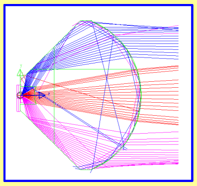

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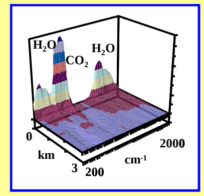

It's Climate Algebra Not Climate Science

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Executive Summary

The energy transfer processes that determine the surface temperature of the earth have been oversimplified using the concept of an equilibrium climate. The time dependence was removed and replaced by average values. Physical reality was abandoned in favor of mathematical simplicity. Climate science has been replaced by climate algebra. This has created two mathematical problems. First, when the atmospheric concentration of CO_2 or other greenhouse gases is increased, climate algebra creates an increase in surface temperature. This is just mathematical artifact of the equations used in the models. Second, the surface temperature is warmer than it ought to be if it were simply heated by a 24 hour average sun. This is explained using a contrived greenhouse effect. Climate algebra has been used to create an equilibrium climate fantasy land of pseudoscientific radiative forcings, feedbacks and climate sensitivity in which the climate modelers can play computer games with their equations.

The equilibrium climate fantasy land was first created by Manabe and Wetherald in the 1960s. As funding was reduced for NASA space exploration and US Department of Energy (DOE) nuclear programs, there was mission creep. Climate modeling became an alternative source of funding for otherwise unemployed mathematicians and computer programmers. The climate algebra was blindly copied and improved. A cabal of NASA trained climate modelers helped to spread the climate algebra to other groups. Environmental and political groups then decided to exploit the mathematical warming artifacts to further their own interests. Climate algebra has degenerated past scientific dogma into the Imperial Cult of the Global Warming Apocalypse. Irrational belief in the results produced by the fraudulent climate models has been used to establish government policies that try to save the world from a non-existent problem.

These mathematical problems disappear when the interactive, time dependent flux terms are used to determine the surface temperature. The temperature changes related to the increase in greenhouse gases are too small to measure in the normal daily and seasonal temperature variations. The surface temperatures in the hot reservoirs of the tropospheric heat engine must be warmer than the cold reservoir at higher altitudes in the troposphere. Eisenhower's warning about the corruption of science by government funding has come true. It is time to dismantle a massive, multitrillion dollar climate fraud.

Technical Summary

The troposphere functions as an open cycle heat engine that transports part of the absorbed solar heat from the surface to the middle to upper troposphere by moist convection. From here it is radiated back to space, mainly by the water bands. Convection is a mass transport process that is coupled to both the gravitational field and the rotation of the earth. These couplings produce the tropospheric lapse rate, the Hadley, Ferrel, Polar convective cell structure, mid latitude cyclone/anticyclone systems, the trade winds and the ocean gyre circulation that form the earth's basic weather patterns. This heat engine also operates at low temperatures and pressures. The

radiative heat transfer cannot be described using simple blackbody theory. A high resolution radiative transfer analysis is required using the molecular line profiles. The surface temperature is set at the surface by four main interactive, time dependent flux terms: the absorbed solar flux, the net LWIR cooling flux, the moist convection (evapotranspiration) and the subsurface thermal transport. The downward LWIR flux from the lower troposphere to the surface establishes a partial LWIR exchange energy. The net LWIR flux (upward minus downward LWIR flux) is insufficient to dissipate the absorbed solar heat and the surface warms so that the excess heat is removed by moist convection. This requires a thermal and/or humidity gradient. The hot reservoirs of the tropospheric heat engine at the surface-air interface must be warmer than the cold reservoir in the middle to upper troposphere. An upper limit to the ocean surface temperature near 30 °C is found in the equatorial warm pools. This is determined by wind driven water evaporation, not by the LWIR flux.

Starting in nineteenth century, the energy transfer processes that determine the surface temperature were oversimplified using the concept of an equilibrium climate. Physical reality was abandoned in favor of mathematical simplicity. Climate science was replaced by climate algebra. The interactive, time dependent flux terms that determine the surface temperature were replaced by average values. It was assumed that the surface temperature was determined by the energy balance between an average absorbed solar flux and an average LWIR flux returned to space at the top of the atmosphere. The simplified climate algebra created two mathematical problems. First, when the atmospheric concentration of CO_2 or other greenhouse gases was increased, there was a slight decrease in LWIR flux emitted at the top of the atmosphere (TOA). It was assumed that the small amount of additional heat released in the atmosphere produced an increase in surface temperature that restored the LWIR flux balance at TOA. As the water vapor concentration increased with temperature, the initial greenhouse warming artifact was amplified by a water vapor feedback. Second, the surface of the earth was warmer than it ought to have been if it was simply warmed by an average solar flux. This was explained using a vague 'greenhouse effect'. The IR radiation field warmed the earth. Ocean thermal storage was ignored.

In the 1960s, the simplified climate algebra was used to develop primitive one dimensional radiative convective (1-D RC) climate models. These were later incorporated into the unit cells of the larger global circulation models. This created an equilibrium climate fantasy land in which mathematicians and computer programmers could play computer games with their equations. Climate algebra was used as an excuse to improve radiative transfer algorithms and solve fluid dynamics problems with large numbers of coupled non-linear equations. The solutions to these equations are unstable and have no predictive capabilities over climate time scales. These Lorenz instabilities and the tropospheric heat engine were ignored. As funding was reduced for NASA space exploration and US Department of Energy (DOE) nuclear programs, there was mission creep. Climate modeling became an alternative source of revenue. The climate algebra was blindly copied and improved. A flat ocean was added to the climate models. Melodramatic warnings about runaway greenhouse effects and increases in extreme weather events became a lucrative source of research funding. The climate modelers became trapped in a web of lies of their own making. The initial decrease in flux at TOA produced by increases in greenhouse gas concentrations became known as a radiative forcing that perturbed the energy balance of the earth. However, this produced too much warming, so other forcing agents such as aerosols were added as tuning knobs to cool the climate models. The water vapor feedback multiplied into a whole family of feedbacks that could be used to 'tune' the later climate models to give any desired result. The climate models were compared using a climate sensitivity. This is the fictional equilibrium climate warming produced in the climate models when the CO_2 concentration is doubled from 300 to 600 parts per million (ppm). Climate modeling using the simplified climate algebra has degenerated past scientific dogma into a quasi-religious doomsday cult. The Prophets of the Imperial Cult of the Global Warming Apocalypse invoke the radiative forcings, feedbacks and climate sensitivities of the climate models to promote nightmare fantasies of a fictional warming world. Various political and environmental groups decided to exploit the Climate Apocalypse to promote their own agendas. This has led to the net zero insanity of today.

The mathematical problems related to climate algebra disappear when the interactive, time dependent flux terms are used to determine the surface temperature. The temperature changes related to the increase in greenhouse gas concentrations are too small to measure in the normal daily and seasonal temperature variations. The surface temperatures in the hot reservoirs of the tropospheric heat engine must be warmer than the cold reservoir at higher altitudes in the troposphere. Eisenhower's warning about the corruption of science by government funding has come true. It is time to dismantle this massive climate fraud.

1.0 Introduction

The earth is an isolated planet that is heated by shortwave (SW) electromagnetic radiation from the sun and cooled by the emission of longwave IR (LWIR) back to space. It is also a rotating water planet with an atmosphere that has an IR radiation field. Starting in nineteenth century, the climate energy transfer processes that determine the surface temperature were oversimplified using the concept of an equilibrium climate. This was introduced by Pouillet [1836]. Speculation that changes in the atmospheric concentration of CO_2 could cycle the earth through an Ice Age started with the work of Tyndall [1861, 1863]. The interactive, time dependent flux terms that determine the surface temperature were replaced by average values. Physical reality was abandoned in favor of mathematical simplicity. Climate science was replaced by climate algebra. It was assumed that the surface temperature was determined by the energy balance between an average absorbed solar flux and an average LWIR flux returned to space at the top of the atmosphere. When this energy balance was perturbed by an increase in the atmospheric CO_2 concentration, there was a decrease in the LWIR flux emitted to space within the spectral regions of the CO_2 emission bands. The surface temperature was then supposed to increase until the energy balance was restored. In reality, the small amount of additional heat released into the troposphere has no measurable effect on the surface temperature. Any increase in temperature was a mathematical artifact of the simplified climate model assumptions. The climate modelers were just playing computer games in an equilibrium climate fantasy land. This also created a non-existent problem: the surface of the earth was warmer than it ought to have been if it was simply warmed by an average solar flux. This was explained using a vague 'greenhouse effect'. The IR radiation field warmed the earth.

