 12 June–12 August 2023 | 61 (5/56) | 56 (11/45) | R. Parnell-Turner<br>A. Briais | L. LeVay |
| NW Greenland Glaciated Margin | 400 | St. John's, Canada | 12 August–12 October 2023 | 61 (5/56) | 56 (13/43) | P. Knutz<br>A. Jennings | L. Childress |

Notes: NA = not applicable.
[1]Ports subject to change, pending issues related to the COVID-19 pandemic.
[2]The start date reflects the initial port call day. The vessel will sail when ready.
[3]Preliminary total estimated transit (i.e., to and from operational area and between sites).

## Expedition 395C: Reykjanes Mantle Convection and Climate: Crustal Objectives

### Postexpedition activities

A core description and hard rock sampling party was held 9–27 May at the Gulf Coast Repository (GCR) in College Station, Texas.

## Expedition 396: Mid-Norwegian Continental Margin Magmatism

### Postexpedition activities

A postcruise sampling party was held 21–28 April at the Bremen Core Repository (BCR) at the University of Bremen in Germany.

## Expedition 391: Walvis Ridge Hotspot

### Postexpedition activities

A postcruise editorial meeting was held 25–29 April in College Station, Texas. A postcruise sampling party was held 13–17 June at the BCR.

## Expedition 392: Agulhas Plateau Cretaceous Climate

Table 2.2. Expedition 392 science party staffing breakdown

| Member country/consortium | Participants | Co-Chief Scientists |
|---|---|---|
| USA: United States Science Support Program (USSSP) | 12 | |
| Japan: Japan Drilling Earth Science Consortium (J-DESC) | 2 | |
| Europe and Canada: European Consortium for Ocean Research Drilling (ECORD) Science Support and Advisory Committee (ESSAC) | 10 | 2 |
| Republic of Korea: Korea Integrated Ocean Drilling Program (K-IODP) | 0 | |

| Member country/consortium | Participants | Co-Chief Scientists |
|---|---|---|
| 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: Four scientists were not able to sail as a result of COVID-19 restrictions and travel problems.

Figure 2.1 Expedition 392 site map

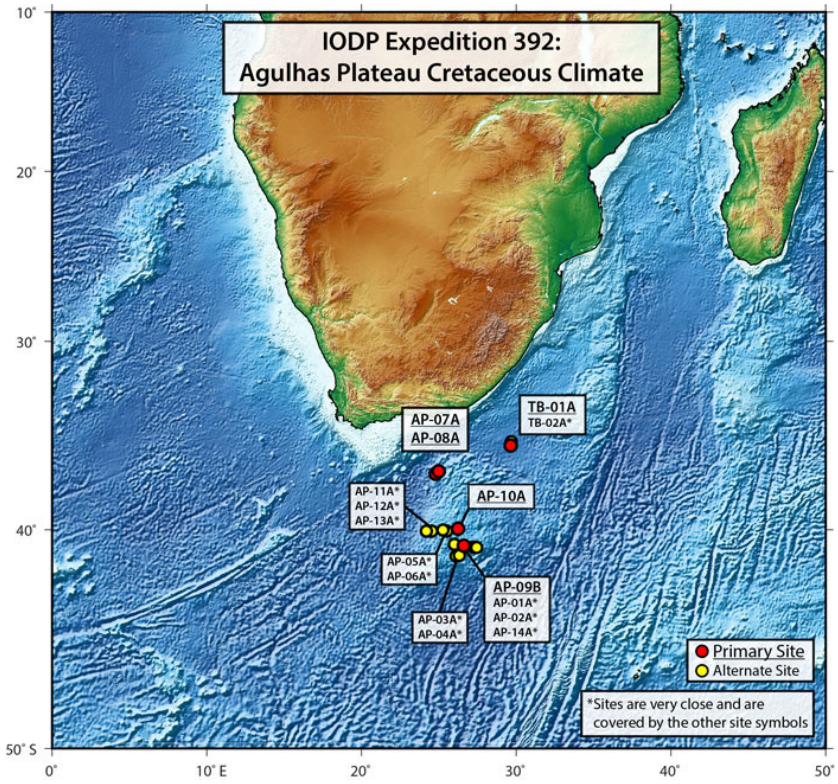



Table 2.2 Expedition 392 coring summary

| Site | Hole | Latitude | Longitude | Water depth (mbsl) | Cores (N) | Total penetration (DSF) | Interval cored (m) | Core recovered (m) | Recovery (%) |
|---|---|---|---|---|---|---|---|---|---|
| U1579 | U1579A | 39°57.0659'S | 26°14.1729'E | 2498.32 | 9 | 84.1 | 84.1 | 73.51 | 87 |
| | U1579B | 39°57.0565'S | 26°14.1729'E | 2492.92 | 27 | 167.2 | 167.2 | 167.08 | 100 |
| | U1579C | 39°57.0588'S | 26°14.1785'E | 2492.92 | 18 | 186.9 | 93.4 | 74.27 | 80 |
| | U1579D | 39°57.0725'S | 26°14.1793'E | 2492.92 | 64 | 727.2 | 597.2 | 440.84 | 74 |
| **Site U1579 totals** | | | | | **118** | **1165.4** | **941.9** | **755.7** | **80** |
| U1580 | U1580A | 40°47.1535'S | 26°36.4137'E | 2560.33 | 68 | 533.9 | 533.9 | 351.03 | 66 |
| | U1580B | 40°47.1542'S | 26°36.4282'E | 2560.33 | 4 | 77.8 | 37.8 | 23.78 | 63 |
| **Site U1580 totals** | | | | | **72** | **611.7** | **571.7** | **374.81** | **66** |
| U1581 | U1581A | 35°40.8654'S | 29°39.0055'E | 4591.35 | 40 | 300.5 | 300.5 | 273.24 | 91 |
| | U1581B | 35°40.8660'S | 29°39.0192'E | 4591.35 | 73 | 997.1 | 708.1 | 539.46 | 76 |
| **Site U1581 totals** | | | | | **113** | **1297.6** | **1008.6** | **812.7** | **81** |

| Site | Hole | Latitude | Longitude | Water depth (mbsl) | Cores (N) | Total penetration (DSF) | Interval cored (m) | Core recovered (m) | Recovery (%) |
|---|---|---|---|---|---|---|---|---|---|
| U1582 | U1582A | 37°1.5002’S | 24°59.7168’E | 3429.36 | 7 | 48 | 48 | 18.48 | 39 |
| | U1582A | 37°1.5003’S | 24°59.7114’E | 3429.36 | 4 | 55.6 | 19.3 | 10.08 | 52 |
| **Site U1578 totals** | | | | | **11** | **103.6** | **67.3** | **28.56** | **42** |
| **Expedition 392 totals** | | | | | **314** | **3,178.3** | **2,589.5** | **1,971.77** | **76** |

