



OPINION ARTICLE

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The Role of the Atmosphere in Protecting Life on Earth

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Description

The atmosphere is the layer of gases that surrounds the Earth, extending from the planet's surface up to about 10,000 kilometers. This thin layer of air is essential to life on Earth, providing the oxygen that is being inhaled and protecting us from harmful radiation from the sun. The Earth's atmosphere is divided into five distinct layers: the troposphere, the stratosphere, the mesosphere, the thermosphere, and the exosphere. Each layer has unique characteristics and plays a specific role in the overall function of the atmosphere. The troposphere is the layer closest to the Earth's surface, extending up to about 7-20 kilometers. This layer contains most of the Earth's weather, including clouds, precipitation, and the air inhaled. The temperature in the troposphere decreases with altitude, and this is why mountains are colder than low-lying areas. The stratosphere is the layer above the troposphere, extending from 20-50 kilometers. This layer contains the ozone layer, which absorbs harmful ultraviolet radiation from the sun. The temperature in the stratosphere increases with altitude due to the absorption of this radiation. The mesosphere is the layer above the stratosphere, extending from 50-85 kilometers. This layer is very cold, with temperatures dropping to as low as -90 degrees Celsius. The mesosphere is also the layer where meteoroids burn up as they enter the Earth's atmosphere, creating the phenomenon known as shooting stars. The thermosphere is the layer above the mesosphere, extending from 85-600 kilometers. This layer is very hot, with temperatures reaching up to 2,000 degrees Celsius. The thermosphere is also where the auroras occur, as particles from the sun collide with the gases in the Earth's atmosphere. The exosphere is the outermost layer of the Earth's atmosphere, extending from about 600 kilometers to 10,000 kilometers. This layer is very thin and contains mostly hydrogen and

helium. The exosphere is also where most satellites orbit the Earth.

The atmosphere is composed of several gases, with nitrogen and oxygen making up the majority of the air inhaled. Other gases present in the atmosphere include argon, carbon dioxide, neon, helium, methane, and hydrogen. Water vapor is also present in the atmosphere, and it plays a critical role in the formation of clouds and precipitation. The atmosphere is constantly in motion, with winds and air currents circulating around the planet. These movements are driven by several factors, including the uneven heating of the Earth's surface by the sun, the rotation of the Earth, and the presence of large bodies of water. One of the most significant impacts of human activity on the atmosphere is the release of greenhouse gases. These gases, including carbon dioxide, methane, and nitrous oxide, trap heat in the Earth's atmosphere, causing global temperatures to rise. This phenomenon, known as global warming, has significant implications for the planet, including rising sea levels, more frequent and severe weather events, and changes to ecosystems and agriculture. In addition to greenhouse gas emissions, human activity also contributes to other forms of air pollution, such as smog, acid rain, and ozone depletion. These pollutants can have significant impacts on human health, as well as on the health of ecosystems. Despite these challenges, there are also many efforts underway to protect and preserve the Earth's atmosphere. These efforts include initiatives to reduce greenhouse gas emissions, promote renewable energy sources, and develop new technologies to mitigate the impacts of climate change. Overall, the atmosphere is a complex and dynamic system that plays a critical role in sustaining life on Earth. While human activity has had significant impacts on the atmosphere, there is still much that can be done to protect and preserve this vital resource for future generations.

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