OOIFB Roundtable on Ocean Observing
May 12-14, 2026
University of Rhode Island, Graduate School of Oceanography

EXECUTIVE SUMMARY

The Ocean Observatories Initiative Facility Board (OOIFB) convened a 2.5-day, [public] roundtable in May 2026 at the University of Rhode Island's Graduate School of Oceanography. The purpose of this roundtable was to discuss how experience gained from developing and operating the U.S. National Science Foundation (NSF) Ocean Observatories Initiative (OOI) and other sustained observing efforts could inform the evolution of ocean observing programs that meet both the science community's needs and U.S. national priorities. Participants recognized that sustained ocean observing represents a national capability that supports scientific discovery, technological innovation, environmental intelligence, and U.S. competitiveness in the ocean domain. Motivated by recommendations from the 2025 National Academy of Sciences Decadal Survey of Ocean Sciences, which focused on three main themes (Ocean and Climate, Ecosystem Resilience, and Extreme Events) the roundtable sought to articulate a vision that aligns with NSF's strategic mission for ocean observing systems over the coming decade. The roundtable also aimed to develop a framework for a subsequent, larger community meeting. The meeting took place in the context of the recently announced (and since suspended) descoping plan for the OOI. Roundtable participants therefore discussed how OOI assets slated for descoping might be made available for future use by the oceanographic community to support a variety of scientific objectives.

Over 50 individuals participated (in person and online) over the 2.5 days, including members of the OOIFB and its Data Systems Committee (DSC), representatives from U.S. federal agencies, and select members of the scientific community (a participant list can be found on the OOIFB website). Dedicated time was spent understanding the current U.S. ocean observing landscape, with framing presentations on the first day that provided high-level overviews of different ocean observing systems. Representatives from the OOI, NOAA's Integrated Ocean Observing System (IOOS), Argo, and Global Ocean Monitoring & Observing programs, NSF EarthScope, Ocean Bottom Seismic Instrument Center (OBSIC), and glider observational systems, and other efforts reviewed the scope and intent of these systems, while also highlighting accomplishments and identifying synergies. Second day discussions with the full group, and in smaller breakout sessions, focused on system capabilities, tradeoffs, potential gaps, and evolving science challenges. Collaborative conversations centered on how ocean observing facilities best serve the community and increase user engagement. There was consensus from the roundtable that science should be the main driver in the development of ocean observing systems, and priorities should center

on a science question, an observable feature, a potential test bed concept, or shared facility model. Participants also agreed that future ocean observing systems should build upon existing national investments in observing infrastructure, technology, data systems, and operational expertise wherever those capabilities continue to support future scientific priorities.

The final day was dedicated to outcomes and deliverables, identifying potential partnerships, and reviewing consensus statements that had surfaced during discussions. The group also reviewed the profound impacts of the OOI descoping decision and the opportunity for collaboration in pursuit of community-driven science goals.

The meeting consensus was that ocean observing systems are an important catalyst to cross-disciplinary discovery and innovation. The OOI's global, coastal and seafloor arrays support groundbreaking research in several key areas including volcanology, seismology, physical oceanography, biogeochemistry, and marine meteorology. They play an important role not only for data and science, but also for workforce development in critical areas such as autonomous robotics, cybersecurity, informatics, artificial intelligence, and skilled trades (e.g. machinists, and electricians). Ocean observing systems are also key incubators for critical technologies that enable industry to invest in our national capacity for marine operations. Preserving and improving ocean observing infrastructure is therefore critical to advancing U.S. capacities in ocean science, as well as economic sustainability (e.g., fisheries), forecasting, offshore energy, and safety, while also providing vital baselines for understanding ocean and atmospheric changes over longer time scales.

Other key points of consideration included:

- The multidisciplinary ocean observing community must understand what is currently available (infrastructure, technology, data, etc.), what is needed for the future, and what specific scientific areas require urgency and emphasis. An updated iteration of the traceability matrices developed to support the original OOI design, could be created to support this activity.
- Ocean observing systems should be transformative and innovative. Participants acknowledged a distinct opportunity for reconfiguring, customizing, and redeploying existing OOI assets in a different way, or in a different location. However, long-term observations are equally critical and highly valued. Participants reflected on how to be agile and adaptable in the short term, exploring the potential for dual-use applications, while also maintaining these important, sustained, multi-parameter observations at the right places and scales.
- Ocean observing facilities should be viewed as shared national research infrastructure that support multiple scientific disciplines and users simultaneously, providing greater value than discipline-specific observing systems alone. This shared-facility model promotes efficient use of resources, encourages interdisciplinary collaboration, and enables a broader range of research than individual (PI-led) projects could support independently.
- Ocean observing facilities can also serve as national testbeds for evaluating emerging sensors, autonomous systems, communications technologies, and artificial intelligence applications. This capability accelerates innovation while reducing the risk of transitioning new technologies into operational use.