### Science summary

During Expedition 392, three sites were drilled on the Agulhas Plateau and one site was drilled in the Transkei Basin. This region was positioned at paleolatitudes of ~65°–58°S during the Late Cretaceous (100–66 Ma) and within the new and evolving gateway between the South Atlantic, Southern Ocean, and southern Indian Ocean basins. Recovery of basement rocks and sedimentary sequences from the Agulhas Plateau and Transkei Basin drill sites provides a wealth of new data to (1) determine the nature and origin of the Agulhas Plateau; (2) significantly advance the understanding of how Cretaceous temperatures, ocean circulation, and sedimentation patterns evolved as $CO_2$ levels rose and fell and the breakup of Gondwana progressed; (3) document long-term paleoceanographic variability through the Late Cretaceous and Paleogene; and (4) investigate geochemical interactions between igneous rocks, sediments, and pore waters through the life cycle of a large igneous province (LIP). Postcruise analysis of Expedition 392 cores will allow testing of competing hypotheses concerning Agulhas Plateau LIP formation and the role of deep ocean circulation changes in controlling Late Cretaceous–early Paleogene climate evolution.

## Expeditions 390 and 393: South Atlantic Transect 1 and 2

### Planning

Expedition 390 and 393 port call logistics were finalized during the quarter. For both expeditions, preparations for freight were completed, and the shipments were dispatched. The science party and crew for Expedition 390 arrived in Cape Town, South Africa, on 2 April and boarded the vessel on 9 April after a 7-day hotel quarantine. The vessel departed Cape Town on 12 April and completed operations at three sites. On 23 May, during operations in Hole U1559D, the bearings failed on the forward drawworks brake. The vessel departed early for Cape Town so that a replacement brake could be installed before the start of Expedition 393. Because of the drawworks brake failure, the operations plan for Expedition 393 was changed, and the three originally planned sites plus Site U1559 were revisited in June.

### Staffing

Table 2.3 Expedition 390 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 |
| Republic of Korea: Korea Integrated Ocean Drilling Program (K-IODP) | 1 | |
| People’s Republic of China: IODP-China | 2 | |

| Member country/consortium | Participants | Co-Chief Scientists |
|---|---|---|
| Australia and New Zealand: Australia/New Zealand IODP Consortium (ANZIC) | 0 | |
| India: Ministry of Earth Science (MoES) | 1 | |

Note: Six scientists were not able to sail as a result of COVID-19 restrictions and travel problems; two joined Expedition 393.

