

November 26, 2017

To:

Don Wuebbles	Coordinating Lead Author, Climate Science Special Report 2017
David Fahey	Coordinating Lead Author, Climate Science Special Report 2017
Kathy Hibbard	Coordinating Lead Author, Climate Science Special Report 2017

Subject: The Climate Science Special Report and ways forward

Dear Don, David, and Kathy,

Congratulations, as Coordinating Lead Authors, for compiling the [Climate Science Special Report](#): Fourth National Climate Assessment, Volume I, issued on November 3, 2017, by the U. S. Global Change Research Program. This 470-page report certainly is the most complete and up to date review available of our current understanding of climate change science applied directly to the United States. This report does an excellent job of documenting how the climate is clearly changing.

Your primary conclusions, however, have serious problems. You state in several places:

1. "It is extremely likely that human activities, especially emissions of greenhouse gases, are the dominant cause of the observed warming since the mid-20th century."
2. "For the warming over the last century, there is no convincing alternative explanation supported by the extent of the observational evidence."

The underlined phrases in these conclusions are both demonstrably mistaken based on direct observations as explained in the attached 4-page document. Greenhouse gases simply do not absorb enough heat to be the dominant cause of global warming and ozone depletion caused by CFCs and extensive basaltic lava flows provide a much more detailed and accurate explanation for "observed warming since the mid-20th century", throughout human history, and throughout geologic history. There is ample detail in my paper "[Ozone depletion explains global warming](#)", in my book "[What Really Causes Global Warming? Greenhouse gases or ozone depletion](#)", on my extensive website [WhyClimateChanges.com](#), in my [talks](#), [op-eds](#), and many other things accessible through my website.

While I seek extensive and thorough review of my work, I am not writing today to debate the science. I am writing to ask your help in maintaining and improving public respect for the value of science when developing sound public policy.

It is virtually certain that greenhouse-warming theory will become widely recognized, over the next months and years, to be mistaken, perhaps the most expensive mistake ever made in the history of science. The deceptively simple statement "**greenhouse gases simply do not absorb enough heat to be the dominant cause of global warming**," once you understand it, proves unequivocally that greenhouse-warming theory is mistaken. I understand that you, and most

good scientists, simply cannot conceive of this possibility, but ignoring it will not make it go away. Many public leaders have believed the scientists and have chosen to utilize science in developing public policy. This has led to spending trillions of dollars, shifting investments, businesses failing, increasing utility costs, and political parties in several countries that are losing elections and public support. Once it is widely understood that the science was mistaken, the backlash is likely to be immense.

As Carl Sagan put it: "There are many hypotheses in science which are wrong. That's perfectly all right; they're the aperture to finding out what's right. Science is a self-correcting process." This is why it is extremely important that scientists take the primary role in dealing with this major misunderstanding, examine it carefully, and lead the world forward based on new and evolving science. The alternative, especially in today's political environment, is that scientists will be dragged kicking and screaming over the cliff, and the value of science for illuminating good public policy will be lost in a new scientific dark age. We scientists are running out of time.

Now I know, Don, that you will say publish it in a reputable journal, but papers questioning greenhouse-warming theory simply do not get sent out for review. And David, a while back you said: "Peter, there is no way that you could be right and all the rest of us wrong." Statistically, that thought has some merit, but I have yet to hear a thoughtful scientific argument from anyone. The observations are unusually clear. You simply cannot heat Earth without heat. It is that simple, and as Einstein said: "If you can't explain it simply, you don't understand it well enough."

Having spent eleven years in retirement working full time with minimal distractions, I have been able to focus intently on all the assumptions made in greenhouse-warming theory and in the physics underlying it. I have been free to follow my scientific instinct wherever it leads—whenever it leads. I have also brought a wealth of experience in the earth sciences, and Earth is the ultimate archive of climate change evidence. I do not have it all absolutely correct, plus we still have a lot to learn about the details. I am convinced, however, that the key points in the attached 4-page document will stand up to intense scrutiny and are fatal for greenhouse-warming theory.

The history of science is replete with fundamental upsets in thinking. The biggest revolutions have typically come when scientists start congratulating themselves for their consensus. Science is never settled. We ignore new insights at our own risk, but now that we have the attention of many world leaders, we ignore new insights at their risk and at humanity's risk. I am not sure how to proceed or what is appropriate, but I do foresee a major train wreck as people begin to realize greenhouse-warming theory is demonstrably flawed. I think we may have to start with a handful of scientists seriously examining and discussing the evidence. I am asking for your advice and help in mitigation. Time is of the essence.

