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NSF 17-018

Dear Colleague Letter (DCL): Provision of Shallow Advanced Piston Coring Capabilities on JOIDES Resolution to the U.S. Research Community: "JR100"

October 19, 2016

Dear Colleagues:

The Division of Ocean Sciences (OCE) of the National Science Foundation (NSF) is providing up to four weeks each year of access to the drill ship *JOIDES Resolution* for U.S. researchers to use the Advanced Piston Coring (APC) system to collect cores up to sub-bottom depths of 100 meters to address research on multiple aspects of geology and geophysics of the ocean basins. This program, referred to as "JR100", will not be part of the *JOIDES Resolution's* participation in the International Ocean Discovery Program (IODP), and will be funded, managed, and implemented separately from the IODP.

Proposals for JR100 coring cruises will be accepted by relevant science programs following announcement of the JOIDES Resolution FY2019 schedule after the May 2017 JOIDES Resolution Facility Board meeting. Prospective PIs are strongly encouraged to consult with a Program Officer to determine the applicable program proposal submission guidelines and deadlines.

Background

Marine sediment coring supports high impact science in a diverse array of disciplines in the geosciences. Access to reliable coring systems is essential for addressing a number of critical questions of both scientific and societal importance, including almost all of the scientific priorities outlined in the National Academy of Sciences report “[Sea Change: Decadal Survey of Ocean Sciences, 2015-2025](https://www.nsf.gov/cgi-bin/goodbye?http://nas-sites.org/dsos2015/) <<https://www.nsf.gov/cgi-bin/goodbye?http://nas-sites.org/dsos2015/>>” and supported by NSF in its [response to the report](https://www.nsf.gov/geo/oce/pubs/nsf-oce-sea-change-reply-may-11-2015.pdf) <<https://www.nsf.gov/geo/oce/pubs/nsf-oce-sea-change-reply-may-11-2015.pdf>>. Additional scientific priorities and technical developments were outlined in an [NSF-supported workshop held to identify the needs of the science community that relies on sediment and porewater samples from cores](https://www.nsf.gov/geo/oce/pubs/oce-coring-workshop-report-with-appendix-may2016.pdf) <<https://www.nsf.gov/geo/oce/pubs/oce-coring-workshop-report-with-appendix-may2016.pdf>>.

Changes in the U.S. Academic Research Fleet (ARF), among them the retirement of R/V *Knorr* and with her the long-coring system previously operated by the Woods Hole Oceanographic Institution (WHOI), have led OCE to reassess how sediment coring operations for deeper objectives (>20 m below the seafloor) will be supported moving forward. OCE has decided not to pursue modifications that would be necessary to reposition the WHOI long-coring system onto another ship in the ARF. This decision considers the recommendations of the *Sea Change* report, which outlines the need for a workable balance between investments in infrastructure and the research that uses the infrastructure and considers the availability of alternative platforms that could fulfill much of the same need.

Implementation Plan

JOIDES Resolution operates on a regional plan, and this regional plan allows for opportunities to use the vessel for additional, non-IODP missions. The ship is currently finishing operations in the Indian Ocean before it moves toward IODP operations in the southwestern Pacific and Antarctic regions, and then into the Atlantic Ocean by 2019/2020. Each spring, at its annual meeting, the *JOIDES Resolution* Facility Board (JRFB) schedules ten months of IODP drilling (5 expeditions) for the next open year of *JOIDES Resolution* operations, with the vessel in tie-up mode for the remaining two months of the year. At its Spring 2017 annual meeting (and at subsequent annual meetings), the JRFB will allocate a portion of the next available two-month tie-up period for JR100 coring operations in a geographic region reasonably near the tie-up port-of-call. The anticipated use of *JOIDES Resolution* for JR100 APC-coring operations would be on the order of four weeks/year, including transit to/from the port-of-call as well as coring time.

Following the Spring 2017 JRFB meeting, NSF-OCE will announce the specific dates and port for the next tie-up period for *JOIDES Resolution* and after that will accept proposals for the JR100 program.

