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(REVIEW ARTICLE)

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SO_2 aerosol removal: The cause of global warming

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Abstract

Archived satellite images of atmospheric SO_2 aerosols show that their decrease since 1980, due to global "Clean Air" efforts and Net Zero activities, is the cause of all of our modern warming.

To avoid even more warming, and their associated environmental disasters, these activities need to be abandoned.

Keywords: Climate Change; SO_2 aerosols; NASA/GMAO Chem maps

1. Introduction

NASA's Global Modeling and Assimilation Organization (NASA/GMAO) has archived satellite images of global, regional, and country atmospheric "Chem Maps" for a range of atmospheric constituents, going back to 1980.

Total Column and Surface Images available for examination are: Black Carbon, Dust, Organic Carbon, Sulfur Dioxide (SO_2), Sulfate, Sea Salt, and Ozone.

Because of the known climatic effects (both cooling and warming) of SO_2 aerosols from volcanic eruptions, they were chosen for examination.

2. Discussion

Sulfur Dioxide (SO_2) aerosols are a mist of micron-sized Sulfuric Acid (H_2SO_4 droplets) which are reflective, and cool our planet by reflecting away a portion of the incoming solar radiation. [1].

They enter our stratosphere from VEI4 or larger volcanic eruptions, and our troposphere primarily from the burning of fossil fuels, due to various activities such as power plants, foundries, factories, home heating units, transportation, etc.,

Both volcanic and industrial SO_2 aerosols have the same climatic effect, so that any increase in either will cause cooling, and any decrease will cause warming.

The archived NASA/GMAO images of SO_2 are available as both forecast and "re-analysis" images, with the re-analysis images being more accurate. They provide the ability to compare the quantities of industrial and volcanic SO_2 aerosol levels in our atmosphere over the years.

The 1980 global "Chem map" image for SO_2 is shown below. At that time, the United States and Europe were the heaviest polluters.

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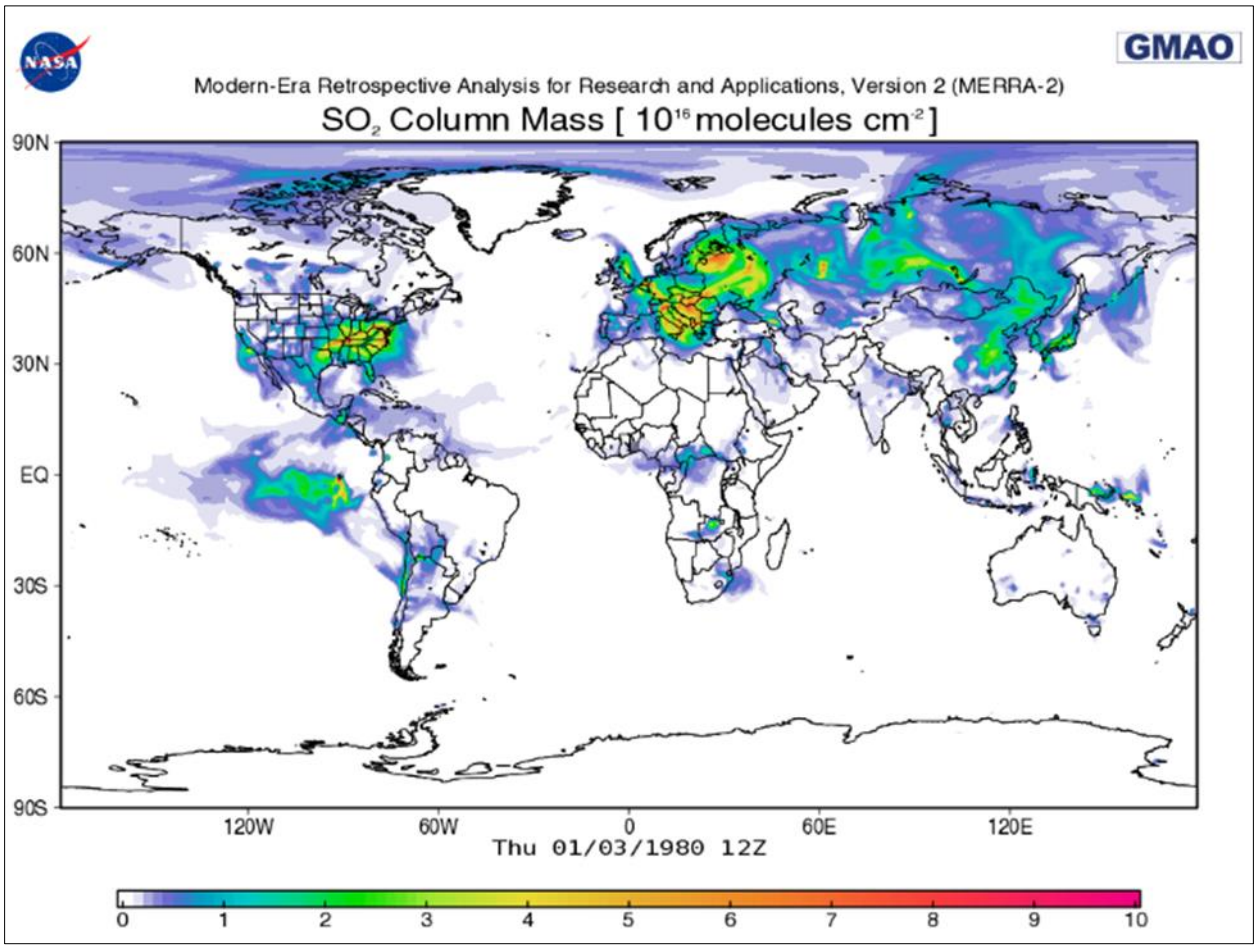

