

UNIT

3

Atmosphere

Learning Objectives

- To understand the composition and structure of atmosphere
- To differentiate weather and climate
- To correlate the factors influencing weather and climate
- To recognize the classification of Clouds, wind and rainfall



Introduction

Earth is a unique planet where life is found. Can you imagine life on the earth without air? No. The air is essential for the survival of all forms of life. The blanket of air that surrounds the Earth is called the atmosphere. It is held close to the earth by gravitational attraction.

3.1

Composition of the Atmosphere

Atmosphere is a mixture of gases, water vapour and dust particles in different proportions. **Nitrogen (78%) and Oxygen (21%)** are permanent gases of the atmosphere. They constitute 99% of the total composition and their percentages always remain the same without any change. The remaining one percentage is occupied by Argon (0.93%), Carbon-di-oxide, (0.03%), Neon (0.0018%), Helium (0.0005%), Ozone (0.00006%) and Hydrogen (0.00005%). Krypton, Xenon and Methane are also present in trace. Water vapour (0 - 0.4%) is also found in the atmosphere, which plays an important role in predicting weather phenomenon. The other solid particles present in the atmosphere includes dust particles, salt particles, pollen grains, smoke, soot, volcanic ashes etc.,.

Fact

In 1772 CE Daniel Rutherford discovered Nitrogen in atmosphere. In 1774 Joseph priestly discovered oxygen in atmosphere

Oxygen is most important for living organisms. CO₂ absorbs heat and keeps the atmosphere warm by insulation and radiation. Nitrogen acts as a diluent and is chemically inactive. Ozone helps in protecting the earth from harmful ultra violet radiation. The solid particles in the atmosphere acts as nuclei on which water vapour condense to form precipitation.

3.2

Structure of the Atmosphere

The atmosphere is thick near the earth surface and thins out until it eventually merges with space. The five atmospheric layers are: Troposphere, stratosphere, Mesosphere, Thermosphere and Exosphere.

Troposphere

The lowest layer of the atmosphere is the troposphere. The Greek word 'tropos' means 'turn' or change. The layer extends up to 8 kms