OOI Data Labs Workshops:
Equipping professors with the tools to tap into a fire hose of ocean data for undergraduate education

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Ocean Sciences Meeting

February 18, 2020

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OOI Data Labs Project Goals

1) Address the challenges of teaching with data & **support opportunities for professors and undergraduates to become more expert users of OOI data**

2) Increase **undergraduates' engagement** in and understanding of core oceanography concepts through use of OOI data

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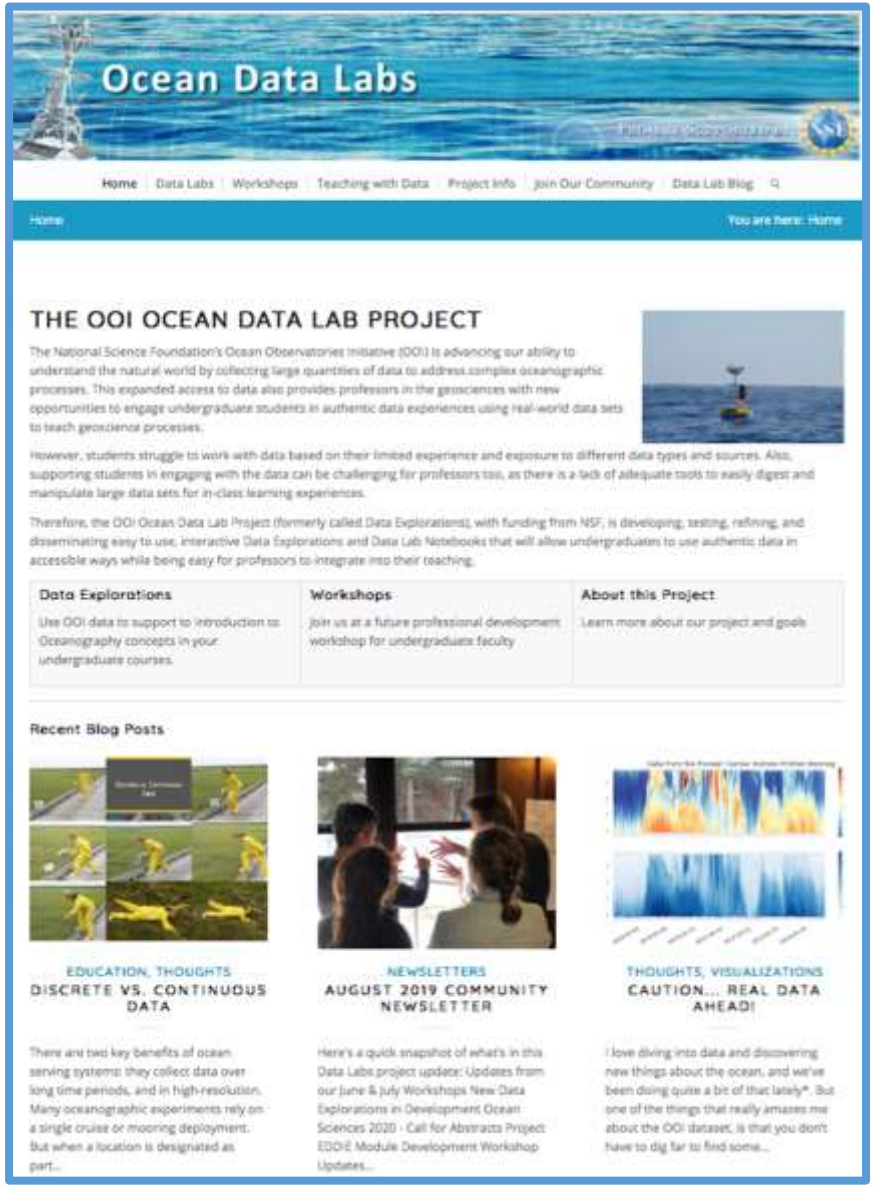


Our professional development model is grounded in educational theory

Community of Practice (CoP)

