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(Review Article)

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"Definitive proof that CO_2 does not cause global warming": An update

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Abstract

Analysis of the Jan 15, 2022 eruption of the Hunga Tonga water volcano leads to the conclusion that it is the actual cause of the 2023 El Nino. The mechanism is that the settling out of its moisture on the way down efficiently flushes out much of the industrial SO_2 aerosol pollution in the troposphere, cleansing the air, and causing temperatures to rise.

Although a natural event, the continued removal of SO_2 aerosols from our atmosphere by various activities will eventually have the same disastrous effect, which may already be beginning, according to a comparison of NASA/GMAO Chem maps of for Jan 1, 2020 versus Jan 1, 2023.

Keywords: Climate Change; El Ninos; Hunga Tonga; SO_2 aerosols; SO_2 Chem maps

1. Introduction

In the midst of the 2020-2023 La Nina, with La Nina temperatures of (-) 0.5 deg. C., or less, in late Feb. temperatures suddenly began rising, reaching 0.0 deg C. by Mar 15. and (+) 0.5 deg. C. by June 8, when El Nino conditions were officially announced. For July, temperatures rose an additional 0.64 deg. C., according to UAH satellite measurements of the lower atmospheric temperature.

As originally published, a NASA/GMAO "Chem map" of global SO_2 aerosol levels dated May 31showed a decrease in their levels, as compared to 2022, and earlier years [1]. This decrease was attributed to Net-Zero activities, reduced industrial activity due to high energy costs, the closing of coal-fired power plants, increased use of electric vehicles, mandated lower sulfur in shipping fuels, etc.

2. Discussion

The reasons given for decreased SO_2 aerosol emissions are all valid, but the warming is more rapid than what would be expected for them, suggesting that an additional mechanism for removing SO_2 aerosols from the atmosphere (the cause of all El Ninos over the past 68 years) was operating. [2]

Most El Ninos are volcanic-induced, with their origin being caused by the eventual settling out of their stratospheric SO_2 aerosols (a mist of Sulfuric Acid droplets), which coalesce with industrial SO_2 aerosols in the troposphere, flushing them out on the way down, and cleansing the air enough to increase the intensity of the sunshine striking the Earth's surface, causing increased warming. This occurs, on average, 16 months after the date of a normal VEI4 eruption. [2]

Which brings us to the probable cause of our recent warming, the VEI5 Hunga Tonga water volcano eruption of Jan 15, 2022. The recent warming began ~15 months after its eruption, well within the normal range of stratospheric volcanic

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fallout. The SO_2 aerosols in the troposphere would have a very strong affinity for the descending moisture, since it is sometimes used as a drying agent. As such, it would be very effective in cleansing the lower atmosphere of SO_2 aerosol pollution, thus increasing the intensity of the sun's radiation striking the Earth's surface, and causing the 2023 El Nino.

This is supported by Chem maps for Jan 2023, prior to any Hunga Tonga fallout, and for May and June, 2023, after the fallout began. See Figure 1, below, for Jan:

