

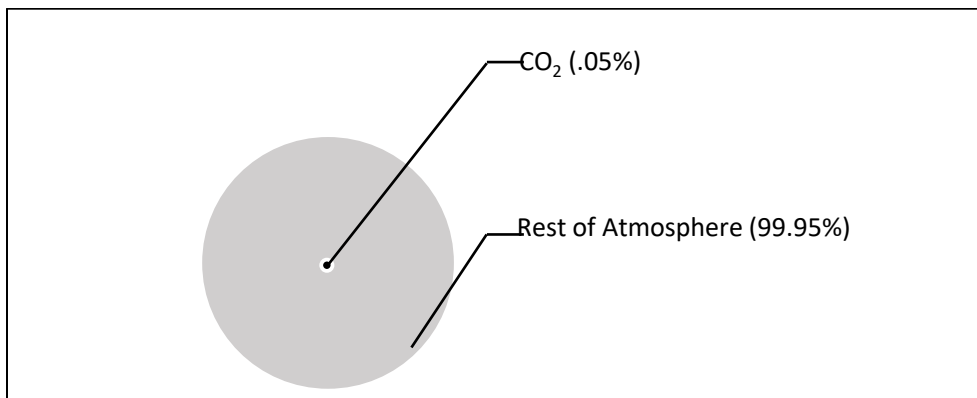
Is CO₂ the Achilles Heel of Energy-Based Economies?

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James Alex Webb

Decades of rhetoric warning of CO₂'s dire effect on climate may soon be translated into obstructive energy policies that the world can ill afford. Here is a brief look at some of the applicable evidence.

The AGW (Anthropogenic Global Warming) hypothesis employs an increased greenhouse gas effect from CO₂. No doubt industrialization has materially contributed to CO₂'s increase from its pre-industrial level of 280 ppm to its current nearly 420 ppm (.05% of the composition of dry air below the ionosphere). There is agreement for a benchmark doubling of this number by the end of the Century.



Volume comparison

Global Climate Models (GCM's) specify the CO₂ warming contribution alone to range near to 1 degree Celsius by 2100. They then project a temperature rise enhanced by consequent increased water vapor of an additional roughly 2 degrees Celsius, enough to raise broad expectations of climate disruptions such as storm enhancement and a sea level rise of several feet.

Approximately 1% of the atmosphere in the form of water vapor. That the greenhouse gas effect is "primarily attributable to H₂O" is long established. (Sverre Pettersen *Introduction to Meteorology*, 1969, New York, McGraw Hill, Inc., p. 50).

Key to their case, GCM's have projected a quasi-constant *relative* humidity level, which translates to a much higher rise in *absolute* humidity because warmer air magnifies moisture

holding potential. However, according to observational [research and satellite data analysis](#) by William M. Gray, no such absolute humidity increase appears likely.

“The resulting extra increased upper tropospheric moisture is assumed to block large amounts of additional outgoing infrared (IR) radiation to space beyond the blockage of CO₂ by itself. This consequently leads to significant amounts of extra global temperature increase which is two to three times larger than what the CO₂ doubling temperature increase can accomplish alone. Our observational analysis shows that these additional feedback warming assumptions are unrealistic.” (Gray p. 6)

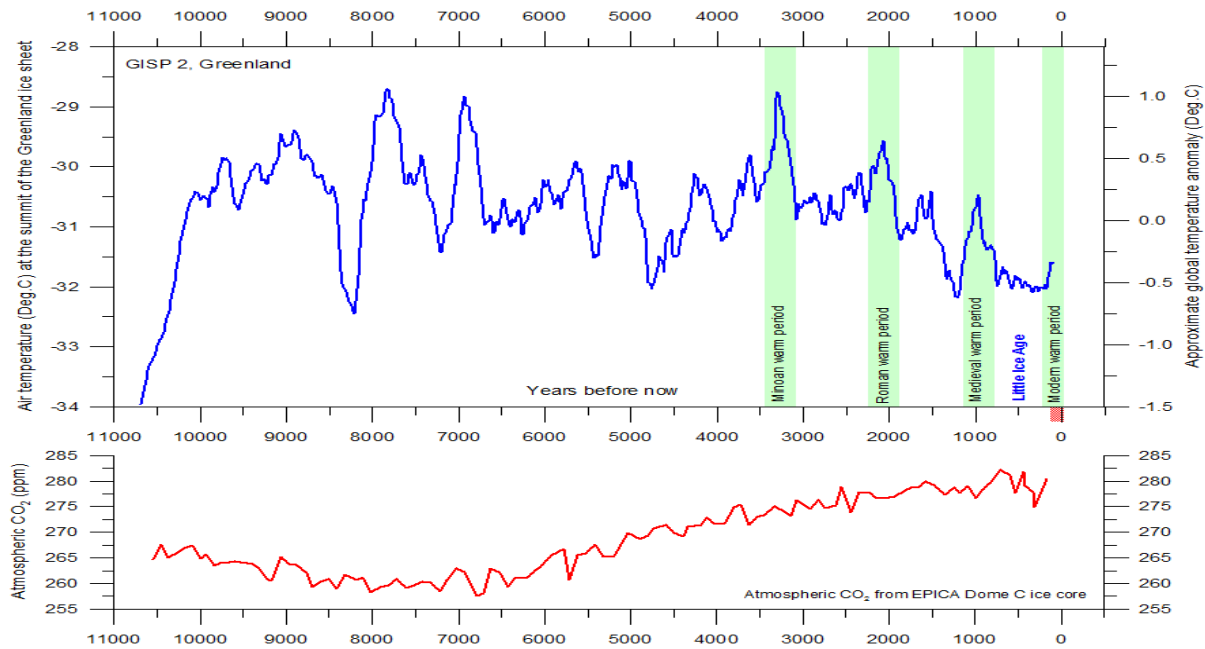
The overall AGW hypothesis begins with a calculated net increased infrared return to the earth from doubling CO₂ by the end of the Century. Given this the surface temperature must rise approximately 1 degree Celsius to stabilize the terrestrial heat budget. This is called climate sensitivity to CO₂ forcing. It reaches a stable equilibrium because there is a more than linear increasing rate of radiation emission (heat loss) per unit temperature increase as the earth warms.

