

# II. A Cloud Thermostat Controls the Earth's Climate, Not Greenhouse gasses! and I. Climate change is a myth!

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# Part I. Climate change is a myth

- The IPCC and its collaborators have attempted to identify the dominant process or processes that control the Earth's climate.
- The IPCC and its collaborators have been tasked to use computer modeling and observational data to determine some very important parameters for the Earth's climate, including
  - The Earth's so-called power imbalance, thereby to prove global warming,
  - The Earth's natural power-balance feedback-stability strength (sensitivity), thereby to claim a catastrophic imminent climate crisis,
  - The Earth's albedo for the Earth's clear-sky portion, cloudy-sky portion, and for the "all-sky" whole Earth.
- The IPCC and its collaborators have grossly botched all of these efforts, and have dishonestly erroneously claimed that there is a climate change crisis!

# I assert that the IPCC and its collaborators misidentify the Earth's dominant climate process

- The IPCC's misidentification, in turn, leads them to draw incorrect conclusions and give dangerous recommendations to policy makers.
- It also leads them to calculate incorrectly the strength of naturally occurring feedback mechanisms that do indeed stabilize the climate. In turn, it leads to the false conclusion that the natural feedback mechanisms have only marginal stability, and that there is an imminent "tipping-point" and climate crisis.
- I assert that the dominant climate control process is the "cloud thermostat mechanism". It is presented in Part II of this talk.
- This dominant process provides the dominant natural feedback that provides the Earth with very strong temperature and climate stability.
- Feedbacks associated with greenhouse gasses are negligible in comparison with cloud-thermostat.
- Correspondingly, there is no climate crisis. - The Earth's climate is robustly stable against large increases in greenhouse gasses.

# The IPCC's house of cards collapses

- I assert that the IPCC and its collaborators have not proven global warming!
- I assert that the IPCC's own observational data are fully consistent with no global warming.
- I assert that the IPCC' computer modeling uses flawed physics.
- **I assert that the IPCC's claims for an observation of a power imbalance are based on dishonestly fudged data.**
- Correspondingly, the lack of any real global warming leads to a house of cards collapse that reverses the IPCC's warnings of an impending climate crisis.
- Without global warming, there is no climate-change crisis!
- **NOAA further dishonestly claims that there is an observed increase in extreme weather events.**
- **NOAA's claims are clearly bogus. I show here that their own published data disprove their own arguments.** NOAA's 100 year history of extreme weather event frequency, plotted frontwards in time is virtually indistinguishable from the same historical data plotted backwards in time.

## Regarding the computer modeling, I observe that

- The computer modeling performed by IPCC collaborators is totally incapable of simulating the past climate over several decades. It can't simulate, even approximately, the Earth's temperature history.
- The computer modeling can't get anywhere near close to simulating the Earth's total albedo and the amount of reflected sunlight. The discrepancies with observed data ( $\approx 10\text{-}15 \text{ W/m}^2$ ) are very large!
- The computer modeling ignores a whole factor of 2 discrepancy in the IPCC's claimed observed cloudy-sky albedo. The IPCC is totally oblivious to this huge error ( $\approx 80 \text{ W/m}^2$ ).

# Regarding the observational data, I observe that

- Observational data are fully consistent with no global warming. Without global warming, there is no climate-change crisis! (see house of cards)
- **Reports of observational data that claim a net global power imbalance and associated resulting global warming are visibly dishonestly fudged. No power imbalance is actually observed.**
- The results of different analyses of satellite radiometry data differ significantly among different observers. Satellite radiometry data and ocean heat content data disagree strongly with each other. Critiques by other whistle blowers (Trenberth et al. (2010,2014)) have been largely ignored. So called data closure has not been made. There is huge missing energy in the various analyses.
- Many, if not most observers admit that both satellite radiometry data and ocean heat content data-measurement methods, themselves, are incapable of determining the Earth's power imbalance to the desired accuracy. This difficulty is exacerbated by due to huge temporal and spatial fluctuations of the input and output powers, along with a gross under-sampling of the data.
- **Fudged reported values, are herein highlighted and exposed. They are an example of the proverbial proliferation of bad pennies.**

# Other important missed inferences from the observations

- The oceans comprise 70% of the Earth's surface. 73% of the sunlight energy incident on the oceans does not warm the Earth. Instead, it is consumed by making clouds.
- Following Ramanathan (1987) climate analysts divide the earth into only two important portions - clear-sky and cloudy-sky.
- Following more recent satellite observations by King *et al.* (2013), there are evidently, not two, but four independently important portions – clear- and cloudy-sky over ocean, and clear- and cloudy-sky over land. Since oceans comprise 70% of the Earth's surface, the first two are clearly the most important.
- The IPCC totally ignores the importance of cloud-cover variability.
- The IPCC totally ignores the careful observations of cloud-cover extent and variability by King *et al.* (2013), and especially its dramatic ocean-land difference.
- Analysis of IPCC-reported data leads to a calculated albedo (sunlight reflectivity) for clouds (= 0.36) that is clearly very wrong - **by about a factor of 2. Direct measurements suggest it is about 0.8.** Alternatively, the IPCC's data violate energy conservation laws.

# The IPCC's first botched sacred task – calculate and measure the Earth's power imbalance

1. The Earth's net power imbalance is its sunlight heating power (its power-IN), minus its two components of cooling power - reflected sunlight and reradiated infrared power (its power-OUT).
2. I call this task “sacred”, because trillions of dollars ride on the accuracy of its measurement.
3. Based on their claimed power imbalance and global-warming assertion, the IPCC and its collaborators assemble a house of cards argument that forebodes an impending climate change apocalypse/catastrophe.
4. I assert that the IPCC and its contributors have not proven global warming. All power-imbalance data are fully consistent with no warming.
5. Their house of cards thus collapses.



## The IPCC's second botched sacred task – calculate and measure the strength of naturally occurring climate-stabilizing feedbacks, p.1

1. Various mechanisms are obviously present that stabilize the Earth's temperature and climate.
2. The IPCC scapegoats atmospheric greenhouse gasses as the dominant cause of global warming.
3. The IPCC, however, claim only marginal effectiveness for their identified feedback mechanisms. They correspondingly assert that there is a “tipping point”, whereinafter further added greenhouse gasses catastrophically cause what amounts to a thermal-runaway of the Earth's temperature – i.e. a catastrophic climate crisis.

# The IPCC's second sacred task – botched!

## p.2

4. I show here that the overwhelmingly dominant process is the cloud thermostat mechanism (presented in Part II). By comparison, the relative influence of greenhouse-gas destabilizing feedback(s) is totally negligible.
5. Correspondingly, there is no impending catastrophic climate crisis.

# A flawed house of cards p.1

1. The IPCC claims with great certainty that the Earth has a (proven) net power imbalance. It claims that there is more sunlight power incident on the Earth heating it, than there is lost power cooling it. The lost power has two forms - reflected sunlight and reradiated far infrared radiation (radiant heat).
2. More power IN than power OUT defines global warming! The IPCC claims a net warming power imbalance is observed!
3. Global warming, in turn, leads to climate change.
4. Climate change, in turn, leads to an increased frequency of extreme weather events and other bad phenomena.
5. An increased frequency of extreme weather events leads to global apocalypse and to a climate crisis.

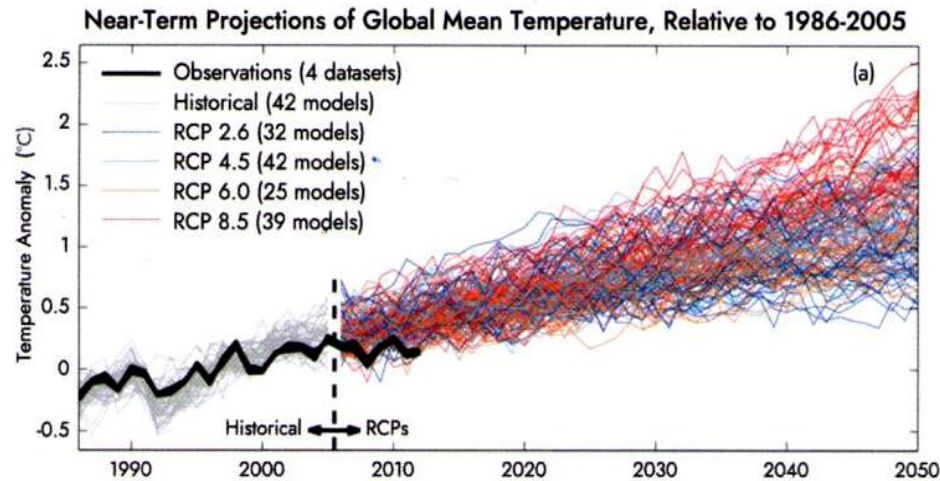
# A flawed house of cards p.2

6. NOAA claims to have observed an increasing extreme weather event frequency. (**Their claims are visibly bogus.**)
7. The IPCC's claimed net warming power imbalance is further claimed to be caused by a buildup of atmospheric greenhouse gasses, especially of CO<sub>2</sub>.
8. The IPCC demands trillions of dollars to be spent to limit, prevent, and reverse the atmospheric buildup of greenhouse gasses.
- 9. I assert that the IPCC's claimed net warming power imbalance is not proven. Observed data are fully consistent with no global warming.**
- 10. Correspondingly, there is no crisis.**
- 11. The house of cards has indeed collapsed.**
- 12. The requested trillions of dollars are a waste.**

# The IPCC's computer modeling is NG – It uses bad physics!

- Computer modeling (CMIP5) of the climate by the IPCC's collaborator, the Goddard Institute for Space Studies, is unable to simulate the Earth's surface temperature history over the past several decades.
- The total disarray and total lack of reliability among the CMIP5 predictions was first highlighted by the former White House science advisor to Barack Obama Steve Koonin, in his recent (2021) book- *Unsettled? What climate science tells us, what it doesn't, and why it matters*.
- The CMIP5 computer modeling is also unable to simulate anywhere nearly correctly the Earth's albedo (sunlight reflectivity). The computer simulated sunlight reflected power and associated power imbalance error, are typically about fourteen times bigger than the claimed measured power imbalance, and about twenty five times bigger than the claimed measured power- imbalance error range.

