Update on the Greenhouse Effect Poppycock – Deception is near-total
(Original version: **http://www.ilovemycarbondioxide.com/pdf/Greenhouse_Effect_Poppycock.pdf**)
By Alan Siddons
27 March 2009

If glass lets visible wavelengths of sunlight in but doesn't let invisible long-wavelengths (infrared) out, thus raising the temperature inside, then glass thermometers have been misleading us for centuries.

According to the theory, glass thermometers necessarily register an extra "greenhouse effect," not the true temperature.

(In reality, however, no extra heating would come about even IF the glass were trapping infrared. The thermometer would simply take longer to adjust to *changes* of temperature. But it would NOT record a higher-than-actual temperature. As a thermos demonstrates, trapping heat doesn't raise the temperature, it only sustains it.)

"Human-generated greenhouse gases are warming the earth but not as much as alarmists say" never was a good strategy for winning the debate, and it's probably too late now. The only battle that remains is trying to limit the extent of emission controls on practical grounds, but the principle of emission controls has already been conceded.

Dissenters should have just stuck with the evidence: there is no sign of CO2-caused warming ***at all***, the "well established physics" of greenhouse theory be damned.

PS: A list of respected organizations, institutions and authorities that perpetuate the myth.

NASA
There are many greenhouse gases, but the most abundant greenhouse gases are water vapor and carbon dioxide. Shortwave radiation from the sun passes through greenhouse gases, but longwave radiation is absorbed by them.
Greenhouse gases absorb longwave radiation that is emitted by the surface of the earth.
Subsequently, they re-emit the energy as longwave radiation in all directions. About half of the re-emitted longwave radiation does escape into space, and contributes to the planet's radiative equilibrium.
About half of the longwave radiation emitted by the gases is directed back toward the surface of the earth. As a result, a continual exchange of longwave radiation takes place between the surface of the earth and the atmosphere above it.
The longwave radiation contained in this exchange causes the warming effect known as the greenhouse effect. This phenomenon is known as the greenhouse effect because, like the glass on a greenhouse, the atmosphere traps some of the energy beneath it.
http://earthobservatory.nasa.gov/Laboratory/PlanetEarthScience/GlobalWarming/GW_Movie3.html

National Oceanic and Atmospheric Administration (NOAA)
What is the Greenhouse Effect?
The glass walls and roof of a greenhouse allow most of the sun's light in, but do not allow most of the heat to escape. This causes the temperature inside the greenhouse to be warmer than outside. The earth's atmosphere, and in particular carbon dioxide (CO2) and water vapor (H2O), acts like a greenhouse, trapping heat and making the earth warmer.
http://wdc.obs-mip.fr/globalwarming/greeneffect.html

National Oceanic and Atmospheric Administration (NOAA)
The greenhouse effect occurs when the atmosphere of a planet acts much like the glass in a greenhouse. Like the greenhouse glass, the atmosphere allows visible solar energy to pass through, but it also prevents some energy from radiating back out into space. The greenhouse effect insures that the surface of a planet is much warmer than interplanetary space because the atmosphere traps heat in the same way a greenhouse traps heat. Certain gases in our atmosphere, called greenhouse gases, tend to reflect radiant energy from the Earth's atmosphere back to the Earth's surface, improving the atmosphere's ability to trap heat.
http://www.fsl.noaa.gov/outreach/education/sam1/Activity5.html

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http://www.fsl.noaa.gov/outreach/education/samii/SAMII_Act6.pdf

Draft of IPCC Fourth Assessment Report
The name "greenhouse effect" comes from the analogy with a greenhouse made of glass which allows sunlight to enter but restricts infrared energy from leaving, thus warming the interior. [...] The natural greenhouse effect is neither harmful nor mysterious. Its basic principles are well-understood and are firmly based on fundamental physics.
http://ipcc-wg1.ucar.edu/wg1/Comments/drafts/AR4WG1_Ch01_FOD.pdf

Hunan University, China

- Light from the sun includes the entire visible region and smaller portions of the adjacent UV and infrared regions.
- Sunlight penetrates the atmosphere and warms the earth's surface.
- Longer wavelength infrared radiation is radiated from the earth's surface.
- A considerable amount of the outgoing IR radiation is absorbed by gases in the atmosphere and reradiated back to earth.