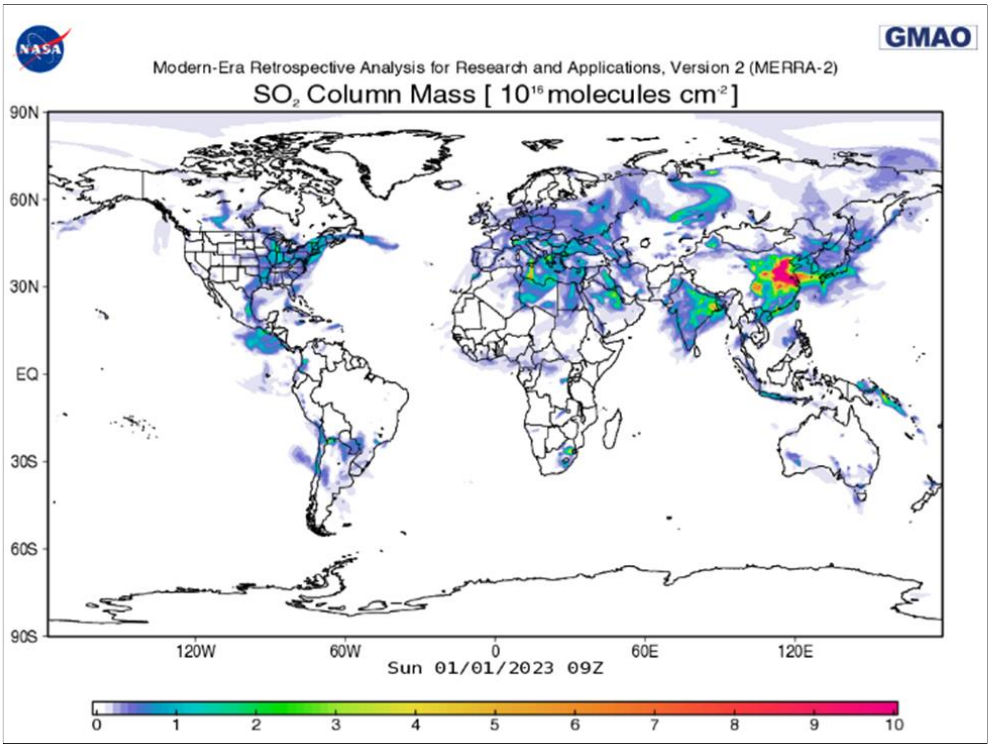

Figure 1 Column Mass of SO_2 Aerosols for Jan 1, 2023

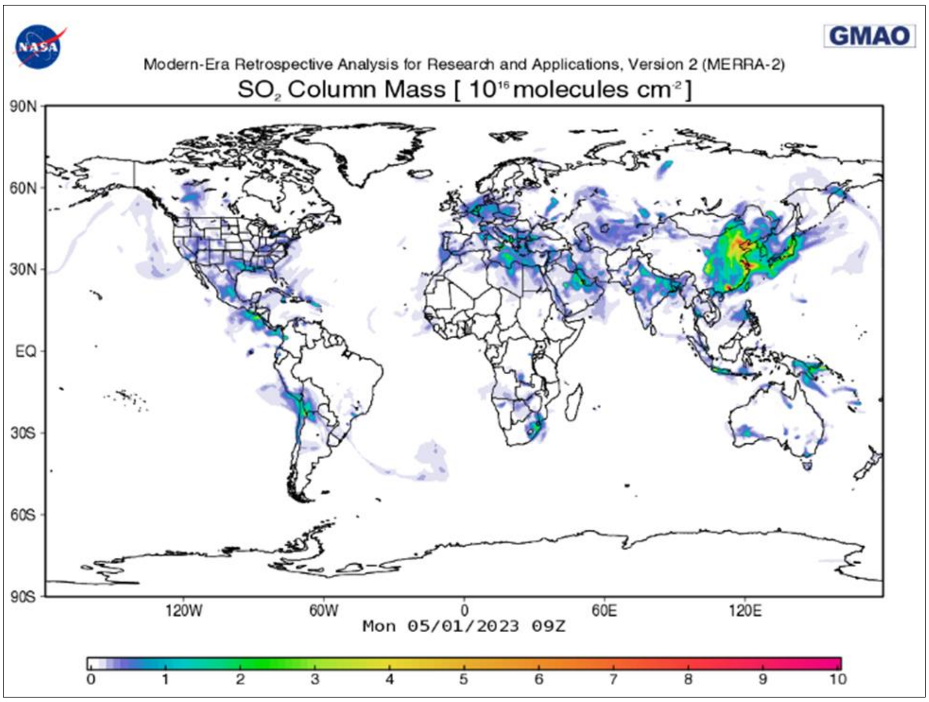

Figure 2 May 1, 2023. Fewer aerosols in Jan, especially in the polar regions.

