Introduction

From around 800,000 years ago, CO2 concentration in the atmosphere has stayed relatively stable around 280 parts per million until the Industrial Revolution[[1]](#endnote-1). From the prevalence of steam engines in the early 19th century and following dazzling evolvement of coal-consuming industries, together with multiple chain effects in economy, has led to rapid increase in CO2 levels in the atmosphere. The growth rate has kept rocketing with progresses in productivity throughout major industrial renovations. With an annual increase of 2.66 ppm in 2021---the tenth consecutive year of an increase over 2 ppm---compared to the 2020 CO2 emission of 412.04 ppm[[2]](#endnote-2), we are currently facing the highest speed of CO2 concentrating around the globe since the very beginning of human kind.

Factors leading to CO2 emissions are far beyond estimation, and they are still expanding with new industries emerging from traditional ones. Direct emissions from industrial production and transportation block indirect factors responsible for increases in CO2 levels, including agricultural, XXX. This partially explains the controversy stirred up by predictions about the levels of CO2 in the atmosphere. In order to stress the urgent need, apart from seeking determining factors for prediction, observations on major variations that close resemble the changes are highly expected. Among these factors, temperature is widely endowed with the most importance.

Restatement of Questions

Question 1: In order to reassess current claims about CO2 levels, we will take various factors into account, including annual XXX. To select influential factors from mass amount of information, we should research in confirmed reliable resources in advance. We should build mathematical models to each of these variations and describe the historical levels of CO2 in the atmosphere in the past few decades (with a starting point earlier than 2004), as well as to predict future changes in CO2 concentration. According to the results, we will come to an opinion for or against the CO2 level claims and point out exactly when CO2 concentration reaches 685 ppm.

Question 2: To find out the relationship between temperature CO2 concentration in the atmosphere, we

1. https://gml.noaa.gov/ccgg/trends/history.html [↑](#endnote-ref-1)
2. https://www.noaa.gov/news-release/increase-in-atmospheric-methane-set-another-record-during-2021#:~:text=Meanwhile%2C%20levels%20of%20carbon%20dioxide%20also%20continue%20to,increase%20in%20the%2063%20years%20since%20monitoring%20began. [↑](#endnote-ref-2)