Temperature regulation by the thermal and humidity gradients at the surface-air interface was ignored. The troposphere functions as an open cycle heat engine. Heat is removed from the surface by moist convection and transported to the middle and upper troposphere. From here it is radiated back to space, mainly by the water bands. The hot reservoir of the heat engine at the surface must be warmer than the cold reservoir in the troposphere. This explains the greenhouse effect. Climate energy transfer is determined by the Second Law of Thermodynamics, not the First.

Here is a 'plain language' summary:

We assume that the earth's climate is controlled by an exact energy balance between the average absorbed solar flux and the average outgoing longwave radiation (OLR) at the top of the atmosphere (TOA). We cannot simulate the complexities of the real climate with our computer models so we will assume that the mathematical artifacts created by our one dimensional convective radiative (1-D RC) model are correct. We need the warming to justify our research funding. We will only use atmospheric radiative transfer in our model. That is all we understand. The surface must be heated by a greenhouse effect. We will ignore the surface energy transfer including evaporation and convection. Our model surface will be a partially reflective blackbody surface with zero heat capacity. Later, we will add a flat ocean model for extra heat capacity. We will force our model to have a lapse rate (tropospheric temperature profile) that does not exceed -6.5 °C per kilometer. We will also assume a fixed humidity distribution. This makes our model look good when we compare it to an average atmospheric temperature profile. This assumption also creates a 'water vapor feedback' that amplifies the CO_2 warming artifact that we create with our model. We will then take this model and add it to every unit cell in our larger global circulation model (GCM). This has all of the fluid dynamics equations that we really want to solve. We will forget about the Lorenz instabilities. This will be the foundation of our equilibrium climate fantasy land. We will ignore the real world and play computer games with our equations. We are the Prophets of the Imperial Cult of the Global Warming Apocalypse. You must believe in our fantasy of pseudoscientific radiative forcings, feedbacks and climate sensitivity before you can join our climate modeling cult and play computer games with us.

Eisenhower's warning about the corruption of science by government funding has come true. Climate science has been thoroughly corrupted by a tidal wave of government largesse. There are three parts to this climate fraud. First, starting in the nineteenth century, climate energy transfer was oversimplified using the equilibrium climate assumption. Second, there was 'mission creep'. As funding was reduced for NASA space exploration and US Department of Energy (DOE) nuclear programs, climate modeling became an alternative source of revenue. The simplified climate models were accepted without question. Third, there was a deliberate decision by various outside interests, including environmentalists and politicians to exploit the fictional climate apocalypse to further their own causes. The climate models used to perpetuate the climate fraud are no longer based on science. They are political models based on the pseudoscience of radiative forcings, feedbacks and climate sensitivity that are 'tuned' to meet political goals. The climate modelers are paid to provide the climate lies and propaganda needed to justify public policy that restricts the use of fossil fuels. Climate science has degenerated beyond scientific dogma into the Imperial Cult of the Global Warming Apocalypse.

The focus of this article is the oversimplification of climate energy transfer and the initial development of the algebra based climate models, including mission creep. Arrhenius [1896] oversimplified climate energy transfer with his steady state air column model. Manabe and Wetherald [1967] added radiative transfer with a fixed relative humidity. This created a water vapor feedback. The planetary atmosphere modelers at NASA then used climate algebra as an excuse to continue work on atmospheric radiative transfer. Hansen et al [1981] completed the one dimensional climate algebra model by adding a flat ocean and tuning the model to match a global average climate record. This led to the pseudoscience of radiative forcings, feedbacks and climate sensitivity [Ramaswamy et al, 2019]. Finally, as computer technology improved, the radiative forcings were split into natural and human causes. This was used to link anthropogenic radiative forcings to increases in the frequency and intensity of extreme weather events starting with the Third UN IPCC Climate Assessment [2001]. These areas will now be considered in more detail.

Further information on climate energy transfer can be found in the book *Finding Simplicity in a Complex World – The Role of the Diurnal Temperature Cycle in Climate Energy Transfer and Climate Change* (ClarkRorschPublication.com).

2.0 Climate Algebra: The Steady State Air Column and the Water Vapor Feedback

The first climate model was the equilibrium or steady state air column described by Arrhenius [1896]. This was just a uniform volume of air illuminated by a 24 hour average solar flux with a partially reflective blackbody surface that had zero heat capacity. When the CO_2 concentration was increased, such a model created global warming as a mathematical artifact produced by the oversimplified modeling assumptions. Over time, the original speculation by Tyndall in the early 1860s that changes in the atmospheric concentration of CO_2 could cycle the earth through an Ice Age was transformed into concerns that fossil fuel combustion could cause global warming [Tyndall, 1961, 1863]. This became scientific dogma.

The foundation of the equilibrium climate fantasy land was established by three key papers. In 1967, Manabe and Wetherald (M&W) published the basic 1-D RC fantasy model (MW67) with the fictional water vapor feedback. Then they spent the next 8 years building this into a 'highly simplified' GCM (MW75) [M&W, 1975]. As funding was reduced for NASA at the end of the Apollo (moon landing) program, there was mission creep. The group that was studying planetary atmospheres was told to pursue 'earth applications'. They started out by blindly copying the 1-D RC model from MW67 [Wang et al. 1975] (H75). Later, in 1981, Hansen's group at NASA Goddard added the flat ocean model, the CO_2 doubling ritual and claimed that they could simulate a 'global temperature record' using a contrived set of radiative forcings in a 1-D RC model (H81).

The set of assumptions used in MW67 steady state air column model were clearly stated on the second page of the paper:

1) At the top of the atmosphere, the net incoming solar radiation should be equal to the net outgoing long wave radiation.
2) No temperature discontinuity should exist.
3) Free and forced convection and mixing by the large scale eddies prevent the lapse rate from exceeding a critical lapse rate equal to 6.5 C km^{-1}.
4) Whenever the lapse rate is subcritical, the condition of local radiative equilibrium is satisfied.
5) The heat capacity of the earth's surface is zero.
6) The atmosphere maintains the given vertical distribution of relative humidity (new requirement).

The questions that M&W set out to answer were:

1) How long does it take to reach a state of **thermal equilibrium** when the atmosphere maintains a realistic distribution of relative humidity that is invariant with time?
2) What is the influence of various factors such as the solar constant, cloudiness, surface albedo and the distributions of various atmospheric absorbers on the **equilibrium temperature** of the atmosphere with a realistic distribution of relative humidity?
1. 3) What is the **equilibrium temperature** of the earth's surface corresponding to realistic values of these factors?

M&W took the Arrhenius steady state air column model and added a 9 or 18 layer radiative transfer model with a fixed relative humidity (RH) distribution. This created a 'water vapor feedback' that amplified the original CO_2 induced warming artifact. When the CO_2 concentration was doubled in the MW67 model, the surface temperature increased by 2.9 °C for clear sky conditions and 2.4 °C for an average cloudy condition. Their calculation involved the slow accumulation of small temperature increases over a year or more of model time (step time multiplied number of steps). This was the expected result based on the prevailing scientific dogma. M&W never questioned their results and never tried to validate their model using a time dependent thermal engineering analysis of the surface temperature. The normal daily and seasonal temperature and humidity fluctuations were ignored. It is impossible for the small step by step changes in model temperature to accumulate in the real atmosphere. When the atmospheric CO_2 concentration is doubled, the change in the rate of LWIR cooling in the troposphere at low and mid latitudes is a maximum of +0.08 °C per day in a cooling rate of -2 to -2.5 °C per day [Ackerman, 1979; Iacono et al, 2008; Feldman et al, 2008]. This is too small to measure in the real troposphere with diurnal temperature variations in a turbulent boundary layer [Gibert et al, 2007]. Furthermore, the assumption of a fixed RH distribution no longer applies near the surface. Both the relative and absolute humidities change significantly over the diurnal and seasonal temperature cycles.

