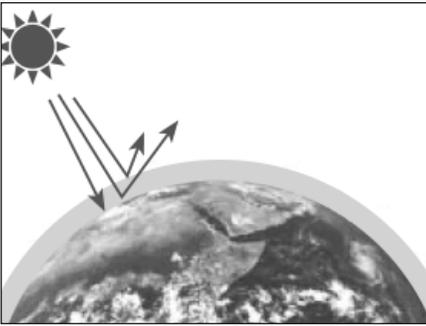


The Greenhouse Effect



In 1827, a French scientist named Jean-Baptiste Joseph Fourier made a compelling observation. He concluded that the earth's atmosphere acts like an immense garden greenhouse, trapping heat to warm the planet. He called the phenomenon "un effet de verre," which means "an effect of glass."

The "greenhouse effect" is a natural phenomenon. Without it, temperatures on earth would be too cold for humans. Here's how the greenhouse effect operates:

Approximately 30 percent of the sun's energy that reaches the earth is reflected by the surface and the atmosphere back into space. But the remainder of this solar radiation is absorbed by "greenhouse gases" in the atmosphere and the earth's surface—where it helps warm the planet. The earth radiates heat back out into the atmosphere. Much of the heat is absorbed by greenhouse gases. As a result, the temperature of the earth's surface and the lower atmosphere stay warm enough for human life. The heat energy emitted out to space prevents the planet from overheating.

Greenhouse Gases

Most greenhouse gases such as carbon dioxide, nitrous oxide, and other trace gases like methane occur naturally. Some are from natural emissions, and some are from human-induced emissions. Without the greenhouse gases, the earth's climate would be about 60° Fahrenheit colder than it is today.

The greenhouse effect thus serves an essential function, but human activities may actually intensify this natural phenomenon. Our activities can increase the concentration of greenhouse gases in the atmosphere. Burning fossil fuels to power our cars, homes, and factories releases carbon dioxide and increases concentrations of other greenhouse gases like methane and nitrous oxide. Humans even manufacture some greenhouse gases, with complicated names such as chlorofluorocarbons (CFCs), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Many of these gases can remain in the atmosphere for decades or even centuries.