Figure 2.2 Expedition 390 site map

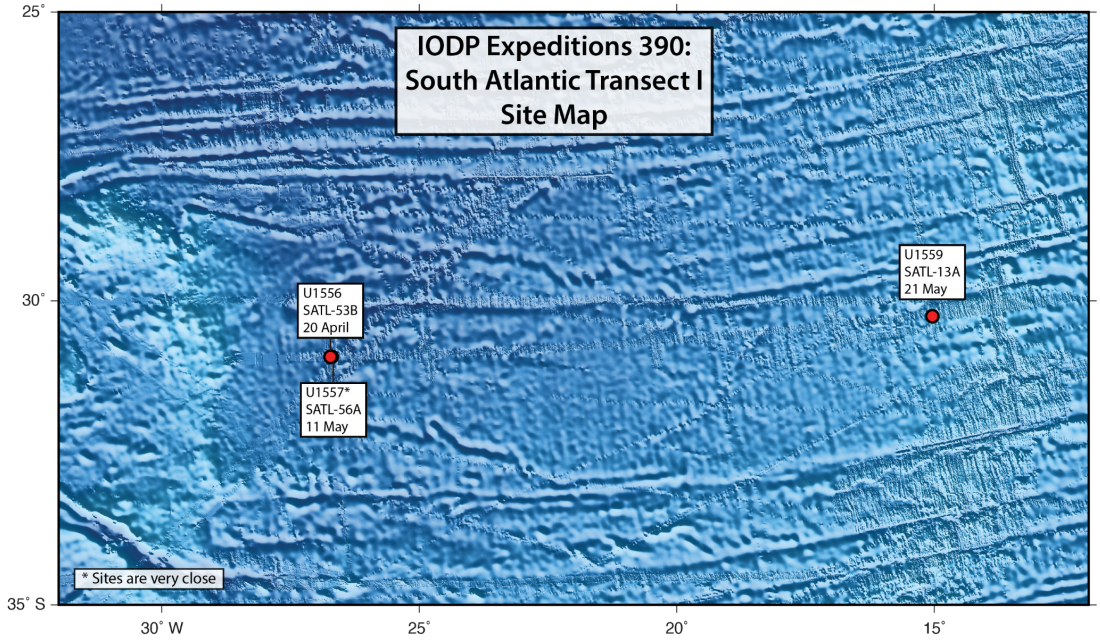



Table 2.4 Expedition 390 coring summary

| Site | Hole | Latitude | Longitude | Water depth (m) | Cores (N) | Total penetration (DSF) | Interval cored (m) | Core recovered (m) | Recovery (%) |
|---|---|---|---|---|---|---|---|---|---|
| U1556 | U1556B | 30°56.5244’S | 26°41.9472’W | 5001.8 | 58 | 633.2 | 342.2 | 191.87 | 56 |
| | U1556C | 30°56.5406’S | 26°41.9472’W | 5005.7 | 32 | 280.3 | 280.3 | 283.81 | 101 |
| | U1556D | 30°56.5514’S | 26°41.9472’W | 5003.1 | 1 | 9.5 | 9.5 | 9.67 | 102 |
| | U1556E | 30°56.5622’S | 26°41.9472’W | 5003.1 | 5 | 43.1 | 43.1 | 43.30 | 100 |
| **Site U1556 totals:** | | | | | **96** | **966.1** | **675.1** | **528.65** | **78** |
| U1557 | U1557D | 30°56.4651’S | 26°37.7892’W | 5010.8 | 13 | 684.7 | 109.1 | 71.28 | 65 |
| **Site U1557 totals:** | | | | | **13** | **684.7** | **109.1** | **71.28** | **65** |
| U1559 | U1559C | 30°15.6505’S | 15°2.0911’W | 3058.0 | 7 | 60.9 | 60.9 | 56.81 | 93 |
| | U1559D | 30°15.6593’S | 15°2.0906’W | 3057.7 | 8 | 59.4 | 59.4 | 43.6 | 73 |
| **Site U1559 totals:** | | | | | **15** | **120.3** | **120.3** | **100.41** | **83** |
| **Expedition 390 totals:** | | | | | **124** | **1,771.1** | **904.5** | **700.34** | **77** |

### Science summary

Expedition 390 is a joint project with Expedition 393. A science summary will be provided after Expedition 393 is completed. The Expedition 390 *Preliminary Report* is under embargo after the *JOIDES Resolution* Facility Board (JRFB) approved a request made by the Expedition 390 and 393 science party, who intend to submit a high-impact paper.

## Expedition 397T: Transit and Return to Walvis Ridge Hotspot

### Planning

The JRFB approved the request to core two more Walvis Ridge sites during Expedition 397T. A *Scientific Prospectus* is in preparation and will likely be published in July. The science party was instructed to submit additional sample requests. Following revisions made to the COPE protocol, participants will be required to follow a 4-day hotel quarantine, followed by a 6-day shipboard mitigation period.

### Staffing

A few scientists plan to sail during Expedition 397T, including one or both of the Co-Chief Scientists and the Onboard Outreach Officer who sailed during Expedition 391.

### Clearance, permitting, and environmental assessment activities

The Co-Chief Scientists proposed adding a new site and requested drilling through the sediment to increase the time available for coring hard rock. The Environmental Protection and Safety Panel (EPSP) approved the new site and the drill-down request based on the thin sediment cover and Expedition 391 chemistry data. A request for the new site was sent to Namibia, and approval to visit the new site was received on 28 June.

## Expedition 397: Iberian Margin Paleoclimate

### Planning

All ship- and shore-based science party members submitted their postcruise research plans and preliminary sample requests. In addition to the standard introductory virtual meetings, discussions about shipboard sampling strategies and postcruise research activities took place.

### Staffing

Because of the high core recovery expected, there will be two curators sailing during the expedition. Two Onboard Outreach Officers have accepted, but only one will sail. The other will be shore based.

### Clearance, permitting, and environmental assessment activities

Portuguese authorities confirmed receipt of the clearance application. Additionally, Portugal selected an Observer for the expedition who is a scientist and will join the science party. Final confirmation from Portugal is pending.

## Expedition 398: Hellenic Arc Volcanic Field

### Planning

All science party members were asked to submit their research plans by mid-July.

### Staffing

The first round of invitations was completed, and the second round of invitations was sent out. With the science party almost complete, a welcome letter was sent out in late May. The special calls for a seismologist/stratigraphic correlator and two micropaleontologists were successfully staffed. Another special call for a paleomagnetist was issued and closed in early June. In late June, an Onboard Outreach Officer was invited but declined, and the other applications are being assessed.

### Clearance, permitting, and environmental assessment activities

The Marine Scientific Research application was completed during the quarter and submitted to the US State Department on 29 April. The required Environmental Evaluation was completed and is being reviewed before submission to NSF.

## Expedition 399: Building Blocks of Life, Atlantis Massif

### Planning

The *Scientific Prospectus* was completed and published in June.

### Staffing

The Program Member Office (PMO) nominations were received, and the first and second rounds of invitations were sent out. Additionally, a special call was issued for a metamorphic petrologist, and applications are being reviewed. Two berths were set aside for Onboard Outreach Officers, and two invitations were issued.

### Clearance, permitting, and environmental assessment activities

JRSO initiated the preparation of the Environmental Evaluation required by NSF.

## Expedition 395: Reykjanes Mantle Convection and Climate

### Planning

To make the best use of operations time, a new site (REYK-14A) was proposed. The site was evaluated by the EPSP and moved to a new location. The new site (REYK-14B) was reviewed and approved by the JRFB at the May meeting.

### Staffing

There are currently three science berths open (stratigraphic correlator/cyclostratigrapher, physical properties specialist, and micropaleontologist). A special call was sent out with an application deadline of 18 July, with the PMOs nominations expected early August. The Onboard Outreach Officer application call opened in late March and closed 6 June.

### Clearance, permitting, and environmental assessment activities

Clearance will be required from Greenland/Denmark for new Site REYK-14B. Additionally, the already approved Environmental Evaluation was revised to include the new site, and NSF was informed.

## Expedition 400: NW Greenland Glaciated Margin

### Planning

An in-person precruise meeting was held 2–4 May in College Station, Texas. The *Scientific Prospectus* will be published early next quarter. Additionally, a United States Science Support Program (USSSP) informational webinar was held on 11 May.

### Staffing

The call for applications opened on 1 April and closed on 1 June. The PMO nominations are expected in early August. The Onboard Outreach Officer position application call closed on 6 June.

# 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 FY22 (January–March) was submitted to NSF on 27 April (**http://iodp.tamu.edu/publications/AR/FY22/FY22_Q2.pdf**).

## Liaison activities

JRSO reports to and liaises with funding agencies and IODP-related agencies (e.g., JRFB, JRFB advisory panels, 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**).

