



# In the Flow: Plastic Pollution in the Pacific Ocean

## Concepts

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

3. Water on Earth moves between the oceans and land through the processes of evaporation and condensation. As a basis for understanding this concept:

a. Students know most of Earth's water is present as salt water in the oceans, which cover most of Earth's surface (approximately 70%).

b. Students know when liquid water evaporates, it turns into water vapor in the air and can reappear as a liquid when cooled or as a solid if cooled below the freezing point of water.

c. Students know water vapor in the air moves from one place to another and can form fog or clouds, which are tiny droplets of water or ice, and can fall to Earth as rain, hail, sleet, or snow.

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

6. f. Select appropriate tools (e.g., thermometers, meter sticks, balances, and graduated cylinders) and make quantitative observations.

g. Record data by using appropriate graphic representations (including charts, graphs, and labeled diagrams) and make inferences based on those data.

### EXTENSION ACTIVITY

3 e. Students know the origin of the water used by their local communities.

## Vocabulary

- Evaporation
- Condensation
- Water vapor
- Precipitation
- Watershed

## Grade Level- 5

### Summary

Using Google Earth students explore Earth's surface to discover the vastness of the planet's oceans, and obtain a global view of the water cycle. Using geographically linked observations made by the crew aboard Oceanographic Research Vessel *Algalita*, students learn about plastic pollution in the Pacific Ocean and how plastic contamination is linked to the water cycle and their daily choices.

### Materials

- "In the Flow: 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. The amount of text and the vocabulary provided under each vessel communication may be challenging for the fifth grade level. If this is the case, encourage students to use the images provided by the crew to find the plastic pollution items they are looking for.
4. Discuss the student's answers to questions 9, 10 and 11. Ask students what local sources of plastic pollution there might be and what they can do to prevent plastic from entering the ocean. This is a good opportunity to discuss the distance of your school from the ocean and your connections to the ocean through the watershed.

### Extensions

#### Tap Water Investigation

Much of the plastic debris polluting the world's oceans comes from single use disposable items such as plastic water bottles. A simple alternative to disposable water bottles is drinking from re-usable bottles; however, many people are concerned about their local water quality. Have your students view the source of their tap water in Google Earth. Finding the source of local tap water can either be a research assignment or the location can be provided to simplify the lesson. Many bottled water companies also use municipal tap water from different locations (check bottle labelling for locations). These locations can also be visited in Google Earth. Local water quality information should be available to lend more information to the investigation.