Purpose

This activity is designed to help students understand the factors that can put a strain on water supplies. What would they do if they had difficulty obtaining water?

Students learn about patterns, scale, proportion, and quantity. They ask questions and define problems, analyze and interpret data, and use mathematics and computational thinking (NGSS: ESS2.C.1, ESS2.C.2).

Data Learning Objective

- The student will read, decode, recognize, and describe patterns in a variety of data visualizations.
- The student will relate data to real events and the student’s own life.

Description

Students look at a drought monitor map from August 2011 and determine which parts of the country were experiencing a drought. Did their own area experience a drought? Students compare the drought intensity between the years 2011 and 2008.
WHAT’S THE STORY?

The following story talks about water shortages that have happened in some U.S. communities. Could it happen to you?

Water Running Dry

The year 2011 was a dry one for Texas. As of August 23, 2011, more than 80% of the state’s land area was considered to be experiencing “exceptional drought” conditions (see Figure 2.1). The dry conditions caused wildfires to burn out of control in some parts of the state, and ranchers and farmers struggled to cope as cattle ponds and farm fields dried up.

![Map showing areas of the United States that were experiencing drought conditions as of August 23, 2011. The table explains the possible impacts associated with each drought severity level.]

### Table: Drought Severity Classification

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>DESCRIPTION</th>
<th>POSSIBLE IMPACTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>D0</strong></td>
<td>Abnormally Dry</td>
<td>Going into drought: Short-term dryness slowing planting, growth of crops, or pastures. Coming out of drought: Some lingering water deficits; pastures or crops not fully recovered.</td>
</tr>
<tr>
<td><strong>D1</strong></td>
<td>Moderate Drought</td>
<td>Some damage to crops and pastures; streams, reservoirs, or wells low; some water shortages developing or imminent; voluntary water-use restrictions requested.</td>
</tr>
<tr>
<td><strong>D2</strong></td>
<td>Severe Drought</td>
<td>Crop or pasture losses likely; water shortages common; water restrictions imposed.</td>
</tr>
<tr>
<td><strong>D3</strong></td>
<td>Extreme Drought</td>
<td>Major crop/pasture losses; widespread water shortages or restrictions.</td>
</tr>
<tr>
<td><strong>D4</strong></td>
<td>Exceptional Drought</td>
<td>Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies.</td>
</tr>
</tbody>
</table>
Even parts of the United States that thought they would never run out of water have experienced severe shortages. In May 2008, the southeastern United States was in the midst of a prolonged drought, as shown on the map in Figure 2.2.

The lakes used as water supplies by Atlanta, Georgia, and Raleigh, North Carolina, reached dangerously low levels during this drought, and neighboring states began fighting over access to water. Georgia even challenged its boundary with Tennessee, saying Georgia’s boundary should be moved north to include part of the Tennessee River.

During this 2007–2008 drought, the small community of Orme, Tennessee, was particularly hard hit. The people in this town relied on a waterfall-fed creek and a natural spring for its water supply, and these supplies dwindled to a trickle. They had to truck in water to fill the town’s water tank, and the water supply to houses was shut off except for 3 hours every evening. A lifelong resident of Orme, Cheryl Evans said, as she rushed to do her dishes, laundry, and fill water jugs, “It’s strange. I can’t tell you how many times I’ve turned on the faucet before remembering the water’s been cut.”

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About the Reading

Write your responses to the following questions in your notebook. You won’t find the answers to most of these questions in the story. Use your own knowledge and ideas, and be prepared to discuss your answers with the class.

1. Study the map in Figure 2.1. Use the legend, which explains the meaning of the colors. Which states experienced the worst drought conditions in August of 2011? Did your area experience drought?

2. Compare the map in Figure 2.1 to the map in Figure 2.2. How are the patterns in these maps similar? How are they different?

3. Have you or anyone in your family experienced drought? If so, what were some of the effects on people’s lives?

4. If you were not able to obtain water as you do now and you had to find it yourself, where would you go to get it? How far would you have to go?
Responses to About the Reading, “Water Running Dry”

1. Study the map in Figure 2.1. Use the legend, which explains the meaning of the colors. Which states experienced the worst drought conditions in August of 2011? Did your area experience drought? Students should observe that a broad area covering much of Texas, New Mexico, Oklahoma, Louisiana, and parts of Kansas experienced exceptional (D4) drought in August 2011. Other states in the southeast and southwest also experienced severe drought at that time, and even Hawaii was experiencing moderate drought.

2. Compare the map in Figure 2.1 to the map in Figure 2.2. How are the patterns in these maps similar? How are they different? Students should notice that parts of Texas and the Southeastern United States experienced extreme drought during both of these time periods. However, the drought in Texas was much more widespread and included surrounding states such as New Mexico and Oklahoma in 2011. This includes wide areas of exceptional (D4) drought. They may also notice that areas of drought were more concentrated in southern states in August, 2011 than in May, 2008.

3. Have you or anyone in your family experienced drought? If so, what were some of the effects on people’s lives? Answers will range from simple inconvenience (taking fewer or shorter showers, re-using dish water for flushing toilets) to varying degrees of hardship (paying a higher price for water, having expensive landscaping die, having to boil water before drinking).

4. If you were not able to obtain water as you do now and you had to find it yourself, where would you go to get it? How far would you have to go? Answers will vary and will reveal students’ understanding of natural water supplies. They may say that they would obtain it from nearby streams and rivers and try to purify it.

Teaching Strategies

You might also want to ask students who in their household would be responsible for getting their water if they had to find it themselves? What effects would they expect this to have on their family?