

Global Warming

Data recorded from various locations around the world over the past century indicate that the average atmospheric temperature is currently 0.6°C higher than it was 100 years ago. However, historical studies indicate that some short-term fluctuations in climate are natural, such as the Little Ice Age of the 17th century. Does this recent increase represent a trend toward global warming or is it simply part of a natural cyclic variation in climate? Although the answer cannot be determined with certainty, most scientists now believe that global warming is a significant issue that requires worldwide attention.

The Greenhouse Effect

Global warming may be due, in part, to the greenhouse effect. The glass of a greenhouse traps sunlight inside the greenhouse, and thus a warm environment is created, even in the winter. Earth's atmosphere functions in a similar way, as the diagram shows. Molecules of "greenhouse gases," primarily carbon dioxide and methane, absorb energy that is radiated from Earth's surface. These molecules then release

energy as heat, causing the atmosphere to be warmer than it would be without these gases. The greenhouse effect is beneficial—without it, Earth would be far too cold to support life. However, an "increased" greenhouse effect, caused by increased levels of greenhouse gases in the atmosphere, could contribute to global warming.

Carbon dioxide and methane are natural components of our atmosphere. However, the levels of atmospheric carbon dioxide and methane have increased rapidly during the last 100 years. This increase has been determined by analyzing air trapped in the ice layers of Greenland. Deeper sections of the ice contain air from earlier times. During the last ice age, our atmosphere contained about 185 ppm (parts per million) of carbon dioxide, CO_2 . The levels 130 years ago were about 300 ppm. Today, the levels are about 380 ppm. This increase can be attributed to the increase in combustion reactions, due primarily to coal and petroleum burning, and to deforestation, which has decreased the number of trees that consume CO_2 .

