

8 September 2023

To the Past, Present, and Future Scientific Ocean Drilling Community,

Forty-two early career researchers (ECRs) from US institutions convened online and in-person in College Station, Texas for a workshop on “Establishing Early-Career Scientific Ocean Drilling (SciOD) Learning Communities” (August 8-10, 2023). Our workshop had four objectives: (1) Encourage expansive participation by specifically targeting individuals and audiences from institutions that have not been involved in SciOD; (2) Provide hands-on activities and training to leverage existing core repository archives; (3) Create, share, and archive key workshop materials and products especially as they pertain to professional development and SciOD-related opportunities; and (4) Model and steward radical earth-learning environments by creating space to discuss the entangled histories, realities, and futures of SciOD.

Participants ranged from undergraduates to associate professors and included individuals with minimal to no previous experience in SciOD, or from backgrounds, demographic groups, and institutions (e.g., two-year colleges, US Navy) that have typically been excluded from SciOD. Workshop organizers led discussions and panels on their experiences and opportunities within the current International Ocean Discovery Program (IODP). Participants completed exercises, led by staff from IODP’s *JOIDES Resolution* (JR) Science Operator and the Gulf Coast Repository (GCR), that strengthened skills in accessing SciOD databases and legacy samples. All recorded presentations and participant-created resource guides were shared with the virtual and in-person attendees, and efforts to establish an accessible, long-term archive for these materials are underway. We held an interdisciplinary panel discussion on “Ethics of Working with the Archive” that featured perspectives from the geosciences, data sciences, humanities, and anthropology.

Motivated by the NSF’s recent decision to not renew operations of the *JOIDES Resolution* and the ending of the current SciOD program in 2024, through the workshop activities we discussed what a future SciOD program should look like and what should take place in the interim. **Here we describe five high-priority actions that we deem critical for maintaining a strong US contingent of SciOD research infrastructure:**

- **INVEST in training opportunities for ECRs to prevent a critical loss of US SciOD research expertise.** Expeditions provide important international and intergenerational training opportunities for ECRs that will be lost without other mechanisms for knowledge dissemination. To address this, skill-specific workshops and short-courses should be hosted to pass along skill sets often developed during expeditions. Regular workshops providing instruction on navigating the various past SciOD program databases, reports, and publications, and requesting and collecting of legacy samples from the GCR should occur. Workshop participants greatly benefited from the opportunity to learn about existing SciOD resources and opportunities, but most importantly, the opportunity of engaging with one another. **This engagement can only occur if there is a coherent US-based SciOD community structure.**
- **PRIORITIZE new funding streams to support SciOD science at all levels.** The discontinuation of the current SciOD program will have a critical impact on funding SciOD science. Expeditions and the expedition support associated with science party participation in the current and past SciOD programs provided the samples, data, and seed funding to establish a foundation from which larger funding (e.g., NSF grants) could be pursued. Without this initial work, PIs will face greater difficulties in acquiring funding to support SciOD science and the ECRs who pursue this work. A parallel seed funding opportunity similar to the participation awards should be established for working with archived materials and legacy data. A smaller funding stream could be established for community members (including students) to visit one of the existing core repositories to sample legacy cores and use repository instruments (see a parallel grant opportunity from the [Continental Drilling Program](#)). Lastly,

a student grants program funding small projects (~\$2K to \$5K) in addition to expanded dissertation fellowships (like the existing [Schlanger Fellowship](#)) should be established to further foster participation by ECRs in SciOD.

- **ENHANCE stewardship of legacy samples to broaden access and utility.** First and foremost, this requires maintaining a fully staffed workforce of curators, technicians, and staff scientists associated with the GCR to facilitate and streamline the sample request and collection procedures and act as mentors to ECRs. Further emphasis should be put on improved policies for returning samples, including an obligation to report how returned samples have been treated or processed. This information is needed by other researchers who wish to reuse returned samples. We also suggest an amnesty policy encouraging the return of samples (e.g., from retired/late-career scientists).
- **FACILITATE opportunities for further characterization of the archived material.** It was identified during the workshop that there are many archived cores that have been minimally sampled. These cores likely do not contain areas of high-sampling priority (e.g., the PETM), however their potential utility is relatively unknown, as the foundational research needed to further interrogate these cores is lacking (e.g., no biostratigraphic framework or age model). A new funding stream should be established to support an interdisciplinary cohort of ECRs, students, and mentors to participate in a legacy core sampling party, mimicking the organization of post-expedition sampling parties. These parties would focus on cores that have been minimally sampled to conduct the foundational research needed to characterize their utility and provide the opportunity to use the repository instruments such as the XRF core scanner to generate new data. Finally, a SciOD program mechanism will also be needed to support publishing the foundational data needed to further interrogate understudied archival cores, such as current IODP Data Reports.
- **INTEGRATE cultural experts and ethical training to pursue convergent SciOD research.** The methodology of SciOD is inherently extractive and often disregards the complex human history of potential drilling locations (e.g., near island-based indigenous communities or in the waters of the Middle Passage). As scientists we often ignore these connections which negatively impacts our ability to broaden participation in SciOD and maximize the societal impact of our work. As such, we insist that the next program prioritizes incorporating cultural advisors and local community members into the drilling proposal process, and invites social scientists to develop a framework for working with archived materials that were collected without local societal considerations. Finally, we propose that scientists are required to incorporate a component of Education or Outreach in their science plans (similar to a “Broader Impacts” section) and that other types of scholars (humanists, artists, and critical theorists) could sail in order to pursue convergent research and build on the interdisciplinary nature of SciOD. The success of our panel on the “Ethics of Working with the Archive” (identified as a highlight of the activities in our post-workshop survey) demonstrates that the up-and-coming generation of Earth scientists are invested in convergent and ethical SciOD research projects.

We emphasize avenues for participating in SciOD research that can continue uninterrupted by the nonrenewal of the JR and ending of the current SciOD program. **Strong US involvement in SciOD should not be contingent on a US-based drilling vessel.** In fact, we argue that a hiatus in the program is an important opportunity to emphasize the critical discoveries that may exist within the archived material. While sailing and drilling/coring is obviously a critical endeavor, many individuals are unable to participate in expeditions for a number of reasons (e.g., disability, familial commitments, cultural limitations). These alternative avenues encourage a wider diversity of perspectives working to address critical Earth system questions and they prepare and maintain a SciOD research force that can reintegrate into drilling/coring activities if and when a new vessel comes online.

We appreciate that the 2025-2035 Decadal Survey of Ocean Sciences for the National Science Foundation will address scientific ocean drilling in its interim and final reports and consider the needs of early career researchers in the SciOD community. We thank the U.S. Science Support Program (USSSP) for funding this workshop.

Sincerely,

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