# An Update on the OOI Data Labs Project

October 13, 2023

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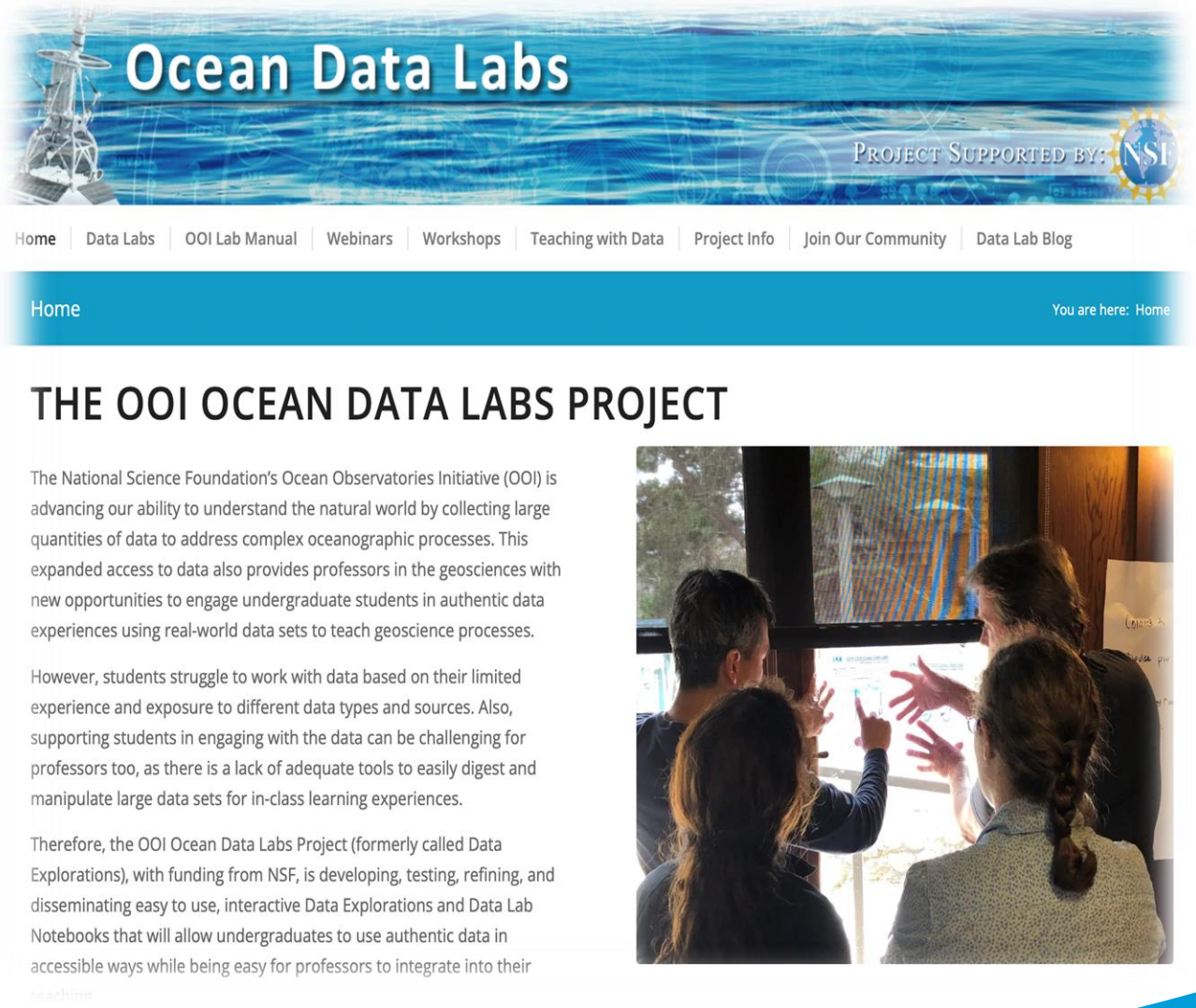


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# ‘To do’ list for today

1. Background: Data Labs
2. 2023 project goals & objectives
3. Timeline

# OOI Data Labs Project

## Key Goals

- Build a **Community of Practice (CoP)** of professors, interested in using OOI data with their undergraduate students:

- Make OOI data more **accessible** to educators and students

# OOI Data Labs

*A Summary of our project milestones*

**Comprehensive Database**
Fall 2018

**590 scientists**

2 undergraduates built a database of professors from around the country teaching Oceanography courses.