The next step involves temperature induced increases in water vapor and then consequent additional (feedback) warming effects, for a total of approximately 3 degrees Celsius. William Gray has considered 19 of the Global Climate Models of the 2007 IPCC-AR4 report: “All models give strong positive energy feedbacks equivalent to about 2°C warming.” (p. 15)

As a matter of record, these models track too hot since the 1990’s (see graphic [here](#), and [Article](#) for in-depth treatment of this failure).

Following GCM logic, amplification would occur from any marginal source of natural warming. And such warming has been seen in cycles that have occurred for various reasons numerous times in the past without increased CO₂. During the past 10,000 years of the present (Holocene) interglacial period, CO₂ remained below its 280 ppm pre-industrial level throughout. In Gray’s words:

“...it is hypothesized that the back-and-forth variations of the globe’s deep ocean circulation patterns operating on multi-century and multi-decadal time scales can explain most of our globe’s prominent surface temperature variations... CO₂ changes could not have played any significant role in these long multi-century temperature changes of the past.” (p. 9)



climate4you.com – Ole Humlum – Professor, University of Oslo Department of Geosciences

During the more remote [Eemian](#) inter-glacial (when the sea level was nearly 20 feet higher than at present), CO₂ also remained under 280 ppm.

Surprising to some, not all scientists concur in net warming from increased CO₂. In *Hot Talk, Cold Science*, (Oakland Ca, Independent Institute, 2021) S. Fred Singer raised the likelihood of negative feedback (cooling) effects that compensate CO₂ warming in the terrestrial heat budget.

Increased cloudiness has a cooling effect. Increased water vapor affects [snowfall](#) (enhanced since 1967, mostly over the Antarctic). Singer advances this possibility in accounting for the lack of any recent increase in the gradual long-term (Holocene) sea level trend rate of 18cm/century. He projects only another 6 inches by 2100 (p. 140).

Singer further challenges GCM assumptions projecting increased water vapor in the upper troposphere, citing William Gray's research into increased tropical deep cumulus convection that found negligible atmospheric moisture gains in the upper troposphere (p. 123). Gray considered increased albedo (reflectivity) from increased cumulonimbus development (Gray p. 9). This evidence contradicts the warming hypothesis.

Singer points to evaporative cooling effects on the heat budget; he explains a mechanism in which CO₂ removes heat due to the stratospheric positive lapse rate where temperatures rise with height. Increased CO₂ at these higher levels would enhance net heat flux to space due to the greenhouse gas logarithmically increased infrared radiation response under higher temperatures (p. 133).

Singer highlights factors that create chaotic variability excluded by AGW advocates. For instance, variations in solar output or in deep current ocean influences, avoided in models because they cannot be computed reliably.

Beyond these findings, little is said by climate alarmists about the beneficial effects on vegetation from increased CO₂ (fertilization), [some](#) estimates are over 13% (global increase in the Leaf Area Index) per 100 ppm. Clearly forces are arrayed to ramp up appropriations and invoke measures attending to select [corporatist](#), academic and regulatory interests

With these weaknesses one may wonder what really drives the anti-CO₂ narrative. There may be genuine concerns challenging conventional energy-based economies, but the AGW hypothesis seems contradicted by the evidence.