

COSEE-West Ocean Observing Systems Lesson Plan

**Using SCCOOS Data to Gain Perspective on the Coastal Environment  
of Palos Verdes Peninsula and Santa Catalina Island, California**

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Ocean Literacy Principles addressed in this lesson:

1b  
1c  
2b  
6f  
7b  
7d

Lesson Question:

What type of perspective can we receive from SCCOOS data on the coastal environment from Palos Verdes Peninsula to Catalina Island?

Introduction/Background

The following is the mission of the Southern California Coastal Ocean Observing System:

"SCCOOS brings together coastal observations in the Southern California Bight to provide information necessary to address issues in climate change, ecosystem preservation and management, coastal water quality, maritime operations, coastal hazards and national security. As a science-based decision support system, SCCOOS works interactively with local, state and federal agencies, resource managers, industry, policy makers, educators, scientists and the general public to provide data, models and products that advance our understanding of the current and future state of our coastal and global environment."

With this mission in mind, please follow the procedure below.

Materials:

Website: [www.sccoos.org](http://www.sccoos.org)

Time Allotment: One 45-minute class period

Procedure:

The procedure for this activity will lead you through data collected via ocean observing systems. Please answer questions as they appear during the procedure.

Go to [www.sccoos.org](http://www.sccoos.org).

Click on "Data, Products and Modeling"

Click on "Los Angeles"

Click on "Bathymetry" (this is the study of the topography of the sea floor).

Palos Verdes Peninsula can easily be identified in the middle of the map.

1. What happens to the sea floor just off Palos Verdes?

2. How might this topography affect water flow from the land (storm drains, runoff following rain)?

3. How is the seafloor surrounding Catalina (the only island in this map) similar to that of Palos Verdes? What human impacts are found in Palos Verdes that are not found on Catalina Island?

Now, click on "surface currents" in the left margin. This will bring up a map of the surface currents offshore in Los Angeles. Click the "satellite" button at the top right.

Using the zoom tool to the left, find a perspective on the coast that allows you to view the arrows indicating surface currents off Palos Verdes Peninsula and Catalina Island.

Think back to the bathymetry map and your answer to questions 1, 2 and 3. Consider the following questions as you view the surface currents data.

4. Do the surface currents appear to be affected by the topography you viewed offshore of Palos Verdes Peninsula and Catalina Island? Explain your answer.

5. What additional data would you need to explain the general flow of currents at this location at this time?

Click on one of the arrows and look at the additional data that is found there. There may be a slight delay as this loads.

6. Does the wind direction appear to have any bearing on the direction of the surface currents at the coordinates you selected?

7. What would be the expected relationship between wind and surface currents?

In the left margin, click on "wind and rainfall forecast". Scroll down and select "Los Angeles". Here is more data on the winds in this area. You will notice you are still looking at Palos Verdes Peninsula and Catalina. Run your mouse along the map and you will see data that pops up on latitude, longitude, wind speed and direction. Notice that this is near real-time data.

8. Compare three wind speeds: one from the middle of the Catalina Channel (between Catalina and Palos Verdes Peninsula), one just offshore in Santa Monica Bay, and one well inland in Los Angeles. Which speed is higher? Why might this be?

9. What wind event would change these data? How would they change?

Now, click on "cast data for Los Angeles". A map showing the sites of ship and glider data collection will appear. Select among the red circles along the Palos Verdes Peninsula. Record the following for the site you selected:

Study name \_\_\_\_\_ (this a number)

Location \_\_\_\_\_

Click "details" following the study name.

A chart showing temperature, one showing salinity and one showing density data from 1998 to the present in this location to a depth of 100 meters will appear. Make a statement about the relationship between each of these parameters and depth that is supported by these data.

Temperature \_\_\_\_\_

Salinity \_\_\_\_\_

Density \_\_\_\_\_

8. Why is it so important to have consistent data on these parameters?

Take some time to look at other parts of Southern California and other data collection products available at SCCOOS.

Keep track of where you go and what you find here:

Other data sets investigated:

List of things you learned from these data:

9. Return to the mission of SCCOOS as listed in the introduction. Reflect upon your opportunity to dive into the data provided at this website. Although you have spent a short period of time at the website, in your opinion is the mission of this organization being successfully accomplished? Explain your answer.

10. Students often bring a fresh perspective to science, Can you think of any other data you would like to see funded that would provide an even better picture of the coastal environment of Southern California?