**Development Workshops**
Spring 2019

**56 professors**

Attended 4 week long workshops:

- Princeton, NJ.
- New Brunswick, NJ.
- Monterey, CA.
- Bellingham, WA.

**Implementation Workshops**
Summer 2019

**60 professors**

Attended Earth Science Teachers Rendezvous Nashville, TN July 2019

Ocean Science Meeting San Diego, CA February 2020.

**Webinar Series**
Fall 2019-2020

**19 professors**

8 webinars featuring data labs developed by workshop participants.

**Open Source OOI Data Lab Manual**
Winter 2020

**11 professors**

Designed workshop to develop an online lab manual for oceanography courses.

**Fellowship Program**
Winter 2020

**10 fellows**

6 professors collected data and feedback from students on the efficacy of the Data Labs.

4 created new Python notebooks with OOI data.

**REU Program**
Summer 2020

**9 professors**

Mentored students in a virtual REU using OOI data in an online REU program.

**Cohort 1& 2 Data Lab Manual Pilot**
Fall 2020 & 2021

**42 professors**

Piloted the OOI Data Lab Manual created by 11 professors from the community.

# Community of Practice ~182 members

70% (n=133) involved in one or more Data Lab initiatives

** 60 Implementation workshop attendees (not pictured on map)

- Data Exploration pilot testers (27)
- Data Lab developers (56)
- 2020 Data Lab Fellows (11)
- Data Lab project team leaders

# OOI Data Lab Manual

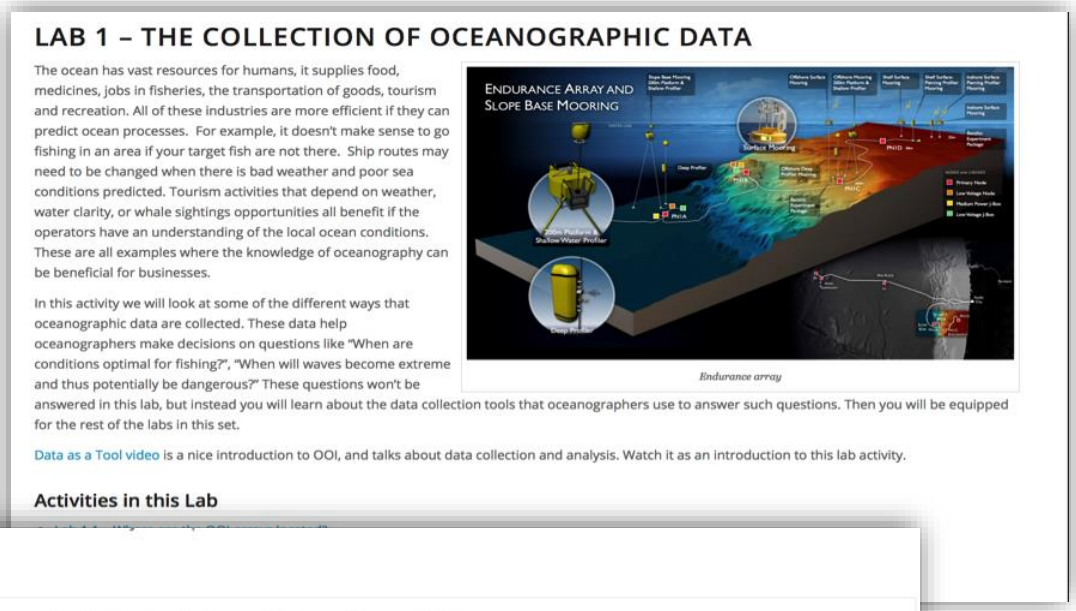
- Community-generated from the idea to the authorship

# OOI Data Lab Manual

- Full lessons
- Interactive quizzes
- Instructors guide

## Lab Chapters

- Lab 1 – Introduction to the Ocean Observatories Initiative (OOI) – The collection of oceanographic data
- Lab 2 – Building Data Skills – The display of oceanographic data
- Lab 3 – Geology – Plate Tectonics and the Seafloor
- Lab 4 – Geology – Sea Floor Changes in a Volcanically Active Setting
- Lab 5 – Ocean Chemistry – Investigating Density and Stratification in the Ocean
- Lab 6 – Ocean Physics – Waves Generated by Large Storms
- Lab 7 – Primary Production – Identify factors that control Primary Production in the western temperate Atlantic Ocean
- Lab 8 – Anoxic Events – Solve the mystery of the dying crabs



LAB 1 – THE COLLECTION OF OCEANOGRAPHIC DATA

The ocean has vast resources for humans, it supplies food, medicines, jobs in fisheries, the transportation of goods, tourism and recreation. All of these industries are more efficient if they can predict ocean processes. For example, it doesn't make sense to go fishing in an area if your target fish are not there. Ship routes may need to be changed when there is bad weather and poor sea conditions predicted. Tourism activities that depend on weather, water clarity, or whale sightings opportunities all benefit if the operators have an understanding of the local ocean conditions. These are all examples where the knowledge of oceanography can be beneficial for businesses.

