

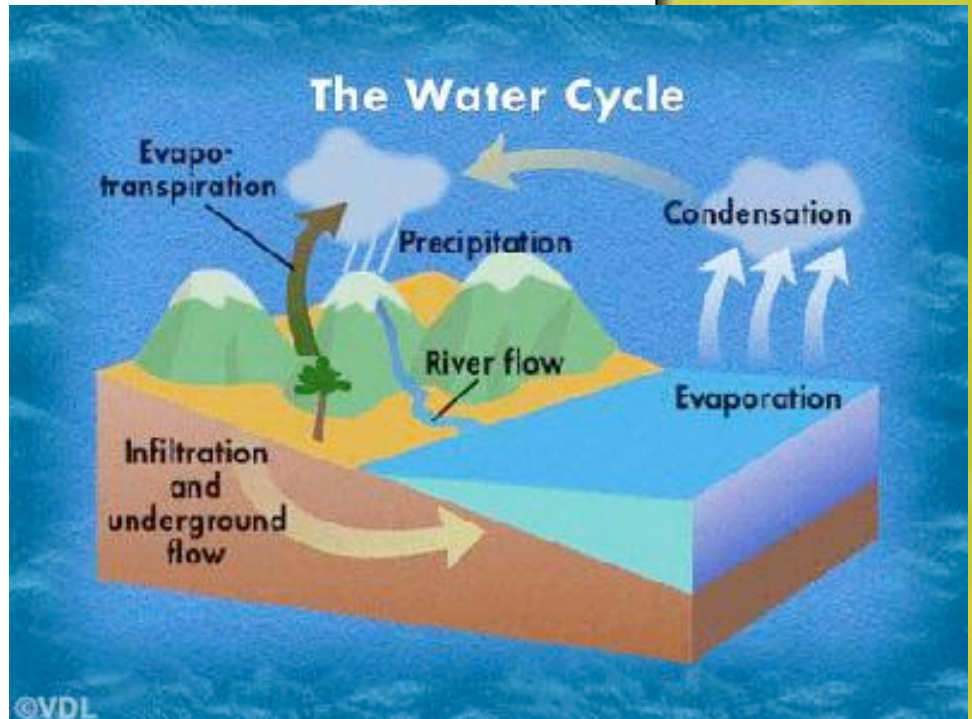
The water cycle describes how water is constantly changing location and form. The water cycle is also known as the hydrologic cycle. The prefix “hydro” refers to water. The water cycle does not have a start or an end point.

It is a continuous movement of water. Depending on the conditions where water is located, it can be found in a solid, liquid, or gas form. When water is a gaseous state, it is called water vapor. There is always some amount of water vapor present in the air. Snow and ice are examples of water in a solid state. Most of Earth’s water exists in a liquid state and can be found in the oceans. Water can frequently change

between these states of matter. Water can be found in the atmosphere, on the surface of Earth, and underground. There are many different processes that allow water to change from one state to another and to move through different locations.

### Going Up

Water moves from the surface of Earth to the atmosphere through the process of evaporation. Evaporation occurs when water is heated enough to change it from a liquid state to a gaseous state. Water vapor is less dense than liquid water, meaning it has less mass per unit of volume. As the Sun heats the surface of the oceans and other bodies of water, water evaporates and rises up into the sky. Water also evaporates off of the surface of plant leaves. In order to stay alive, plants must constantly pull water from the soil under the surface of Earth, through their stems or trunks and then out to their leaves.



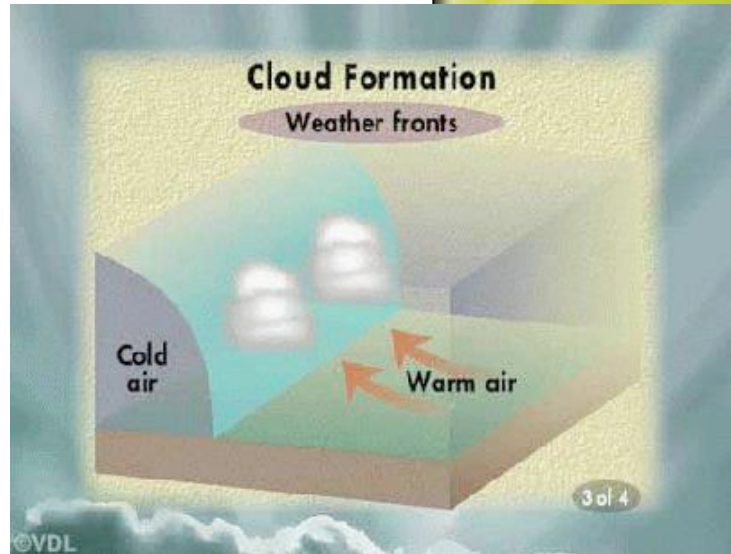
The water cycle, or hydrologic cycle, describes how water moves through different locations and changes states on a regular basis.

