

Climate Scientists Misapplied Basic Physics

A mistake in the climate model architecture changes everything—trapped energy just reroutes to space on another path

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Dr David Evans earned six degrees related to modeling and applied mathematics over ten years, including a PhD from Stanford University. He was instrumental in building the carbon accounting system Australia uses to estimate carbon changes in its biosphere, for the Australian Greenhouse Office.

There are serious architectural errors in the basic climate model. When fixed, it shows future warming due to carbon dioxide will be a fifth to a tenth of official estimates. Less than 20% of the global warming since 1973 was due to increasing carbon dioxide.

Increasing carbon dioxide “thickens the blanket”, reducing the heat radiated to space by carbon dioxide. In reality, the blocked heat mainly just reroutes out to space by being radiated from water vapor instead, all in the upper atmosphere. In the current climate models, however, that blocked heat travels down to the Earth’s surface where it is treated like extra sunlight, and less heat is radiated to space from water vapor.

This discovery debuted recently on blogs, withstanding detailed public scrutiny, and is in a paper currently undergoing peer review.

Like most scientists, I am convinced carbon dioxide is a greenhouse gas and causes some global warming. I agree that carbon dioxide levels have been rising. My dissent is about *how much* warming it causes.

Basic Climate Model

The basic climate model, used to calculate the Earth’s sensitivity to carbon dioxide, dates back to 1896. It is the cornerstone of the carbon dioxide theory of global warming. Predating computer simulations, it applies “basic physics” to the climate.

The idea that “it’s the physics” makes the carbon dioxide theory impregnable in the minds of the establishment.

Despite the numerous mismatches between theory and climate observations to date, many climate scientists remain convinced that increasing carbon dioxide causes dangerous warming essentially because of the basic model, rather than because of the huge opaque computer models. The basic model ignited concern about carbon dioxide; without it we probably wouldn’t be too worried.

There is no empirical evidence that rising levels of carbon dioxide will raise the temperature of the Earth’s surface as fast as the UN’s Intergovernmental Panel on Climate Change (IPCC) predicts. The predictions are entirely based on calculations with models.

The basic climate model, like any model, simplifies reality by making approximations, trying to capture the essence of the situation with just a few vital factors. The big computerized climate models take more factors into account, but are imbued with the same ideas and principles—they have

essentially the same flaws that we discuss here for the basic model.

Clashes with Reality

In modelling, it is difficult to know before testing whether a model will happen to work well enough. It is often impossible to know the impact of the errors introduced by the inevitable approximations, or whether anything vital has been omitted.

In fields where experiments can be performed quickly, like chemistry or electronics, a model is tested within hours or days and quietly discarded if it turns out not to work. But climate changes slowly, so testing the basic climate model has taken decades.

There are three fundamental discrepancies between the carbon dioxide theory of global warming and reality:

First, it has not warmed since the late 1990s. We've had increasing carbon dioxide—a third of all human carbon emissions in history have occurred since 1998—but not the commensurate rise in global temperature predicted by the IPCC. The First Assessment Report of the IPCC in 1990 predicted warming of 0.2 to 0.5 °C per decade for the ensuing decades, whereas it warmed at most 0.17°C per decade since then (all during the 1990s). This is not a matter of interpretation or ambiguity; it is simply a matter of downloading any of the five main global temperature datasets.

Second, all mainstream climate models predict a “hotspot”, a warming about 10 km or 6 miles up, in the tropics, caused by an ascending water vapor emissions layer, during periods of warming such as the 1970s to 1990s. This is crucial, because over half of their predicted warming is from this change in water vapor; less than half is directly due to increasing carbon dioxide.

Our only suitable instruments for detecting the hotspot are weather balloons—released from 900 locations twice daily, thirty million since the 1950s. They show no hotspot, and

indicate that the water vapor emissions layer descended slightly instead.

Satellites are unsuitable because they intrinsically aggregate information from several vertical kilometers into each data point, while the predicted ascent is only tens of meters. Even so, Dr Roy Spencer, who leads one of the two teams analyzing satellite temperatures for NASA, used a different mix of microwave channels to specifically look for the hotspot in May 2015—and concluded: “But I am increasingly convinced that the hotspot really has gone missing.”

Third, changes in temperature did not *follow* changes in carbon dioxide over the last half million years, as predicted by climate scientists in the 1990s, but rather the other way around.

The Modeling Flaws

The basic model evidently fails to approximate our climate. There are two main modeling flaws:

First, it treats different climate influences as interchangeable, so long as they cause the same radiation imbalance—one size fits all.

The basic climate model calculates the surface warming due to increased carbon dioxide as equal to *the surface warming due to increased absorbed sunlight*, where the increase in absorbed sunlight is the same as the reduction in emissions of heat to space by carbon dioxide.

