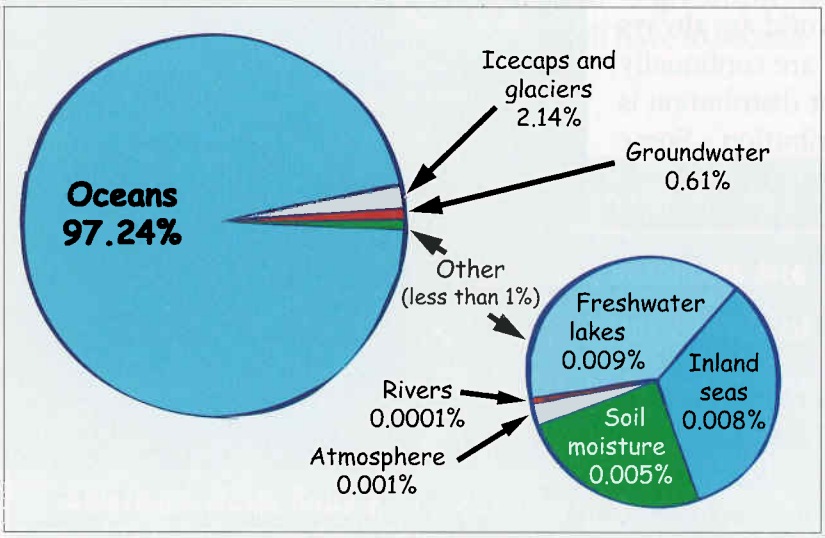
Earth is known as the water planet. Of all the planets in the Solar System, Earth is the only one that has vast oceans of water. If your first view of Earth from space was of the Pacific Ocean, you might think Earth was completely covered with water.

Earth is a closed system (almost). That means almost no material comes to Earth from space, and, on the flip side, no material is lost. This includes the water. All the water that is here now has been here for billions of years. The good news is that Earth's water is going to stay here for the next several billion years, but the probability of getting any more water from some outside source is essentially zero. What you see is what we've got.

Where Is Earth's Water?

By now, you know water is almost everywhere—in the oceans, in and on the land, and in the atmosphere. The pie charts show how water is distributed on Earth. A quick glance shows that just about all Earth's water is in the oceans. All that water and not a drop to drink, because to humans, seawater is poisonous. To acquire the water we need for survival and to support civilization, we need access to the small portion of Earth's water that is fresh. After subtracting the amount of fresh water frozen as icecaps and glaciers and as groundwater, that small portion is less than 1% of the water. Even this small percentage is still a pretty impressive volume of water—about 13 million cubic kilometers. This water is in lakes, rivers, swamps, soil, snow, clouds, water vapor, and organisms. It is known as free water because it is free-moving and constantly being refreshed and recycled on and over the land.



Source: *The Hydrologic Cycle* (pamphlet), U.S. Geological Survey, 1984.

Most of the water we can easily use comes from rivers and lakes. Water in rivers and lakes is known as surface water. Water that falls as precipitation can either remain as surface water or seep into the ground, where it is stored in soil or porous rock. Underground water is known as groundwater. You can see from the pie charts on the previous page that there is much more water stored underground than at the surface. It's water that is close at hand, but water that we can't see.

Water Use

Americans place high demands on water sources. Think about this. In 1995, people in the United States used about 1204 billion liters of surface water a day. They also used about 289 billion liters of groundwater a day. That's a total of nearly 1500 billion liters every day. Over the course of a year that adds up to more than 500,000 billion liters! That translates into half a million cubic kilometers per year. This is a significant percentage of the 13 million cubic kilometers of free water available on Earth—about 4%.

Flooded farm in the Midwest.

People use water in many different ways. Most important, water is essential for life. Without water to drink, we wouldn't survive. You can probably think of many nonessential ways you use water at home. You wash clothes, brush your teeth, and cook food with water. Swimming pools are filled with water, and lawns are watered. Humans also use water for navigation, for creating electricity, in manufacturing, and for agriculture. Many of these activities require good water quality. And, unfortunately, many of these activities create pollutants that can lower water quality.

Water Distribution

Water is distributed on Earth's landmasses by weather. If weather did not continually resupply the land with water in the form of rain and snow, all land would be arid and lifeless. Weather does not, however, distribute water equally around the planet. Some places, like the Midwest, have variable water supplies, getting very little precipitation one year and too much the next. During droughts there may be severe water shortages, followed by floods. The deserts of the world are always parched, while the tropical rain forests are continually soaked. Adding to the problem of water distribution is the pattern of human-population distribution. Some densely populated areas, like Los Angeles, Phoenix, and New York City, need more water than is available locally. They have to import water from faraway places.

Scientists are concerned about the warming trend on Earth. Global warming could affect both evaporation and precipitation in the United States. If more evaporation happens than precipitation, the land will dry, lake levels will drop, and rivers will run at lower levels. Other regions may receive more precipitation than usual,

Photo taken by space-shuttle astronauts of Valley of the Kings, southern Egypt, October 1988. Water from the Nile River is used to water crops. The land is arid outside of the agricultural area.

A middle school field trip to Kings Landing on the Patuxent River, Maryland. Biologists are dragging a seine net to determine kinds and variety of organisms present in the river at this time of year. Photo by Mary Hollinger, NODC biologist, NOAA.

creating floods and affecting vegetation. It will take worldwide planning and cooperation to adjust to the impact of global warming.

Earth is the water planet. Fortunately, water is one of our renewable resources. It is constantly being recycled among the atmosphere, land, and oceans. Humans can't change how much water there is. But we can make smart decisions about how much of it we remove from natural systems, how it is distributed, how it is used, and what happens to it after we use it. As the demand for water increases worldwide due to population increase and a rising standard of living (which requires water), everyone will have to participate in water conservation. Industries will need to be more efficient with water use and careful not to introduce pollutants into water sources. Agriculture will have to develop more conservative crop-watering practices. And every citizen will have to become more aware of the value of water and treat it as the most precious substance on Earth.

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