Data Lab Workshop

Ocean Observing Initiative (OOI) Edition

Western Washington University, Bellingham WA

August 18-23, 2019

Key Objectives of the Data Lab Workshop

Participants will:

1. Learn about the OOI program and key science questions it addresses.
2. Access existing tools and resources designed to integrate OOI data into teaching.
3. **Be introduced to Python as a tool for working with and engaging students in OOI data.**
4. **Learn how to effectively incorporate OOI data labs into undergraduate teaching.**
5. **Create a customized new resource to bring OOI data into your classes.**
6. Have an opportunity to network with other professors interested in using oceanographic data. in undergraduate teaching.

Workshop Overview

Day 1: Laying the groundwork for understanding and using OOI data in teaching; explore existing OOI data labs

Day 2: Exploring Python and building data skills; Generating ideas for how you will bring OOI data into your undergraduate course

Day 3: Creating a plan: what OOI customized resource will I create?

Day 4: Develop and refine your OOI customized resource

Day 5: Reflection and presentations: looking forward; planning for future applications of OOI in my teaching.

Arrival and Gathering - Sunday August 18, 2019

Time	Topic, Objectives & Activities
4:00 pm-6:00 pm	Check-in at Fairhaven Dorms, outside Building 12. • Housing Staff available at Fairhaven Commons until 9pm for late arrivals
6:30 pm	*Dinner – Boundary Bay Brewery. We will be carpooling from Fairhaven. Daily commuters, we hope you will join us!*

Day 1 – Monday August 19, 2019

Objective: Laying the groundwork for understanding and using OOI data in teaching.

Time	Topic, Objectives & Activities
8:00 am	*Breakfast – Academic West, Room 302*
8:30 am	**Welcome and Introductions** • Meet each other and review the goals for the week
9:30 am	**The OOI Today: Introduction to its history and the science it supports - Part 1** • Understand the driving forces that created the OOI and how it can enable future scientific research
10:15 am	*Coffee Break*
10:30 am	**The OOI Today: Introduction to its history and the science it supports - Part 2** • Understand what the OOI was designed to do and why
11:15 am	**The Structure of the OOI & the OOI Website** • Learn about the OOI infrastructure and discover where key resources can be found on the OOI website
12:00 pm	*Lunch – Academic West, Room 302*
12:45 pm	**Introduction to the OOI Data Labs** • Share current suite of Data Labs and understand their intended uses
1:30 pm	**Where does OOI data fit in my teaching? Case Study on Primary Production** • Understand how OOI can be integrated into undergraduate teaching with a case study example
2:15 pm	**How do I effectively integrate OOI data into my teaching? Introduction to the Learning Cycle** • Introduce common language/pedagogy for how we introduce and apply OOI data in our teaching
3:15 pm	*Coffee Break*
3:30 pm	**Explore Existing OOI Data Labs (Chemistry, Biology, or Geology)** • Hands on exploration of previously developed Data Labs • Discussion and reflection
4:45 pm	**Reflection and Feedback** • Review and reflect on what was learned today (complete Road Check on-line)
5:00 pm	*Free Time/Organize groups for dinner – on your own (per diem reimbursement)*

Day 2 – Tuesday August 20, 2019

Objective: Exploring OOI data and building data skills.

Time	Topic, Objectives & Activities
8:00 am	*Breakfast – Academic West, Room 302*
9:00 am	**The End Goal for the Week – Data Lab Example Products** • Investigate Data Explorations developed by previous workshop participants
9:30 am	**Quick Introduction to the OOI Data Portal and Data Documents** • Explore OOI data platforms, instruments and data types
10:00 am	*Coffee Break*
10:15 am	**Introduction to Curated Data Nuggets** • Understand what data is available to create your own Data Lab
11:00 am	**Data Lab Work Session** **Backwards Design Step 1: Identify Desired Outcomes** What are the big ideas and important understandings? What do you want your students to know/be able to do with that concept? What science questions are you interested in using OOI data to support? • Explore Ocean Literacy Principles and OOI Data Lab crosswalk in light of your syllabus • Form topic groups based on shared interests; develop an initial set of content learning objectives
12:00 pm	*Lunch – Academic West, Room 302*
1:00 pm	**OOI Science: A Case Study with the Irminger Sea** • Explore an example published dataset from the **Global Irminger Sea Array** that demonstrates a disciplinary core idea and the data visualization process • Gain experience with the Jigsaw Research Discussion format
2:00 pm	**Quick Start to Accessing and Visualizing OOI Data using Python** • Explore Python as a tool to access OOI data from the Irminger Sea Array
3:00 pm	**Coffee break**
3:15 pm	**Using Python as an Educational Tool** • Continue exploring Python as a computing tool to work with OOI datasets
4:45 pm	**Reflection and Feedback** • Review and reflect on what was learned today. What excited you about today? What would you share with a colleague about today's work? Complete on-line Road Check.
5:00 pm	*Free Time/Organize groups for dinner – on your own (per diem reimbursement)*

Day 3 – Wednesday August 21, 2019

Objective: Creating a plan for your custom Data Lab.

