



# Common Sense Empirical Climate Science: No Carbon Climate Crisis at Current Trace Levels

Radiative Cooling of Earth by Emission of Infrared Radiation,  
Moderated by Clouds & Water Vapor, Not Carbon Dioxide,  
Based Upon Multiple Lines of Empirical Evidence & Sound Theory

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Climate science deals with the harsh reality of 174,000 terawatt of solar energy striking Earth's surface & air, minus 29 percent albedo. The exposure is sustained by the planet cooling itself by means of EM radiation emitted to outer space of a like amount of energy in the infrared range. The balance may not be perfect at all times, but miraculously we are still around & attempting to comprehend the physical processes involved in keeping the planet's surface suitable to sustain biological life & human civilization. While ground temperature is maintained at a pleasant avg 288 kelvin = 15° C by the atmospheric greenhouse effect, a surprising 255 kelvin satisfies the demand for radiative cooling. This just happens to be standard air temperature at 5,000 m altitude. Official climate science largely is concerned with models & has assigned a major role to carbon molecules in air. As these exist currently only at mere trace levels, they are widely considered to be irrelevant for climate in view of the Mass-Action Law that implies that trace components can have only trace effects. Denying this simple fact, familiar to meteorologists, unfortunately has led to much of the civilized public being misled by climate scientists. One of the themes among their rhetoric is calling for renewable energy sources, when in reality unlimited amounts of hydrogen & hydrocarbons are dissolved in the Earth's mantle, going back to the primitive solar nebula that gave rise to our solar system, & available for human consumption through fracking. Here in this philosophical essay, we are offering simple empirical proofs, examples from everyday life, as opposed to the largely theoretical modeling work of climate science, for the fact that atmospheric carbon molecules can have only trace effects on radiative planetary cooling, proofs that are easy to verify. We dispute unrealistic estimates of important effects on climate from carbon dioxide trace gas via an atmospheric feedback mechanism proposed by some climate scientists. The essay demonstrates that atmospheric carbon molecules are irrelevant for climate at this epoch. Humanity is not facing a carbon climate crisis, currently.

*Keywords:* Kant's inner & outer senses, orderly inner self & chaotic outer environment, brain laterality, double Ego bilateral interior cosmos, metaphysical gap, climate & radiative cooling, Stefan-Boltzmann Law, CO<sub>2</sub>, CH<sub>4</sub>, water vapor shielding by greenhouse gases

### **Dedication**

Saint Paul's address to the Areopagos, Acts 17:28, King James Version: For in him we live, and move, and have our being; as certain also of your own poets have said. For we are also his offspring.

To the pioneers HOBBS, LEIBNIZ, KANT, BERGSON and many others, who have promoted the scientific view point in philosophy and have seen glimpses of the cosmos, this side of the metaphysical gap that separates man from his environment.

These philosophical theories are included in the cosmos, Plato's Forms his Cave & his Divided Line, Hobbes' Calculations, Hume's Utility, Leibniz' Monad, Kant's Oneness Function & Synthetic Unity, Hegel's Geist, Brentano's Intentionality, Bergson's Mental Self-Record, Husserl's Phenomenon, Heidegger's World, & Rorty's Community.

Life depends on language for overcoming the metaphysical gap that separates an individual animal from its environment. From the beginnings, the genome, the animal's blueprint, its embryonic logos, is stored in each cell as a linguistic record coded in the DNA alphabet.

### **Introduction: Common Sense, Holistic Human Judgment**

The key concept is a human being's interior cosmos, similar to Saint Teresa of Avila's Interior Castle (her father was a Jewish *converso*, her mother ancient Castilian nobility), but wider, including the common sense understanding of the universe, steadily augmented by experience, learning & science, not a completely isomorphic image of reality but an orderly, beautified arrangement (cosmos = cosmetics applied to nature).

Immanuel Kant mentions it in the A-edition of his Critique of Pure Reason, as general experience and in his Critique of Judgment Power, the First Introduction under similar names, such as interconnected experience.

Common sense is resident in everybody's interior human cosmos & we here endeavor to encourage people to rely on their own judgment based upon the brain's bilateral store of lifetime experience & memory (Burchard, 2021).

We place much emphasis upon awareness of the biological foundations underlying one's personality & mental powers, that have been emerging from cognitive science & recently were revealed as important for our survival (Burchard, 2020).

