



The Water Cycle

Student Page 1 of 3



What is the water cycle? Water cycle is the name used to describe the constant recycling of the earth's water. During the cycle, water given off by plants, water in rivers, streams, puddles, lakes, and oceans, and surface water evaporates, making water vapor. This vapor rises, forms clouds, and then falls as rain, hail, or snow. During the cycle, water changes from a liquid to a gas and back to a liquid. This happens over and over and over again. Let's look more closely at the water cycle to see if we can understand it better and to identify some of the natural processes at work in the cycle.

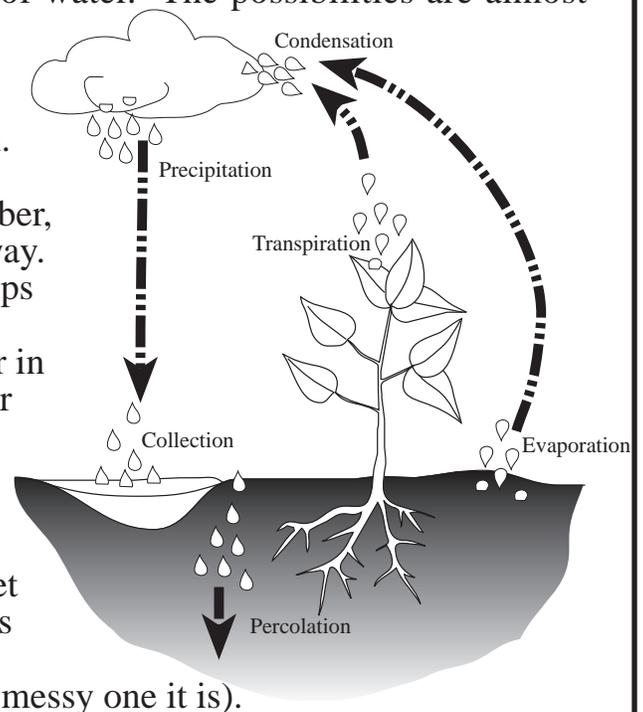
Imagine yourself for a minute as a drop of water. You can be any drop of water you like. (Just don't be a drip.) Let's say you're a drop of water in the Ohio River. You are just floating along doing your water thing when the sun starts shining down. The sun warms you and your fellow water particles, causing you to move faster and faster. After a while, you have enough energy (thanks to the sun) to leave the water and enter the air as water vapor. Congratulations! You have just evaporated. You have undergone a change of state from liquid to gas. As water vapor you may be carried a long way from the Ohio River. You're cruisin' now! Let's say you get carried to New York. You begin to rise high into the atmosphere. You get cold. (Brrrrr!) Now you change from a gas back into a liquid, but this time you are in such tiny drops of water that you stay up in the air in a cloud. Congratulations again! You have just condensed. (No, I did not say you are dense. I said that you have condensed; you have undergone a change of state from a gas into a liquid.) In the cloud, some other tiny water drops bump into you. (How rude!) They stick to you and your drop gets bigger and bigger. When it gets too large to stay up in the air, it falls to the ground as rain, snow, sleet, or hail. Take your pick. Which one you are depends, of course, on the weather conditions at the time. Congratulations again! Man, you're good. You have just precipitated. Let's say you fell as rain into the East River. Before you know it, you flow out to sea and you are a drop of water in the Atlantic Ocean. Now the cycle starts all over again.

Of course, you could have been any drop of water. The possibilities are almost endless. You could have been a drop of water in one of the leaves on one of those bushes the P.T.A. planted out in front of your school.

How do you become a cloud then? Good question. You are transpired. In other words, you leave the plant through its stomata as water vapor. (Remember, stomata are the pores in leaves.) You get blown away. You rise, cool, and change from a gas into tiny drops of water (condense) in a cloud. Sound familiar?

You could have chosen to be a drop of water in my dog. Lucky you. Animals give off water vapor when they pant. Or (even luckier you) my dog may eliminate you from his body as urine. You collect on the sidewalk in front of my house in a puddle and remain there until (you guessed it) the sun warms you up enough to evaporate. You get blown away. You rise, cool, and change from a gas into tiny drops of water (condense) in a cloud.

Sound familiar? I think you get the picture (and a messy one it is).





The Water Cycle

Student Page 2 of 3



Here is a list of **places you could spend time when you are cycling around as a drop of water.**

Animals. Animals need water in order to survive. They receive their water by drinking it or through the foods they eat. This water will **STAY** with the animal for a period of time before it is excreted to the **SOIL** through waste or evaporated to the **CLOUDS** through perspiration and/or respiration.

