

A New Reign of Ocean Discovery

# Cloud-Based Data Access and Exploration

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Plenary - June 8, 2022



# Cabled Array Value Added Team (CAVA)



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Senior Research  
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**Wendi Ruef**  
Research Scientist



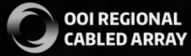
**Mitch Elend**  
Research Scientist



## Our goals

1. **increase active use of RCA data** by scientists and to support educators and public exploration of data in the future;
2. provide **additional tools** for scientists to **discover, access, visualize**, and use RCA data sets suitable for addressing specific science hypotheses;
3. provide an **intuitive, user-friendly data search and visualization interface**, coupled with a convenient **data downloading** scheme;

# Interactive Oceans 2.0



DATA PORTAL



HOME

ABOUT ▾

RESEARCH SITES ▾

TECHNOLOGY ▾

INSTRUMENTS

EXPEDITIONS ▾

EDUCATION ▾

RESOURCES ▾

DATA PORTAL

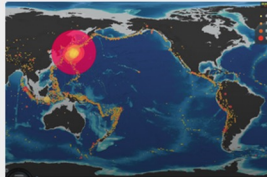
LIVE VENT  
VIDEO

## Eyes on the Ocean



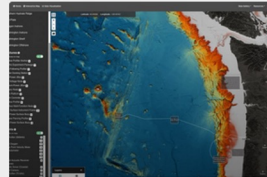
### Student Application: Please Join Us On the VISIONS 2022 Seagoing Expedition

We are looking for students  
interested in participating in the



### The Rumbling Oceans – Earthquakes Around the Globe

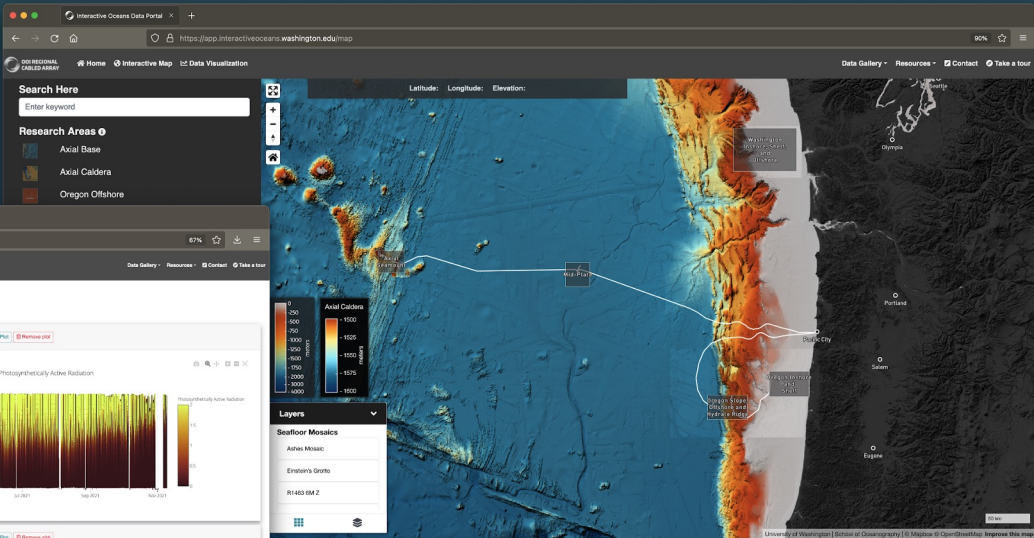
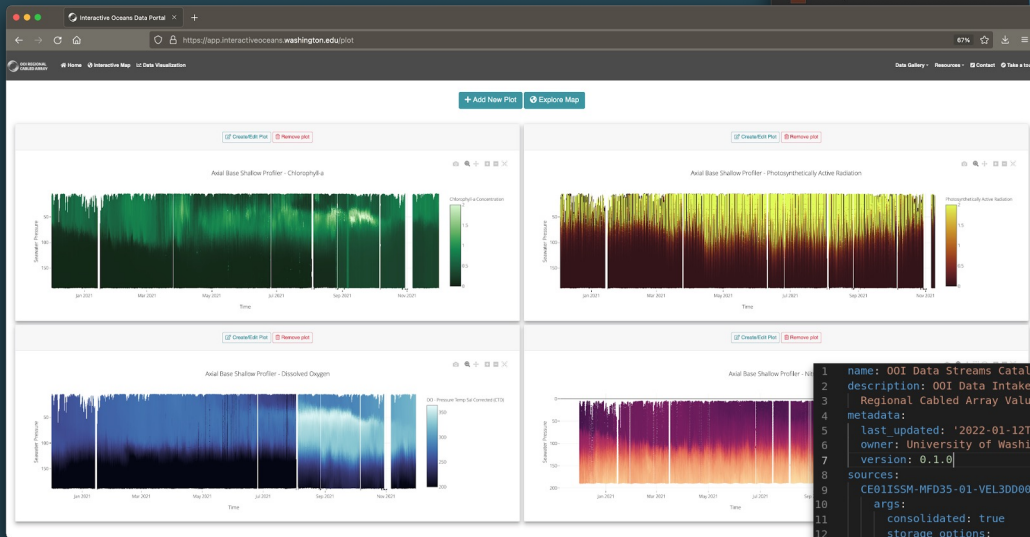
The Rumbling Oceans –  
Earthquakes Around the Globe  
The global oceans are highly  
dynamic, constantly moving and the



