INTRODUCTION TO THE
HYDROLOGIC CYCLE

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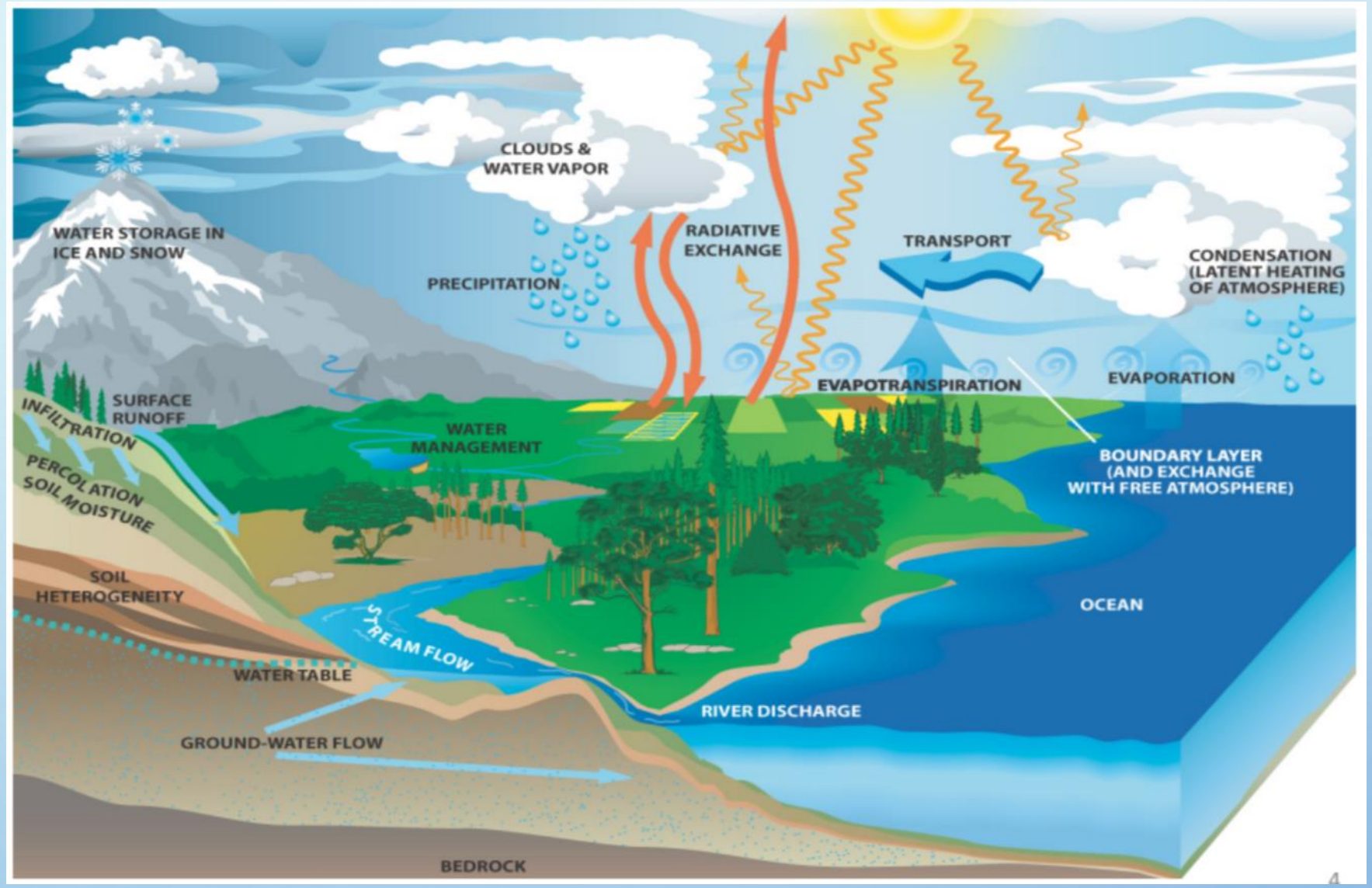
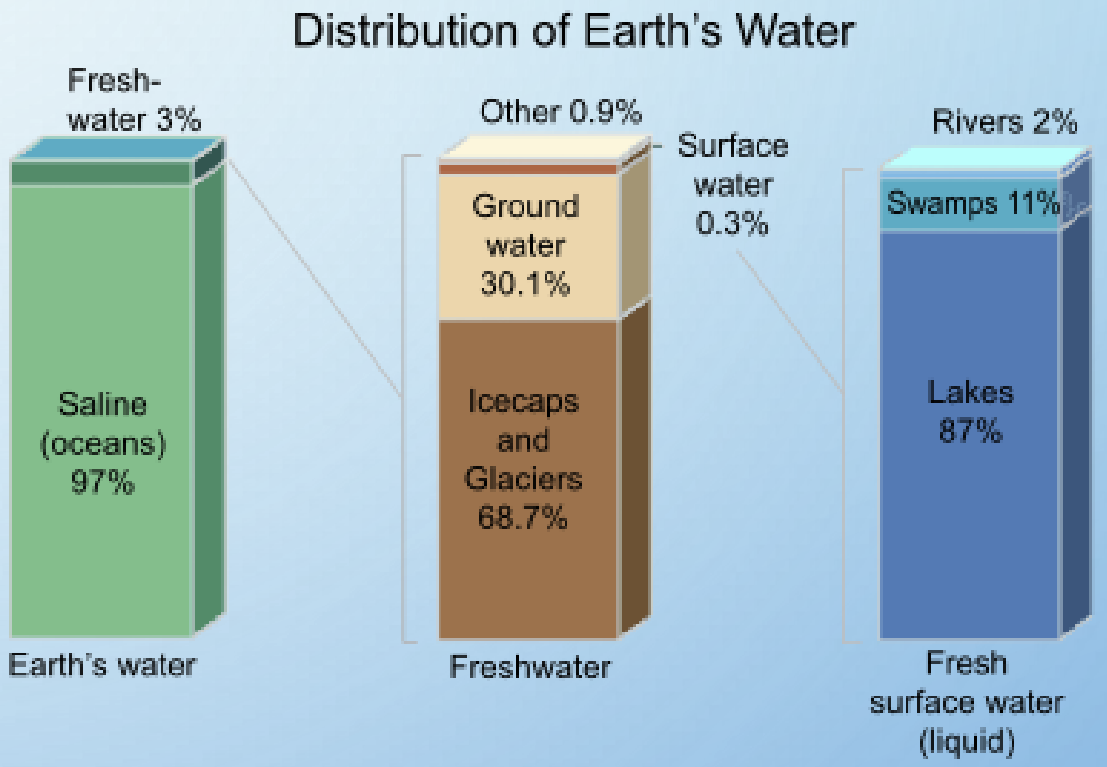
THE CYCLIC PROCESS