The gases in the atmosphere that act like glass in a greenhouse are called greenhouse gases.
http://jpkc.lzjtu.edu.cn/hjhx/jpkc/7.ppt

The Public Broadcasting Service
In part, we owe our existence to a process called the greenhouse effect. Inside an artificial greenhouse filled with plants, the surrounding glass traps the sun's energy, making it warm inside, even while outside the temperature may be much colder. This same effect happens every day on the Earth. Gases within the atmosphere act like glass, trapping the sun's heat.
http://www.pbs.org/wgbh/nova/ice/greenhouse.html

BBC
A greenhouse works because of the glass panels that line the roof and walls. The glass is transparent to the visible light from the sun, so sunlight can shine in and warm things inside the greenhouse. Now a body at about 35°C emits mostly infrared radiation. (On the other hand our sun, with a surface temperature of about 5500°C, emits mostly visible light.) The glass panels are opaque to infrared light. The result is that the glass lets the energy of the sun in, but won't let it back out. This keeps the inside of a greenhouse warm.
Replace the greenhouse with Earth and glass panels with atmosphere in the above example, and that is how the Earth's greenhouse effect works.
http://www.bbc.co.uk/dna/h2g2/A283277

University Corporation for Atmospheric Research (UCAR)
Have you ever been inside a greenhouse on a cold winter day? It might be cold outside, but inside the greenhouse lush green plants flourish in the warmth and sunshine. Greenhouses are made of glass and are designed to hold heat inside. The atmospheres of some planets are able to trap energy just like a greenhouse. Energy from the Sun can enter the atmosphere, but not all of it can easily find its way out again.
What blocks the Sun's energy from escaping a planet's atmosphere? Unlike a greenhouse, planets do not have a layer of glass over them! Instead, molecules in the atmosphere called greenhouse gases absorb the heat.
http://www.windows.ucar.edu/tour/link=/earth/interior/greenhouse_effect.html

University of Michigan
The "greenhouse effect" is the heating of the Earth due to the presence of greenhouse gases. It is named this way because of a similar effect produced by the glass panes of a greenhouse. Shorter-wavelength solar radiation from the sun passes through Earth's atmosphere, then is absorbed by the surface of the Earth, causing it to warm. Part of the absorbed energy is then reradiated back to the atmosphere as long wave infared radiation. Little of this long wave radiation escapes back into space; the radiation cannot pass through the greenhouse gases in the atmosphere. The greenhouse gases selectively transmit the infared waves, trapping some and allowing some to pass through into space. The greenhouse gases absorb these waves and reemits the waves downward, causing the lower atmosphere to warm.
http://www.umich.edu/~gs265/society/greenhouse.htm

Cary Academy, North Carolina
The term "greenhouse effect" describes how the gasses in Earth's atmosphere retain the radiant energy from the sun instead of letting it fly back out into space. The glass of the greenhouse works the same way.
In short, the gasses in the atmosphere let energy in and don't let all the energy back out.
http://web1.caryacademy.org/chemistry/rushin/StudentProjects/CompoundWebSites/2000/CarbonDioxide/greenhouse_effect.htm

Appalachian State University, North Carolina
Selective Absorbers and Greenhouse Effect.
Our atmosphere is a selective filter since it is transparent to some wavelengths and absorbs others.
The greenhouse effect occurs when the energy absorbed is not all be radiated because of the filtering of the atmosphere. Some of the earth's radiated energy is reflected back to the surface. Consequently the earth's atmosphere has an increased temperature. This process is much like the action of glass in a greenhouse.
http://www.physics.appstate.edu/courses/FirstExamReview.rtf

The University of Colorado at Colorado Springs
3. greenhouse effect
a. transmission can depend on wavelength of radiation
b. glass
1) readily transmits shortwave radiation but not longwave radiation
2) that's why heat builds up in a closed automobile
c. greenhouse effect: the trapping of heat in the lower troposphere because of differential transmissivity for short and long waves
1) greenhouse gases readily transmit incoming shortwave radiation from the sun but do not easily transmit outgoing longwave terrestrial radiation
2) most important greenhouse gases: water vapor and CO2
3) terrestrial radiation is absorbed by greenhouse gases and reradiated back toward the surface
http://web.uccs.edu/geogenvs/ges100-online/Chapt4.doc

