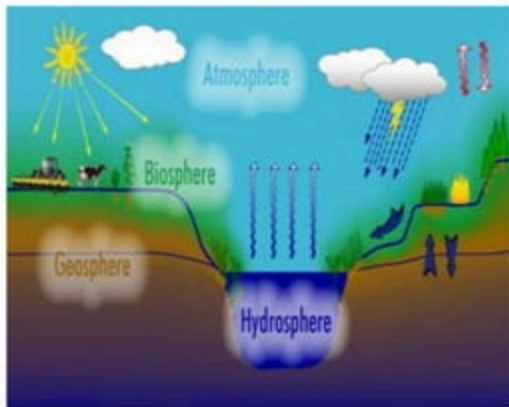


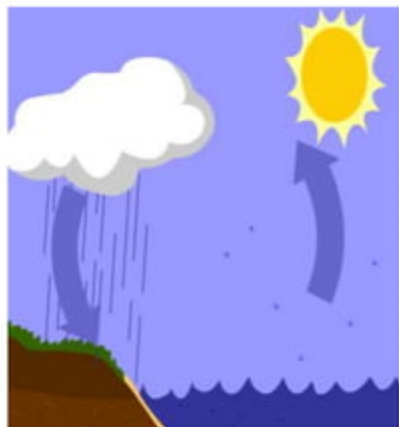
# Hydrological Cycle

- also known as global water cycle or the H<sub>2</sub>O cycle.
- one of the most important processes in the natural world
- describes the storage and movement of water between the:
  - biosphere
  - atmosphere
  - lithosphere
  - hydrosphere



# Hydrological Cycle

- total amount of water remains constant, its distribution among the various processes changes.
- throughout water changes between three different states:
  - water evaporating into water vapor
  - vapor condensing to become water
  - water freezing into ice
  - ice melting into water



# Components of Hydrological Cycle

- the hydrological cycle is composed of the following components:
  - Evaporation
  - Transpiration
  - Sublimation
  - Condensation
  - Precipitation
  - Run-off
  - Infiltration and percolation
  - Ground-water flow

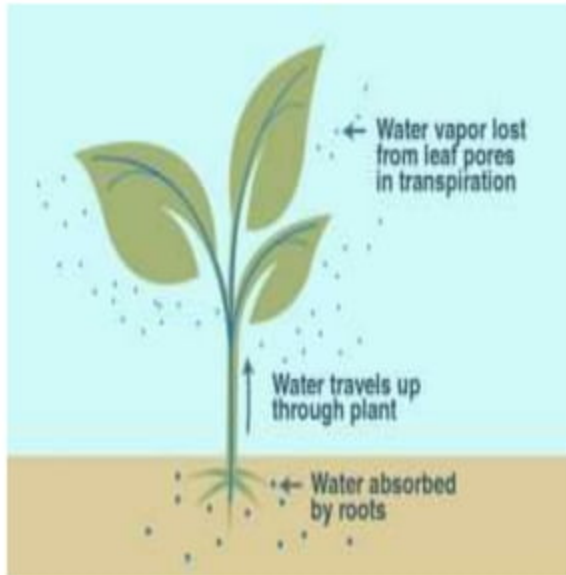
# Evaporation

- Surface water get energized by the solar radiations
- sufficiently energized break free from the forces binding them together and they evaporate as water vapor.
- largest amount of water comes from oceanic evaporation



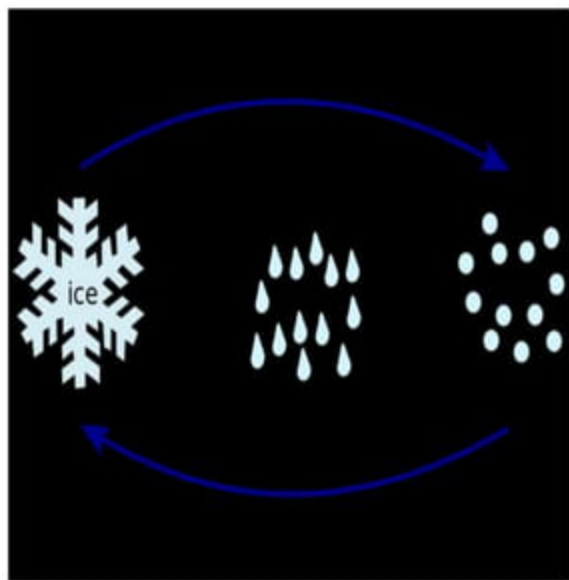
# Transpiration

- process of water movement through a plant and its evaporation from aerial parts, such as leaves, stems and flowers.
- Evaporation along with transpiration is known as evaporation



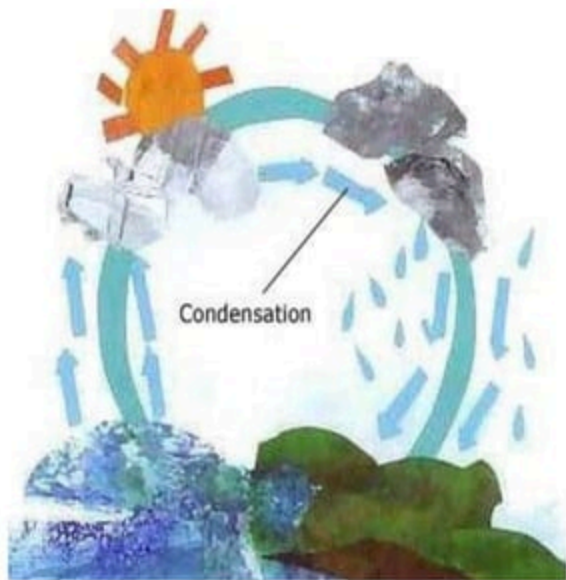
# Sublimation

- Movement of water directly from a solid to a gaseous state without ever entering the liquid state.
- This allows water in snow or glaciers to enter the atmosphere directly.



