

# **Comprehensive Refutation of the Radiative Forcing Greenhouse Hypothesis**

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## **ABSTRACT**

The author's 2013 paper "Planetary Core and Surface Temperatures" presented what amounts to a totally new paradigm in climate change science. The hypothesis can be used to explain all temperatures and the main heat transfer mechanism in all planets. Only one hypothesis can be the correct one, and the issue as to which it is can be resolved using standard laws of physics. The study of heat transfer mechanisms lies wholly within the discipline of physics, and yet it appears that few, if any, physicists have been asked to review the physics that is being presented by climatologists, whose papers are referred to by the International Panel on Climate Change (IPCC) and many scientific authorities, including NASA. It appears that most physicists have avoided the debate, although some are now looking into it and finding false physics being used.

In physics it has been explained in the 19th century that force fields like gravity will establish a situation in which temperatures do not level out as they would in a horizontal plane. Instead a stable non-zero temperature gradient is formed and this is a state of equilibrium. Because it is such a state, it was shown in the above 2013 paper that we cannot assume that heat transfers by non-radiative molecular collision processes need always to be from a warmer object to a cooler one. Imagine what must happen when the Sun rises and starts to warm the tops of clouds, thus disturbing the state of equilibrium that was closely the case the night before. There is now more energy but the temperature gradient will tend to restore its previous value. This means that the whole thermal profile (graph) will rise to a higher (but parallel) position with downward heat transfer being necessary towards warmer regions. Climatologists have completely overlooked this process and wrongly assumed the required energy came from atmospheric radiation that caused a heat transfer into the warmer surface.

Because of this assumption, there is now an implication in energy diagrams, such as those from NASA, that the Earth's surface temperature is determined primarily by the assumed combined effect of solar radiation and about twice as much radiation from the colder atmosphere. This assumption is shown to be contrary to standard physics, and empirical evidence is presented that proves their assumption to be incorrect. Climate change is shown to follow natural cycles that are probably regulated by the Sun and planetary orbits. A possible mechanism for this regulating is suggested.

## 1. Overview and background

The reader will be well aware that it is claimed that humans are causing increased levels of carbon dioxide in the atmosphere and that so-called greenhouse gases (including water vapor) are assumed to be raising the average (or "mean") surface temperature of Earth. School children are being taught that carbon dioxide forms a "blanket" that keeps the surface warmer, despite there being only about one molecule of carbon dioxide for every 2,500 other air molecules. This blanket is, however, somewhat colder up in the atmosphere than the warmer surface below, as you would know if you've been high up on a mountain. In fact, in the lower layer of the atmosphere it gets colder by nearly 7C degrees for each kilometer of altitude.

The above concept of a cold blanket raising the warmer surface temperature is not, however, the official explanation given by the International Panel on Climate Change (IPCC) or NASA. Instead, they say that the extra warming is due to so-called "back radiation" from greenhouse gases that are, mostly, water vapor (about 1% to 4%) and far less prevalent carbon dioxide, methane, nitrous oxide and some others. Some say that this radiation slows the cooling of the surface, but in fact NASA energy diagrams clearly imply that the observed temperature of the surface can be explained by adding to solar radiation about twice as much back radiation.

As outlined by the author in his 2012 paper "Radiated Energy and the Second Law of Thermodynamics"  $\square$  the back radiation undergoes resonant (or "pseudo") scattering when it strikes a warmer surface. In fact, as is well-known, this radiation from the colder atmosphere does not penetrate water surfaces by more than a few nanometers. Furthermore, such radiation can only slow that portion of surface cooling that is itself by way of radiation.

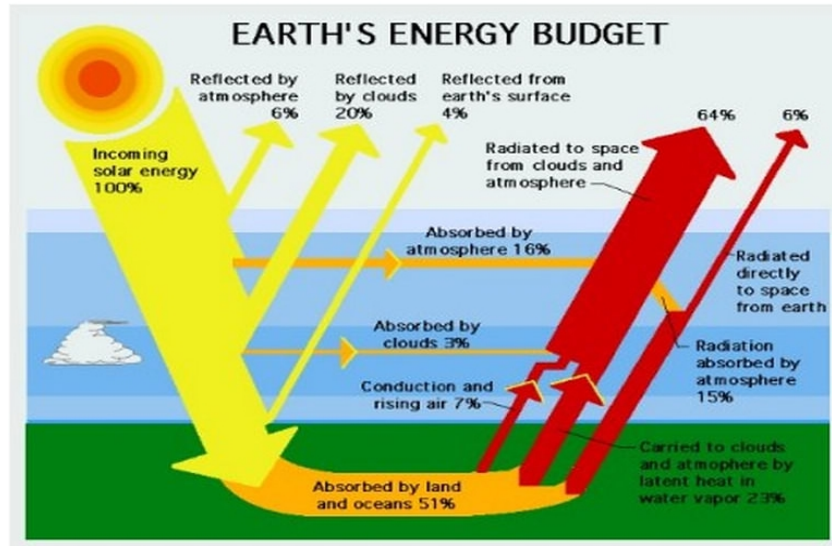
As will be seen in this paper, the Sun's radiation which gets through the atmosphere and reaches the surface is simply far too little to allow us to understand from laws of physics why the surface temperature is far hotter than that radiation could make it. Climatologists assumed it must be the back-radiation that is helping the Sun. "What else?" they probably thought. The answer to that question lies not in back-radiation, but in what was explained by the brilliant 19th century physicist, Josef Loschmidt, namely that gravity forms the observed temperature gradient seen in every planetary troposphere, that being the lowest layer of the atmosphere.

