



OCEAN
OBSERVATORIES
INITIATIVE



NSF's Ocean Observatories Initiative

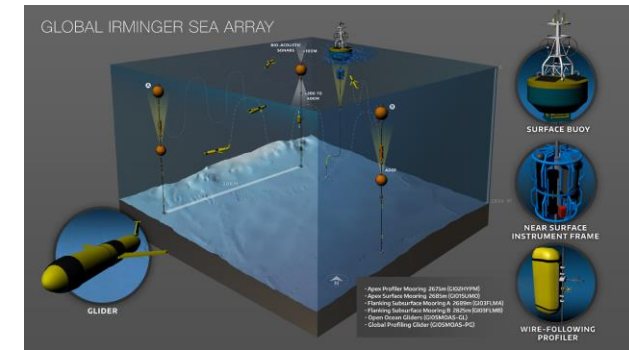
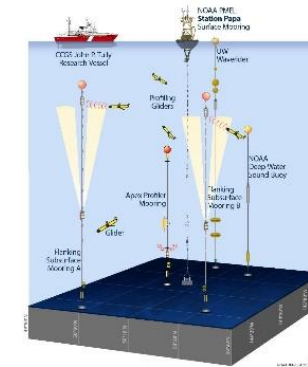
James Edson, Lead PI
Program Management Office

OOIFB Town Hall
Ocean Sciences Meeting
New Orleans, LA
February 20, 2024

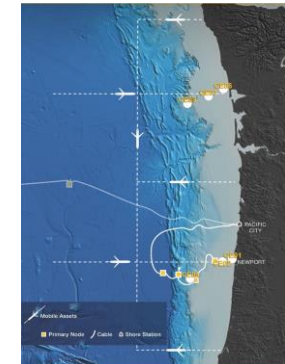
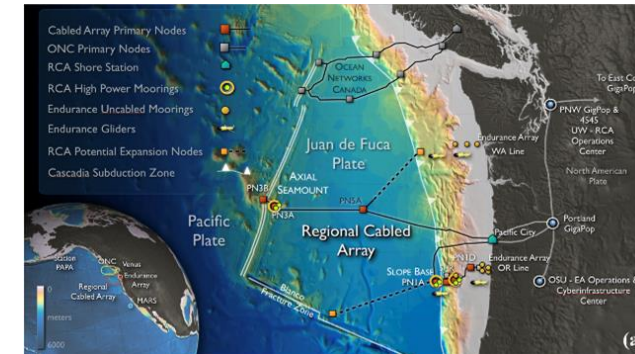


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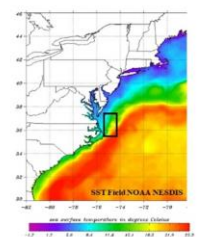
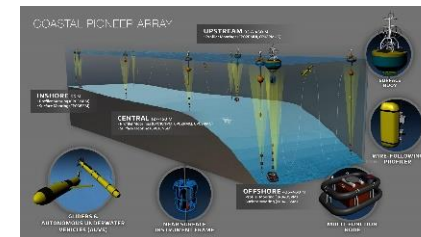
A System of Systems



Global Station Papa and Irminger Arrays



Regional Cabled and Coastal Endurance Arrays



Coastal Pioneer Arrays at NES and MAB



Democratization of Data

The OOI provides research quality data to the user community. These data are freely available to researchers, educators, and the general public in near real-time at:

<https://oceanobservatories.org/>



Palevsky et al., 2023: *OOI Biogeochemical Sensor Data Best Practices and User Guide. Version 1.1.1.* OOI Biogeochemical Sensor Data Working Group. <https://doi.org/10.25607/OBP-1865.2>

GOOS ENDORSED PRACTICE



ECV Collected

Surface Variables

- Pressure
- Radiative Fluxes
- Temperature
- Humidity
- Precipitation
- Moisture/Evaporation
- Vector Wind
- DC Stress & Buoyancy Flux

Oceanographic

- Net Surface Heat Flux
- Temperature Profiles
- Salinity Profiles
- Currents Profiles
- Sea Level

Biogeochemical Sensors (at multiple depths)

- pH
- pCO₂
- Oxygen
- Plankton & zooplankton
- Nitrate
- Chlorophyll- α
- Methane
- Sound

