

Greenhouse Effect does not exist

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Abstract

It has been said that we have a greenhouse effect or GHE and that the Earth's atmosphere lets visible light in from the Sun. This heats up the Earth's surface which radiates long wave InfraRed IR radiation. This IR radiation gets trapped in by so called greenhouse gases or GHG's and this heats up the Earth. These GHGs also re-emit back-radiation to the Earth's surface heating the Earth. In this paper it will be shown that the trapping of radiation is false and that back-radiation cannot heat the Earth.

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Definitions

Greenhouse Effect and Greenhouse Gases

These terms are extremely misleading and not correct. There are no such things as greenhouse gasses in the atmosphere and no such thing as a greenhouse effect. The analogy drawn is that the atmosphere acts like a real greenhouse. The glass roof lets in visible light that heats up the ground inside the greenhouse. The ground emits long wave infrared IR radiation. The glass blocks the IR and traps in the IR heat thereby heating up the greenhouse.

The claim is the atmosphere does the same. The atmosphere lets in visible light that heats up the ground which emits IR radiation. The so called greenhouse gasses in the atmosphere absorb the IR radiation and trap in the heat thereby heating up the atmosphere and the Earth.

This is all wrong. We've known for 200 years how greenhouses work and they don't work like this. The glass does let visible light in but absorbs and emits IR. Emissions are in all directions so half is emitted out into the atmosphere and half back inside the greenhouse. This is once again absorbed and re-emitted by the ground and back to the glass and the process repeats. The re-emission is now only half the original emission. Once again half of this goes out and half back in. So that's half of half or a quarter. That makes it exponential. After 5 iterations, the original incident packet of radiation is gone out into the atmosphere. So all the glass has done is delay by a matter of 30 microseconds the escape of this IR radiation out into the atmosphere. Remember that radiation is traveling at the speed of light.

Greenhouses actually work by the glass blocking convection.¹ This was even known by Fourier almost 200 years ago.²

The atmosphere does have gases that absorb and emit IR radiation but they do not block convection, they do the same as the glass, they delay, only slightly, the escape of

an incident packet of radiation from the Earth's surface back out to space. Nothing blocks convection except clouds at night.

These gases are properly termed Radiatively Active gases or RAGs and the effect on the atmosphere is properly termed Adiabatic Thermal Enhancement or ATE. The more appropriate term would be RAM or Radiatively Active Molecules because water vapor is technically not a gas below its boiling point.

It has been said there is a natural GHE. The Earth's theoretical temperature is -18°C and the measured temperature is $+14^{\circ}\text{C}$. It is said the 33°C difference is caused by the natural GHE. The 33°C difference between the theoretical and measured temperature of the Earth is falsified. That is based on the Stefan-Boltzmann equation which is based on the assumption that the Earth is a flat disc and a black body, when the Earth is a rotating sphere and a gray body. To say the Earth has a theoretical temperature of -18°C is meaningless. It is atmospheric pressure or adiabatic auto compression that sets the Earth's surface temperature.³

InfraRed Electro Magnetic Radiation – EMR

IR radiation is Electro Magnetic Radiation or EMR. EMR travels at the speed of light. It is never stationary. As soon as it is absorbed by something it is immediately emitted within nanoseconds. Emissions are isotropic, i.e., they are in all directions at random. The GHE theorists will tell you that gases in the atmosphere and the glass in a greenhouse absorbs IR EMR. They do not tell you that it immediately gets emitted. IR EMR takes a circuitous pin ball journey through the atmosphere, bouncing off molecules, sometimes returning to the Earth's surface to be absorbed and re-emitted, before escaping to space. Back-radiation from CO_2 molecules is at 14.6 micron wavelength. When absorbed and re-emitted by the Earth it is re-emitted at the full 1-100 micron spectrum wavelength and this escapes to space at a different frequency.

The time it takes IR EMR to escape Earth's atmosphere to space is between 2 and 30 milliseconds. Nothing gets trapped in the atmosphere.⁴

It is impossible for CO_2 to block the escape to space of IR radiation or to trap IR radiation. RAMs absorb and emit radiation, they don't absorb and stay absorbed. Water vapor dominates the IR absorption spectrum but even that doesn't trap IR radiation or block its escape to space. RAMs provide a small delay for IR radiation leaving the atmosphere with the vast majority of that delay coming from water vapor. And it is no different on Venus which has 96.5% CO_2 in its atmosphere. The delay times for IR radiation to exit the Venusian atmosphere is less than Earth because there is no water vapor in the Venusian atmosphere.

Radiation provides zero heat to a greenhouse. That was proved by the Woods Experiment in 1909 and replicated by Nasif Nahle in 2011.⁵

When the Earth emits IR photons, some get absorbed by CO₂ molecules warming the molecules, only minutely. But in this process the warm Earth is giving up that energy and warmth to the cold molecule. I.e Thus the Earth cools and the molecules warm by the same amount creating a balance. There is no net or extra warming and there is no new energy.