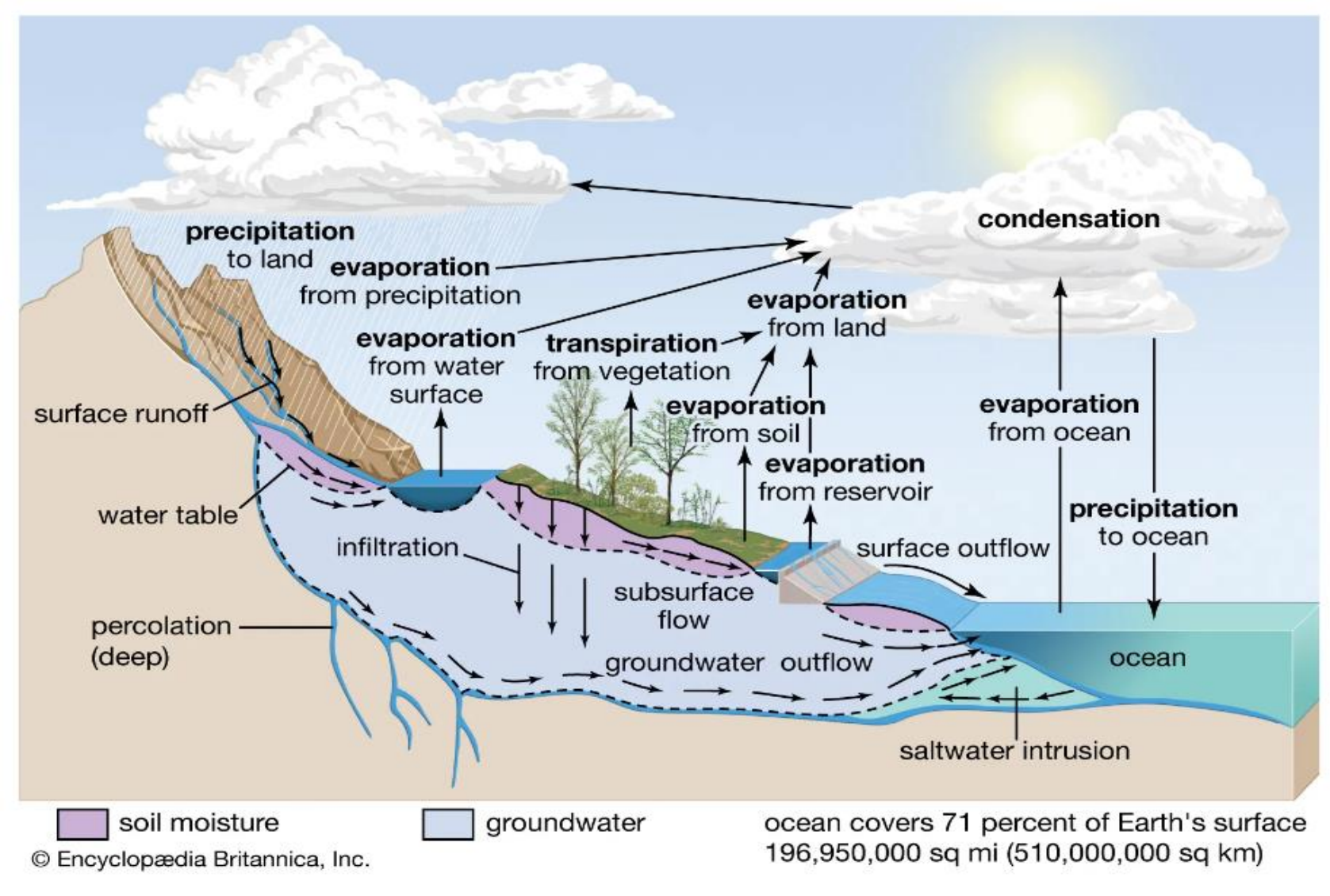
HYDROLOGIC CYCLE

- **Hydrologic cycle** – also known as **water cycle,** involves movement of water within four spheres such as at atmosphere, lithosphere, biosphere and hydrosphere in a cyclic manner and also deals with the **occurrence, distribution** and **chemistry** of the water.
- The surface of the earth is covered by 70% of water out of which, water present in oceans (saline water) constitutes about 97% and 3% constitutes fresh water sources which involves rivers, lakes, glaciers and permanent snow.



COMPONENTS INVOLVED IN WATER CYCLE:

- Evaporation
- Transpiration
- Condensation
- Precipitation
- Infiltration
- Runoff