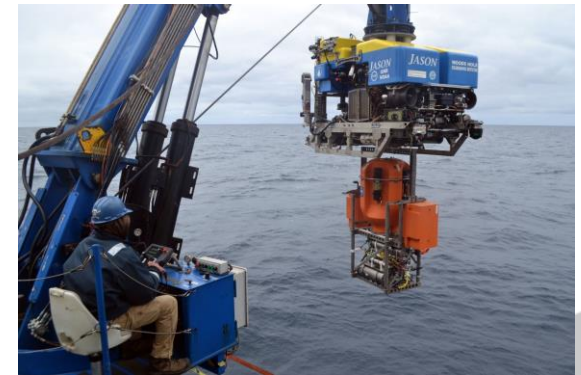
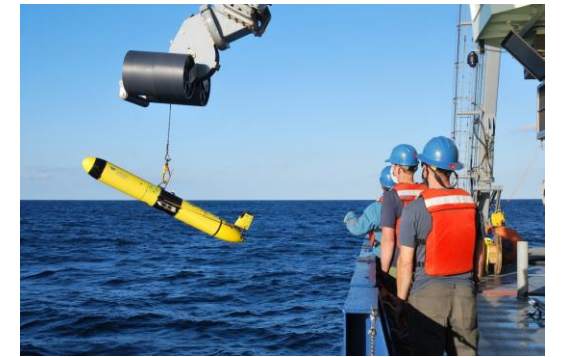
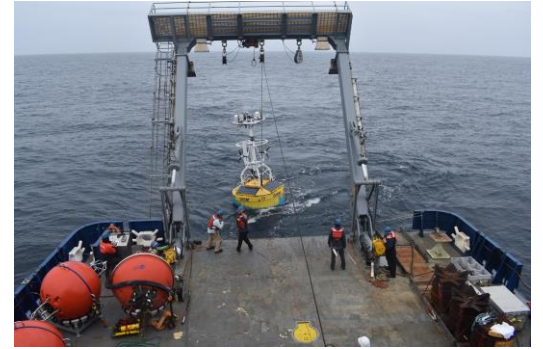
OOI 2.5 Renewal

The OOI has been awarded a Cooperative Agreement for support of Operations and Maintenance for the next five years.

- \$220M award for OOI 2.5.
- Does not include ship costs, which will now be handled as normal between NSF and UNOLS with input from OOI.

Proposed Program Enhancements

- **Data Specialist for each MIO:** Much needed help with our ongoing QA/CC efforts and generation of curated data sets for the research and educational communities.
- **Associate Project Scientists:** The next generation of OOI scientists. Discussions have also included hiring post-docs, ECS, visiting scientists, sabbatical support to expose more researchers to OOI.
- **Data Ambassador Program:** Teams of scientists/engineers and data specialist to provide presentations and data training sessions for new and existing users.
- **Tech Refresh:** Replace aging infrastructure, new data center for CI, improved technology upgrades, and some new sensors.
- **Science User Groups for Research (SUGR) Meetings:** Not to replace OOIFB workshops and other activities, but to enhance interaction with the user community.



Data Ambassador Program

OOI is launching a Data Ambassador (DA) Program to elevate the visibility of the OOI and grow the user base. The DA Program is designed to have members of OOI get out in the community of potential data users to provide them with the tools and resources needed to use OOI data. OOI is focusing this effort on underserved populations to encourage a diverse and inclusive user base of OOI data in research and in the classroom. We expect to reach out to some institutions and accept invitations from others.

The DA program will take many forms. A few examples include:

Data Ambassador teams consist of an Assistant Project Scientist (APS) or Principal Investigator (PI) and an OOI Data Specialist. The APS or PI will present a talk or seminar, followed by a mini workshop on how to use OOI data by the Data Specialist or one-on-one sessions with the APS/PI. The talks will be held at research universities, minority-serving institutions, community colleges, and other organizations that could benefit from OOI data.

Bring Data Specialist to national meetings such as OSM2024 to provide demonstrations on how to access and process OOI data with OOI scientists in the audience.