Figure 1 Chem Map image of industrial SO2 aerosols for Jan 1980

For the year 1979, the "gridded" Community Emissions Data System (CEDS) of the University of Maryland reported that there were 136 million tons of industrial SO_2 aerosols introduced into the atmosphere (thus the approximate amount present when the year 1980 began) [2].

[Because of acid rain and health concerns, global "Clean Air" efforts to reduce the amount of industrial SO_2 aerosols in the atmosphere began in the late 1970's, and temperatures quickly began rising as the air became cleaner. These efforts have been highly successful, and by 2019 emissions had fallen to 72 million tons (the latest data available), a decrease of 64 million tons].

Figure 2, below is the same map as shown above, for May 31, 2023, shortly before the 2023 El Nino was declared, on June 8,

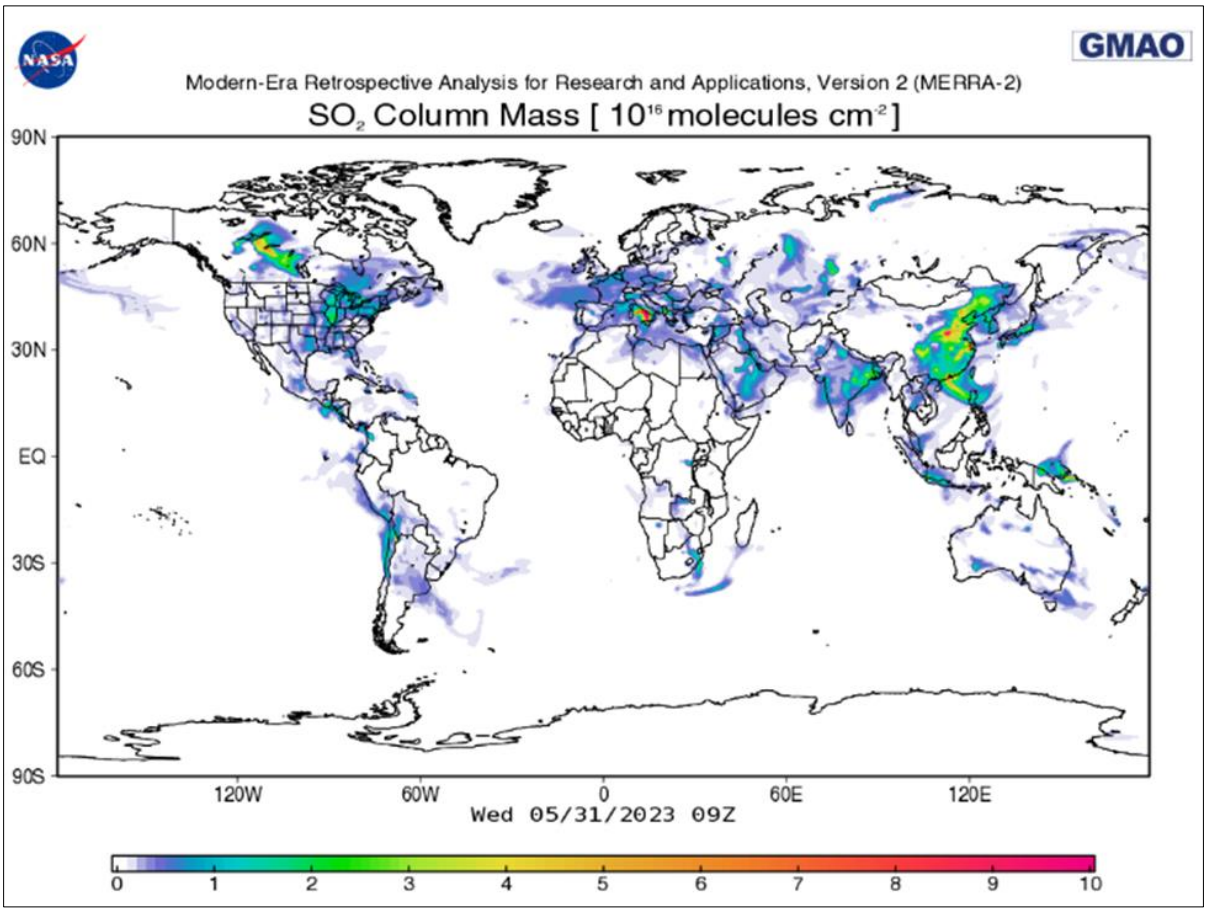

Figure 2 Chem map image of industrial SO_2 aerosols for May 31, 2023

As noted above, the removal of more than 64 million tons of industrial SO_2 aerosol pollution from the troposphere over the past 43 years has increased the intensity of the solar radiation striking the Earth's surface, and is the cause of all of the modern warming, since 1980.

This completely refutes the unproven hypothesis that increasing levels of Carbon Dioxide (CO_2) are the cause of our warming climate. Decreased SO_2 aerosol levels ALWAYS cause warming, as also happened in the 1930's, for example, and this warming cannot be ignored. In contrast, there is NO instance where CO_2 has ever been proven to have caused any global warming.

3. Conclusion

The comparison of the 1980 and 2023 Chem maps proves that all of our modern warming (since 1980) has been due solely to decreasing levels of SO_2 aerosols in our atmosphere. Consequently, ALL Net Zero activities to reduce CO_2 emissions need to be halted, since its abandonment of the burning of fossil fuels, which produces both CO_2 and SO_2 aerosols, will drive temperatures even higher, because of decreasing SO_2 aerosol levels.

(There is some evidence that the temperature of the very strong 2023 El Nino is already being augmented by decreased SO_2 aerosol emissions). https://doi.org/10.30574/wjarr.2023.19.2.1660

References

[1] Google: Atmospheric Aerosols: What Are They, and Why Are They So Important?

[2] Industrial SO2 aerosols: https://github.com/JGCRI/CEDS Scroll down to CEDS, click on emissions by country are archived here.