

GSM - Grand Solar Minimum. The real "Climate Change" existential threat is right around the corner. Do the Research!

OPS-42

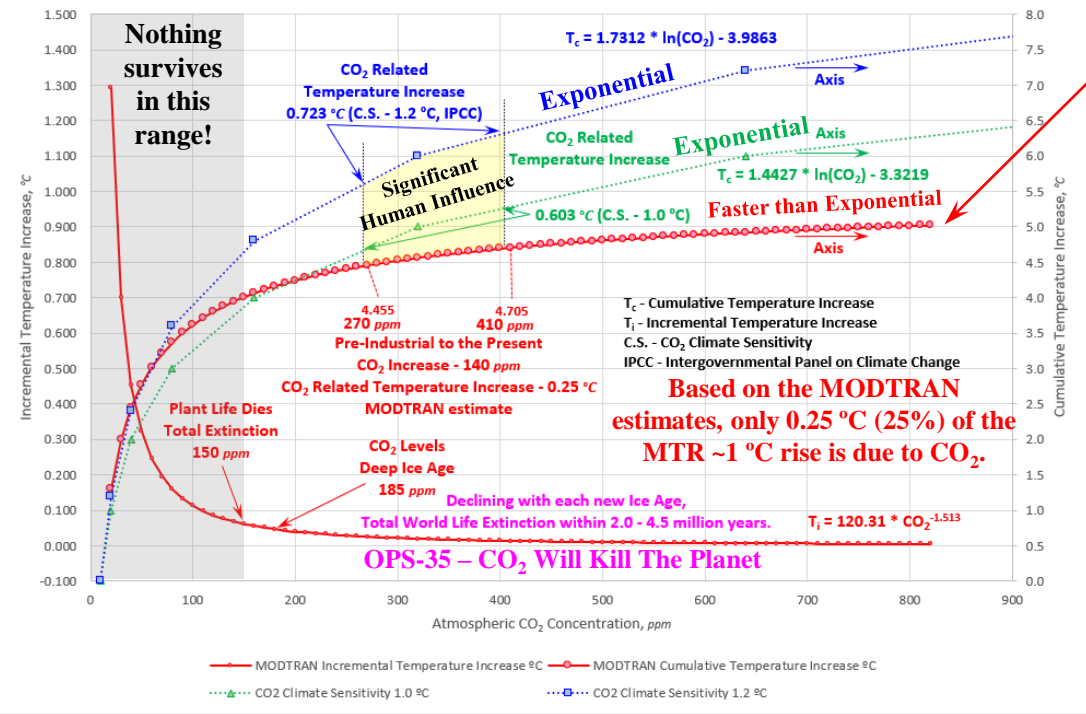
What is CO₂'s Climate Sensitivity?

The answer to that question can be easily illustrated by using the University of Chicago's MODTRAN software (examples below).

A more detailed discussion is available in CSS-3 - CO₂-Sensitivity

Heating Effect of CO₂ 10 ppm increments

Modern Temperature Record MTR, (~1850 to the Present)



The flattening of the MODTRAN sensitivity curve suggests that the CO₂ Adsorption Band is indeed becoming saturated. In that scenario, CO₂ additions will have only minor (beneficial) warming effects on global temperatures.

The MODTRAN sensitivity curve (red curve to the left) does suggest that the CO₂ Adsorption Band is indeed becoming saturated. In that scenario, CO₂ additions will have only minor (beneficial) warming effects on global temperatures going forward. Adding CO₂ has very strong effects at low CO₂ concentrations. The first 10 ppm of CO₂ added to the atmosphere has a very pronounced effect. By 50 ppm, close to 60% of the warming associated with a doubling of atmospheric CO₂ to 800 ppm has already occurred. The MODTRAN temperature increase estimate for an atmospheric CO₂ increase from 400 to 800 ppm is roughly 0.3 °C. Not a very scary increase and CO₂'s effectiveness is still declining as CO₂ rises further. The MODTRAN model replicates the satellite measurements very closely. If only the IPCC computer modellers could say the same thing. Their models consistently run hotter than the measured temperatures and they make no effort to correct that very obvious problem. Recognizing the solar forcings that have been added into the latest computer protocol (CMIP6) would easily fix that problem but that would not fit the CAGW Narrative. Can not have that, can we!

CO₂ Climate Sensitivity

CO₂ has a very noticeable effect on the energy radiating out to space but in a very narrow Absorption Band (AB, 13 – 17 μm). With no CO₂, the Schwartzchild Curve would be represented by the black curve. I have a question for both sides of the "Climate Change" discussion. Why is the CO₂ Climate Sensitivity (CCS) generally discussed as a set value? Note, the magnitude of that value has a wide range and is nowhere near settled science. The IPCC (despite the decades of computer modelling) still ranges from roughly 1.5 to 4.5 °C. The proponents of AB saturation would recognize that the CCS is not a set value and does decline with rising CO₂ concentrations (more quickly than the exponential curves above). The historical CCS is likely closer to 1.0 °C, but that does not mean the CCS will continue to remain at 1.0 °C. The CCS is NOT a Universal Constant and could easily be subject to change (as shown in MODTRAN models).

Is rising CO₂ going to help us get through the GSM? Not if you look at the CCS objectively. The magnitude is most likely too low and the CO₂ adds too small to affect the GSM.

When CO₂ molecules absorb the earth's thermal radiation, they re-emit that energy, but they don't re-emit that energy unidirectionally. If the energy radiating out to space isn't changing much, the energy being re-emitted to the atmosphere is also not changing much.

