

Teaching Environmental Justice Using OOI Datasets

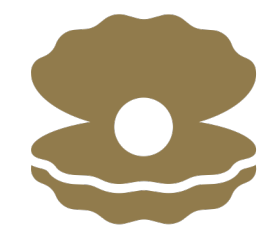
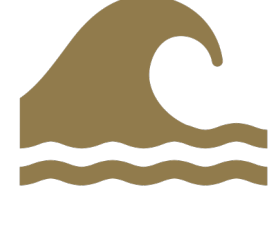




Mikelle Nuwer, School of Oceanography

Impacts of Ocean Acidification on Shellfish and the Communities That Rely on Them in the Pacific Northwest

This lesson was developed to motivate students to explore the impact of ocean acidification in local waters and on Pacific Northwest (PNW) coastal communities using Ocean Observatories Initiatives (OOI) datasets and visualization tools.

In this activity, students:

-  Learn about the importance of shellfish aquaculture in the PNW
-  Develop an understanding of changing ocean conditions
-  Use OOI datasets and visualization tools
-  Gain an understanding of the connections between societal and environmental issues driven by climate change

ENVIRONMENTAL JUSTICE

Authentic datasets can be used to spotlight how social justice and the environment are connected and can provide students with a tangible understanding of the societal and environmental disparities driven by climate change. Through hands-on engagement with data, students can gain the tools necessary to explain scientific concepts and processes and make informed decisions in the face of climate-related challenges.

LESSON OVERVIEW

Environmental Justice Issue
Threats to shellfish, like ocean acidification, not only reduce the prevalence of a key resource, but also endanger an important part of the heritage, culture, and economy of many communities in the Pacific Northwest






Target Audience:
Advanced high school and Introductory level college students

Lesson Length:
3-5 class periods (50 minutes each) with prior preparation

Technology Requirement:
Parts of this activity require internet access on computers or tablets

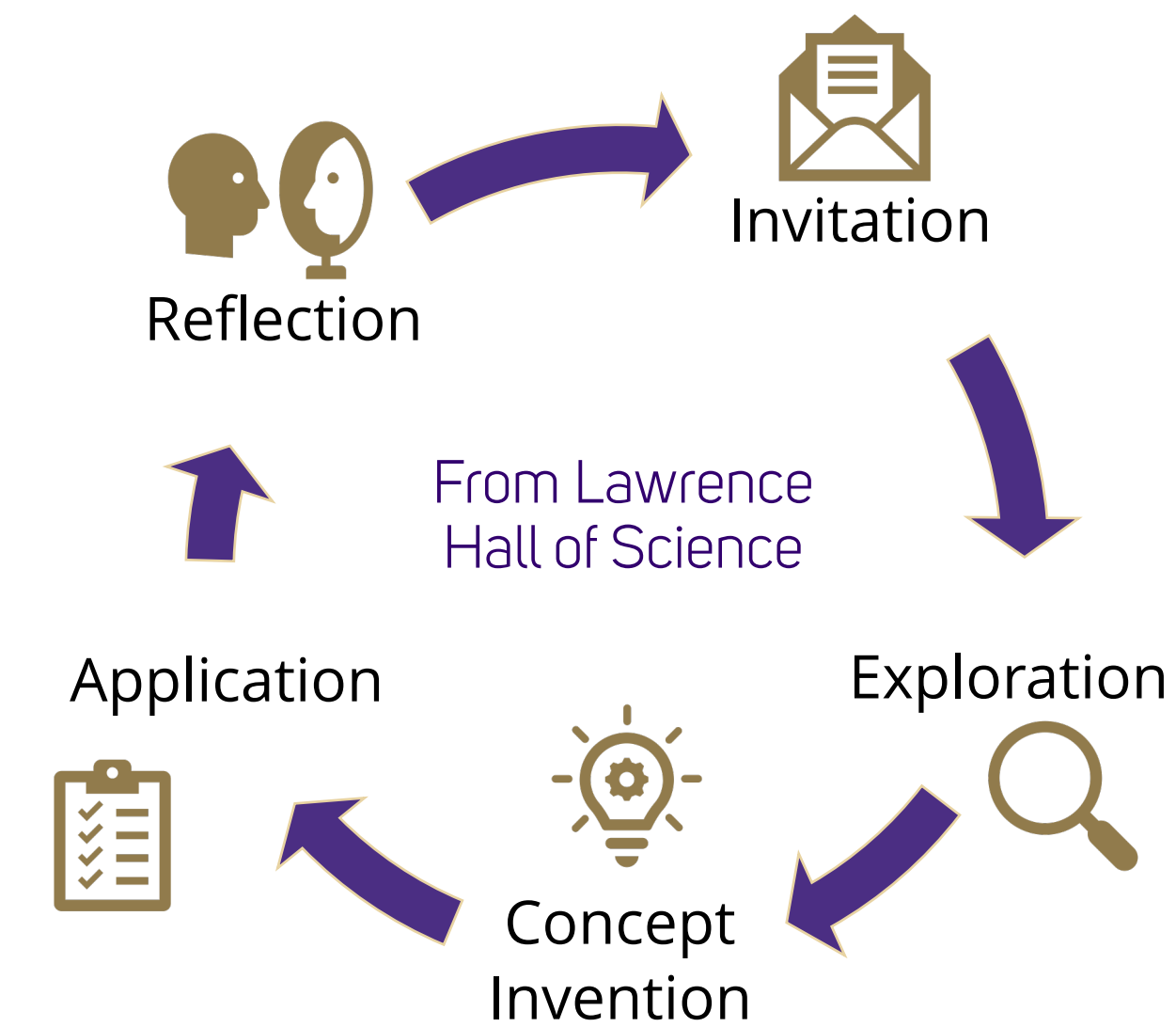
LEARNING OUTCOMES



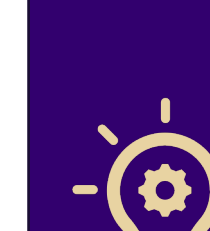


After completing the activity, students can:

-  Describe and interpret patterns in OOI datasets and correlations between different data types
-  Explain the relationship between wind direction and pH on the WA/OR coast using OOI data
-  Identify oceanographic conditions that negatively impact shellfish populations and determine when those conditions are occurring
-  Identify the communities that rely on shellfish as a resource
-  Advocate for equitable solutions for communities that rely on shellfish harvest

LEARNING CYCLE

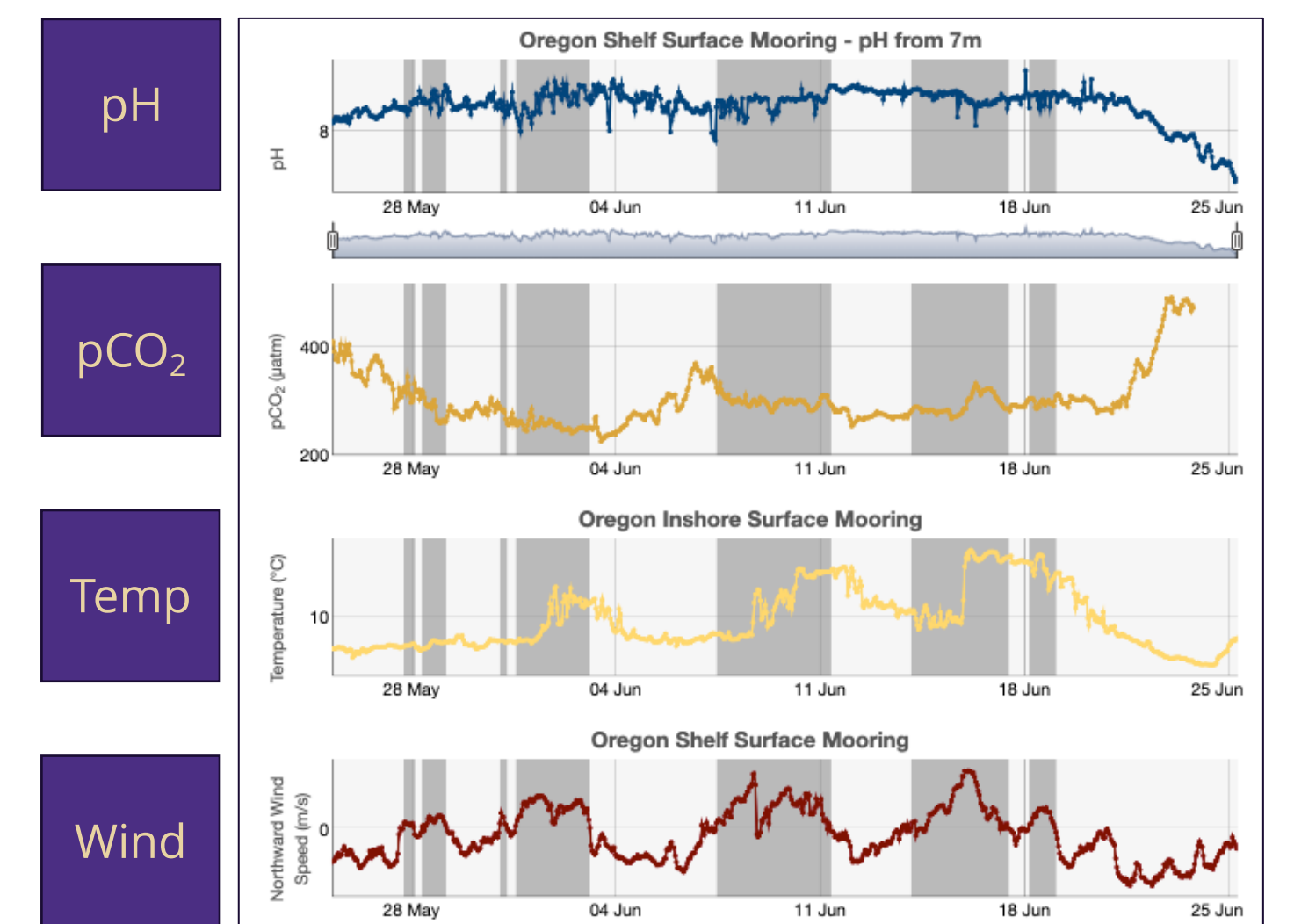
The activity takes students through the entire learning cycle. The environmental justice component is integrated into several phases. The activities can be modified for the targeted student audience.



-  Students are invited into the activity by sharing their personal experience with shellfish consumption or harvest.
-  Students use OOI interactive data widgets to explore how changing weather conditions and ocean circulation patterns affect ocean pH
-  Students work together to identify and explain the link between CO₂ and pH of a solution
-  Students use interactive data widgets to predict when coastal waters would be harmful to shellfish
-  Students assess the value and economic contribution of shellfish farming and wild harvest and translate research findings into infographics

OOI DATA EXPLORATIONS

Exploration
How do changing weather conditions and ocean circulation patterns affect ocean pH? How does each plotted variable change during the periods of N or S winds? Describe the relationship.



Application
How does ocean pH affect survival of shellfish in hatcheries? Predict when coastal waters become harmful to shellfish..

ENVIRONMENTAL JUSTICE

Shellfish are an important resource and part of our heritage, culture and economy in the PNW.

Reflection
Asses the value of shellfish to different communities.
Asses the impact of climate change on resource and community group.

SCAN ME



Lesson Plan & Assessments OOI Data Exploration More Climate Justice Lessons