



## Process Discussion: The Water Cycle

The continuous processing of water on Earth is called the water cycle or the hydrologic cycle. The amount of water on Earth stays fairly constant, but the amount of water in various locations is ever changing. The water cycle affects the weather and is a vital process for life on Earth. The main phases of the water cycle are evaporation, transpiration, condensation, and precipitation. <sup>1</sup>

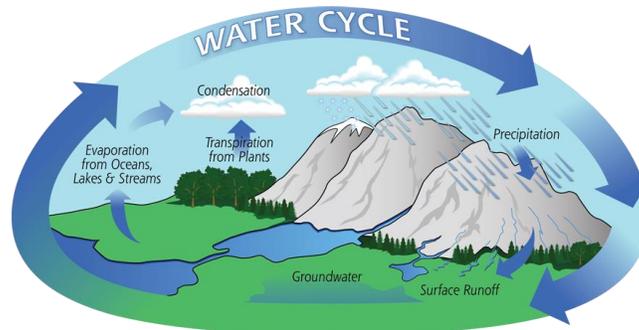


Figure 1: Diagram of the water cycle. Source: <http://pmm.nasa.gov/education/water-cycle>

### Evaporation

Evaporation is the process of liquid water changing into water vapor. Water is evaporated from various bodies of water around the Earth such as the ocean, rivers, and lakes. Evaporation is the primary source for the majority of the moisture in the atmosphere. An estimated 90% of the moisture in the atmosphere comes from evaporation [1]. This is the most important process in the water cycle. It bridges the gap between the surface and the atmosphere.

### Transpiration

Transpiration is the process where the water in plants travels through the roots in the plant to pores on the underside of the leaves. The water then leaves the plant as water vapor. Only about 10% of the moisture in the air comes from transpiration [2]. The rate at which a plant will transpire water increases as the temperature increases. This process along with evaporation provides all the moisture in the air.

### Condensation

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<sup>1</sup> The audience for this description of the water cycle is the general public concerned about how the water travels around the Earth. Readers would have a general knowledge of what the phases of water are, but do not have extensive knowledge about the water cycle.

After condensation and transpiration occur, the water is then condensed into clouds. Condensation is the process where water vapor is transformed back into a liquid. Condensation is important to the water cycle because it produces the clouds that are the main route for the water to return back to Earth. The clouds that form influences the amount of radiation that enters and leaves the atmosphere [3]. Clouds have a large affect on the climate on the Earth.

### **Precipitation**

Precipitation is the process where water is released from clouds in the form of rain, snow, sleet, or hail. This process provides the delivery of the water from the atmosphere back to the Earth. The amount of precipitation that falls varies from area to area. In order for precipitation to actually fall, the water must attach to salt particles, dust particles, or another object that can act as a nucleus for the water droplets. The droplets will then collide with other droplets and when the droplets have enough velocity to overcome the updraft of the cloud, the droplets will fall as precipitation [4]. This process allows the water to fall back to the earth and complete the cycle.

### **References**

1. "The Water Cycle: Evaporation." *Evaporation, The Water Cycle, from USGS Water-Science School*. N.p., n.d. Web. 18 Oct. 2015. <<http://water.usgs.gov/edu/watercycleevaporation.html>>.
2. "Transpiration - The Water Cycle." , *from USGS Water-Science School*. N.p., n.d. Web. 18 Oct. 2015. <<http://water.usgs.gov/edu/watercycletranspiration.html>>.
3. "Condensation - The Water Cycle." , *from USGS Water-Science School*. N.p., n.d. Web. 18 Oct. 2015. <<http://water.usgs.gov/edu/watercyclecondensation.html>>.
4. "Precipitation: The Water Cycle." *Precipitation -The Water Cycle. USGS Water Science School*. N.p., n.d. Web. 18 Oct. 2015. <<http://water.usgs.gov/edu/watercycleprecipitation.html>>.
5. "The Water Cycle." *The Water Cycle*. N.p., n.d. Web. 18 Oct. 2015. <<http://pmm.nasa.gov/education/water-cycle>>.