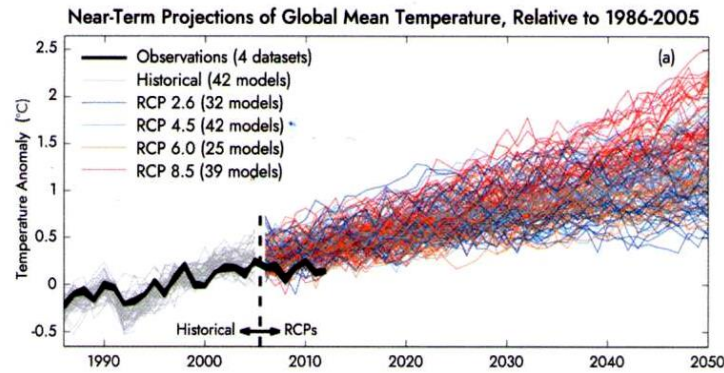
# Flawed computer modeling estimates of the Earth's temperature "anomaly" history



This graph is copied from [AR5, (IPCC, 2013) Fig 11.25].

- This graph shows the CMIP5 computer modeling of the Earth's temperature "anomaly". The various computed curves display the earth's predicted (colored) and historical (gray) "temperature anomaly".
- The solid black curve is the observed temperature anomaly.

# Computer modeling estimates of the the Earth's temperature “anomaly” history



No reference value is given to allow the reader to determine the actual temperature history. IPCC reports, in general, hide errors in their actual values by instead showing only undefined “anomaly” values.

- Note that all 40+ models are incapable of simulating the Earth's past temperature anomaly history, let alone predict the future.
- **Something is obviously very wrong with the physics incorporated within the computer models, and their predictions are totally unreliable.**

# Temperature anomaly measurements are a very poor indicator of global warming – power imbalance is a better choice

- Temperature measurements (especially measurements of ill-defined temperature anomalies) are mostly made over land. But land occupies only 30% of the Earth's surface.
- Temperature varies strongly from one spot to another, and measurements are grossly under-sampled. (**Fabricating data to fill in the gaps is a scientific no-no.**)
- Land measurements are subject to “urban heat island” effects.
- **A far better indicator of global warming is the Earth's power imbalance.**
- **The IPCC agrees Instead it defines global warming as a net power imbalance.**
- **Global warming is correspondingly defined by the IPCC as more Power-IN than Power-OUT.**

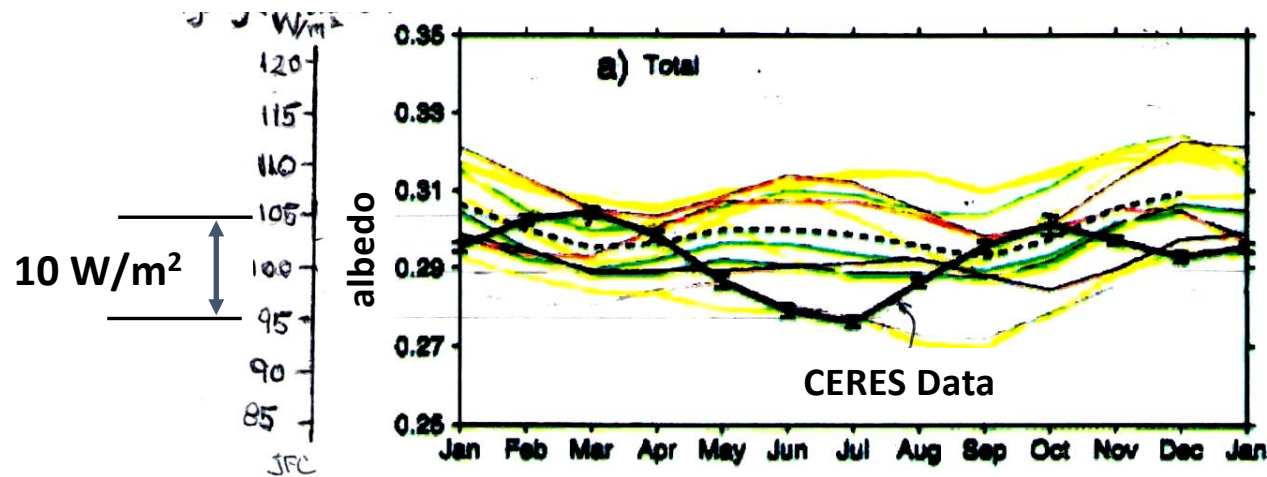


# What is albedo?

- The Earth's albedo is the (fraction) ratio of reflected sunlight power (Shortwave Power-OUT) to incident sunlight power (Shortwave Power-IN).
- The Earth's Outgoing (reflected) power flows back out into space and does not heat the Earth.
- Measuring and/or calculating the Earth's power imbalance, equivalently requires measuring and/or calculating the Earth's albedo.

# Flawed computer modeling estimates of the Earth's albedo – p.1

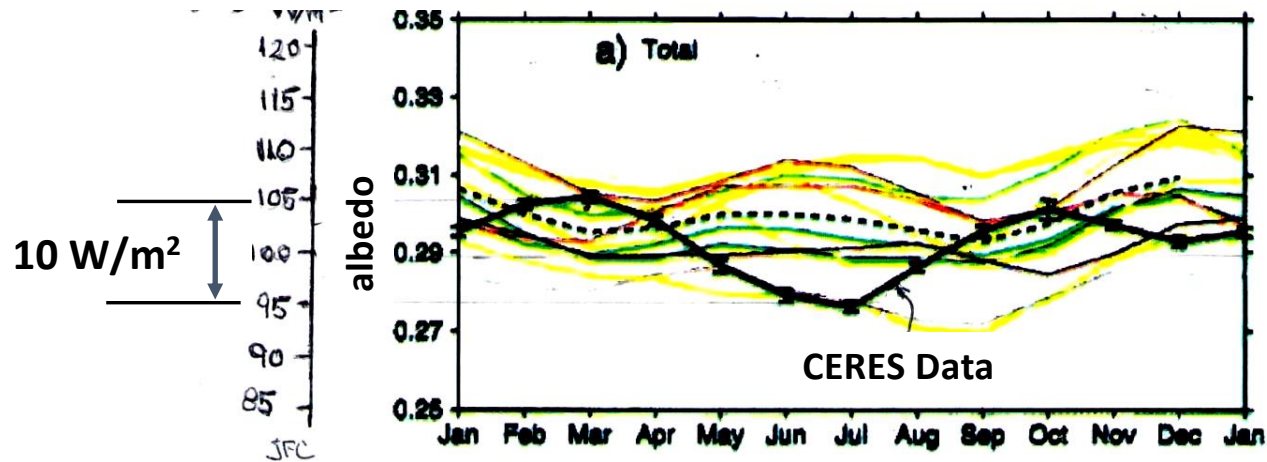
Outgoing Shortwave Radiation ( $W/m^2$ )



- The above Figure is reproduced from Stephens *et al.* (2015). It shows the IPCC's CMIP5 computer modeling (the colored curves) of the Earth's mean annual albedo temporal variation. The solid black curve is the Earth's albedo measured by satellite radiometry.
- Note that the annual variation is not sinusoidal.

# The IPCC's flawed computer modeling estimates of the Earth's albedo – p.2

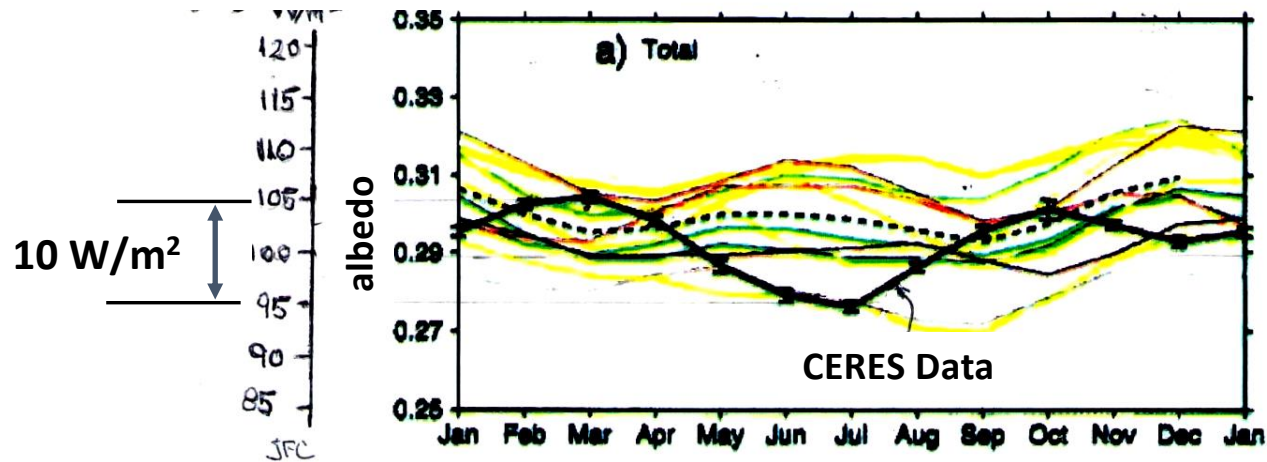
Outgoing Shortwave Radiation (W/m<sup>2</sup>)



- The added scale shows the associated reflected sunlight power. It assumes a constant solar irradiance – 340 W/m<sup>2</sup>.
- The IPCC claims that outgoing (reflected) power is about 100 W/m<sup>2</sup>.
- The so-called solar constant is not constant. (See below.)

