

# How Wet is our Planet?



## Objective

To describe in visual terms the amount and distribution of water in the earth's oceans, rivers, lakes, groundwater, ice caps, and atmosphere.

## Background

The earth is also known as the "water planet," as approximately 70 percent of its surface is water. Water is found in rivers, ponds, lakes, oceans, ice caps, clouds, and as groundwater. All these forms of water are part of a dynamic and interrelated flow called the hydrologic cycle, in which each part of the cycle shares a portion of the total amount of water on the planet. Many people think water is a limitless resource, yet simple calculations demonstrate the fact that the amount of water on our planet is in fact limited. It is known that the earth has the same amount of water now as it did when it was first created, therefore, the amount of water available to humans and wildlife depends largely on how its quality is maintained. Every person has the responsibility to conserve water, use it wisely, and protect its quality.

**Duration:** 20 minutes

**Age Range:** Junior & Secondary

## Materials Needed

- Large map of the world or 12" diameter globe (preferably one which depicts clouds)
- Five-gallon container (aquarium or bucket)
- Three clear containers (cups or jars). Label one "freshwater," the second "groundwater," and the third "rivers and lakes"
- Tablespoon
- Eye dropper
- Blue food colouring (optional: use a few drops to tint water for improved visibility)



## Procedure

1. Fill the empty bucket or aquarium with five gallons of water, and ask the students to imagine that this is all the water on Earth including the water that is contained in the atmosphere, glaciers, ice caps, lakes, rivers, oceans and streams.
2. Next, have a volunteer take out 25 tablespoons of water from the bucket and place it in the large, clear jar labelled “freshwater.” This represents all the freshwater on Earth (water contained in the atmosphere, icecaps, rivers, ponds, lakes, and groundwater). Now all the water in the bucket/aquarium represents all the salt water on Earth. Ask the students what the difference between salt and fresh water is (saltwater is not drinkable, fresh water is).
3. Next, have another volunteer take out 8 tablespoons from the freshwater supply and place it in the measuring cup labelled “groundwater.” This represents all the groundwater on Earth. Discuss that groundwater is water that is located underground in the cracks and spaces between sand and gravel. Ask them if they have ever dug a hole in their back yard to discover water in the sand, tell them that this is groundwater.
4. Finally, have a third volunteer take out one tenth of a tablespoon (or about 25 drops with an eye dropper) and pour it in a small glass labelled “rivers and lakes.” This water represents all the water in rivers and lakes on Earth. Now we have removed the water contained in groundwater, rivers and lakes from the world’s “freshwater” container, the “freshwater” container now represents all the water contained in the atmosphere (clouds, rain, snow) and all the water on the planet that is frozen (polar ice caps and glaciers). Ask the students to compare the amount of drinkable water (the “groundwater” and “rivers and lakes” container) to the amount of undrinkable water (the bucket/aquarium of salt water and the “freshwater” container).

## Conclusion

We all have a responsibility to protect water in all its forms on Earth. Of immediate concern is the protection of our drinking water sources. The amount of freshwater on Earth represents a small percentage of the total water available.

The freshwater in groundwater, rivers, and lakes is our primary source of drinking water. You may have been surprised to learn that groundwater and surface water make up such a small percentage of the Earth's total water supply. It becomes very apparent then how important it is to protect these water sources since they are available in a limited quantity and since our existence depends on them.

### **Activity Source**

Adapted from "Making Discoveries," published by The Groundwater Foundation.

