Three Impossible Outcomes

by Alan Siddons

With all the talk about CO_2 and global warming today, it's odd that the heating mechanism to blame for this concern – the Greenhouse Effect – is seldom contemplated or discussed. Rather, it's taken for granted.

It is a popular view that "greenhouse gases" act like a blanket or winter clothing. As a thermal camera consistently testifies, after all, a body that suppresses heat loss cools off less, which is to say "stays warmer."

Indeed, notice in this case the bright thermal radiation escaping from the children's bare faces versus the darkness of their winter jackets.

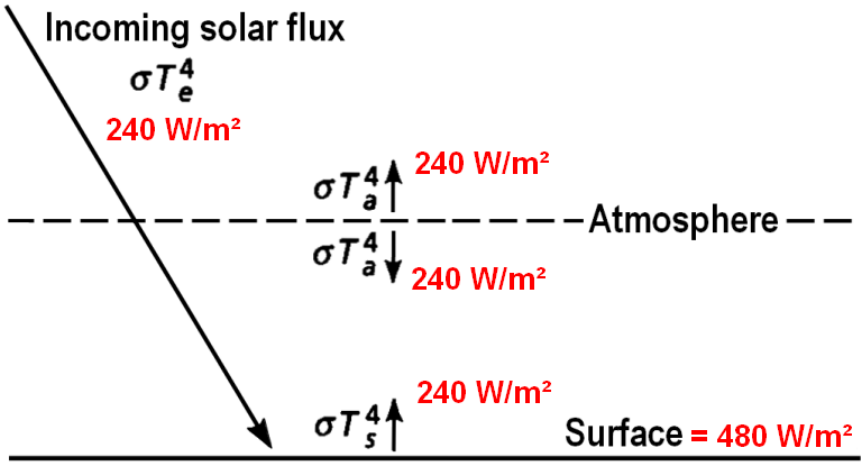
Insulation limits heat loss, pure and simple. And that's what the Greenhouse Effect does too.

Compared to this popular belief, however, the scientific view proposes something quite peculiar. It contends that under a jacket of greenhouse gases the Earth will radiate as much to its surroundings as it would *WITHOUT* such insulation.

To repeat, scientific theory states that an Earth thermally shielded by greenhouse gases radiates as strongly to outer space as an Earth without this shield. To an infrared camera, the Earth with a jacket on or a jacket off would look much the same.

As commonsense as the simpler, popular notion of the Greenhouse Effect might seem, though, evidence contradicts it. For satellite observations do indicate that the Earth emits to space the same amount of thermal energy that it absorbs from the Sun. In other words, there's no evidence of an insulative barrier as most people would conceive it, no physical sign of withholding any heat.

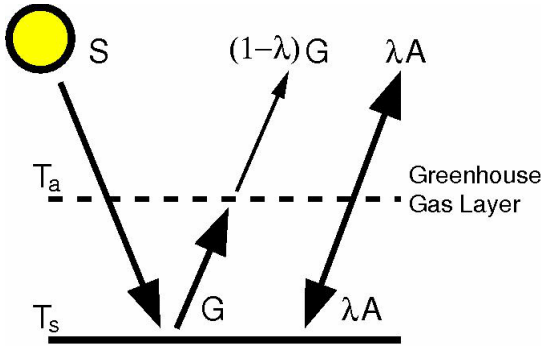
Scientists have sought a way to address this apparent discrepancy. A detailed explanation of their proposed solution may be found in MIT professor Richard Lindzen's essay Greenhouse Effect. But here is the main idea.



Briefly, incoming sunlight hits the Earth and warms it, so it radiates this energy toward outer space. But a layer of greenhouse gases catches this radiation and emits the same amount back to Earth, thus doubling the thermal energy on its surface – while simultaneously releasing the same amount to space.

Hardly unique, Lindzen's depiction of basic greenhouse principles conforms to what is taught elsewhere. For instance, this is University of Chicago's professor David Archer teaching the same model of the Greenhouse Effect.

