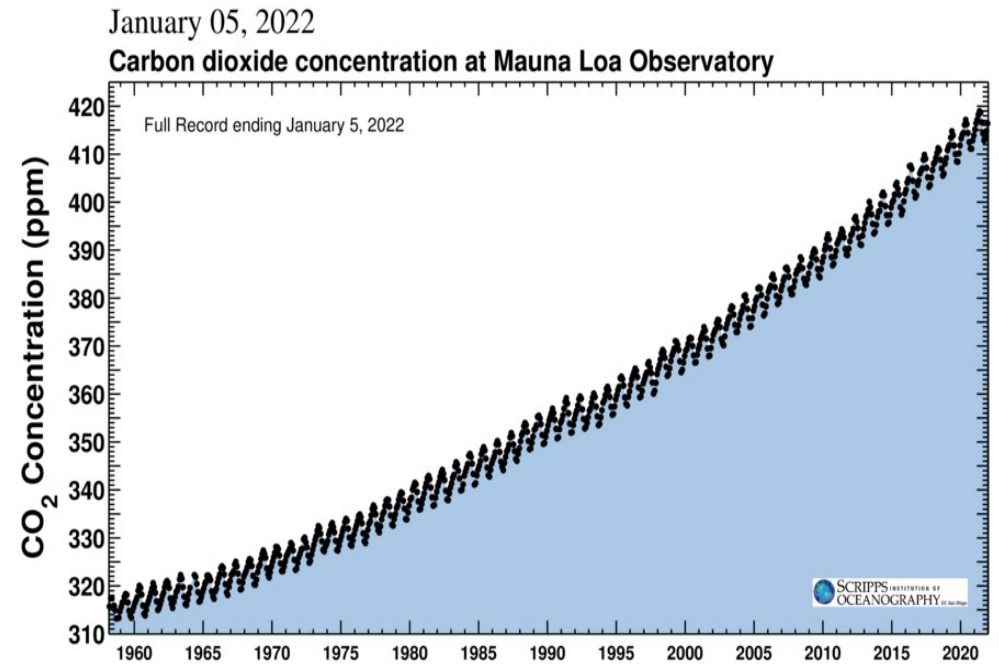
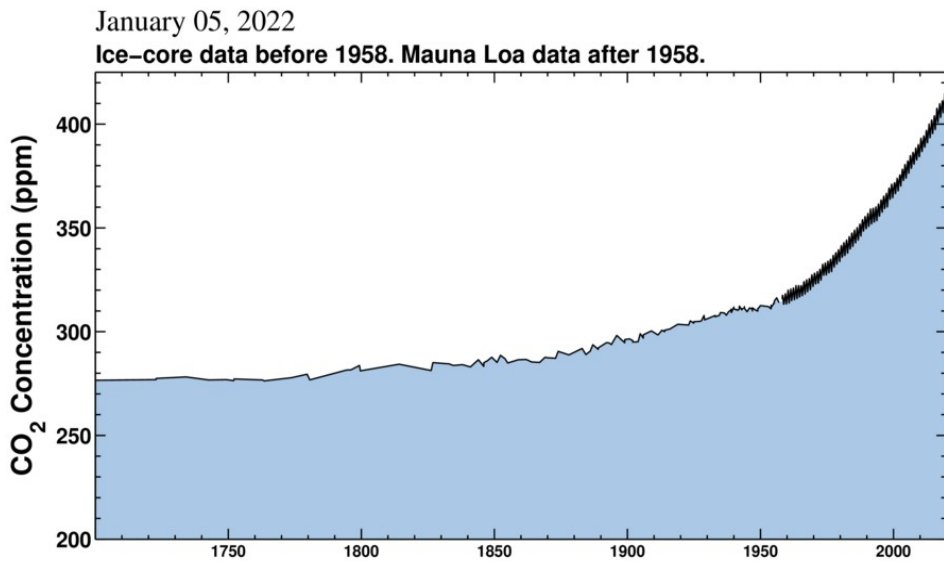
