

RESOURCE LIBRARY
ACTIVITY : 30 MINS

Mapping the World's Watersheds

Students label major rivers and outline watersheds on a world map. They compare the shapes of various watersheds and discuss how topography influences their shapes.

GRADES

3 - 8

SUBJECTS

Earth Science, Geology, Oceanography, Geography, Physical Geography

CONTENTS

1 Video, 1 Link

OVERVIEW

Students label major rivers and outline watersheds on a world map. They compare the shapes of various watersheds and discuss how topography influences their shapes.

For the complete activity with media resources, visit:

<http://www.nationalgeographic.org/activity/mapping-watersheds/>

DIRECTIONS

1. Students locate a nearby river on a world map.

Ask a volunteer to point to the area where students live on the World Physical Mapmaker Kit. Ask a different volunteer to use a blue marker to trace a nearby river or stream on the map along its path to the ocean. Have a third volunteer use a black marker to trace all of the streams and rivers that flow into that river. Explain that a smaller river or stream that flows into a larger river is called a tributary.

2. Discuss how watersheds connect to the ocean.

Discuss how all land on Earth is part of a watershed. A watershed is an entire river system or an area drained by a river and its tributaries. When it rains, or snow melts, water soaks into ground and becomes part of the ground water, or it runs off of the land or through storm drains into the nearby streams or rivers. Watersheds connect us to the ocean because much of the water that falls within a watershed as precipitation "drains" into streams and rivers. This water flows in rivers to the ocean.

3. Students locate major rivers on Earth and trace watersheds.

Have students work in pairs. Assign each pair two rivers from the list below. Have one student trace the path of a river with a blue marker from its start to end, where it meets the ocean. Have the second student trace all of the tributaries that flow into that river with a black marker. This process is the same as the one the student volunteers performed in Step 1. Once most of the tributaries have been highlighted in black, instruct the pair to "connect the dots," outlining in a third color the points from where all of the tributaries start and the point where the major river joins the ocean. This should create an outlined "bubble" around each major river and all of its tributaries. Explain to the students that they are outlining watersheds.

Suggested Rivers:

- Amazon
- Amur
- Columbia
- Congo
- Kolyma
- Lena
- Mackenzie-Peace
- Mekong
- Mississippi
- Murray-Darling
- Niger
- Nile
- Ob-Irtysh
- Orinoco
- Parana
- Saint Lawrence
- Yangtze

- Yellow
- Yenisey-Angara
- Yukon

4. Students compare and contrast watershed shapes.

Have pairs compare and contrast the shapes of the two watersheds they drew. Ask: *How are the shapes of the two watersheds similar? How are they different?* Call on pairs to share the differences and similarities they found between their two watersheds with the rest of the class.

5. Students analyze why watersheds are shaped differently.

Ask: *Why do you think watersheds are shaped the way they are?* Students can try to picture what the land within the watersheds looks like. *If a watershed is large and wide, how might the land be shaped? If a watershed is small and narrow, how might the land be shaped?*

Explain that topography is the shape of the surface features of an area. Different watersheds have different shapes because the topography of the land within the watershed is different. If a watershed is narrow and small, that probably means that the land within the watershed is steep. If a watershed is wide and sprawling, the land within the watershed is flatter. If students are having a hard time visualizing how topography influences watershed shape, use a piece of paper to demonstrate the concept. To demonstrate a small and narrow watershed with steep topography, have students curl the sides of a piece of paper upward. Ask what would this watershed look like from above? Lay the paper flat to demonstrate a large and wide watershed. Repeat the same question as before, asking again what this watershed would look like from above. The curled paper as viewed from above will look much smaller than the flat paper.

6. Students draw their local watershed and compare it to the shapes of other watersheds.

Have a volunteer outline the shape of the watershed of the river from Step 1. Have students take a step back from the map and compare the shape of their local watershed to the shapes of the other watersheds that have been drawn on the map. Discuss the topography of students' local watershed.

Tip

If you laminate the map, you can use dry or wet erase markers instead of regular markers. Additionally, laminating the map ensures that you can reuse it.

Modification

You can adapt the activity for different MapMaker Kit sizes as needed for different settings.

Extending the Learning

Have students make predictions on what the land cover looks like within their watershed. Using the [MapMaker Interactive](#), have students test their predictions by looking up their watershed and using the different layers to explore the land cover.

OBJECTIVES

Subjects & Disciplines

Earth Science

- Geology
- [Oceanography](#)

Geography

- [Physical Geography](#)

Learning Objectives

Students will:

- identify major rivers, tributaries, and watersheds
- explain a watershed's connection to the ocean
- compare shapes of watersheds and relate them to topography

Teaching Approach

- Learning-for-use

Teaching Methods

- Cooperative learning
- Discovery learning
- Discussions

- Hands-on learning

Skills Summary

This activity targets the following skills:

- Critical Thinking Skills
 - Analyzing
 - Applying
- 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

- **Standard 3:**

How to analyze the spatial organization of people, places, and environments on Earth's surface

- **Standard 4:**

The physical and human characteristics of places

OCEAN LITERACY ESSENTIAL PRINCIPLES AND FUNDAMENTAL CONCEPTS

- **Principle 1g:**

The ocean is connected to major lakes, watersheds and waterways because all major watersheds on Earth drain to the ocean. Rivers and streams transport nutrients, salts, sediments and pollutants from watersheds to estuaries and to the ocean.

Preparation

What You'll Need

MATERIALS YOU PROVIDE

- Markers
- Paper

REQUIRED TECHNOLOGY

- Internet Access: Required
- Tech Setup: Printer
- Plug-Ins: Flash

PHYSICAL SPACE

- Classroom

SETUP

Wall or floor space large enough to display a giant map

GROUPING

- Large-group instruction

OTHER NOTES

This activity works best with the Water Planet MegaMap. Print and assemble the map as a class or before class. Use the assembly video provided to help with this process. If you do not have room for the large map, print several tabletop maps for the students to use in small groups.

BACKGROUND & VOCABULARY

Background Information

During the water cycle, water travels through watersheds composed of streams and rivers and flows into the ocean. When precipitation falls and the land has absorbed all the water it can, the remaining water travels as runoff over the ground within the watershed. A watershed is

the land included as part of an entire river system, or an area drained by a river and its tributaries. This runoff drains into the tributaries and river and eventually makes its way to the ocean. We are all connected to the ocean through this process. The shape of watersheds is greatly influenced by the land's topography.

Prior Knowledge

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Recommended Prior Activities

- None

Vocabulary

Term	Part of Speech	Definition
groundwater	<i>noun</i>	water found in an aquifer.
precipitation	<i>noun</i>	all forms in which water falls to Earth from the atmosphere.
river	<i>noun</i>	large stream of flowing fresh water.
storm runoff	<i>noun</i>	rainwater from storms.
topography	<i>noun</i>	study of the shape of the surface features of an area.
tributary	<i>noun</i>	stream that feeds, or flows, into a larger stream.
watershed	<i>noun</i>	entire river system or an area drained by a river and its tributaries.

For Further Exploration

Maps

- [USGS: Science in Your Watershed](#)

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