

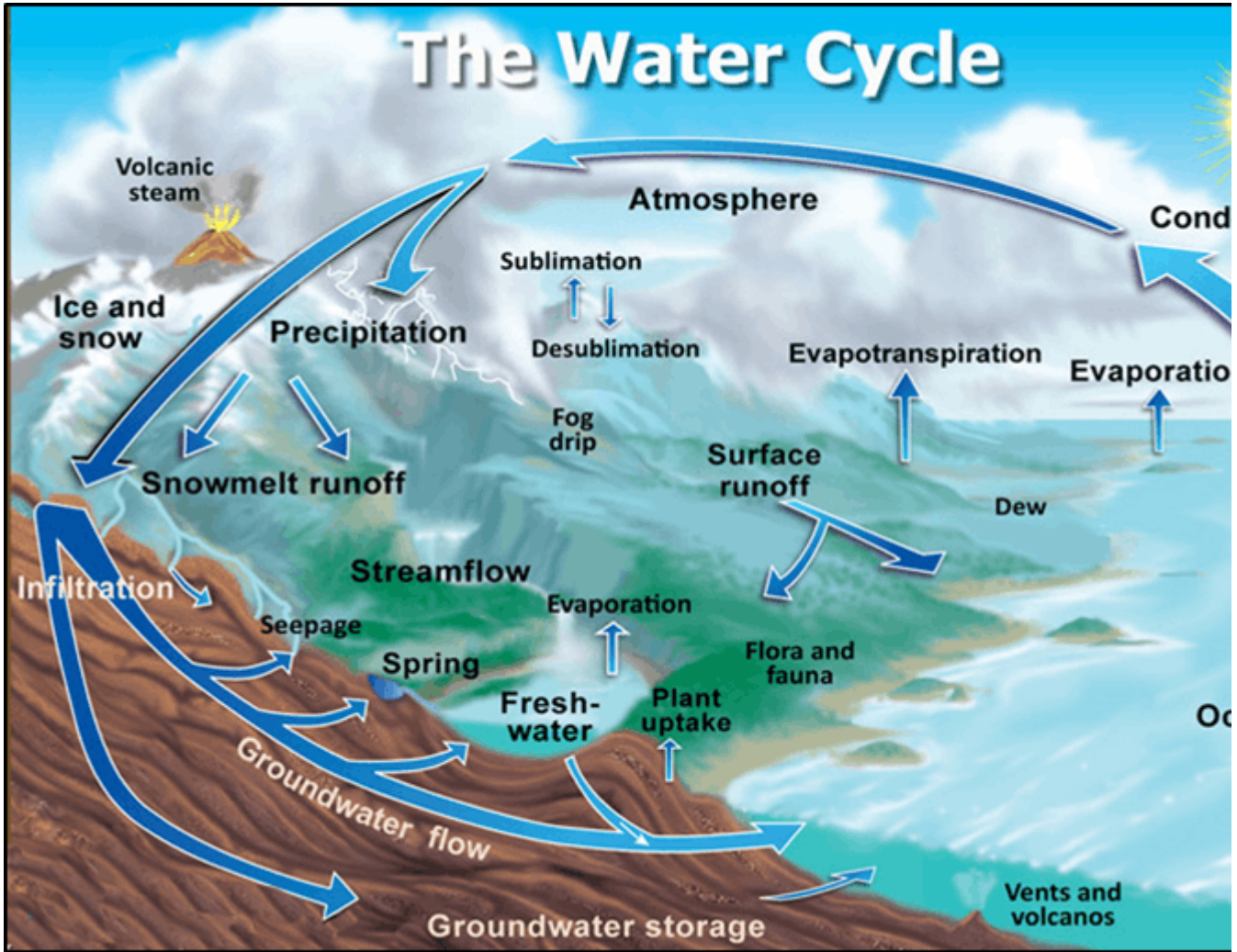
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Water Cycle: Definition, Stages of Water Cycle and Evaporation

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Definition of Water Cycle

- Water Cycle describes the continuous movement of water on above and below the surface of the Earth.
- This cycle is also known as the hydrologic cycle or the hydrological cycle.
- It involves the exchange of energy leading to temperature changes.
- The movement of water i8s from one reservoir to another such as from river to ocean, or from the ocean to the atmosphere.
- Physical processes involved are:
 - Evaporation
 - Condensation
 - Precipitation
 - Infiltration
 - Surface runoff
 - Subsurface flow



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Stages of Water Cycle

Evaporation

- This occurs when the water molecules at the surface of the water bodies rise into the air.
- The molecules accumulate into water vapour clouds.
- When evaporation takes place through the leaves, the process is known as evapotranspiration.
- This process usually takes place below the boiling point of water.

Sublimation

- This process occurs when snow or ice changes directly into water vapour without becoming water.
- This can be observed on mountain peaks (the air pressure is quite low).
- The ice sheets covering the poles of the earth are the primary source of sublimation.
- The low air pressure helps in sublimation.

Condensation

- It is the change of the physical state of matter from the gas phase into the liquid phase.
- Wind and air currents move the moisture, which leads to the formation of clouds.

Precipitation

- The vapours will condense into water droplets above zero degrees centigrade.
- It is the action or process of precipitating a substance from a solution.
- The vapours cannot condense in the absence of dust and other impurities.

Infiltration

- Rainwater gets absorbed into the ground through this process.
- One of the examples is that of rocks which can retain comparatively less water than the soil.

Runoff

- The water from the rainfall often flows down the sides of mountains and hills forming rivers eventually.
- Ice caps are formed in the colder regions.
- At the poles, the biggest icecaps on earth are found.

Implications of Water Cycle

- It is an essential part of other biogeochemical cycles.
- All life processes on earth gets affected by the water cycle.
- The earth's temperature would rise drastically without the evaporating cooling effect of the water cycle.

Other Important Processes

Snowmelt

It is the runoff produced by the melting snow.

Advection

- It is the movement of water through the atmosphere.
- Without this, the water that evaporated over the oceans could not precipitate over land.

Percolation

Under the influence of gravity, water flows vertically through the soil and rocks.

Plate Tectonics

- It is a scientific theory describing the large-scale motion of seven large plates.

- This also includes the movements of a larger number of smaller plates of Earth's lithosphere.

Transpiration

It is the release of water vapour from plants and soil into the air.

FAQs

Q1. What are the various stages involved in a complete water cycle?

Answer:

Following are the stages involved in a complete water cycle:

- i) Evaporation and Transpiration
- ii) Condensation
- iii) Precipitation
- iv) Runoff and Infiltration

Q 2. What is Sublimation?

Answer:

- Sublimation process occurs when snow or ice changes directly into water vapour without becoming water.
- This can be observed on mountain peaks (the air pressure is quite low).
- The ice sheets covering the poles of the earth are the primary source of sublimation.
- The low air pressure helps in sublimation.

Q 3. What is the importance of biogeochemical cycles?

Answer:

- Biogeochemical cycles are important for regulating the elements essential for life on Earth.
- This form of natural recycling allows the continuous survival of ecosystems.

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