## Planning meetings

Mitch Malone (JRSO Director) attended the IODP Forum meeting held 7–8 April in Vienna, Austria. Malone, Gary Acton (JRSO Assistant Director), and Katerina Petronotis (Manager of Science Operations) attended the JRFB meeting held 24–26 May in Washington DC. Petronotis and Leah LeVay (Supervisor of Science Support) attended the IODP Science Evaluation Panel meeting held June 27–30 in Southampton, UK.

## Project portfolio management

JRSO maintained the Core Orientation project on hold and continued work on the GEODESC, X-Ray Linescan Core Imager, New Rig Instrumentation System, Sample and Data Request Replacement, Google Migration project, and GCR Core Storage Expansion projects.

### GEODESC

*Scope and deliverables*

The purpose of this project is to replace the DESClogik IODP core description interface, with the principal goal of increasing performance and reliability. The GEODESC project proposes to design, build,

and deliver a new and improved core description tool set. The project manager is Peter Blum (JRSO Expedition Project Manager [EPM]).

*Status*

JRSO tested the first live deployment of the core description capabilities (template manager without micropaleontology functions, data capture, and data access applications) during a 3-week Expedition 395C core description party in College Station, Texas. Developers received feedback and implemented fixes in near–real time. Development of the micropaleontology functions and miscellaneous repairs continue. The estimated project completion date remains October 2022.

## X-Ray Linescan Core Imager

*Scope and deliverables*

The purpose of this project is to design and fabricate a standalone X-Ray Linescan Imager (XSCAN) to replace the prototype X-Ray Imager that has been in use since Expedition 379 (Amundsen Sea West Antarctic Ice Sheet History). Like the prototype, the XSCAN will provide the fundamental 2-D X-ray images for scientists to observe structures or objects such as dropstones, lamination, shells, burrows, faults, and fractures that might aid in the interpretation of geologic processes, depositional settings, environmental conditions, alteration, and tectonics. Similarly, it will produce images that might aid in core-splitting decisions aimed at targeting specific material for sampling or minimizing damaging or disturbing important structures or objects. Unlike the prototype, the XSCAN will be capable of producing line-scanned X-ray images of each core section that can be viewed in the LIVE application or used for stratigraphic correlation or other analyses similar to the images produced by the Section Half Imaging Logger. Additionally, the XSCAN will be able to rotate the source and detector around the core, which will provide different angular views of structures within the sections and could also be incorporated into volume estimates to be used to improve other datasets. The project manager is Margaret Hastedt (JRSO Research Specialist).

*Status*

JRSO still awaits delivery of the camera, which was projected to ship in July. The project team worked on the database components and structure of the XSCAN LORE Report, which will closely follow those for the Section Half Imaging Logger (SHIL). The team also finalized configuration and upload files and file-naming conventions used for the scanner's products. The estimated project completion date was changed to March 2023.

## Core Orientation

*Scope and deliverables*

The purpose of this project is to (1) develop a new nonmagnetic orientation tool that will be directly attached to the core barrel and (2) improve methods used to align the core liner within the core barrel. Specifically, a new gyroscopic orientation tool (GOT) will be developed in house that will be attached directly to the core barrel, avoiding possible problems with misalignment between the sinker bars and core barrel. Because the GOT does not use the magnetic field for orientation, the large magnetic fields associated with the drill string are irrelevant. To improve the alignment of the core liner, JRSO will investigate whether it is possible to modify the advanced piston corer core barrels to allow the core liner to be aligned and attached at both ends. Currently, the top of the liner is oriented and attached to the core

barrel with a screw but the bottom of the liner is free to twist, which it might do as sediment enters the liner. The project manager is Bill Rhinehart (JRSO Operations Engineer).

*Status*

This project remains on hold pending completion of the Rig Instrumentation System project. This is a very complex project with many unknowns. The project completion date remains open ended

## 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*

JRSO continued testing and fine-tuning the new Rig Instrumentation System while under way. JRSO intends to install and continue testing interfaces and configuration/calibration processes during Expeditions 397P and 397T (tie-up and transit). The estimated project completion date remains December 2022.

## Sample and Data Request Replacement

*Scope and deliverables*

The scope of this project is to design and implement a replacement program for the current IODP sample and data request replacement (SaDR) application. This project will be used for pre-expedition research planning, along with all postexpedition sample requests, including X-ray fluorescence (XRF) scanning and education and outreach requests. All existing SaDR functions will be carried over to the replacement program. Some additional functions will be added to overcome shortcomings of SaDR. Work on this project will be conducted in four main phases: creating new requests, administrative functions, integration with the Sample Planning Tool (SPLAT), and data migration from SaDR to the replacement.

*Status*

JRSO tested the "create new request functions," highlighting many bugs and a few features that still need further development. Additionally, JRSO developers deployed a new version of Auther that will be used by the Sample and Data Request Management System (SDRM) to control user administrative privileges. The estimated project completion date was changed to October 2022.

## GCR Core Storage Expansion

*Scope and deliverables*

The scope of this project is to plan expansion of the core storage facilities within the GCR. This planning will consider how to provide the best long-term storage and preservation of core material while maximizing available space within the GCR at a reasonable budget.

*Status*

Progress remained slow this quarter as a result of resource commitments for other projects. The estimated project completion date was changed to December 2022.

### Google Migration

*Scope and deliverables*

The scope of this project is to migrate all Google applications including Drive, Sites, Calendar files, and objects from the Google scientific-ocean-drilling.org domain to the Google TAMU.edu domain. Included in this migration is the transfer of responsibility for Google audit and compliance to TAMU's Division of IT.

*Status*

JRSO worked with TAMU's Division of IT to set up a test Google Workspace, which included email, calendar data, a sample site, shared drive content, and users. Preliminary test results determined that more review and testing is needed before scheduling the migration. Additionally, the project slowed considerably when TAMU handed most of the work to a new IT engineer who was already very busy working on other projects. The estimated project completion date was changed to September 2022.

## 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 weekly to discuss evolving travel/shipping restrictions as the pandemic progresses.

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 high-temperature cable will be received and shipped to the vessel in the next quarter.