But the amazing mental power of individual common sense judgment can be demonstrated only through examples from each person's own experience, or that one may be able to observe in others, or details of events affecting one personally.

Recently in my own case, common sense was my personal guide, in this humble occurrence, when I managed to fix a broken thing, a hand mirror that is convex on one side, flat on the other & that can be put up on its plastic stand. It now has a little damage on one side of the plastic stand. It had fallen into my recliner where, as an octogenerian, I spend most of my time, 24/7 & had been missing for several days. I heard some crunching noises, fearing my recliner was breaking down, but it was the mirror passing through the gears of the chair, falling out to the ground eventually. It looked broken, parts sticking out, like broken bones. I tried to fix it, but it seemed hopeless. In the end I pulled it apart, the mirror from the level stand. Then I tried to put the two parts back together, it seemed impossible. Suddenly on the 7th trial, it was back together, functioning as before. The plastic stand required some gluing back together. A drop of superglue took care of it.

### The Greenhouse Effect, Science Basics

Here we wish to philosophically reflect upon climate science, a discipline that deals with the harsh planetary reality of 174,000 terawatt of solar energy radiation striking Earth's surface & air at all times. A large fraction is reflected back to space by Earth's 29% albedo. There remain 123,000 terawatt that are absorbed by planet Earth. To sustain this enormous exposure, the planet must cool itself, & it does so by re-emitting a like amount of energy back to outer space in the form of infrared (IR) or heat radiation.

The central issue of the international climate debate concerns the proximate cause of the famous *Greenhouse Effect* (GHE), whereby atmospheric molecules absorb thermal energy of all sorts, which they then re-radiate as IR photons. Half these thermal photons escape to space, the other half is sent down to the ground.<sup>1</sup> This causes the Earth's surface temperature to be maintained at a pleasant avg of 288 kelvin = 15° C. An important role in achieving this is played by processes of vertical convection in the troposphere (Lacis et al., 2013).

Of course, global averages hardly give a full picture, as we all know. Our weather phenomena are highly variable, both locally & in time, often minute by minute.

In view of the 288K surface GHE it is all the more surprising that a global avg of 255 K = -18° C satisfies the demand for radiative cooling, *vide infra*. This just happens to be the standard air temperature at 5,000 m altitude, see below,<sup>2</sup> suggesting that this height, beneath which lies nearly half the air, is the atmospheric layer responsible for emitting most of our IR global cooling radiation. This sci info morsel, here may be proposed as a first result of our philosophical common sense reflection.

As we can see, the GHE is part of the processes by which our atmosphere reacts to solar heating of the planet & performs the vital task of radiative cooling that thankfully is slowed by the GHE, so we do not freeze even stopped under a heavy cloud cover. Water H<sub>2</sub>O strongly absorbs IR rays in the 6.2-7.3 μm wavelength range, & is the main contributor to the GHE, *vide infra*.

We are not dealing with a *Carbon Climate Crisis*. Even after 250 years of the world's industrial civilization, atmospheric carbon molecules, carbon dioxide CO<sub>2</sub> and methane CH<sub>4</sub> are only present in trace amounts and therefore, by the Mass-Action Law, can have mere trace effects on weather & climate. A brief clarification on the Mass Action Law: A few CO<sub>2</sub> molecules will fail to capture many infrared (IR) photons.

Climate now is a major economic concern because of the GND, which will wreck our economy. We cannot operate our vital commercial truck fleets on electrical power. No carbon crisis exists, no threat to climate at current trace levels.<sup>3</sup> Affordable electricity does not come from other sources & hydrocarbons are synthesized plentifully in the Earth's mantle from primordial hydrogen & methane. On Benny Peiser's old CCNet, I discussed the seeping up of petroleum in impact craters from unlimited reserves dissolved in the Earth's mantle dating to the primitive solar nebula (Burchard, 2016; 2017), the impact having fractured the crystalline lithosphere basement rocks of Earth's crust. Later, petroleum engineers began fracking deep strata where the target shale deposits demarcate shallow basement crust that can be reached by oil drilling rigs.

