



# Into the Web: Plastic Pollution in the Pacific Ocean

## Concepts

### 6<sup>th</sup> Grade Earth Sciences

#### Focus on Earth Sciences

2. Topography is reshaped by the weathering of rock and soil and by the transportation and deposition of sediment. As a basis for understanding this concept:

- a. Students know water running downhill is the dominant process in shaping the landscape, including California's landscape.
- b. Students know rivers and streams are dynamic systems that erode, transport sediment, change course, and flood their banks in natural and recurring patterns.

#### Energy in the Earth System

4. a. Students know the sun is the major source of energy for phenomena on Earth's surface; it powers winds, ocean currents, and the water cycle.

#### Ecology (Life Sciences)

5. Organisms in ecosystems exchange energy and nutrients among themselves and with the environment. As a basis for understanding this concept:

- a. Students know energy entering ecosystems as sunlight is transferred by producers into chemical energy through photosynthesis and then from organism to organism through food webs.
- b. Students know matter is transferred over time from one organism to others in the food web and between organisms and the physical environment.

### 6<sup>th</sup> Grade Investigation and Experimentation

7 b. Select and use appropriate tools and technology (including calculators, computers, balances, spring scales, microscopes, and binoculars) to perform tests, collect data, and display data.

## Vocabulary

- Erosion
- Sediment
- Ocean Currents
- Food Web
- Chemical Energy
- Phytoplankton
- Zooplankton

## Grade Level - 6

## Summary

Using Google Earth, students explore local geography to determine their proximity to the ocean, how water shapes their landscape, and how water transports plastic pollution to the ocean. Using geographically linked observations made by the crew aboard Oceanographic Research Vessel Algalita, students view plastic pollution collected from the Pacific Ocean and learn how that plastic gets incorporated into the marine food web.

## Materials

- "Into the Web: Plastic Pollution in the Pacific Ocean" activity sheet for each student or group: <http://algalita.org/MappingPlasticPollution.htm>
- Computers with Google Earth software installed and access to the internet
- Any Voyage.kml file: <http://algalita.org/MappingPlasticPollution.htm>
- Pencil or pen (if activity sheets are printed).

## Procedure

1. Discuss oceanographic research and the topic of plastic marine debris with your students. Provide students with some background on the research voyage they will be viewing. Much of this information is contained within the text of the voyage - more detail can be found at <http://algalita.org/>
2. Students can work individually or in groups. The worksheet provides detailed directions that assume Google Earth is already open and the .kml file of the voyage is already loaded for the students use.
3. Question #2 asks the students to investigate how running water shapes topographical features. This will be easier to visually recognize in some regions than others. View your region in Google Earth to ascertain what scale students use to most easily view this phenomenon. Encourage students to try different scales (using the zoom feature) to help them identify these features.
4. For questions 4 and 5 the amount of text and the vocabulary provided under each vessel communication may be challenging at the sixth grade level. If this is the case, encourage students to use the images provided by the crew to find the plastic pollution items and organisms they are looking for.
5. Have students compare the maps they made in question 2. Did they find similar topographical features to those of their classmates? Discuss question 4 - what was the farthest distance from land that a student measured to where the ship's crew observed plastic debris? Discuss the student's answers to questions 3 and 7. What other solutions can the students think of that would address the human made pollutants they listed? This is a good opportunity to discuss the distance of your school from the ocean and your connections to the ocean through the watershed.