## 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); conducting long-range operational planning for out-year JRSO expeditions; 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

Onboard Outreach Officers sailed during Expeditions 392 and 390, and support was provided for social media postings, videoconferences, and other activities. A training session for the USSSP Onboard Outreach Program is scheduled for 24–26 August 2022 at JRSO in College Station, Texas, for Expeditions 397, 398, 399, 395, and 400. An exhibit for IODP Expedition 398 is being planned to be displayed at the cultural center in Fira on Santorini in mid-October. There are ongoing discussions with the Co-Chiefs, Onboard Outreach Officers, USSSP, and local scientists regarding the exhibit plans.

## Other projects and activities

Leah LeVay (JRSO Supervisor of Science Support) continued to work on an NSF EarthCube grant to integrate IODP data with the paleobiology database (eIODP), supervised five student workers for this effort, and helped coordinate the June EarthCube meeting at Scripps (University of California San Diego). Trevor Williams (JRSO EPM) taught a climate change class during the spring semester and taught at the Antarctic Core School held 23–27 May at the Marine and Geology Repository at Oregon State University. Laurel Childress (JRSO EPM) supported the Pop-Up/Drill-Down Exhibit as a Co-Principal Investigator on that NSF grant. Emily Estes (JRSO EPM) is a member of the College of Geosciences Diversity and Climate Committee. All EPMs are involved with the JRSO Diversity, Equity, and Inclusion Working Group, which aims to improve inclusion and diversity at TAMU and on *JOIDES Resolution*. Finally, the EPM group supervised research projects for three undergraduate and two graduate students.

# 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

### UIC CM5017 coulometers

The new coulometers were installed on the ship and are in use. The older CM5015 units are en route to College Station, Texas, where they will be set up and made available for use by staff and visiting scientists.

### SPECIM FX10 hyperspectral imaging logger

TAS continued experiments with the FX10 camera. Image and data acquisition and further calibration testing with color standards continues. TAS is still working with the vendor to determine the origin of spectral anomalies, which may be a function of the FX10 camera itself.

### X-ray core section imager (XSCAN Project)

TAS is still awaiting the TDI X-ray camera from Hamamatsu, although we were informed that it will ship in early July. TAS had to return the “loaner” Hamamatsu camera but was able to conduct many experiments before it was removed. Additionally, one EPM scanned a number of high-latitude Southern Ocean cores during the test period and collected very impressive images that clearly showed internal features (e.g., drilling disturbance, ice-rafted debris, and finely laminated sediments). The original X-ray imager remains operational on board for the interim.

### Scanning electron microscope—energy dispersive spectrophotometer

JRSO received the repaired energy dispersive spectrophotometer (EDS) detector, and the system will be shipped to the vessel for installation during Expedition 397T. This system will replace the Hitachi TM-3000 scanning electron microscope (SEM) on the ship, and the older SEM will be transferred to College Station, Texas, where it will be available for use by visiting scientists and staff.

### Carbon-hydrogen-nitrogen-sulfur analyzer

The new carbon-hydrogen-nitrogen-sulfur (CHNS) analyzer was installed on the ship and is now in use. The older unit was shipped to shore. When it arrives, it will be installed at the GCR for use by visiting scientists and staff.

### Handheld/portable X-ray fluorescence spectrometer

The Olympus DELTA Premium portable X-ray fluorescence spectrometer (pXRF) had an X-ray source failure and was shipped to shore, and the Brüker AXS Tracer-5g pXRF was sent to the vessel to provide ED-XRF capabilities. The data will be stored as tables until the uploader and reports are completed.

### Icefield MI-5 core orientation tools

One Icefield MI-5 tool continues to have electrical problems and was returned to shore once again. JRSO may have to shelve that instrument and rely on the other two Icefield tools and the two Minex FlexIT tools that remain in service.

## 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.

### Curation and Core Handling

The Curation LWG did not meet this quarter because there were no curatorial issues raised in recent cruise evaluations.

### Geochemistry and Microbiology

The Geochemistry LWG did not meet this quarter but will meet early next quarter to discuss ongoing issues and recent cruise evaluations.

### Geology

Although the Geology LWG did not meet this quarter, the membership was heavily engaged in getting the GEODESC program up and running. Furthermore, the Expedition 395 science party conducted their core description party utilizing the new description framework and software, and the remaining effort was directed toward getting GEODESC ready for use during Expedition 397.

### Geophysics

The Geophysics LWG met at the end of last quarter and will meet next quarter to discuss ongoing issues and recent cruise evaluations.

# 7. Development, IT, and Databases

The Development, IT, and Databases (DITD) department manages data supporting IODP activities, operates and maintains shipboard and shore-based computer and network systems, and monitors and

protects JRSO network and server resources to ensure safe, reliable operations and security for IODP data and IT resources. Additional activities include managing expedition and postexpedition data, providing long-term archival access to data, and supporting JRSO IT services.

# Expedition data

## LIMS database

Data from Expedition 392 were added to the LIMS database on shore this quarter. These data are currently under moratorium and available only to the Expedition 392 scientists. No data were released from moratorium during this quarter.

## 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

| Rank | Janus database | | LIMS database | |
|---|---|---|---|---|
| | Country | Visitor sessions | Country | Visitor sessions |
| 1 | United States | 698 | United States | 935 |
| 2 | China | 247 | United Kingdom | 554 |
| 3 | Australia | 134 | China | 515 |
| 4 | United Kingdom | 121 | Germany | 182 |
| 5 | Germany | 97 | Japan | 131 |
| 6 | France | 60 | Canada | 85 |
| 7 | South Korea | 50 | India | 66 |
| 8 | Canada | 41 | France | 58 |
| 9 | Japan | 40 | Australia | 49 |
| 10 | Netherlands | 33 | Norway | 45 |
| 11 | Other | 214 | Other | 357 |
| | **Total** | **1,735** | **Total** | **2,977** |