Sincerely,
Peter

November 26, 2017
To: Peter Ward et al.
From: Don Wuebbles
Peter:

There are many studies (e.g., Feldman et al., Nature, 2015) showing that the greenhouse effect is real and that the Earth's energy system works as we understand it. It is also well known that the energy from changes in stratospheric ozone, while a contributor to climate forcing, is way too small to explain what has been observed. You would need to show why so many observations made from space and the detailed radiative analyses made at the ground and in laboratories cannot observe what they do. Modeling studies only serve to back up what is observed. Your analyses do not have the quantitative evaluation that comes from the series of observations and associated laboratory and modeling studies.

Don

November 26, 2017
To: Don Wuebbles et al.
From: Peter Ward
Don,

Greenhouse gases simply do not absorb enough heat to be the dominant cause of global warming. Period. Full Stop.

Heat, that which can warm a body of matter, is a broad continuum of frequencies of oscillation and carbon dioxide only absorbs less than 16% of these frequencies radiated by Earth.

The problem with everything you mention is that all equations, computer models, instruments, and experiments are designed based on the concept of radiative forcing which thinks of radiant energy, or more specifically power, as an **amount** of watts per square meter. But thermal energy in matter and in radiation, the ability of thermal energy to heat matter, is a function of **frequency**, not **amount**. As an atmospheric chemist, you are well aware of $E=h\nu$, the Planck Einstein relation. Frequency (ν) is observed clearly to be a continuum and it takes a broad continuum to describe temperature in matter and heat as shown by Planck's empirical law. The energy E is different for every frequency and all the frequencies for a given temperature must coexist to describe that temperature in matter and to heat a body of matter.

Furthermore, because $E=h\nu$, the energy of ultraviolet-B radiation at 310 nm reaching Earth when ozone is depleted is 48 times the energy of infrared most strongly absorbed by CO_2 at 14,900 nm. UV-B has enough energy to burn your skin. All the IR in the Universe cannot cause sunburn.

All current thinking related to the physics of greenhouse gases that you have used throughout your distinguished career calculates thermal energy incorrectly. Change will not come easily.

I describe the key points in the 4-page attachment and in much more detail elsewhere. There are many reasons why greenhouse-warming theory is not correct because of assumptions made more than a century ago. We can go into all the gory details, but the bottom line is **greenhouse gases simply do not absorb enough heat to be the dominant cause of global warming**. I see no way out from this deceptively simple statement. Please try to understand this in the 4-page document I provided. It is the cleanest, clearest, most direct way to begin to comprehend the problem.

Sincerely,
Peter

November 27, 2017

To: Peter Ward et al.

From: David Fahey

Peter,

Thank you for your supportive comments on the CSSR product.

It is clear that neither side has moved in this discussion in the intervening months. I found it interesting that you used the word 'modeling' which has been rare or unused in your previous communications. I suggest you use it more because nothing will be resolved unless we compare results on the basis of quantitative models. This comment aligns with Don's reply.

So, the cleanest, clearest and most direct way to continue this discussion is for you to offer a counterpoint quantitative model to the one presented, for example, in the Mlynchak et al paper that comprehensively models the radiative forcing of CO₂ in the atmosphere to show we know this value to 1%. More specifically, take the measured composition profiles of atmospheric constituents from the surface to the stratosphere, the observed temperature profile, measured CO₂ absorption line parameters and other known physical constants to calculate the radiative imbalance at the tropopause due to industrial era CO₂. Closely associated with this is reproducing the infrared spectrum observed on the ground looking up into the atmosphere and the one looking down from space. Mlynchak has also done this.

The other issue you may want to address is calculating the background greenhouse effect that warms the planet above 0°C based on the observed composition profile and parameters noted above.

I hope you have a good holiday season.

Cheers
Dave

Mlynchak, M. G., et al. (2016), The spectroscopic foundation of radiative forcing of climate by carbon dioxide, Geophys. Res. Lett., 43, [doi:10.1002/2016GL068837](https://doi.org/10.1002/2016GL068837).

[Radiative Transfer Working Group Site](#)

November 27, 2017

To: Don Wuebbles et al.

From: Peter Ward

Dave, all,

What I have been trying to explain to you and others for several years is that the physics and mathematics upon which greenhouse-warming theory, radiative forcing, and climate modelling is built, is based on mistaken concepts about what temperature in matter physically is, what radiation in air and space physically is, what thermal energy physically is, and what heat physically is. To be more blunt, the modelling, and the physics and the mathematics upon which the modelling is based, are wrong.

Current theory does not fit physical reality no matter how hard thousands of scientists try to make it fit, and they have tried valiantly. Current greenhouse theory has been made self-consistent, just like quantum mechanics, but being self-consistent does not prove that it is a correct representation of what is physically happening in Nature.