Ironically, it is the radiating properties of these "greenhouse gases" that actually have a temperature-leveling effect which works against the gravitationally-induced temperature gradient, reducing it in magnitude, as is well-known for water vapor. This reduction in the temperature gradient causes the whole plot of temperature against altitude to rotate about a central region in the troposphere so as to maintain radiative balance with the incoming solar radiation. Hence that graph rotates downwards at the surface end, causing surface cooling by these greenhouse gases. There is a study in the Appendix of the author's 2013 paper (and his book "Why It's Not Carbon Dioxide After All") which presents real-world data supporting the conclusion that water vapor cools the surface, and that puts a real spanner in the works for the Radiative Forcing Greenhouse Hypothesis.

## 2. Errors in the Radiative Forcing Greenhouse Hypothesis

There is a law in physics (called the Stefan-Boltzmann Law) which tells us how much radiation will be emitted from what is called a "blackbody" at any given temperature. It also works in reverse, telling us to what maximum temperature a uniform flux of radiation will raise a blackbody. Strictly speaking, there is no such thing as a blackbody and it would have to be in Space anyway so that there is no other cooling by processes other than radiation. These other processes include conduction and a form of convection called "free" or "natural" convection. In such processes the transfer of heat occurs when molecules collide and share their "kinetic energy" which is energy associated with motion.

The Earth's surface is not a blackbody because it loses thermal energy by other processes in addition to radiation. These other processes make it harder for the solar radiation to achieve a blackbody temperature because there are limited hours in the day. A black asphalt road surface with the Sun directly overhead reaches a temperature that is probably about as hot as the solar radiation could achieve. However, the Earth is not covered with black asphalt and about 70% of its surface is water into which solar radiation penetrates several meters. The energy diagram below shows what happens to the solar radiation as some of it is reflected and some absorbed before the rest of it reaches the surface. There is a more detailed discussion of this in the author's website on this page. [\[1\]](#) When we use the Stefan-Boltzmann Law and the flux shown as entering the surface we get a cold mean temperature of  $-40^{\circ}\text{C}$ .



You may be thinking that you have felt the Sun warming you to more like  $+40^{\circ}\text{C}$  than only to  $-40^{\circ}\text{C}$ , but the latter is the average (mean) temperature which could be achieved at the most. In fact it is even colder because the radiation varies for different locations and the whole surface is not covered in black asphalt.

So climatologists realized that the solar radiation was not sufficient to explain the Earth's surface temperature (let alone that on Venus) and so they abandoned the conjecture that carbon dioxide acted like a "blanket" slowing the cooling of the surface because, after all, they could not explain the surface temperature in the first place. The whole hypothesis that the Sun's radiation impinging on the surface heats that surface and then the warmed surface heats the adjoining atmosphere is not correct globally. Yes, it may well happen on a clear day where the Sun passes almost directly overhead, but that is only a small portion of the globe. On Venus it cannot happen anywhere because the solar radiation reaching its surface is about a tenth of that for Earth and about one-thousandth of what would be required to maintain the Venus surface temperature of about  $460^{\circ}\text{C}$ .

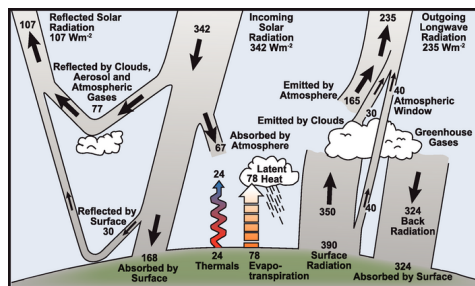
It seems, however, that climatologists had an agenda that they wanted to stick to, perhaps to ensure funding for themselves and their universities. Rather than acknowledging their error about a carbon dioxide blanket, they apparently wondered what else it could be that explained why the surface was in fact far hotter than the solar radiation could make it. In fact it is considered to have an average global temperature of about  $15^{\circ}\text{C}$  and is thus about 55 degrees hotter than the above  $-40^{\circ}\text{C}$  which itself is a little less cold than the temperature that the variable solar flux could achieve. The IPCC website refers to a difference of only "33 degrees" but that is the least of their errors.