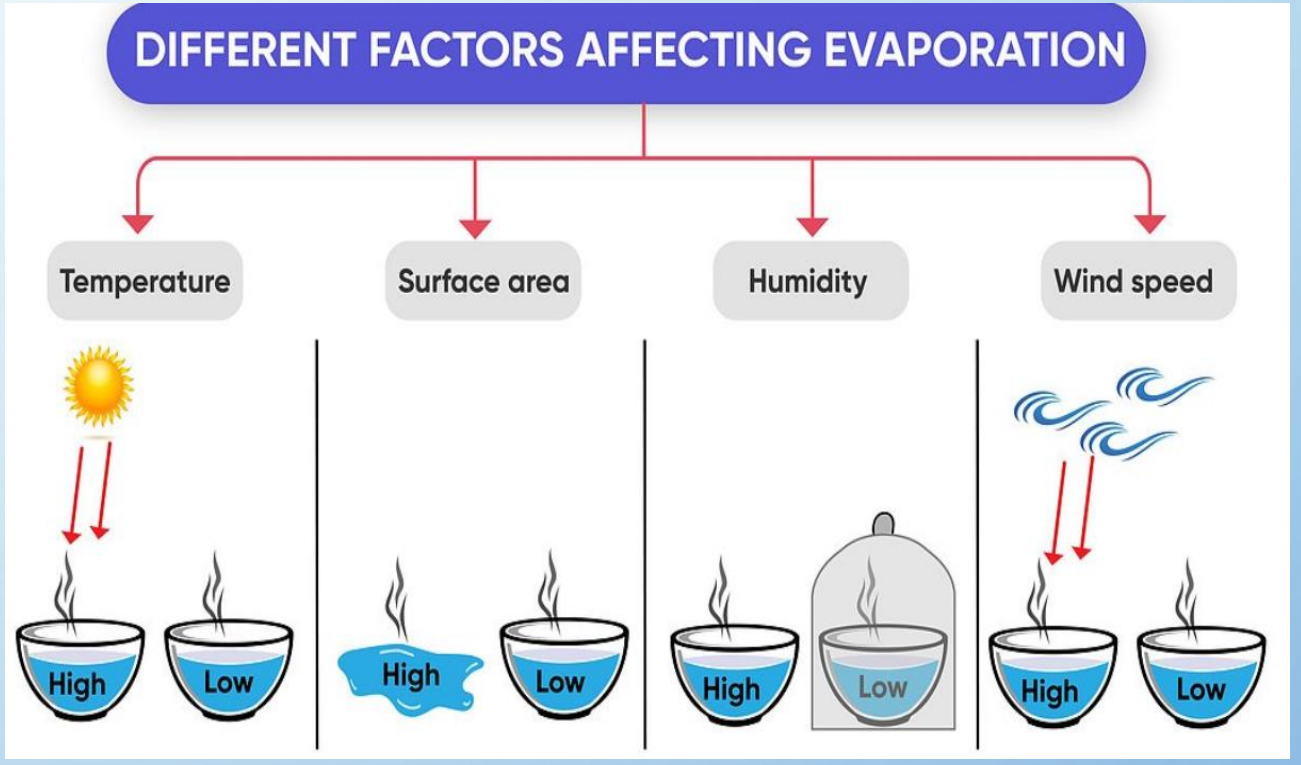


EVAPORATION

- It involves change in the state of water from liquid to gaseous state
- Factors affecting evaporation –

1. Solar radiation
2. Surface area
3. Wind
4. Humidity

- Through evaporated water is lifted into the atmosphere from land surfaces (lithosphere), ocean surfaces (hydrosphere) as water vapour.