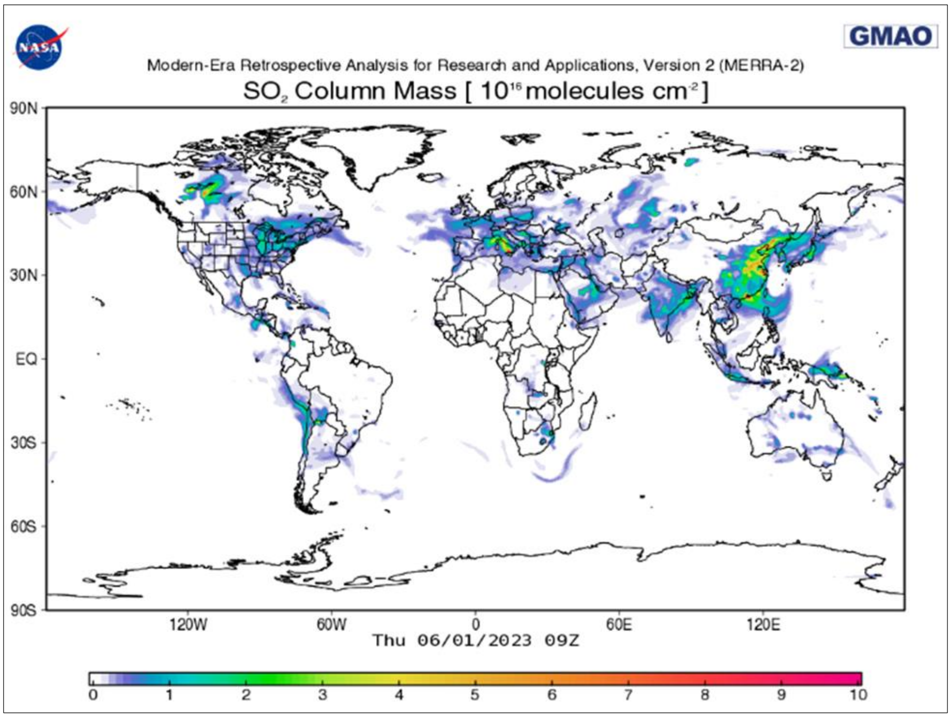

Figure 3 Column Mass of SO_2 Aerosols for Jun 1, 2023

Even fewer aerosols than in May. Temperatures should keep rising as long as there still are SO_2 aerosols in the atmosphere, and Hunga Tonga moisture to flush them out. For other eruptions, this takes about 2 years.

The following map is for Jan 1, 2020, and it shows substantially more SO_2 aerosols in the atmosphere than for Jan 1, 2023, above. (The original paper included a less accurate "forecast" map for this date, but both show more aerosols for 2020 than in 2023).

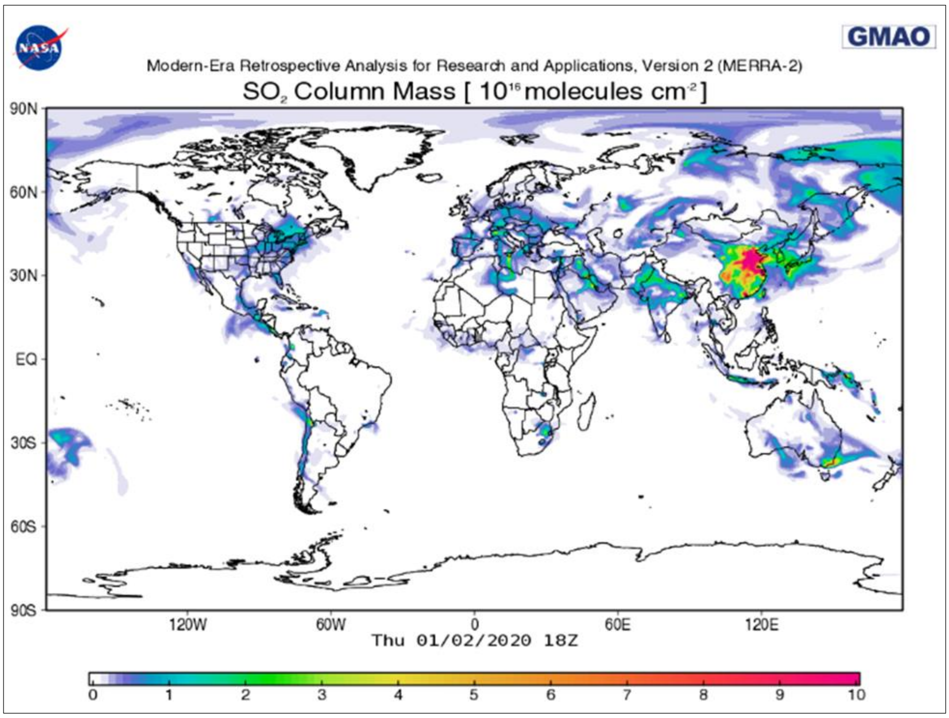

Figure 4 SO_2 Column Mass for Jan 1, 2020

Since this a pre-eruption map, and the Jan 1, 2023 map is a “pre-fallout” map, the decrease in SO_2 aerosol emissions in the interval between appears to have been due to the “man-made” activities cited above in the introduction.

In addition to the water injected into the stratosphere by the VEI5 Hunga Tonga eruption, 0.18 million tons of SO_2 were also injected into the stratosphere [3]. This is equivalent to the average amount (0.2 million tons) injected by a VEI4 volcanic eruption, which results in an average of 0.2 deg C. of cooling. Since no extra cooling from the SO_2 was observed after the eruption, it must have been offset by decreased SO_2 aerosol emissions from elsewhere [4].

3. Conclusions

The current decreased SO_2 aerosol level may be replenished by the continuing industrial SO_2 emissions from China, India, and elsewhere (the cause of the 2020-2023 La Nina), and temperatures should decrease. However, the mechanisms originally identified for the removal of SO_2 from the atmosphere, appear to be operating, and, if not halted, temperatures will continue to increase.

In that event, the climate disasters of the 2023 El Nino will be representative of our future!

References

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[3] Hunga Tonga SO_2 aerosol emissions. SO_2.gfsc.nasa.gov

[4] Hadcrut5 global temperatures. https://crudata.uea.ac.uk/cru/data/temperature/HadCRUT5Analysis_gl.txt