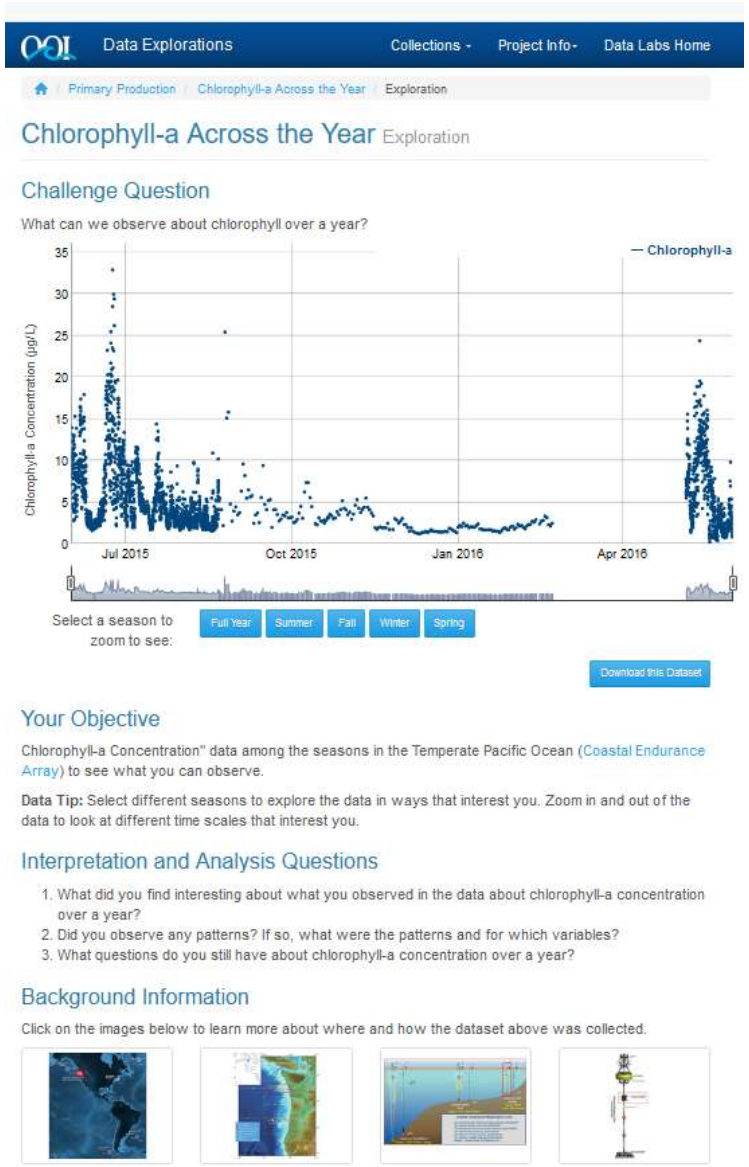
Learning defined as …growth in one's ability to participate meaningfully and centrally in communities of practice [Lave, 1991]

- Novices begin by taking on simple but valued tasks
- As novices continue to participate and learn, they move towards the center of the community

Building a CoP Using OOI Data in Teaching

Sustained professional development opportunities

Facilitating sharing of ideas and teaching practice

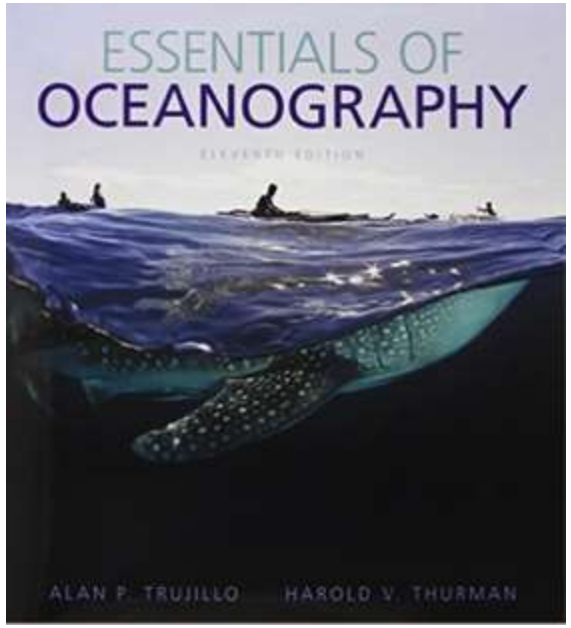


OOI Data Labs:

