

Atmosphere

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The atmosphere seen from the International Space Station. The thin blue layer above the surface is the atmosphere, and above it is the Moon.

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The layer of gases that surrounds a planet.

The gases of the atmosphere are held in place by the planet's gravity. Close to the surface the atmosphere is relatively dense. On Earth, three quarters of the atmosphere's mass is within 11 km of the surface. The atmosphere becomes less and less dense with the distance from Earth and finally fades away completely into space. Sometimes, an altitude of 100 km is regarded as the boundary between the atmosphere and outer space.

Earth's atmosphere contains four gases in significant amounts. Nitrogen is by far the most abundant gas. It comprises 78.08 percent. Oxygen takes up about 20.95 percent of the space in the atmosphere. Argon 0.93 percent. Finally, [carbon dioxide](#) (CO₂) comprises about 0.038 percent. Other gases are only present in the atmosphere in very small amounts. All these gases combined make up dry air.

There is also a significant amount of [water vapor](#) in the atmosphere near the surface of the Earth. Water vapor is the gas phase of water. It is much less uniformly distributed in the atmosphere than the four gases mentioned above.

The atmosphere of the Earth is divided into four layers. Closest to the Earth is the troposphere. This layer stretches from the surface of the planet up to an altitude of around 14 km.

Above the troposphere lies the stratosphere. The stratosphere reaches about 50 km in altitude. The ozone layer is located in the stratosphere.

The mesosphere reaches from the top of the stratosphere up to almost 90 km. Most meteors heading for Earth burn up in the mesosphere. Further away there is the thermosphere and finally the exosphere which fades diffusely into space.

The ionosphere stretches the mesosphere and the thermosphere, but in spite of its name the ionosphere is not really a sphere or a layer. The structure of the ionosphere is strongly influenced by the level of Solar activity and the number of [sunspots](#).

These layers together protect life on Earth by [absorbing](#) ultraviolet [solar radiation](#), and by keeping the surface warm while at the same time reducing temperature extremes between day and night through the [greenhouse effect](#).

There are no physical barriers between the layers. They can be distinguished by the way temperature relates to increasing altitude within the layers.

When levels of CO₂ rise in the atmosphere due to human activity the greenhouse effect is enhanced. This leads to [global warming](#).

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