Proposal Preparation

JR100 proposals will be reviewed using the two standard established NSF merit review criteria (Intellectual Merit and Broader Impacts) and be evaluated in the competitive context of the NSF core science programs. Prior to writing a

proposal to use *JOIDES Resolution* coring capabilities outlined in this Dear Colleague Letter, Principal Investigators (PIs) are strongly encouraged to contact the cognizant Program Officer of the Program to which their proposal will be submitted for guidance. Prospective PIs will also need to work with the *JOIDES Resolution* Science Operator (JRSO) prior to proposal submission to refine operational needs and provide information in the proposal regarding core-processing requirements, science party expertise and size, coring/transit times, and permitting issues. In all other aspects, a JR100 coring proposal would be identical to science proposals using a vessel that is part of the ARF, but would instead be based on the APC coring system operating on *JOIDES Resolution*.

If a proposal is successful, the NSF science program to which the proposal was submitted would provide funding for the type of items normally included in a ARF-based coring proposal including, but not limited to, funding for PI and science party salaries, core shipments, and non-standard analytical equipment required at sea, and post-cruise research funding. The OCE Integrative Programs Section will provide funding for the ship operations to implement successful proposals. This funding structure (science funding from the science program, and ship operations funding from the Ship Operations program in the Integrative Programs Section of OCE) parallels standard funding allocations throughout OCE.

JOIDES Resolution has a fully--equipped laboratory stack to process, analyze, and store cores. The JRSO will provide technical assistance to the science party for basic core processing, including cutting cores into 1.5 m sections, processing the sections through whole-core multi--sensor tracks, and storing the cores in the ship's reefer. The JRSO will also require hydrocarbon levels in cores to be monitored for potential safety or pollution hazards. Implementation of any additional core processing and/or shipboard measurements will depend on the scientific requirements and science party size and expertise, and the costs for this additional implementation would need to be included in the budget of the original proposal submission.

Science party requirements (number of participants, expertise, etc.) on the vessel must be clearly described in the NSF proposal and developed in consultation with JRSO prior to proposal submission. Science party size will be determined by a combination of the level of required shipboard core processing and funding constraints from the NSF-OCE science program(s) to which the proposal is submitted. Science party members will be subject to the same medical examination protocols <<https://www.nsf.gov/cgi-bin/goodbye?http://iodp.tamu.edu/travel/participants.html>> currently utilized by the JRSO for IODP operations.

All data collected using IODP equipment during the cruise will be provided to the PIs by the JRSO at the end of the cruise. Per normal NSF guidelines, each NSF proposal will require a Data Management Plan (See information in NSF Grant Proposal Guide <http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg> . In addition, a "Cruise Preparation Timeline" (including such items as pre-cruise meetings with the JRSO, approval of coring sites by the JRSO safety panel, staffing deadlines, shipping deadlines, etc.), developed in consultation with the JRSO, must be included in

the proposal. Access to the cores and the archival of data collected from cores (both shipboard and shore-based data) will follow the NSF Division of Ocean Sciences Sample and Data Policy https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf11060. The cores will be shipped by the JRSO (at the expense of the PI's science proposal) to a repository identified in the proposal and approved by NSF, as is the case with coring cruises that occur on any NSF-funded award using ARF or other vessels.

Site characterization requirements <https://www.nsf.gov/cgi-bin/goodbye?http://iodp.org/proposals/submitting-data> will be similar to those required for an IODP proposal to collect cores from 0-100 mbsf. As experience is gained with implementing this type of coring program, additional capabilities (e.g, taking multi-cores, performing limited ROV multibeam surveys) may be added to the JR100 program based upon community requirements, funding availability, and the ability to conduct these operations on *JOIDES Resolution*.

Proposal Submission

NSF-OCE will release another Dear Colleague Letter when the specific dates and port for the next tie-up period for JOIDES Resolution have been determined. Proposals will be accepted after this guidance has been issued. Prospective PIs should consult with the relevant NSF science programs (e.g., Marine Geology and Geophysics, or other as appropriate <https://www.nsf.gov/funding/programs.jsp?org=OCE>.) to determine specific program proposal submission deadlines.

Contact Information

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