# The IPCC's flawed computer modeling estimates of the Earth's albedo – p.3

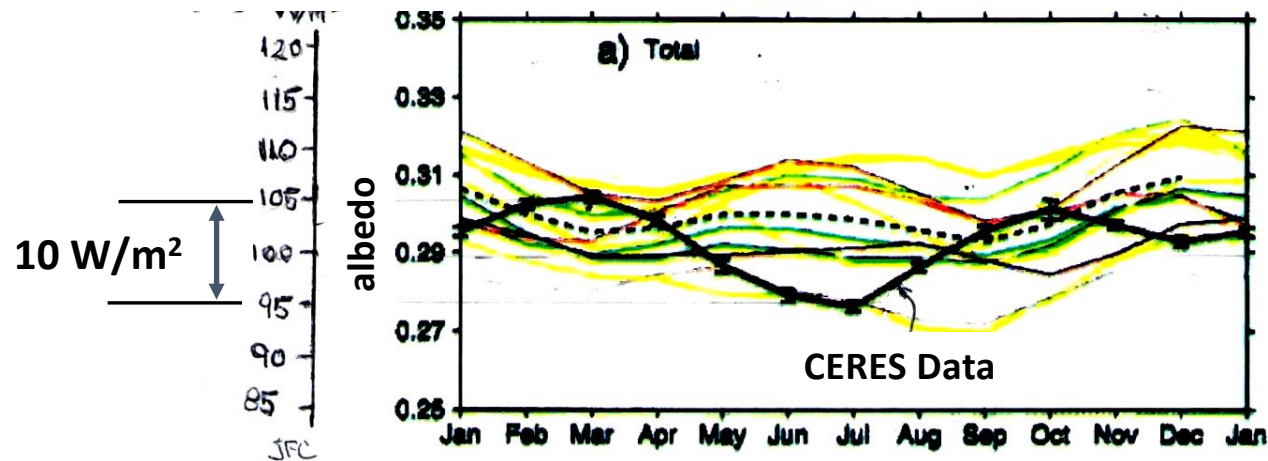
Outgoing Shortwave Radiation ( $\text{W}/\text{m}^2$ )



- Note that the IPCC's computer modeling is grossly incapable of simulating the observed Earth's reflected power. It is especially incapable of simulating that power's dramatic temporal fluctuation.
- **Comparison between theory and experiment shows that something is obviously very wrong with the assumed physics (again).**

# Flawed computer modeling estimates of the Earth's albedo – p.4

Outgoing Shortwave Radiation ( $\text{W}/\text{m}^2$ )



- Reflected (outgoing) power errors translate into power-imbalance errors.
- Despite more than  $10\text{-}15 \text{ W}/\text{m}^2$  evident gross errors in the computer simulation's calculated reflected power, the IPCC [AR6 (2021)] still claims that it has computer simulated and precisely measured this power, yielding an imbalance that is equal to  $0.7 \pm 0.2 \text{ W}/\text{m}^2$ . – **Huh?** (Stephens et al. (2015) further claim the imbalance is  $0.6 \text{ W}/\text{m}^2$ . See below.)

- **The so-called solar constant is not actually constant.**
- This Figure is also from Stephens *et al.* (2015). The solid curve on the bottom Figure (5d) shows the sinusoidal temporal variation of the (so-called) solar constant. Its variation is dominantly due to the ellipticity of the Earth's orbit.
- Correspondingly, the actual outgoing SW power's non-sinusoidal annual variation (about  $10 \text{ W/m}^2$ ) is actually much greater than is shown by the previous Figure by about  $22 \text{ W/m}^2$ .
- The total outgoing SW power correspondingly typically varies annually by about  $32 \text{ W/m}^2$ .

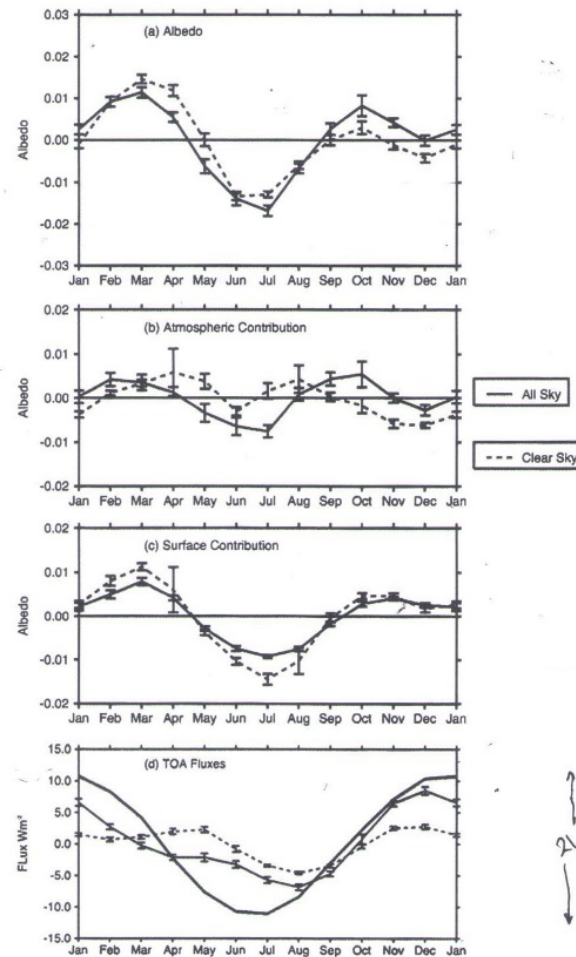


Figure 5. Annual cycles of (a) the globally averaged albedo, (b) the atmospheric, and (c) surface contributions to this cycle. The solid curves are for all-sky fluxes, and the dashed curves are the clear-sky fluxes. The error bars represent the interannual variability. (d-f) The respective cycles of the global mean fluxes where the heavy curve of Figure 5d is the annual cycle of the solar insolation shown for reference. Annual means of all quantities have been subtracted.

# The IPCC's observational data are consistent with NO global warming – p.1

- Recall, global warming is defined as more Power-IN than Power-OUT.
- Power-IN is the sunlight power incident on the Earth. The IPCC and climate scientists call it Short Wavelength (SW) Radiation. It is about 340 Watts per square meter of the Earth's surface area. It varies annually by about  $\pm 11 \text{ W/m}^2$ , (not including the additional variation of the solar constant.)
- Power-OUT has two components:
  - One component is the sunlight energy that is directly reflected by the Earth back out into space, whereinafter it can no longer heat the planet. That component is claimed by the IPCC to be about  $100 \text{ W/m}^2$ .
  - The other component is the far-infrared heat re-radiated into space by a hot planet. It is claimed to be about  $240 \text{ W/m}^2$ . The IPCC calls the far-infrared heat radiation component, Long Wavelength (LW) Radiation.

# The IPCC's observational data are consistent with NO global warming – p.2

- Measuring the power imbalance consists of measuring power-IN, measuring power-OUT and subtracting. Simple enough? Not really.
- The problem is that power-IN and power-OUT are both huge numbers, and that the difference between them is miniscule - 0.2% of power-IN. That miniscule difference is the net imbalance that is sought, both experimentally and theoretically.
- Unfortunately, the difference is so small that it is very difficult to measure accurately. Measurement errors readily swamp the error of the difference.
- It is especially tough to measure the difference when power-IN and power-OUT are both also hugely varying, both in time and in space, in a seemingly random and irreproducible fashion.
- Many, if not most observers admit that both satellite radiometry data and ocean heat content data measurement methods are incapable of determining the Earth's power imbalance to the desired accuracy.



# The IPCC's observational data are consistent with NO global warming – p.3

- A variety of methods has been employed to measure these three powers. They include satellite radiometry, (the ERBE, and CERES Terra and Aqua satellites), ocean heat content (OHC) measured using the ARGO buoy chain and XBT water sampling by ships, and finally by ground sunlight observations using the Baseline Surface Radiation Network (BSRN).
- The various measured values are all in wild disagreement with each other.
- Large data gaps are common, especially in the ERBE and OHC data.
- None of the reported data actually show a convincing net warming power imbalance.
- Reported data are totally fudged in a manner that dishonestly changes them from showing no warming to showing warming!

# What is the basic power-imbalance calculation? It is really quite simple – p.1

Observed data are typically reported on a Figure that shows a map of the claimed power flow.

The power imbalance is conventionally reported at the Top Of Atmosphere (TOA) altitude.

The three needed numbers are readily available from the top line of a power-flow diagram.

If you don't believe my claims of **fudging**, it's easy enough to pull the numbers from the various power-flow diagrams, and verify the arithmetic yourself!

