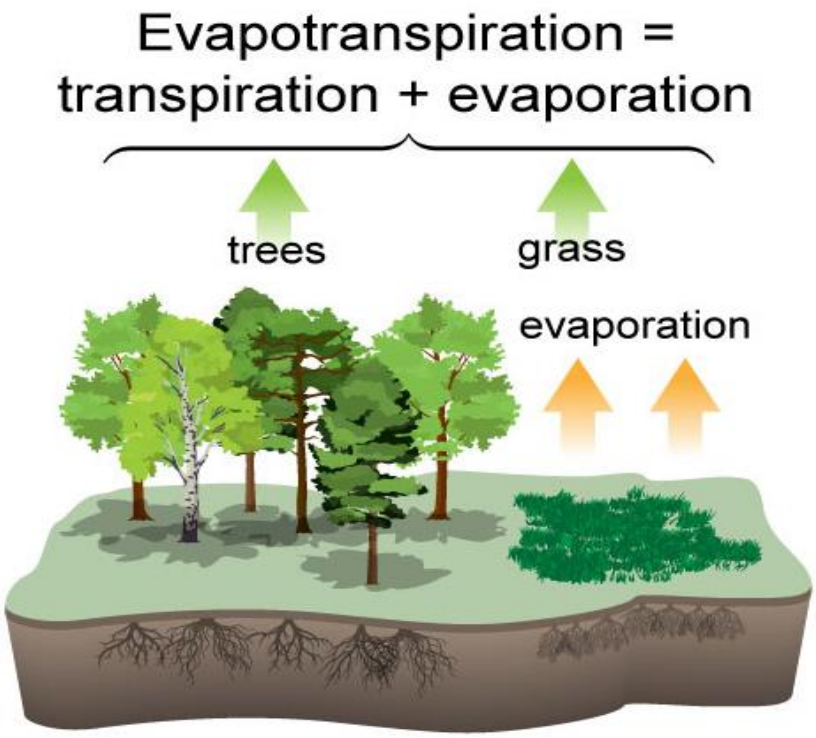
Precipitation (Rain Fall)

- The moisture falling on an area in liquid, vapours or frozen form is termed as **precipitation**. Thus, precipitation includes all moisture that comes to earth in the form of rain, snow, hail and dew.
- Precipitation is the chief source of soil water. The water available to plants and animals from soil comes as a result of rainfall. Due to **water cycle** or **hydrological cycle**, there occurs an interchange of water between the earth's surface and the atmosphere. In this cycle following, two important events are involved : **precipitation** and **evapotranspiration**. The ecofactor of precipitation depends upon season, wind, air pressure and temperature.



Evapotranspiration

- Precipitation occurs as a result of the cooling and condensation of water vapour at high altitudes. The low temperature at high altitudes cools the air, which gets saturated and loses its water-holding capacity.
- As the temperature starts falling, the water vapour condenses and falls as rain due to gravity. Depending on the environmental conditions, precipitation falls as hail, snow or rain. In winter the ground temperature falls and as a result, atmospheric vapour gets

condensed as **dew** or **frost** on the surfaces of objects, plants, animals, soils, etc.

- Dew becomes an important source of moisture to plants in the winter season. **Drizzle** involves minute drops appearing as to float in air. **Rain** is the drops of liquid water, which are larger than drizzle and also heavier.
- **Snow** is the moisture as solid state. **Sleet** is the form of small grains or pellets of ice, whereas **hail** consists of balls or lumps of ice. Light drizzle is of little importance as very little moisture penetrates the soil because much of it evaporates rapidly.
- Snow is injurious to plants, breaking tender branches, flowers and fruits. Hail and sleet also cause similar damage. Some sedges grow in snow patches. Of all the above forms of precipitation, the rain is most important.
- It is the source of soil water and also affects humidity of atmosphere. The total precipitation of the world is about 4.46 × 102° g per year and of this amount 0.99 × 102° g fell on land and the rest on oceans (**Hutchinson**, 1957). In India, rains are caused by monsoons; **monsoon** is a special pattern of moist air movement prevalent in India.
- During monsoon, the air masses moving from the Arabian sea to the West coasts of India and from the Bay of Bengal to the eastern part of country, become extremely moist. About 45 per cent of the water available during annual precipitation flows into river, 20 per cent percolates in the ground and the remaining 35 per cent is lost by evaporation.
- Gentle steady rains are most effective because much of it penetrates the soil. Torrential rains on the land are most disastrous because they lead to flooding, soil erosion, destruction of vegetation and of animals. The quantity, duration and intensity of rainfall profoundly regulate the vegetation of any place.
- For example, in tropical areas with heavy rainfall throughout the year, vegetation mainly include **evergreen forests**. In countries, with heavy rainfall during winter and low during summer, there are present **sclerophyllous forests**.

- The plants are shrubs, stunted in height, with leathery, thick, evergreen leaves. The areas with heavy rainfall during summer and low during winter are characterized by the presence of **grasslands**. The regions where rainfall is scanty, are seen with deserts and xerophytic vegetation.
- The average annual rainfall of India is about 117 cm, the highest in the world. However, there exists great variations between the

different regions in India with regard to rainfall. Thus, the average annual rainfall in Assam and the north-east is about 250 cm.

- In Cherrapunji in Meghalaya, the annual average of rainfall is about 1,100 cm, whereas in Jaisalmer in Rajasthan it is only 20 cm. The distribution of rainfall over India depends largely on the position of hills and mountains and the forest cover.
- Thus, monsoon winds strike the Western Ghats from a southwest direction and shed most of their water on the windward side. Bombay being on the windward side, receives 200 cm of rainfall annually during the monsoon, while, Pune being on the leeward side (i.e., side of anything away from wind) receives only about 75 cm.
- If the rainfall to evaporation ratio is zero or less, deserts develop. Grasslands develop when this ratio is more than 0.2 and less than 1 and forests develop when the ratio is more than 1 (around 1.6 to 2). Often in forests, the floor receives rain from trees in the form of drips from tree leaves due to accumulation of condensed water on winter mornings.