M&W spent the next 8 years building their 1967 model artifacts into each unit cell of a 'highly simplified' global circulation model, GCM [M&W, 1975] (MW75). When the CO_2 concentration was doubled in this model, the average surface temperature increase was 2.9 °C. They could now play computer games with their fluid dynamics equations in the equilibrium climate fantasy land. Unfortunately, these GCMs require the solution of very large numbers of coupled nonlinear equations. Such solutions are unstable and the errors grow with time. The climate GCMs have no predictive capabilities over the time scales required for climate studies [Lorenz, 1963; 1973].

3.0 Mission Creep: The Growth of the NASA Climate Cabal

As the Apollo (moon landing) program ended at NASA, funding was reduced and those studying planetary atmospheres were told to start working on 'earth applications'. This was described by Hansen et al [2000]

> When I came to GISS as a postdoctoral candidate in the late 1960s my primary interest was in planetary atmospheres, especially the clouds of Venus, and I focused on radiative transfer theory as a tool to study the Venus clouds. But at about that time the director of GISS, Robert Jastrow, concluded that the days of generous NASA support for planetary studies were numbered, and he thus began to direct institutional resources toward Earth applications.

The atmospheres of Mars and Venus are approximately 95% CO_2 with dust and clouds. These were analyzed using a combination of radiative transfer and aerosol scattering algorithms. The NASA modelers had no understanding of climate energy transfer on a rotating water planet. Melodramatic claims about climate change related to 'runaway' greenhouse effects or 'air pollution' were used to justify the extension of their radiative transfer studies to the earth's atmosphere. They failed to conduct any model validation or 'due diligence' and blindly accepted the 1-D RC equilibrium air column model and the CO_2 warming dogma. They just wanted funding to continue their work on atmospheric radiative transfer. They followed M&W into the equilibrium climate fantasy land and have never left.

In the 1970s, the climate modeling group at NASA was part of a 'pipeline' that accepted graduate students with experience in radiative transfer analysis and trained them in the use of fraudulent 'equilibrium' climate models. As these researchers moved on to other positions outside of NASA, they took their climate modeling fantasy land with them. This established the NASA Climate Cabal - a closed group of 'climate cronies' that 'peer reviewed' each other's publications and grant proposals.

During the 1970s there was a global cooling scare related to the cooling phase of the Atlantic Multi-decadal Oscillation (AMO) that was coupled to the weather station record [Douglas, 1975; Akasofu, 2010]. Since ocean cooling was not part of the climate change narrative, Rasool and Schneider [1971] claimed that an increase in aerosol concentration could over-ride any CO_2 induced warming and produce atmospheric cooling. If this continued then it could trigger an Ice Age. At the time, both authors were with NASA Goddard.

> We will report here on the first results of a calculation in which separate estimates were made of the effects on global temperature of large increases in the amount of CO_2 and dust in the atmosphere. It is found that even an increase by a factor of 8 in the amount of CO_2, which is highly unlikely in the next several thousand years, will produce an increase in the surface temperature of less than 2 K. However, the effect on surface temperature of an increase in aerosol content of the

> atmosphere is found to be quite significant. An increase by a factor of 4 in the equilibrium dust concentration of the atmosphere, which cannot be ruled out as a possibility within the next century, could decrease the mean surface temperature by as much as 3.5 K. If sustained over a period of several years, such a temperature decrease could be sufficient to trigger an Ice Age.

They used a 1-D equilibrium model with 60 layers, 0.5 km thick and performed calculations for both clear sky and 'cloudy' conditions. Their model had a lower sensitivity to a CO_2 doubling than MW67, 0.8 °C compared to 2.9 °C for M&W. This was because of differences in the CO_2 absorption coefficients, the lapse rate and the treatment of the H_2O/CO_2 line overlap. The temperature increases produced by CO_2 are a mathematical artifact of the model. The real value should be 'too small to measure'.

Schneider became a professor of climate algebra at Stanford University and was a major Prophet in the Cult of the Global Warming Apocalypse. He established the climate fantasy land at Stanford.

Ramanathan [1975] at NASA Langley claimed that an increase in the atmospheric concentration of chlorofluorocarbons (CFCs) could produce an increase in surface temperature. This was later recognized as the first use of radiative forcing, although the term 'radiative forcing' was not introduced until later [Ramaswamy et al, 2019]. Ramanathan simply used the available spectral data to calculate the decrease in average LWIR flux at TOA for an increase in CF_2Cl_2 and $CFCl_3$ concentrations. He then did a bait and switch trick. He took a sensitivity of the surface temperature to the solar flux of 1.425 W m^{-2} K^{-1} derived from the work of Budyko [1969] and applied it to the change in LWIR flux produced by the CFCs.

> The implications of Eq. 3 for the global climate can be examined by invoking the global energy balance condition which stated that on a global average the net incoming solar radiation should be in balance with F [the LWIR flux emitted to space]. Since the net incoming solar radiation would not change with the addition of CFCs, the energy balance condition implies that F has to be the same for both the perturbed and the unperturbed atmosphere. Recall that the ΔF given by Eq. 3 was calculated by fixing the atmospheric and surface temperature. The decrease in F can be related to an equivalent change in T through the relation $\Delta T_s = \Delta F/(dF/dT_s)$ where dF/DTs is obtained by differentiating Budyko's empirical formulation for F with respect to T_s which yields $dF/dT_s = 1.425$ W m^{-2} K^{-1}. Ramanathan, 1975, p.51.

Ramanathan never explained how a decrease in flux of 1.4 W m^{-2} at TOA could couple to the surface and produce an increase in temperature of 1 K. He stayed in the equilibrium climate fantasy land and ignored the effects of molecular line broadening and the temperature variations and turbulence near the surface.

In 1976, a group at NASA Goddard, including Hansen, extended the 1967 M&W 1-D RC model to include another 8 minor species, N_2O, CH_4, NH_3, HNO_3, C_2H_4, SO_2, CH_3Cl and CCl_4, in addition to the CFCs analyzed by Ramanathan [1975] and the original molecules, CO_2, H_2O and O_3 included in MW67 [Wang et al, 1976]. The authors failed to understand that their calculated temperature changes were nothing more than mathematical artifacts of the 1-D RC climate model that they were using.

> A first step toward achieving a realistic climate model can be taken by modeling specific aspects of the full climate system. In particular, for evaluating the effect of a perturbation of atmospheric radiative constituents, a one dimensional radiative-convective model of the atmospheric thermal structure is a useful tool. Wang et al, 1976, pp. 686-687.

The equilibrium assumption was also clearly stated by Ramanathan and Coakley [1978] in their review paper on radiative convective models.

> For radiative-convective equilibrium the net outgoing longwave radiative flux at the top of the atmosphere, F_{n0}, must equal the net solar radiative flux S_{n0}. Likewise, because the stratosphere is in radiative equilibrium, the net longwave radiative flux at the base of the stratosphere, F_{n1}, must equal the net solar radiative flux into the troposphere, S_{n1}. For any perturbation the stratosphere and the atmosphere as a whole seek a new state of radiative equilibrium. Ramanathan and Coakley, p. 479

They went on to provide an elaborate description of the algebraic climate used in the 1-D RC equilibrium climate fantasy land. At the time, the authors were working at the National Center for Atmospheric Research (NCAR) in Boulder CO. The equilibrium climate fantasy land had expanded to NCAR.

The flat ocean, the CO_2 doubling ritual and the calculation of a global mean temperature record were added to the climate fantasy land by Hansen's group in H81. They began by tuning their model so that a CO_2 doubling from 300 to 600 ppm produced an increase in temperature of 2.8 °C. This is shown in Figure 1a (H81 table 1).

They introduced a 'slab' ocean model with a mixed ocean layer 100 m thick and a thermocline layer below this. This is shown in Figure 1b (H81 figure 1). The surface energy transferwas ignored and only the time delays related to the increase in heat capacity were considered. The penetration depth of the LWIR flux into the oceans is less than 100 micron [Hale and Querry, 1972]. Here it is fully coupled to the wind driven evaporation or latent heat flux. The large wind driven variations in the latent heat flux overwhelm any possible heating effects produced by the increase in LWIR flux related to a 'CO_2 doubling' [Clark and Rörsch, 2023]. The climate fantasy land was now an isolated island protected by a flat ocean without wind or waves.

