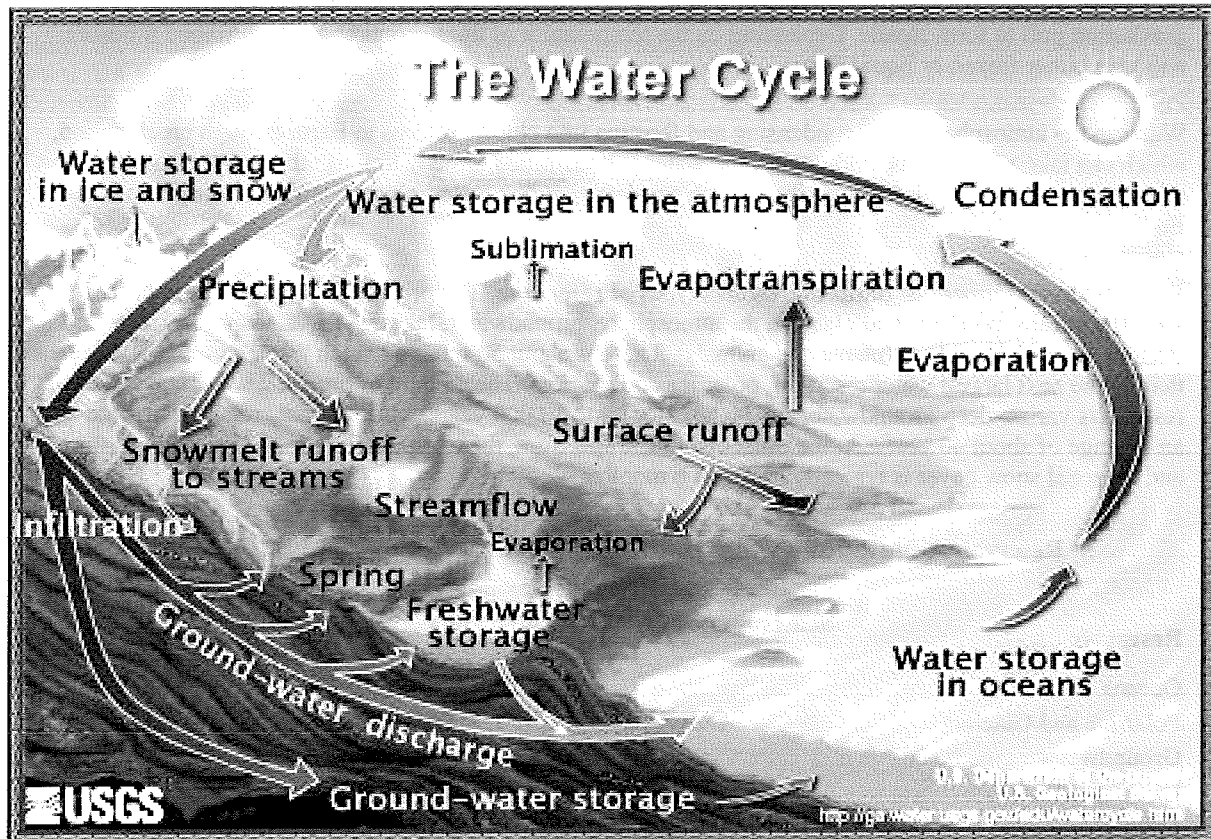


Water Cycle

Earth is the water planet with more than two-thirds of its surface covered by water. Most of life on Earth is also primarily composed of water; our cells, and those of plants and animals are composed of approximately 70 percent water. Vast quantities of water also cycle through the Earth's atmosphere, oceans, land, and biosphere over both short and long time scales. This grand cycling of water is called the hydrologic cycle. The cycling of water shapes our weather and climate, supports plant growth, and makes life itself possible. The water cycle is dominated by the oceans, where 96 percent of the water on Earth is found and where 86 percent of global evaporation occurs.



When rain and other precipitation falls on land, some of it runs off into surface waters such as lakes and streams. Much of it, however, seeps into the ground. This process – the movement of water into and through the soil and rocks – is called infiltration. How water behaves once it is in the ground, the speed and character of infiltration, is determined by the type of soil or rock through which the water moves. It is primarily during this stage of the hydrologic cycle that water is purified. The extent to which the water is “cleaned” depends on the state of the environment and the amount of pollution in the water. Passing through layers of sediment and rock helps to filter pollutants out, allowing the pure water to pass through. Generally, the deeper groundwater is found, the cleaner it will be.

Water that is not absorbed into the soil flows across the landscape to rivers, lakes, streams, and eventually to the oceans, as runoff. While some runoff waters originate from precipitation, others stem from melting snow or ice, and are called melt water runoff. The area where precipitation that reaches the land drains into a common body of water is called a “watershed,” and can range in size from a few acres to many square miles. As communities strive to improve the quality of their watersheds, education in this area continues to expand.

Rather than seep into the soil or run off into surface waters, some water returns to the air in gaseous form (water vapor) through evaporation. However, of all water that returns to the atmosphere through evaporation, ocean evaporation is the most prevalent, consisting of about 80 percent of total global evaporation. For land-based evaporation, roughly half occurs on the surface area of plants and is called transpiration. These processes – evaporation and transpiration – are sometimes given a single term: evapotranspiration.

The process in which water vapor is converted back into liquid is called condensation. A familiar type of condensation is the formation of dew drops on blades of grass or on the outside of a cold glass. A more important type of condensation within the hydrologic cycle takes place in the atmosphere. As water vapor moves upward in the atmosphere it cools. This process – the loss of heat through vertical movement – is called convection. The droplets formed from atmospheric condensation gather together as a result of their gravitation pull to form clouds. Depending on the temperature of the surrounding air, this cloud moisture will take either frozen or liquid form.

Water in the atmosphere, after condensing and forming into clouds, returns to Earth through precipitation, which can take many forms. Although some water is transmitted directly to Earth through the condensation of ambient water vapor, it is primarily through precipitation that water moves from the atmosphere to the Earth.

Water is stored for periods of time in various types of *reservoirs*. The primary reservoirs are (in order of size) the oceans, polar ice and glaciers, the atmosphere, groundwater, lakes, soils, atmosphere, rivers and streams, and the biosphere (plants and animals). There is about 50 times as much water stored in the oceans than in the next largest water reservoir, polar ice and glaciers. The amount of time that water stays in the reservoirs varies: deep groundwater can be held for up to 10,000 years, while glaciers retain their water for an average of about 40 years. At the other end of the spectrum, the retention time for rivers, soil moisture, and seasonal snow cover is typically less than 6 months.

Reservoirs (a)<http://www.enviroliteracy.org/article.php/704.html> - _edn1

Reservoir	Size (volume of water in cubic km x 10,000,000)	Percent of Water in Hydrologic Cycle
Oceans	1370	97
Polar Ice and Glaciers	29	2
Groundwater	9.5	0.7
Lakes	0.125	0.01
Soils	0.065	0.005
Atmosphere	0.013	0.001
Rivers and Streams	0.0017	0.0001
Biosphere	0.0006	0.00004