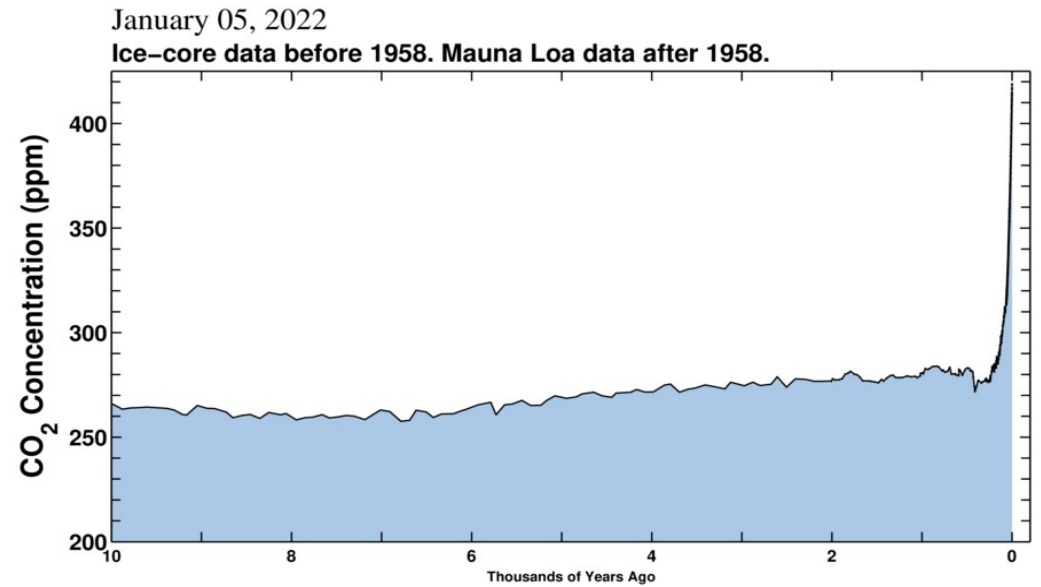
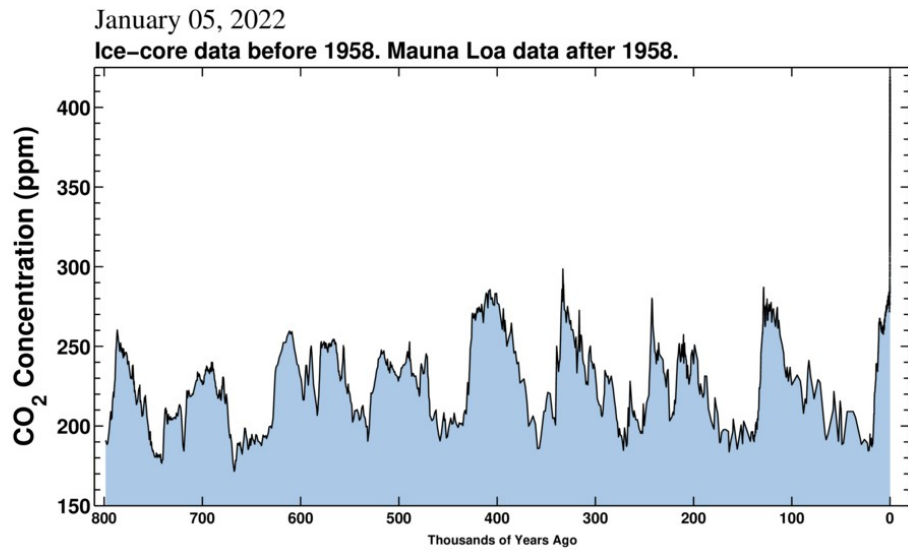