At present, CO<sub>2</sub> is at 0.04%, CH<sub>4</sub> at 0.0002% by volume. To thaw Snowball Earth, 639 M years ago in the Neoproterozoic, it took a build-up of 13% CO<sub>2</sub> from volcanic emissions when photosynthesis had not yet

<sup>1</sup> A slightly over-simplified picture of the process, for additional thoughts & details *cf.* Wikipedia article "Earth's energy budget."

<sup>2</sup> U.S. Standard Atmosphere, 1976 model.

<sup>3</sup> Similar views were expressed by Finnish meteorologist Petteri Taalas on September 6, 2019 in the journal *Talouselämä*, although he later was forced to retract by the WMO, the international meteorological body, of which he is the Secretary General.

evolved.

This is true despite during the 250 yrs of our Industrial Civilization on this planet we relied heavily on coal & hydrocarbons for fuel. However, the unfortunate situation exists of a world-wide public campaign, seeking to reduce consumption of carbon-based fuels.

We emphasize radiative cooling because it happens to be the key process of the planet in response to solar energy striking Earth, beaucoup heat energy going out to space, water vapor & clouds re-radiating sufficient photons to keep us warm.<sup>4</sup> The atmospheric greenhouse effect keeps ground temperatures at a pleasant avg 288 K = 15° C. As we next derive, a surprising avg surface temperature of 255 K satisfies the demand for infrared radiative cooling. This happens to be the standard air temperature at about 4,989.670 m altitude  $\approx$  5,000 m above sea level. For quantitative understanding of the role in climate study of radiative cooling & the greenhouse effect, we consider the “solar constant,” or Earth’s average total solar irradiance of 1.366 kW/sqm. Given Earth’s avg radius (spherical planet) of  $20,000/\pi$  km = 6,366,197.724 m (actual mean Earth radius = 6,371,000 m), we determine Earth’s cross-section, the area of our planet’s circular disk =  $127.324 * 10^{12}$  sqm. From this, total solar energy impinging on Earth’s surface & atmosphere is estimated at 174 PW (1 petawatt = 1 billion megawatt) [Wikipedia]. Here,

$$\begin{aligned} 1.366 \text{ kW/sqm} &= 1.366 * 10^{-3} \text{ MW/sqm} \\ &= 1.366 * 10^{-12} \text{ PW/sqm} \\ &= 173.925 \text{ PW/Earth cross-section area} \end{aligned} \quad (1)$$

We subtract the portion of solar energy that is reflected directly and not absorbed, estimated to be about 29% albedo. This leaves 123.487 PW = 0.9699 kW/sqm fully absorbed.

In other words, sunbeams put 174,000 terawatt of energy on Earth minus 29% albedo, so about 123,000 terawatt. The same amount must be returned to space & removed from Earth by radiative cooling, sent back out to space through infrared EM radiation, or we’ll all fry (a small amount of solar radiation is converted into other forms of energy, *e.g.* biochemical, & stored in the surface of the planet; the oceanic heat reservoir capacity seems to play a major role in maintaining the stability of Earth’s climate).

Quantitative greenhouse analysis requires the Stefan-Boltzmann law, SBL of radiation, according to which the heat energy  $Q = \Delta E$  radiated by a physical body’s surface, intended to be a black body, during a time interval of duration  $\Delta t$ , is given by

$$Q = \sigma * A * T^4 * \Delta t \quad (2)$$

and depends only on the body’s temperature  $T$ , with a surprising 4th power  $T^4$ , where

$$\sigma = 5.670374419 * 10^{-8} * \text{watt}/(\text{sqm} * \text{kelvin}^4) \quad (3)$$

is the Stefan-Boltzmann constant.  $A$  is the surface area in sqm of the body, and  $T$  is its absolute temperature in kelvin.

To achieve the exactly correct intensity of IR radiation, Earth’s surface must be kept warm enough though not too warm, which by the SBL formula implies an average temperature of 255.717 kelvin.

Of course, here we have a somewhat meaningless number. Sahara sands get as hot as 355 kelvin, radiating into space per sqm 3.8 times as much IR energy as would be the avg. Deserts in low latitudes do most of our vital radiative cooling for us. It is a deep mystery that evolution & continued existence of biological life in our world came to be enabled by the SBL temperature & the atmospheric greenhouse effect.

<sup>4</sup> As fortune dictates, with local incidents like the recent Texas 2021 cold spell.