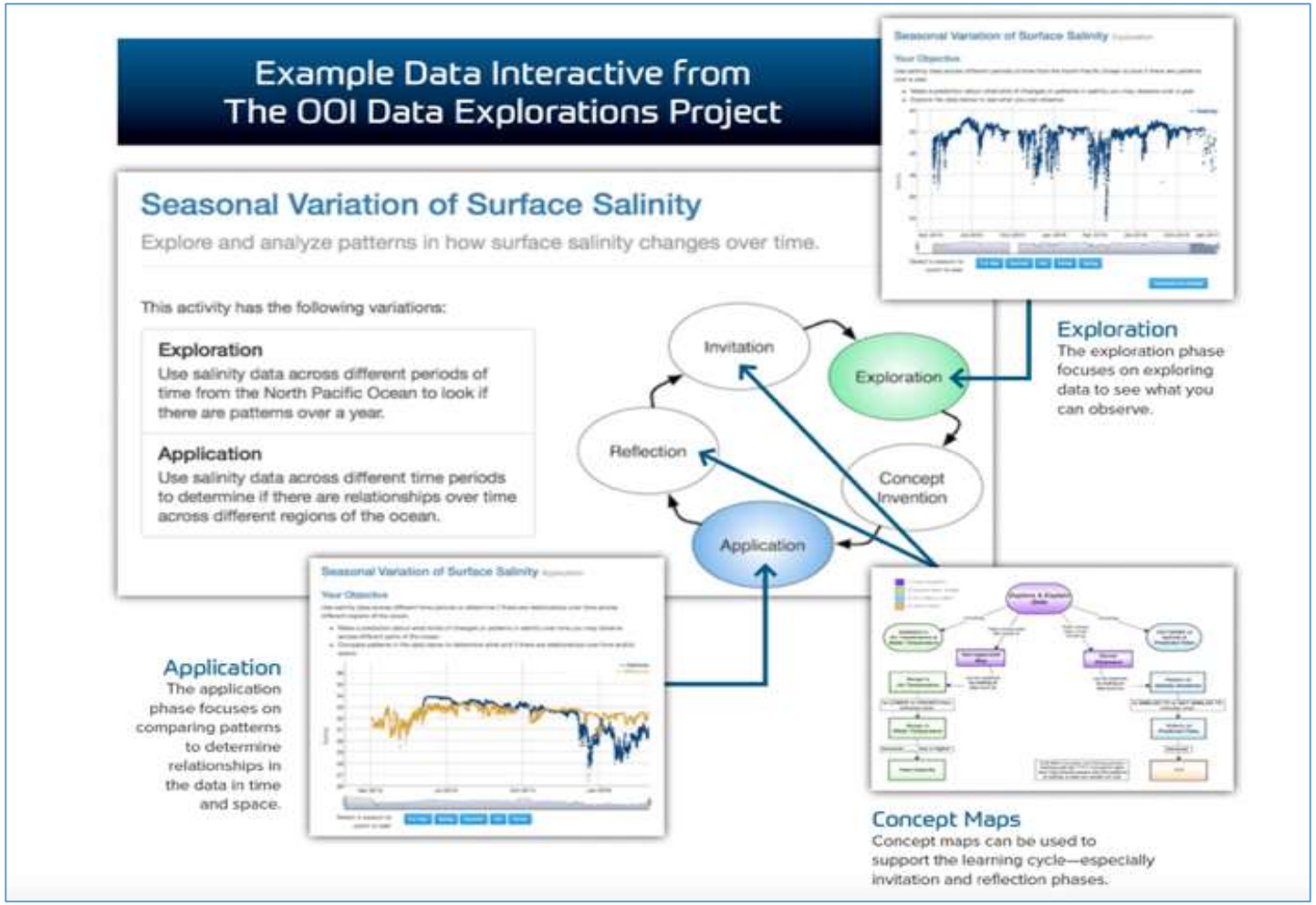
Integration of OOI data into Introductory Oceanography courses