The H81 model was then used to calculate changes in surface temperature using a variety of 'forcing agents' including greenhouse gases, clouds and aerosols. This is shown in Figure 1c (H81, figure 2). Climate algebra was enshrined in the CO_2 doubling ritual. This is shown in Figure 1d (H81 figure 4). The CO_2 concentration was first doubled in the 1-D RC model from 300 to 600 ppm. This produces a small decrease in the upward LWIR flux emitted to space at TOA and small increase in the downward LWIR flux to the surface. After a few months, the model stratosphere has cooled by ~5 C and the decrease in LWIR flux at TOA is 3.8 W m^{-2}. The energy gained is being used to warm the oceans. Years later, the surface temperature increased by 2.8 °C. Of this, 1.2 °C was produced by the CO_2 and the rest was from feedbacks. In reality, all of this is ‘buried in the noise’ of the normal daily and seasonal temperature variations. At present the annual increase in the average CO_2 concentration is near 2.4 parts per million (ppm) and the change in flux is 0.034 W m^{-2} per year [Harde, 2017]. There can be no measurable surface heating by a CO_2 doubling and no feedbacks.

Available weather station data was combined and averaged into a global mean temperature record. The obvious large peak near 1940 created by the warming phase of the AMO was ignored. This is shown in Figure 1e (H81 figure 3). For reference, the increase in CO_2 concentration [Keeling Curve, 2022] has been added to the original temperature plot. The 1-D RC model with the flat ocean was ‘tuned’ to create the illusion that it could be used to simulate the global temperature record. A combination of increased CO_2, solar variation and volcanic aerosols was used to fit the climate model artifacts to the temperature record. This is shown in Figure 1f (H81 figure 5). The temperature increase produced by CO_2 was determined by the spectral data used in the radiative transfer model and the feedbacks. This overestimated the temperature increase in the weather station record. The solar variation and volcanic aerosols were used as additional tuning knobs to make the model results fit the data. The H81 paper is one of the earliest examples of the use of a contrived set of ‘radiative forcings’ to fraudulently ‘tune’ an equilibrium climate model to match the global average temperature record. This was the prototype political climate model that was ‘tuned’ to meet political goals. It established the pseudoscience of radiative forcing, although the term was not used until later. The concept of radiative forcing was accepted by the UN Intergovernmental Panel on climate Change (IPCC) and has been used in all of the IPCC climate assessment reports [Ramaswamy et al, 2019].

• Climate Sensitivity/Feedbacks

a)

Model	Description	ΔT_s (°C)	f	F (W m^{-2})
1	FAH, 6.5LR, FCA	1.22	1	4.0
2	FRH, 6.5LR, FCA	1.94	1.6	3.9
3	Same as 2, except MALR replaces 6.5LR	1.37	0.7	4.0
4	Same as 2, except FCT replaces FCA	2.78	1.4	3.9
5	Same as 2, except SAF included	2.5–2.8	1.3–1.4	
6	Same as 2, except VAF included	~3.5	~1.8	

Table 1

b) • Ocean Heating

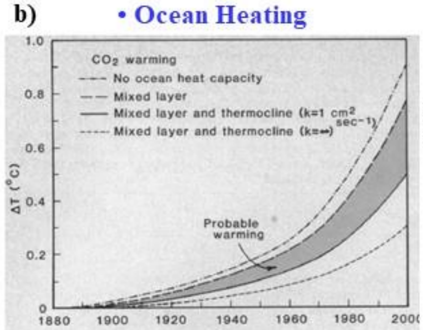


Figure 1

• Radiative forcing

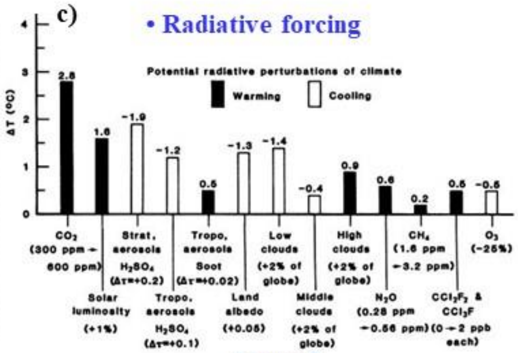


Figure 2

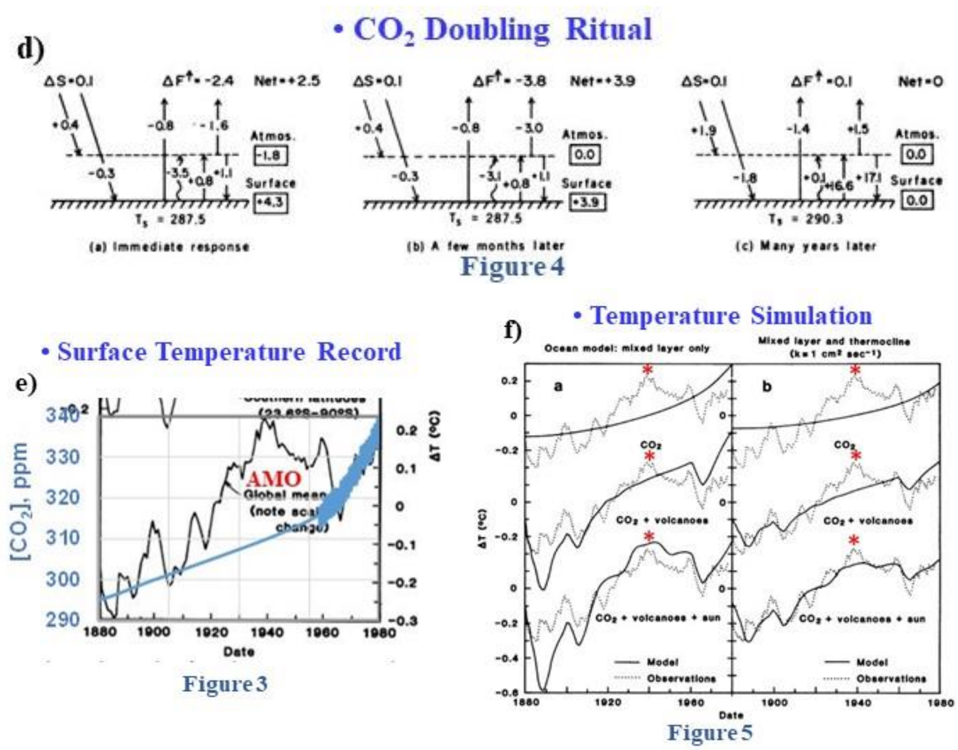


Figure 1: The foundation of the pseudoscience of radiative forcings, feedbacks and climate sensitivity established by H81. The 1940 AMO peak in the global mean temperature record is indicated by an asterisk in Figure 1f.

4.0 Climate Algebra: The Greenhouse Effect

The concept behind the greenhouse effect is that the surface temperature of the earth is higher than it should be based on an average absorbed solar flux near 240 W m^{-2}. This assumes that the surface temperature is determined by atmospheric radiative transfer. It is not. A large fraction of the upward LWIR emission from the surface is 'blocked' by the downward LWIR flux from the lower troposphere to the surface. This establishes a partial LWIR exchange energy at the surface-air interface. In order to dissipate the absorbed solar flux, the surface warms up until the excess solar heat is removed by moist convection. The surface temperature is determined by four interactive, time dependent flux terms, the absorbed solar flux, the net LWIR flux (upward minus downward LWIR flux), the moist convection (evapotranspiration) and the subsurface thermal transport. (Rainfall and freeze/thaw effects are not included here). The energy transfer processes at the ocean-air and land-air interfaces are different and have to be considered separately.

Convection is a mass transport process that is coupled to both the rotation and the gravitational field of the earth. As the warm, moist air rises through the troposphere, it cools as it expands and internal energy is converted to gravitational potential energy. For dry air, the lapse rate, or change in temperature with altitude, is -9.8 °C km^{-1}. As moist air rises above the saturation level, water condenses to form clouds with the release of latent heat. This reduces the lapse rate. The US Standard Atmosphere uses an average lapse rate of -6.5 °C km^{-1}. The coupling of the convection to the rotation leads to the formation of the Hadley, Ferrel and polar cell convective structure, the trade winds, the mid latitude cyclones/anticyclones and the ocean gyre circulation. This produces the earth's basic weather patterns. In addition, the troposphere functions as an open cycle heat engine that transports part of the absorbed solar heat from the surface to the middle and upper troposphere by moist convection. From here it is radiated back to space, mainly by LWIR emission from the water bands. The ocean and land surface layers are the hot reservoirs of the heat engine and the middle to upper troposphere is the cold reservoir. The Second Law of Thermodynamics requires a thermal gradient for the heat to flow from the surface. The surface air layer has to be cooler than the surface. The upward and downward LWIR flux terms are decoupled by molecular line broadening effects [Clark and Rörsch 2023, Clark, 2013]. The moist convection also establishes a control mechanism that limits the upper ocean surface temperatures in the equatorial warm pools to values near 30 °C.

