

A Science Service Feature

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? WHY THE WEATHER ?

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HOW HIGH IS THE OZONE LAYER?

For many years it has been known that a relatively large amount of ozone is present at high levels in the atmosphere, while only insignificant amounts are ever found, under natural conditions, near the earth's surface. The total amount present over any region can be measured, since the ozone absorbs sunlight of certain wave-lengths and the amount of absorption can be determined with the spectroscope. On an average it is found that the amount of this gas is such that, if it were under a pressure of one atmosphere and at a temperature of 32 degrees Fahrenheit, it would make a layer about 0.12 inch thick. The actual amount is, in general, much greater in high latitudes than in low latitudes, and outside of the tropics it is subject to rather wide variations, some of which appear to be connected with weather changes and have been the subject of much discussion.

A number of recent measurements have been made of the height of the "ozone layer" in the atmosphere. The method consists of measuring the absorption of sunlight due to ozone both when the sun is high and when it is low. The amount of absorption will vary with the length of the sunlight's path through the absorbing layer. When the sun is high the length of path through the layer will be the same whether the layer is high or low. When the sun is low (i.e., near sunrise or sunset), the path through the ozone layer will, on account of the curvature of this layer, conforming to that of the earth, be longer if the layer is low than if it is high.

These measurements indicate that the average height of the ozone layer is between 25 and 30 miles. There is some evidence that its height varies to a certain extent, with season and otherwise.

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