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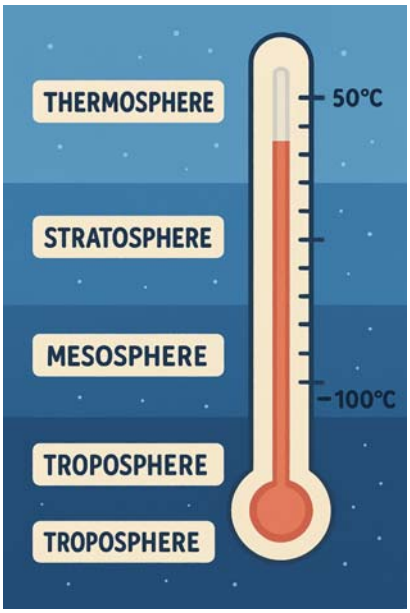

How Temperatures Change Through the Layers of the Atmosphere

The atmosphere is the layer of gases that surrounds Earth. It's made up of five main layers: the troposphere, stratosphere, mesosphere, thermosphere, and exosphere. As you move upward through these layers, the temperature doesn't stay the same. In fact, it changes in surprising ways!

The first layer, the troposphere, is where we live and where weather happens. This layer is closest to Earth's surface, and it gets its heat from the ground. The sun warms the land and oceans, and they heat the air above them. So, the higher you go in the troposphere, the colder it gets.

Above that is the stratosphere. This is where planes often fly and where the ozone layer is found. The ozone layer absorbs energy from the sun, especially ultraviolet (UV) radiation. This makes the stratosphere warmer the higher you go—the opposite of the troposphere.

Next is the mesosphere, and things change again. Here, the temperature drops with height. The air is very thin, and there's not much to absorb heat. This makes the mesosphere the coldest layer of the atmosphere.

Then we reach the thermosphere, where temperatures rise again—a lot! The sun's radiation hits this layer first, and even though the air is very thin, the molecules that are there absorb lots of energy. This makes the thermosphere very hot, even though it might not feel that way because there are so few air particles.

The final layer is the exosphere, which slowly fades into space. Temperatures here can still be high, but the air is so thin that it's hard to measure in the same way.

So, temperatures in the atmosphere go up and down as you move through the layers. It depends on how much sunlight is absorbed and how thick the air is. Scientists study these changes to better understand weather, climate, and space!