Nathan Phillips, Associate Professor, Geography and Environment
Boston University
A simple greenhouse effect model
A. Glass represents the 'normal' greenhouse effect on earth and is at top of atmosphere
B. Solar shortwave radiation S largely makes it to surface
C. For energy balance, top of glass must send S back out
D. Greenhouse gases don't have a preferred direction; they send S units in both directions – up and down
E. Thus, the surface of the earth recieves 2S due to the greenhouse effect – instead of 1S if there were no atmosphere!
G. Thermal radiation emitted from earth = 2S
http://people.bu.edu/nathan/ge510_06_6.pdf

ThinkQuest Education Foundation
In a greenhouse, heat from the sun enters the glass. The heat in the form of infra-red light bounces and heads back up towards the glass. The glass then allows only some of this heat to escape, but reflects back another portion. This heat remains bouncing within the greenhouse. In the case of planet Earth, there is no glass, but there is an atmosphere which retains heat or releases heat.
http://library.thinkquest.org/11353/greenhouse.htm

Moorland School, Earth Science (UK)
Imagine that Earth has been encircled by a giant glass sphere. The heat of the sun penetrates through the glass. Some of the heat is absorbed by the Earth, and some of it is radiated back towards space. The radiated heat reaches the glass sphere and is prevented from dispersing any further.
Similarly, the earth is surrounded by a blanket of gases. This blanket traps energy in the atmosphere, much the same way as glass traps heat inside a greenhouse. This results in an accumulation of energy, and the overall warming of the atmosphere. The 'greenhouse effect' is the popular expression for the above process.
http://www.moorlandschool.co.uk/earth/greenhou.htm

Eli Rabett
What happens in a greenhouse is the same mechanism that heats a car up when you close the windows. The sun's light (radiation) shines through the glass. The light energy checks in, but it can't get out because both air flow (most important) and conduction are closed off. The fancy name for air flow is convection. We might fall into the habit of using that below.
That leaves radiation. The wavelength of radiation emitted from a surface depends on the temperature of the surface according to a formula first derived by Max Planck. It turns out that the emission from the sun is peaked in the green which can pass through the glass windows, but the radiation from surfaces at 300 C is peaked at much longer wavelengths in the infrared (IR), which is absorbed by the glass.
The IR radiation inside the car can heat the air inside the car, but, because it is adsorbed by the glass windows and the metal, it cannot get out.
http://rabett.blogspot.com/2005/10/people-who-tell-you-that-greenhouse.html

Grandview High School, Missouri
Have you ever walked through a green house in late January? The temperature on the outside may have been quite cold but the temperature on the inside might have felt almost balmy!
This is not because of a giant furnace located in the back of the green house, but because of the green house effect. When rays from the sun travel through the glass, it strikes all materials within the greenhouse. Because of this, the objects will heat up as does everything that comes in contact with the suns infrared rays (heat). These rays generally bounce back towards where they came from unless there is a barrier to keep them in. Yes that's right, a barrier such as glass!
The Green House Effect
Once the infrared rays bounce off of the objects contained in the green house, some of the rays get trapped inside of the greenhouse because of the glass. The rays then bounce off of the glass and back towards all of the objects in the green house. As the rays of infrared radiation (found in sunlight) bounce all over the greenhouse, the greenhouse heats up.
http://www.csd4.k12.mo.us/egits/MAP%20TAP/Andy%20Leech/greenhouse.ppt

Science Encyclopedia
The greenhouse effect is the retention by the Earth's atmosphere in the form of heat some of the energy that arrives from the Sun as light. Certain gases, including carbon dioxide (CO2) and methane (CH4), are transparent to most of the wavelengths of light arriving from the Sun but are relatively opaque to infrared or heat radiation; thus, energy passes through the Earth's atmosphere on arrival, is converted to heat by absorption at the surface and in the atmosphere, and is not easily re-radiated into space. The same process is used to heat a solar greenhouse, only with glass, rather than gas, as the heat-trapping material.
http://science.jrank.org/pages/3148/Greenhouse-Effect.html

California Environmental Protection Agency
Simply put, the greenhouse effect compares the earth and the atmosphere surrounding it to a greenhouse with glass panes. Plants in a greenhouse thrive because the glass panes keep the air inside at a fairly even temperature day and night, and throughout the four seasons of the year. Just as the glass lets heat from sunlight in and reduces the heat escaping, greenhouse gasesand some particles in the atmosphere keep the Earth at a relatively even temperature.
http://www.arb.ca.gov/cc/factsheets/ccbackground.pdf