Leaves have special openings, or pores, on them that let water exit to the surface of the leaf. This process is called transpiration. Transpiration is an important process in moving water from inside Earth back up to the surface. Once the water is on the outside surface of the leaf, it then evaporates into the atmosphere. Evapotranspiration is the term given to the combination of these two processes.

Sometimes solid water on the surface of Earth, such as ice or snow, changes into water vapor and rises into the atmosphere. This process is called sublimation and does not require the water to transition to a liquid state. This occurs where there is a lot of snow and ice on the ground, such as at both the North and South poles. As water vapor rises into the air through the processes of evaporation and sublimation, it cools and condenses into clouds.

### Going Down

Condensation, the process of condensing, occurs when water vapor changes to liquid water. This process occurs in clouds. Once clouds form, they get pushed around Earth by air currents. As they move around the atmosphere, they collect different particles and more water vapor. Even though clouds float above the surface of Earth, they are still affected by gravity. As a cloud picks up more and more water vapor, it gets heavier and heavier. At some point, the water in the cloud is heavy enough to be pulled back to the surface of Earth by gravity. If the temperature in the cloud is above the freezing point of water (32 degrees Fahrenheit, or 0 degrees Celsius) then the water will fall to Earth in a liquid state as rain. However, if the cloud temperature is below the freezing point, the water will fall as a solid, such as snow or hail.

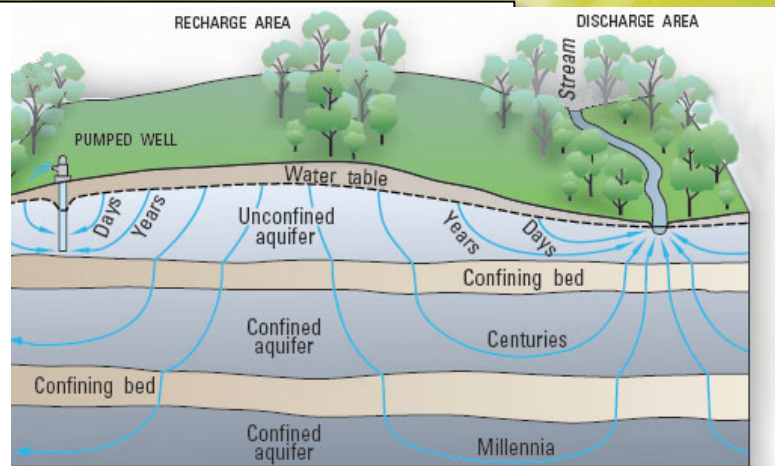


As water vapor rises from the surface of Earth and into the atmosphere, it cools and condenses into clouds. This diagram shows this process where warm and cold air fronts meet. The water vapor in the warm air cools and condenses when it comes in contact with the cold air.



When water, in any state, falls back to the surface of Earth, it may fall into a lake, river, ocean, or on land. Once back on the surface of Earth, the water continues to move. Water flows downhill in rivers and streams. Gravity pulls water down towards lakes and oceans. Water that lands on solid ground sinks into the soil. Some of the water will be brought back up to the surface through the process of transpiration in plants. Some water will move through the soil and be deposited in ponds, lakes, rivers, and streams. The rest of the water will continue to sink through the soil and eventually through the bedrock of Earth's crust. This process naturally filters the water and takes long periods of time. Water collects in large underground pools, or aquifers. This water can move back up to the surface through cracks and openings in the rock layers of Earth's crust.

Water can be found above, on, and under the surface of Earth. It continuously cycles from one location to another and from one state to another. The processes involved in the water cycle allow water to be distributed over Earth.



Water moves underground as well as on Earth's surface and atmosphere. This diagram shows different ways in which water moves underground. It also indicates how long these different kinds of movement take.