

RESOURCE LIBRARY
ACTIVITY : 50 MINS

The Geography of Ocean Currents

Students use maps to learn about ocean currents, research case studies of ocean spills, and discuss the role of oceanographers.

GRADES

6 - 8

SUBJECTS

Geography, Physical Geography

CONTENTS

7 Links

OVERVIEW

Students use maps to learn about ocean currents, research case studies of ocean spills, and discuss the role of oceanographers.

For the complete activity with media resources, visit:

<http://www.nationalgeographic.org/activity/geography-ocean-currents/>

DIRECTIONS

1. Have a whole-class discussion about ocean currents.

Display for students the NG Education interactive map with the Ocean Surface Currents data layer selected. Point out the Northern and Southern Hemispheres. Ask:

- *What are the general water movements called? (currents)*
- *What factors do you think affect these movements? (wind; water temperatures)*
- *What is the pattern of currents in the Northern Hemisphere? In the Southern Hemisphere? (The North has primarily clockwise currents; the South has counterclockwise.)*

- *If you were on a cruise ship that sank off the coast of California, in which direction would your lifeboat most likely drift? (south)*
- *If tons of sewage and waste were dumped off the coast of the Mariana Islands, would it more likely reach Alaska or Hawaii? How? (Alaska; by floating along the Kuroshio current)*

2. Have students look at the NG Photo Gallery: Polluted Oceans.

View the National Geographic Photo Gallery: Polluted Oceans with students. Invite volunteers to read each caption aloud as you scroll through the gallery. Check to make sure that students understand that ocean currents are the primary way that all of the trash, oil, and other pollutants move around the Earth.

3. Introduce the Great Pacific Garbage Patch.

Explain to students that one area of spiraling ocean currents has been nicknamed the Great Pacific Garbage Patch. This area is approximately twice the size of the United States. It accumulates marine debris that gets trapped by the clockwise currents. Go to the CNN article “Woman tackles ‘Great Garbage Patch’” and find the interactive map on the page. Have students click on and read about the identified currents (Kuroshio, North Equatorial, and North Pacific) and the patch itself. Make sure students understand that there are many named currents that do not appear on this interactive.

4. Have students research case studies of major ocean pollution events.

Divide students into six small groups. Assign each group one of the notable events listed below. Have groups use the National Geographic and Dr. Curtis Ebbesmeyer websites to find facts about their assigned events and report back to the class.

- 1989 *Exxon Valdez* oil spill
- 1990 Nike shoe spill
- 1991 arsenic drum spill
- 1992 rubber bath toy spill
- 1997 Lego spill
- 2010 *Deepwater Horizon* oil spill

Extending the Learning

Have students read the page *An Oceanographer Studies the Ocean* on the NOAA website.

Ask:

- *What topics do oceanographers study?* (marine life, ecosystems, ocean circulation, plate tectonics, geology of the sea floor, and chemical and physical properties of the ocean)
- *What kind of oceanographers study currents?* (physical oceanographers)
- *What kind of oceanographers study the effects of pollutants?* (chemical oceanographers and marine chemists)

OBJECTIVES

Subjects & Disciplines

Geography

- Physical Geography

Learning Objectives

Students will:

- describe how ocean currents move and what affects their movement
- explain how ocean currents move marine debris and collect it
- analyze case studies of major ocean pollution events
- explain the role of oceanographers

Teaching Approach

- Learning-for-use

Teaching Methods

- Discussions
- Reading
- Visual instruction

Skills Summary

This activity targets the following skills:

- Critical Thinking Skills
 - Analyzing
 - Understanding
- Geographic Skills
 - Acquiring Geographic Information
 - Analyzing Geographic Information

National Standards, Principles, and Practices

NATIONAL GEOGRAPHY STANDARDS

- Standard 1:

How to use maps and other geographic representations, geospatial technologies, and spatial thinking to understand and communicate information

Preparation

What You'll Need

REQUIRED TECHNOLOGY

- Internet Access: Required
- Tech Setup: 1 computer per small group, Projector
- Plug-Ins: Flash

PHYSICAL SPACE

- Classroom

GROUPING

- Large-group instruction
- Small-group instruction

BACKGROUND & VOCABULARY

Background Information

Over 70% of planet Earth is covered with water. Although there are labels that separate names of different regions, the Earth ultimately has just one large, interconnected ocean. The currents of this one big ocean carry people, animals, and debris around the globe. Tracking marine debris is one way to learn more about currents and their impact on human activity.

Prior Knowledge

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Recommended Prior Activities

- [Our Interconnected Ocean](#)
- [The Benefits of Studying Ocean Currents](#)

Vocabulary

Term	Part of Speech	Definition
current	<i>noun</i>	steady, predictable flow of fluid within a larger body of that fluid.
Great Pacific Garbage Patch	<i>noun</i>	area of the North Pacific Ocean where currents have trapped huge amounts of debris, mostly plastics.

For Further Exploration

Websites

- [Marine Conservation Biology Institute: From Sea to Shining Sea](#)
- [NOAA: Marine Debris Program](#)

PARTNER



