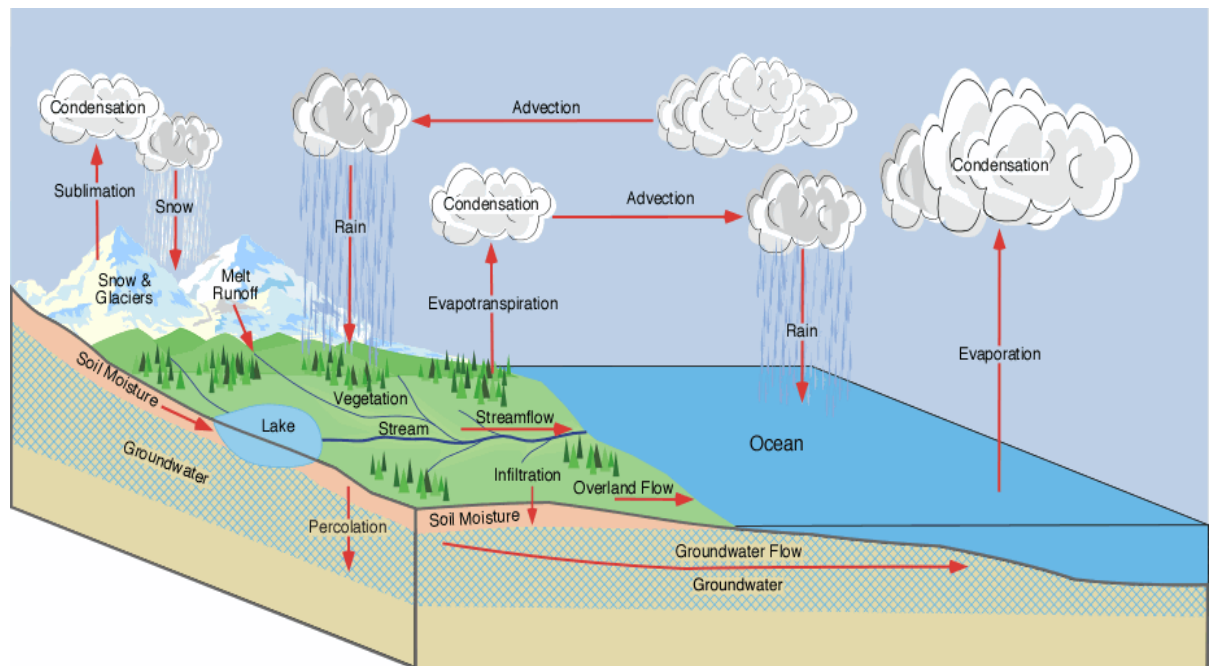


Hydrologic Cycle

What is the Hydrologic Cycle?

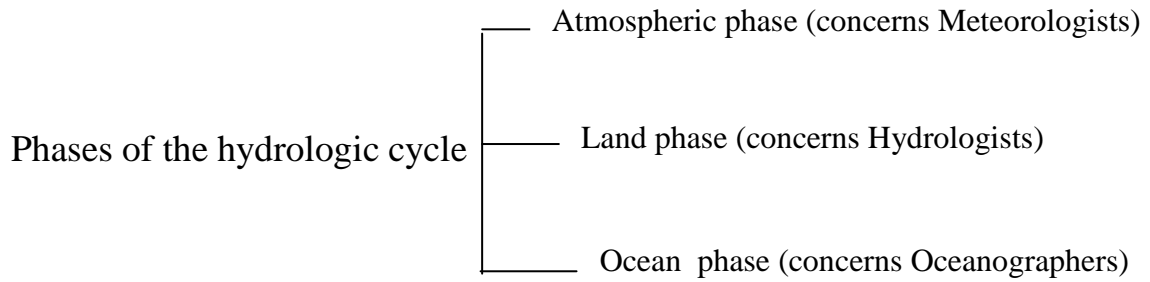
- The hydrologic cycle is the transfer of water from the oceans to the atmosphere to the land and back to the oceans in a system involving a number of major processes

