

Politics and the Greenhouse Effect

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What has politics, a needed instrument to run a nation, to do with a scientific concept that tells the difference between the surface temperature of earth and the temperature of earth's atmosphere as seen from space? This temperature difference of 33 °C has unfortunately and inadequately been named "The Greenhouse Effect" (GE) despite the absence of any relationship between this effect and the warm climate in a real greenhouse. The intention of this paper is to cover the title subject in a few pages in a way that is understandable to a high school student and, hence, to Swedish parliamentary members. **Basic scientific principles demonstrate that the overall GE phenomenon is not a result of human emissions of "greenhouse gases".**

Politics can be claimed to be the art of appearing credible, at least in a democracy. If successful, the power is yours which is the goal of politicians. But politicians are the servants of the voters who have the power to dismiss you if you fail to be credible. The temptation is to resort to gaining credibility without a base in ethics, truthfulness, honesty, observational evidence and scientific facts. This can be great for politicians who, at least sometimes, believe that the ends justify the means.

Likewise, the temptation can be great for the servants of our nations that are responsible for the quality of information that the elected, unspecialized politicians need to be able to make rational decisions. To disregard the methods of science to gain unjustified influence, economical gain and fame might be more common than we would like to know. The risks involved in too strong a relationship between politicians and the servants of a nation were well expressed by a US president in *Eisenhower's Farewell Address to the Nation*, January 17, 1961. Few Swedes would deny the validity of his words.

"The prospect of domination of the nation's scholars by Federal employment, project allocations, and the power of money is ever present and is gravely to be regarded. It is the task of statesmanship to mold, to balance, and to integrate these and other forces, new and old, within the principles of our democratic system – ever aiming toward the supreme goals of our free society. "

It is now up to the Swedish Prime Minister Fredrik Reinfeldt to realize that his most recognized servants in the specialized topics of climatology and meteorology in Sweden have failed to accomplish their duty to present facts and results that, according to Swedish law, has to be based on scientific methods and acknowledged experience.

Instead they have to a large extent relied on, and continue to rely on, what a political UN organization, the Intergovernmental Panel of Climate Change (IPCC) is stating without complying with scientific methods according to its Swedish definition. It should be observed that the IPCC statements have no validity, as information with scientific quality, according to the Swedish law. The IPCC is biased from the start by its mandate. It only covers the impact on climate caused by man (anthropogenic or AGW) which is reductionism that does not conform to scientific methods. Furthermore, the IPCC has chosen not to investigate those types of local, regional and national global anthropogenic impacts which actually do exist. The IPCC has emphasized the importance of an unverified, simplistic model that predicts a particular surface temperature of earth as being caused by "greenhouse gases". These are

specifically identified as carbon dioxide and methane. Water vapour, the most abundant greenhouse gas, is wrongly assumed to be “a quantifiable feedback” to carbon dioxide, which is 50 times less abundant than water vapour in the atmosphere. Such a model is far too inexact and speculative to describe the complex climate system. This type of logic does not conform to accepted scientific methodology.

The major IPCC claim is that greenhouse gases are the sole reason why the average surface temperature of earth is 33 °C warmer than the temperature at an average altitude of around 4000 m, where the infrared photons prefer to leave our planet. (Seen from Mars the temperature of earth is -18 °C). The pertinent question is: do greenhouse gases raise the global temperature 0.1, 10 or 100% of the observed 33°C? There are many indications that the first alternative is the most probable. Let us mention a few ways the IPCC “greenhouse gas” claim can be debunked.

I. The high school approach.

The average sea level pressure is around 1013 mbar. If you live at a higher altitude the pressure will be less. Your barometer at 100 m above sea level will read about 12 mbar less. Pressure is a direct measurement of how much atmospheric mass there is above your head per square meter. The ideal gas law can be written $PV = RT$ where P is the pressure (Pascal), V is the volume (m^3), R is the gas constant (Joule/K) and T is the average temperature (over some days). Let us now calculate the temperature in a $1 m^3$ volume at any height. Hence $T = P/R$, T is proportional to P and P is known from observation to decrease with increasing altitude. It follows that the average T has to decrease with altitude. This decrease from the surface to the average infrared emission altitude around 4000 m is 33 °C. It will be about the same even if we increase greenhouse gases by 100%. This is a consequence of the ideal gas law, a natural law which politicians cannot change, but unscrupulous scientists can twist.

II. Observational evidence

On any sunny day the solar irradiation hitting the surface of earth will warm the air just above it which will then start to lift. A black ground surface, such as a parking place or a newly ploughed field, will absorb more solar energy and subsequently heat the air more than surfaces of lighter colours. Hawks and vultures know about this phenomenon, allowing them to be able to hover above such surfaces without moving their wings. The temperature decrease with elevation in such a situation is very close to the dry adiabatic temperature lapse rate which can be derived theoretically. It is -9.8 °C/km. Everyday observational evidence and theoretical derivations show that the temperature lapse rate in such situations can be determined without consideration of any influence at all from greenhouse gases, whether they are of anthropogenic origin or not. Hence, GE has to be a function of other processes than “greenhouse gases”. The question remains if CO₂ has a measurable influence, at all.