### Data Portal

The Interactive Oceans Data  
Portal is an interface designed  
to enable scientists, educators,  
and students to quickly locate  
and plot cabled, real-time  
Ocean Observatories Initiative

# What we've built



<https://interactiveoceans.washington.edu/>

```
1 name: 001 Data Streams Catalog
2 description: 001 Data Intake Catalog. This effort is part of the University of Washington,
3 Regional Cabled Array Value Add Project.
4 metadata:
5   last updated: '2022-01-12T01:35:31.474022'
6   owner: University of Washington, Regional Cabled Array
7   version: 0.1.0
8 sources:
9   CE01ISSM-MFD35-01-VEL3D0000-recovered_inst-vel3d_cd_dcl_velocity_data_recovered:
10     args:
11       consolidated: true
12       storage_options:
13         anon: true
14       urlpath: s3:///ooi-data/CE01ISSM-MFD35-01-VEL3D0000-recovered_inst-vel3d_cd_dcl_velocity_data_recovered
15       description: Data produced by Stream Engine version 1.18.0 for CE01ISSM-MFD35-01-VEL3D0000-recovered_inst-vel3d_cd_dcl_velocity_data_recovered
16       driver: zarr
17       metadata:
18         data_products:
19           - comment: Seawater conductivity refers to the ability of seawater to conduct
20             electricity. The presence of ions in the seawater, such as salt, increases
21             the electrical conducting ability of seawater. As such, conductivity can
22             be used as a proxy for determining the quantity of salt in a sample of seawater.
23             coordinates: time lat lon depth
24             data_product_identifier: CONDWTAT_L1
25             instrument: CE01ISSM-MFD37-03-CTDBPC000
26             long_name: Seawater Conductivity
27             precision: 0
28             reference_designator: conductivity
29             standard_name: sea_water_electrical_conductivity
```

# Interactive Map Application

A window to explore instruments and features on the seafloor.

Powered by **COG (Cloud Optimized Geotiffs)**

<https://app.interactiveoceans.washington.edu/map>

# Data visualization application

A tool to visualize and analyze historic and recent oceanographic datasets

Powered by **Zarr (Cloud Optimized N-dimensional arrays storage)**

<https://app.interactiveoceans.washington.edu/plot>

# Intake data catalog

Direct cloud data access through Python APIs

Powered by **Intake, Xarray, Dask, Zarr**

<https://ooi-data.github.io/catalog.yaml>



# What's next

- Keep improving portal for multiple dimensions data support for more complex instruments
- Expand real time data visualization and analysis
- Optimize data storage and system scalability

**“Our fate and the ocean’s are one.”**

**– Sylvia Earle**