Online interactive data activities

Connected to core concepts



Data Labs are structured in learning science theory

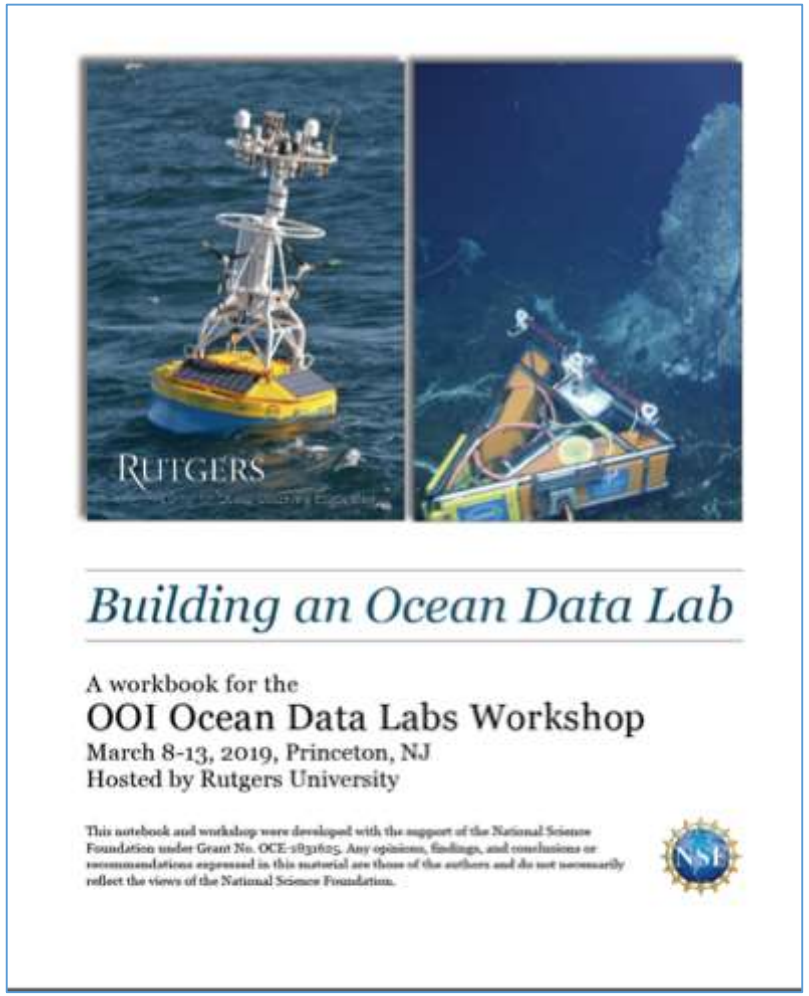


Learning Cycle:
Invitation – Exploration – Concept Invention – Application – Reflection

[Lawrence Hall of Science, UC Berkeley]

Data Labs Development Workshops Offered

- ✓ Princeton, NJ – March 8-13, 2019
- ✓ Rutgers University, New Brunswick, NJ
  June 1-6, 2019
- ✓ Asilomar Conference Center, Monterey, CA
  July 22-26, 2019
- ✓ Western Washington University, Bellingham, WA
  August 19-23, 2019



Workshop Team

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Catherine Halversen
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Queens College CUNY

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Data Labs Workshop Goals

- Learn about the OOI program and key science questions
- Access existing tools and resources designed to integrate OOI data into undergraduate teaching
- Introduction to Python as a tool for working with OOI data
- Learn how to effectively incorporate data into undergraduate teaching
- Create a customized new resource to bring OOI data into their classes
- Network with other professors interested in using oceanographic data in undergraduate teaching

Data Lab Workshop Agenda

Goal: Participants develop a customized resource to bring OOI data into their classrooms.