Climate algebra has been used to create two different and incorrect definitions of a fictional radiative equilibrium greenhouse effect. The first is a greenhouse effect temperature and the second is a greenhouse LWIR flux that is absorbed by the atmosphere. These will now be considered in turn followed by a description of the tropospheric heat engine and the convective control mechanism that produces the 30 °C temperature limit.

4.1 The Greenhouse Effect Temperature

In order to dissipate the absorbed solar flux and maintain the energy balance of the earth, the average planetary LWIR flux that has to be returned to space is approximately 240 W m^{-2}. This corresponds to a blackbody emission temperature near 255 K. The average surface temperature is 288 K. It is then assumed that the earth is 33 K warmer that it would be without the IR radiation field in the atmosphere. This is just meaningless climate algebra. The spectral distribution of the LWIR flux returned to space is not that of a black body. It is simply a cooling flux that is emitted from many different layers of the atmosphere at different temperatures. The emission from each layer is modified by absorption and emission within the layers above. There can be no 'effective emission temperature' of 255 K [Clark and Rörsch, 2023; Möller, 1964]. Similarly, an average planetary surface temperature of 288 K is just a number with no physical meaning [Essex et al. 2006].

4.2 The Greenhouse Effect Flux

An alternative definition of the greenhouse effect using climate algebra based on the LWIR flux was discussed by Raval and Ramanathan [1989] and expanded by Ramanathan and Collins [1991].

> In its normal state, the earth-atmosphere system absorbs solar radiation and maintains global energy balance by re-radiating this energy to space as infrared or longwave radiation. The intervening atmosphere absorbs and emits the longwave radiation, but since the atmosphere is colder than the surface, it absorbs more energy than it emits upward to space. The energy which escapes to space is significantly smaller than that emitted by the surface. The difference, the energy trapped in the atmosphere, is popularly referred to as the greenhouse effect (G).
>
> Raval and Ramanathan, 1989

Instead of using a contrived temperature difference of 33 K to define a greenhouse effect temperature, Ramanathan and coworkers took the difference in LWIR flux between the blackbody radiation emitted by the surface and the OLR and called this a greenhouse effect. Climate algebra was used to relate changes this greenhouse effect flux to so called cloud forcings. The long wave cloud forcing is the decrease in the OLR produced by clouds. This is typically ~30 W m^{-2}. The short wave forcing is the increase in solar flux reflected back to space. The authors then go on to discuss changes in these cloud forcings related to ocean temperatures and the 1987 El Nino without any consideration of the surface energy transfer, specifically the wind driven evaporation. They still assume that the surface temperature is determined by the radiative flux balance.

4.3 The Tropospheric Heat Engine

The troposphere is an open cycle heat engine that has some rather unusual properties. The heat source is the absorbed solar flux that varies locally on a daily and a seasonal time scale. It also depends on the cloud cover. The working fluid is moist air. The piston is the downward force of the air above. As the moist air rises, it expands and cools as mechanical work is performed to overcome the force of gravity. Internal molecular energy is converted to gravitational potential energy. The temperatures and pressures are sufficiently low that the thermal radiation cannot be described using simple blackbody theory. A high resolution radiative transfer analysis is required using the molecular line profiles. In the climate models, the radiative transfer is often simplified using wideband absorption or a correlated k distribution to increase the speed of the calculation [Lacis and Oinas, 1991]. However, such simplifications are validated using high resolution calculations. The altitude of the cold reservoir is not fixed. There is a wide vertical band of water vapor LWIR emission with a peak intensity near 260 K (-13 °C). As the surface temperature increases, this band shifts to higher altitude. The upward and downward LWIR fluxes are decoupled by molecular line broadening effects. The temperature of an air parcel in the troposphere depends on both the convective and the LWIR radiative cooling. The two cannot be separated and analyzed independently of each other.

An air parcel in the troposphere is also coupled to the rotation or angular momentum of the earth. As the altitude increases, so does the moment of inertia. There is also a Coriolis force that changes the direction of motion of the air parcel. As the air continues to cool at higher altitudes in the troposphere, the density increases and the air sinks. Gravitational energy is converted back to heat. In the tropics, this establishes the Hadley and Walker circulation. These are the latitude and longitude motions of the tropical convective cell. The return flow near the surface forms the trade winds. The trade winds in turn drive the equatorial ocean currents that form part of the ocean gyre circulation. This establishes a complex, coupled circulation system between the atmosphere and the oceans that produces the quasi-periodic oscillations in equatorial Pacific Ocean temperatures known as the El Niño Southern Oscillation (ENSO). The surface energy transfer processes related to the ENSO will now be considered in more detail.

4.4 The Pacific Equatorial Warm Pool and the El Niño Southern Oscillation

Over the oceans, the water surface is almost transparent to the solar flux. The diurnal temperature rise is small and the bulk ocean temperature increases until the water vapor pressure at the surface is sufficient for the excess absorbed solar heat to be removed by wind driven evaporation. The sensible heat flux (dry convection) is usually small, less than 10 W m^{-2}. The penetration depth of the LWIR flux into the ocean surface is less than 100 micron [Hale and Querry, 1973]. The LWIR flux and the wind driven evaporation are coupled together at the surface and should not be analyzed separately. The cooler water produced at the surface sinks and is replaced by warmer water from the bulk ocean below. This allows the evaporation to continue at night. At higher latitudes, outside of the equatorial gyre circulation, during summer and fall, the solar heating exceeds the wind driven cooling. This produces a stable stratified thermal layer structure with a surface temperature peak in August or September in the N. Hemisphere. There is a time delay or phase shift of approximately 8 weeks after summer solstice. The phase shift increases and temperature rise decreases at lower depths. The subsurface thermal layer structure then collapses as the wind driven evaporative cooling in winter and spring exceeds the solar heating. The heat stored and released during the course of a year may easily reach 1000 MJ m^{-2}. This is a major factor in stabilizing the earth's climate [Clark, 2023, Clark and Rörsch, 2023]. There is no requirement for an exact flux balance between the absorbed solar flux and the surface cooling.

At low latitudes, there is no obvious summer temperature peak. These locations are influenced by the equatorial gyre circulation. The cooler water from the eastern continental boundary currents changes direction and flows westwards forming the north and south equatorial currents in the Atlantic and Pacific Oceans. In the eastern equatorial currents, the solar heating exceeds the wind driven cooling and the ocean water warms as it travels from east to west. This leads to the formation of the equatorial warm pools in the western equatorial Atlantic and Pacific Oceans. As the ocean surface water warms, the water vapor pressure and the wind driven evaporation or latent heat flux increases. The cloud cover also increases. The net long term heat transfer into the Pacific Ocean as measured by 20 year averages using TRITON buoy data along the equator decreases from approximately 150 W m^{-2} to 50 W m^{-2} [Clark and Rörsch, 2023]. The average solar flux decreases from 250 to 200 W m^{-2} and the latent heat flux increases from 50 to 100 W m^{-2}. There is still a net solar heating of approximately 50 W m^{-2} in the Pacific warm pool. The shorter wave solar radiation penetrates to lower depths and is not coupled to the surface cooling. An upper surface temperature limit is reached near 30 °C. If the wind speed drops and the surface temperature increases above 30 °C because of the reduced latent heat flux, strong local thunderstorms are formed [Eschenbach, 2010]. These rapidly cool the surface through increased local convection and evaporation. The water vapor pressure increases rapidly with temperature above 30 °C.

As ocean temperatures change with the seasons and the wind speed varies, natural, quasi-periodic variations in the location and extent of the equatorial warm pool location and extent occur that are known as the El Niño Southern Oscillation (ENSO). The time scale varies from 3 to 7 years. When the wind speed decreases, both the ocean gyre velocity and the latent heat flux decrease.

