

It's a Fact! Carbon Dioxide Sound Bites and Quotable Quotes

The following information has been derived from the Fourth Intergovernmental Panel on Climate Change (IPCC) Assessment Report (Working Group I and II). Because this report only captured data through 2005, NOAA updated some figures with 2006 data when available.

Fact: About 80% of the observed increase in atmospheric CO₂ results from the burning of fossil fuel.

In 2006, carbon dioxide emissions totaled 30.9 GtCO₂ (gigatons of carbon dioxide). The primary source of the increased atmospheric concentration of carbon dioxide, since the pre-industrial period, results from fossil-fuel burning. Carbon dioxide emissions associated with land use change account for about 20% of the increased concentration of atmospheric CO₂.

Fact: Many natural systems are being affected by changes in regional climate.

Observational evidence from all continents and most oceans show that many natural systems are being affected by changes in regional climate, particularly caused by increases in temperature. Through its impact on water availability, ecosystems, food production, coastal sustainability, and human health, human-induced climate change is projected to lead to large-scale displacement of populations, dramatic changes in the distribution of crops, and significant adjustments in the world economy. These changes have potential consequences for international security.

Fact: Carbon dioxide is the most important anthropogenic greenhouse gas.

Carbon dioxide is the most influential anthropogenic greenhouse gas. The atmospheric concentration of carbon dioxide in 2007 exceeds by far the natural range over the last 650,000 years, and is currently 37% higher than in pre-industrial times (1750). The rate of increase of CO₂ has been accelerating sharply over the past decade.

Fact: The longest record of atmospheric carbon dioxide is from Antarctica.

The carbon dioxide record from Antarctica pre-dates the better known, continuous record from Mauna Loa Observatory by approximately 6 months. Begun at the Little America station and shortly thereafter moved to the Amundsen-Scott station at the South Pole, this record consists of over 12,000 measurements and continues through today.

Fact: Carbon dioxide emitted today will be around for thousands of years.

While more than half of the CO₂ emitted is currently removed from the atmosphere within a century, about 20% of emitted CO₂ remains in the atmosphere for many millennia. Because of slow removal processes (e.g., ocean chemistry and transport),

atmospheric CO₂ will continue to increase in the long term even if its emission is substantially reduced from present levels.

Fact: Increases in anthropogenic greenhouse gases are the primary drivers of climate change since 1750.

The effect of carbon dioxide methane, and nitrous oxide on the heat budget of Earth is 19 times greater than the effect of changes in solar output since the onset of the Industrial Revolution. Although water vapor is a strong greenhouse gas, its concentration in the atmosphere changes in response to changes in surface climate. This must be treated as a feedback and not as a radiative forcing.