Climate Change Lesson 3 - Global Water Supply

Objectives

- Students will learn about the global water supply and come up with solutions to reduce their water consumption
- Students will understand the difference between salt and fresh water
- Students will understand that 96.5 percent of water on Earth is in our oceans, covering 71 percent of the surface of our planet. Only a small amount of that water is drinkable

Vocabulary

- Atmosphere
- Fresh water
- Ground water
- Precipitation
- Saline Water
- Salt water
- Watercycle

Materials

For the first activity, an apple for each student. For the second activity, tap water, soda water, mineral water, salty water, distilled water, paper cups, water containers

Warm Up

1. Show participants a picture of the Earth taken from space to begin a discussion about water on Earth. Link: https://pmm.nasa.gov/education/sites/default/files/article_images/globe_west_2048.jpg
   Discussion Questions:
   - *What do you see in this image? (land, water, clouds)*
   - *How was this image taken? (on a satellite from space)*
   - *Why is water important to humans?*

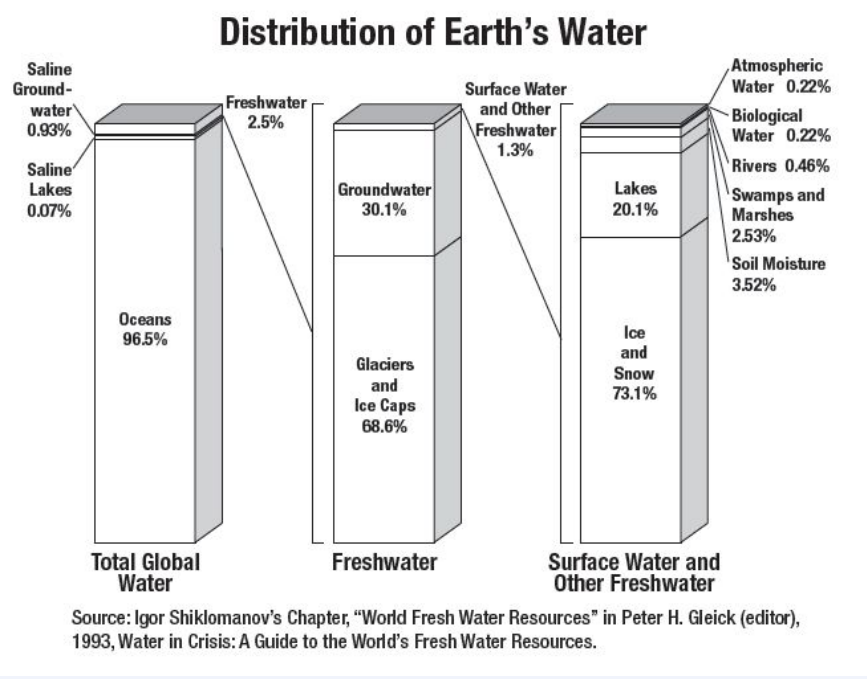
2. Direct the conversation toward the value of water to humans and other living organisms on Earth.
   Discussion Questions:
   - *What are some of the ways that you use water every day?*
   - *Where does the water that you use come from?*
   - *Is water a finite or infinite resource? How do you know?*

Lesson

Have participants work in small groups to discuss the information, or lead the discussion to ensure they are reading the graphic information accurately. Begin by having students read the following information from NASA's TRMM website and review the graphic:

Water is essential to life, as it nourishes our cells and removes the waste they generate. Water determines whether plants produce food, or whether they wither from drought or rot from dampness. Water is essential to our homes and factories, to our production of food, fiber, and manufactured goods, and to just about everything else we produce and consume. Although water covers more than 70 percent of the Earth's surface, only about 3 percent is freshwater—and about 69 percent of that is inaccessible because it is frozen in glaciers and icecaps.

Rainfall is one of the most important weather and climate variables that determine whether humankind survives, thrives, or perishes. Water is so ever-present on planet Earth that we often take it for granted. Too much water results in devastating floods, and the famine caused by too little water (drought) is responsible for more human deaths than all other natural disasters combined. Water comprises more than 75 percent of our bodies and as much as 95 percent of some of the foods we eat 1.



Discussion Questions

- *What does "saline" mean? How does salinity affect water for human usage?*

- *What is "groundwater"? How does water get into the ground?*
- *What is a "glacier"? Where do we find glaciers on Earth?*
- *What is "atmospheric water"?*
- *What do you think "biological water" might be?*

Assignment

The following three activities will help students understand the global water supply.

1. Apple: How much water is in an apple?

   Steps:

   1. Peel the apple, and then weigh and record the weight
   2. Place the apple in a dry location
   3. Leave the apple for two weeks
   4. Weigh the apple
   5. Determine the percentage of weight that has disappeared
   6. Explain why the apple weighs less now

2. Water Tasting: Does all water taste the same?

   Steps:

   1. Collect tap water, soda water, mineral water, salty water, and distilled water in containers that have been washed in the same way
   2. Pour the different types of water into paper cups
   3. Taste and observe the differences
   4. Discuss the differences
   5. Bonus: As an extension, students can survey their classmates and display their results in a graph

Wrap Up

For homework, have students calculate their water footprint using this website:
http://www.watercalculator.org/

Resources
https://climatekids.nasa.gov/10-things-water/
https://pmm.nasa.gov/education/lesson-plans/freshwater-availability-classroom-activity
http://www.watercalculator.org/