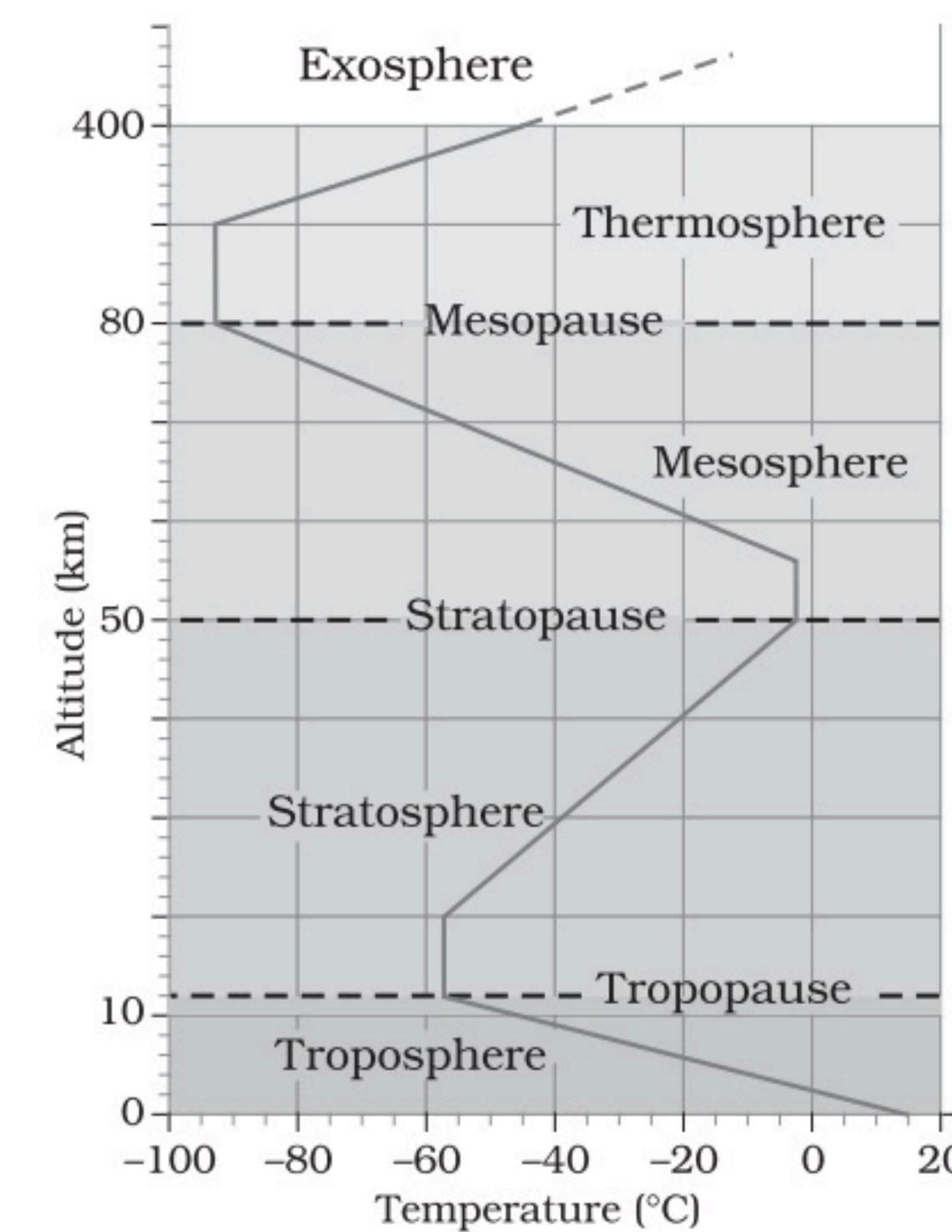


Structure & Composition of Atmosphere



There are five layers in the structure of the atmosphere depending upon temperature.

These layers are:

- Troposphere
- Stratosphere
- Mesosphere
- Thermosphere
- Exosphere

Troposphere

- It is considered as the lowest layer of Earth's atmosphere.
- The troposphere starts at the surface of the earth and goes up to a height of 8 km (poles) to 18 km (equator). The main reason for higher height at the equator is due to the presence of hot convection currents that push the gases upward.
- All kinds of weather changes occur within this layer.
- This layer has water vapour and mature particles.
- Temperature decreases with increasing height of atmosphere at the rate of 1 degree Celsius for every 165 m of height. This is called the **Normal lapse rate**.
- Tropopause, the transitional zone, separates the Troposphere and Stratosphere.

Stratosphere

- It is the second layer of the atmosphere found above the troposphere.
- It extends up to a height of 50 km from the earth's surface.
- This layer is very dry as it contains little water vapour.
- This layer provides some advantages for flight because it is above stormy weather and has steady, strong, horizontal winds.
- The ozone layer is found in this layer.
- The ozone layer absorbs UV rays and safeguards Earth from harmful radiation.
- Stratopause separates Stratosphere and Mesosphere.

Mesosphere

- The Mesosphere is found above the stratosphere.
- It is the coldest of the atmospheric layers.
- The mesosphere starts at 50 km above the surface of the Earth and goes up to 80 km.
- The temperature drops with altitude in this layer.
- By 80 km it reaches -100 degrees Celsius.
- Meteors burn up in this layer.
- The upper limit is called Mesopause which separates Mesosphere and Thermosphere.

Thermosphere

- This layer is found above Mesopause from 80 to 400 km.
- Radio waves that are transmitted from the earth are reflected by this layer.
- The temperature starts increasing again with increasing height in this layer.
- Aurora and satellites occur in this layer.

Ionosphere

- The lower Thermosphere is called the Ionosphere.
- The ionosphere consists of electrically charged particles known as ions.
- This layer is defined as the layer of the atmosphere of Earth that is ionized by cosmic and solar radiation.
- It is positioned between 80 and 400 km above the Mesopause.

Exosphere

- It is the outermost layer of the atmosphere.
- The zone where molecules and atoms escape into space is mentioned as the exosphere.
- It extends from the top of the thermosphere up to 10,000 km.

- One of the main components of Earth's interdependent physical systems is the atmosphere. An atmosphere is made of the layers of gases surrounding a planet or other celestial body.
- **Composition:**
 - Earth's atmosphere is composed of about 78% nitrogen, 21% oxygen, and 1% other gases.
 - Nitrogen (N₂): It is the most plentiful gas in the air. It is one of the primary nutrients critical for the survival of all living organisms.
 - Oxygen (O₂): Humans and animals take oxygen from the air as they breathe. Green plants produce oxygen during photosynthesis. In this way oxygen content in the air remains constant.
 - Carbon dioxide (CO₂): It is an important heat-trapping gas, or greenhouse gas, that comes from the extraction and burning of fossil fuels.

