



OCEAN
OBSERVATORIES
INITIATIVE

Ocean Observatories Initiative Community Engagement Plan

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Document Control Sheet

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1. Introduction

To achieve and accelerate important scientific outcomes, the Ocean Observatories Initiative (OOI) must continuously engage with the scientific community, educators, and other stakeholders. The overall goal is to achieve an optimized observatory with a robust, active, and inclusive OOI user community that transforms Ocean and Earth science.

This Plan provides a roadmap for Community Engagement during OOI 2.0, PYIII, commencing 1 October 2020 and ending 30 September 2023. The Plan informs development of the scope, timeline, and budget of specific Community Engagement activities that are defined in the Annual Work Plan (AWP) for each Program Year. The Community Engagement Plan is high-level and serves as a guide to increase use of OOI data in research and in the classroom.

Formal or structured education is not part of the OOI Community Engagement scope, according to direction from the National Science Foundation (NSF). However, it behooves OOI to actively support NSF-sponsored OOI educational efforts outside of the OOI 2.0 funding to help ensure that OOI data are applied and integrated into the lexicon of ocean research. OOI will link to, and promote NSF-sponsored OOI-related educational initiatives such as OOI Ocean Data Labs, Project Eddie, West Sound STEM, and other efforts undertaken by the OOI Implementing Organizations (IOs) (Woods Hole Oceanographic Institution, University of Washington, and Oregon State University).

The OOI Principal Investigator (PI), Community Engagement Manager (CEM), and IO teams implement Community Engagement activities throughout each Program Year. This collective effort is designed to culminate in a robust, engaged, growing OOI community. The OOI PI and CEM coordinate the program-wide effort and, together with the IO Principal Investigator / Project Scientists (PI/PS's), serve as the public face of the OOI. The IO PI/PS's are responsible for the execution of Community Engagement activities at their individual IOs. The OOI Facilities Board (<https://ooifb.org/wp-content/uploads/2017/04/OOIFB-Terms-of-Refererence.pdf>) and its Data Systems Committee (DSC: <https://ooifb.org/working-groups/data-systems-committee-dsc/>) also advise, support, and contribute to OOI Community Engagement activities.

This Plan incorporates recommendations from the NSF's 2020 Mid-Award Review Recommendations (Appendix A). The Plan also includes input from the Updated Science Plan, but because of its length was not included here. The updated Science Plan is available for reference [online \(https://ooifb.org/ooi-science-plan/\)](https://ooifb.org/ooi-science-plan/).

2. Goals

The OOI Engagement Plan centers on four goals:

1. Optimize the OOI by continuously improving and adapting OOI data and resources and tools through interactive community engagement.
2. Improve and expand the OOI infrastructure through community proposals/awards.
3. Build a robust, active, and inclusive OOI user community through multi-levels of interactions that raise awareness and provide next generation and PI opportunities.
4. Cultivate future OOI users by facilitating student opportunities, engaging with underserved populations and underrepresented groups, developing partnerships, and providing opportunities for early career scientists and others to use OOI data and research platforms.

3. Strategies

To achieve the goals, three inter-related strategies will be implemented. The first regards content posted on websites and shared via OOI's newsletter, social media, and at events to demonstrate OOI's value to potential and present data users. Messaging primarily focuses on how OOI is advancing research and education opportunities to be a part of the OOI community. Content is developed by both the PI, CEM, and

IOs on the following topics:

Content

- Data Access/Quality/Tools (to provide progress reports on improvements to elicit trust in data and enhance its usage)
- Science Advances (to demonstrate that scientists are using OOI to advance understanding of ocean processes, which is contributing to the greater good)
- Technological innovations (to share OOI's experiences and technical development as a means to advance ocean observations tools and techniques)
- OOI data in the classroom (to show examples of how OOI data are being integrated into classrooms to encourage more of the same)
- Partnerships (to show that OOI data are contributing to a broader ocean observing network and striving to be a diverse and inclusive network)
- Opportunities to participate (to provide examples of how PIs can add instruments and students can participate in workshops/cruises as a means to encourage more participation)

Outreach

The second strategy relates to outreach-focused activities to reach specific audiences who will advance, support, and ensure a future for the OOI. The following audiences are the focus of outreach efforts undertaken jointly by the PI, CEM and IOs:

- OOI Community members (to re-enforce that OOI is continually working to improve data accessibility, quality, usefulness, and is responsive to their needs)
- Active PIs and potential PIs (to help them succeed in adding instrumentation and sampling protocols to broaden the scientific investigations supported by the infrastructure)
- Partners (to continue to share data with partner organizations such as IRIS, NANOOS, NERACOOS, and others to ensure easy access to and integration of OOI data into other data providers).
- Organizations and Networks: Programs, institutions, and consortia that focus on diversity in geophysical research (to increase the efficiency with which the OOI can reach under-served groups).
- The next generation of Earth and ocean scientists: Students/professors and Early Career Scientists (to help achieve an inclusive, diverse, engaged, and successful next generation of interdisciplinary scientists)
- Peer Networks: NSF Major Facilities and the observing systems funded by NSF Division of Ocean Science (to share best practices) and [OceanBestPractices: https://www.oceanbestpractices.org/](https://www.oceanbestpractices.org/) (to share experiences and methods)
- Potential partners (to share potential synergies and experiences with other ocean and Earth observing networks, and subsequently build a more robust global observing network)
- Mentorships: At-sea and shore-based mentorships to provide next generation opportunities and workforce development.

Communication Tools

The third strategy is to implement a variety of communication tools to convey consistent messages to target audiences. The PI and CEM and each of the IOs may employ these tools differently, but together they serve as an effective toolbox to achieve a robust, diverse, expansive OOI community:

- Website: [oceanobservatories.org](https://www.oceanobservatories.org) is the primary OOI vehicle for conveying OOI information and

accessing OOI's Data Portal and Data Explorer. It also serves as a gateway to the University of Washington's [InteractiveOceans website \(https://interactiveoceans.washington.edu/\)](https://interactiveoceans.washington.edu/), an excellent outreach site focused on the Regional Cabled Array. IOs regularly contribute content to the OOI website, helping to keep it information-rich and engaging to visitors.

- **Social media:** OOI maintains a presence on Facebook, Twitter, LinkedIn, Instagram, and Discourse, which provides access to OOI's Help Desk. Each platform has a slightly different audience and the focus of posts are adjusted accordingly. The IOs regularly provide content for these social media platforms and share posts, helping to expand OOI's messaging and reach. Traffic to each platform is tracked regularly.
- **Meeting attendance:** OOI is a consistent presence at relevant meetings for both the ocean observing and ocean science communities. This presence serves to develop relationships with potential and existing data users and potential collaborators. The IOs help staff and provide content for these outward-looking meetings. The OOI team also explores opportunities to host and participate in workshops and conferences that bring people with shared interests together to advance the ocean observing community goals. Workshops commonly involve a collective effort of the PMO and IOs and potentially the OOIFB.
- **Webinars/seminars:** The IOs, working in concert with the CEM, present OOI-specific webinars and seminars to engage with and inform a variety of target audiences. IOs also conduct topical webinars/seminars about their specific arrays, which serve to enlarge audience reach.
- **Videos/images:** The IOs contribute videos and images to the OOI gallery on the website, making it possible to publicly share these and helping to tell OOI stories.

4. Metrics

The success of these community engagement efforts will be measured using the following metrics that will be reported quarterly. The metrics will measure growth of publications, influence, and audience reach. It is anticipated that all measurements will continue on an upward trajectory. Should the trajectory slide or stall, this will serve as a warning to take action to correct the trend. The number of publications, OOI-related abstracts, data requests, and funded programs using OOI data or infrastructure all directly account for the impact of the OOI on advancing science. Web and social media analytics serve as means to increase awareness and subsequent use of OOI data.

- Number of publications in refereed professional journals using OOI data or infrastructure, together with number of Web of Science citations and sum of Altmetrics scores
- Number of OOI-related abstracts at the AGU Fall Meetings and Ocean Science Meetings
- Number of requests for data, data downloads, uptime and availability, and unique IP addresses
- Number of data requests from data distribution partners such as IRIS, NDBC, and others that serve OOI data
- Numbers of funded NSF, NASA, ONR and other awards using OOI data or infrastructure
- Google analytics of web traffic
- Web-based analytics for Twitter, Instagram, Facebook, LinkedIn, and Discourse
- Number of fractional FTEs dedicated to community engagement

Appendix A: NSF 2020 Mid Award Review Recommendations

Recommendations 1, 2, 8-14, and 19 all related to community engagement in some manner. Of these, recommendations, NSF deemed 1 (diversity and inclusion goals), 8 (more unified, cohesive community engagement vision), and 14 (partnership expansion) to be the most critical for implementation.