Time	Topic, Objectives & Activities
8:00 am	*Breakfast – Academic West, Room 302*
9:00 am	**Teaching with Data Pedagogy: Design Patterns to Teaching with Data** • Step back and think about *Pedagogy & Strategies* of how to design learning experiences that help students develop quantitative data skills.
10:00 am	**Data Lab Work Session** **Backwards Design Step 1: Revisit Outcomes** • Refine the big ideas and outcomes for your proposed activity. What are your goals for student interaction with data? What data skills do you want your students to build?
10:30 am	**Coffee Break**
10:45 am	**Data Lab Work Session** **Backwards Design Step 2: Determining Success** • How would you know that your students are on the right path? How would the students themselves know they are building understanding? • Brainstorm ideas for assessment
11:15 am	**Python Skills Building – Part 2** • Continue exploring Python as a computing tool to work with OOI datasets
12:00 pm	*Lunch – Academic West, Room 302*
1:00 pm	**News and Updates from the OOI** • Dr. Deb Kelley, University of Washington and Director of the OOI Regional Cabled Array
1:30 pm	**Python Skills Building – Part 3** • Access and plot a new OOI dataset by creating a notebook
3:00 pm	*Coffee Break*
3:15 pm	**Data Lab Work Session** **Backwards Design Step 3a: Zeroing in on a Dataset** • Identify the datasets your topic group would like to use, considering what is available and OOI parameters.
4:15 pm	**Group Check in and Report Out** • Groups share progress and challenges • How can we help get over the challenges we are encountering?
4:45 pm	**Reflection and Feedback** • Review and reflect on what was learned today. Complete on-line Road Check.
5:00 pm	*Free Time/Organize groups for dinner – on your own (per diem reimbursement)*

Day 4 -Thursday August 22, 2019

Objective: Develop and refine your custom Data Lab

Time	Topic, Objectives & Activities
8:00 am	*Breakfast – Academic West, Room 302*
9:00 am	**Data Lab Work Session** **Backwards Design Step 3 - Data Lab Template Review** • Define the product your group will develop during this workshop
10:30 am	*Coffee Break*
10:45 am	**Data Lab Work Session** **Backwards Design Step 3b: Create a Challenge Question** • Identify how you will challenge your students to analyze the provided dataset(s). What practice(s) will they use?
11:15 am	**Data Lab Work Session** **Backwards Design Step 3c: Data Tips and investigation Question** • Develop questions that will help your students address the research challenge • Develop guidance on how to design and execute a data interactive for your Data Lab
11:45 am	**Group Check in and Report Out** • Groups share progress and challenges • How can we help get over the challenges we are encountering?
12:00 pm	*Lunch – Academic West, Room 302*
1:00 pm	**Data Lab Work Session** **Backwards Design Step 3d: Background and Step 3e: Instructor Notes** • Add an introduction to help your students access and connect to their prior knowledge and provide a motivating context for their investigation • Add instructor notes
3:00 pm	*Coffee Break*
3:15 pm	**Data Lab Work Session** • Continue working with your group to complete the Data Lab template
4:45 pm	**Reflection and Feedback** • Review and reflect on what was learned today. Complete on-line Road Check.
5:00 pm	*Free Time*
6:00 pm	*Barbeque Dinner – Fairhaven Courtyard – All are invited!*

Day 5- Friday August 23, 2019

Objective: Looking forward: planning for future.

Time	Topic, Objectives & Activities
8:00 am	*Breakfast – Academic West, Room 302*
9:00 am	**Final Data Lab Work Session** • Complete your Data Lab Template for presentation
10:00 am	*Coffee Break*
10:15 am	**Presentations:** (15 minutes/group) • Share out your group's Data Lab with other participants
11:45 pm	**Taking it All Home/What's Next** • What might we take forward? What are the most valuable aspects of OOI assets for teaching? How can we involve more scientists in OOI?
12:15 pm	**Final Reflection and Final Logistics** • Complete end-of-workshop evaluation • Be sure to turn in your signed TABER (reimbursement form)
12:45 pm	*Lunch – Academic West, Room 302*
2:00 pm	Check out of rooms and turn in keys to WWU Representative