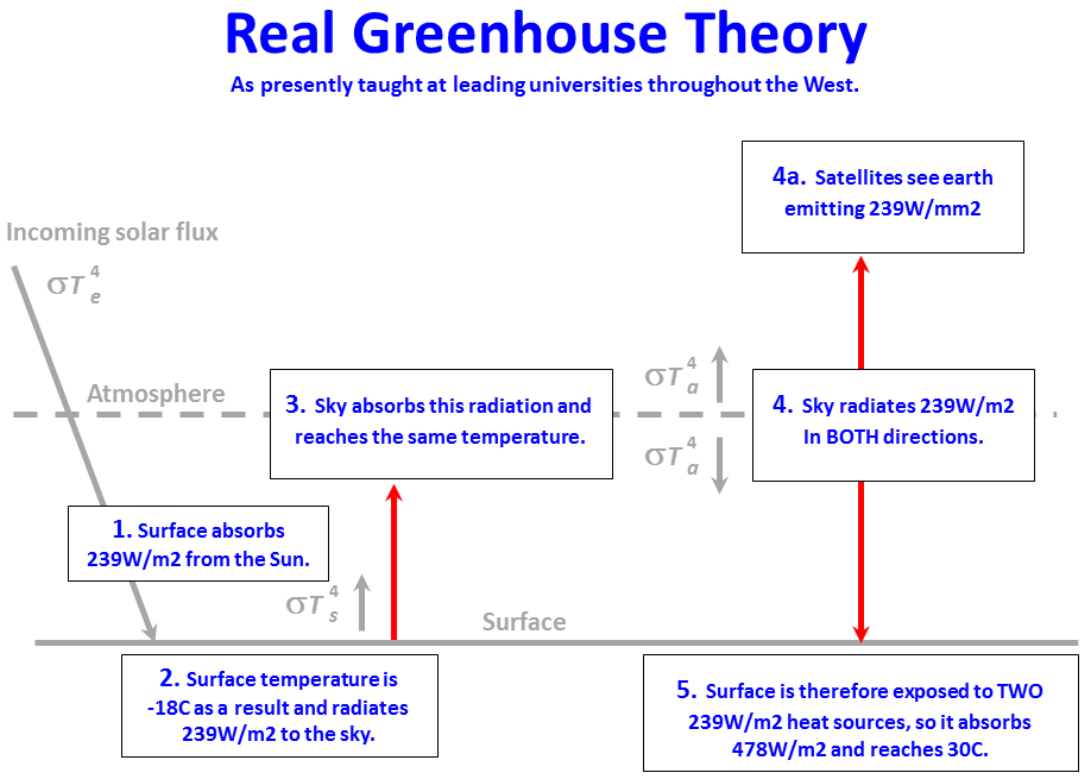
Furthermore, NASA's Gavin Schmidt has done the same.



"The factor of two for A (the radiation emitted from the atmosphere) comes in because the atmosphere radiates both up and down." – Gavin A. Schmidt

See more on this topic here.

These examples make Derek Alker's explanatory diagram a valuable reference. Compare it to what Lindzen, Archer, Schmidt and others present. Alker's is a faithful rendition.