Day One: OOI Background

Engage in hands on investigations of our collection of classroom ready Data Labs that use real time data from the OOI.

Day Two: Exploring Python

Build pedagogical skills and discuss data literacy for students. Generate ideas for how to bring OOI into an oceanography course.

Day Three: Creating a Plan

Provide a chance to step back and think about pedagogy & strategies for creating an on ramp for student success with data exploration.

Day Four: Develop & Refine Data Lab

Engage in Backwards Design planning and work with the Data Lab team to develop a customized product.

Day Five: Reflection & Presentations

Participants present their progress and receive feedback from the group on improvements and next steps for their Data Lab.

Outcomes from Development Workshops

- 56 professors from 2-year, primarily undergraduate, and research institutions participated
- Five new data labs developed, several more in development
- Idea to develop an online OER lab manual→ implemented

Posters on OOI Data Labs Today

Poster Hall C-D
4-6 pm

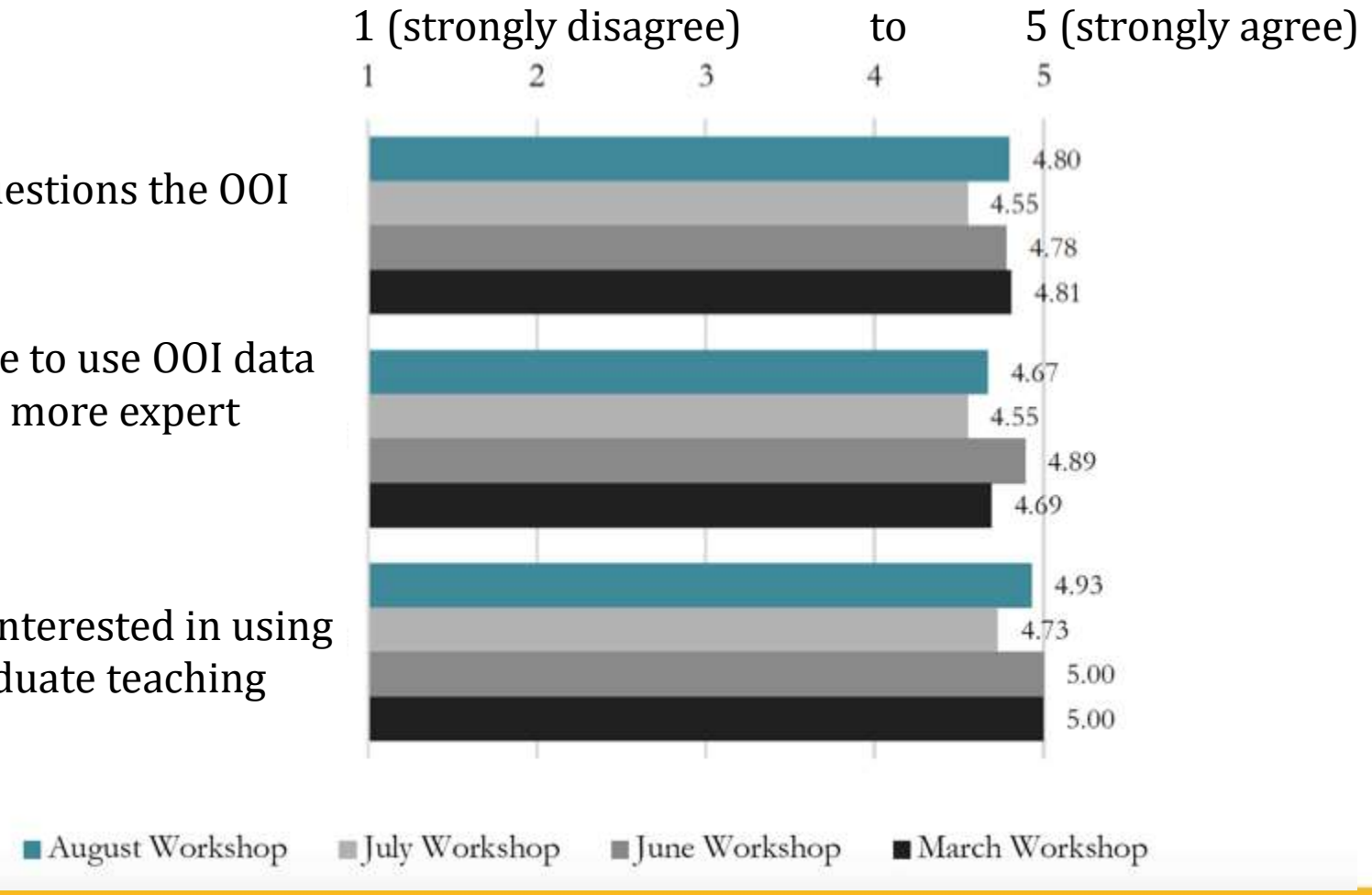
- Exploring seasonal variability in mixed layer depth (Eveleth)
- Oceans and the Carbon Cycle: What drives air-sea exchange of CO2? (Rhew)
- Factors affecting primary production in the southern hemisphere polar Pacific Ocean (DiSantis)
- Oceans of data: Enhancing data literacy by bringing real data into introductory oceanography courses (Nuwer)
- Solving challenges of integrating large datasets into community college asynchronous online science classes by using a scaffolded-learning-cycle approach (Bristol)
- *And more!*

