

GREENHOUSE EFFECT – FACT or FICTION?

By Alan Siddons, edited by Hans Schreuder – 19 August 2011

Here are simple graphics to show how the Greenhouse Effect works:

What the University of Massachusetts teaches...

1. Sunlight is transmitted through glass and heats ground directly

2. IR radiation cools the ground, but it is NOT transmitted through glass. IR heats the glass.

3. IR radiation cools the glass. This provides cooling for the greenhouse and also provides an additional source of heating of the ground.

Radiative Transfer in a Greenhouse

The behavior of radiation in a planetary atmosphere is often compared to behavior of an idealized greenhouse.

The key point is that the atmosphere plays the role of the glass in this model and the transfer of energy through the atmosphere from the ground is critical to determining the ground temperature.

and what the University of Washington is getting at with this...

Solar radiation reaching the Earth's surface:
 $1370 \times (1-A)/4 = 239.7 \text{ W/m}^2$

Infrared radiation emitted by the top layer of the Earth's atmosphere:
 $E = 239.7 \text{ W/m}^2$

Infrared radiation emitted by the Earth's surface:
 σT^4

Infrared radiation emitted by the bottom layer of the Earth's atmosphere:
 $E = 239.7 \text{ W/m}^2$

Energy balance at the Earth's surface:
Solar radiation + Infrared radiation from the atmosphere = Infrared radiation emitted by the Earth's surface

$$239.7 + 239.7 = \sigma T^4$$

$$\Rightarrow T = (239.7 + 239.7)/(5.67 \times 10^{-8}) = 303 \text{ K}$$

and what Harvard University is explaining here...

Incoming solar radiation

$F_g(1-A)/4$

Outgoing terrestrial radiation

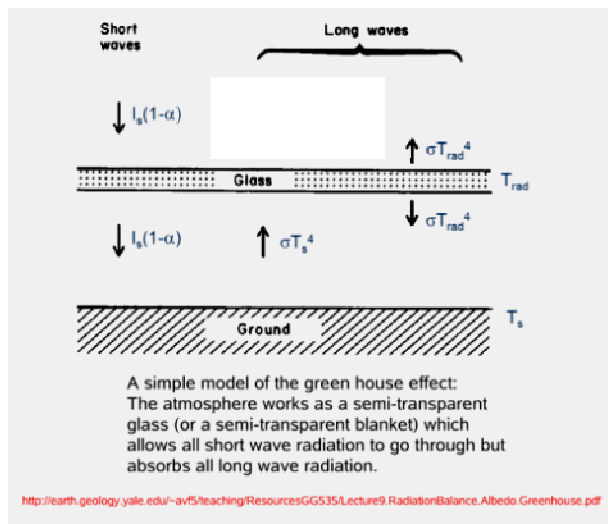
Atmosphere: $f\sigma T_1^4$ (up), $f\sigma T_1^4$ (down)

Earth surface: $(1-f)\sigma T_o^4$ (up), σT_o^4 (down)

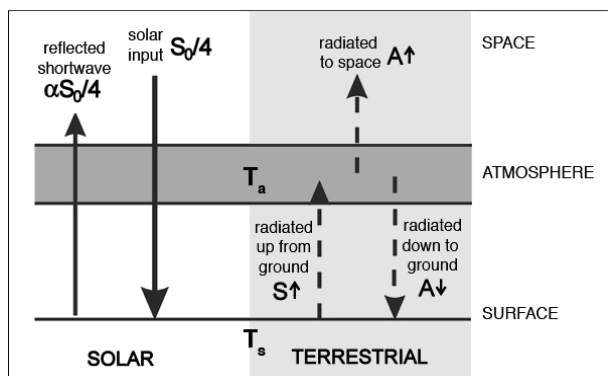
Atmospheric layer: T_1

Surface: T_o

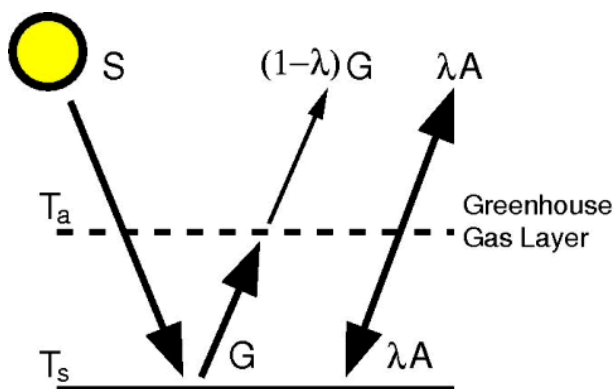
and what Yale University also teaches...



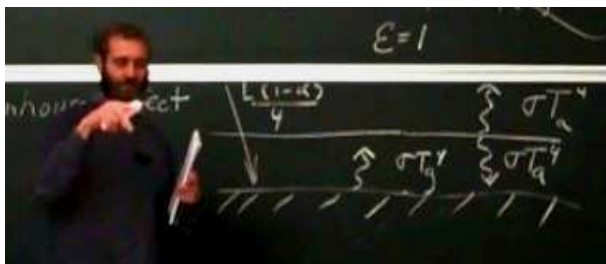
and what the University of Texas teaches too...