### Empirical Evidence for CO<sub>2</sub> Having No Effect on Radiative Cooling

There is plenty empirical proof that CO<sub>2</sub> at current trace level is not stopping radiative cooling, *i.e.*, does not perform as a viable greenhouse gas at this time.

However, using common sense reflection, our constant theme in this philosophical essay, the key process of radiative cooling of the planet is slowed down by clouds & water vapor, not carbon. Therefore, we may infer that there is no carbon climate emergency.

If all of these facts were widely known, the global hoax of the GND & NetZero would collapse.

That CO<sub>2</sub> is irrelevant is easily verified in empirical ways with solid evidence of all kinds. During the solar eclipse of August 21, 2017 no carbon greenhouse effect was observable as temperatures dropped.

In the real world, over the oceans, 70% of Earth's surface, low clouds are slowing down radiative cooling, as was noted recently by meteorologist Paquita Zuidema, University of Miami, Florida (Wood, 2012; Wood et al., 2016). Over continents, the remaining 30% of the planet, radiative cooling is reduced by clouds & water vapor circulating in huge swirling masses that are present, although highly variable in their amounts, both locally & over time.

An easy empirical proof that CO<sub>2</sub> at current trace level is not a viable greenhouse gas was by observing the solar eclipse Aug. 21, 2017.

My empirical proofs can be verified easily by anybody. No greenhouse gas effect from CO<sub>2</sub>, CH<sub>4</sub>, no climate emergency from carbon.

Empirical Proof #1: Solar Eclipse Aug. 21, 2017. During this event, at my home the eclipse was 87% total, at 250 miles from the strip of totality. The sun's glare was fading on the foliage outside my window, & the backyard electronic thermometer fell from 92° to 86° F within minutes. Dry air, no water vapor to stop radiative cooling. Infrared EM radiation let heat energy escape to space almost instantaneously, with no apparent obstruction by carbon molecules.

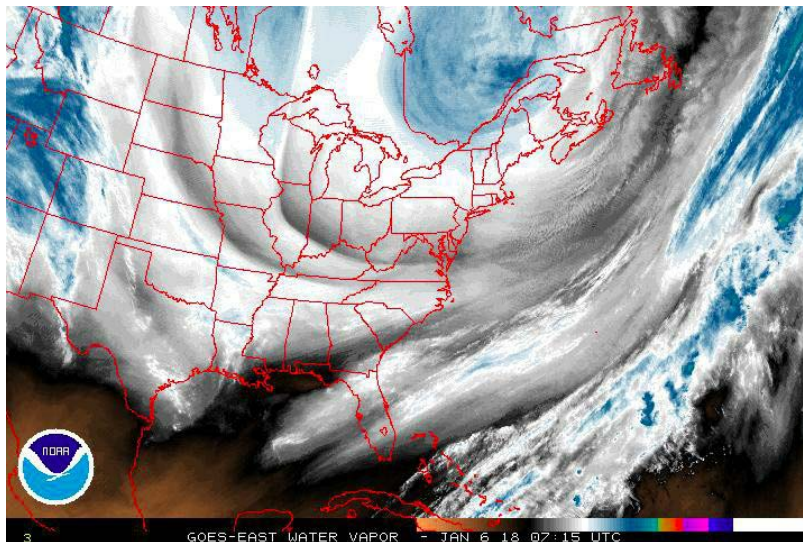


Figure 1. NOAA chart 6 Jan. 2018 showing zero water vapor in an area along the St. Lawrence River, covering the City of Baie Comeau, Quebec. There, night-time temperatures fell to -25° C, but in nights before and after Jan. 6, thermometer lows were only -16° C.

Empirical Proof #2: No Water Vapor 1/6/2018 @ Baie Comeau, Quebec. On Jan 6, 2018 temperature fell

to  $-25^{\circ}\text{C}$  but only  $-16^{\circ}\text{C}$  in nights before & after that date (official city records). The City of Baie Comeau was hit by a dry spot, gap with no water vapor. See NOAA chart in Figure 1, showing  $\text{H}_2\text{O}$  vapor distribution. The city is located where the dark spot is tangent to the river. With complete absence of water vapor that night, no greenhouse gas effect is observed from trace amounts of  $\text{CO}_2$  or  $\text{CH}_4$  methane, that might have stopped infrared rays from escaping to space.

