Russ' Thought Experiments

The following series of emails are excellent for provoking thought. Science needs critical thinking not brainless obedience.

On August 2, 2021, Russ Babcock wrote:

Examining the relationships between motion, energy, and temperature as these relationships apply to N_2 - a so-called non-greenhouse gas.

Experiment 1.

Let's say we have two molecules of N_2.

One is moving very fast in one direction while the other is moving at exactly the same speed and exactly in the opposite direction on exactly the same path.

When they collide, they each will come to a complete stop assuming both are completely inelastic.

How does that "lost" energy from each N_2 molecule express itself? We all understand that it cannot just disappear, and we all understand (?) that N_2 does not emit IR radiation.

Experiment 2.

Imagine inserting a thermometer into a gaseous soup of rapidly moving N_2 molecules. Would the soup have any effect on the thermometer? Why or why not?

I would appreciate your thoughts on this.

I'm wondering how N_2 cools without emitting IR radiation.

Thanks,

Russ

On August 2, 2021, Thorpe Watson wrote:

> Russ,
>
> Great questions!

The fact that N_2 doesn't scatter certain IR wavelengths, shouldn't preclude its ability to emit IR radiation. Right????

In your 2nd experiment, the thermometer will react to increased vibrational energy derived from the N_2 kinetic and vibrational energy.

> Do these initial thoughts make sense?

On August 2, 2021, Russ Babcock wrote:

Thanks for responding Thorpe.

Your first answer - I don't know, but everything I read tells me that anything in the IR part of the EM spectrum is never emitted by N_2. I believe N_2 is transparent to IR so does that mean that it can neither absorb nor emit it? Scattering is the sum effect of absorption and emission. This is what distinguishes scattering from reflection. On the other hand, I appreciate that the imperative of Earth's energy balance demands that energy-in must equal energy-out (or earth's temp would have to compensate for the difference by changing) BUT it does not demand that IR in = IR out, so part of the energy balance must include other wavelengths leaving, and any such contribution by N_2 would have to be energy of non IR wavelengths (if it never emits IR).

I also know that energy held by mass isn't always expressed as photons when it is released. It seems to me that energy can be released from mass A to mass B simply by colliding with it, not involving photons at all. This idea is consistent with my statement that energy in mass can express itself in many, many ways and that expression can change without having to absorb or emit photons. Just like

"cold" electricity can be converted to heat or the motion and momentum of a rotating turbine can be converted to electricity WITHOUT involving photons.

As for your second answer - The wavelengths of emitted radiation energy depends completely upon its temperature according to Wien's Law, so if an N_2 molecule never emits IR wavelengths when it cools it must either bump into something while relatively warmer than its neighbours with less or equal energy (like the glass vessel of a expandable-liquid thermometer) or it must emit at longer wavelengths (less energy per photon according to Planck's law) than IR wavelengths. Either way, whatever motion-energy it has would decrease and that should manifest itself as cooling. Yes?, no?

Stefan Boltzmann tells us that the only bodies that don't emit EM radiation are at absolute zero, and I think all such mass would have to be in a black hole, occupying essentially zero space. By definition, EM radiation IS energy so emissions from earth and its atmosphere to outer space at any wavelength (not just IR) should help offset incoming EM radiation from the sun to maintain Earth's energy balance.

Reasonable???

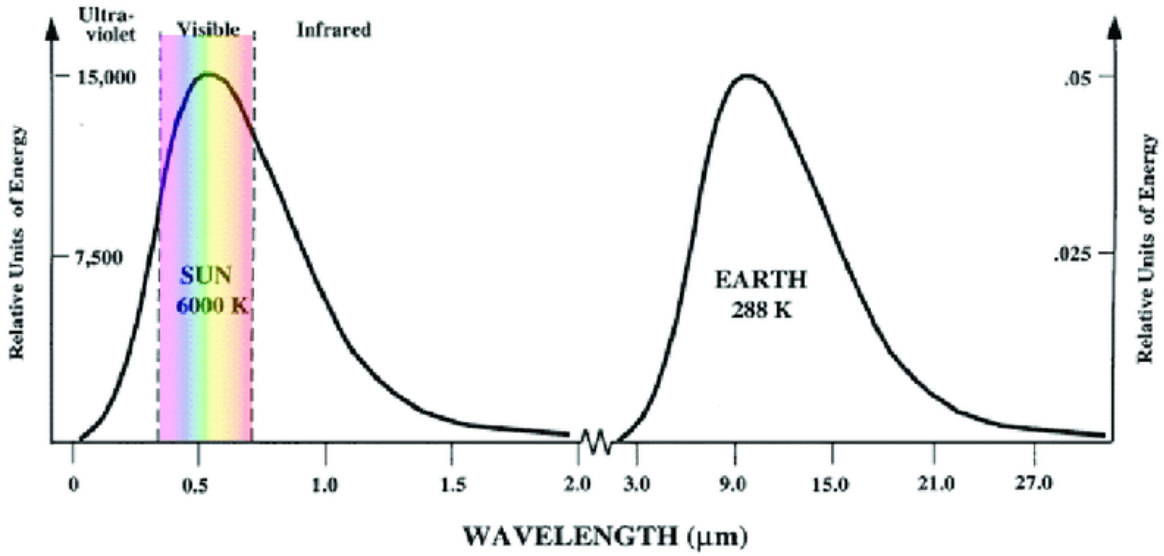
Russ

On August 2, 2021, Russ Babcock wrote:

The fact that we can clearly see the earth from the moon tells me that the energy escaping from earth is far more than just the IR wavelengths of it.