The Atmosphere, Climate & Environment (ACE) Information Programme (UK)
The greenhouse gases in the atmosphere act in a similar way to panes of glass in a greenhouse (see Figure 2 below). Radiation from the Sun (consisting mainly of visible and ultraviolet (UV) radiation) can travel through glass into the greenhouse. When this radiation is absorbed by objects in the greenhouse, it is re-radiated as infrared (IR) radiation, or heat. This heat cannot escape through the glass, so the greenhouse warms. up.http://www.ace.mmu.ac.uk/Resources/Teaching_Packs/Key_Stage_4/Climate_Change/01p.html
(But look at the self-contradictory illustration! AS)

The University of Winnipeg
As glass in a greenhouse traps heat inside, gases in the upper atmosphere trap some of the heat escaping the Earth, creating a greenhouse effect.
http://theory.uwinnipeg.ca/mod_tech/node204.html

The University of the Western Cape, South Africa
A greenhouse is made entirely of glass. When sunlight (shortwave radiation) strikes the glass, most of it passes through and warms up the plants, soil and air inside the greenhouse. As these objects warm up they give off heat, but these heat waves have a much longer wavelength than the incoming rays from the sun. This longwave radiation cannot easily pass through glass, it is re-radiated into the greenhouse, causing everything in it to heat up.
http://www.botany.uwc.ac.za/envfacts/facts/gwarming.htm

Department of Environmental Affairs and Tourism, South Africa
Energy coming from the sun passes through the atmosphere and warms the Earth - but the emitted infra-red radiation coming from the Earth's surface is partly absorbed by gases in the atmosphere and some of it is re-emitted downwards, further warming the surface of the Earth and the lower levels of the atmospshere. This effect has been called the 'greenhouse effect' because of a similar effect caused by glass in a greenhouse: it lets sunlight into the greenhouse but in turn traps a portion of infra-red radiation (heat) inside the greenhouse.
http://www.environment.gov.za/ClimateChange2005/Greenhouse_Gases_and_the_Greenhouse_Effect.htm

U.S. Department of the Interior, U.S. Geological Survey
The gases that encircle the Earth allow some of this heat to escape into space, but absorb some and reflect another portion back to the Earth. The process is similar in Mountain View, only, the greenhouse there is made of glass instead of gas.
http://hvo.wr.usgs.gov/volcanowatch/1998/98_10_22.html

The Institute for Educational Technology, Italy
Just as it happens in a greenhouse where the function carbon dioxide performs in the atmosphere is played by glass-rafters, the sun's energy arrives down at the earth, where it is partially absorbed and partially reflected. Such reflected heat, however, is reflected again, by glass as for the greenhouse, by carbon dioxide as for the atmosphere, down on earth: it is as if a part of the heat were entrapped, thus determining a growth of temperature on the ground.
http://www.itd.cnr.it/ge8/rivista/inglese/num_2/galil3.htm

University of Cincinnati College of Engineering, Ohio
Greenhouses are much warmer inside than the air is outside because the glass is transparent to light and allows short-wavelength light to pass through and heat the contents of the greenhouse. It also reflects back the longer wavelength heat radiating within the greenhouse, thus preventing if from passing back out.
In a glass greenhouse, heat builds up and gets trapped due to presence of carbon dioxide and other heat trapping gases in the upper atmosphere.
CO2 is analogous to glass.
http://www.eng.uc.edu/~pbishop/Chapter-3-Slides.ppt

Miami-Dade Environmental Resources Department, Florida
The phenomenon gets its name from the similarity to a garden greenhouse. Visible light passes through the glass ceiling and walls of a greenhouse. Some of the light is absorbed, some is reflected back, and a portion of it is radiated out as heat. Glass, like carbon dioxide (CO2) and other "greenhouse gases" doesn't allow heat to escape back out.
http://www.miamidade.gov/derm/climate_change_greenhouse_effect.asp

