Chapter- 6

The Hydrosphere

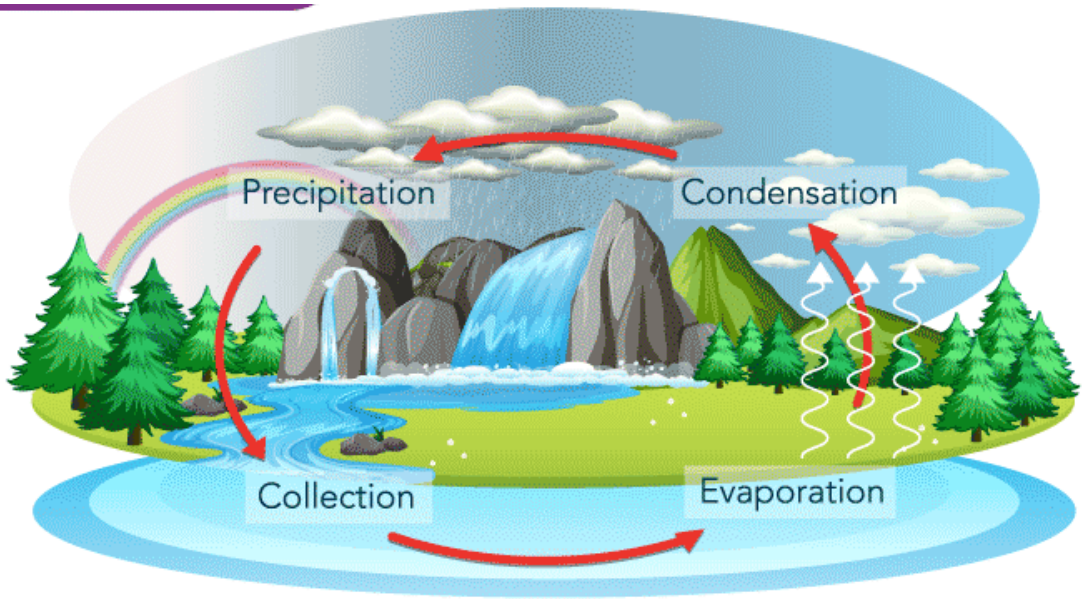
STUDY NOTES

What is Hydrosphere?

The hydrosphere is the combined mass of water found on, under, and above the surface of the earth. It has been estimated that there are 1386 million cubic kilometres of water on earth. This includes water in liquid and frozen forms in groundwater, oceans, lakes and streams approximately 75% of Earth's surface, an area of some 361 million square kilometres is covered by ocean.

Hydrological cycle

The hydrological cycle transfers water from one state or reservoir to another. Reservoirs include atmospheric moisture including snow, rain and clouds, streams, oceans, rivers lakes, groundwater, subterranean aquifers, polar icecaps and saturated soil.



The Solar energy is the source of heat and light and gravity causes the transfer from one state to another over periods from hours to thousands of years. Most evaporation comes from the oceans and is returned to the earth as snow or rain.

Importance of Hydrosphere

It consists of all bodies of water, icebergs and water vapour in the earth's atmosphere. Oceans contain 97 per cent of water in the hydrosphere, while rivers, lakes and other water bodies on land and underground water contains a small percentage of total water in the hydrosphere.

Here is the importance of the layer-

- Helps to maintain the hydrological cycle.
- Good means of transport of water
- Plays a vital role in the earth's climate.

Hydrosphere Facts

- The amount of water on the Earth's surface remains constant over time. This signifies that the amount of water available on the Earth today is the same as it was when dinosaurs were roaming the Earth.
- 68.7% of the freshwater exists in the form of permanent snow.
- The total amount of water on Earth is about 333 million cubic miles or 1,386 million cubic kilometres.

Distribution of Water Bodies

Three-fourth of the earth's surface is covered by water. Water is absolutely essential for survival. Water alone can quench our thirst when we are thirsty.

Ocean Circulation

The movements that occur in oceans can be broadly categorised as waves, tides and currents.

Waves

When the water on the surface of the ocean rises and falls alternately, they are called waves. During a storm, the winds blowing at very high speed form huge waves. These may cause tremendous destruction. An earthquake, a volcanic eruption or underwater landslides can shift large amounts of ocean water. As a result a huge tidal wave called tsunami is formed.

Tides

The rhythmic rise and fall of ocean water twice in a day is called a tide. It is high tide when water covers much of the shore by rising to its highest level. It is low tide when waterfalls to its lowest level and recedes from the shore.

The strong gravitational pull exerted by the sun and the moon on the earth's surface cause the tides. During the full moon and new moon days, the sun, the moon and the earth are in the same line and the tides are highest. These tides are called spring tides.

But when the moon is in its first and last quarter, the ocean waters get drawn in diagonally opposite directions by the gravitational pull of sun and moon resulting in low tides. These tides are called neap tides.

Ocean Currents

Ocean currents are streams of water flowing constantly on the ocean surface in definite directions. The ocean currents may be warm or cold. The warm ocean currents originate near the

equator and move towards the poles. The cold currents carry water from polar or higher latitudes to tropical or lower latitudes.

Warm currents bring about warm temperature over land surface. The areas where the warm and cold currents meet provide the best fishing grounds of the world. Seas around Japan and the eastern coast of North America are such examples. The areas where a warm and cold current meets experience foggy weather making it difficult for navigation.