Outcomes from Development Workshops

Learn about the key scientific questions the OOI program seeks to address

Develop the skills and knowledge to use OOI data effectively to help students to be more expert users of data

Network with other professors interested in using oceanographic data in undergraduate teaching

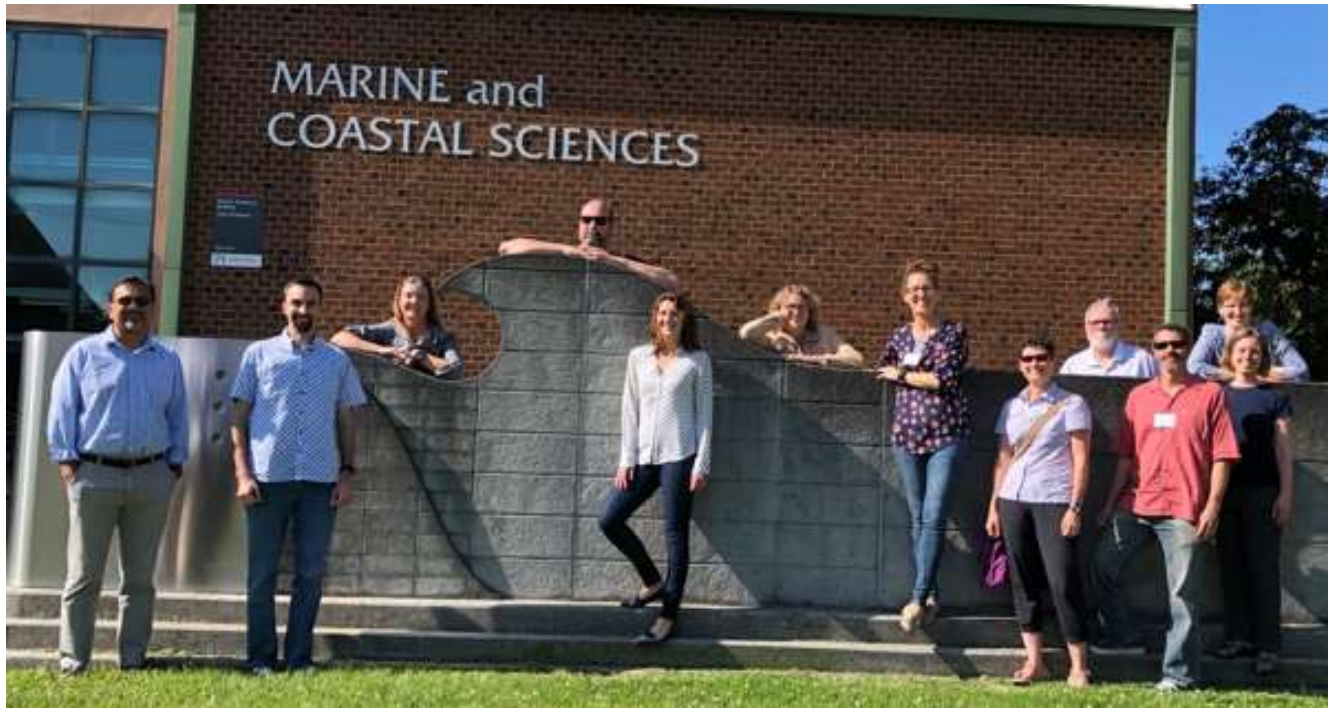


Participant Interviews: Evidence of sustained engagement

- **5 of 6** interviewees reported that they had already **introduced OOI materials into their classrooms** (3-6 months post workshop).
- **5 of 6** interviewees indicated a **desire for continued involvement** with the OOI Data Labs project, beyond continuing to use OOI materials in their classrooms
