Topic 12: Greenhouse Gas Concentrations through time

What does the Keeling Curve measure and since when?

Explain why the Keeling Curve shows an annual cyclicity

What does the Keeling Curve show about the rate at which concentrations are rising?

How are ice cores used to reconstruct past atmospheric GHG concentrations?

Prior to the onset of the industrial revolution, where did CO_2, NO_2, and CH_4 concentrations "hover"?

What relationship exists between GHG concentrations and emission rates since the 19th century?

How much greater are today's GHG concentrations compared to the last 800,000 years?

What difference in CO_2 concentrations are usually accompanied by natural glacial-interglacial variations?

When was the last time on Earth that CO_2 concentrations naturally reached today's levels?

What is an isotope?

What are the three major isotopes of carbon?

Which carbon isotope is fractionated by photosynthetic organisms?

How can carbon isotope signature be used to determine where the increases in CO_2 in our atmosphere are coming from?

How does the stoichiometric relationship between changes in the concentrations of O_2 and CO_2 demonstrate that atmospheric concentrations of the latter are driven by burning carbon.

What are the four major types of gases that are given off by volcanic eruptions?

Volcanoes have played a role in extinction and climate change in the past – how were those eruptions different from the ones we have experienced throughout most of human history and prehistory?

Do volcanoes give off more carbon dioxide annually than humans? What are the numbers?

What ACTUALLY measurable affect have large volcanic eruptions had on the Earth's short-term climate since the 19th century?

How has climate change denial "evolved" over the decades?