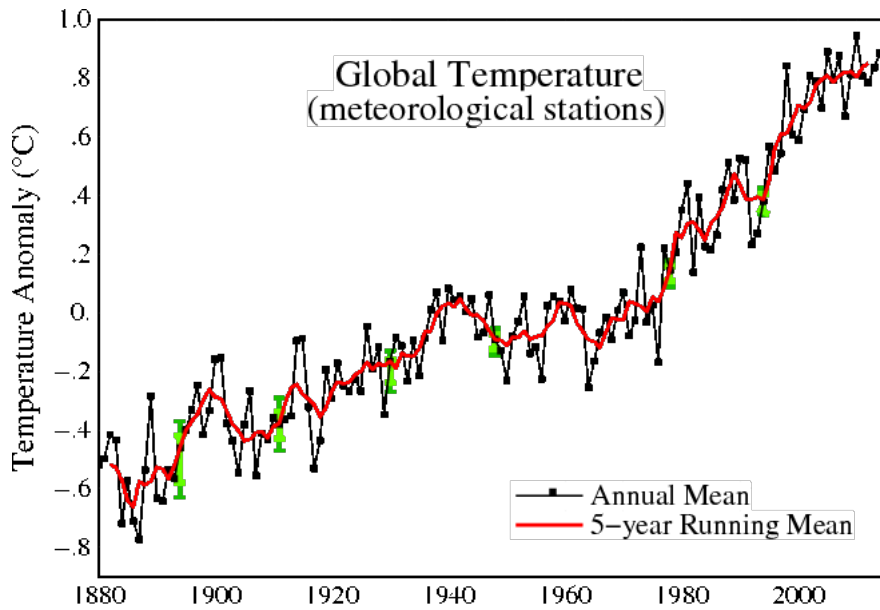
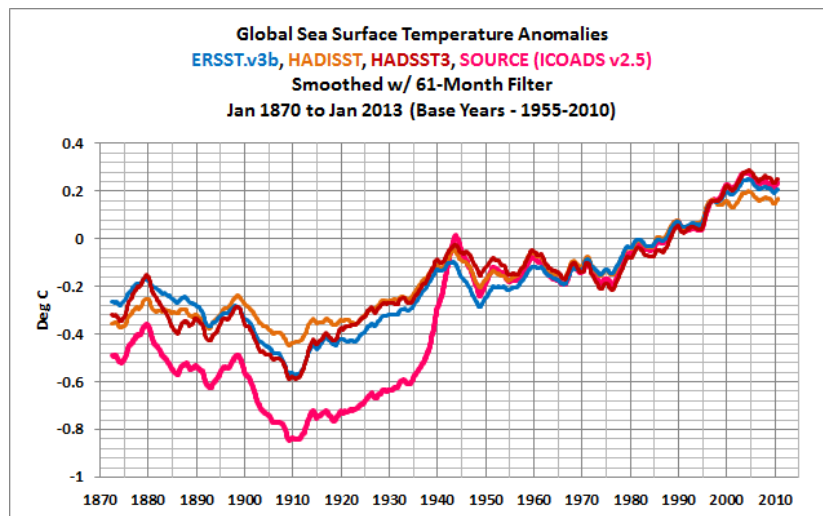


Global Temperatures: Departure from Long-term Average

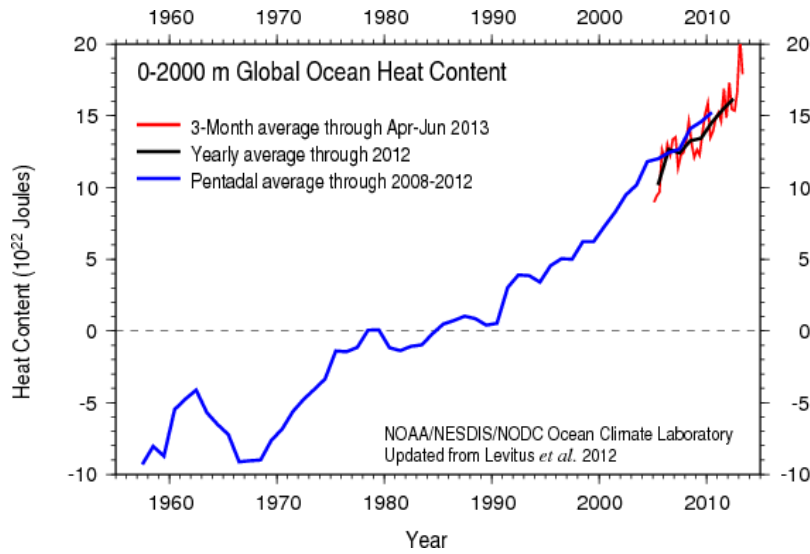


NASA Goddard Institute for Space Studies, http://data.giss.nasa.gov/gistemp/graphs_v3/

Ocean temperatures are rising too!