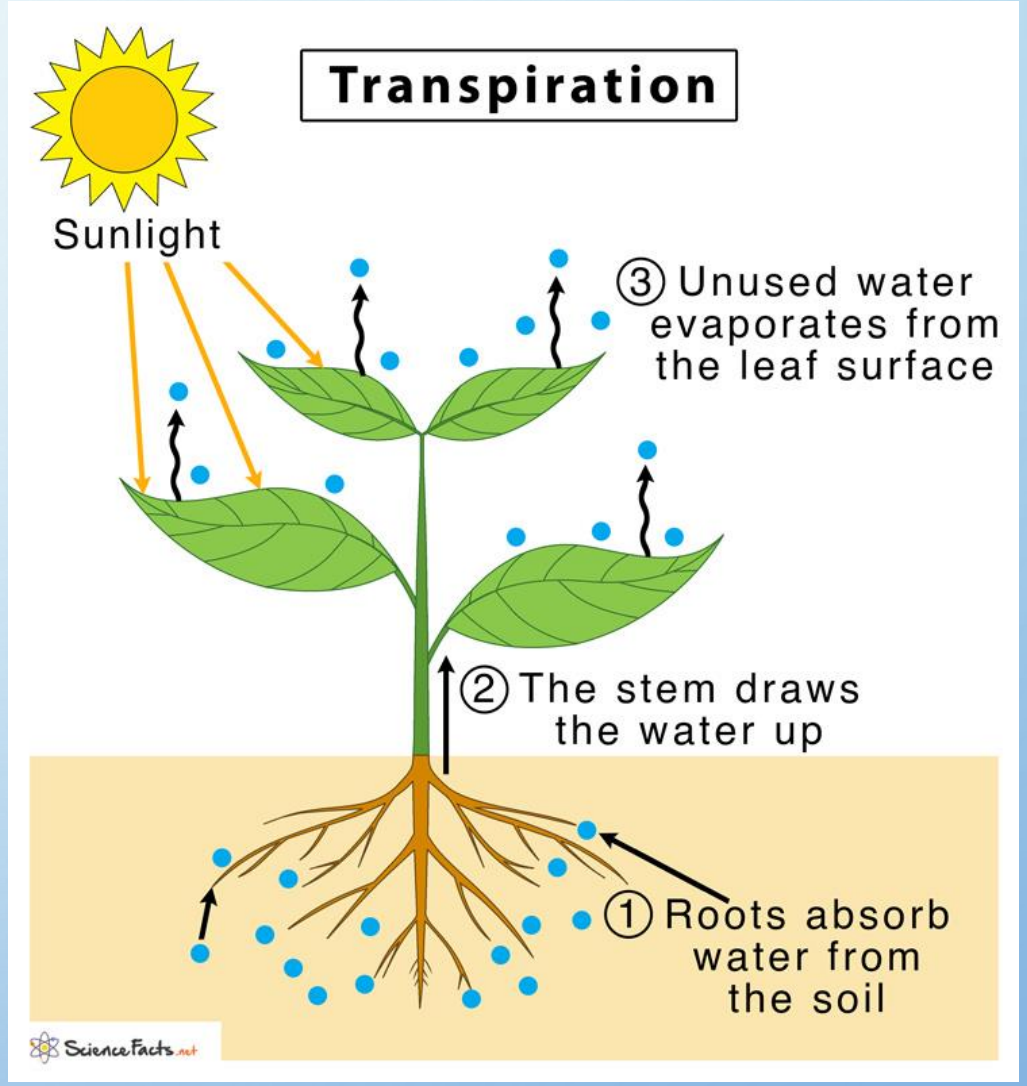


TRANSPIRATION

- It is a biological process in which water inside the plant is evaporated towards the atmosphere as water vapour through numerous leaf openings.
- It is affected by the amount of light, the plants are being exposed.

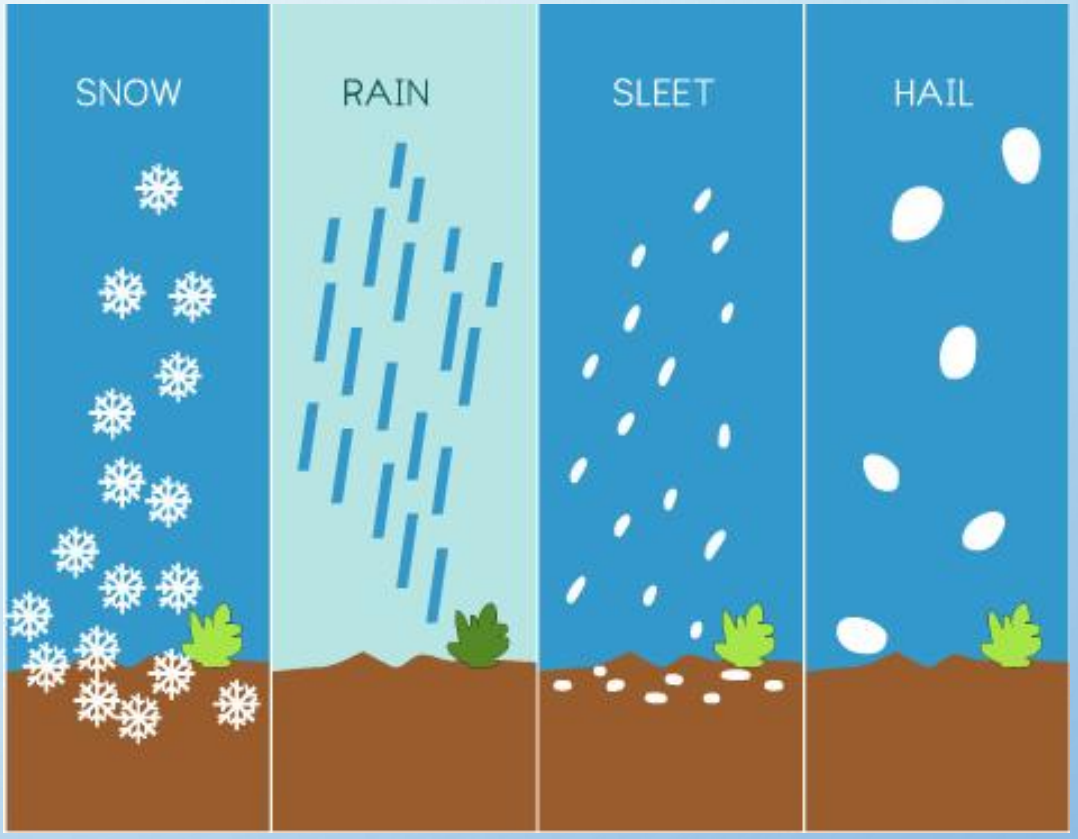
Evapotranspiration

- It is a process that involves combination of both evaporation and transpiration.
- It is a process by which water is transferred from the land to the atmosphere involving water leaving from the soil (evaporation) and the plant surfaces (transpiration)



PRECIPITATION

- It is a process that occurs when all forms of water particles (rain, snow, sleet, hail) fall from the atmosphere and reaches the ground surface.
- Ice pellets, snow fall under the influence of gravity where they melt and change into rain drop.
- The precipitated water may fall into the water body or it may fall onto the land surface.
- When rainfall is small and infrequent, much of the precipitation is returned to the atmosphere by evaporation.