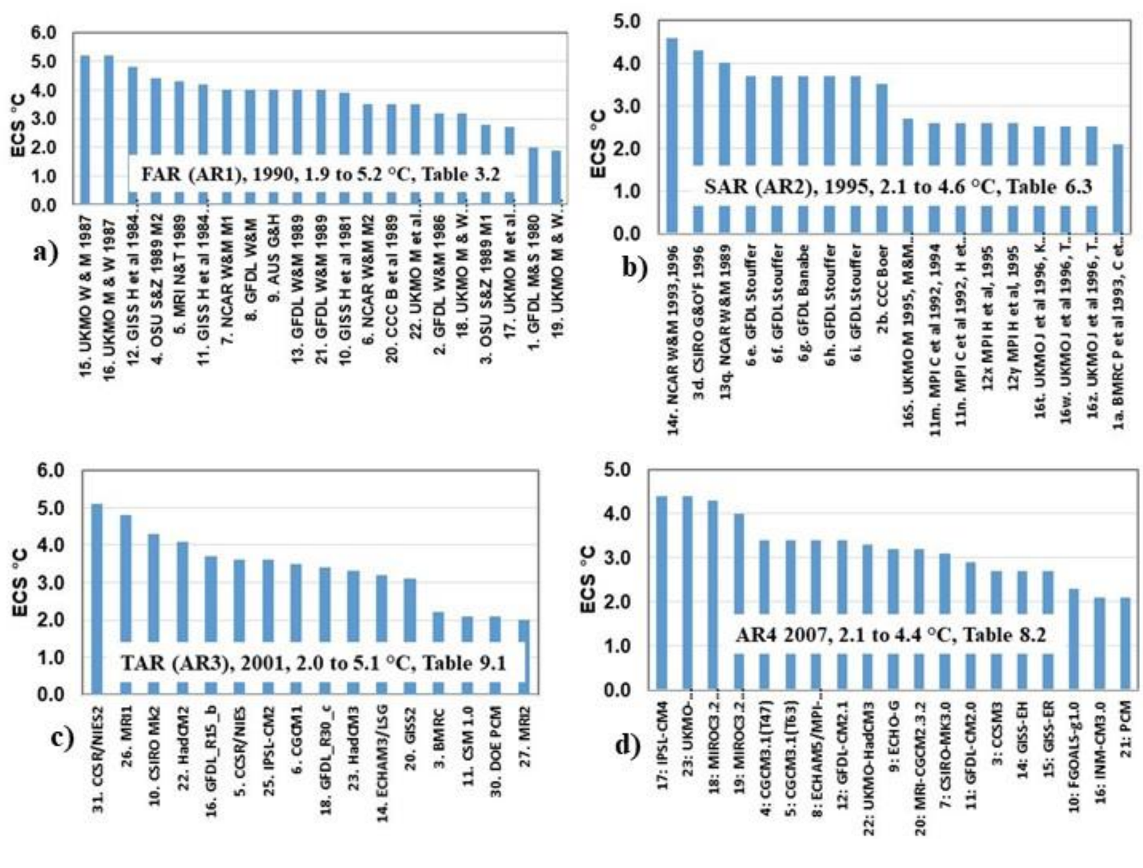
The transit time across the Pacific Ocean increases, so more solar heat is absorbed by a cell of ocean water as moves with the equatorial current. The solar warming is enhanced by the decrease in latent heat flux. This increases the eastward extent of the Pacific equatorial warm pool. The area and the location of the Pacific warm pool change, by the maximum surface temperature stays near 30 °C. The changes in surface air pressure may reverse the wind flow during a strong ENSO peak. In addition, the thunderstorms in the Pacific warm pool increase high level cloudiness which leads to reduced solar flux during the warm (El Niño) ENSO phase. As the conditions change and the wind speed increases, the opposite effect occurs. The transit time decreases, the latent heat flux increases and the warn pool shrinks. There are similar circulation patterns in the Atlantic and Indian Oceans that are globally coupled with the ENSO. Such oscillations can cause major changes in weather patterns, particularly rainfall because of changes to the wind drive evaporation. The ENSO can also be characterized using the Southern Oscillation Index (SOI). This is derived from the surface pressure difference between Tahiti and Darwin, Australia. As the SOI increases, the wind speed increases and the ENSO enters its cool (La Niña) phase. There is an inverse relationship between the ENSO and the SOI [Clark and Rörsch, 2023, ENSO, 2022, SOI, 2022].

The immediate cause for the ENSO is a change in wind speed in the central equatorial Pacific Ocean. The sensitivity of the latent heat flux to the wind speed is approximately 15 W m^{-2}/m s^{-1} [Yu et al. 2008]. For each increase in wind speed of 1 meter per second there is an increase of 15 W m^{-2} in the latent heat flux. The equatorial current velocity also depends on the wind speed. The changes in the latent heat flux related to the location and extent of the warm pool alter the tropospheric convective mass flow in the Western Equatorial Pacific Ocean. These changes are coupled through the Walker circulation to the Eastern Equatorial Pacific where the descending air normally produces a higher surface pressure that drives the surface air flow and the equatorial current flow. There are also changes in cloud cover that alter the intensity of the solar flux coupled to the equatorial current. However, 90% of the solar radiation is initially coupled to the first 10 m layer of the ocean and the absorbed solar heat is then mixed to lower depths by the ocean convection. The changes in solar flux alter ocean surface temperatures over a longer time scale than the wind driven surface effects. The combination of changes in wind speed and solar flux lead to the quasi-periodic ENSO oscillation. The detailed interactions are complex and include Madden-Julian Oscillations and Rossby Waves [Schwendike et al, 2021]

The discussion of the ENSO by Ramanathan and Collins [1991] in terms of a 'super greenhouse effect' is pseudoscientific nonsense. The changes in atmospheric water vapor concentration are produced by changes in surface evaporation related to the tropospheric heat engine with a hot reservoir that includes the Pacific equatorial current and the Pacific equatorial warm pool. The LWIR surface exchange energy is ignored. Changes in LWIR flux above the cloud layer are not coupled to the surface.

5.0 Climate Algebra in the Coupled Global Circulation Models

As computer technology improved, the climate models became more complex, but the climate algebra was still there, hidden in the unit cells of the GCMs. A global average planetary energy balance was used instead of the exact flux balance at TOA in a one dimensional model. However, the initial decrease in LWIR flux at TOA produced by an increase in greenhouse gas concentration still changed the energy balance of the earth [Knutti and Hegerl, 2008]. A greenhouse gas radiative forcing could still magically heat the oceans. More forcing agents were added to the climate models and the changes over time were manipulated so that the global average temperature record generated by the models matched the one derived from the weather station data. More feedback mechanisms were also added so that the models could be tuned to give any desired result. Effective radiative forcings were introduced by Hansen et al [2005]. These just added additional 'tuning' to the climate models. The models were compared to each other using the climate sensitivity as a benchmark. The equilibrium climate sensitivity (ECS) is the increase in temperature produced by a doubling of the CO_2 concentration from 300 to 600 ppm (or 280 to 560 ppm) after the climate model has reached a new equilibrium state. The MW67 model had an ECS of 2.9 °C for clear sky conditions. The H81 model was tuned to 2.8 °C. The published ECS values for various climate models used in the six ICCC Assessment Reports are shown in Figure 2. The widest ECS range is from 1.8 to 5.6 °C for AR6. The correct value is 'too small to measure'.