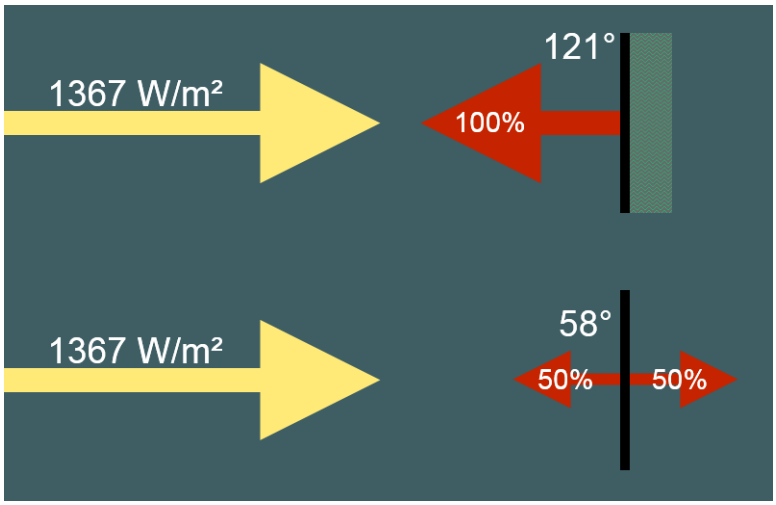
In its most rudimentary form, this is the Greenhouse Effect that climate experts go by. Although they're always quick to point out that it's an "overly simplified model," however, its problem isn't simplicity, it's that a heating mechanism like this one would fail from the start. For it requires three impossible outcomes.

First Impossible Outcome: Examine how much energy that two-sided air layer is radiating. In the real world, when a unit of light is absorbed by a flat plane that's free to discharge this energy in two directions, its emission on each side will be cut in half. This means that a 1 square meter plane emitting 1 Watt per square meter will radiate half a Watt from one side and half a Watt from the other — certainly not a Watt from each side! Otherwise, two Watts would be emitted for each Watt absorbed.

This is confirmed by a European Space Agency chart.

(W/m^2)		(-)	black body	white paint PSG120-FD	black paint Electrodag 501	VDAu	VDA	sand-blasted Al	black CFRP
S		α	**1.00**	**0.20**	**0.94**	**0.23**	**0.15**	**0.20**	**0.90**
1367.0		ε	**1.00**	**0.88**	**0.81**	**0.025**	**0.05**	**0.20**	**0.80**
		α/ε	1.00	0.23	1.16	9.20	3.00	1.00	1.13
Surface	F_S	A_p/A	**Steady-State Temperature (degC)**						
1-s plate	1	**1.00**	121	-1	136	413	245	121	133
2-s plate	1/2	**0.50**	58	-44	71	304	163	58	68
cylinder	$1/\pi$	**0.32**	23	-69	34	242	116	23	32
sphere	1/4	**0.25**	5	-81	16	212	94	5	14
cube	1/6	**0.17**	-21	-99	-12	165	58	-21	-14

The section I've highlighted in blue depicts the responses of a fully-absorptive flat plate. With a radiant barrier affixed to its backside, a 1-s (one-surface) plate can only radiate in one direction. Stimulated by a 1367 W/m² light beam, then, this single surface reacts with a 1367 W/m² emission, a 100% return. The same plate without a radiant barrier (2-s) is able to radiate from *two* surfaces, of course. So, having twice the area to radiate with, it yields 50% from each side.



As you can guess, dilution is the reason, the same bundle of energy being spread over a larger area. Please note that a larger emission area also rules out a two-sided emitter getting as hot as a single surface.

The conclusion is obvious: The academic version of the greenhouse mechanism has a two-sided layer that's impossibly warm and radiating an impossible magnitude of energy.

Second Impossible Outcome: Even if that hovering greenhouse layer did match the temperature of the surface **whose radiation it is responding to**, its own radiation would be unable to raise the surface's temperature – since its temperature is the SAME as the surface's. It is an axiom of physics that heat can be transferred only when a temperature difference exists. Thus the greenhouse layer, at minus 18° (Celsius), cannot induce a higher temperature on another minus 18° body like the surface.

