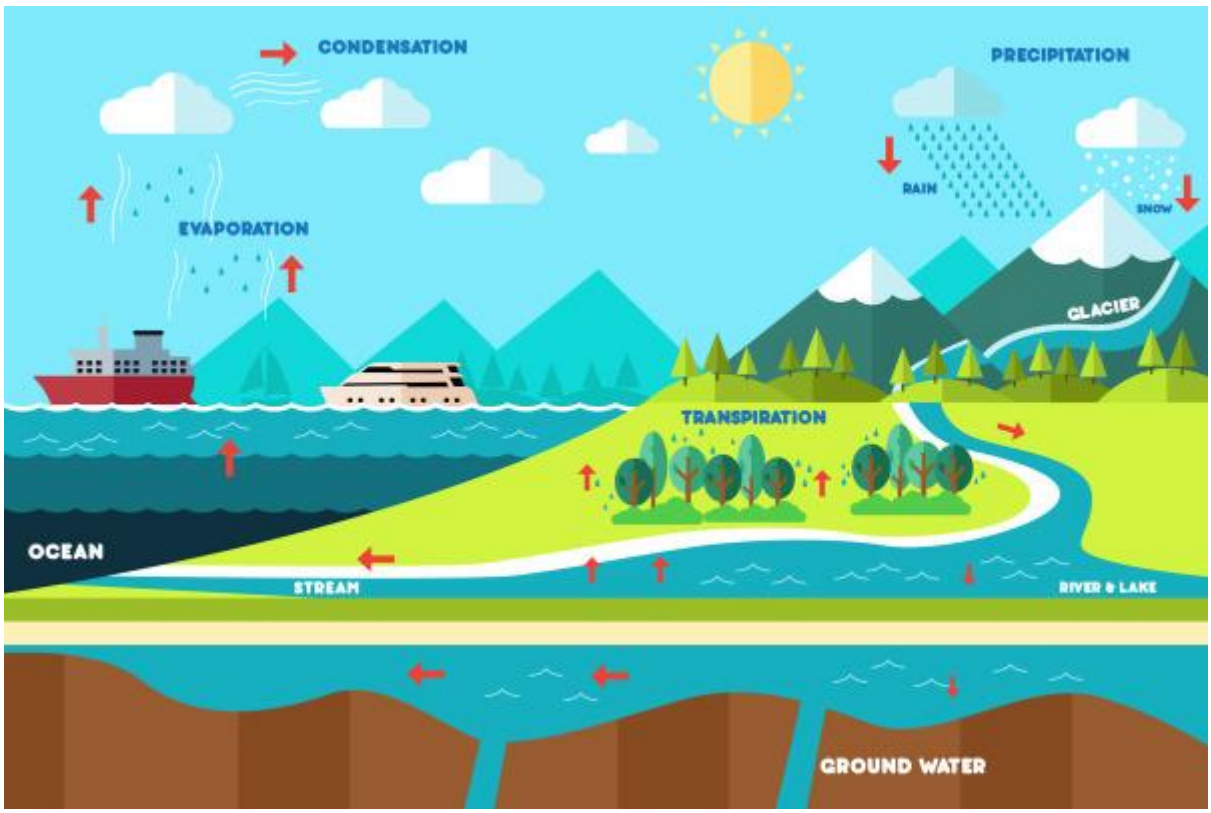
Hydrological cycles

Hydrological cycle is also known as the “water cycle”; it is the normal water recycling system on Earth.

Due to solar radiation, water evaporates, generally from the sea, lakes, etc. Water also evaporates from plant leaves through the mechanism of transpiration. As the steam rises in the atmosphere, it is being cooled, condensed, and returned to the land and the sea as precipitation. Precipitation falls on the earth as surface water and shapes the surface, creating thus streams of water that result in lakes and rivers. A part of the water precipitating penetrates the ground and moves downward through the incisions, forming aquifers. Finally, a part of the surface and underground water leads to sea. During this trip, water is converted in all phases: gas, liquid, and solid.



picture: hydrological cycle

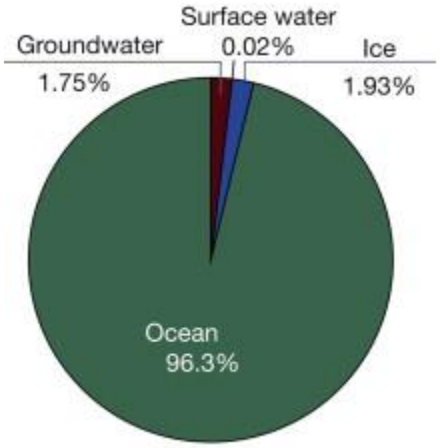
The hydrological cycle is intimately linked with changes in the atmospheric temperature and radiation balance. Warming of the climate system in recent decades is unequivocal, as it is now evident from observations of increases in global average air and ocean

temperatures, widespread melting of snow and ice, and rising of the sea level globally.

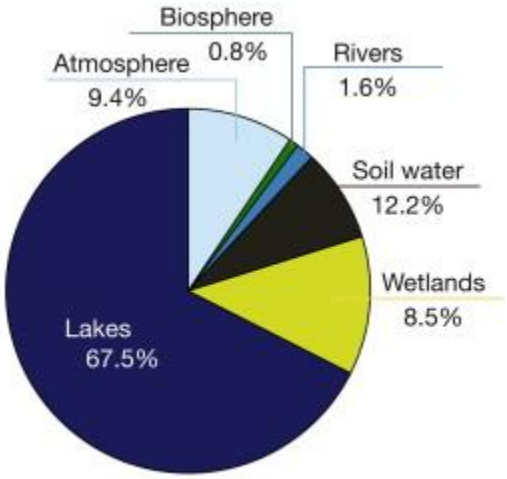
hydrological cycle will be affected from global warming due to the enhanced greenhouse effect. The hydrological cycle may be strengthened with more precipitation and more evaporation, but the extra precipitation will be unequally distributed around the globe. It is expected that some areas of the world may see significant reductions in precipitation or even more major variations in the timing of wet and dry seasons. Many aspects of the economy, environment, and society are dependent upon water resources, and changes in the hydrological resource base have the potential to severely impact upon environmental quality, economic development, and social well-being.

The Global Water Cycle

The hydrological cycle describes the perpetual flux and exchange of water between different global reservoirs: the oceans, atmosphere, land surface, soils, groundwater systems, and the solid Earth. Most of the world's water – approximately 96.3% – is in the world's oceans, where water molecules have an average residence time of about 3300 years. Glaciers and ice sheets lock up more than half of the remaining water, with 90% of this stored in the Antarctic Ice Sheet. Most of what remains lies below the surface, in groundwater aquifers, where vast reserves of water are saline or difficult to access.



Global water reserves



Surface water