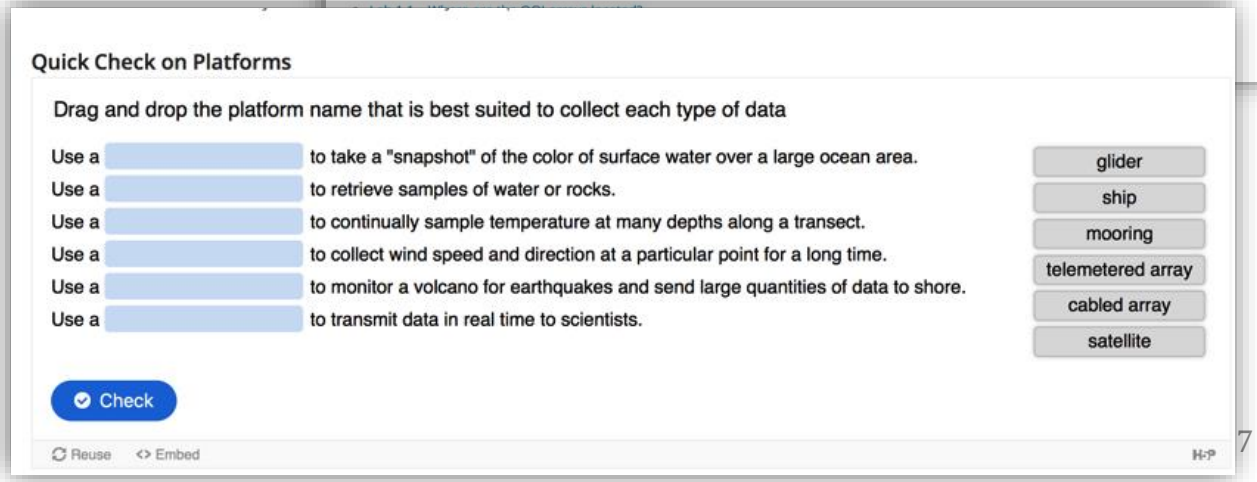


*Endurance array*

In this activity we will look at some of the different ways that oceanographic data are collected. These data help oceanographers make decisions on questions like "When are conditions optimal for fishing?", "When will waves become extreme and thus potentially be dangerous?" These questions won't be answered in this lab, but instead you will learn about the data collection tools that oceanographers use to answer such questions. Then you will be equipped for the rest of the labs in this set.

Data as a Tool video is a nice introduction to OOI, and talks about data collection and analysis. Watch it as an introduction to this lab activity.

**Activities in this Lab**



Quick Check on Platforms

Drag and drop the platform name that is best suited to collect each type of data

Use a _____ to take a "snapshot" of the color of surface water over a large ocean area.
Use a _____ to retrieve samples of water or rocks.
Use a _____ to continually sample temperature at many depths along a transect.
Use a _____ to collect wind speed and direction at a particular point for a long time.
Use a _____ to monitor a volcano for earthquakes and send large quantities of data to shore.
Use a _____ to transmit data in real time to scientists.

glider
ship
mooring
telemetered array
cabled array
satellite

Check

Reuse <> Embed

# Building a Community of Practice

Of the 116 we worked intensively with in workshops:

- 19 delivered OOI DL webinars, presenting the DL they had developed during workshop
- 11 became DL Fellows
- 11 are designing and building the DL Notebook
- 9  became peer presenters at mini workshops
- 10 presented on OOI at Ocean Sciences Meeting in San Diego, CA
- 13 volunteered to be an OOI Virtual REU mentor
- 20 participated as Lab Manual testers
- The community is growing!