Table 7.2. Top 20 database web queries

| Rank | Janus database | | LIMS database* | |
|---|---|---|---|---|
| | Query | Views | Query | Views |
| 1 | Images—core photo | 1,200 | Sample | 1,313 |
| 2 | Sample | 1,006 | Images—core photo | 838 |
| 3 | Site summary | 764 | Images—section line scans | 685 |
| 4 | X-ray—XRD | 567 | Hole summary | 684 |
| 5 | Core summary | 560 | Section summary | 548 |
| 6 | Chemistry—carbonates | 474 | Chemistry—carbonates | 484 |
| 7 | Chemistry—interstitial water | 430 | Core summary | 465 |
| 8 | Site details | 389 | Chemistry—interstitial water | 272 |
| 9 | Hole summary | 366 | Physical properties—GRA | 264 |
| 10 | Physical properties—GRA | 316 | Physical properties—MS | 248 |
| 11 | Physical properties—MS | 309 | Magnetism—SRM | 213 |

| Rank | Janus database | | LIMS database* | |
|---|---|---|---|---|
| | Query | Views | Query | Views |
| 12 | Images—closeup | 299 | Physical properties—MAD | 211 |
| 13 | Paleontology—age model | 233 | X-ray—XRD | 183 |
| 14 | Images—prime data images | 229 | Physical properties—NGR | 170 |
| 15 | Special holes | 219 | X-ray—XRF | 168 |
| 16 | Physical properties—PWS | 193 | Magnetism—MSPOINT | 151 |
| 17 | Physical properties—PWL | 192 | Images—closeup | 149 |
| 18 | Physical properties—smear slides | 185 | Physical properties—color reflectance | 143 |
| 19 | Physical properties—MAD | 185 | Physical properties—downhole temp. | 138 |
| 20 | Chemistry—rock eval | 172 | Chemistry—ICP-AES | 133 |
| | Other | 1,619 | Other | 2,635 |
| | **Total** | **9,907** | **Total** | **10,095** |

Table 7.3. Data requests to the TAMU Data Librarian

| Requests | Total |
|---|---|
| How to | 11 |
| Data not available | 1 |
| Ages | 1 |
| | |
| | |
| | |
| **Total** | **13** |

| Country | Total |
|---|---|
| USA | 6 |
| United Kingdom | 3 |
| Canada | 1 |
| Cyprus | 1 |
| Norway | 1 |
| Taiwan | 1 |
| **Total** | **13** |

## Network systems operation, maintenance, and security

JRSO conducted routine system maintenance in accordance with the TAMU IT security policy.

## Other projects and activities

JRSO continued to collaborate with ODL on the purchase of a new, higher resolution closed circuit camera system used for monitoring important activities outside the skin of the ship. JRSO will begin to configure and test text overlay functionality after a sample Axis camera arrives in College Station, Texas, in early July.

# 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 390 and 393. Curation procedures were discussed with the Expedition 400 Co-Chief Scientists at their pre-expedition meeting. JRSO also provided curatorial support to the BCR with sample list preparation and attending the Expedition 396 postexpedition sampling party. A postexpedition core description and sampling party was held for the Expedition 395 science party members to describe cores collected during Expeditions 384 and 395C.

More than 2.5 km of core was described in 3 weeks, and personal samples were collected from basement cores.

## Sample requests and core sampling

The following table provides a summary of the 4,158 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 |
|---|---|---|
| 093414IODP, Basch, Germany | 123 | 1 |
| 093599IODP, Barnet, United Kingdom | 454 | 0 |
| 093583IODP, Zhang, USA | 87 | 0 |
| 093399IODP, Li, China | 47 | 0 |
| 093660IODP, Schwark, Germany | 126 | 0 |
| 089178IODP, Black, USA | 32 | 0 |
| 093921IODP, Sartori, Brazil | 58 | 0 |
| 093944IODP, Ghosh, India | 112 | 0 |
| 094002IODP, Scholz, India | 53 | 0 |
| 094137IODP, Friedrich, Germany | 227 | 0 |
| 094173IODP, Yan, China | 35 | 0 |
| 094194IODP, Bhowmick, India | 433 | 0 |
| 094285IODP, Wubben, Netherlands | 307 | 0 |
| 094265IODP, Schaefer, Germany | 147 | 0 |
| 094318IODP, Zhang, USA | 120 | 0 |
| 094379IODP, Zhang, USA | 142 | 0 |
| 094391IODP, Kapuge, USA | 64 | 0 |
| 094229IODP, McArthur, USA | 54 | 0 |
| 094487IODP, Zhang, USA | 130 | 0 |
| 094552IODP, Jones, Germany | 72 | 0 |
| 094535IODP, Liu, China | 151 | 0 |
| 094626IODP, Ochoa, Peru | 0 | 1 |
| 094637IODP, Dove, USA | 0 | 1 |
| 094897IODP, Izaguirre, USA | 42 | 0 |
| 094708IODP, Barham, Australia | 21 | 0 |
| 094725IODP, Yu, China | 188 | 0 |
| 094652IODP, Zhang, USA | 101 | 0 |
| 094868IODP, Burkett, USA | 305 | 0 |
| 094875IODP, Neofitu, Sweden | 22 | 0 |
| 094915IODP, Pallone, USA | 0 | 2 |
| 095056IODP, Anderson, USA | 96 | 0 |
| 095101IODP, McKay, New Zealand | 10 | 0 |

| Sample request number, name country | Number of samples taken | Number of visitors |
|---|---|---|
| 095168IODP, Williams, USA | 0 | 0 |
| 095182IODP, Bablon, France | 8 | 0 |
| 095190IODP, Hoefig, USA | 0 | 2 |
| 095337IODP, Yanquanshu, China | 32 | 0 |
| 094781IODP, Sonenjin, South Korea | 55 | 0 |
| 095485IODP, Herbert, USA | 438 | 0 |
| 095610IODP, Liu, China | 19 | 0 |
| 095678IODP, Clark, USA | 98 | 1 |
| 09570IODP, Dunlea, USA | 55 | 0 |
| 095720IODP, Liu, China | 40 | 0 |
| 095675IODP, Regnier, USA | 36 | 0 |
| 095909IODP, Barrett, United Kingdom | 25 | 0 |
| 096071IODP, Campbell, USA | 2 | 0 |
| 096129IODP, Paytan, USA | 11 | 0 |
| 096216IODP, Auderset, Germany | 127 | 0 |
| 096474IODP, Wang, USA | 64 | 0 |
| 096600IODP, Kozdon, USA | 53 | 0 |
| Tours/demonstrations (6) | 7 | 105 |
| **Totals** | **4,158** | **112** |

## 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 provided tours to four TAMU classes and hosted a class laboratory exercise for students to get hands-on experience in core description while also testing the new GEODESC program. Two tours were provided to middle school students as part of the Summer Science Safari summer camp.

