

CBSE Class 7 Geography Notes

Chapter 4 - Air

Air is the generic name for the mixture of gases that makes up the Earth's atmosphere. This gas is primarily nitrogen, mixed with oxygen, water vapour, argon, carbon dioxide, and trace gases. Air is essential for all living beings for survival. Chapter 4 - Air of CBSE Class 7 Geography elaborately explains the composition of the atmosphere, structure of the atmosphere, weather and climate, etc. Based on these concepts mentioned in the respective chapter, we have designed CBSE Class 7 Geography notes for Chapter 4. It is advisable to refer to these notes to have a quick revision before writing the exam.

Overview

Atmosphere: An atmosphere is a layer of air surrounding our planet Earth. All living beings on this earth depend on the atmosphere for their survival. It is this mass of air that has made the temperature on the earth liveable.

Composition of the Atmosphere

In the atmosphere, nitrogen and oxygen are found in bulk quantities. Carbon dioxide, helium, ozone, argon and hydrogen are found in lesser quantities. Apart from these gases, tiny dust particles are also present in the air. Nitrogen is the most plentiful gas in the air. When we inhale, we take some amount of nitrogen into our lungs and exhale it.

Nitrogen is essential for plants to survive. They cannot take nitrogen directly from the air. Bacteria that live in the soil and roots of some plants take nitrogen from the air and change its form so that plants can use it.

Oxygen is the second most plentiful gas in the air. Humans and animals take oxygen from the air as they breathe. During photosynthesis, green plants produce oxygen. In this way, oxygen content in the air remains constant.

Carbon dioxide is another important gas. Green plants use carbon dioxide to make their food and release oxygen. Humans or animals release carbon dioxide. The amount of carbon dioxide released by humans or animals seems to be equal to the amount used by the plants which make a perfect balance.

Structure of the Atmosphere

The atmosphere is divided into five layers starting from the earth's surface. These are Troposphere, Stratosphere, Mesosphere, Thermosphere and Exosphere.

Troposphere: This layer is the most important layer of the atmosphere. Its average height is 13 km and the air we breathe exists here. In this layer, all-weather phenomena like rainfall, fog and hailstorm occur.

Stratosphere: Above the troposphere lies the stratosphere. It extends up to a height of 50 km. This layer is free from clouds and associated weather phenomenon, which makes it most ideal for flying aeroplanes. It contains a layer of ozone gas.

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Mesosphere: This is the third layer of the atmosphere. It lies above the stratosphere. It extends up to a height of 80 km. Meteorites burn up in this layer on entering from space.

Thermosphere: In thermosphere, temperature rises very rapidly with increasing height. Ionosphere is a part of this layer. It extends between 80-400 km. This layer helps in radio transmission. In fact, radio waves transmitted from the earth are reflected back to the earth by this layer.

Exosphere: The uppermost layer of the atmosphere is known as exosphere. This layer has very thin air. Light gases like helium and hydrogen float into space from here.

Weather and Climate

Temperature

Temperature: The temperature that we feel every day is the temperature of the atmosphere. The degree of hotness and coldness of the air is known as temperature. The temperature changes between day and night and season to season. Summers are hotter than winters.

Insolation: An important factor that influences the distribution of temperature is insolation. Insolation is the incoming solar energy intercepted by the earth. The amount of insolation decreases from the equator towards the poles. Therefore, the temperature decreases in the same manner.

Temperature in cities is much higher than that of villages. The concrete and metals in buildings and the asphalt of roads get heated up during the day. This heat is released during the night. Also, the crowded high rise buildings of the cities trap the warm air and thus, raise the temperature of the cities.

Air Pressure

Air pressure is defined as the pressure exerted by the weight of air on the earth's surface. As we go up the layers of the atmosphere, the pressure falls rapidly.

The air pressure is highest at sea level and decreases with height. Horizontally the distribution of air pressure is influenced by the temperature of the air at a given place.

In areas where temperature is high the air gets heated and rises. This creates a low-pressure area. Low pressure is associated with cloudy skies and wet weather. In areas having lower temperature, the air is cold and heavy.

Heavy air sinks and creates a high pressure area. High pressure is associated with clear and sunny skies. The air always moves from high-pressure areas to low-pressure areas.

Wind

The movement of air from high-pressure areas to low-pressure areas is called wind. Winds can be broadly divided into three types.

Permanent winds – The trade winds, westerlies and easterlies are the permanent winds. These blow constantly throughout the year in a particular direction.

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Seasonal winds – These winds change their direction in different seasons. For example monsoons in India.

Local winds – These blow only during a particular period of the day or year in a small area.

Moisture

When water evaporates from land and different water bodies, it becomes water vapour. Moisture in the air is known as humidity. When the air is full of water vapour we call it a humid day. As the air gets warmer, its capacity to hold the water vapour increases and so it becomes more and more humid.

When the water vapour rises, it starts cooling. The water vapour condenses causing formation of droplets of water. Clouds are masses of such water droplets. When these droplets of water become too heavy to float in the air, then they come down as precipitation.

Precipitation that comes down to the earth in liquid form is called rain. On the basis of mechanism, there are three types of rainfall: the convectional rainfall, the orographic rainfall and the cyclonic rainfall.