And this very likely explains how energy leaves N_2 as it “cools”.

Russ



On August 2, 2021, Russ Babcock wrote:

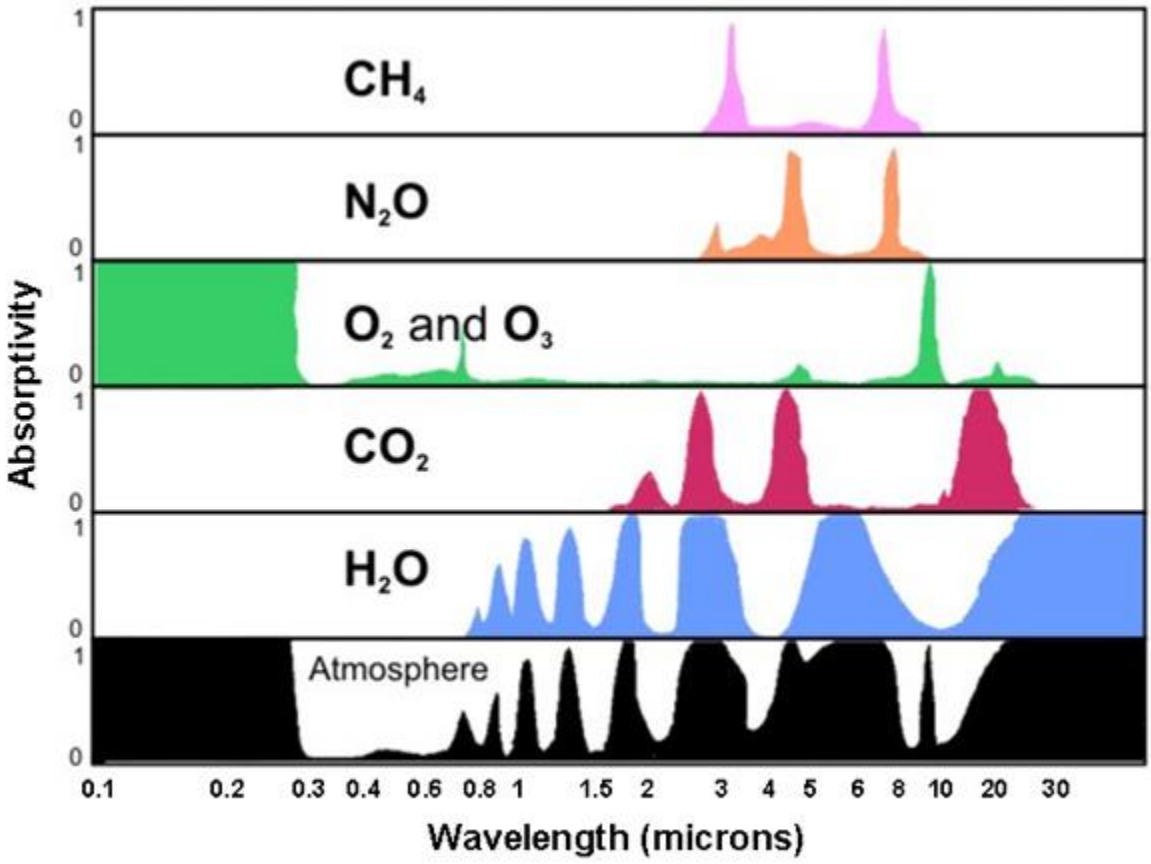
The above spectrograph is very telling. Look at how much energy emitted from earth's surface is IR in the 15 micrometre range (the widest range that CO2 likes to scatter). Also note that the preponderance of the energy emitted from earth is of wavelengths shorter than that (higher energy density), and of course there is a relatively small amount emitted from earth at longer wavelengths (lower energy density).

For the life of me, I can't see how intelligent people can credit CO2 (at only 0.04% of the atmosphere) for slowing energy transfer from earth to outer space to the extent that would be necessary to be of ANY concern. Like I've said a few times now ..... utter nonsense.

If either of you two can enlighten me, please do so! I'm all ears. I've been trying to understand the guts of this AGW fear for about 14 years now!

Is all this so complex that intelligent people can be brainwashed into believing something that is so desperately at odds with the science? Or am I just that ignorant that I cannot see it?

Here's the absorption spectrum for the "greenhouse gases" in the atmosphere. Note that the x axis is logarithmic.



Conclusions

It is clear that heat exchange in the atmosphere like weather prediction itself is not straightforward. However, it only takes a little knowledge to realize the vilification of CO_2 is preposterous. A particle that is 0.04% (416 ppm) of the atmosphere cannot control the climate. If it could, CO_2 should be increased simply because it's powerful heating properties could keep us warm in the winter. It would save on heating bills. Alas, CO_2 is not a wonder molecule in that regard. It is a wonder molecule, however, because without it life would not exist. If CO_2 drops to 150 ppm, life ends. A carbon sequestration machine is the true weapon of mass destruction. Also, the greenhouse gas narrative is fictional because a greenhouse

needs a glass ceiling, not the seemingly infinite heat sink of outer space. In a society, where kids should strive to learn and succeed, false knowledge is a yoke that prevents their achievement in the STEM fields.