Empirical Proof #3: This is my most common sense example, a decadal study initially undertaken with no thoughts about climate or weather, which only emerged gradually as the explanation for various curious phenomena seen as I kept watching my home *Heater Furnace Cycle* & began to record values of

$$K = (\Delta T) \times (\Delta t) \quad (4)$$

where  $\Delta t$  = cooling time in min &  $\Delta T$  = thermometer difference “home minus yard.” In theory by the heat equation,  $K$  should be a constant, in calm winds, if radiative cooling were absent or of minor importance. Heavy cloud cover prevents radiative cooling, & I observed constant  $K \approx 600$  for my home on such occasions. One day, when  $K \approx 240$  was at an extreme low value, I noticed NOAA water vapor charts had a hole with no  $\text{H}_2\text{O}$  vapor in my vicinity, that resulted in IR radiation from my home shooting BTUs out into space bigtime. No  $\text{CO}_2$  greenhouse gas effect seen. From variable water vapor: Big range of  $K \approx (240 \dots 600)$ .

Based on these observations, the value of  $K$  could be used to define a cloudiness index  $c = (K-240)/360$ .

Some more empirical observations of my furnace pause during cooling cycles, when there is a heat loss of  $0.1^{\circ}\text{Kelvin}$  or about 4,000 BTU = 3 min firing of my 80,000 BTU/hr nat gas furnace. Actual firing times are longer, & compensate for heat loss during the furnace cycle. Today, cloud cover beginning to move in, we have  $K \approx 420$ , a high value,  $K = 320$  being average.

The strangest effect was “bouncing,” when successive cycles came in pairs, one long followed by one very short in duration. I considered various types of possible explanations, until one day after several years the NOAA weather charts revealed that I was sitting under a weather front, that undulated along overhead, keeping me on the warm, wet side under heavy cloud cover during one cycle, then next on the cold side with dry air allowing radiative cooling.—I only hope that any meteorologist readers will agree that what I thought happened, really was what I did observe in all probability.

The inference is that climate change & carbon emissions are separate & unrelated issues.

### **Disputing Carbon Dioxide Feedback Influence on Climate**

Whatever causes global warming, it is not carbon in our air. Climate scientists seem to be playing with models that they themselves, for whatever reason, do not seem to fully understand.

At current trace level of 0.04%  $\text{CO}_2$  is not a viable greenhouse gas.

Therefore, it is totally unnecessary for humanity to quit relying on carbon fuels as their principal energy source, currently 82% of global energy consumption.

The main point of contention with official climate science is why world-wide temperatures on the ground average higher, at  $288\text{ K} \approx 15^{\circ}\text{C}$ , by the famous greenhouse effect, than the SBL temperature of  $255\text{ K}$ , attained in std atmosphere at 5,000 m altitude.

While climate change adherents play up the role of carbon dioxide,  $\text{CO}_2$ , our empirical proofs, above, show that the cause is  $\text{H}_2\text{O}$ , clouds & water vapor, not  $\text{CO}_2$ .

Climate scientists, who love playing with their models, all appear to be saying that we have a carbon crisis, carbon dioxide being the chief GHG (greenhouse gas, Wikipedia article). Their models cannot be verified

because the future has not yet arrived, often may be too complicated to understand fully, tend to make incorrect predictions, and easily can be manipulated in support of false theoretical conclusions.

Official climate science just recently, at this epoch, seems to have adopted a revised position & now admits that trace CO<sub>2</sub> does not operate as an effective GHG, exactly 0.04% of absorbed photons being intercepted by CO<sub>2</sub>, 99.96% are not. So we merrily may run our SUVs on gasoline. Methane is only 0.0002%, so eating my porterhouse steak is alright.

So why are carbon fuels still thought of as a danger to climate, said to lead to a warming catastrophe...??