# What is the typical power-imbalance calculation p.2

A typical calculation goes as follows:

Incident ShortWave power	+340	W/m <sup>2</sup>	± σ <sub>IN</sub>
Outgoing ShortWave reflected power	-100	W/m <sup>2</sup>	± σ <sub>SW-OUT</sub>
Outgoing LongWave reemitted power	<u>-240</u>	W/m <sup>2</sup>	± σ <sub>LW-OUT</sub>
Sum=Net “observed” power imbalance	IMBALANCE		± σ <sub>IMBALANCE</sub>

RMS error-sum:  $\sigma_{\text{IMBALANCE}} = (\sigma_{\text{IN}}^2 + \sigma_{\text{SW-OUT}}^2 + \sigma_{\text{LW-OUT}}^2)^{1/2}$ .

RMS error-sum crosscheck:

$$\sigma_{\text{IMBALANCE}} > \sigma_{\text{IN}}, \sigma_{\text{IMBALANCE}} > \sigma_{\text{SW-OUT}}, \sigma_{\text{IMBALANCE}} > \sigma_{\text{LW-OUT}}.$$

Is there global warming?

no global cooling if  $\text{IMBALANCE} \leq \sigma_{\text{IMBALANCE}}$

global warming if  $\text{IMBALANCE} > \sigma_{\text{IMBALANCE}}$

Fudged arithmetic is highlighted in red on the next slides. (**Follow the proverbial bad penny.**)

## The earliest data are reported by Stephen's *et al.* (1981) and Ramanathan (1987) – p.1

- Their results are based on only four partially analyzed months of observation by the ERBE satellite – (Apr. 1985, July 1985, Oct. 1985, Jan. 1986). (4 samples are insufficient because of observed non-sinusoidal albedo annual oscillation.)
- Their resulting Top of Atmosphere net power imbalance results are as follows:

	Stephens <i>et al.</i> (1981)	Ramanathan (1987)
Incident ShortWave power (W/m <sup>2</sup> )	+344	+340
Outgoing ShortWave power	-103.2	-106
Outgoing LongWave power	<u>-234±7</u>	<u>-237</u>
Net “observed” power imbalance	<b>+9 ± 10</b>	0
<b>jfc calculation</b>	<b>+6.8 (warming)</b>	<b>-3 (cooling)</b>

- Both Stephens *et al.* (1981) and Ramanathan (1987) data are fully consistent with zero net global warming and/or cooling.

The earliest data are reported by Stephen's *et al.* (1981) and Ramanathan (1987) – p.2

- The 2003 US National Academy / National Research Council report “*Understanding Climate Change Feedbacks* (p.112)” cites the Ramanathan (1987) data, and comments that “*The observations do not meet quality standards.*”

Loeb *et al.* (2009, 2012) use OHC data to “adjust” Ramanathan’s (1987) numbers, to show a net warming power imbalance – p.1

- Loeb *et al.* (2012, p.111) admit “*A limitation of the satellite data is their inability to provide an absolute measure of the net TOA radiation imbalance to the required accuracy level.*”
- Loeb *et al.* (2009, 2012) reanalyze and arbitrarily replace Ramanathan (1987)’s (extremely under-sampled) EREB satellite data with new values that now show a net global warming power imbalance.
- They obtain their new preferred data values by switching modality from satellite-radiometry data to ocean heat content (OHC) data (also very sparsely sampled) from the ARGO buoy chain, and from XBT ship-based bathythermograph manually sampled water temperature data.
- They base their action on a claimed increase in ocean heat content, as per speculation by Hansen *et al.*, (2005, 2011).

Loeb *et al.* (2009, 2012) use OHC data to “adjust” Ramanathan’s (1987) numbers, to show a net warming power imbalance – p.2

- Unfortunately, the ARGO and XBT data have a woefully sparse area sampling, and much worse accuracy than Loeb *et al.* claim. Lyman and Johnson (2008) fabricate data to fill in large OHC data gaps. (Data fabrication is one of our scientific little no-no’s.)
- Their resulting Top of Atmosphere net power imbalance results:

	<i>EREB</i> <i>satellite</i>	<i>OHC</i> <i>(2009)</i>	<i>OHC</i> <i>(2012)</i>
Incident ShortWave power (W/m <sup>2</sup> )	+340	+340	
Outgoing ShortWave power	-107	-99.5	various
Outgoing LongWave power	<u>-234.6</u>	<u>-239.6</u>	<u>                    </u>
net power imbalance	-1.6	+ 0.9	<b>+0.64 ± 0.11</b>
	(cooling)	(warming)	<b>(warming)</b>

**THE BAD PENNY**

Remember this proverbial BAD PENNY. It shows up again and again, and again.

# Power imbalance analysis by Stephens *et al.* (2012) with grossly admittedly-fudged error estimates – p.1

- Following Loeb *et al.*, Stephens *et al.* (2012) also admit that satellite data are incapable of observing a net imbalance! The two groups join forces and switch to the use of Ocean Heat Content (OHC) data, as per the suggestion by Hansen *et al.*, (2005, 2011).
- Stephens *et al.* (2012) use OHC data and the Outgoing ShortWave power “adjustment” (**fudge!**) reported earlier by Loeb *et al.* (2009, 2012) to claim a net global-warming power imbalance (**the BAD PENNY reappears!**):

Incident ShortWave power (W/m<sup>2</sup>)                      +340.2 ± 0.1

Outgoing ShortWave power                                      -100.0 ± 2.0

Outgoing LongWave power                                      -239.7 ± 3.3

Net “claimed observed” power imbalance +0.6 ± 0.4 ← recurring BAD PENNY  
(fudged warming)

Actual summation & assoc. RMS error (jfc) +0.5 ± 3.9 (no warming)

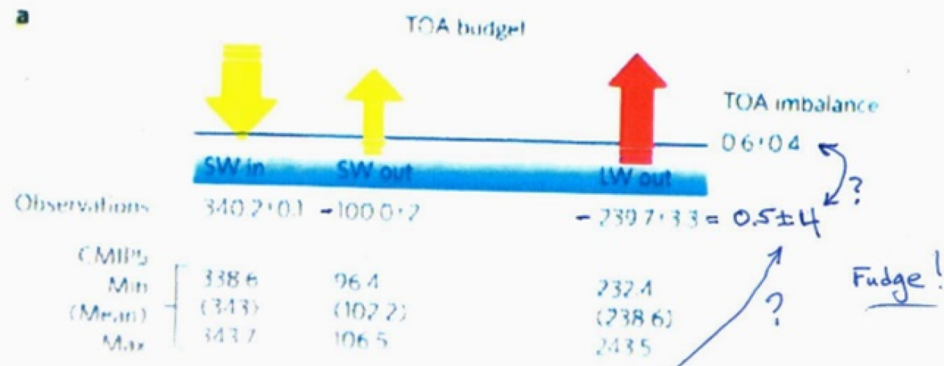


## Power imbalance analysis by Stephens *et al.* (2012) with grossly admittedly-fudged error estimates – p.2

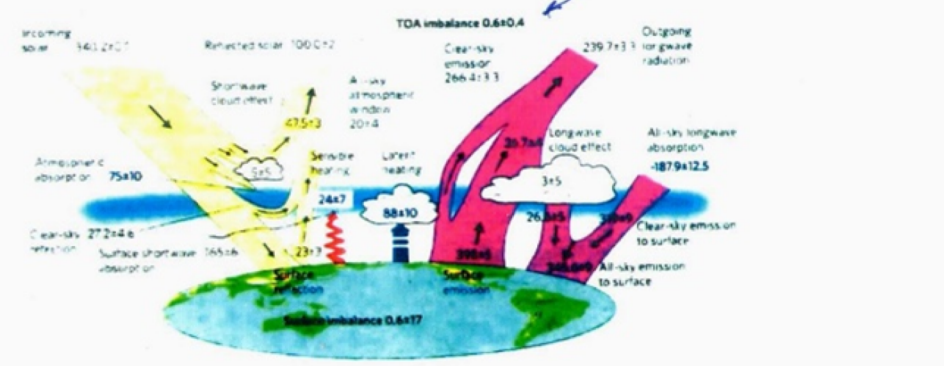
- Stephens *et al.* (2012) and Loeb *et al.* (2012) admit to having “adjusted” the data.
- Stephens *et al.*’s use of (visibly) incorrect arithmetic is another one of our scientific little no-no’s.
- Stephen’s *et al.* do not mention how they calculate their (fudged) error bars.
- Their error bars visibly fail the RMS error-sum crosscheck.
- Loeb *et al.* (2012)’s BAD PENNY error limits are increased from  $\pm 0.11$  to  $\pm 0.4$ , with no comment..

# An update on Earth's energy balance in light of the latest global observations

Graeme L. Stephens<sup>1\*</sup>, Juilin Li<sup>1</sup>, Martin Wild<sup>2</sup>, Carol Anne Clayson<sup>3</sup>, Norman Loeb<sup>4</sup>, Seiji Kato<sup>4</sup>, Tristan L'Ecuyer<sup>5</sup>, Paul W. Stackhouse Jr<sup>4</sup>, Matthew Lebsock<sup>1</sup> and Timothy Andrews<sup>4</sup> 2012



**Box 1 | Updated energy balance**



**Figure B1 | The global annual mean energy budget of Earth for the approximate period 2000–2010.** All fluxes are in  $Wm^{-2}$ . Solar fluxes are in yellow and infrared fluxes in pink. The four flux quantities in purple shaded boxes represent the principal components of the atmospheric energy balance.

Stephens *et al.* (2012) power-flow diagrams show the **fudged numbers**

Figures 1 and B1 from Stephens *et al.* (2012), display **bad arithmetic** and compare it with the CMIP5 computer modeling.

