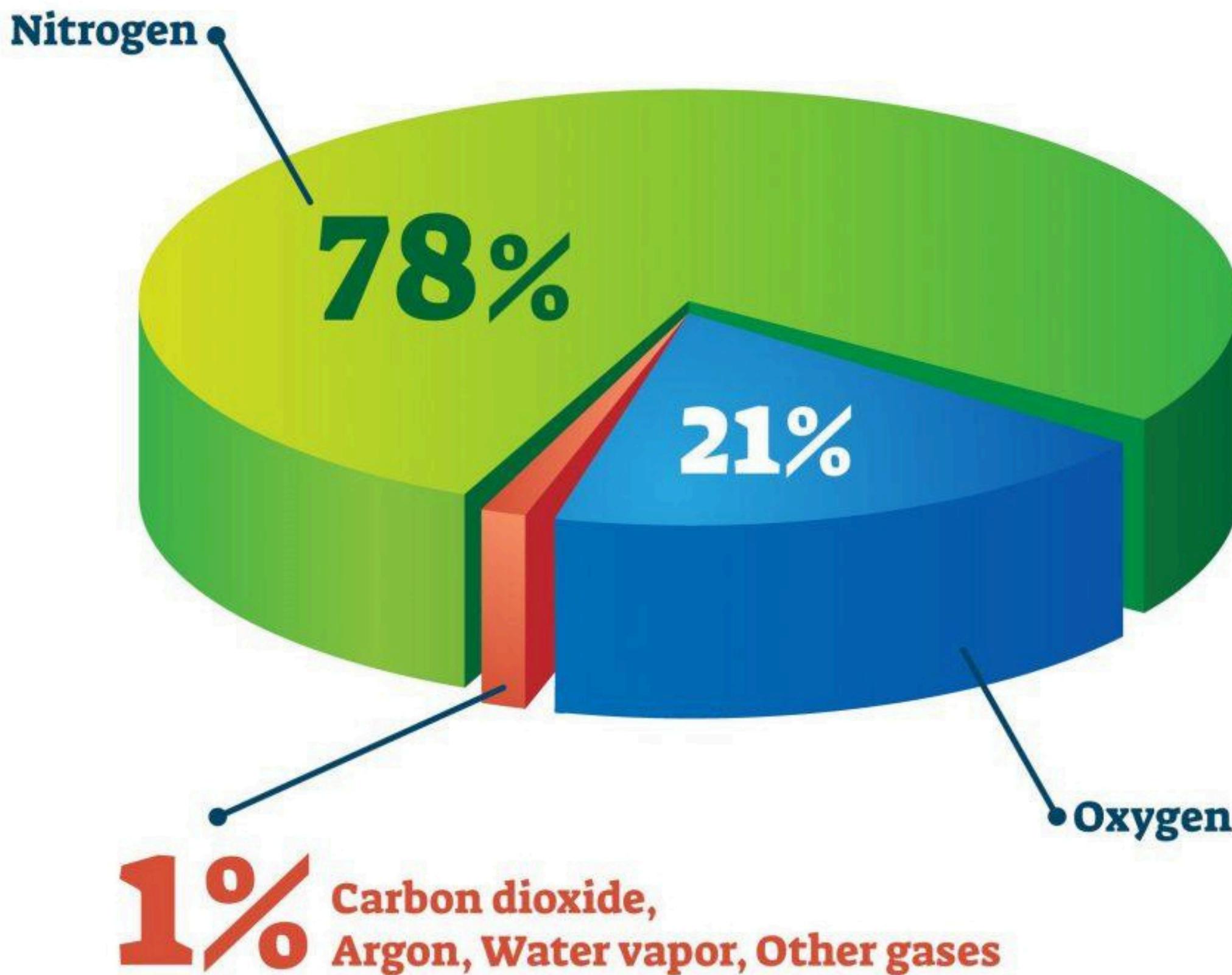
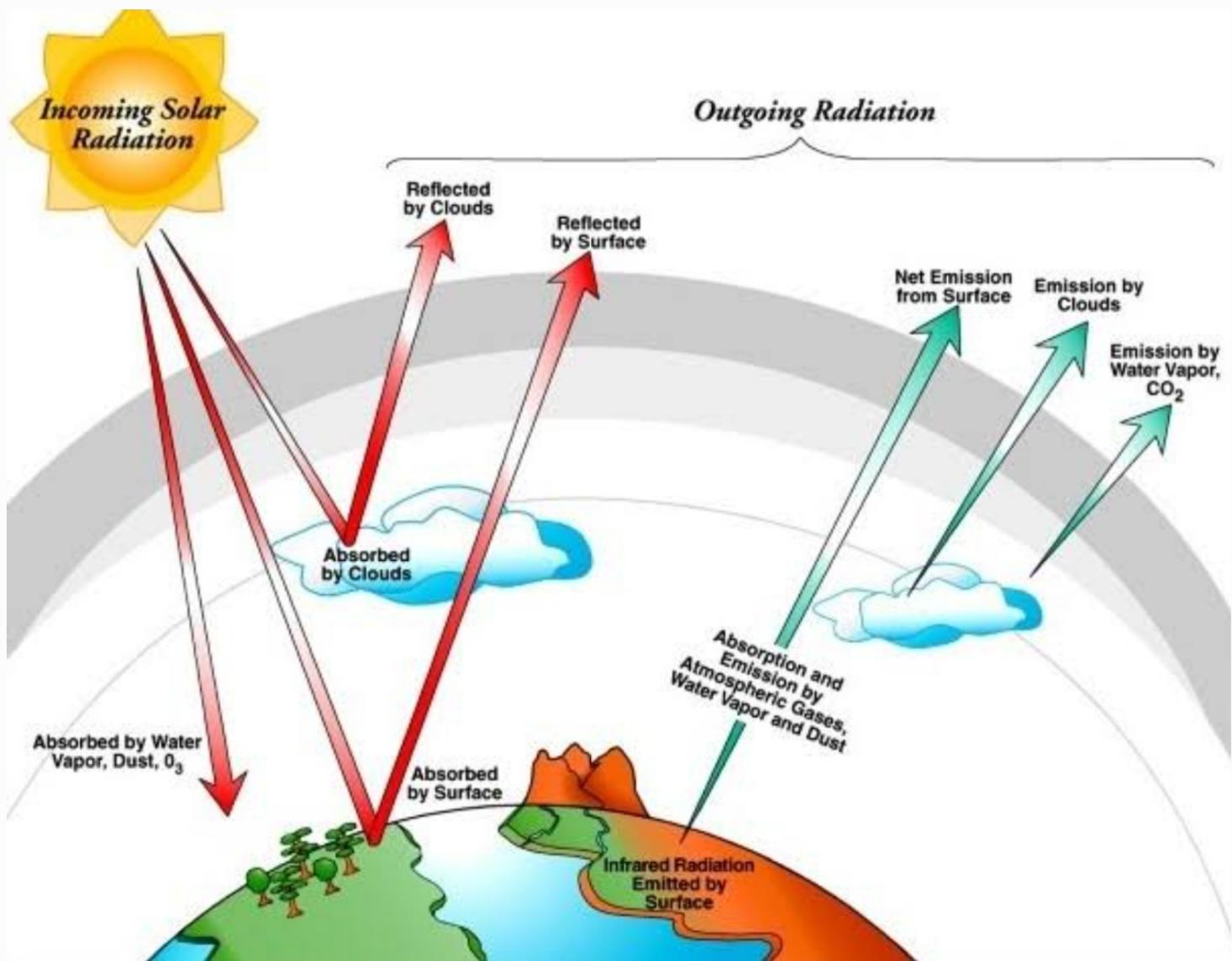