## Onshore XRF scanning

During this quarter, 550 core sections and discrete samples 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 | 392, Childress, Bohaty, Jana, Mossell, Lopez, USA | 141 | 73 | | |
| Personal | 64, Hoefig, Yeon, USA | | 98 | 98 | |
| Personal | 202, Ochoa, Peru | 100 | | | |
| Programmatic | 396, Alvarez-Zarikian, USA | 20 | | | |
| Personal | 178, Dove, USA | 33 | | | |

| Request type | Expedition, name, country | XRF 1 | XRF 2 | SHIL | WRMSL* |
|---|---|---|---|---|---|
| Personal | 18, 129, 341, Plank, Peccia, Ding, USA | | 74 | 74 | |
| Personal | 188, Williams, USA | 11 | | | |
| **Totals** | | **305** | **245** | **183** | **0** |

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* | 10.14379/iodp.sp.390393add.2022 | |
| *Preliminary Reports* | 10.14379/iodp.pr.391.2022 | |
| Data Reports | 10.14379/iodp.proc.367368.202.2022<br>10.14379/iodp.proc.369.206.2022 | 10.14379/iodp.proc.358.201.2022 |

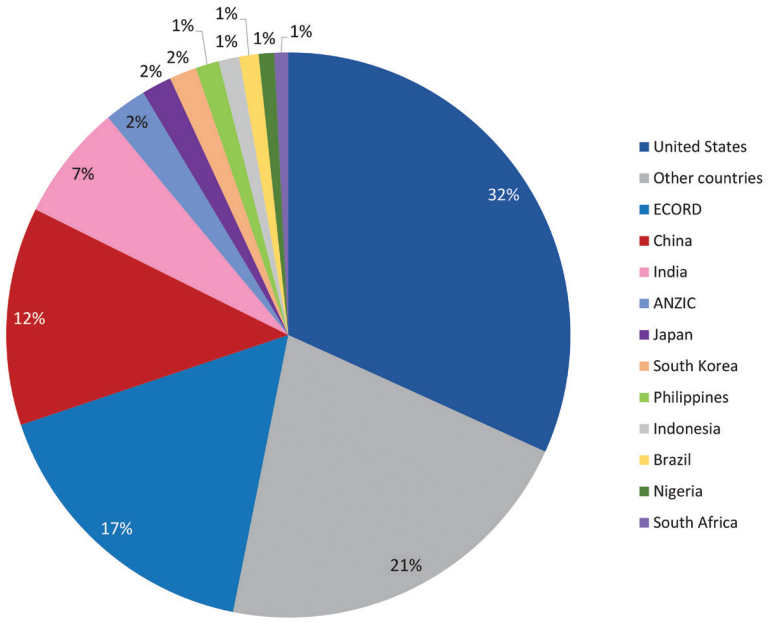
Notes: Other = European Consortium for Ocean Research Drilling Science Operator (ESO), The Institute for Marine-Earth Exploration and Engineering (MarE3), Integrated Ocean Drilling Program US Implementing Organization (USIO), and Oman expedition publications.

## 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 last quarter, the IODP TAMU website received 324,695 page views and 40,550 site visits and the IODP Publications website received 282,208 page views and 41,654 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 195 countries.

Figure 9.1. Top 12 countries/consortia of visitors to the IODP TAMU website




Notes: ECORD = European Consortium for Ocean Research Drilling, ANZIC = Australia/New Zealand IODP Consortium. ECORD countries include Austria, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

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 | FY22 Q3 page views* | FY22 Q3 site visits* |
|---|---|---|
| www-odp.tamu.edu | 205,812 | 31,841 |
| www.odplegacy.org | 3,087 | 2,028 |
| www.deepseadrilling.org | 66,340 | 10,894 |
| **Total** | **275,239** | **44,763** |

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

## Publications coordination

Data reports related to Expeditions 358, 362, 367/368, 369, 378, and 385 were accepted and/or published this quarter. Peer-reviewed postcruise research result publications related to Expeditions 349–352, 353, 355, 357, 359, 360, 362–364, 366–369, 371, 372/375, 376, 381, 382, and 385 were added to the publications database. In addition, dissertations/theses from Expeditions 349–357, 360–364, 366–369, 371–375, 379, 381, and 382 were added to the publications database.

# 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 2022 | May 2022 | June 2022 | FY22 Q3 total |
|---|---|---|---|---|---|
| IODP | 10.14379 | 9,507 | 11,590 | 11,728 | **23,318** |
| Integrated Ocean Drilling Program | 10.2204 | 9,081 | 10,892 | 10,181 | **21,073** |
| ODP/DSDP | 10.2973 | 24,327 | 22,681 | 35,041 | **82,049** |

Table 9.4. Top 10 IODP DOIs resolved during FY22 Q3

| DOI (10.14379) | Resolutions | Title |
|---|---|---|
| 10.14379/IODP.SP.390393.2020 | 416 | *Scientific Prospectus*: Expedition 390/393 South Atlantic Transect |
| 10.14379/IODP.PROC.385.2021 | 412 | *Proceedings* Volume 385: Guaymas Basin Tectonics and Biosphere |
| 10.14379/IODP.PROC.378.2022 | 387 | *Proceedings* Volume 378: South Pacific Paleogene Climate |
| 10.14379/IODP.SP.398.2022 | 386 | *Scientific Prospectus*: Expedition 398 Hellenic Arc Volcanic Field |
| 10.14379/IODP.PROC.367368.2018 | 348 | *Proceedings* Volume 367/368: South China Sea Rifted Margin |
| 10.14379/IODP.PROC.369.101.2019 | 348 | *Proceedings* Volume 369: Expedition 369 summary |
| 10.14379/IODP.PR.396.2022 | 346 | *Preliminary Report*: Expedition 396 Mid-Norwegian Margin |
| 10.14379/IODP.PR.349.2014 | 256 | *Preliminary Report*: Expedition 349 South China Sea Tectonics |
| 10.14379/IODP.PR.391.2022 | 210 | *Preliminary Report*: Expedition 391 Walvis Ridge Hotspot |
| 10.14379/OMANDP.PROC.2020 | 203 | Oman Drilling Project |