L'Ecuyer *et al.* (2015) reanalyze the Ocean Heat Content (OHC) data and get different results and much larger error estimates than those reported earlier by Stephens *et al.* (2012)

- Following the Stephens *et al.* (2012) estimate of the Earth's power imbalance based on OHC data, L'Ecuyer *et al.* (2015) further revise Loeb *et al.*'s (2009, 2012) ocean heat content data analysis.
- They correspondingly revise upwardly the (fudged) power imbalance error limits offered by Stephens *et al.* (2012). They do, however, provide their own "adjustments", that they instead call constraints.

	unconstrained	constrained
Incident ShortWave power (W/m <sup>2</sup> )	+340.0 ± 0.5	+340.2 ± 0.1
Outgoing ShortWave power	-102 ± 4	-102 ± 4
Outgoing LongWave power	<u>-238 ± 3</u>	<u>-238 ± 2</u>
Net "observed" power imbalance	0 ± 5.0	0 ± 3.5
	(no warming)	(no warming)

## The Observed State of the Energy Budget in the Early Twenty-First Century

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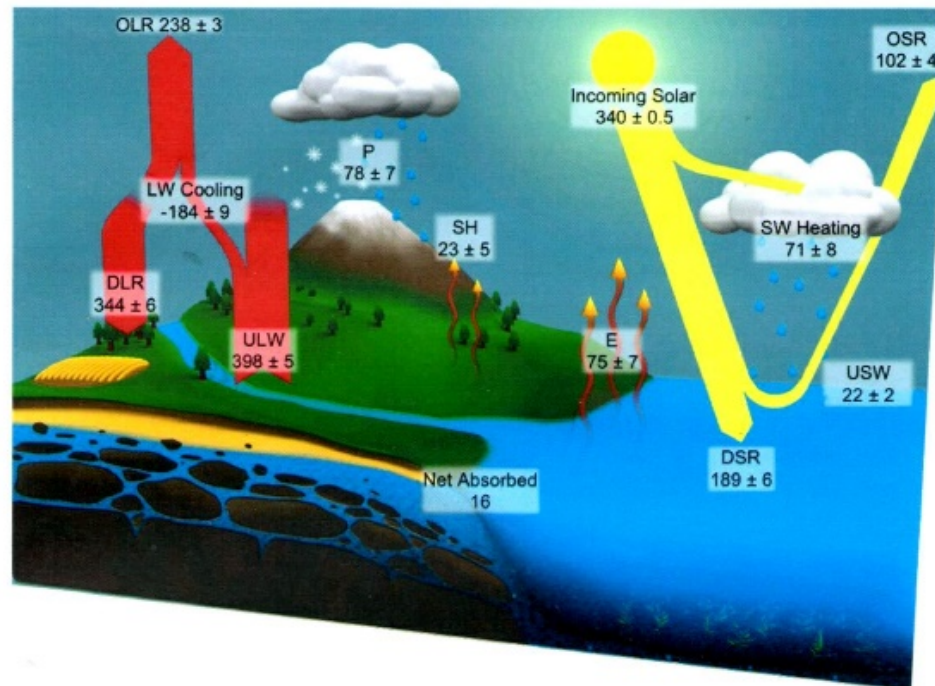


FIG. 1. The observed annual mean global energy budget of Earth over the period 2000–09 (fluxes in  $\text{W m}^{-2}$ ). Note that each flux value corresponds to the aggregate from all surfaces around the globe. Longwave and shortwave fluxes are plotted over land and ocean regions, respectively, merely for convenience. The small fraction of DLR that is reflected by Earth's surface has been absorbed into the ULW.

Power flow diagram from L'Ecuyer *et al.* (2015, Fig.1).

Numbers on the previous slide are extracted from the top line of this Figure.

# Critiques by Trenberth *et al.* (2010, 2014) – p.1

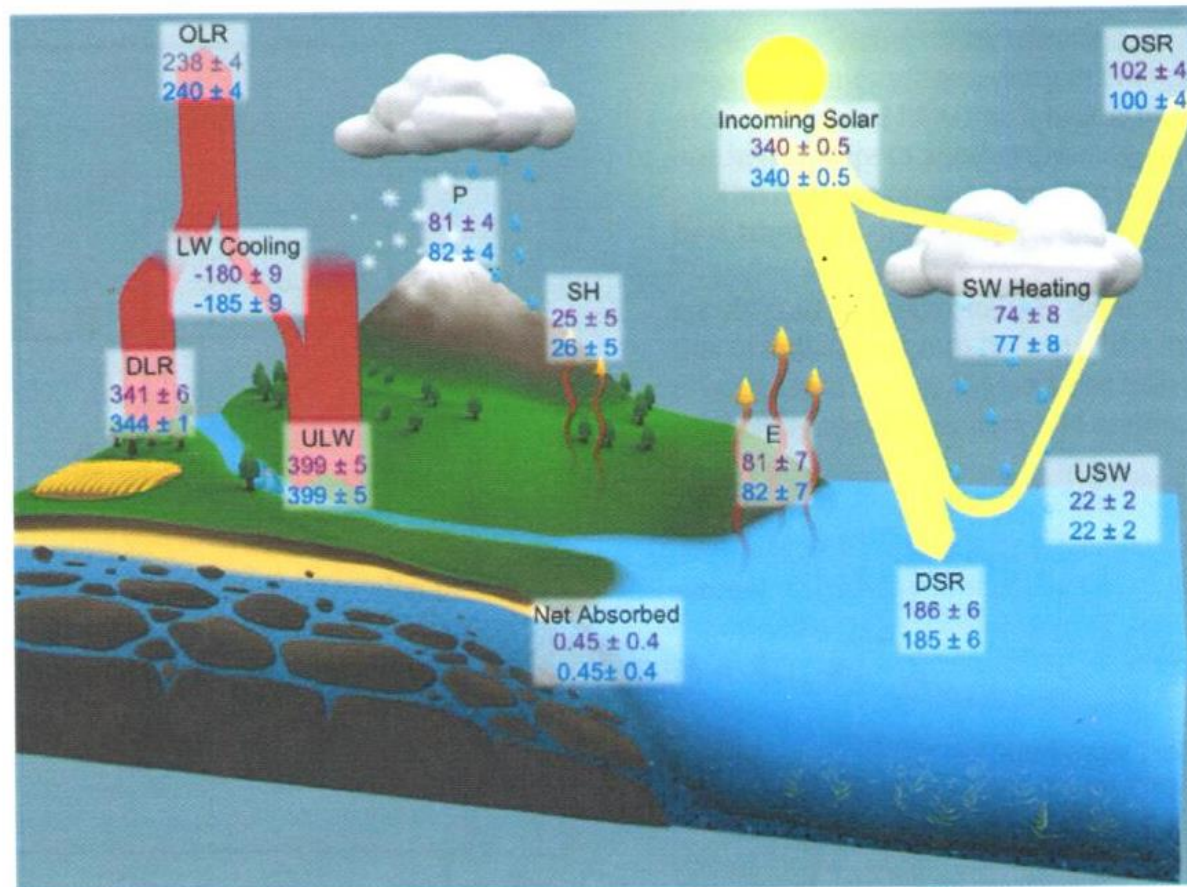
- Satellites measure the Top of Atmosphere energy balance, while Ocean Heat Content data apply to the surface energy balance. One may legitimately mix power-flux data at the two different altitudes, if and only if one fully understands all of the power-flow processes in the atmosphere that occur between the surface and the Top of Atmosphere. If the latter requirement is not true, then one ends up with an “apples to oranges” comparison.
- Trenberth *et al.* (2010, 2014) are highly critical of Loeb, Stephens, L’Ecuyer, and Hansen’s claimed “understanding” of the associated connection between the power flows at these two altitudes.
- Trenberth and Fasullo (2010) point to a huge “missing energy” indicated by the difference between the satellite data and the OHC data power-imbalance calculations, and specifically ask “*Where exactly does the energy go?*”

## Critiques by Trenberth *et al.* (2010, 2014) – p.2

- Hansen *et al.* (2011) dismiss Trenberth and Fasullo's alleged missing energy as being simply due to satellite calibration errors.
- Trenberth, Fasullo and Balmesada (2014) further note that despite various considerations of the surface power balance, significant unresolved discrepancies remain, and they are skeptical of the power imbalance claims.
- In effect, Trenberth *et al.* are the earliest “whistle blowers” to the above-mentioned data fudges.

Stephens and L'Ecuyer (2015) together offer a *mea culpa* admission to having made an “unjustified, ad hoc” choice between OHC data and CERES satellite data, and miraculously now claim simultaneously both zero and +0.6 +/- 0.4 W/m<sup>2</sup> power imbalance. – p.1

- In response to repeated criticism by Trenberth *et al.* (2010, 2014), Stephens and L'Ecuyer (2015) together offer what amounts to a *mea culpa* article regarding the aforementioned data fudging.
- They admit that “adjustments” do need to be made to obtain agreement (closure) between satellite data and ocean heat content data, and that these “adjustments” are very much larger (by about 10 W/m<sup>2</sup>) than their previously claimed power imbalance, +0.6 +/- 0.4 W/m<sup>2</sup>.
- Stephens and L'Ecuyer (2015) also admit that their choice of which data needs “adjustment” was made “*in a totally ad hoc*” fashion”, and that “*there is no real evidence to support one adjustment approach over the other*”



Power flow diagram from Stephens and L'Ecuyer (2015).

Numbers are extracted from the top two lines of this Figure.