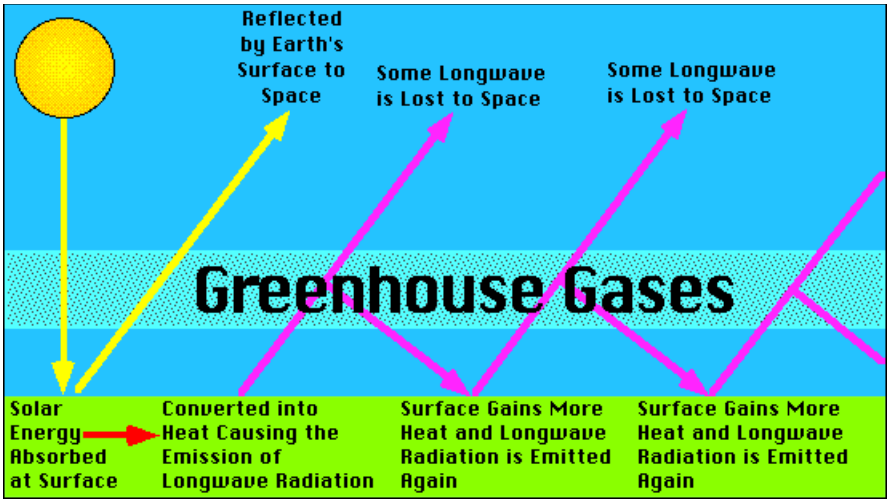
Impossible Outcome 3: Besides just proposing that an Atmosphere ***as warm as*** the Surface nevertheless ***transfers heat*** to the Surface, this peculiar scenario also forbids the now-warmer Surface to transfer heat to the Atmosphere, even though thermal law demands that it make this transfer due to the temperature difference between them!

As this heating mechanism indicates, the sky responds to the surface by matching its temperature and emission. The surface then responds to the sky by warming and radiating more than otherwise. But notice that once this point is reached **the atmosphere ceases to respond to the surface's higher temperature and emission.**

Given an air layer subjected to 480 W/m² coming up from the surface, the rules dictate that it absorb and re-radiate this 480 downwards (while tossing another impossible 480 out to space). Yet that air layer holds onto its initial 240 intensity, stuck at -18° for some reason.

So it would seem that the modelers stopped the clock as soon as they obtained a plausible surface temperature.

To repeat, two bodies at the same temperature can't heat each other. It's a thermal standoff. But if A heats B, whose updated temperature then heats A, and so on, what can prevent this from spinning out of control? A runaway perpetual motion machine would have been created. That's why modelers stop the clock, because the mutual heating process they've hatched threatens to proceed without end. And that's a tacit *acknowledgment* of an impossible heating process.



Source: California Polytechnic State University

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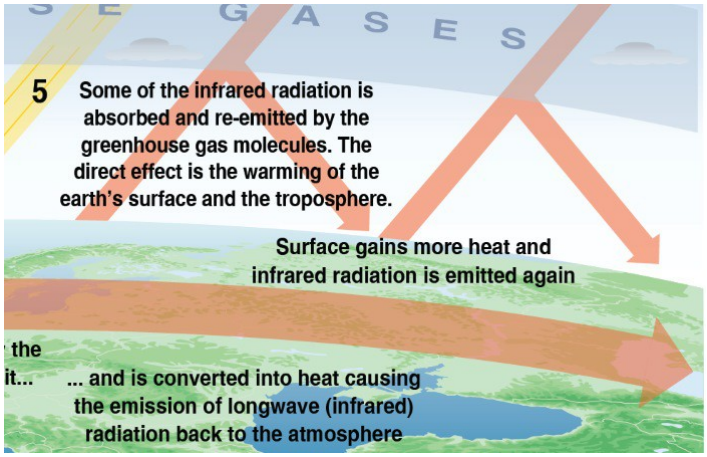
To put it mildly, the academic version of the Greenhouse Effect lacks scientific rigor. Yet this incoherent conjecture is what most climate authorities and even most skeptics consider "a settled science." To my mind, the cruder public notion – that of an insulating blanket – makes a lot more physical sense. But then, one must answer why satellites report that the Earth's emission to space equals the energy it absorbs from the Sun.

Might it be that there is no Greenhouse Effect at all?



Source: United Nations Environment Programme