It is structurally unable to distinguish between increased carbon dioxide, which blocks some heat from escaping to space from the upper atmosphere, and increased sunlight, which warms the surface. Physically, this is rather implausible.

Second, the architecture of the basic model omits any feedback that is not a response to surface warming. (A “feedback” is a response to a change that affects whatever caused the change in the first place. Feedbacks mainly determine our climate.)

For instance, surface warming causes more evaporation from the oceans and thus more water vapor, but water vapor is the main greenhouse gas so this might in turn cause more surface warming. This “water vapor amplification” is the main feedback in the climate models, amplifying surface warming due to any cause. In the models it causes the water vapor emissions layer, which emits heat to space, to ascend and thus cool, reducing its emission of heat to space (warmer material emits more heat) and causing the hotspot. However, as mentioned above, in reality there was no hotspot.

What significant feedbacks might have been omitted because they are not in response to surface warming? One possibility is the newly-proposed rerouting feedback. Increasing carbon dioxide makes it harder for heat in the upper atmosphere to escape to space, so it instead warms the neighboring water vapor molecules, which thus emit more heat to space. It emits more, so the water vapor emission layer must have descended slightly into warmer air. This is compatible with the non-observation of the hotspot.

In other words, when increasing carbon dioxide makes it more difficult for heat to

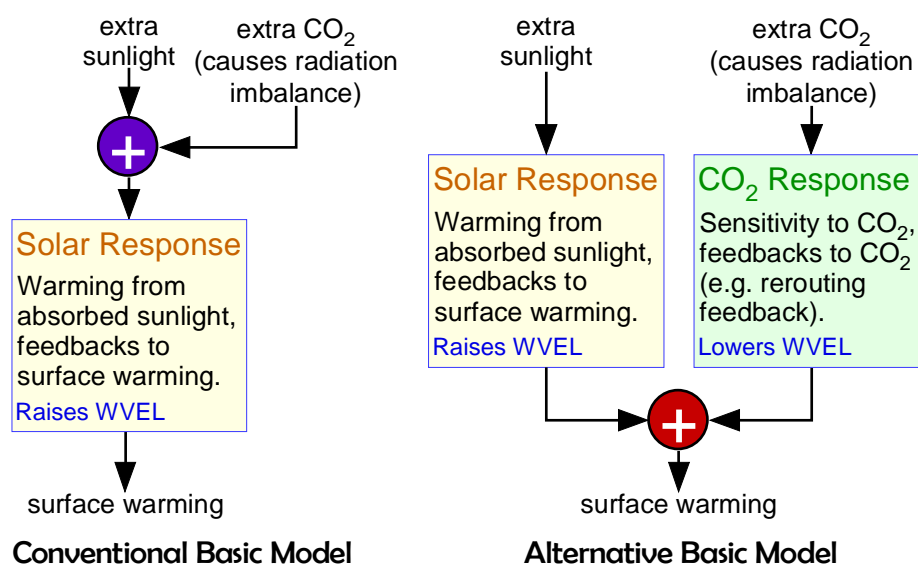
radiate to space on the electromagnetic wavelengths at which carbon dioxide emits, most of the blocked heat simply *reroutes* out to space on the water vapor wavelengths instead.

This feedback takes place high in the atmosphere, so it is not a response to surface warming— it cannot exist in the conventional basic climate model; it is in its blindspot.

Fixing the Flaws

The conventional models seemed to work for temperature (though not the hotspot) when the world was warming in the 1970s to 1990s, but have failed since then. A model that has the wrong architecture would act like this— correct sometimes by accident (especially if tuned to fit the data), but failing a lot of the time too, and no amount of hammering on the model can make it work all the time. It’s just wrong.

An alternative basic model has been developed that fixes the architectural errors in the conventional basic model. It allows for rerouting, and instead of applying the increased-sunlight response to the influence of carbon dioxide it applies a response specifically for carbon dioxide.



WVLE = Water vapor emissions layer, the top layer of the water vapor, that emits heat to space on the water vapor wavelengths. An ascending WVLE creates the “hotspot” and causes more than half of the warming predicted by conventional climate models. But observations show the WVLE descending and no hotspot, because the CO₂ response has outweighed the solar response in recent decades. sciencespeak.com

Putting the climate data into the alternative model, the carbon response is found to be much weaker than the solar response—that is, a radiation imbalance (or “forcing”) due to increased carbon dioxide causes much less surface warming than the same radiation imbalance due to increased absorbed sunlight. The conventional basic model applies the strong solar response to the influence of carbon dioxide—might this modeling error be the root cause of climate alarm?

The alternative model finds that the increasing carbon dioxide most likely caused less than 20% of the global warming of recent decades, and shows that there will most likely be less than 0.5 °C of surface warming for each doubling of carbon dioxide, compared to the 1.5 °C to 4.5 °C currently estimated by the IPCC. (The first doubling of carbon dioxide since pre-industrial times will probably occur by around 2080.)