- **All 6** interviewees indicated that they **found value in their involvement** with the OOI Data Labs project and expressed appreciation for the efforts of projects leaders to create a **welcoming, supportive environment** and support to faculty following the workshop.

Constructing a Path for OOI Data Labs CoP

- Mentorship: Follow up conference calls post-workshop
- Newsletter: Celebration of successes, sharing ideas
- Webinars by workshop participants and project team
- 2020 OOI Data Lab Fellows
- Scholarly presentations at conferences/meetings



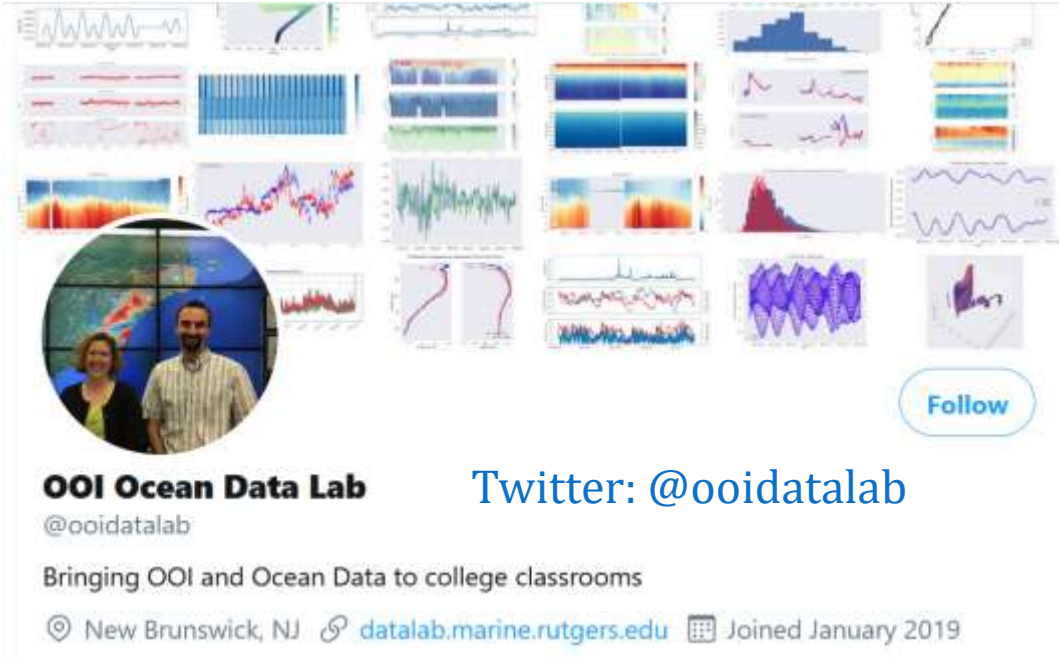
The growing Ocean Data Labs community

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

https://datalab.marine.rutgers.edu/community-map/

Resources

- Data Lab collections and news on website
- New video added to *Tools of Science* series on YouTube
- Open source Data Lab Manual (coming Fall 2020)



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