What I am saying is built on direct observations of Nature. Nature is doing the modelling for us without any mistaken assumptions, mistaken equations, or mistaken concepts. Perhaps the greatest problem in modern physics and now in climate science is that mathematics has become more important than observations of Nature. The fundamental goal of science is to explain how Nature works. Physics should be about what is physically happening. You can't do good physics without good mathematics, but you can do excellent mathematics without doing any physics. Greenhouse-warming theory is founded on the observation that greenhouse gases absorb some frequencies of infrared radiation and the assumption that, therefore, air and Earth get warmer. The more greenhouse gases, the warmer Earth gets. It is all about **amount**—the greater the **amount** of greenhouse gases, the greater the **amount** of absorption, the greater the **amount** of radiative forcing, the greater the **amount** of warming. Current concepts conclude, therefore, that infrared radiation has a greater effect on Earth temperatures than ultraviolet-B radiation because there is a greater **amount** of infrared. This conclusion can be shown to be wrong in many different ways. Current theory posits that radiation is a thing that is the same when radiated by all bodies of matter. What differs is the **amount** in watts per square meter. This conclusion is also demonstrably wrong as follows.

We observe clearly, as shown by the 2nd figure in my 4-page attachment, that the physical properties of radiation from Sun, a light bulb, and Earth are distinctly different—the hotter the body, **the higher the frequencies contained and the higher the amplitude at each frequency**. Thermal energy at the molecular level is, physically, frequency of oscillation of molecular and atomic bonds ($E=h\nu$). Macroscopic temperature and macroscopic heat are clearly observed to be a **broad continuum** of these frequencies of oscillation. Therefore, macroscopic

thermal energy is a **broad continuum** of these energies, the result of a very large ensemble of atomic oscillators. Carbon dioxide only absorbs the resonant frequencies of the CO₂ molecule and, therefore, only absorbs less than 16% of the frequencies radiated by Earth. **Greenhouse gases simply do not absorb enough heat to be the dominant cause of global warming.**

I spent a lot of time honing those four pages attached here again to say what is most crucial as clearly as I could to a very broad audience. Please read them carefully and take issue with what you wish.

My conclusions are based on direct observation and experiment, which clearly show current mathematics and modelling are incorrect. Observe Earth carefully. It will teach thee. The Earth sciences provide the best and the only archive of climate past. Attached is a short article written for a popular magazine explaining this briefly. My fully referenced book and my fully referenced website give all the scientific detail.

Greenhouse-warming theory cannot explain climate past as I describe briefly in the 4-page attachment and in more detail in the article. Greenhouse warming theory cannot even explain climate recent past. All four major analyses of average global surface temperatures agree that temperatures changed very little from 1945 to 1970, increased from 1970 to 1998, changed very little from 1998 through 2013, and have been increasing rapidly since 2014. Meanwhile greenhouse gases simply increase at higher and higher rates. Greenhouse-warming theory cannot explain the well-observed inflection points in the temperature trends. Now there is a whole lot of arm waving and wishful thinking about this in thousands of peer-reviewed papers, but there is minimal agreement, and none can explain all the observations more clearly and more directly than ozone-depletion theory.

Yes, Dave, Mike, and others, my ultimate conclusion leads to a major revolution in physics, perhaps even more than in climate science. The data show that thermal radiation is a continuum of frequencies that “travels” through air and space by resonance—not as waves and not as photons. Resonance is all around us. It is how we see and how we hear. Understanding the role of resonance in what we call “electromagnetic radiation” suddenly causes all the laws of thermodynamics to make sense and it makes what quantum mechanics tries to explain, including entanglement, fully deterministic and quite physically intuitive, something Einstein spent the last half of his life trying to discover. I wish he were here now because he would be delighted.

The implications are huge, but there is no sense in getting sidetracked in those details which will become self-evident in time. All the evidence for these conclusions comes from Earth science and atmospheric science. Atmospheric scientists have convinced the world that climate change is described accurately by greenhouse-warming theory, and that we must reduce greenhouse-gases to prevent almost certain doom later this century. This is already costing the world prodigious amounts. This conclusion is demonstrably incorrect and the sooner we can get to the bottom of the issues, the better for society and the better for the value of science for

informing sound public policy. For these reasons, time is of the essence in climate science. Physics will catch up later.

Again, the clearest, simplest, most cogent way to understand what is wrong with current theory is the observation that **greenhouse gases simply do not absorb enough heat to be the dominant cause of global warming**. This gets down to the issue of what heat is. Heat is very definitely not radiative forcing. Heat and temperature are functions of frequency of oscillation. They are, most clearly, not a function of amount as currently assumed.

Sincerely,

Peter