# Condensation

- water vapor in the air is changed into liquid water.
- When water vapor rises, it cools slightly and condenses
- the water condenses on dust particles in the air and becomes liquid



# Precipitation

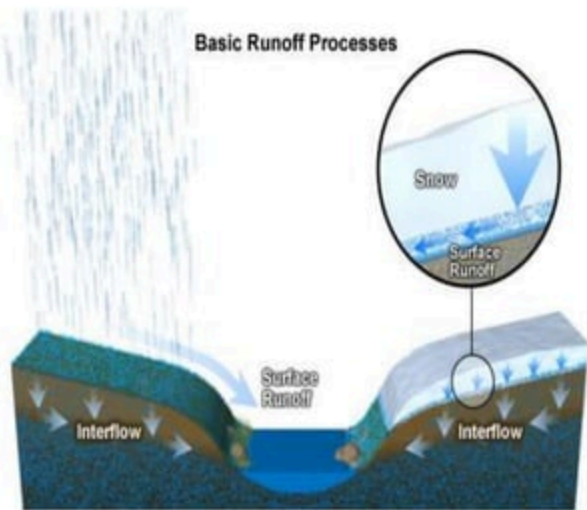
- Water falls from the sky in numerous different forms of precipitation including rain, snow, and hail.
- precipitation comes from clouds, which move around the world by air currents





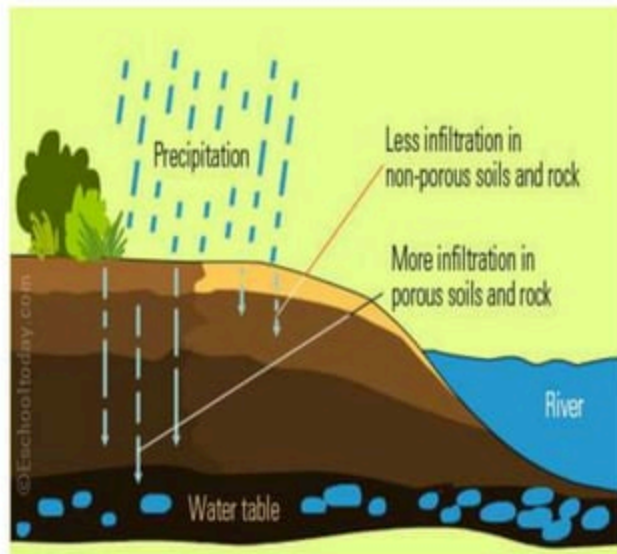
# Run-off

- Runoff is that portion of precipitation which makes its way toward stream, channels, lakes or oceans as surface or sub-surface flow.
- runoff will occur only when the rate of precipitation exceeds the rate at which water may infiltrate into the soil



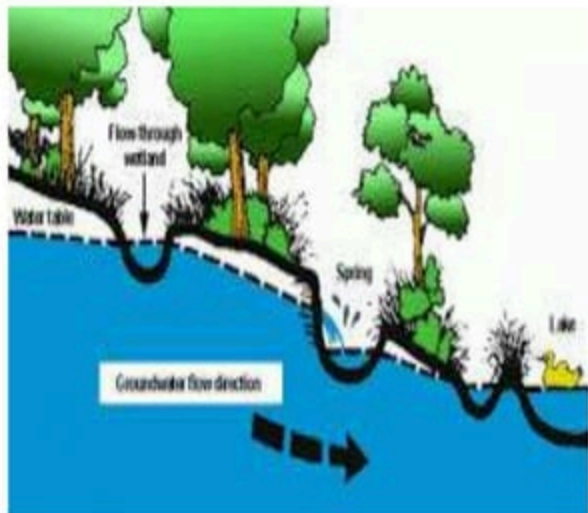
# Infiltration

- process in which water is absorbed by soil of any area by the downward movement of water during a rainfall.
- the porosity and pore-size distribution affect the infiltration rate.
- the infiltrated water slowly becomes a part of groundwater



# Groundwater Discharge

- Groundwater is water that is held in cracks and pore spaces below ground.
- This water can be tapped by water supply wells or continue moving below the ground until it eventually returns to the surface
- The process by which groundwater exits the ground is known as groundwater discharge.



# Hydrological Cycle

- Process of hydrological cycle starts with oceans. Water in oceans, gets evaporated due to heat energy provided by solar radiation and forms water vapor.
- This water vapor moves upwards to higher altitudes forming clouds. Most of the clouds condense and precipitate in any form like rain, hail, snow, sleet.
- A part of clouds is driven to land by winds. Precipitation, while falling to the ground, some part of it evaporates back to atmosphere.

# Hydrological Cycle

- Portion of water that reaches the ground, enters the earth's surface infiltrating various strata of soil and enhancing the moisture content as well as water table.
- Vegetation sends a portion of water from earth's surface back to atmosphere through the process of transpiration.
- Once water percolates and infiltrates the earth's surface, runoff is formed over the land, flowing through the contours of land heading towards river and lakes and finally joins into oceans after many years.
- Some amount of water is retained as depression storage.

# Hydrological Cycle

- Further again the process of this hydrological cycle continues by blowing of cool air over ocean, carrying water molecules, forming into water vapor then clouds getting condensed and precipitates as rainfall.
- Similarly, then water gets percolated into soil, increasing water table then formation of runoff waters heading towards water bodies. Thus the cyclic process continues.