A Focus on Data Quality and Data Delivery

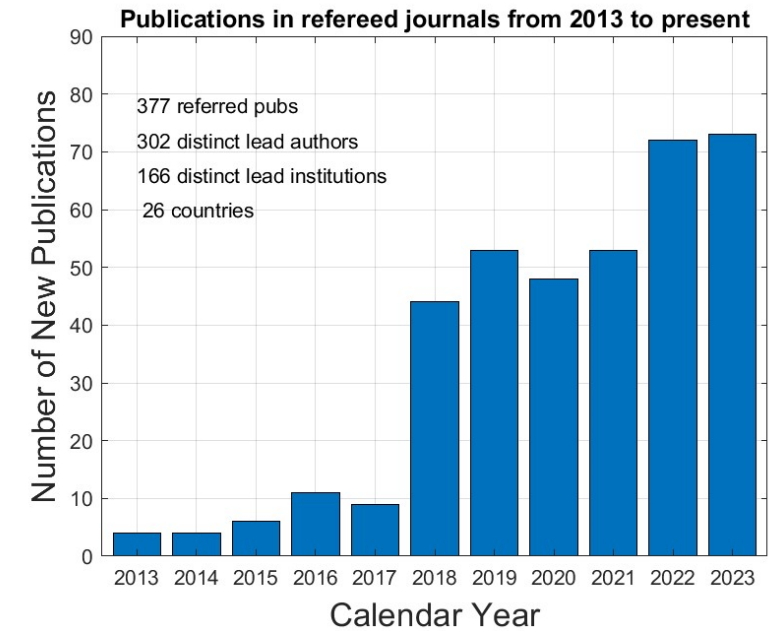
The OOI plans to hire data specialists and staff scientists to provide much needed help in day-to-day OOI activities.

- **Quality Control**

- QARTOD for sensors when available
- QARTOD-inspired QC for sensor without formal QARTOD
- Humans-in-the-Loop creating Annotations

- **Research Ready Data**

- We heard from the modeling community and we will continue to work with them to address RRD (e.g., through SUGR Meeting)
- PI Generated Data Sets from Publications
- PI added data sets
- Collaboration with BCO-DMO
- Data Explorer!



Toole, J. M., Musgrave, R. C., Fine, E. C., Steinberg, J. M., & Krishfield, R. A. (2023). On the Vertical Structure of Deep-Ocean Subinertial Variability. *Journal of Physical Oceanography*, 53(12), 2913–2932. <https://doi.org/10.1175/JPO-D-23-0011.1>

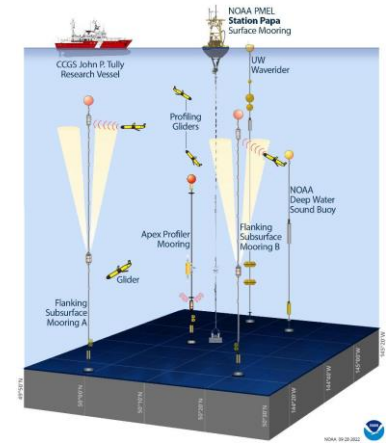
Wilcock, W., & Ocean Observatories Initiative. (2023). Rapid: A Community Test of Distributed Acoustic Sensing on the Ocean Observatories Initiative Regional Cabled Array [Data set]. Ocean Observatories Initiative. <https://doi.org/10.58046/5J60-FJ89>



Some Recent Activities

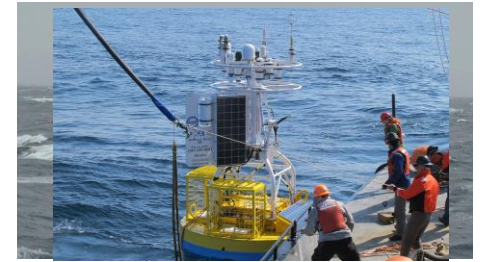
- **Station Papa**

Effort to better combine the CGSN and PMEL components of Papa into a more integrated array, and to add an FDCHP on the PMEL surface mooring to mimic the Irminger global array.



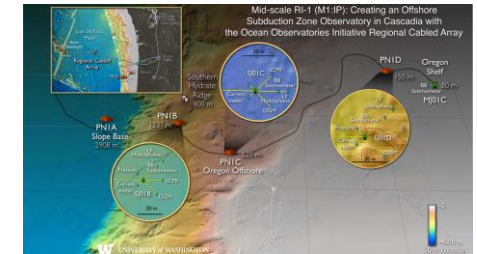
- **Wave Energy Conversion (WEC)**

Working with several companies to provide wave energy to our Coastal and Global by harvesting the platform motion. This would provide more continuous energy in addition to our solar and wind turbine systems.



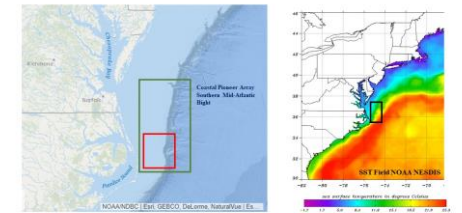
- **Mid-Scale RI-1 Project**

Creating an Offshore Subduction Zone Observatory in Cascadia with the OOI Regional Cabled Array.



- **Pioneer Re-location**

Moving the array from the New England Shelf to the Mid-Atlantic Bight. More from AI.





THANK YOU!