Stephens and L'Ecuyer (2015) together offer a *mea culpa* admission to having made an “**unjustified, ad hoc**” choice between OHC data and CERES satellite data, **and miraculously now claim simultaneously both zero and +0.6 +/- 0.4 W/m<sup>2</sup> power imbalance. – p.2**

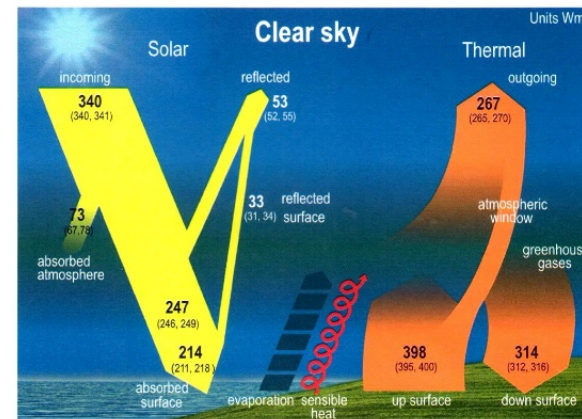
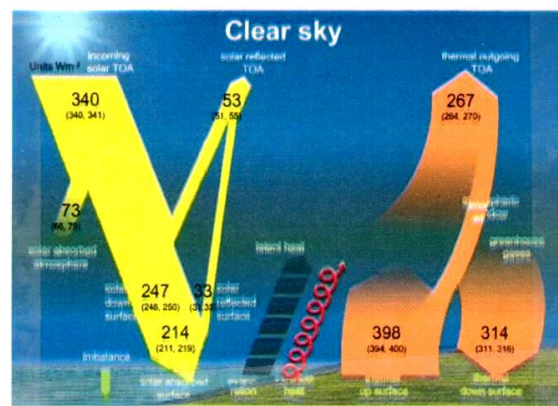
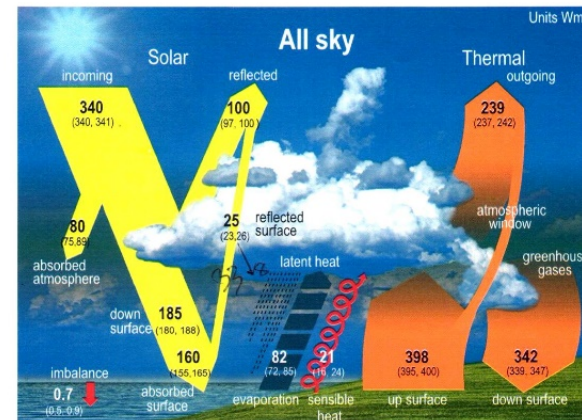
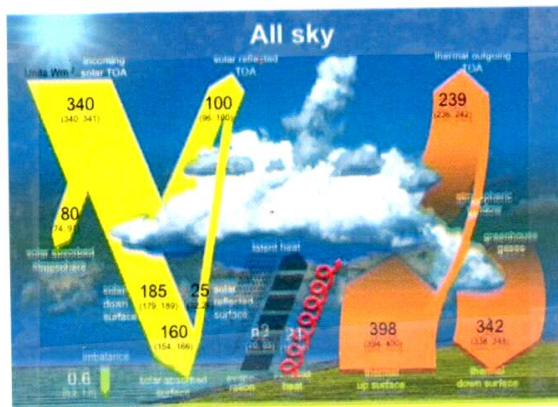
- Amazingly, Stephens and L'Ecuyer (2015) persist in reporting (in their abstract line 5) the power imbalance = 0.6 +/- 0.4 W/m<sup>2</sup>! (The infamous Loeb *et al.* (2012) global-warming BAD penny reappears!).

	OHC	CERES (satellites)
Incident ShortWave power (W/m <sup>2</sup> )	+340.0 ± 0.5	+340.0 ± 0.5
Outgoing ShortWave power	-102 ± 4	-100 ± 4
Outgoing LongWave power	<u>-238 ± 4</u>	<u>-240 ± 4</u>
<b>Power imbalance reported</b>	<b>+0.6 +/- 0.4 W/m<sup>2</sup> (=warming)</b>	
Net “calculated” power imbalances (jfc)	0 ± 5.6	0 ± 5.6
	(no warming)	(no warming)

## Power imbalance analysis by Wild *et al.* (2019) and AR6 (2021) – power imbalance and error bars both fudged – p.1

- Wild *et al.* (2019) report new Clear-sky (a.k.a cloud-free-sky) measurements to the data set using ground sunlight observations via the Baseline Surface Radiation Network (BSRN).
- The Clear-sky measurements allow the calculation of a new Clear-sky albedo. (See below.)
- The Wild *et al.* (2019) power-flow diagram is copied directly by AR6 (2021), except for added **fudges**. The power fluxes and error bounds presented here are copied directly from the top lines of their nearly identical power-flow diagrams. **The fudged power imbalances and error limits are copied directly from the associated lower left-hand corners.**

# Wild (2019, left pair) & AR6 (2021, p.934), right pair) power-flow diagrams.



## Power imbalance analysis by Wild *et al.* (2019) and AR6 (2021) – power imbalance and error bars fudged – p.2

	Wild <i>et al.</i> (2019)	AR6 (2021)
Incident ShortWave power (W/m <sup>2</sup> ) see note**	+340.5 ± 0.5	+340.5 ± 0.5
Outgoing ShortWave power	-98 ± 2	-98.5 ± 1.5
Outgoing LongWave power	<u>-239 ± 3</u>	<u>-239.5 ± 2.5</u>
Power imbalance (reported at lower left-hand corner of the upper Figures)	+0.6 +/- 0.4 (warming)	+0.7 ± 0.2 (strong warming)
Net “calculated” power imbalance (jfc)	3.5 ± 3.6 (no warming)	2.5 ± 3.0 (no warming)

- The infamous Loeb *et al.* (2012) global-warming BAD PENNY (with the Stephens *et al.* (2012) error-bar choice) reappears once again in Wild *et al.*(2019).
- The error bars all visibly fail the RMS error-sum crosscheck.

## Power imbalance analysis by Wild *et al.* (2019) and AR6 (2021) – power imbalance and error bars fudged – p.3

- The arithmetically incorrect **fudged** numbers shown in red are the values reported at bottom of their power flow diagrams. My last line gives the correct summation.
- Wild *et al.* (2019) introduce an innovative technique for data fudging: The Incident ShortWave power reported by previous power-flow maps (e.g. by Stephens and L'Ecuyer (2015), is typically  $340.0 \pm 0.1 \text{ W/m}^2$ . Wild *et al.* (2019) and AR6 (2021) assume  $340.0 \pm 0.5 \text{ W/m}^2$ , round upwardly the center of their asymmetric error-limit range by  $+0.5 \text{ W/m}^2$ , and show both limits correspondingly rounded to the nearest whole number, as per 340 (340, 341)  $\text{W/m}^2$ . Note that they upwardly or downwardly round by  $+0.5 \text{ W/m}^2$ . That trick shifts upwardly their calculated power imbalance by almost all of their reported net power imbalances,  $+0.6 \pm 0.4$  and  $+0.7 \pm 0.2$ .

# Two important observations from the AR6 (2021) power flow diagram

While we are here, note that

- #1. The cloudy-sky albedo that one calculates from this diagram is in error by about a factor of two.
- #2. 73% of the sunlight energy incident on oceans (that cover 70% of the Earth's area) is used not for warming the Earth, but for making clouds.
- These observations are important for Part II.

# #1 A very important observation from the AR6 (2021) and Wild *et al.* (2019) power flow diagrams: Cloud albedo 2X error!

- Energy conservation theorem in terms of albedos: *The albedo of a composite area is the area-weighted average of the individual component areas' albedos* –  $\alpha_{\text{ALL-sky}} = f_{\text{Clouds}} \times \alpha_{\text{Clouds}} + f_{\text{CLR-sky}} \times \alpha_{\text{CLR-sky}}$   
(See Appendices A,B.)
- The AR6 all-sky diagram implies that the all-sky albedo is  $\alpha_{\text{ALL-sky}} \equiv \text{OSR}_{\text{ALL-sky}} / \text{TOA}_{\text{INC}} = 100 / 340 = 0.3$ .
- The clear-sky diagram for  $f_{\text{CLR-sky}} = 0.33$  (i.e. for 33% of the Earth's area) implies that the clear-sky albedo is  $\alpha_{\text{CLR-sky}} \equiv \text{OSR}_{\text{CLR-sky}} / \text{TOA}_{\text{INC}} = 53 / 340 = 0.16$ .
- For the cloud fraction,  $f_{\text{Clouds}} = 0.67$ , (for 70% of the Earth's area) the albedo conservation corollary (in Appendix A) shows that the cloudy sky albedo is  $\alpha_{\text{Clouds}} = 0.36$ , while other direct measurements indicate a value  $\alpha_{\text{Clouds}} \approx 0.8$ .
- This value for  $\alpha_{\text{Clouds}}$  is conspicuously wrong by about a factor of two!

## #2 important observation: What does sunlight mostly do when it reaches the Earth's surface?

- It is commonly believed that sunlight that is absorbed by the Earth's surface simply warms the surface. That may be true over land. But land represents only about 30% of the Earth's surface.
- Oceans cover 70% of the Earth's surface. Correspondingly, about 70% of incoming sunlight falls on the oceans. Virtually all of the Earth's exposed water surface occurs in the oceans.
- Following the AR6 power-flow diagram,  $160 \text{ W/m}^2$  is absorbed by the whole Earth, meaning that roughly  $70\% \times 160 = 112 \text{ W/m}^2$  is absorbed by oceans.
- The AR6 power-flow diagram indicates that  $82 \text{ W/m}^2$  is used for evaporating water, and not for heating the surface.
- Since clouds are mostly produced over the oceans (because that's where the exposed water is), then  $82/112 = \underline{73\%}$  of the input energy absorbed by the Earth's oceans is used, not for warming the Earth, but instead simply for making clouds.