Although the carbon dioxide blanket shrouds the whole Earth physically, it only affects outgoing heat on the wavelengths at which carbon dioxide absorbs and emits. Only a fifth of the heat emitted to space is on these wavelengths. The thickening of the “carbon dioxide blanket” just redistributes the heat between the wavelengths at which heat escapes to space—in the long term the same amount of heat must escape, because outgoing heat must match the incoming energy from sunlight. The heat blocked by the increased carbon dioxide is merely rerouted out on other wavelengths.

The conventional models assume that extra carbon dioxide causes a sympathetic *decrease* in radiation escaping on the water vapor wavelengths *as well*, leaving it to just the surface and cloud tops to emit more heat—so the surface must warm a lot. This is the amplifying water vapor feedback of the strong solar response, the evidence for which would be a hotspot when the surface is warming. But the rerouting feedback causes an *increase*

in radiation to space from water vapor, consistent with a descending water vapor emissions layer—so the surface need warm only a little.

It appears the world has been led astray by a primitive model, a first attempt at modelling the climate that doesn’t really work. Simply fixing that basic model implies the carbon dioxide will never be much of a problem.

Politics

Do you suppose that pointing out the flaws in the basic climate model that started it all, in conjunction with the failure of reality to match its predictions, will have much effect on the believers in the theory of catastrophic anthropogenic global warming?

Probably not, for as J.K. Galbraith said in *The Affluent Society*, “We face here the greatest of vested interests, those of the mind.” Then there are the billion dollars a day spent worldwide on renewables and government climate research, increasing bureaucratic control over energy, Big Green, and, perhaps most importantly, the credibility invested in the idea by the current elites—who often imply that their cleverness on climate change is a reason they are fit to rule.

The world has spent \$100 billion on global warming research since 1990, and we have not found any actual empirical evidence that carbon emissions caused most of the recent global warming. Evidence that says nothing about the *cause* of global warming, such as arctic sea ice, is irrelevant. If there really was any evidence that rising carbon dioxide caused the global warming, don't you think we would have heard all about it?

Instead the public has heard a deafening silence about the missing hotspot and the non-warming of the past 17 years. The public don’t even know there *should* be a hotspot, or that it is crucial and central to the alarm—whereas if it was present, everyone would be told every glorious detail, as the story is no more complex than the draw at Wimbledon.

So there doesn't appear to be much of a hunt for the truth going on, nor an honest reporting; instead the public is being hustled into acquiescing to—what?

The Paris Conference in late November 2015 to address climate change, like the Copenhagen Conference of 2009, aims ultimately to establish a global bureaucracy that can limit carbon emissions. That body would therefore be able to interfere in any country and override its national government. Inevitably it would accrete more powers: experience with federations like the USA or Australia show centralized government becomes ever more powerful at the expense of the periphery.

So the Paris treaty would eventually lead to the greatest loss of national sovereignty ever, more than any war or election. Yet we hear nothing of this in our media. Instead we are told incessantly of ... storms, arctic ice, how many government scientists believe in the theory, or the conspiracy theory about how “evil deniers” are in the pay of big oil (untrue, I'm not, not that any “reporters” called up to ask).

A disinterested onlooker would long ago have judged the carbon scare bogus: the hotspot was verified as missing beyond reasonable doubt by 2000, the world stopped warming in 1998, and by 2003 it was universally acknowledged that temperature led carbon in the past (which didn't stop Gore's movie, made in 2005, presenting the ice cores as its only evidence that carbon caused temperature).

History is unlikely to be kind to a political class who “believed” in an obviously failing model. They should have known better; it's not as if

they were not told. The Greens, in particular, will be big losers. That class encouraged a profligate carpetbaggery to develop. The climate change industry worldwide is enriching some people with over a billion dollars per day of taxpayer money, yet is woefully inefficient at reducing carbon emissions.

Our permanent government of bureaucracy, academia, and media must duly be regarded as stupid, incompetent, and ideological for not having seen through it, or worse, for continuing to knowingly foist it on us for their own purposes. (In general; there are some honorable exceptions.)

Who benefits? The folks promoting the alarm tend to be in line for tax money without accountability, paid whatever they say they are worth. Most of the rest of us work under market discipline and are forced to pay taxes. Big government, obviously, becomes bigger.

The burgeoning climate establishment will be like pan-European government writ global—excessively bureaucratic and upholstered, sclerotic, and increasingly unanswerable to its people. Europe, the main promoter of climate alarmism, coasts on past achievements but nowadays is increasingly just an over-governed idiocracy, as illustrated by their folly over carbon (especially the Germans). But everything's fine because their bureaucrats and elites have an exaltedly good time, with enough wealth and power to make a medieval cleric jealous. The global warming scare is their Trojan horse for extending that arrangement globally.

While our democracies still have meaning, ask your representatives to vote wisely in Paris.