1. Recommendation: OOI program management and all OOI elements should be proactively engaged in U.S. workforce development with explicit and proactive efforts to address diversity and inclusion goals. Workforce development and diversity and inclusion progress should be better tracked by OOI and reported openly.
2. Recommendation: work with the OOI Facilities Board and other external groups to enhance the use of the OOI infrastructure to address biological questions through direct measurements, in part to address the many challenges and expected outcomes of the “Ocean Decade.”
3. Recommendation: The PMO, MIO PIs, and NSF should set priorities for cost cutting measures that may be required due to inflation, COVID-19 impacts on operations and personnel, or catastrophic failure of observing system elements, evaluating impacts on the science community expectations and actual OOI use.
4. Recommendation: Clearly define a management process to recover from a catastrophic failure of any point or element of the OOI. This process should evaluate the value of different elements within the OOI program, including an assessment of impacts on personnel, science outputs, partners, and workforce development, and it should allow for rebalancing the OOI program in a strategic manner across MIOs to recover or continue functioning if a particular OOI element is lost.
5. Recommendation: Continue close collaboration with NSF and UNOLS, exercising the Cooperative Agreement to help avoid impacts on project elements including personnel due to conflicting cruise schedules, and to streamline the budgeting required to cover vessel costs.
6. Recommendation: Linkages and synergies across MIOs and program elements should be documented and as possible illustrated in a graphical manner, to emphasize how coordination lends strength to the Program and to show that the OOI is integrated across its operating components.
7. Recommendation: Ensure that existing and new applications of Redmine have enough flexibility to properly track the spectrum of issues involved with refurbishment, performance, and risk.
8. Recommendation: The OOI program should develop a more unified, cohesive vision for community engagement. Shared, facility-wide goals and objectives should be articulated, even if individual goals are pursued by specific MIOs or sub-teams. We highly recommend tracking FTEs dedicated to engagement as well, to enable better evaluation of the time required to achieve engagement objectives, and following that, to enable more accurate projections and work planning for these activities in the future.
9. Recommendation: Engagement with underrepresented groups should be a core goal of the OOI. In setting objectives and developing plans in this area, we recommend consultations with the many existing organizations that work to improve equity and inclusion in the sciences.

- 10.** Recommendation: The OOI Program should plan to support, sustain and expand the successful efforts to engage early career researchers.
- 11.** Recommendation: The OOI Program should expand the effort to disseminate the experience and technical developments gained through the OOI activities more broadly and quickly. The Ocean Best Practices (<https://www.oceanbestpractices.org>) provides an appropriate journal-like forum. However, other complementary, less formal formats (blogs, technical notes, user-groups, etc.) with less review-and- revision overhead should also be considered. Perhaps the Altmetric.com approach to measuring impact would be an effective way to track this type of impact.
- 12.** Recommendation: Shared, facility-wide goals and objectives should be articulated, even if individual goals are pursued by specific MIOs. We also recommend tracking FTEs dedicated to building partnerships to enable better evaluation of the time required to achieve and sustain partnership objectives.
- 13.** The Panel recommends that OOI form a Community Engagement/Partnership Team (similar to the team examples that were provided during the review – data team, glider team, etc.)
- 14.** The Panel recommends that the OOI expand its partnerships to include other ocean observatory facilities in addition to Ocean Networks Canada. Examples of other National ocean observatory partners include MARS, ALOHA, BATS, HOTS, etc., and there are other important international examples as well.
- 15.** The Panel recommends that OOI establish a plan for evaluating and prioritizing requests to add new instruments that can be sustained by the MIOs into the future.
- 16.** Recommendation: Develop a comprehensive plan by October 1, 2021 to implement a long-term data archiving solution to preserve OOI data in perpetuity in accordance with the NSF Cooperative Agreement.
- 17.** Recommendation: Continue to strengthen OOI's cybersecurity program with the goal of conducting annual comprehensive risk assessments based on the National Institute of Standards and Technology (NIST) 800-53 security controls framework.
- 18.** Recommendation: Establish a process to ensure software interfaces, web content and media comply with federal accessibility requirements (Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990 (ADA), along with other relevant state and university policies).
- 19.** Recommendation: Continue to focus on transparency for both the user community and the MIOs. The redesign of Redmine and the implementation of Discourse should prioritize the creation of a public forum where bugs, enhancements, complaints or other requests can be posted, reviewed by the MIOs, prioritized and addressed.
- 20.** Recommendation: The Program should commit a small measure of resources to track the contribution to research commissioned by other government programs (DOE, NASA, NOAA, ONR, USGS, and EPA) that exploits the OOI infrastructure.