

ATMOSPHERE

Presented By

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The Earth's atmosphere is composed primarily of nitrogen and oxygen, as well as some argon. There are also several other trace gases, meaning they occur in very small amounts.

The major constituents are oxygen (O₂) and nitrogen (N₂). Other components such as argon, CO₂, NO, and O₃ are produced in minute quantities in natural processes. However, industrial and other technological human activities (such as automobile traffic) have begun to increase the amounts of materials such as CO₂ by amounts that are beginning to make a difference in the balance of circulation and radiation absorption in the troposphere.

Nitrogen - 78% - Dilutes oxygen and prevents rapid burning at the earth's surface. Living things need it to make proteins. Nitrogen cannot be used directly from the air. The Nitrogen Cycle is nature's way of supplying the needed nitrogen for living things.

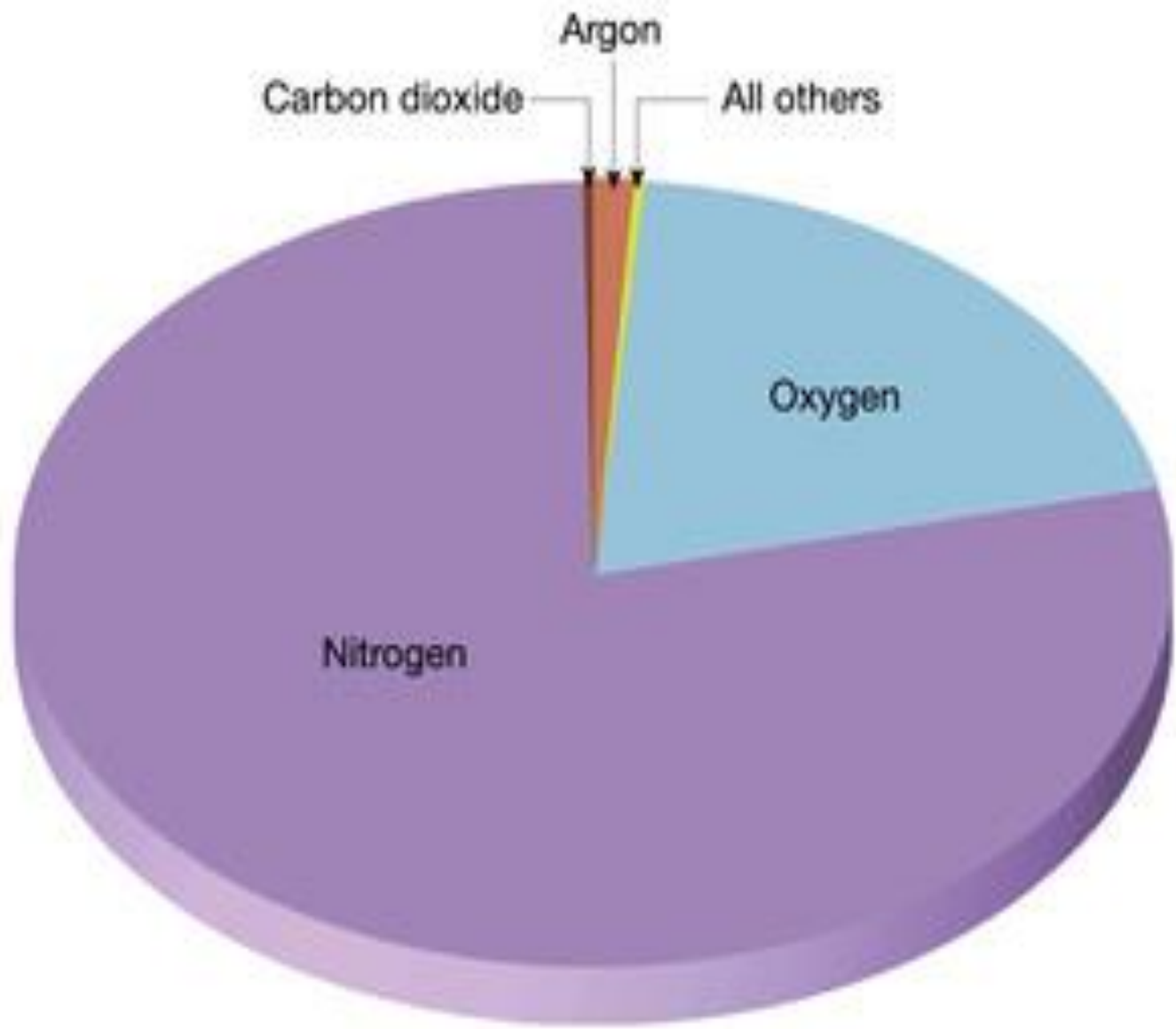
Oxygen - 21% - Used by all living things. Essential for respiration. It is necessary for combustion or burning.

Argon - 0.9% - Used in light bulbs.

Carbon Dioxide - 0.03% - Plants use it to make oxygen. Acts as a blanket and prevents the escape of heat into outer space. Scientists are afraid that the burning of fossil fuels such as coal and oil are adding more carbon dioxide to the atmosphere.

Water Vapor - 0.0 to 4.0% - Essential for life processes. Also prevents heat loss from the earth.

Trace gases - gases found only in very small amounts. They include neon, helium, krypton, and xenon.



The atmosphere consists of five layers: the troposphere, the stratosphere, the mesosphere, the thermosphere, and the exosphere. The thickness of these layers is slightly different around the globe, and also varies according to temperature and season. In this discussion, we will focus primarily on the troposphere and the stratosphere because they are the most affected by anthropogenic (or man-made) pollutants.