- Ocean observing systems are not only about innovative infrastructure and technology, but also the highly specialized engineering, software, marine operations, data management, and project management expertise required to operate them. Preserving this operational capability is as important as preserving the physical assets themselves. These facilities thus create a unique STEM pipeline that develops and sustains an agile and capable workforce. Potential losses in technical expertise associated with the OOI descoping plan would have been significant and challenging to recover, likely requiring several years.
- Co-design is key, involving collaborations among modelers, industry, educators, and other ocean observing stakeholders, with tribal and state resource managers, and across Federal agencies. Participants identified numerous opportunities for partnerships that leverage existing investments, expand scientific impact, and address shared national priorities. These include renewable ocean energy developers, commercial and recreational anglers, the Department of Defense, Office of Naval Research, the U.S. Coast Guard (Search and Rescue and Spill Response), the National Weather Service, the National Hurricane Center, the Department of Energy, National Aeronautics and Space Administration, Bureau of Ocean Energy Management, United States Geological Survey, private industry, and international ocean observing programs. Participants also noted that partnerships between existing NSF large facilities, e.g., National Center for Atmospheric Research (NCAR), National Ecological Observatory Network (NEON), EarthScope/National Geophysical Facility (NGF), and OOI will enhance research capabilities and opportunities.
- Data delivery, documentation, and quality assurance/control (QA/QC) are incredibly important. In discussions during this meeting, there was a general consensus that the original scope of the OOI did not include sufficient emphasis on producing and/or support of science-ready data products. Delayed mode QC and the creation of science-ready data products that are easy to use are essential, as is data interoperability (e.g. metadata standards), and a strong data management plan. Leveraging emerging technologies, including artificial intelligence, factor into these data activities. AI offers new opportunities for coding and data synthesis, and acts as an accelerator for data analysis and QA/QC; however it was also recognized that AI can only be effective in conjunction with domain-specific scientific and engineering human expertise.

There are a variety of ways different stakeholders can use the high-value components and associated data products from ocean observing systems to address broad oceanographic questions. However, it is equally important to revisit the fundamental science questions that led to the original establishment of these systems and determine if those questions match current community needs and align with NSF's strategic mission.

The 2025 National Academies report stressed the importance of investing in ocean observing infrastructure and technology, and noted that the OOI had seen many successes over the past decade. Their report suggested a “revisioning and restructuring exercise for the future of the OOI...”, which should now be reimagined as a broader community-wide effort to optimize the ocean observation system across different national and international stakeholders. The report went on to suggest that “... Such an activity would provide a timely path forward for the next iteration of OOI that takes advantage of strategic partnerships [and] the evolution of ocean sciences and technological capabilities over the two decades since the OOI was originally conceived.”

At the time of the roundtable, NSF had just announced that the OOI would be significantly descoped, without any such revisioning and restructuring exercise having taken place. There was general consensus among meeting participants that this was an extremely unfortunate outcome for U.S. ocean observing, and a missed opportunity for the scientific community to engage in a much-needed reflection on the scientific impact, technology innovation, workforce development, data infrastructure, and operational capabilities of the OOI, and how it fits into the broader constellation of ocean observing systems. On June 18, 2026, NSF made the decision to suspend descoping and resume regular operations of the OOI, including planned maintenance. This summer, NSF will issue a Dear Colleague Letter (DCL) to solicit stakeholder input and convene an expert panel to address ocean observational needs and required resources. This call provides an important opportunity for the community to inform the possible revisioning of ocean observing systems and advancement into the future.

Roundtable discussions about necessary steps for broad and effective community engagement offer important guidance on how to ensure that the forthcoming review of OOI by NSF aligns with the needs of both the scientific community and other stakeholders, and fulfills the recommendations of the 2025 National Academies report. Discussions highlighted the urgency for a focused, future community survey and larger, follow-on meeting to engage both current and potential stakeholders in ocean observing. This community survey and meeting would engage a much wider swath of potential infrastructure and data users than the group represented at the roundtable, and would work to catalyze partnerships across disciplines, the private sector, and other federal entities, including those who may not have previously considered ocean observing systems. Groups and disciplines to engage include federal, state, and tribal communities, national defense, uncrewed systems, air-sea interaction and marine meteorology, greenhouse gas exchange, forecasting, geohazards, biogeochemistry, modeling, shipping, fisheries, offshore energy, industry (technology/sensors), data aggregation, and eScience (computationally intensive scientific research).

The OOIFB anticipates that the forthcoming NSF DCL will provide an avenue to collect input from a variety of stakeholders. Questions developed for a future community survey and associated responses should be directed as input to the DCL. To facilitate this need, a working group, comprised of OOIFB and DSC members, as well as other individuals engaged in the roundtable event and key members of the ocean observing community, will be formed to connect with and coordinate across the community to promote substantive input in response to the DCL, once it is issued. This working group will also lead planning for a larger community meeting to address the overarching scientific and technological advancements needed to cultivate and strengthen ocean observing systems and their integration over the next decade.

The May 2026 Roundtable on Ocean Observing reaffirmed the vital role of sustained ocean observing systems in advancing transformative scientific discovery, supporting national priorities, advancing U.S. leadership in ocean science and technology, strengthening the nation's technical workforce, and providing critical infrastructure for future scientific innovation. In the context of the OOI descoping announcement, participants agreed that the future of NSF-supported ocean observing should be driven by compelling scientific questions, strengthened through strategic partnerships, and supported by robust data infrastructure and technological innovation. The forthcoming DCL process is an opportunity for the ocean observing community to shape a shared vision for the next generation of ocean observing

systems. A future community meeting would build on the momentum generated by this roundtable, broadening participation across disciplines, federal, state, and tribal partners, industry, and other stakeholders. Together, these combined efforts will help ensure that future investments continue to move all ocean observing endeavors forward, meet evolving scientific, technological, and community needs, and maximize their value to society, the economy, and national resilience over the coming decade.