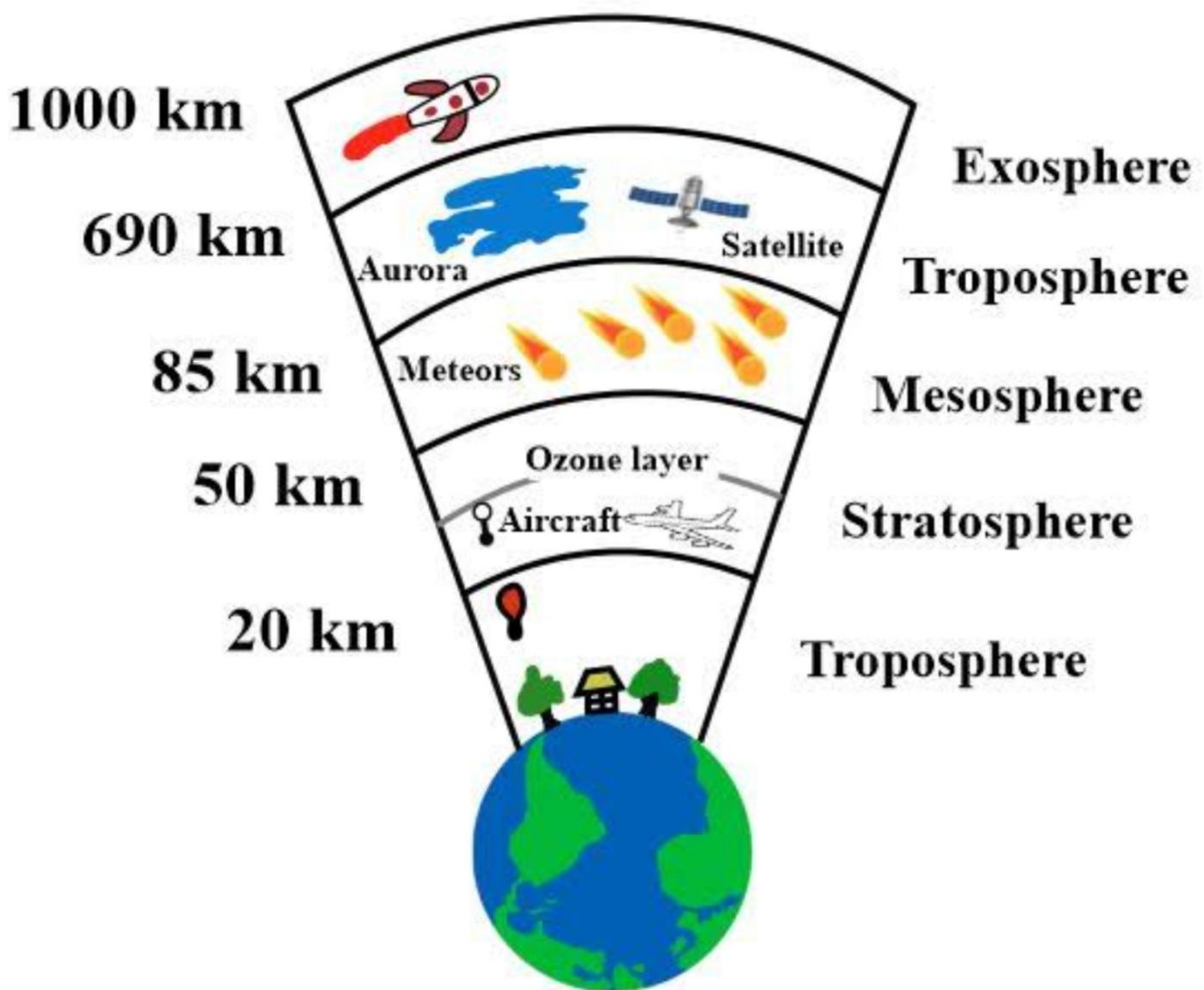


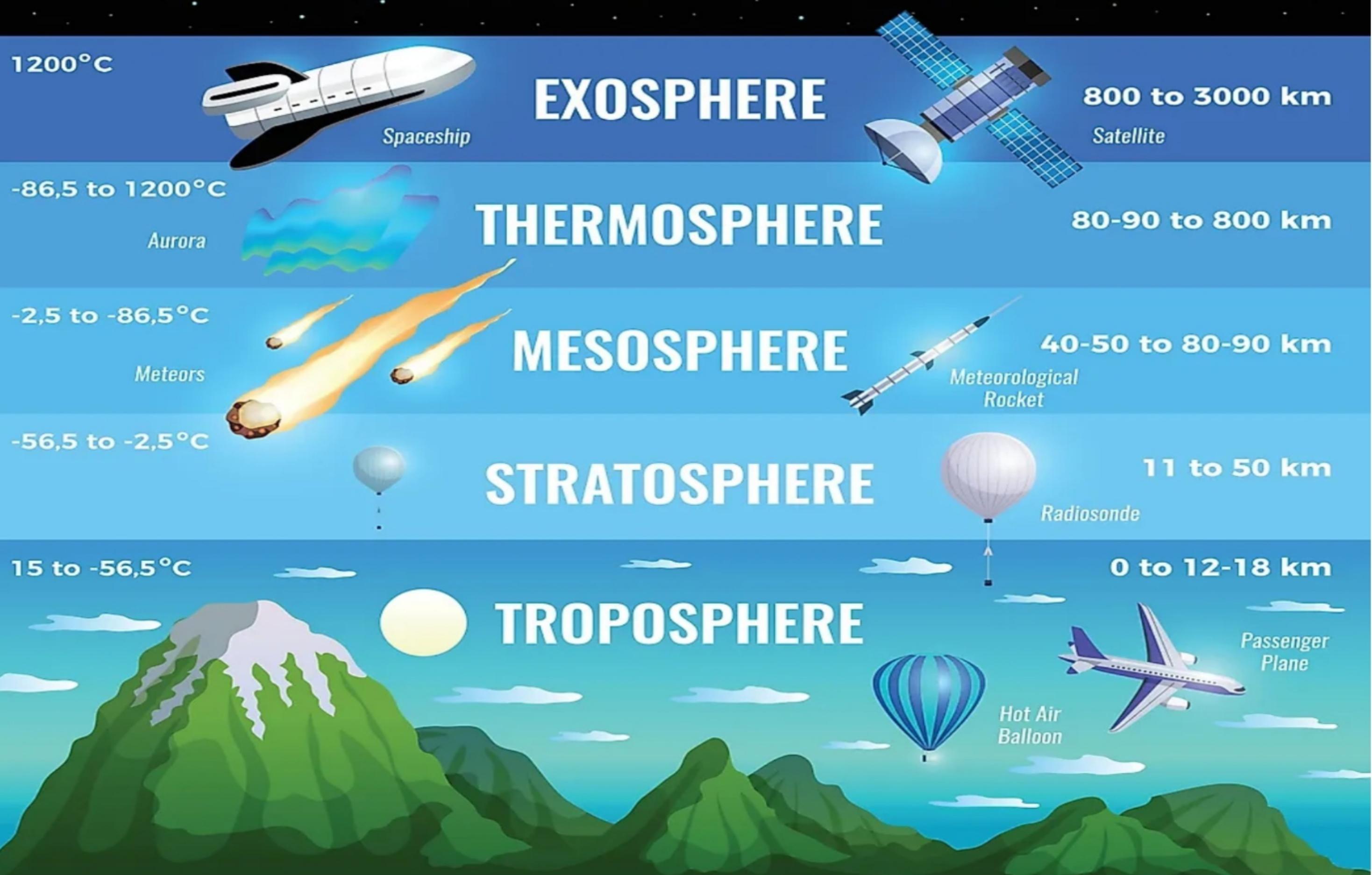
- One of the main components of Earth's interdependent physical systems is the atmosphere. An atmosphere is made of the layers of gases surrounding a planet or other celestial body.
