

# The Water Cycle

There's really no start to the water cycle, but to understand it, we must begin somewhere. Evaporation is as good a place as any.

## Evaporation

Evaporation happens everywhere. When a liquid is heated enough, it changes to a gas. This happens when the heated molecules move around so fast they are no longer close enough together to be a part of the liquid. When water evaporates, we call it water vapor. It happens on a small scale when a stove heats a pot of water. It happens on a very large scale when the sun heats water in the oceans.

The water vapor moves up through the atmosphere and loses the heat it had taken in. When it loses enough heat, the vapor condenses back into a liquid. The water molecules start sticking together, and they form small droplets or ice crystals. The droplets or crystals are very tiny and not heavy enough to fall back to Earth. When there are enough of them close together, they can form clouds.

When the sun heats Earth, it doesn't heat evenly. Some places get hotter than other places do, and this causes pressure differences in the air. To make up for these differences, air moves from areas with high pressure to areas with low pressure, creating wind. In addition, the spinning of Earth and currents in the oceans can affect movement of the air on Earth as well. This process of air moving from side to side across the earth is called advection, and it is why clouds move across the planet.

## Precipitation

Water vapor in the atmosphere can form water droplets or turn into solid ice crystals. Wind and air movement causes these particles to bump into each other, forming larger particles. If they get large enough, they fall to the earth as precipitation. Of course, precipitation is better known as rain, snow, sleet, and hail.

Water progresses to the next phase of the water cycle once it hits the ground. What happens depends on where it falls and in what form. If the water is frozen as snow, sleet, or hail, it might pile up and stay frozen for a while. It may melt quickly and change to liquid water. When water falls as rain, it can soak into the ground or it can run off and form streams or rivers.



## Groundwater

When water soaks into the ground, it flows into tiny spaces. The spaces are in between bits of soil. Deeper down the water can't flow through rock. The rock is impermeable. The water is trapped. It fills up all the spaces in the soil above. That rock is permeable. Then it is called groundwater. The water backs up. It spills out. It starts moving downhill.

Sometimes there is a lot of rain from a storm. The water can't all soak into the ground. The water runs over the ground's surface. It runs into streams. It runs into rivers. The water keeps going and going. Over time, all the water makes its way back to the ocean.

Water flows to the oceans. It has gone all the way around the water cycle. All the water that flows into the ocean once came out of it.



### Comprehension Question

Describe the water cycle from the point of view of a single drop of water.