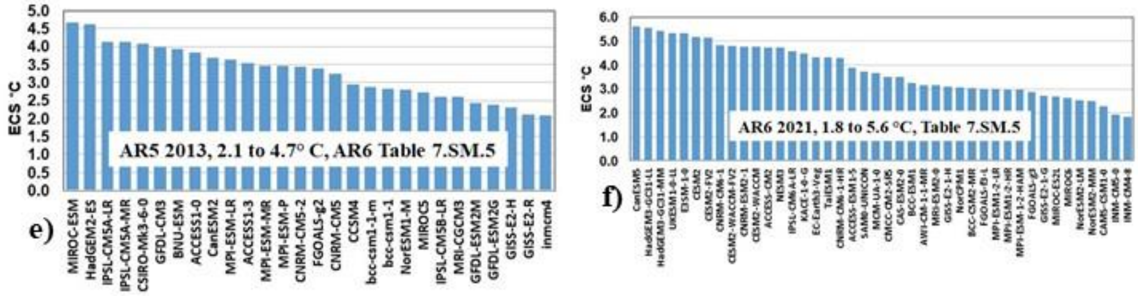
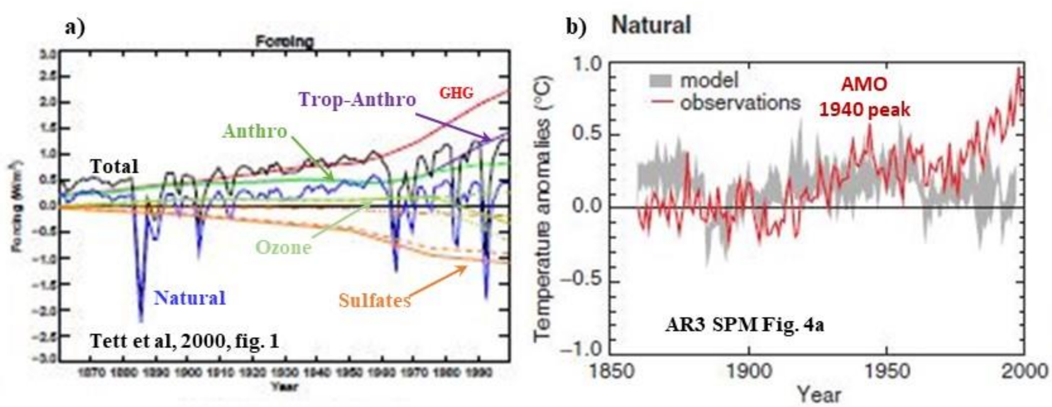


Figure 2: The equilibrium climate sensitivities (ECS) for various climate models from the six IPCC reports. The sources are indicated in the figures. The correct value of the ECS should be 'too small to measure'.

5.1 The Extreme Weather Trick

Starting with the Third IPCC Climate Assessment Report (TAR) [2001], a new level of political fraud was added to the climate models. The contrived time series of radiative forcings used to create the illusion of a fit to the global mean temperature record was split into 'natural' and 'anthropogenic' forcings. These forcings are shown in Figure 3a. The climate models were then rerun to create a separate 'natural baseline' and an 'anthropogenic contribution' to the global mean temperature. The natural, anthropogenic and global temperatures are shown in Figures 3b, 3c and 3d. A vague statistical argument using changes to the normal distribution ('bell' or Gaussian curve) of temperature was then used to claim that the increase in temperature caused by 'anthropogenic' forcings would cause an increase in the frequency and intensity of 'extreme weather events'. This is shown in Figure 3e. Figure 3a is from Tett et al [2000]. Figures 3b through 3e are from the TAR [2001]. The climate model results are from Stott et al [2000] using the Hadley HadCM3 model. Little has changed in 20 years. This provided the pseudoscientific justification for the political control of fossil fuel combustion that led to the disastrous net zero policy of today.



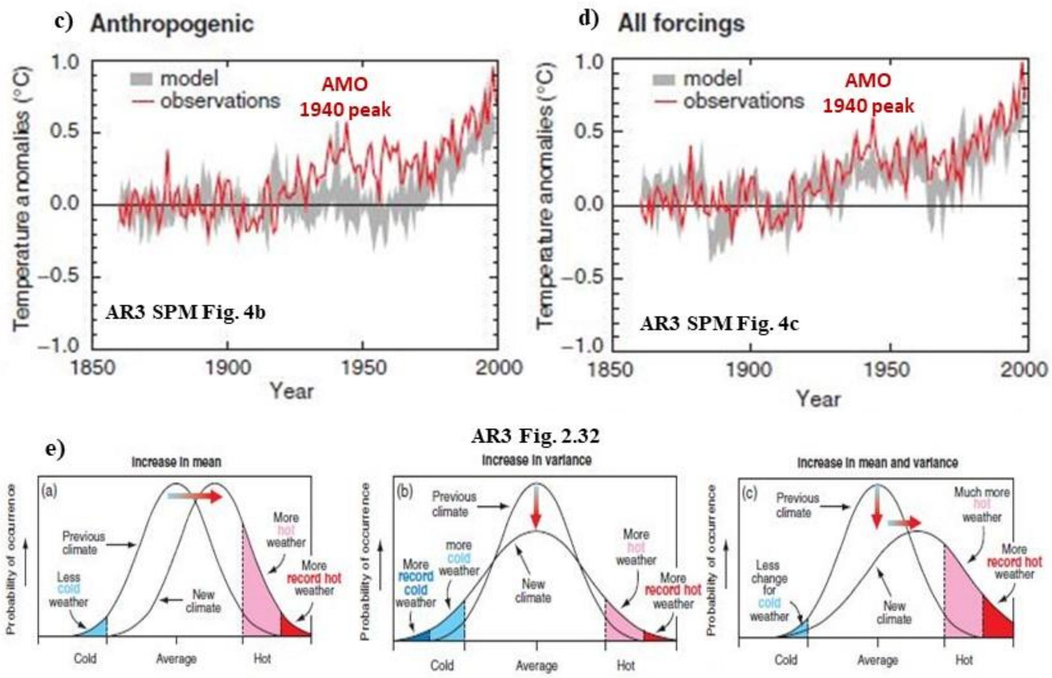


Figure 3: The source of 'Net Zero' - the fraudulent 'attribution' of warming in the global mean temperature record to 'anthropogenic' causes. The contrived set of pseudoscientific forcings created by the climate models to simulate the global mean temperature record shown in a) are separated into natural and anthropogenic sources. The climate models are rerun using the natural forcings to create a fraudulent 'natural' baseline b) and the anthropogenic forcings c) to show the 'human caused' warming. A vague statistical argument e) is used to claim that the anthropogenic warming caused an increase in the frequency and intensity of 'extreme weather events'.

5.2 More Mission Creep: The Climate Intercomparison Project

As funding decreased for nuclear programs at DOE, mission creep expanded as climate model comparison programs gradually evolved into the Climate Model Intercomparison Project (CMIP). AMIP, the Atmospheric Model Intercomparison Project was described by Gates [1992]. This was part of the program for Climate Model Diagnosis and Intercomparison at the Lawrence Livermore National Laboratory (LLNL). The first phase of the Coupled Model Intercomparison Project (CMIP1) started in 1996 [Meehl, 1997].

> The first objective of CMIP1, which began in 1996, is to document systematic simulation errors of global coupled climate models. This is done by comparing the mean model output to observations to determine how well the coupled models simulate current mean climate. Meehl et al, 1997

The second phase, CIMP2 involved a study of the transient climate response.

> The second phase of CMIP, CMIP2, has just begun and will involve an intercomparison of global coupled model experiments with atmospheric CO_2 increasing at a rate of 1 % per year compounded where CO_2 doubles at around year 70 of 80 total years. The goals of CMIP2 are to document the mean response of the dynamically coupled climate system to a transient increase of CO_2 in the models near the time of CO_2 doubling. Meehl et al, 1997

An LWIR greenhouse gas radiative forcing, including a CO_2 doubling does not change the energy balance of the earth, nor can it produce a measurable change in the surface temperature. This CMIP2 study is pseudoscientific nonsense. The climate modelers are still playing computer games in their equilibrium climate fantasy land.

The third phase, CMIP3 involved 12 different experiments [sic] with 24 Air-Ocean GCM models including a separation into natural and anthropogenic forcings and runs with a variety of 'CO_2 forcings' and different emission 'scenarios'. In addition, models were run with both doubling and quadrupling of the CO_2 concentrations and a CO_2 concentration ramp [Meehl et al, 2007]. By now LLNL was heavily involved in collecting and archiving the model data. This was additional mission creep away from the original LLNL mission to develop nuclear weapons. The CMIP3 results were used to create 'natural' and 'anthropogenic' forcings for regional and global mean temperature records [IPCC AR4 WG1, 2007 figure SPM4, FAQ 9.2 figure 1].

The CMIP5 and CMIP6 phases have followed CMIP3 with different emission scenarios and a mix of CO_2 ramp and doubling/quadrupling model runs [Taylor et al, 2012, Stauffer et al, 2017]. The number and complexity of the models has increased, but the fundamental assumption that a contrived set of radiative forcings and feedbacks can simulate a global mean climate remains the same. The number of denizens in the equilibrium climate fantasy land has also grown. In 2019 there were 49 modeling groups playing computer games for CMIP6 [Hausfather, 2019].