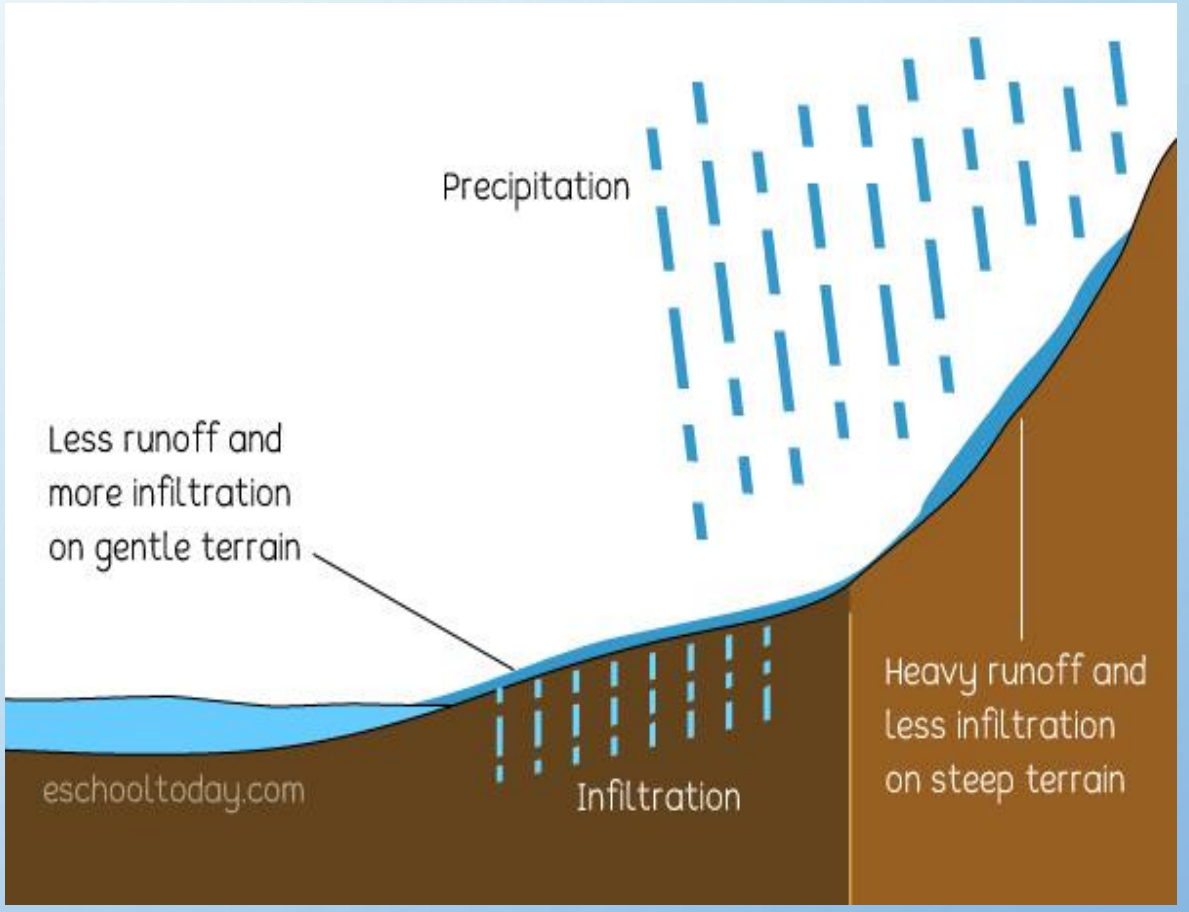


RUNOFF

- Run-off may consist of contribution from

1. Surface runoff
2. Subsurface runoff
3. Groundwater runoff

- The portion of precipitation that appears in the surface streams is called runoff. This surface runoff travels over he ground surface and leave towards catchment area called as drainage basins or watershed.



INFILTRATION

- It is a physical process which involves movement of water towards the interfaces within the soil. It is governed by the soil surface conditions.
- Factors affecting infiltration rate:

1. Texture and structure of soil
2. Initial soil moisture content
3. Pores within soil matrices
4. Changes in soil composition

- Water become infiltered and get stored in the soil through filling of the pore spaces.