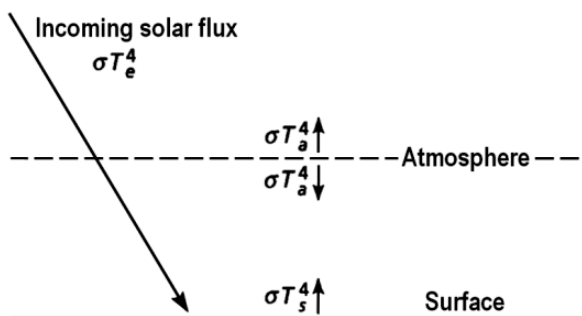
and what Gavin Schmidt describes...



and Professor David Archer...



and Professor Richard Lindzen...



Now for the “Real Greenhouse Theory”
 (note item 4 ...that’s the trick everyone appears to fall for)

Real Greenhouse Theory

4a. Satellites see earth emitting 239 W/m²

1 Surface absorbs 239 W/m² from the sun

2 Surface temperature is -18°C as a result and radiates 239 W/m² to the sky

3 Sky absorbs this radiation and reaches the same temperature

4 Sky radiates 239 W/m² in BOTH directions

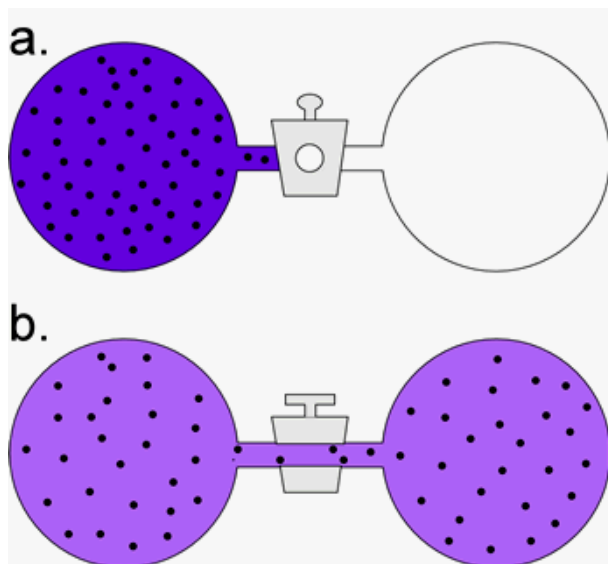
5 Surface is therefore exposed to TWO 239 W/m² heat sources, so it absorbs 478 W/m² and reaches 30°C.

Well then, what’s the truth?

At the very **MOMENT** you refer to a (spontaneous) exchange of heat, a "net flow", you are **ALREADY** contradicting and distorting what the 2nd Law states and what countless experiments have demonstrated, which is: *heat only flows to the cooler body*.

Moreover, a net exchange can only imply that the cooler body contributes its coolness to the warmer body while the warmer body contributes its warmth. But coolness is a **DEFICIENCY** of heat, a relative **ABSENCE** of energy.

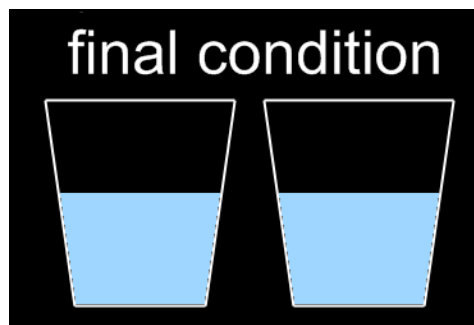
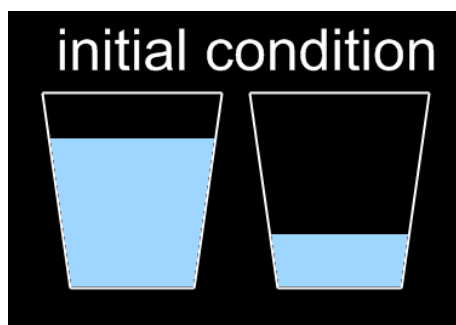
To be consistent, then, one would have to propose that the higher temperature body delivers "positive heat" and the lower temperature body delivers "negative heat."



Reality check.

It doesn't matter what is in the containers in the above graphic, the result will always be the same when the contents are allowed to mix: the two containers will equalize but never will the lesser contents of the right-hand side add its contents to the container on the left-hand side.

Just the same as connecting two buckets of water, one with more water than the other: the level of both buckets will be the same when the connection is opened but no water from the lower level bucket of water will have moved into the bucket with the higher level water:



Heat transfer is a *transfer*; it is *not* an *exchange*.

Net heat exchange is NOT part of the Second Law of Thermodynamics.