5.3 Climate Algebra in AR6

The radiative forcings, feedbacks and climate sensitivity that started with H81 have continued to provide the pseudoscientific foundation of the climate models. The time series of the radiative forcings used in the AR6 CMIP6 models and the related temperature changes are shown in Figures 4a and 4b. The comparison to the global temperature record is shown in Figure 4c. The fraudulent attribution to human causes by dividing the radiative forcings into 'natural' and 'human caused' is shown in Figure 4d. The real causes of the observed temperature changes are shown in Figure 4e. They are a combination of ocean temperature changes, urban heat island effects, changes to the rural/urban mix in the weather station averages and various 'adjustments' used to 'homogenize' the temperature data. It has been estimated that half of the warming in the 'global record' has been created by such adjustments [Andrews 2017a, 2017b and 2017c, D'Aleo and Watts 2010, Berger and Sherrington, 2022, O'Neill et al, 2022]. The dominant terms in the ocean temperature contribution are the AMO and a linear temperature recovery from the Little Ice Age (LIA) [AMO 2022, Akasofu, 2010]. The climate models are simply 'tuned' to match the global temperature record. The 'tuned' models are then used to simulate the increase in global average temperature produced by a doubling of the CO_2 concentration. This gives the climate sensitivities shown in Figure 4f (repeated from Figure 2f).

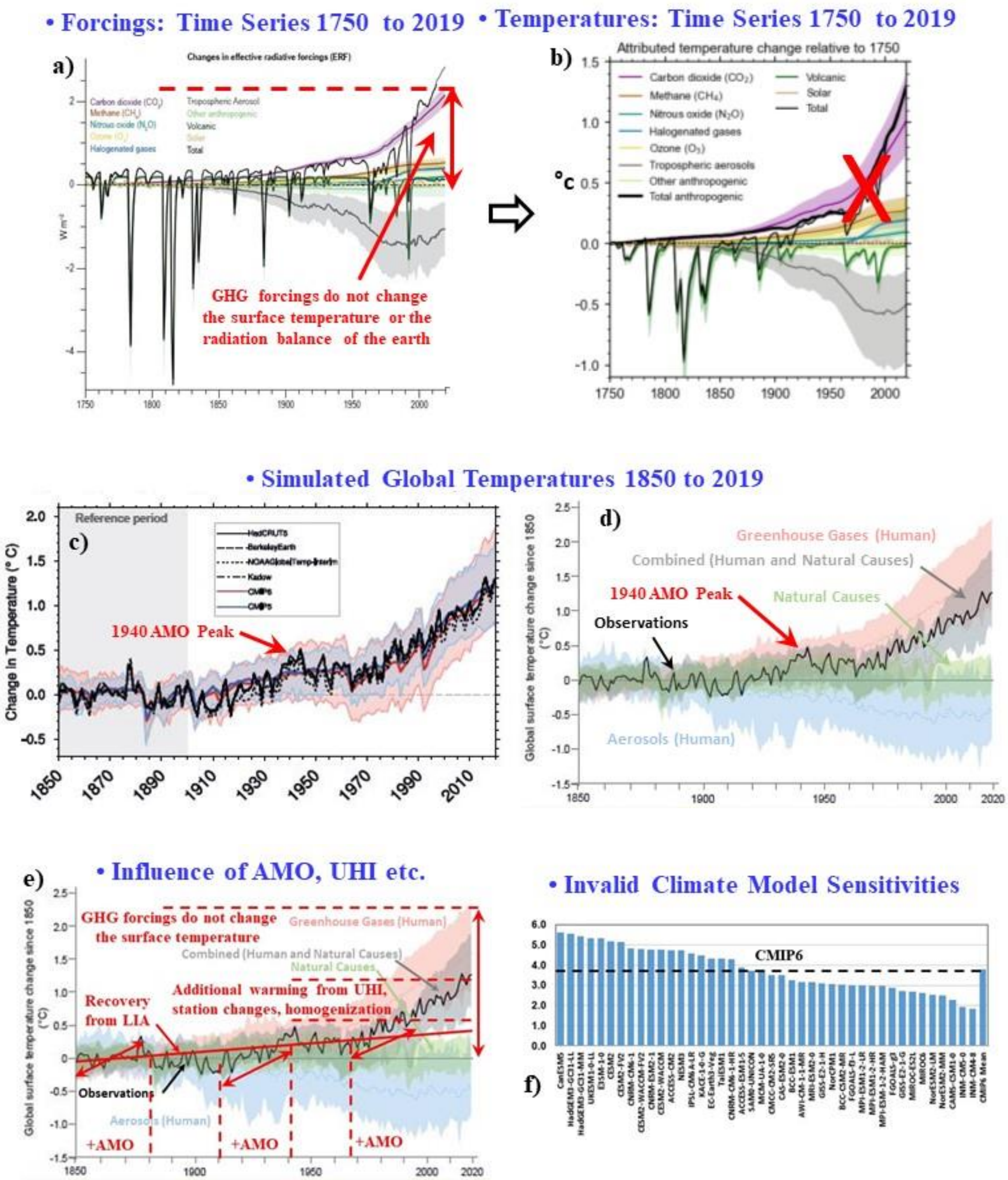


Figure 4: The attribution fraud from the CMIP6 model ensemble used in AR6. a) time dependence of the radiative forcings and b) time dependence of the temperature changes derived from a), c) 'tuned' temperature record using a contrived set of radiative forcings that appear to simulate the global mean temperature record, d) the separation of the contrived forcings to create fraudulent 'human' and 'natural' temperature records, e) the contributions of the AMO, UHI etc. to the global mean climate record, f) the [pseudoscientific] equilibrium climate sensitivity (ECS) estimated from the CMIP6 models (IPCC AR6, WG1, figures 2.10, 7.8, 3.4b and FAQ 3.1 Fig. 1, ECS data from Table 7.SM.5)

6.0 Conclusions

The climate modelers started out from the *a priori* assumption that an increase in the atmospheric CO_2 concentration must cause climate warming. Arrhenius simply assumed that his oversimplified steady state calculations produced a real change in temperature. M&W copied the Arrhenius model and added a 9 or 18 layer radiative transfer model with a fixed RH distribution. This provided a general agreement with average atmospheric temperature distributions derived from measured data. Their radiative transfer algorithms were correct, given the limitations of the wideband spectral absorption coefficients that they used. However, M&W never considered the limitations of their assumptions. When they used the time step integration algorithm in their model to simulate the effects of a CO2 doubling, the temperature changes were too small to accumulate in the normal daily and seasonal variations in surface temperature. Furthermore, the assumption of a fixed RH distribution no longer applies near the surface. There can be no water vapor feedback. Both the relative and absolute humidities change significantly over the diurnal and seasonal temperature cycles. The 2.4 and 2.9 °C increases in surface temperature for a CO_2 doubling in a cloudy and clear atmosphere were mathematical artifacts of the M&W model.

The NASA climate cabal were using climate studies as an excuse to keep working on radiative transfer algorithms. They never even looked for the errors in the M&W model. A paycheck was more important. Once they accepted the time marching algorithm and the water vapor feedback, they rapidly became trapped in a web of lies of their own making. Continued funding required a climate sensitivity similar to that of M&W. The surface energy transfer was also ignored when the slab ocean model was incorporated into H81. This was a flat ocean model without wind or waves.

H81 provided the foundation for the pseudoscience of radiative forcings, feedbacks and climate sensitivity used in the climate models. The equilibrium climate fantasy land became a playground for mathematicians and computer programmers. Climate warming was just an excuse to work on improved radiative transfer algorithms and solutions to the coupled non-linear equations of fluid dynamics. Unfortunately, environmental and political interests took over control of the funding. They wanted to use the mathematical artifacts generated the climate models to control the world's energy supply. They got their way in the TAR in 2001 when the pseudoscientific radiative forcings were split into natural and anthropogenic contributions. Human caused climate warming artifacts, still amplified by the fictional water vapor feedback, were now made to increase the frequency and intensity of extreme weather events.

Eisenhower's warning about the corruption of science by government funding has come true. The climate modelers have been thoroughly corrupted. The climate models are only useful for political purposes. It is time to throw out the climate algebra and return to climate science.

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