University of Washington, School of Oceanography
Greenhouse effect: a blanket of water vapor and CO2 and methane CH4 traps the upward infra-red 'long-wave' or 'heat' radiation. The pane-of-glass model assumes total absorption of upward infrared waves yet no absorption of visible light..both of which are not completely accurate, hence the numbers are not applicable to the real atmosphere, yet demonstrate the effect.
— incoming solar radiation, I in watts/meter^2
— some is simply reflected back to space the rest is absorbed by ocean and land and atmosphere yet re-radiated as infrared heat, both upward and downward (red arrows)
— The net effect of the 'blanket' of atmosphere is to have more downward radiation toward the Earth's surface than just the incident sunlight.
http://www.ocean.washington.edu/courses/as222d/lecture2(6)-slides07.pdf

Saskatchewan Schools and School Divisions, Canada
The heat-trapping gases in the atmosphere behave like the glass of a greenhouse. They let much of the Sun's rays in, but keep most of that heat from directly escaping. This is why they are called greenhouse gases. Without these gases, heat energy absorbed and reflected from the Earth's surface would easily radiate back out to space, leaving the planet with an inhospitable temperature close to –19°C (2°F), instead of the present average surface temperature of 15°C (59°F).
http://www.saskschools.ca/~greenall/scienceprojects/greenhouse_effect.htm

U.S. House of Representatives Select Committee on Energy Independence and Global Warming
Just like the glass of a greenhouse traps warm air inside, certain gases in the atmosphere trap heat that would otherwise escape into space.
http://globalwarming.house.gov/issues/globalwarming?id=0002

The Austrian JI/CDM- Programme
The Earth's atmosphere is comparable to a glass roof of a greenhouse: the short-wave solar radiation passes through nearly unhindered and warms the Earth's surface. From the Earth's surface, the short-wave radiation is partly absorbed and partly reflected back as long-wave thermal radiation. However, this long-wave thermal radiation cannot pass the atmosphere unhindered due to the greenhouse gases but is partly reflected back again to the Earth's surface. In absence of this natural greenhouse effect the average temperature on the Earth would not reach the present level of about plus 15 degrees Celsius, but about minus 18 degrees Celsius.
http://www.ji-cdm-austria.at/en/portal/kyotoandclimatechange/ourclimate/greenhouseeffect/

Torfaen County, Environment and Planning, Wales
Some of the energy from the sun is trapped inside our atmosphere as it is reflected back from the earth towards space. This natural process is called the greenhouse effect, as the atmosphere acts like the glass walls of a greenhouse, which allows the sun's rays to enter but keeps the heat in.
http://www.torfaen.gov.uk/EnvironmentAndPlanning/EnergyEfficiencyAdviceAndAssessment/ClimateChange/GreenhouseEffect.aspx

Fort Lewis College, Physics Department, Colorado
This partial trapping of solar radiation is known as the greenhouse effect. The name comes from the fact that a very similar process operates in a greenhouse. Sunlight passes relatively unhindered through glass panes, but much of the infrared radiation reemitted by the plants is blocked by the glass and cannot get out. Consequently, the interior of the greenhouse heats up, and flowers, fruits, and vegetables can grow even on cold wintry days.
http://physics.fortlewis.edu/Astronomy/astronomy%20today/CHAISSON/AT307/HTML/AT30702.HTM

The National Assessment Synthesis Team, US Global Change Research Program
The composition of the atmosphere is particularly important because certain gases (including water vapor, carbon dioxide, methane, halocarbons, ozone, and nitrous oxide) absorb heat radiated from the Earth's surface. As the atmosphere warms, it in turn radiates heat back to the surface, to create what is commonly called the "greenhouse effect."
http://www.usgcrp.gov/usgcrp/Library/nationalassessment/overviewclimate.htm

Please read this most important information again:

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PPS by Hans Schreuder: There is no greenhouse effect in our atmosphere other than the mechanism that prevents *night-time* temperatures from dropping lower than they would otherwise, due to the presence of humidity (water vapor) – that mechanism does however not add one single degree of warmth to the day that follows and water vapor actually acts as a cooling agent during the hours of sunlight.

To illustrate the case for water vapor, consider a tropical island and a desert at equal latitude and receiving the same amount of solar radiation and think about these questions, with the concept of warmer/cooler relative to the *maximum possible level* given solar radiation and Stefan-Boltzmann's law:

1. Is the tropical island warmer or cooler due to its high humidity (answer: cooler during the day, warmer during the night)
2. Is the desert warmer or cooler due to its low humidity (answer: warmer during the day, cooler during the night)