Well, an excuse, an escape, has been constructed, whereby CO<sub>2</sub> still is claimed to influence climate in a major way. As a consequence, at this moment in the climate debate, the teetering pillar upon which rests the global climate change doctrine, and that we must examine next for its soundness & veracity, appears to be well represented in two articles by a widely cited author & his co-workers (Lacis et al., 2010; 2013).<sup>5</sup>

The authors right away in the 1st paragraph, & again later (Lacis et al., 2010), express their plan “to deny the deniers:”

It often is stated that water vapor is the chief greenhouse gas (GHG) in the atmosphere. For example, it has been asserted that about 98% of the natural greenhouse effect is due to water vapor and stratiform clouds with CO<sub>2</sub> contributing less than 2%. If true, this would imply that changes in atmospheric CO<sub>2</sub> are not important influences on the natural greenhouse capacity of Earth, and that the continuing increase in CO<sub>2</sub> due to human activity is therefore not relevant to climate change.

We next can dispute their proposal that trace amounts of carbon dioxide play a major role by supporting a feedback mechanism (Lacis et al., 2010; 2013), which authors say is needed to maintain high amounts of water vapor GHG in air. Their basic assertion, pointing to their model simulations, is that even trace amounts of CO<sub>2</sub> will warm the air initially, so much so, that water begins to evaporate & thereafter water vapor further will lead to additional warming. Missing in the earlier paper is any investigation into how much CO<sub>2</sub> is sufficient for maintenance of a stable, moderate climate, thus authors do not attempt to answer their own question. In their more recent work, the 2013 article they try to correct this by citing the Clausius-Clapeyron relation, which implies evaporation of water increases strongly with rising temperature. However, there is no quantitative study offered, for how much CO<sub>2</sub> is needed, only simulations casually presented, which cannot be adduced for inferring a causal link.

This goes back to David Hume’s skeptical view of causality, but here we have even less than the flames shooting up when a fresh log is put in the fire, which is one of Hume’s examples. There is a parallel between Hume’s unscientific discussion of his fireplace and model simulations reported blackbox style, without including science details. Theoretical conclusions being based on simulations, bulk model calculations, using the authors’ own GISS ModelE (Schmidt et al., 2006), there is insufficient detail presented, for making credible that the effect depends on the presence of trace carbon dioxide.

As authors describe it, the feedback mechanism requires a curious long-time maturation process that seems incompatible with the turbulent nature of climate & weather. Although the mechanism is said to function even under current conditions of trace level atmospheric carbon compounds, they claim to demonstrate that it fails with zero CO<sub>2</sub> in air. The simulation ends with descent into an ice age, when excessive cloudiness raises

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<sup>5</sup> Cf. Wikipedia article “Greenhouse Gas.”

planetary albedo.<sup>6</sup>

The run with zero CO<sub>2</sub> is based on the *q-flux ocean*, a simplified thermodynamic ocean part of GISS ModelE, instead of their main model, which would have been more accurate. No explanation is given for this change of model selection. In the earlier 2010 paper no physical details are offered concerning how the mechanism is to manage this feat, no mathematical analysis is presented. There is lack of clarity of these numerical simulations. Although the greatly amplified later version is offered (Lacis et al., 2013), the same or similar objections apply of lacking transparency, insufficient detail to make results credible, with some of the most important results tucked away at the end of the paper.

The most glaring conflict with observable empirical data is the assertion that water vapor & clouds supply only 75% of the greenhouse effect, when our example observations suggest otherwise, absent atmospheric water there is no stopping radiative cooling.

In reality, there can be little doubt that, during the nine-day water hydrological cycle in contrast to the feedback mechanism requiring long-time maturation, driven by solar power, warming of oceans, lakes & soil causes massive evaporation of water, replenishing all of the atmospheric H<sub>2</sub>O that was precipitated out, barring excessive albedo.

Our own empirical observations, reported above, confirm that CO<sub>2</sub> at current trace levels of 0.04% makes no discernible contribution to the greenhouse effect, as it fails to stop the escape of infrared photons to space by absorption & re-radiation.