- **Composition:**
 - Earth's atmosphere is composed of about 78% nitrogen, 21% oxygen, and 1% other gases.
 - Nitrogen (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.

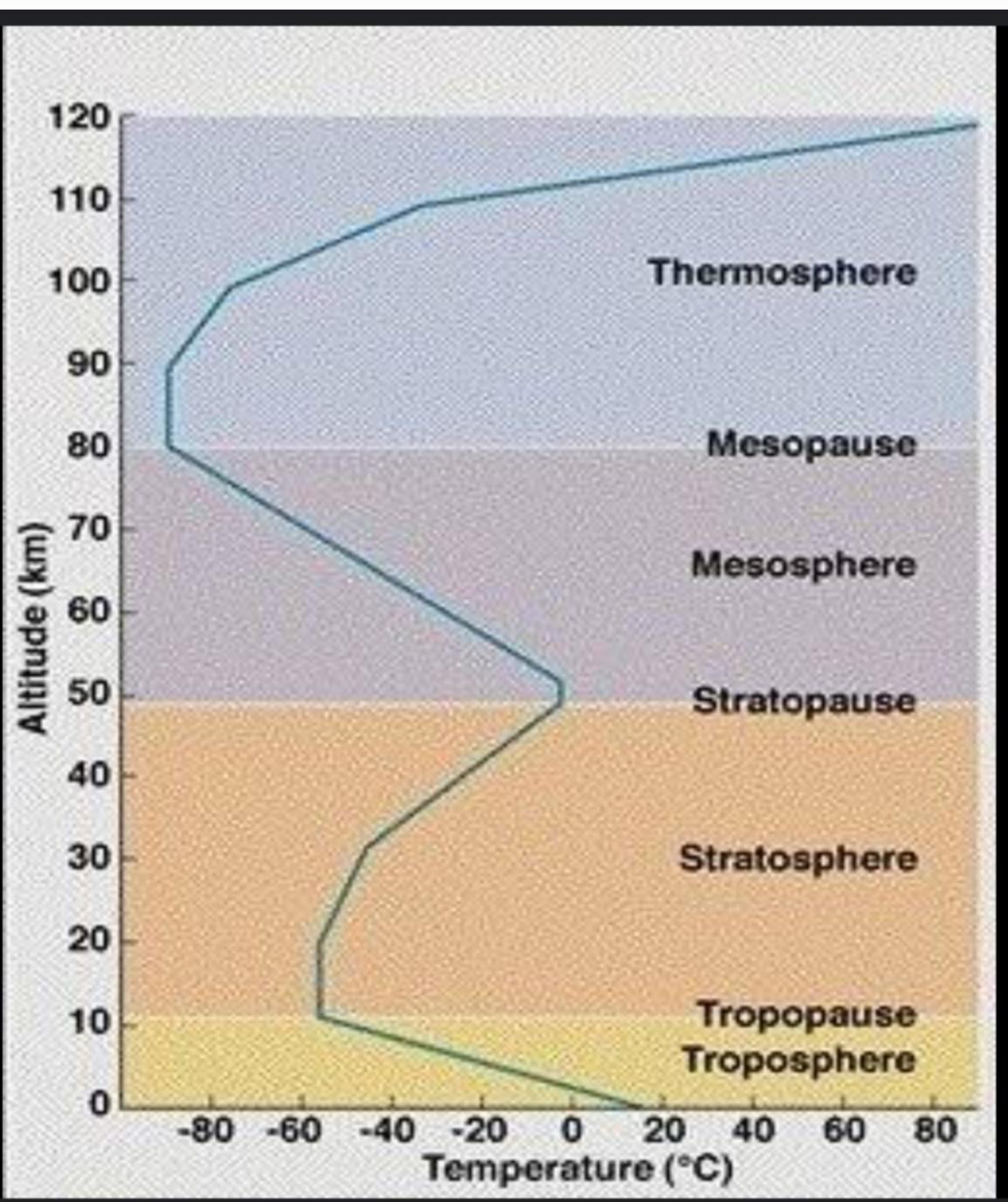






Layers of Earth's Atmosphere





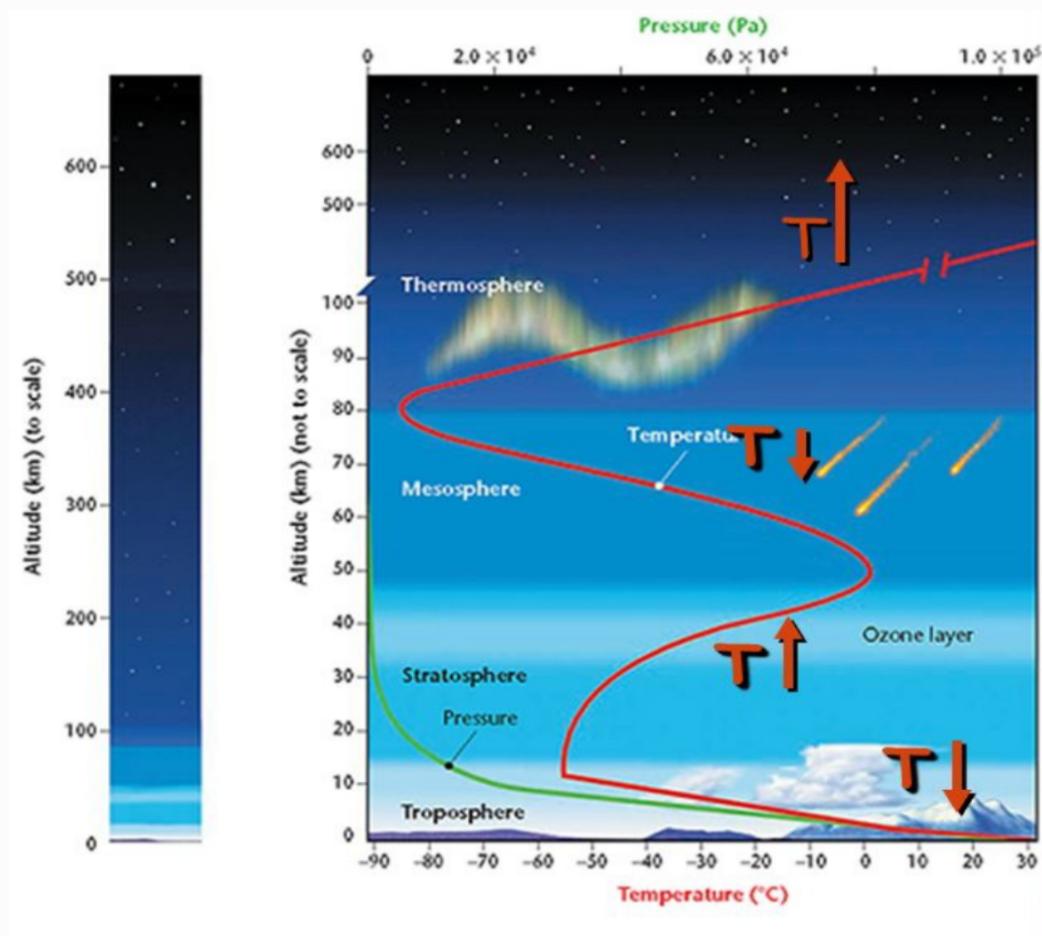
There are five layers in the structure of the atmosphere depending upon temperature.