# Evaluation & Impacts

*Conducted by Dr. Ellen Altermatt, SERC at Carleton College*

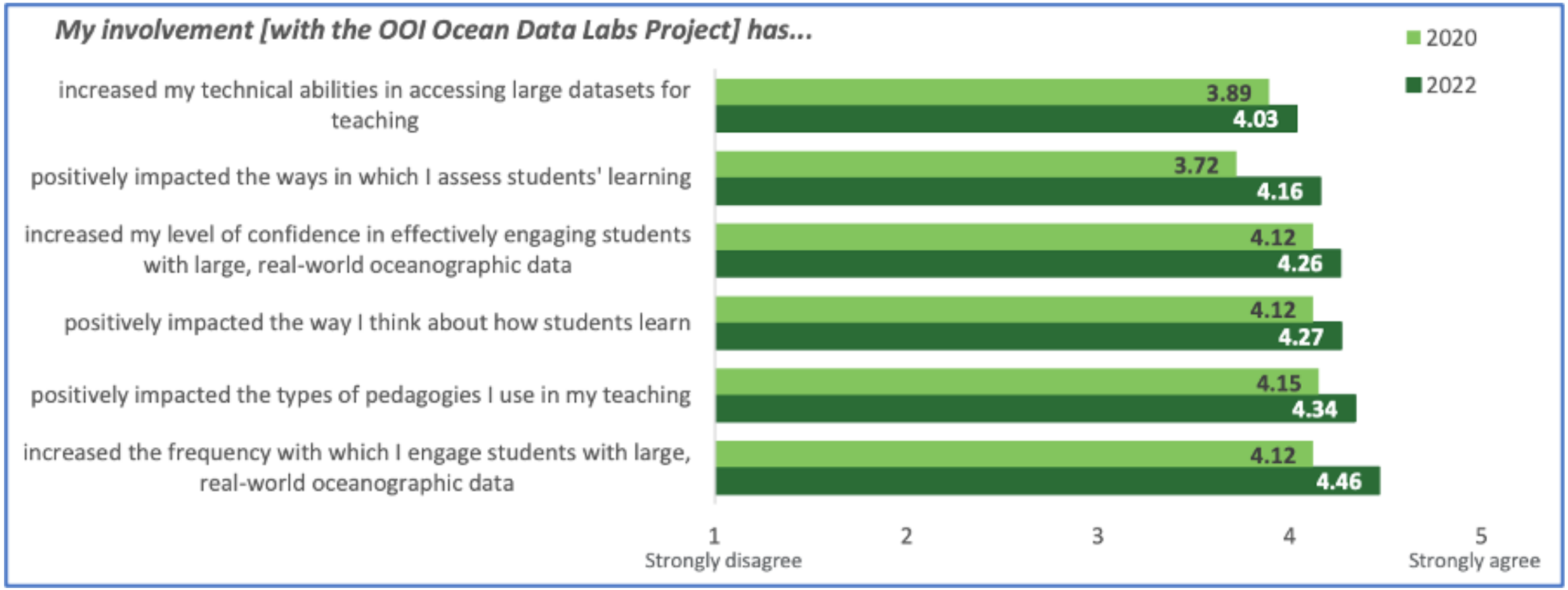
The purpose was to:

1. better understand current ***perceptions of and practices in using large, real-world oceanographic datasets*** in undergraduate classrooms,
2. assess ***levels of involvement*** in past and current OOI Ocean Data Labs initiatives,
3. examine the ***impact of participation*** in these initiatives on faculty teaching and perceptions of community belongingness, and
4. assess planned ***levels of future involvement*** and to understand how current resources might better meet community needs.

# Survey Facts

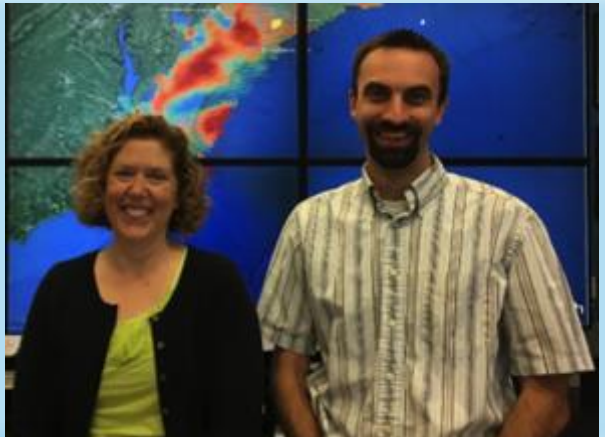
- Sent to updated database of 590 professors
- Completed by 145 individuals (22.8% response rate).
- Analysis focused on n=133
  - 130 who indicated that they had taught an undergraduate-level oceanography course (or a related course with substantial oceanographic content) in the past two years.
  - An additional 3 respondents indicated that, although they had not recently taught this type of course, they planned to do so in the next two years.