Representation of the Hydrologic Cycle

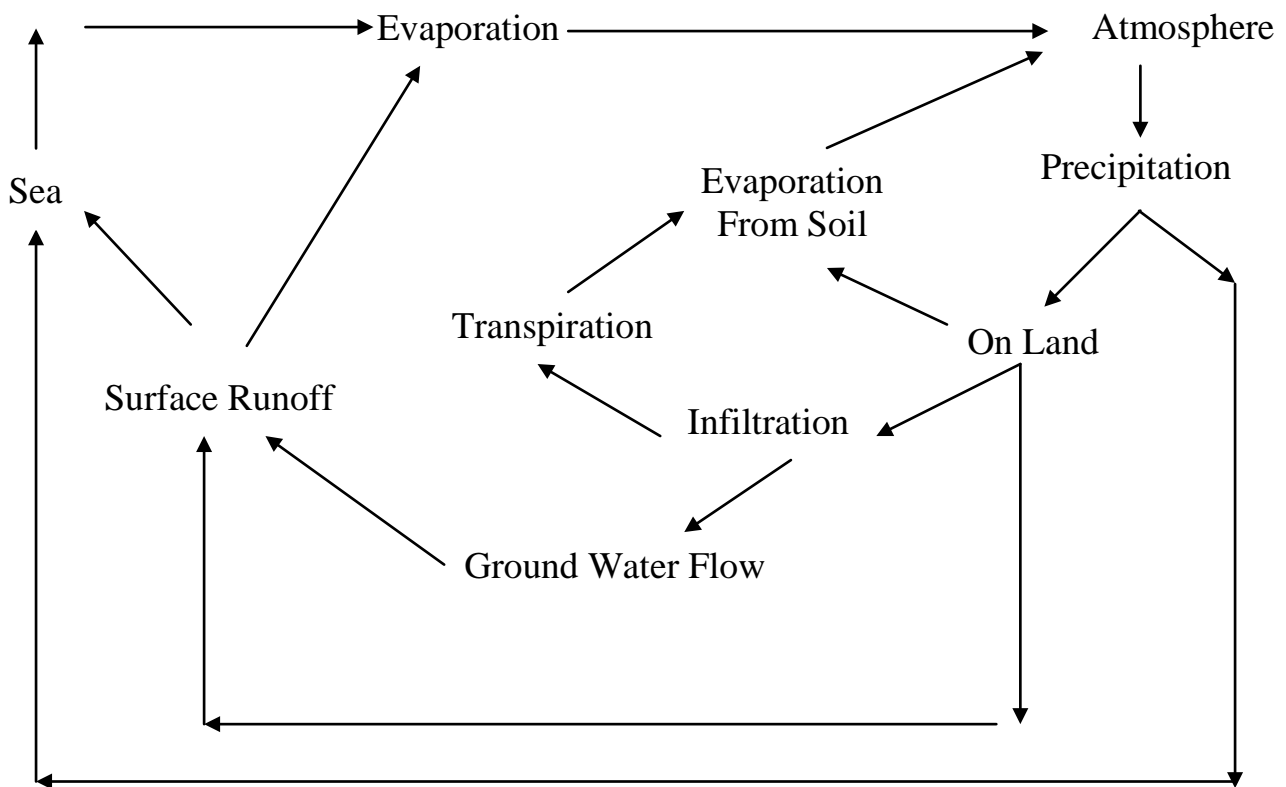


The Sequence of the Hydrologic Cycle

- Water evaporates from the oceans and the surface
- Water vapor is transported and lifted in the atmosphere until it condenses and precipitates
- Precipitated water may be intercepted by vegetation
- It becomes overland flow
- Infiltrates into the ground and later percolates and recharge Groundwater
- Flows through the soil as subsurface flow
- Discharges into streams as surface runoff



A Flow Chart of the Hydrologic Cycle



Flow Chart of Land Phase

The Hydrologic Cycle

- Water moves by processes like evaporation, condensation, precipitation, runoff, infiltration, sublimation, transpiration, melting, and groundwater flow
- These processes control the distribution and movement of water in earth
- This in turn is determined by the weather patterns and by physical factors such as topography, geology, and vegetation
- Vegetation cover, for example, can reduce the rate of direct evaporation of water from the soil, but at the same time will result in the loss of water to the atmosphere by transpiration
- Land cover and soil type will largely affect the runoff. So, as we have more impervious surfaces then we will have more runoff and less infiltration and indeed less recharge to groundwater resources

Main Input and Outputs

- The main **input** to the hydrologic system is **precipitation**
- The main **outputs** are **evapotranspiration** and **runoff**

Why it is Important to Study the Hydrologic Budget and Hydrology in General?

- Design of hydraulic structures. Runoff generation: Dam capacity, Drainage system
- Evapotranspiration: Helps to know water requirements for plantations, the amount of runoff that will evaporate
- Rainfall: To determine the successfulness of rain-fed agriculture
- Determine the replenishment to groundwater and thus we can tell how much water we can pump out
- Determine the length of dry periods and drought cycle

Some Facts about Water in the Globe

- The total amount of water on the Earth is about 1,400 million cubic kilometers
- 97% is sea water
- 2.2% occurs in solid form as ice
- 0.2% is fresh water in rivers and lakes
- 0.6% is groundwater

Relative Volumes of Water

