

OO Exchange, September 24, 2026

Topical focus: OOI Endurance Array; Ocean Observing in the Pacific Northwest

Facilitators: Jan Newtown and Rosie Gradoville

Summary

Twenty-seven attendees participated in the virtual session (41 individuals registered). The group first reviewed introductory information about the DCL process and resources. They also discussed:

- The synergies between ocean observing assets that currently exist in the Pacific Northwest (and how lacking coverage would be without NSF and/or NOAA assets).
- Why ocean observing is necessary in this region (major economic, cultural, and ecological dependences; safety at sea and protecting maritime infrastructure)
- The benefits ocean observing provides (to society and science- measurements on HABs, internal waves, marine heatwaves, etc. are important for research purposes, but are also benefiting fisheries, marine water quality, and forecast models used for tourists, businesses, and recreational fishermen), and the value of long-term datasets.
- The importance of ocean observing for technological innovation that goes beyond ocean science and/or the Pacific NW (partnerships between industry and academia and have tested and developed tech including sensors, buoys, and technology designs, that can be applied elsewhere).

The group then split into five breakout groups with discussions focused on three key questions:

- Q1: How should NSF's investments complement and/or differ from other national and international efforts; for example, the National Oceanic and Atmospheric Administration's (NOAA) ocean observation systems?
- Q2: What gaps exist in observations to address high impact science questions and what oceanic regions could benefit from NSF ocean observations system(s)?
- Q6: What other operational uses and stakeholders should be considered and how can their needs be best served?

Key takeaways from this OO Exchange included:

- When comparing **NSF vs NOAA ocean observing...NSF has been the primary agency for science learning and high risk/high reward research and technological development. While other agencies, such as NOAA, have been the agencies that operationalize these technologies after they are brought to a readiness level where that can be considered for more operational use.** Both systems are **complementary** (to each other and that at other institutions) and directly overlap. There are also unique capabilities that are provided through IOOS and OOI including measurements beyond state waters that **researchers and policymakers, who are working for state agencies, don't have the resources or technical capabilities to make themselves.** These observations are critical as individuals need to understand how things vary in the nearshore and along the coast.
 - Real time data is important as it allows individuals to make quick decisions about the science they are doing (e.g. estuaries science)
 - Long term data and current observations and current data are critical to detecting environmental changes. If these measurements are lost or discontinued, then the

Pacific NW (and the U.S. as a whole) will not know what is happening over longer time scales.

- It is important to **work with the synergies between NSF, NOAA, and other agencies (sharing technology, scientific discovery, and even ship time)**. However, when considering this maximized collaboration, **data governance (how data is collected, stored, processed, and shared) is critical, as is data standardization, quality control, and optimized data access and delivery (e.g create user friendly interfaces or dashboards)**. **It needs to be obvious and easy for different stakeholders to find the data they need** (recognizing that different users may need data for different purposes- for example, a fisherman needs data that is different than a modeler).
 - Cross-communication is also important. When working with state agencies/with other groups who are working in the same region and are tasked with putting different types of sensors on their arrays, how do we cross reference or discover and understand rule making for new capabilities of these sensors and connect back to OOI and IOOS?
- The OOI Endurance Array was planned for a 25-year lifetime. Ten years have been completed, and the system needs another 15 years to complete its original goal(s). Beyond the planned lifetime, it may be possible to identify what portions should be transferred to operational oceanography (IOOS/NDBC). Beyond the 25 years, the **Endurance Array is valuable as an experimental testbed**.
- **Gaps.**
 - NSF has been a leader in formulating the technologies needed to gain further research questions that cover gaps in our current sensing capabilities. **More gaps will exist if we do not maintain current infrastructures.**
 - **Without OOI measurements, there would be a gap in full water column measurements, winter measurements, and deeper shelf measurements, especially further away from the coast.** This would have maritime safety implications (amongst other things).
 - **Subsurface observations** are very important and OOI contributes a lot here. The Columbia River goes right through this area, and the chemistry [of the nearshore/coast] is affected by the Columbia River Plume. **Need to have a better understanding of how the river inputs impact the coastal ocean.**
 - Need to **pair physical observations with biological observations** to better understand ecosystem health (e.g. HABs). From a policy perspective, trying to understand how things vary along coasts and if investments are paying off. Some measurements exist and they are growing, but the spatial coverage is limited.
 - **More observations on things like alkalinity, ph, DO**, and more linking of low cost sensors that are networked and can work together. Also need more observations along the coast, while also maintaining the current data sources.. Increased mobile assets could be used to answer specific, geographically-focused research questions.
- **Other stakeholders** to consider include:
 - **Tribal communities.**
 - The **general public**. Many may not know these measurements go into their use of the coast. How do we effectively convey this and what happens if we lose those measurements?

- **Modelers**, and the 1) importance of OOI data as the only source available to evaluate and improve a Pacific NW live ocean model, but also 2), the different stakeholders that then use this [live ocean] model (fishermen, mariners, etc.).
- **Local fishermen, shellfish growers, hatchery operators, oyster farmers**, are really impacted by ocean conditions. They use these data for input into their operations.
- **Future ocean scientists, engineers, modelers, policy-makers, etc.** Using ocean observing/OOI data to expand teaching/learning opportunities and/or solve complex problems that were previously unanswerable (or perhaps not even conceived yet).