Mean ratings for the degree to which participants' involvement with the OOI Data Labs Project has influenced their teaching. (1- strongly disagree 5= strongly agree)



# Project Team

NSF Grant #1831625
and # 2316075



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# OOI Data Labs 2.0

**Project Goals**

- Continue to build and support the OOI educator community
  - MSI, 2YC and R2
  - Special focus on the Mid Atlantic

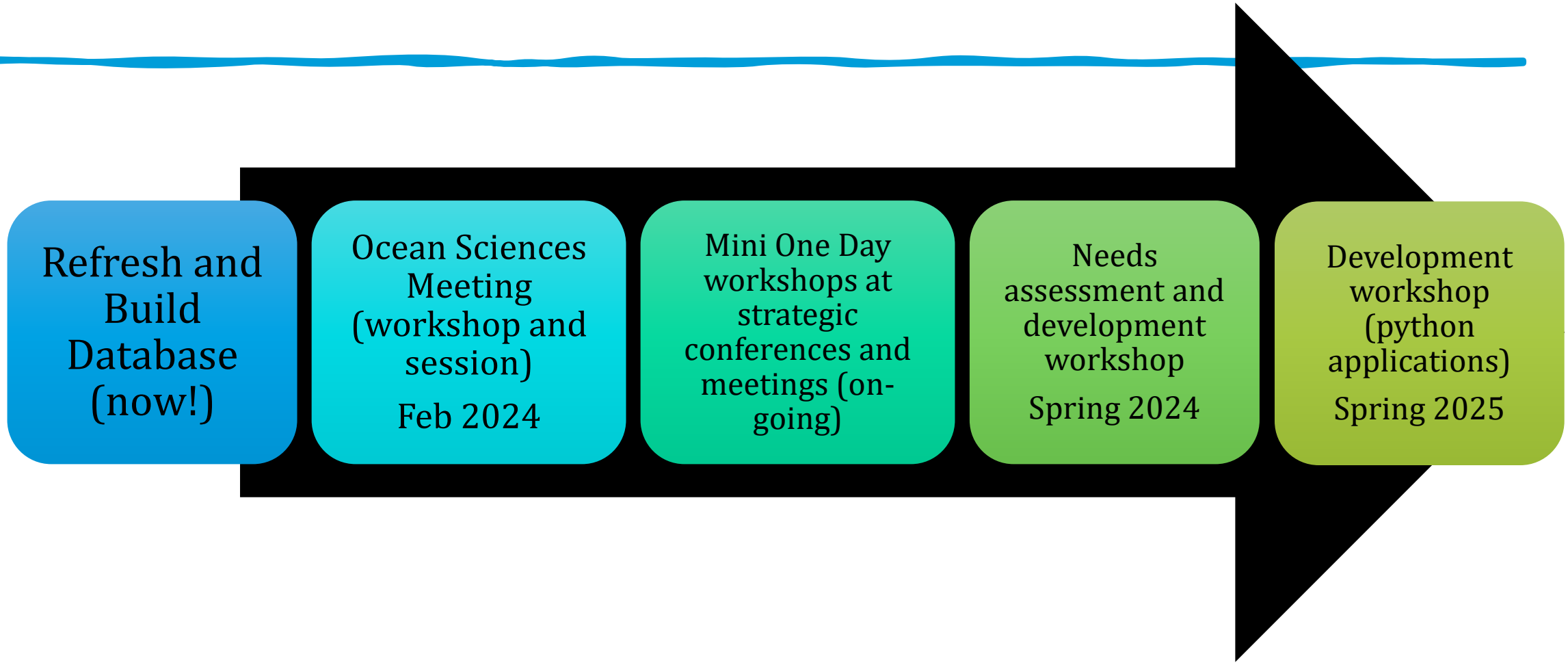
- Develop “next level” activities
  - Fill in gaps in the existing OOI Data Labs manual
  - Domain-specific and level-appropriate programming notebook-based activities

# OOI Data Labs 2.0

**Tasks**

- Engage a new community of faculty capitalizing on the Pioneer Array relocation
  - Refresh our database of potential faculty
  - ”Regional” workshop focused on Pioneer
- Expand the collection of OOI education resources
  - Development Workshop
- Continue to support the community
  - Two 1-day introductory workshops (e.g. OSM24)
  - Sharing resources
- Evaluation
  - Needs Assessment to identify community needs
  - Reach Survey to measure long-term impact

# Timeline


Refresh and Build Database (now!)
Ocean Sciences Meeting (workshop and session)
Feb 2024
Mini One Day workshops at strategic conferences and meetings (on-going)
Needs assessment and development workshop
Spring 2024
Development workshop (python applications)
Spring 2025


Thank you!
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