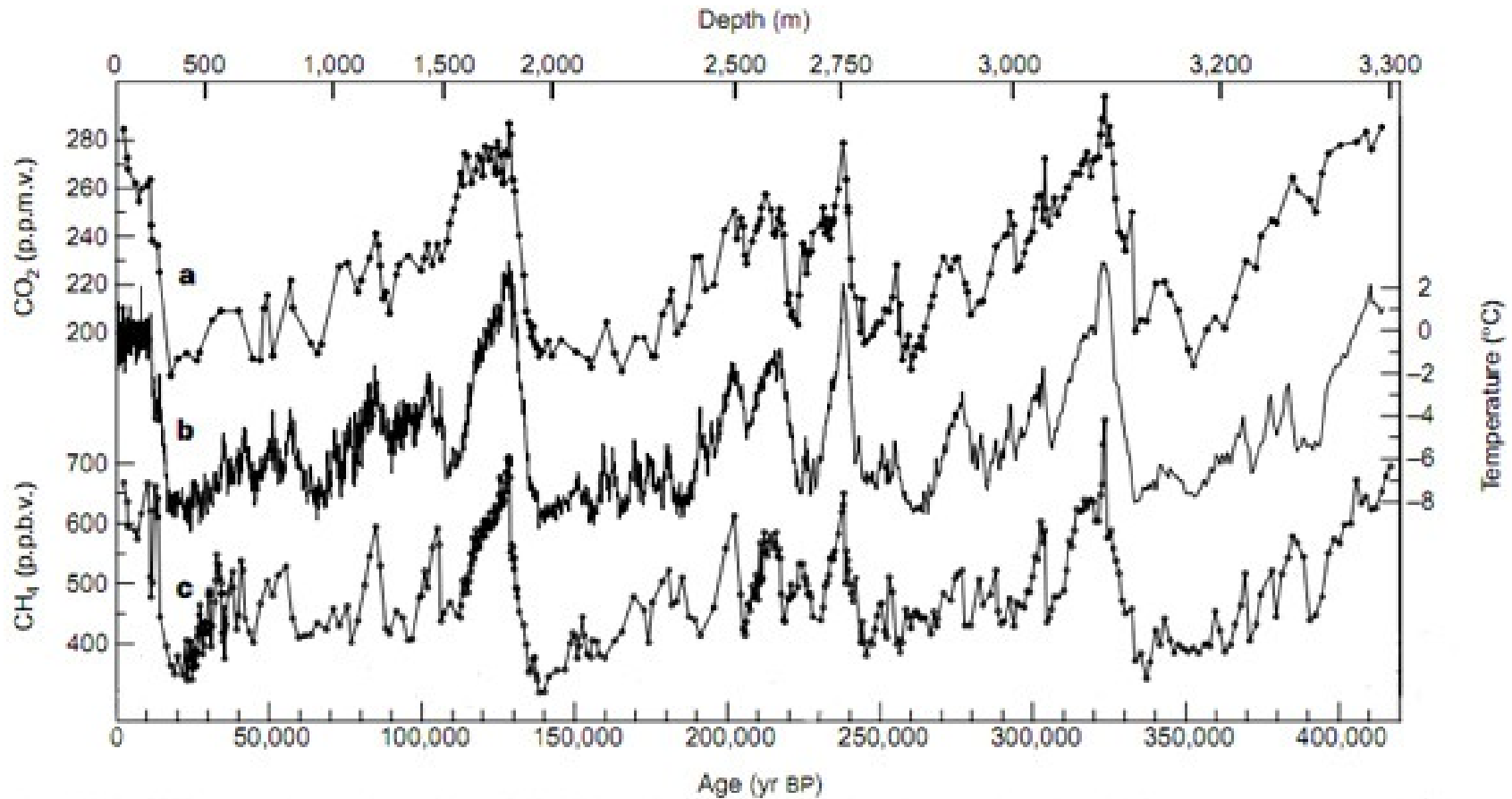
CO₂, from 1700 & 1958



CO₂, Last 800k & 10k Years



Vostok Ice Core, 1999



Additional Comments

- I strongly recommend the Nova program “Arctic Sinkholes”.
- CH₄ concentration in the atmosphere has increased from about 720ppbv in 1800 to above 1,900ppbv in October 2021. This is an increase of about 1180ppbv, or about 160%, in 222 years.
- CO₂ concentration in the atmosphere has increased from about 280ppmv in 1800 to above 415ppmv in January 2022. This is an increase of about 135ppmv, or about 48%, in 222 years.
- Here is a link to a NOAA Global Sea Level report that was updated February 15, 2022: <https://www.climate.gov/news-features/understanding-climate/climate-change-global-sea-level>
- This report projects average sea level rise from 2000 levels for the contiguous United States to range from 2 ft (0.60 m) to 7.2 ft (2.2 m) by 2100, depending on how well greenhouse gas emissions are controlled. The task force concluded that an extreme possibility of an 8.2 foot (2.5 m) rise above 2000 levels by 2100 appears to be less likely than previously thought.

Thwaites Glacier (“Doomsday Glacier”)

- In Antarctica, Thwaites Glacier's buttressing ice shelf is predicted to collapse in the next decade, and possibly within 3 to 5 years. The collapse of this ice shelf will not increase sea level since it is already floating. However, without its restraining ice shelf, Thwaites, and the huge amounts of ice that funnel into it, could accelerate their flow into the ocean. If this Florida size glacier were to completely melt, sea level is predicted to rise 65 cm, or over 2 ft. The collapse of Thwaites, and crucial neighboring glaciers, could also hasten the flow of the West Antarctic Ice Sheet, which contains enough water to raise sea level by 10.8 feet (3.3 meters).
- <https://www.sciencenews.org/article/antarctica-thwaites-glacier-ice-shelf-collapse-climate-5-years>
- <https://news.climate.columbia.edu/2021/12/17/crucial-antarctic-glacier-likely-to-collapse-much-earlier-than-expected/>
- <https://tc.copernicus.org/articles/16/397/2022/tc-16-397-2022.pdf>









Summary

- Global climate change is real, is getting worse, and is being caused by human activity.
- Link to a comprehensive hypertext history of climate change studies, created by Spencer Weart, on the American Institute of Physics website is here: <https://history.aip.org/climate/index.htm>
- Good News: Warming is likely to more or less stop if CO₂ emissions reach zero. However, temperatures are likely to stay steady instead of dropping. Thus, the climate change that has occurred will be hard to reverse unless CO₂ is removed from the atmosphere. Removing CO₂ will take large amounts of energy.
- <https://www.carbonbrief.org/explainer-will-global-warming-stop-as-soon-as-net-zero-emissions-are-reached>
- To stop climate change, and have adequate supplies of electrical energy, **we must act rapidly to fully develop ALL forms of energy production that do not produce greenhouse gasses.**