

OO Exchange, September 28, 2026

Topical focus: Observing the California Current System

Facilitators: Dax Soule and Chris Edwards

Summary

Eighteen attendees participated in the virtual session (30 individuals registered). The group first reviewed introductory information about the DCL process and resources, and then split into three breakout groups to review the DCL questions.

Key takeaways from this OO Exchange included:

- **NSF vs FEMA, NOAA, DOE- they are complementary and this is important to highlight** (e.g. complement other agency mandated-observing systems that are focused on National Security [e.g., coastal fisheries, shipping, tourism, HABs/ocean health], or long-term stability [LTER, TOGA TAO, Argo, IOOS]) is important. One of NSF's key contributions (where NSF is unique) is the **advancement of fundamental research/science and the development of technology and associated data products.**
- **Aligning with international ocean observing initiatives is important** especially with regards to **metrics**. This is important when comparing data sets and working across different initiatives. There is no need to reinvent the wheel, however (systems already exist).
- Capabilities with ocean observing have been changing over time. Our ocean observing systems writ large (OOI, Argo, gliders) are doing very difficult things in hostile environments. They are collecting data in places where it's not trivial to get an instrument there, leave it there for a year, and have it tell you things the whole time. **These are not simple or easy problems. We are currently very good at it. But it took time (~10 years). If we stop doing this [existing ocean observing], then we will lose that capacity. And it is not something that can just be picked back up again (from an infrastructure or personnel standpoint).** The rest of the world is galloping forward on this front, so **the U.S. needs to remain competitive.**
 - **NSF's existing ocean observing portfolio should be maintained as it is needed for the stability and continuity of observations.** Decadal variability can't be seen with short term systems. For modelers, ocean state estimates require **subsurface information**. In situ measurements of temperature and salinity are critical. Remote sensing and satellite-based observations are great, but subsurface density structure relies on the subsurface information [which is what OOI currently provides]
 - **Value of current NSF data products to industry** (e.g. insurance industry). Current data is used to improve modeling and risk assessments (in the insurance industry, financial, infrastructure, etc.). There are opportunities for **public-private partnerships** here.
 - Maintaining persistent sites at long-term monitoring stations is important, however, NSF should also be nimble to **maintain some agility and flexibility** in the event of changing circumstances and issues that arrive, and the continued ability to make new discoveries.
 - **Moveable assets** that leverage the exponential growth in robotics, controls, and sensor technologies should be prioritized
 - **Sustained funding and personnel (human capacities)** within these programs (to keep long term time series data up to date and a system operating) is often

neglected and needs to be prioritized. Educational funding and resources could be provided to institutions for **scientific, technical training in the oceans**. Such an effort would span fundamental science (NSF core mission), provide future-proof job training, and advance efforts on the fundamentals of autonomous systems and robotics.

- Observations alone without analysis are not sufficient. NSF should be **supporting the software development** in addition to the technology/sensors/infrastructure. NSF should invest in underlying research software and data resources that are used by other national and international efforts, as a way to enable and facilitate further research.
- **Data quality control and data distribution is very important to ensure maximal use and impact from core science to non-technical users** (e.g., fishing communities, native american communities, industry writ large).
 - Long term support of NSF data products and dissemination is important.