

Earth's Atmosphere

We live on the crust of the Earth. We have food and water. But another part of the Earth's structure is needed to keep us alive. That part is called the **atmosphere**. The atmosphere is about 500 miles (800 km) high, and it is held in place by the Earth's gravity. The atmosphere has four layers.

Closest to the Earth is the **troposphere**, the layer in which we live. The troposphere is only a thin band of the atmosphere, about 5 to 10 miles (8–16 km) thick. All the Earth's weather occurs in the troposphere. The troposphere also contains the air we need to live. The air in the troposphere is about 80 percent nitrogen and 20 percent oxygen. There are also small amounts of other gases, including argon and carbon dioxide.

Above the troposphere is the **stratosphere**, a layer that is from about 5 to 50 miles (8–80 km) high. The stratosphere is similar to the troposphere in its composition, but in the stratosphere people need extra oxygen to breathe. The stratosphere has only a few clouds. These clouds are mostly made of ice crystals. In the stratosphere are the fast-moving winds known as the jet stream. The air in the lower part of the stratosphere is cold. In the upper part of the stratosphere, the temperature increases. The important ozone layer is in the upper stratosphere. The ozone absorbs ultraviolet energy from the Sun, which causes the temperature there to rise. The ozone layer is important because it protects creatures on the Earth from the harmful ultraviolet rays.

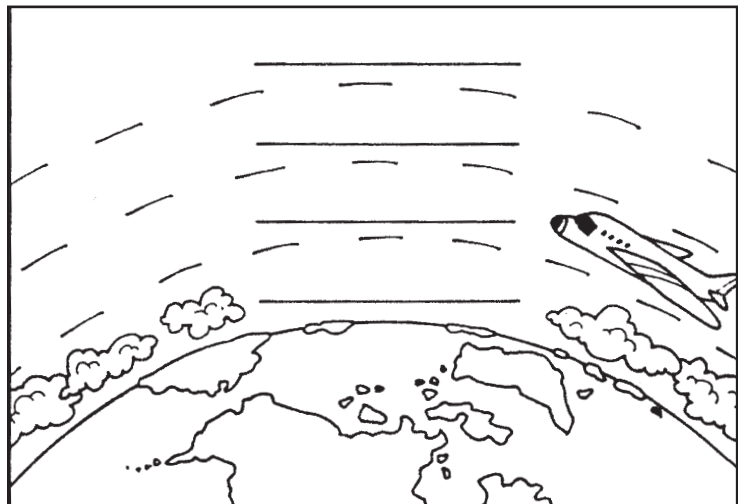
Above the stratosphere is the **ionosphere**, which stretches from about 50 miles to about 300 miles (80–500 km) above the Earth. There is almost no air in the ionosphere. The natural displays of light called auroras occur in the ionosphere.

The top layer of the atmosphere is called the **exosphere**. It begins about 300 miles (500 km) above the Earth, but it has no real top boundary. This layer is the beginning of what we call outer space. The exosphere contains mostly oxygen and helium gases. This layer also has a very high temperature, up to several thousand degrees.



Label the layers of the Earth's atmosphere in the picture.

Write *troposphere*, *stratosphere*, *ionosphere*, or *exosphere* on the correct line.



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Answer Key

Students should label diagram, from top: exosphere, ionosphere, stratosphere, troposphere.