# NOAA's scientific disinformation hoax asserts that the frequency of extreme weather events is increasing



## Predicting and managing extreme weather events

Jane Lubchenco and Thomas R. Karl

**Earth's climate is warming, and destructive weather is growing more prevalent. Coping with the changes will require collaborative science, forward-thinking policy, and an informed public.**

This is a challenging time for the US and for US science. The economy, though it is beginning to show some positive signs, is still in bad shape. Extraordinary numbers of Americans are without jobs. The public holds a record-low opinion of government. The integrity of the scientific process is being questioned, and pressure to reduce federal spending is fierce.

The irony is that the demand for services provided by agencies such as the National Oceanic and Atmospheric Administration is at an all-time high and growing. Our ability to deliver those services depends in part on our scientific enterprise. One significant reason why demand for services is growing is the increased frequency and intensity of extreme weather events. Last year, new records were set in the US for tornadoes, drought, wind, floods, and wildfires. Heat records were set in every state. At one time last summer, nearly half of the country's population was under a heat advisory or heat warning. In late November, hurricane-force winds hit parts of Wyoming, Utah, Nevada, Arizona, New Mexico, and California, with winds reaching 97 mph in Pasadena.

We at NOAA were able to predict most of the weather- and climate-related extreme events, but our capacity to continue to do so is seriously threatened by downward pressure on our budgets. Budgets and politics threaten NOAA's ability to observe and model weather and climate events and to deliver information to the public. NOAA's abilities to fund and conduct research aimed at understanding the causes of extreme weather and to improve the effectiveness of response to our warnings are all at great risk.

This article focuses on the unusual weather and climate patterns we've documented in 2011 and in previous decades and identifies several actions that would help us to better predict and manage them. Succeeding in this tough environment will take innovative new approaches, a collaborative effort from the scientific community, and a broader appreciation for what is at risk.

**Going to extremes**

The number of events that produced on the order of \$1 billion or more in damages in 2011 is the largest since tracking of that statistic began in 1980, even after damages are adjusted for inflation. NOAA estimates that there were at least 14 such events in 2011. (The previous record was nine, set in 2008; an average year would see three or four.) Collectively, the 14 events resulted in approximately \$55 billion in damage.<sup>2</sup> Furthermore, many events produced less than \$1 billion in damage, but are not included in the tally, although they collectively represent additional significant financial losses. Why did we see such expensive damage last year? There are likely a number of contributing factors, including upward trends in population and infrastructure, migration to vulnerable areas, and climate change. The contribution of each of these factors remains an important research issue.

Of course, the economic losses are far from the full picture. Weather- and climate-related disasters in the US claimed more than 1000 lives in 2011, almost double the yearly average. For the victims, each of the events was a huge tragedy. For our country, as for all countries, the events are an unprecedented challenge to the safety of our citizens, the bottom line for our businesses, and the smooth functioning of our society. Timely, accurate, and reliable weather warnings and forecasts are essential to our nation's ability to plan for, respond to, recover from, and prosper in the aftermath of disaster. Short-term forecasts are critical, but so are forecasts of slowly evolving events like prolonged droughts, snow- and ice-melt flooding, and heat waves.

We've emphasized how unusual 2011 was, but was it an anomaly or part of a broader change? Should we expect more of the same in the future? Globally, according to the insurance company Munich Re, the number of extreme meteorological and hydrological events, defined in terms of economic and human impacts, has more than doubled over the past 20 years.<sup>3</sup>

Jane Lubchenco is undersecretary for oceans and atmosphere at the US Department of Commerce and administrator of the National Oceanic and Atmospheric Administration. Thomas Karl is director of NOAA's National Climatic Data Center and chair of the US Global Change Research Program. This article is an edited version of the Union Agency Lecture given by Lubchenco at the 2011 fall meeting of the American Geophysical Union in San Francisco.

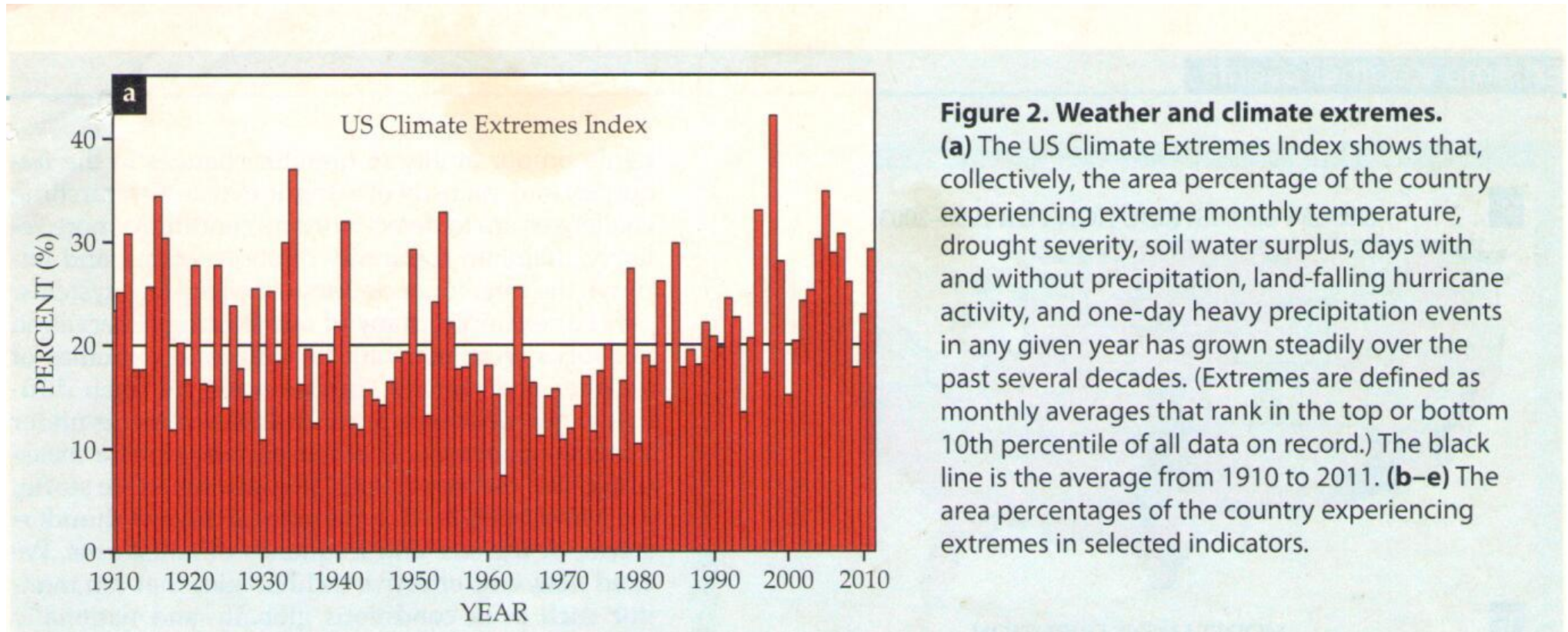
www.physicstoday.org March 2012 Physics Today 31

- 2012, Physics Today article “*Predicting and Managing Extreme Weather Events*” – *Earth’s climate is warming, and destructive weather is growing more prevalent. Coping with the changes will require collaborative science, forward-thinking policy, and an informed public.*”
- Authors: Jane Lubchenco, undersecretary for oceans and atmosphere at the US Dept. of Commerce, and NOAA administrator, and Thomas Karl, Director of NOAA’s climatic data center and chair of the US Global Change Program.

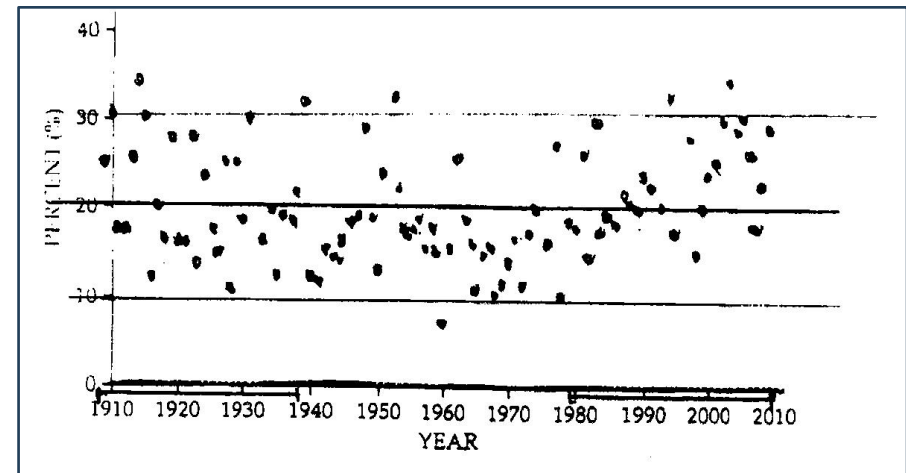
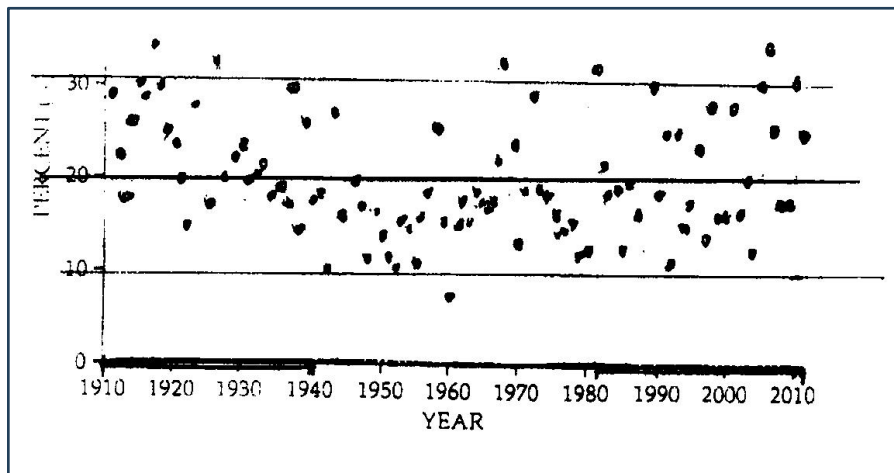
# NOAA's disinformation hoax regarding an impending climate apocalypse