It is a fact of physics that, to raise a temperature, there must be a net input of thermal energy. This is not attained, for example, just by high pressure as some have thought. What climatologists now put forward was an astonishing idea (not at all supported by the laws of physics) that radiation from the cold atmosphere somehow caused heat into the surface.

Firstly, the concept that there can be an effective heat transfer via radiation from the cooler atmosphere to the warmer surface would be a violation of the Second Law of Thermodynamics, because that law applies to every independent process or a combination of dependant processes that are interacting. It cannot apply, for example, to the net effect of an initial radiation process supposedly transferring thermal energy into the warmer surface, followed by one or more separate independent processes which, in total, transfer more thermal energy from the surface to the atmosphere. The first process would violate the Second Law because, if the energy in the radiation were thermalized (converted to molecular kinetic energy) in the surface, then it could "escape" by conduction and remain in the surface for months, perhaps from summer to winter.

Here is another way of explaining it. Because the Second Law is about maximum entropy production, and entropy can be affected by changes in gravitational potential energy, what climatologists claim about "net" effects being all that are required by the Second Law is akin to saying water will flow up a creek to a lake at the top of a mountain provided that it will subsequently (maybe days later) flow further down the other side.

Let us study the revised energy budget diagrams (such as that below by NASA) and we now see a whole lot of "back radiation" from the atmosphere supposedly helping the solar radiation to (in combination) produce the observed global mean surface temperature.



At the left you will see the revised NASA energy budget diagram now showing "back radiation" which is about twice as strong as the solar radiation. It has been admitted by climatologists that this 324 figure for back radiation is merely a calculated figure that makes the energy flows balance at the surface. In fact, the Stefan-Boltzmann Law lets us calculate that there could not possibly be much more than half that.

However, not only is the back radiation overstated, but the whole conjecture that we could just add solar flux and back radiation flux, then deduct the thermal and evaporative cooling to get a net figure to insert into Stefan-Boltzmann calculations is totally fictitious physics. This is because the Stefan-Boltzmann Law is derived for a single radiating body. For those who have studied physics, the calculations are based on the integral of the Planck function. Then, as we know from Wien's Displacement Law, the temperature is proportional to the peak (or modal) frequency. Hence, combining radiation from two sources (with Planck functions that barely overlap) would not have the same peak frequency as would radiation from a single source like a sun three times as powerful as the Sun we know. As mentioned above, the author's 2012 paper [explains](#) what happens.

A simple experiment can confirm that we do not get the correct temperature if we add two or more radiative fluxes. Suppose we place an electric bar radiator at just the right distance so that it warms our cheek to a comfortable 42°C. On the absolute (K) scale used in physics, we add 273 degrees and get 315K. To achieve double the temperature (630K) we would need 16 times the flux from a single source. If instead we just use 16 similar radiators we do not get cooked at 357°C. But if we misused Stefan-Boltzmann in the way that climatologists do, then our calculations would yield 630K or 357°C.

Yet another way to understand why the radiative forcing greenhouse hypothesis is false is to carry out a study such as that in the Appendix of the author's paper "Planetary Core and Surface Temperatures" [1](#) where it can be seen that the main greenhouse gas water vapor cools the surface leading to lower temperatures in moist regions than in dry ones.

Temperature (C)	30.8	33.0	35.7
	20.1	21.2	21.9
	Wet	Medium	Dry

### 3. The Paradigm Shift in Climate Change Science

In the 19th century Josef Loschmidt was the first to estimate the size of air molecules, and he understood how those molecules are affected by force fields like gravity, just as any other object would be. Let us consider two imaginary horizontal planes of molecules that are so close that there are no other molecules between the planes. We further simplify it by assuming all molecules in a plane have the same kinetic energy, with the mean kinetic energy determining temperature. As molecules move from the upper plane to the lower one they are accelerated by gravity in such a way that there is an equal swap between molecular kinetic energy and gravitational potential energy. When the state of maximum entropy (called "thermodynamic equilibrium") is attained there will be no further heat transfers and this means that, by the time a molecule arrives at the other plane its kinetic energy will match that of the molecules in that plane. Hence the molecules in the upper plane have less kinetic energy than those in the lower plane and so we have a non-zero temperature gradient.

The above shows why Loschmidt was right, and yet climatologists have ignored what he said and, in some cases, gone overboard to try to prove him wrong with invalid thought experiments. For more discussion of this science please read the author's 2013 paper and, for a refutation of an attempt to prove Loschmidt wrong see this page. [4](#)



We also have experiments which prove that force fields produce a stable temperature gradient. For example, in a vortex cooling tube the centrifugal force creates a radial temperature gradient.

