

ATMOSPHERE

- The **vast expanse of air**, which envelops the earth all around is called the atmosphere. It extends to thousands of kilometres .
- It protects the Earth's surface from the Sun's harmful **ultraviolet rays**.

Structure of Earth's Atmosphere

Layer	Height (km)	Feature
Troposphere	0-18 km	Contains 75% of the gases in the atmosphere. As height increases, temperature decreases (about 6.5°c/km ascent).
Stratosphere	18-50 km	This layer contains the ozone layer. The temperature remains fairly constant in the lower part but increases slowly with increase in height due to presence of ozone gas. At upper layer temperature is almost 0 0C
Mesosphere	50-80 km	This is the coldest region of the atmosphere. The temperature drops to about – 100°C.
Ionosphere	80-600 km	Radio waves are bounced off the ions and reflect waves back to the Earth. This generally helps radio communication.
Exosphere	Above 600 km	Upper part of the exosphere is called the Magnetosphere. The temperature keeps on rising constantly at a high rate.

- It also regulates temperature, preventing the Earth from becoming too **hot** or too **cold**.
- The **major constituents of air** in the atmosphere are Nitrogen (78%), Oxygen (21%), Argon (0.93%) and Carbon dioxide (0.03%).
- Besides water vapour, dust particles, smoke, salts and other impurities are present in air in varying quantities.

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Greenhouse Effect and Global Warming

- A **greenhouse gas** (sometimes abbreviated GHG) is a gas in the atmosphere that absorbs and emits radiation within the thermal infrared range. This process is the fundamental cause of the greenhouse effect.
- The primary greenhouse gases in the Earth's atmosphere are water vapour, carbon dioxide, methane, nitrous oxide and ozone.
- In the **solar system**, the atmosphere of Venus, Mars and Titan also contain gases that cause greenhouse effects.
- **Global warming** is the increase of Earth's average surface temperature due to the effects of greenhouse gases, such as carbon dioxide emissions from burning fossil fuels or from deforestation. This is a type of greenhouse effect.

Pressure System of Earth

- The pressure exerted by the atmosphere due to its weight, above a unit area of the Earth's surface is called **atmospheric pressure**. It is measured by the **Mercury Barometer**.
- Major pressure belts of the Earth are equatorial low, subtropical high, subpolar low and polar high.