

UPSC Civil Services Examination

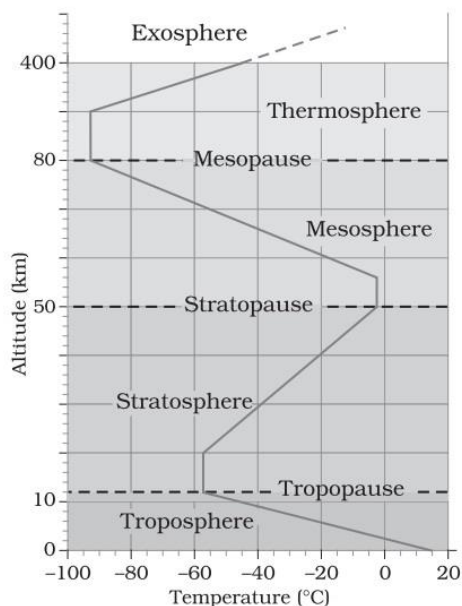
UPSC Notes [GS-I]

Topic: Structure of Atmosphere [Geography Notes for UPSC]

Structure of the Atmosphere

Our atmosphere is composed of many components. But the structure of the atmosphere is a combination of various layers.

The structure of the atmosphere is represented in a pictorial form below:



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 surface of the earth and goes up to a height of 7 to 20 km.

- All weather occurs within this layer.
- This layer has water vapour and mature particles.
- Temperature decreases at the rate of 1 degree Celsius for every 165 m of height.
- Tropopause separates Troposphere and Stratosphere.

Stratosphere

- It is the second layer of the atmosphere found above the troposphere.
- It extends up to 50 km of height.
- 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 Earth and goes up to 85 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 separate Mesosphere and Thermosphere.

Thermosphere

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

Ionosphere

- The lower Thermosphere is called the Ionosphere.
- 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.