The above diagram of a vortex tube shows how air is pumped in and then starts to move down the tube, with that in the center coming out colder and that in the outer region being hotter than the original air. Hence there has been a heat transfer (along any radius of the tube) which involved a transfer of thermal energy from the cool central region to the warmer outer region. The same can happen, and must happen in every planetary troposphere when new thermal energy from the Sun is absorbed mostly in the upper troposphere where the temperatures are cold enough for the solar radiation to have a warming effect. On Venus, for example, warming can only occur where the temperatures are less than about 150°C and so, over the course of the four-month-long Venus day, this new thermal energy makes its way (via molecular collisions) downwards towards hotter regions and eventually some of it into the 460°C surface.

The same "heat creep" process also happens below any solid surface, transferring thermal energy down through the crust and mantle all the way to the core. So what we are saying here is that solar radiation maintains the existing temperatures in all planets even that in the core. Some planets may well have internal energy release due to fission or radioactive decay, or even because of overall planetary compression as for Jupiter. But it is highly unlikely that these processes maintain the core temperatures at just the right levels so that the temperature gradient is what we would calculate as being due to gravity.

So we have a whole new paradigm in which we may think of temperatures being anchored at an effective radiating altitude. Then, because of the fact that the temperature gradient is the state of thermodynamic equilibrium we can deduce directly from the Second Law of Thermodynamics that this "heat creep" process is not only possible, but absolutely must be happening. How else would the core, mantle, crust and surface "know" what temperature they should be so as to ensure the temperature gradient was just right all the way out to the radiating altitude? The chance of this happening at random is infinitesimal. So too is the chance that the radiative forcing greenhouse hypothesis is right.

What does the future hold now that we can be confident that carbon dioxide does not warm? The world needs to cease all actions that would not otherwise have been taken but for the false claims that carbon dioxide warms the surface. Should we apply the "precautionary principle" just in case? No. There is no possibility that carbon dioxide could warm. The hypothesis should have been discarded as soon as it was obvious that radiation reaching Earth's surface is not the primary determinant of the mean global temperature.

Are renewable energy sources worth pursuing anyway? In most countries with dense populations there simply is nowhere near enough land to supply all their energy needs from sources like biofuels, wind or solar. Geothermal appears to be the most viable because, as we have seen, the Sun's energy is trapped underground and any of that energy we draw from there will be replenished with energy that came from the Sun and entered the crust, often maintaining temperatures of over 250°C at depths around 10 km to which boreholes can be drilled. They drill two close holes, connect them at the base with a fracking process, and then pump water down one and drive turbines with the steam coming out the other.

What about the warming we have observed? Will it continue? Well there is compelling evidence of various superimposed climate cycles that are all regulated by processes that we can start to understand now. It is evident that there has been a cycle of about 1,000 years with the Medieval Warming Period nearly 1,000 years ago, then the Roman Warm Period that was warmer and an even warmer period just over 3,000 years ago. Superimposed on this there is a 60-year cycle which reached maximums around 1939 and 1998. So it was not surprising that alarm was generated in the 30 years or so when both cycles were rising until about 1998. Since then, satellite measurements (as seen on [drroyspencer.com](http://drroyspencer.com)) have shown no significant overall warming, and are unlikely to do so until after the year 2028. There may be warming in the following 30 years, but after that the 1,000 year cycle should turn to cooling with the next "Little Ice Age" around the years 2400 to 2600.



Do the planets hold the key? The above appears on the author's website [whyitsnotco2.com](http://whyitsnotco2.com) where the source is linked. It is derived from the scalar sum of the angular momentum of the Sun and the planets, and yet it shows the climate cycles we have been discussing. It may well be that magnetic fields from the planets (which we know reach to the Sun) affect the direction and perhaps intensity of cosmic rays which subsequently affect cloud formation on Earth. The temperature at the effective radiating altitude is determined after about 20% of the solar radiation has been reflected back to Space. That percentage would only have to vary between 19% and 21% for all climate change in the last 3,500 years to be explained. In all that time, annual mean global temperatures have varied by less than about 1%, so in fact the climate is quite stable and such variations do not impose serious life-threatening problems for mankind. Many more lives will be lost if the world continues to waste over a trillion US dollars a year on a problem that does not exist, rather than directing such funds to humanitarian aid.

## Referenced URL's

- [1] <https://ssrn.com/abstract=2876905>
- [2] <https://ssrn.com/abstract=2883465>
- [3] <http://whyitsnotco2.com/PSI.html>
- [4] <http://whyitsnotco2.com/WUWT.html>