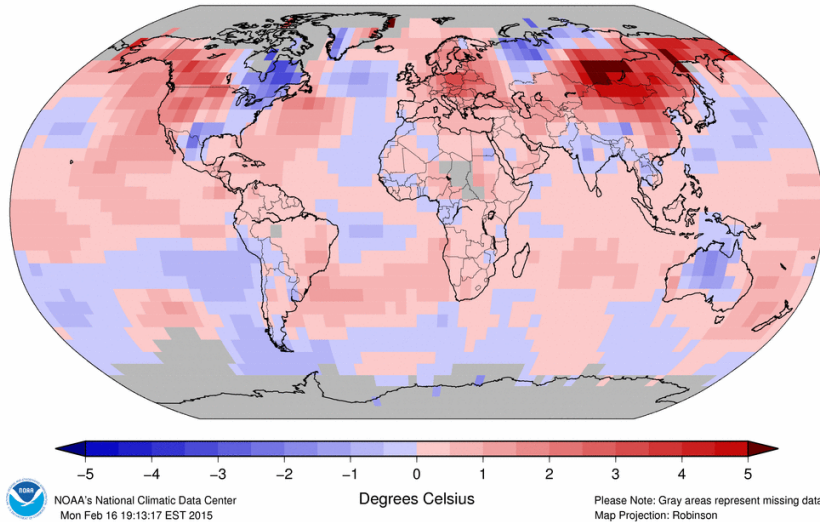


Increasing Ocean Heat Content



Land & Ocean Temperature Departure from Average Jan 2015 (with respect to a 1981–2010 base period)

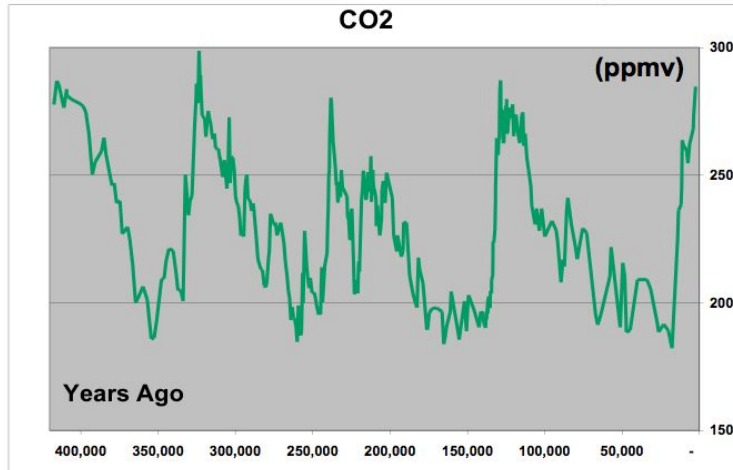
Data Source: GHCN-M version 3.2.2 & ERSST version 3b



Animation: <https://youtu.be/TO03ColwxHE>

Atmospheric CO₂ in the past 400,000 years

Carbon Dioxide Ice Core History

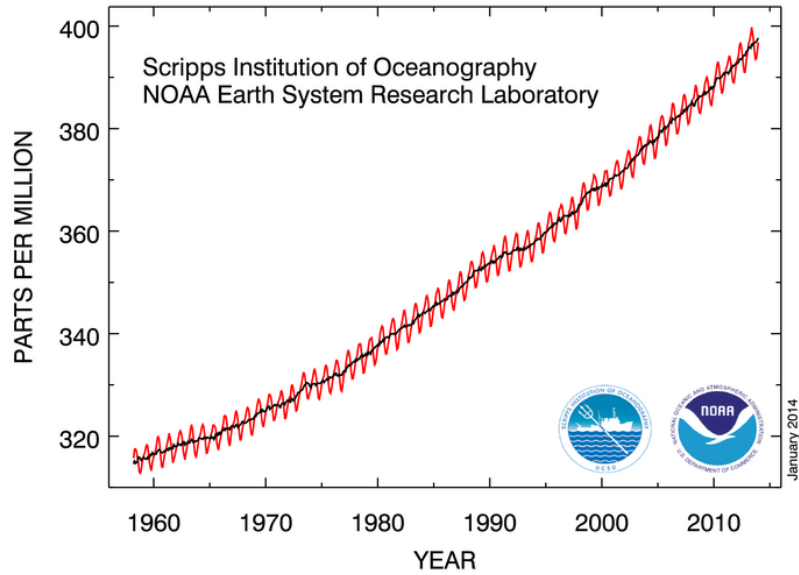


CO₂ levels have remained below 300 parts per million (volume) for over 400,000 years