Some of this back-radiation from CO₂ molecules returns to the Earth's surface. The Earth emitted a photon that energized a molecule causing that molecule to return some of that energy back to the Earth. This back-radiation is the Earth's own radiation energy coming back on itself. It is impossible for the Earth to heat itself with its own radiation.⁶ Back-radiation cannot just keep heating the Earth over and over again. That would be perpetual motion and the Earth would have run away warming which does not happen. This is the same energy source as the originally emitted photon. To heat the Earth you need an additional energy source.

Discussion

The so called GHE theory has never been scientifically proven. This mythical warming of the atmosphere has never been measured in an experiment.

For the GHE theory to be proved, proponents of it need to produce these measurements that show the Earth warming from the back-radiation from specifically CO₂ molecules, distinct and separate from the Earth being heated from direct solar radiation. That, *prima facie*, is impossible. The UN's IPCC admit they cannot prove the theory.⁷ *Wong & Minnett 2018* actually tried to do this and failed miserably.⁸ For their experiment they measured back-radiation from a clear sky but the signal was too weak to be useful. 99.9% of that back-radiation was back-radiation from water vapor. Of the 0.1% that came from CO₂ molecules, just 4% of that was from human produced molecules.⁹ They then used radiation from clouds as a surrogate as this produced a useable signal. Most of this radiation was not actually back-radiation but rather reflected radiation from the water and ice in the clouds. A small amount only would have been back-radiation from water vapor. They tried to measure the warming of the top micro-meters of the ocean surface skin layer. They had determined that IR EMR only penetrated water to the top couple of micrometers. The warming they measured from the reflected radiation from clouds was 0.0000000000°C. The warming from water vapor molecules was substantially less and from CO₂ molecules, to say immeasurable would be an understatement.

The only thing the proponents of the GHE theory have are climate models. These are more appropriately termed mathematical illusions. They are all built on false assumptions including giving CO₂ a radiative forcing factor. *Wong & Minnett 2018*¹⁰ measured the radiative forcing factor for CO₂ at 0.0W m⁻². Despite that, models continue to assume a radiative forcing factor. *Thorstein & Olsen 2020* conducted an experiment using a manufactured Earth and atmosphere. They upped CO₂ in their atmosphere from 0.04% to 100% and measured 0.0°C of resultant warming.¹¹ And in another experiment "No 'greenhouse effect' is observed in the measured data."¹²

The Earth's surface temperature is controlled mostly by the global ocean temperature which is 71% of the Earth's surface. We are a water planet. To heat the Earth's surface temperature you need to heat the oceans. It is impossible for the GHE theory to heat the oceans.¹³ The oceans are heated by solar radiation in the visible spectrum only.

There is not enough energy in the energization of every CO₂ molecule in the atmosphere with IR EMR to effect the globe's temperature.¹⁴

Total energy expended if every CO₂ molecule is
excited = 5,954,347,826J

This represents 0.0000000000004% of the heat in Joules required to heat the active layer of the world's oceans by 1°C.

This energy equates to enough to boil 7,115.6 kettles. If you poured them into the ocean you would not measure a temperature difference. In any event, all this energy was given up by the Earth's surface to the molecule. This is not new energy or new heat. This is recycled heat. This is an energy transfer from the Earth to the molecules. The Earth's surface cooled by this same amount that all the molecules warmed.

The Earth's surface cooled by more because approximately 20% of Outgoing Longwave Radiation or OLR went directly to space through the atmospheric window.

Summary

In the same way that IR EMR does not heat a greenhouse, it does not get trapped in the Earth's atmosphere, nor heat the Earth's atmosphere or the Earth. RAMs in the atmosphere do not block convection making it impossible for there to be a GHE. Consequently there can be no such thing as greenhouse gasses in the atmosphere. It is impossible to trap EMR in the atmosphere.

The GHE theory is falsified.

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² Fourier (1824, 1827) . . . acknowledged that the actual mechanisms that determine the temperatures of the atmosphere included mainly convection. . . . see page 586 of this 1824 memorandum: de Saussure's apparatus is a distant forerunner of the modern solar flux measuring devices which were born with the pyrheliometer of Pouillet (1838), see Snow (2015); Fourier clearly indicates (p. 586) that it is the movement of air (we would say convection) which is prevented by the glass;

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⁶ ***Earth Can't heat itself with it's own Radiation***

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⁷ IPCC AR4 WG1

Ch. 1. Historical Overview of Climate Change Science

1.2 The Nature of Earth Science Page 95

1.3.3 Detection and Attribution Pages 102-103

“with no spare Earth with which to experiment, attribution of anthropogenic climate change”

And the introduction of confidence, likelihood & uncertainty levels:

1.6 The IPCC Assessments of Climate Change and Uncertainties

Pages 118-121

⁸ ***Alarmist Study Fails to Measure CO2 Back Radiation***

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