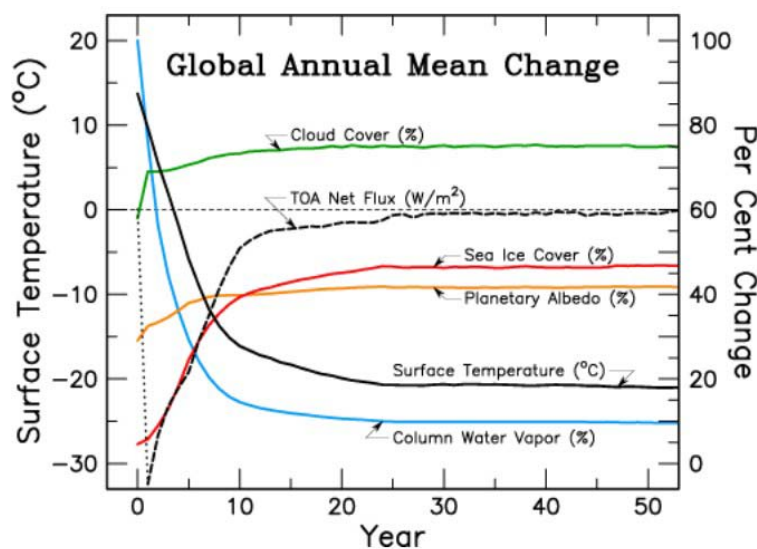


Figure 2. Excerpt from Lacis et al. 2010, their Figure 2: Time evolution of global surface temperature, top-of-atmosphere (TOA) net flux, column water vapor, planetary albedo, sea ice cover, and cloud cover, after zeroing out all the non-condensing greenhouse gases. The model used in the experiment is the GISS 2° × 2.5° AR5 version of ModelE with the climatological (Q-flux) ocean energy transport and the 250 m mixed layer depth. The model initial conditions are for a pre-industrial atmosphere. Surface temperature and TOA net flux utilize the left-hand scale.

<sup>6</sup> This may have been the case recently in Texas, with albedo perhaps increased from aerosol clouds circling the globe caused by polluted skies.



Although the summary presentation of their simulation precludes analytical discussion and/or comprehension, the paper itself appears to offer a complete explanation of how it happened that its authors ended up with erroneous conclusions: As can be seen in Figure 2 (excerpt of Figure 2, in Lacis et al., 2010), when the simulation terminates, high albedo under increased cloud cover with low humidity has caused descent into an ice age. Completely missing in the paper is the next required logical step in proving that the fabulous feedback mechanism is real, a simulation to demonstrate conclusively that adding trace amounts of CO<sub>2</sub> to the same model would result in sufficient water vapor, reduced albedo, reduce cloud cover with no ice age. Although this omission seems meant to have been repaired in the 2nd paper, again, the casual presentation of the simulation, almost like an afterthought, placed in a late section (it could qualify for a front & center position), does not instill confidence, failing to discuss or explain the model, that is barely mentioned, in any detail.

As a concluding remark, atmospheric gases & ice age causation generally are thought to be linked, but there could be other reasons for an ice age to arise, such as volcanism & impact winters (Wikipedia article). Large oceanic (thin crust) meteorite impacts can cause volcanism (Burchard, 2016). Most recently, the *Austral-Asian Tektite Impact* in the South China Sea @ 800 ka (Burchard, 2018) is thought to have intensified the Pleistocene Ice Age, itself caused by the *Eltanin Impact* in the Bellinghausen Sea @ 2.588 Ma discovered by Frank Kyte in 1977.<sup>7</sup> The Pleistocene Ice Age was reinforced at the end of its most recent cycle 12,900 BP, through the *Younger Dryas Comet* impact in the Great Lakes, which was discovered in 2007 by Richard Firestone & his team (Burchard, 2017). The impacting comet fragments excavated the five (5) lakes & caused the Megafauna Extinction, also creating the *Carolina Bays* along the Atlantic Coast as tektite-like ejecta.

Summarizing our examination of these two articles, the water evaporation feedback mechanism appears to be real, & a quantitative analysis would be welcome, should be possible & may have been done already.<sup>8</sup> However, we safely can dismiss the outlandish proposal of trace CO<sub>2</sub> playing a role by significantly advancing evaporation, esp. if this proceeds in an unrealistic, long-lasting time frame. This has not been demonstrated to exist, either theoretically, or by experiment, nor by the simulations of these papers.

### Summary and Conclusions

According to Plato's Cave Allegory, we can access phenomena in our world only indirectly.

However, by means of our brain, its powerful cerebral cortex, we are able to synthesise and compose a simplified orderly model of the universe, an interior cosmos.

Our performance in life depends on a well-maintained cosmos, giving primacy of holistic truth finding to our maturing common sense.

This allows us to conclude that atmospheric carbon-based molecules have no significant influence on climate at present trace levels.

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<sup>8</sup> This topic would be outside the scope of this philosophical review.

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