Table 9.5. Top 10 Program DOIs resolved during FY22 Q3

| DOI (10.14379, 10.2204, 10.2973) | Resolutions | Title |
|---|---|---|
| 10.14379/IODP.SP.390393.2020 | 416 | *Scientific Prospectus*: Expedition 390/393 South Atlantic Transect |
| 10.14379/IODP.PROC.385.2021 | 412 | *Proceedings* Volume 385: Guaymas Basin Tectonics and Biosphere |
| 10.14379/IODP.PROC.378.2022 | 387 | *Proceedings* Volume 378: South Pacific Paleogene Climate |
| 10.14379/IODP.SP.398.2022 | 386 | *Scientific Prospectus*: Expedition 398 Hellenic Arc Volcanic Field |
| 10.14379/IODP.PROC.367368.2018 | 348 | *Proceedings* Volume 367/368: South China Sea Rifted Margin |
| 10.14379/IODP.PROC.369.101.2019 | 348 | *Proceedings* Volume 369: Expedition 369 summary |
| 10.14379/IODP.PR.396.2022 | 346 | *Preliminary Report*: Expedition 396 Mid-Norwegian Margin |
| 10.2204/IODP.PROC.323.2011 | 294 | *Proceedings* Volume 323: Bering Sea Paleoceanography |
| 10.14379/IODP.PR.349.2014 | 256 | *Preliminary Report*: Expedition 349 South China Sea Tectonics |
| 10.2204/IODP.PROC.302.2006 | 251 | *Proceedings* Volume 302: Arctic Coring Expedition (ACEX) |

### ScienceOpen

Integrated Ocean Drilling Program and IODP expedition reports and data reports are indexed at ScienceOpen. JRSO deposited data reports from Volumes 340, 374, 367/368, and 372B/375 into ScienceOpen this quarter.

Table 9.6. 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 | Altmetric score (collection) | Number of authors | Referenced articles |
|---|---|---|---|---|---|
| *Proceedings of the International Ocean Discovery Program* collection | 807 | 20,407 | 333 | 1,990 | 9,651 |
| *Scientific Ocean Drilling Expedition Research Results* collection | 9,410 | 49,206 | 73,649 | 20,449 | 94,569 |

### Altmetric.com

JRSO contributes publications metadata to TAMU's Symplectic Elements database, which feeds data to **http://altmetric.com**, a platform that enables monitoring of the online activity surrounding academic research. This quarter, JRSO uploaded DOIs of data reports for Volumes 334, 363, and 372B/375.

## 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. Peer-reviewed postcruise research result publications related to Expeditions 302, 303/306, 311, 314/315/316, 320/321, 323–325, 337, 339, 344, and 348 were added to the publications database. In addition, dissertations/theses from Expeditions 301T–331, 333, and 335–348 were added to the publications database.

### 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. Scheduled crawls incrementally update the archive with new files. Currently, our collection houses 1.5 TB of data and more than 7.7 million files.

## 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 39,669 records for Program-related scientific ocean drilling publications from 1969 to the present. This quarter, IODP Pubs sent 460 expedition-related publication citations for consideration for inclusion in the database.

Table 9.7. Scientific Ocean Drilling Bibliographic Database statistics

| Program-related publications | April 2022 | May 2022 | June 2022 | FY22 Q3 total |
|---|---|---|---|---|
| Searches | 341 | 360 | 672 | 1,373 |
| Citation views | 164 | 158 | 188 | 510 |

## 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 301–396. 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 (**http://iodp.tamu.edu/staffdir/indiv.html**).

*European Geosciences Union General Assembly*

- Berndt, C., Planke, S., **Alvarez Zarikian, C.**, Bünz, S., Karstens, J., Svensen, H., and Manton, B., and the IODP Expedition 396 Scientific Party, 2022. Shallow-water hydrothermal venting in the North Atlantic during the Paleocene Eocene Thermal Maximum. Presented at the EGU General Assembly, Vienna, Austria, 23–27 May 2022. https://doi.org/10.5194/egusphere-egu22-2359
- Planke, S., Berndt, C., Huismans, R., Buenz, S., **Alvarez Zarikian, C.A.**, and the Expedition 396 Scientists, 2022. Operations and initial results from IODP Expedition 396: Mid-Norwegian Continental Margin Magmatism and Paleoclimate. Presented at the EGU General Assembly, Vienna, Austria, 23–37 May 2022. https://doi.org/10.5194/egusphere-egu22-1917

## Articles authored by JRSO staff

- **Alvarez Zarikian, C.A.**, Nadiri, C., Alonso-García, M., Rodrigues, T., Huang, H.-H.M., Lindhorst, S., Kunkelova, T., Kroon, D., Betzler, C., and Yasuhara, M., 2022. Ostracod response to monsoon and OMZ variability over the past 1.2 Myr. Marine Micropaleontology, 174:102–105. https://doi.org/10.1016/j.marmicro.2022.102105
- Barik, S.S., Singh, R.K., Hussain, S.M., Tripathy, S., and **Alvarez Zarikian, C.A.**, 2022. Spatial and seasonal distribution of Ostracoda in a lagoonal environment along the northeastern coast of India: implications to assess coastal ecology and paleoenvironment. Marine Micropaleontology, 174:102082. https://doi.org/10.1016/j.marmicro.2021.102082
- **Estes, E.R.**, Berti, D., Findlay, A.J., Hochella, M.F., Shaw, T.J., Yücel, M., De Carlo, E.H., and Luther, G.W., 2022. Differential behavior of metal sulfides in hydrothermal plumes and diffuse flows. ACS Earth and Space Chemistry, 6(6):1429–1442. https://doi.org/10.1021/acsearthspacechem.1c00377

# Appendix: JRSO quarterly report distribution

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