Science Module: Hydrology and the Earth's Water Cycle

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for accuracy.

ENERGY INITIATIVE

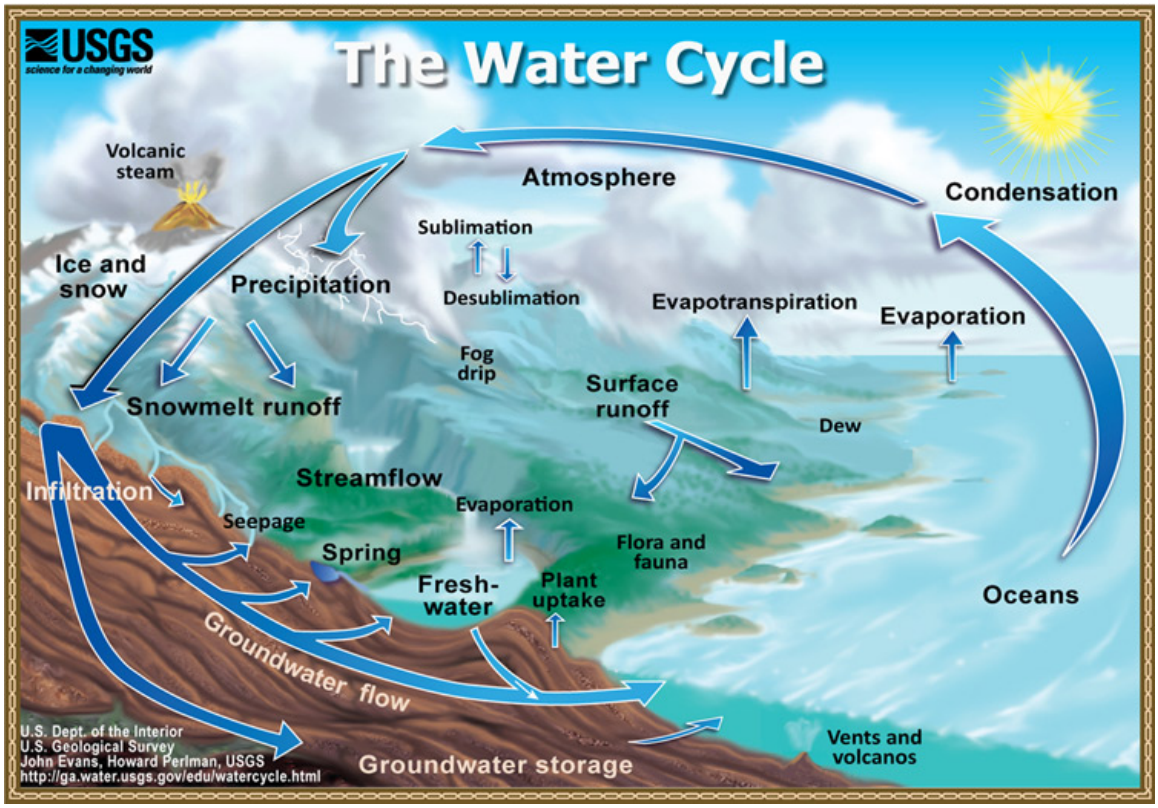
BACKGROUND

Hydrology is the branch of science concerned with earth's water. The field of hydrology encompasses the occurrence, distribution, movement and properties of the waters of the earth and their relationship with the environment. The hydrologic cycle – commonly referred to as *the water cycle* – is the continual, repeated process by which water moves from the earth's surface (including the oceans) to the atmosphere and back to the land and oceans.

RELEVANT SCIENCE

There are many ways for earth's water to make this journey. To better understand these processes, we can think of them in three simple steps:

1. Movement from the land & oceans to the atmosphere
   (*evaporation*, *sublimation* & *transpiration*)
2. Movement within the atmosphere
3. Movement back into the land & oceans
   (*precipitation* – rain, snow, and ice)



The Earth's Water Cycle (USGS)

In the first step, water moves into the atmosphere from aquatic bodies such as lakes, rivers, streams, and oceans. Water is also carried into the atmosphere through the transpiration of plants, the evaporation of groundwater sources, and the sublimation of snow and ice on mountain tops.

In the second step, water travels in the atmosphere as a vapor or through clouds – which are a combination of air, water, and tiny particles. This step is critical, because it moves fresh water from one location on earth to another.

In the third step, water is deposited back on earth in the form of precipitation (rain, ice, or snow). Some atmospheric water can also land on earth's surface – usually mountain tops – by a process called desublimation – this means that the water has transformed from a gas directly to a solid.

All of this deposited water is absorbed by soil and transported along streams, in rivers, and through ground water flows. It is in this final step that water provides the basis for much of life on earth. By flowing through streams, rivers, and ground water, it is able to fuel the growth of plant life, and provide drinkable water to humans and animals on land.

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RECOMMENDED CITATION

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