These layers are:

- Troposphere
- Stratosphere
- Mesosphere
- Thermosphere
- Exosphere

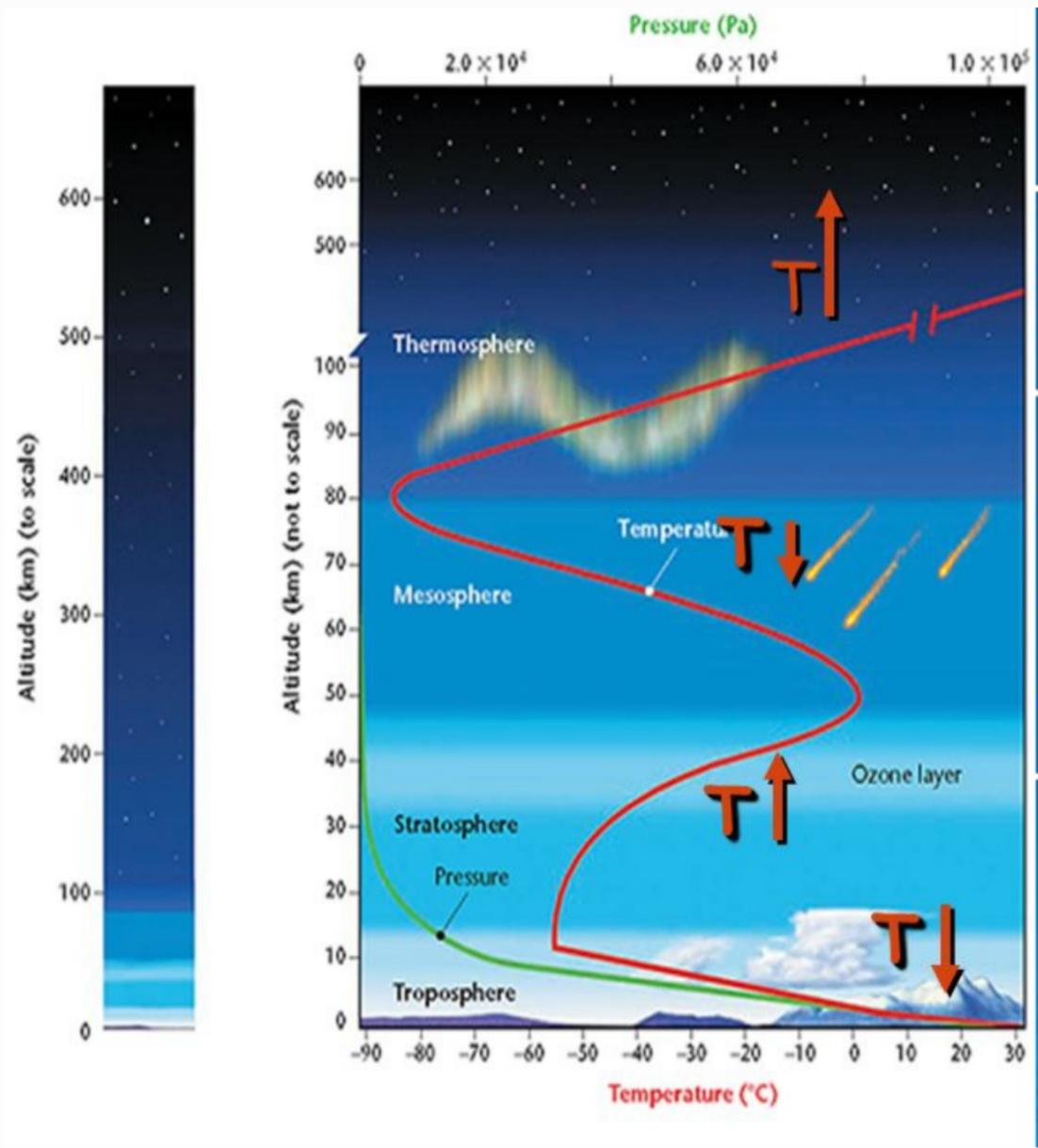
Troposphere

- 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.