III. Advanced theoretical considerations

The theoretical temperature lapse rate that can be expected to be found in the earth’s atmosphere depends on a number of physical processes that are possible to identify. The GE is basically determined by the first and second laws of thermodynamics. The energy per mass unit of an atmosphere will tend to equalize and become constant from the surface upwards. This will lead to an average vertical cooling rate defined by $-g/C_p$, (g is gravity and C_p heat capacity of air) which also is named the dry adiabatic temperature lapse rate. This lapse rate is modulated by condensation processes in the atmospheres (clouds) and other less important physical processes. The influence of greenhouse gases is small. These additional processes lead to an average observed global temperature lapse rate around -6.5 °C/km (ref 1). This

temperature decrease can be directly verified by any airplane passenger. A strict proof showing that there is no theoretical reason to assume that greenhouse gases cause the bulk of the 33 °C GE can be found in the peer reviewed article in ref (2). There are several other relevant articles in scientific journals.

IV. Politicized science

The dysfunctional nature of the climate sciences is nothing short of a scandal. Leaders of the meteorological institution at Stockholm University have not only failed to do their duty as teachers of science based on scientific methods, they have actively suppressed research results presented by researchers that do not comply with the dogma that they and the IPCC have set without support of accepted scientific methods. The policy at the university is also to refuse an open scientific debate involving the students. Instead the major preoccupation of the leaders has been to influence politicians and to publish their dogmatic beliefs in newspapers or appear on TV programs. This has obviously been used as a method to attract funding that they do not deserve. These so-called leaders are far more like irresponsible politicians than scientists and a good question to ask is why our elected politicians are letting them continue with this behaviour. The following quote from Professor Erland Källén is from Dagens Nyheter, April 17, 2009.

“The people who claim that we don’t need to worry (about AGW) – they simply have very little on their feet” This quote illustrates well the low scientific standard that professor Källén and his co-workers have established in Sweden. The discussion of scientific issues of importance for climate sciences seems taboo in the meteorological institution at Stockholm University. It would be far better if he returned to do the work he is supposed to do instead of spreading propaganda that does not have the support of accepted scientific methodology. He used to be quite good at complicated integrals during the time I studied meteorology and he was my teacher. In politics he is just a layman who is quickly running out of credibility. It would be sad if our prime minister will share a similar fate by listening to just a few biased scientists instead of relying on known and new scientific fact that comply by scientific methods and not consensus. Science is too important for our society to be misused in the way it has been done within the Climate Science Community.

Atmospheric Temperature Distribution in a Gravitational Field

William C. Gilbert

There still seems to be some confusion in the Climate Science Community about the temperature distribution in a gaseous atmosphere under the influence of a gravitational field. My academic degrees are in Chemical Engineering and Chemistry and I have spent over three decades in Research and Development in private industry (DuPont, Monsanto, Celanese and American Cyanamid). I became interested in Climate Science some four years ago because it seemed to be a perfect fit with my Chemical Engineering background (large, complex, multi-variant systems involving significant heat and mass transfer processes) and I thought I may be able to contribute something. I was immediately amazed at the paltry level of scientific competence that I found, especially in the basic areas of heat and mass transfer. Even the relatively simple analysis of atmospheric temperature distributions were misunderstood completely. To illustrate the level of simplicity involved with this topic, let's go back to basic physics.

Consider a vertical gas column containing a finite and constant specific energy level (U , J/kg) that is isolated from its surroundings (no input/output of energy or mass) but which is in a gravitational field. The column will in time reach equilibrium with respect to internal specific energy but the temperature will not be uniform. At static equilibrium (adiabatic equilibrium where no macro motion exists), internal specific energy (U) is composed of both thermal energy (the energy due to molecular motion) and potential energy (the energy due to position). The latter has to exist in a gravitational field. Thus, according to the first and second law of thermodynamics, the specific internal energy (U) for any mass parcel in the air column has to be constant and can be expressed as a sum of the thermal and potential energies. This law (expressed as specific energies) can be written:

$$U = C_p T + gh \text{ or upon differentiation } dU = C_p dT + gdh \quad (1)$$

where “ $C_p T$ ” is the enthalpy (or thermal energy) per mass unit, “ g ” is the gravitational acceleration, “ h ” is the vertical height and “ gh ” is the potential energy per mass unit. At static equilibrium $dU = 0$ and equation (1) becomes;

$$C_p dT + gdh = 0 \quad (2)$$

Thus, according to the first and second laws of thermodynamics, for any given difference in altitude (height) the increase in specific potential energy (gdh) must be offset by a corresponding decrease in thermal energy ($C_p dT$) and a corresponding decrease in temperature. **Thus in a gravitational field an atmosphere in equilibrium must have a non-isothermal decreasing temperature distribution with altitude.** This is true in an isolated air column and this basic physical phenomenon **exists independent of any input/output of other energy sources such as ground temperature, convection, radiation, convection, etc.** And of course equation (2) can be rewritten as:

$$dT/dh = -g/C_p T = -9.8 \text{ K/km}$$

which is a temperature profile often observed in our atmosphere on a daily basis. This static temperature lapse rate (in this model atmosphere) is identical to the dry adiabatic lapse rate theoretically derived in Meteorology for a convective adiabatic air parcel. In both situations it is solely a function of the magnitude of the gravitational field and the heat capacity of the atmospheric gas, and nothing else. And this relationship aptly describes the bulk of the 33°C so-called “Greenhouse Effect” that is the bread and butter of the Climate Science Community.

It is remarkable that this very simple derivation is totally ignored in the field of Climate Science simply because it refutes the radiation heat transfer model as the dominant cause of the GE. Hence, that community is relying on an inadequate model to blame CO₂ and innocent citizens for global warming in order to generate funding and to gain attention. If this is what “science” has become today, I, as a scientist, am ashamed.

References:

1. The US 1976 standard atmosphere: http://modelweb.gsfc.nasa.gov/atmos/us_standard.html and <http://www.digitaldutch.com/atmoscalc/index.htm>
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