Trophosphere:

Temperature declines by around 6.5°C per kilometer increase in altitude

Wind speeds increase with altitude. The jet stream occurs at the top of the troposphere.

Most of the atmospheric mass is found.

Most of our weather occurs here.

Humans and other organisms have most interaction e.g. through exchange of gases or through introduction of pollutants.

Stratosphere :

Temperature is constant at about -60°C in the lower part of the stratosphere, which is shielded by the ozone layer but then increases with altitude.

The air is dry.

Winds increase with height.

Ozone layer at the top of the stratosphere.

Stratospheric ozone absorbs ultra violet radiation from the sun

Mesosphere:

Temperature declines with height

Coldest part of the atmosphere.

Contains strong zonal winds (east-west),
atmospheric tides, planetary waves, and gravity
waves.

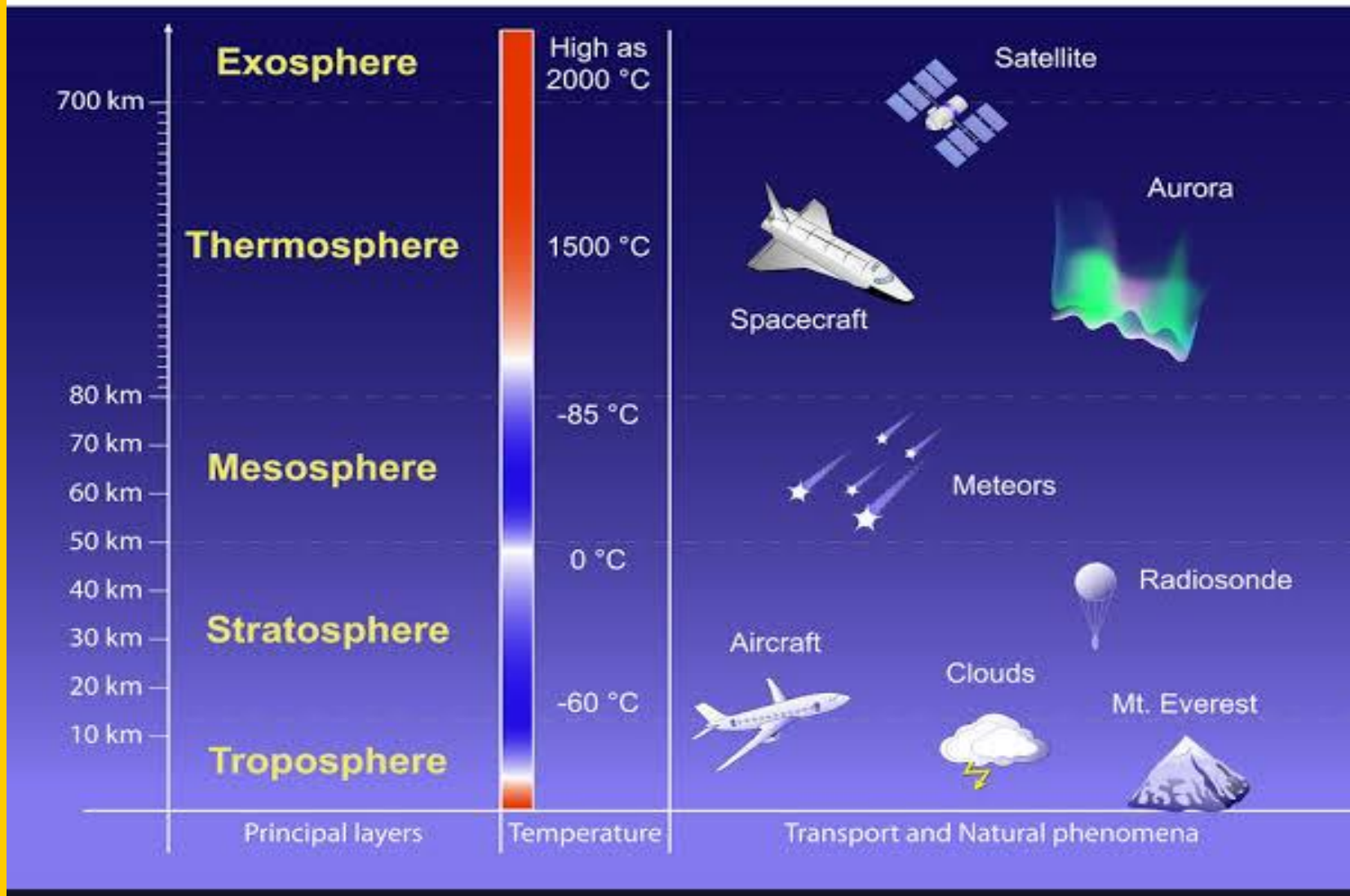
Thermosphere:

Temperatures climb sharply in the lower thermosphere (below 200 to 300 km altitude), then level off and hold fairly steady with increasing altitude above that height.

Solar activity strongly influences temperature in the thermosphere.

UV and X-radiation from the sun is absorbed which breaks apart molecules into atoms (oxygen, nitrogen and helium atoms are the main components in the upper thermosphere).

LAYERS OF THE ATMOSPHERE



A 3D yellow speech bubble with a blue shadow, set against a blue background. The words "THANK YOU" are cut out of the bubble in a blue, sans-serif font.

THANK YOU