

Water Composition, Resources and Water Cycle

**For Second Year Environmental Sciences Students
and Environmental Sciences & Chemistry Students**

Introduced by

Dr. Khaled H. El-Ezaby

*Associate Professor of Environmental Pollution
Faculty of Science
University of Damietta*

Water is a chemical substance with the chemical formula H_2O . Its molecule contains one oxygen and two hydrogen atoms connected by covalent bonds. Water is a liquid at ambient conditions, but it often co-exists on Earth with its solid state, ice, and gaseous state (water vapor or steam). Water also exists in a liquid crystal state near hydrophilic surfaces.

Water Resources

Water covers 70.9% of the Earth's surface, and is vital for all known forms of life. On Earth, it is found mostly in oceans and

other large water bodies, with 1.6% of water below ground in aquifers and 0.001% in the air as vapor, clouds (formed of solid and liquid water particles suspended in air), and precipitation. Oceans hold 97% of surface water, glaciers and polar ice caps 2.4%, and other land surface water such as rivers, lakes and ponds 0.6%. A very small amount of the Earth's water is contained within biological bodies and manufactured products.

a- Surface water

- i. Fresh water (Rivers)
- ii. Brackish water (Lakes)
- iii. Saline water (Oceans & Seas)

b- Underground water (Wells & Springs)

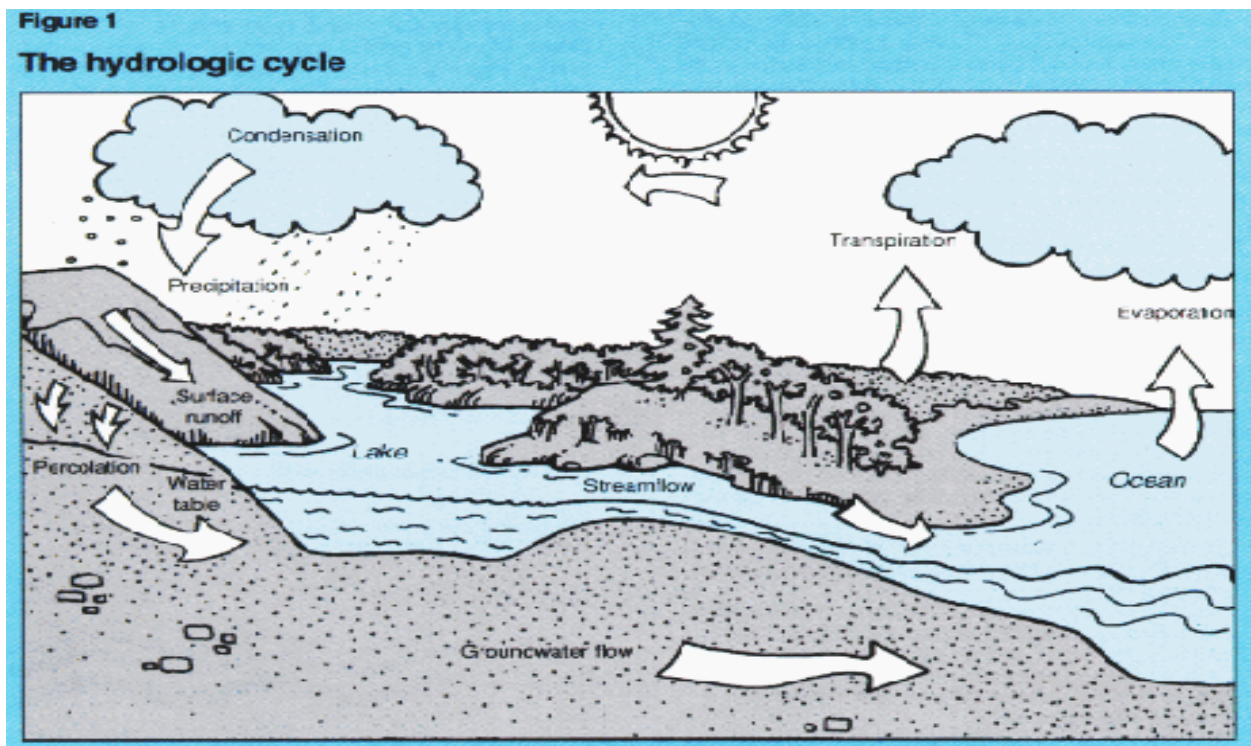
The hydrologic cycle (Water Cycle):

Water on Earth moves continually through a cycle of evaporation or transpiration (evapotranspiration), precipitation, and runoff, usually reaching the sea. Evaporation and transpiration contribute to the precipitation over land.

The water cycle (known scientifically as the **hydrologic cycle**) refers to the continuous exchange of water within the hydrosphere, between the atmosphere, soil water, surface water, groundwater, and plants.

Water moves perpetually through each of these regions in the *water cycle* consisting of following transfer processes:

- evaporation from oceans and other water bodies into the air and transpiration from land plants and animals into air.
- precipitation, from water vapor condensing from the air and falling to earth or ocean.
- runoff from the land usually reaching the sea.



(The Water Cycle)