Clouds. Clouds receive moisture when the heat of the sun evaporates liquid water into the air. The moisture then cools and condenses onto dust in the atmosphere to form clouds. Once in cloud form, this water will **STAY** in the atmosphere until it precipitates to the ground and collects in **GLACIERS, LAKES, or OCEANS.**

Glaciers. Glaciers receive moisture when precipitation from clouds falls in higher altitudes and freezes. Once in glacier form, water will usually **STAY** for an extended period of time before the heat of the sun causes melted water to slowly enter the **GROUNDWATER** or travel into a nearby **RIVER.**

Groundwater. Groundwater is water that is below the soil layer in the earth. This water collects from rivers, lakes, glaciers, and the soil. Once collected, groundwater will usually **STAY** in the ground for an extended period of time as gravity helps it to slowly filter downward. Once reaching the lowest point of a watershed, groundwater may filter into a **LAKE or RIVER.**

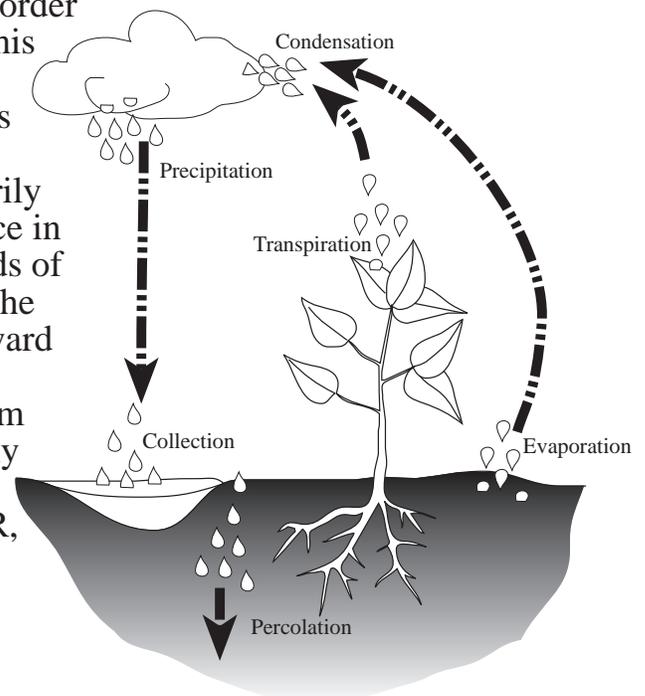
Lakes. Lakes are large bodies of water that collect water primarily through groundwater, rivers, and precipitation. Once in a lake, water may **STAY** for a period of time before evaporating to the **CLOUDS,** emptying into **RIVERS** or **Groundwater**, or being consumed by animals.

Oceans. Oceans are the largest bodies of water on the planet. They cover 3/4 of the Earth's surface and hold approximately 97% of the world's water. Oceans receive most of their water from rivers and through precipitation. Once in an ocean, water will either **STAY** or evaporate back to the **CLOUDS.**

Plants. The cells of plants need water in order to survive. Plants take in water from the soil. This water will **STAY** in the plant as it travels up to the leaves where it evaporates through a process known as **transpiration** to the **CLOUDS.**

Rivers. Rivers receive their water primarily from glaciers, lakes, groundwater, and soil. Once in a river, this water may supply the moisture needs of **ANIMALS,** evaporate to **CLOUDS,** filter into the **GROUNDWATER,** or **STAY** as it flows downward to **LAKES or OCEANS.**

Soil. Soil receives its water primarily from precipitation. Once in the soil, water will usually **STAY** for a period of time before evaporating to **CLOUDS** or filtering into **GROUNDWATER, RIVERS, or PLANTS.**





The Water Cycle

Student Page 3 of 3



Here is a list of the **water cycle terms you learned.**

evaporation: the changing of a liquid into a gas

condensation: the changing of water vapor from a gas to a liquid

precipitation: the falling of water to the earth as rain, snow, sleet, or hail

transpiration: the giving off of water vapor by plants

collection: the pooling of water on the ground in puddles, streams, ponds, oceans, etc.

percolation: the mixing of water with soil

How can pollution get into the water cycle?

Pollution occurs when too much of something (e.g., fertilizer, manure, chemicals, etc.) is concentrated in an area, thus overwhelming the Earth's ability to break it down or decompose it.

Is the water cycle physical or chemical change?

Water cycling is a physical change, not a chemical change.

Misconceptions

Misconception: The same water cycles in the same part of the Earth over and over.

Fact: A drop of water could travel to virtually any part of the earth during its journey through the water cycle.

Misconception: Businesses and industries are mostly responsible for water pollution.

Fact: Water pollution (sewage, pesticides, etc.) from residential areas (your home) is a large source of water pollution.