Source: Laboratoire de Glaciologie et de Geophysique de l'Environnement

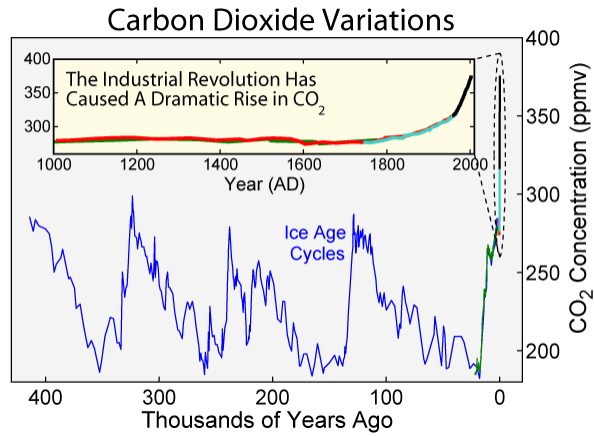
CO₂ since 1960

Atmospheric CO₂ at Mauna Loa Observatory



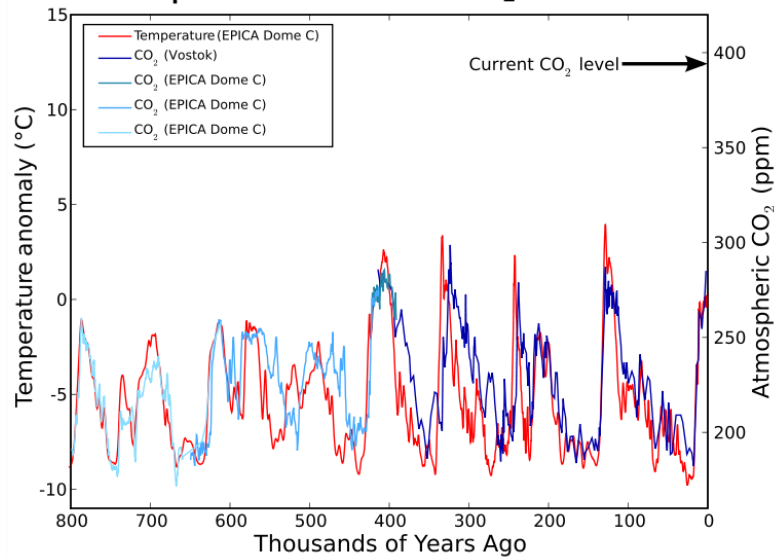
<http://www.esrl.noaa.gov/gmd/ccgg/trends/>

Compare the rate of change 400,000 years ago to present



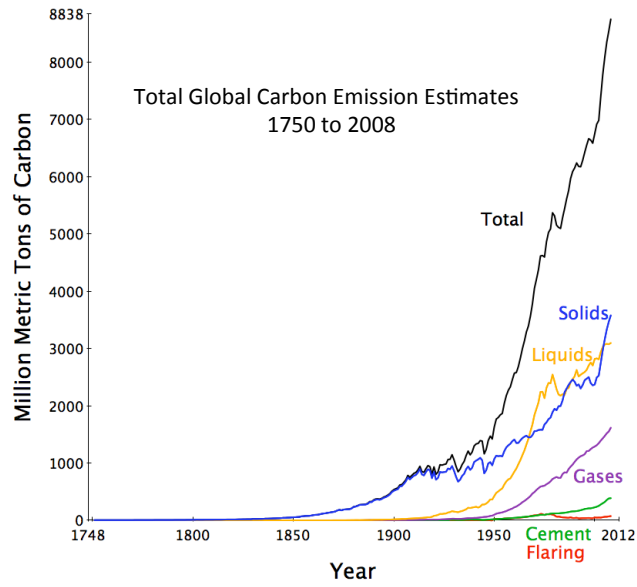
This figure was prepared by [Robert A. Rohde](#) from publicly available data and is incorporated into the Global Warming Art project. Downloaded from http://commons.wikimedia.org/wiki/File:Carbon_Dioxide_400kyr.png

Temperature and CO₂ Records



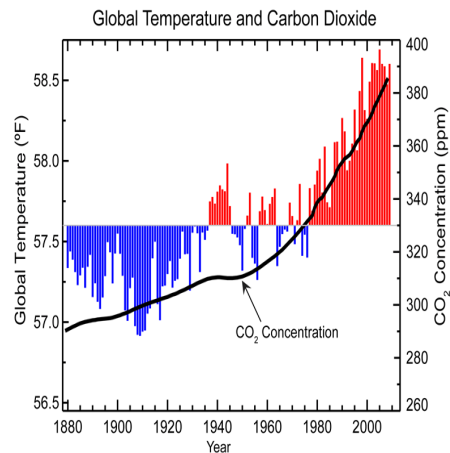
Skepticalscience.com

Historic trends in CO₂ emission sources



Plotted from data on <http://cdiac.ornl.gov/trends/emis/glo.html>
 Boden, T.A., G. Marland, and R.J. Andres. 2010. Global, Regional, and National Fossil-Fuel CO₂ Emissions. Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tenn., U.S.A. doi 10.3334/CDIAC/00001_V2010

Changes in Temperature & CO₂



Atmospheric CO₂ & temperature have both increased

Temperature departures relative to 1901–2000 mean (NOAA)

IPCC 2013, AR5

Global climate models: No warming without CO₂

