

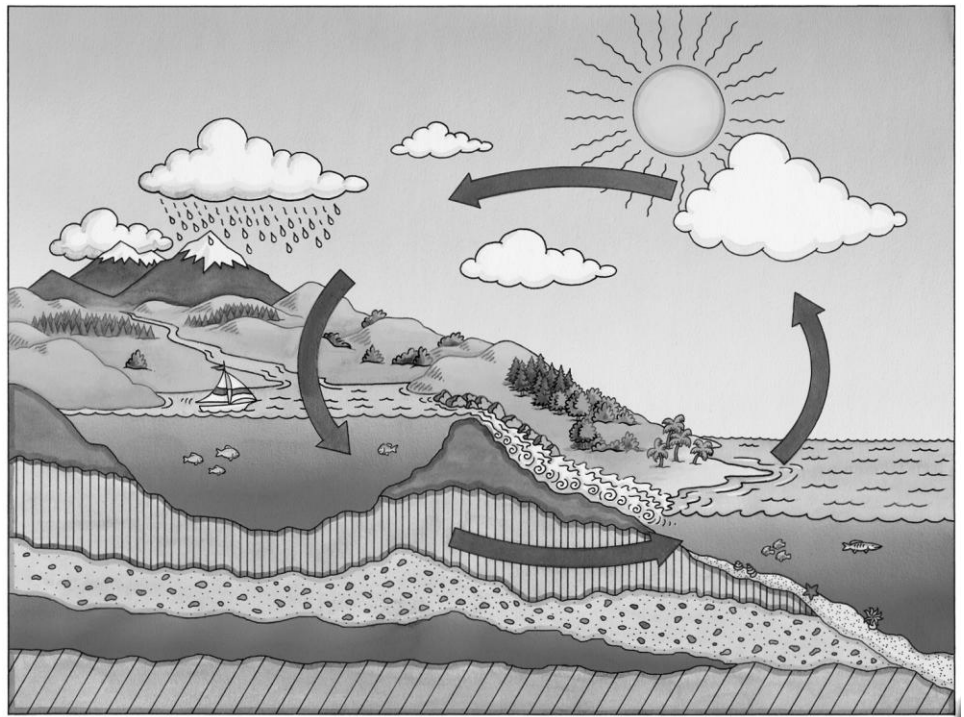
# The Water Cycle

Water surrounds us. It is in the air as rain, ice, snow, steam and fog. It is in lakes, streams, rivers, oceans and glaciers. Earth has so much water it has been given the nickname “the water planet.” But this water really isn’t new at all. In fact, at this very moment we have all the water we will ever have or ever have had. No new water is being manufactured. Water is circulated through the environment over and over. This recycling process is called the hydrologic cycle or water cycle.

Water’s unique properties allow it to be a universal material. One of these special properties is its ability to change states very easily. Water can be found in three forms: a liquid, a solid, and a gas. While water can be found most often in its liquid form, it becomes a solid when the temperature drops

below freezing at 32°F or 0°C and becomes a gas when the temperature rises to 212°F or 100°C. These forms play an important role in the hydrologic cycle.

The hydrologic cycle, or water cycle as it is also called, takes place in the hydrosphere, a region containing all the water in the atmosphere and on the surface of the Earth. The process occurs through five vital stages: Condensation, Precipitation, Infiltration, Runoff, and Evaporation.



- *Condensation*- When the Earth’s air cools enough, water vapor condenses on particles in the air to form clouds. Clouds are then moved across the globe by winds which spread water vapor across the planet.
- *Precipitation*- As the clouds become warmer and are “heavy” with water, they release this moisture to Earth in the form of precipitation, which can be snow, rain, hail or sleet.
- *Infiltration, Runoff, Evaporation/Transpiration*- The next three stages occur simultaneously after precipitation falls to the ground. Infiltration happens when precipitation seeps into the ground recharging shallow water tables and deep aquifers. However, if precipitation occurs faster than it can infiltrate the ground, it becomes runoff. Runoff is precipitation that remains on the surface of the Earth flowing into streams, rivers and eventually large bodies of water such as lakes or oceans. Evaporation begins when the power of the sun (heat) changes the liquid water to a vapor. As the liquid

heats, molecules are released and changed into a gas. Warm air rises up into the atmosphere and becomes vapor. Transpiration occurs when plants release water vapor through their leaves into the atmosphere. Once the vapor enters the atmosphere, the entire hydrologic cycle begins again.

## Humans are Part of the Water Cycle as Well

When you go to the faucet to get a drink of fresh clean water, that water is new to you. But it really isn't new water at all. As explained through the water cycle, the water has been recycled time and time again, from the very beginning of the Earth, through numerous life forms like dinosaurs, a rabbit or even Abraham Lincoln. Think about any organism that has lived in the past. Those organisms needed water to stay alive. As they lived, they released water back to the Earth in the form of exhaled water vapor, sweat and urine just as organisms do today. All organisms including humans are part of a living hydrologic cycle. How you might ask?

### WATER FACTS:

The United States is water "rich." For example, we have 39,400,000 acres of lakes and reservoirs. The Great Lakes contain about 1/5 of the world's fresh water supply.

1. After precipitation falls, humans capture runoff in reservoirs and pump infiltrated water from aquifers for human use.
2. Through the process of production, the water is pumped, treated and distributed through a network of systems to people's homes and businesses.
3. Humans utilize the water in many ways including consumption.
4. Humans then rid the water from their bodies through perspiration, exhalation and excretion. Water vapor from perspiration and exhalation immediately enter back into the water cycle while excreted water is generally sent through a series of systems to be treated.
5. Once treated, the water is then released back into the Earth's environment so the water cycle may begin again.

