Topic 05: Greenhouse Gases

What are the six major greenhouse gases and which ones do we produce and emit directly?

What percentage of the annual emissions of CO_2 to the atmosphere is of human origins?

What are the three major natural sources of atmospheric CO_2?

What are the three major human sources of atmospheric CO_2?

Explain how cement-making creates emissions of CO_2

Explain of changes in land use create emissions of CO_2

What percentage of the annual emissions of CH_4 to the atmosphere is of human origins?

What is the largest source of natural emissions of CH_4 on our planet, why?

Ignoring "ruminants", what other group of animals creates a significant output of methane to the atmosphere? Explain

Why does the annual thawing of continuous permafrost create methane?

What are the three major sources of human emissions of CH_4 to the atmosphere? Explain.

What globally widespread agricultural grain product also creates large amounts of methane?

Which greenhouse gas is the ONLY gas that has NO NATURAL sources, only humans.

How are soils a major source of natural nitrous oxide emissions?

Connect the last question to human emissions. What is the single largest source of human emissions of nitrous oxide – related to the last question, why is this not surprising?

Other than farming and livestock holding, what other type of "farming" is now a significant source of nitrous oxide emissions produced by humans?

What percentage of annual emissions of nitrous oxide are human in origin?

Why is it difficult to establish and average GLOBAL concentration of tropospheric ozone at any given moment in time?

What are the chemical and physical factors that drive tropospheric ozone production

Humans do not directly produce water vapor. Explain how we do so indirectly.

What happens to the natural and human emissions of carbon dioxide into the atmosphere every year?

Which greenhouse gas is produced by humans in the largest quantities?

Which greenhouse gas has the highest concentration in the Earth's atmosphere?

Why is the e-lifetime of a greenhouse gas important to atmospheric warming?

Why does carbon dioxide have three different e-lifetimes?

What does the “radiative efficiency” of a greenhouse gas show?

Explain how the “absolute global warming potential” and “global warming potential” is used to compare among the impacts that different gases have on heat retention in the atmosphere

What does NEITHER formula actually consider?

What are the top 5 emitters of greenhouse gases in the world?

Why are China’s emissions so large and growing?

How is the US doing in terms of greenhouse gas emissions per capita?

Why do so many small countries like Kuwait have such high per capita greenhouse gas emissions. What’s not being considered here?

What has been the per capita trend of emissions in the US for the past few decades?

What has been the global trend (few exceptions) of the top 25 emitters when it comes to per dollar domestic productivity emissions?