





Trash Travels: Plastic Pollution in the Pacific Ocean



- A. In Google Earth, go to the Search Panel under the "Fly to" tab.
- B. Type your school's name or address and hit search 
- C. Click "**Add Placemark**"  on the tool bar.
- D. **Name** your placemark with the name of your school.




1) **What is the latitude and longitude of your school? (Record below)**

Latitude _____

Longitude _____



- E. Use the Navigation Controls to "zoom out" until you can see the ocean.
- F. Use the Ruler tool  to **measure the distance** from your school to the ocean.

2) **What is the distance from your school to the Ocean?**




- G. Using zoom functions and the navigation controls, begin to follow the path that you think a raindrop would take through the watershed from your school to the ocean.



3) **a. What is the force acting on the water that causes the water to continue moving after reaching the ground?**

b. How can this knowledge help you predict where the water will travel?

c. Latitude and longitude alone do not provide enough information to help you predict the route your rain drop will take- what third measurement of location do you need? ( Hint: Activate this function now by checking the box next to "terrain" under the "Layers" tab- the third measurement will appear at the bottom of the screen with latitude and longitude. Do this before continuing.)



- H. Imagine the largest storm of the year and where that water would flow. Use the measurement you activated in question 3 to continue following the path that rainwater would most likely take through the watershed from your school to the ocean.

4) **a. Given what you have observed along the route of your watershed, do you think that a bucketful of the water sampled just before it entered the ocean would be clean enough to drink? If not, what types of pollutants would you expect to find in the water?**

b. What types of pollutants would you predict that you might find in storm water run off that you could observe with your eyes? Where do these go?



Plastic debris is one type of pollution entering the Pacific Ocean through our watersheds. Oceanographic Research Vessel *Alquita* sailed from the Port of Long Beach on a research voyage to Hawaii studying plastic pollution in the Pacific Ocean




I. Scroll out until you can view the Pacific Ocean.

J. Take a moment to follow the voyage by clicking on the sailboat icons



K. Use the navigation control to “zoom in” until Day 2 and Day 3 of the voyage fill the screen.

L. Measure  the distance between the location of the research vessel on each of these days. (The position of the sailboat icons in Google Earth are the positions that the research vessel was at on noon that day.)



5) a. How far did the research vessel travel in 24 hours?

**b. What was the average speed that the research vessel was traveling at?
(Remember average speed = total distance traveled divided by the total time elapsed.)**



The speed you calculated above was the average speed, but the research vessel's speed may have varied during this time.



M. Click on the sailboat icon for “Day 2” to read the captain's comments about the day. You will notice that the vessel actually stopped for some time to do research.



6) a. What species of marine mammal did the crew observe while the boat stopped?

**b. Can that species of marine mammal move faster than the average speed you calculated for the research vessel? (Use an internet browser to visit the following site to gather the information you need to answer this question;
<http://www.acsonline.org/factpack/finwhl.htm>) Circle one. YES / NO**



- N. Use the ruler tool to measure the distance from the “Day 4” icon to the shore.
- O. Click on the sailboat icon for “Day 4.”



7) a. What plastic pollution does the crew describe collecting on Day 4?

b. How far was the research vessel from shore on Day 4? _____

c. Assuming the plastic was moving at the average speed of the California Current (1 km per hr or 0.6 mph) what is the minimum amount of time that it would have taken the plastic to travel from the nearest shore to the point where it was collected?

d. What other information and variables would you need to take into account to make this calculation more accurate?



8) What other types of plastic pollution did the research crew find during their voyage?



9) Do you think the type of pollution that these researchers are studying has an effect on marine organisms living in the Pacific Ocean? If so, what effect?



10) What could you do, as an individual, to help keep plastic debris out of the Pacific Ocean?