

UPSC Civil Services Examination

UPSC Notes [GS-I]

Topic: Water Cycle [Geography Notes for UPSC]

Water Cycle Explanation

Water

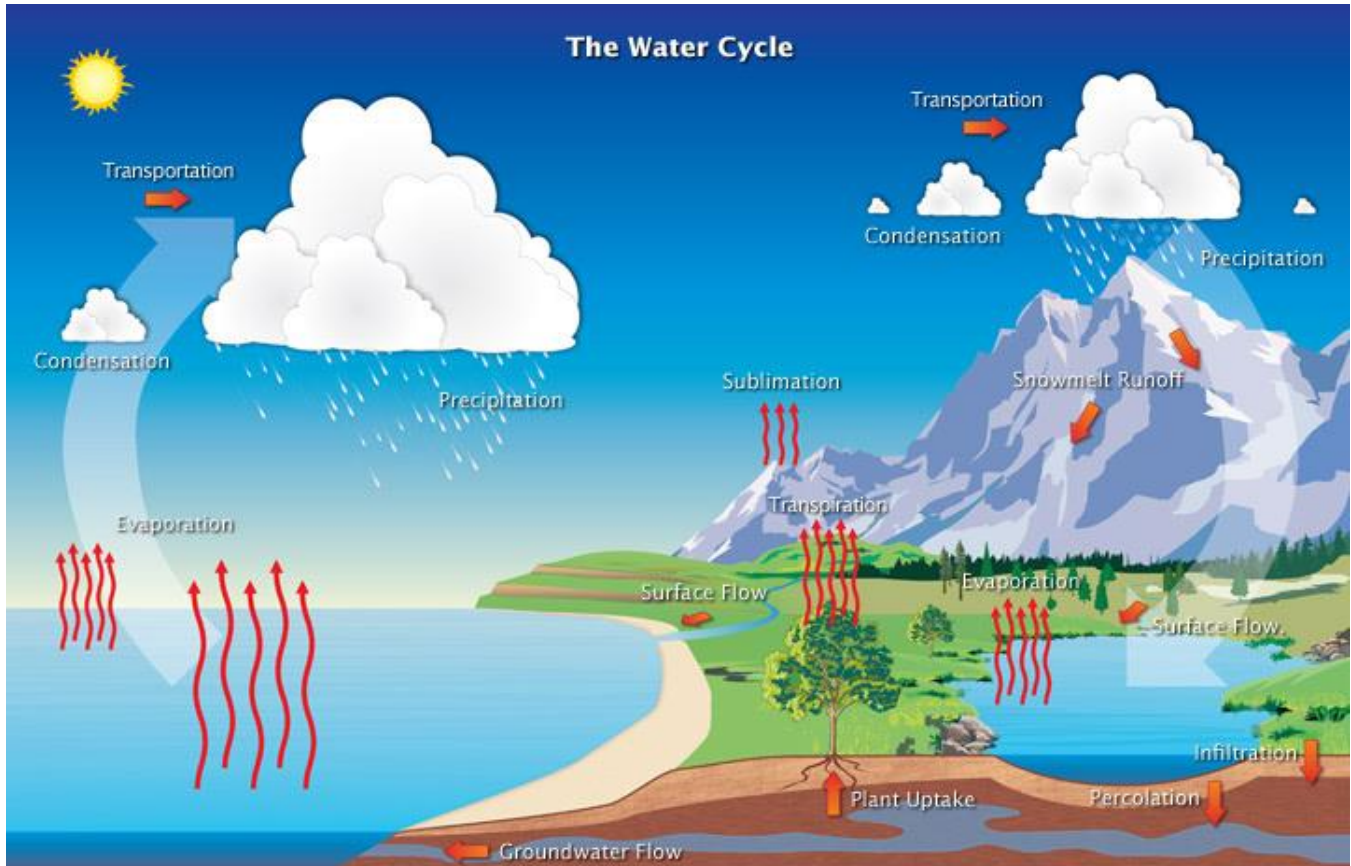
- Water is a cyclic resource as it is used and re-used.
- About 71% of the planetary water is found in the oceans.
- The remaining is held as freshwater in glaciers and ice caps, groundwater sources, lakes, soil moisture, atmosphere, streams and within life.
- About 59% of the water on the land surface evaporates and returns back to the atmosphere.
- The remaining run-off on the surface penetrates into the ground or a part of it becomes glaciers.

Distribution of water on the surface of the earth

Reservoir	Percentage of the total	Volume in Million Cubic km
Oceans	97.25	1,370
Ice caps and glaciers	2.05	29
Groundwater	0.68	9.5
Lakes	0.01	0.125
Soil moisture	0.005	0.065
Atmosphere	0.001	0.013
Streams and Rivers	0.0001	0.0017
Biosphere	0.00004	0.0006

Hydrological Cycle Diagram

Hydrological cycle / Water Cycle



- The hydrological cycle is the circulation of water within the hydrosphere of Earth in different forms such as liquid, solid and gaseous states.
- It also denotes the uninterrupted exchange of water between the land surface, oceans and subsurface and the organisms.
- The hydrologic cycle begins with the evaporation of water from the surface of the ocean.

Hydrological Cycle Processes

Components and Processes of the Water Cycle

Components	Processes
Water storage in oceans	Evaporation Transpiration Sublimation
Water in the atmosphere	Condensation

	Precipitation
Water storage in ice and snow	Snowmelt runoff to streams
Surface runoff	Streamflow freshwater storage infiltration
Groundwater storage	Groundwater discharge springs

Evaporation

- The conversion of water from liquid to gas stage as it moves from the ground or bodies of water into the atmosphere.

The source of energy for evaporation is mainly solar radiation.

Transpiration

- Water vapour is also discharged from plant leaves by a process called transpiration.

Sublimation

- The process in which solid water such as snow or ice directly changes into water vapour.

Condensation

- The transformation of water vapour to liquid water droplets in the air, forming fog and clouds.

Precipitation

- The condensed water vapour falling to the surface of the Earth is known as Precipitation.
- It occurs in the form of rain, snow, and hail.

Runoff

- Runoff is a visible flow of water in rivers, creeks, and lakes as the water stored in the basin drains out.

Snowmelt

- The runoff created by melting snow.

Percolation

- Water flows vertically through the soil and rocks under the effect of gravity.

