

Scientists have discovered that for the last 160,000 years, at least, there has been a consistent relationship between the amount of carbon dioxide in the air and the average temperature of the planet.

The importance of carbon dioxide in regulating the Earth's temperature was confirmed by scientists working in eastern Antarctica.

Drilling down into a glacier, they extracted a mile-long cylinder of ice from the hole.

The glacier had formed as layer upon layer of snow accumulated year after year.

Thus drilling into the ice was tantamount to drilling back through time.

The deepest sections of the core are composed of water that fell as snow 160,000 years ago.

Scientists in Grenoble, France, fractured portions of the core and measured the composition of ancient air released from bubbles in the ice.

Instruments were used to measure the ratio of certain isotopes in the frozen water to get an idea of the prevailing atmospheric temperature at the time when that particular bit of water became locked in the glacier.

The result is a remarkable unbroken record of temperature and of atmospheric levels of carbon dioxide.

Almost every time the chill of an ice age descended on the planet, carbon dioxide levels dropped.

When the global temperature dropped 9°F (5 °C), carbon dioxide levels dropped to 190 parts per million or so.

Generally, as each ice age ended and the Earth basked in a warm interglacial period, carbon dioxide levels were around 280 parts per million.

Through the 160,000 years of that ice record, the level of carbon dioxide in the atmosphere fluctuated between 190 and 280 parts per million, but never rose much higher-until the Industrial Revolution beginning in the eighteenth century and continuing today.

There is indirect evidence that the link between carbon dioxide levels and global temperature change goes back much further than the glacial record.

Carbon dioxide levels may have been much greater than the current concentration during the Carboniferous period, 360 to 285 million years ago.

The period was named for a profusion of plant life whose buried remains produced a large fraction of the coal deposits that are being brought to the surface and burned today.