- The Physics Today article asserts that there is an increase in the extreme weather event frequency that is associated with climate change in the three decades ending in 2012.
- The article presents data in their Fig. 2a displaying NOAA's Weather and Climate Extremes Index. That index is NOAA's numerical composite measure of the frequency of so-called extreme weather events, including hot-spells, cold-spells, droughts, floods, land-falling hurricanes, etc. (EF3+ tornado frequency is conspicuously absent from the list, presumably because it was actually decreasing. See Koonin, pp.124-125)
- The authors assert that their climate extremes index has "obviously" grown steadily over the last three decades. I assert here that their own data in their Fig. 2a disprove their own assertion.

# Lubchenco and Karl's Fig. 2a



The two graphs below are traced directly from Fig. 2a. They are identical, except that one is plotted left-to-right reversed, i.e. backwards with time increasing to the left. If you look carefully, you will see that they are mirror images. If you can't tell which one of these graphs is correctly plotted and matches the one on the previous slide, and which one is time-backwards, I assert that their claimed recent increase in extreme weather-event frequency is not obviously indicated by their data, as they claim. Their claim is false! Are you really confidently willing to bet trillions of dollars that you can tell which one is correct? **These data portend the impending apocalypse, so Lubchenko and Karl claim.**



# Part I – Conclusions – p.1

1. The IPCC and its contributors claim the Earth has a net-warming energy imbalance. I show here that those claims are false.
2. A net-warming energy imbalance is the definition of global warming. Moreover, there is no energy crisis without global warming!
3. The IPCC bases its global warming claims on computer modeling of the Earth's atmosphere, and on observational data from a variety of observational modalities. Both the computer models and the observational data are grossly flawed. **They also use fudged data.**
4. The IPCC's computer modeling and its predictions are totally unreliable. There is something clearly very wrong with the physics incorporated within these computer models. Since the computer models can't even explain the past, why should anyone trust their prediction(s) for the future?

## Part I – Conclusions – p.2

5. Not one of the observational modalities for measuring the Earth's power imbalance convincingly shows a net global warming.
6. Various observers and the IPCC have dishonestly fudged their reported data, and have dishonestly changed it from showing No Warming, to showing Warming. Crucially important data fudges are revealed here and highlighted in red. **If you don't believe me, check my arithmetic.**
7. The Data from Wild *et al.* (2019) and AR6 (2021) indicate a serious factor of two error in their implied cloudy-sky albedo  $\approx 0.36$ . Direct measurements indicate a value  $\approx 0.8$ .
8. The IPCC and NOAA further claim that the purported power imbalance has already caused an increase in dangerous extreme weather events. NOAA's own data disprove their own claims.

## Part I – Conclusions – p.3

9. I thus offer **Great News**. Despite what you may have heard from the IPCC and others, there is no real climate crisis! The planet is **NOT** in peril!
10. The IPCC's (and NOAA's) claims are a dishonest hoax. Trillions of dollars are being wasted. **The climate crisis is a colossal trillion-dollar hoax.**

## Part II – The cloud thermostat - 1

1. So what is really happening? Why is the earth's climate actually as stable as it really is?
2. In Part II, I show that the cloud thermostat mechanism is clearly the overwhelmingly dominant climate controlling feedback mechanism that controls stabilizes the Earth's climate and temperature. It thereby prevents global warming and climate change.
3. The cloud-thermostat mechanism provides very powerful feedback that stabilizes the Earth's climate and temperature. Its great strength obtains from the observed large fluctuation of the Earth's power imbalance.
4. The mechanism gains its strength from the Earth's observed very large cloud-cover variation. The power imbalance is actually observed to be continuously strongly fluctuating by anywhere between 18 to 55 W/m<sup>2</sup> (40 to 77 W/m<sup>2</sup> , if you include the solar constant's annual variation).



## Part II – The cloud thermostat - 2

5. Clouds modulate the outgoing Shortwave power and therefore control the Earth's power imbalance, minimally with a  $18 \text{ W/m}^2$  available power range (ignoring the added  $22 \text{ W/m}^2$  solar-constant variation), which is minimally 26 times the IPCC's  $0.7 \text{ W/m}^2$  claimed power imbalance, and 45 times the IPCC's  $\pm 0.2 \text{ W/m}^2$  power imbalance error range.
6. The above numbers use the IPCC's assumed and questionable albedo parameters. With more realistic assumptions, the cloud-thermostat mechanism controls the Earth's power imbalance with a  $77 \text{ W/m}^2$  available power range, which is more than 100 times bigger than the IPCC's  $0.7 \text{ W/m}^2$  claimed power imbalance, and 192 times bigger than the IPCC's  $\pm 0.2 \text{ W/m}^2$  power-imbalance total error range.

## Part II – The cloud thermostat - 3

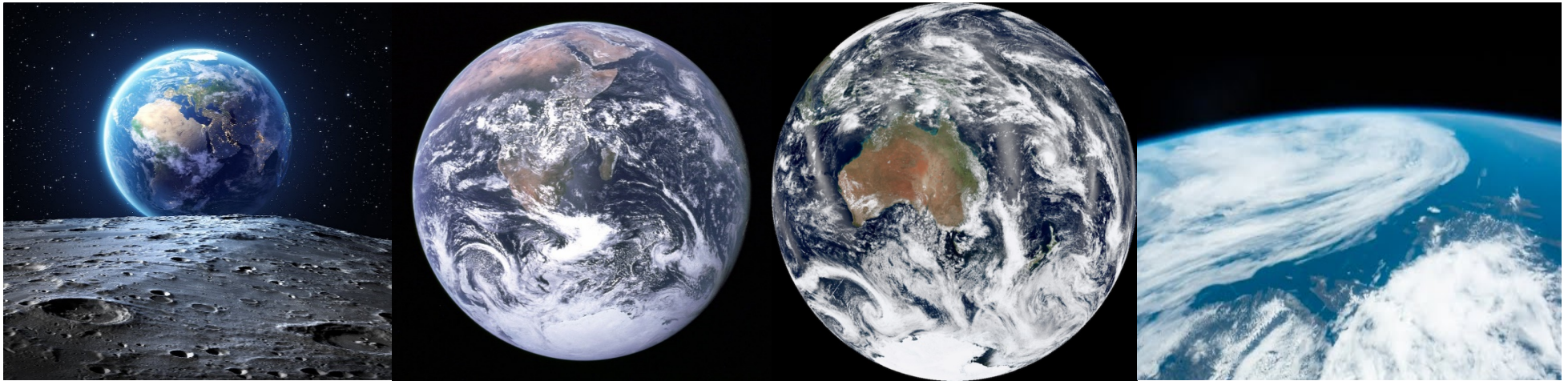
7. This seemingly random fluctuation of the power imbalance is not random at all, but is actually a crucial part of a thermostat-like feedback mechanism that controls and stabilizes the Earth's climate and temperature. It is observed by King *et al.* (2013) and by Stephens *et al.* (2015) to be quasi-periodic,
8. Just like the thermostat in your home, the power-imbalance is never zero. The furnace or AC is always either ON or OFF. The thermostat simply modulates the heating/cooling duty cycle.

# Features of the cloud thermostat mechanism

1. In preparation for the introduction of this model, I first review important, underappreciated, but conspicuous properties of clouds - their variability and their strong reflectivity of sunlight (SW radiation).
2. I have shown in Part I that the cloud-thermostat mechanism involves the dominant (73%) use of sunlight energy incident on 70% of the planet.
3. I show that, when the cloud-thermostat mechanism is viewed as a form of climate-stabilizing (negative) feedback, it is by far the most powerful of any such mechanism heretofore considered.
4. The IPCC estimates that the net stabilizing feedback strength of the Earth's climate, including the destabilizing feedback strength of greenhouse gasses, is about  $-1 \text{ W/m}^2/\text{°C}$ .
5. I show that the cloud thermostat feedback increases the net natural stabilizing feedback strength to about anywhere between  $-7 \text{ W/m}^2/\text{°C}$  and  $-14 \text{ W/m}^2/\text{°C}$ , depending on the assumed cloud albedo.

# Some important obvious properties of clouds

**What does the Earth look like when viewed from space in sunlight?**



# There are 5 important take-home messages to be gleaned from these satellite photographs.

1. Cloud coverage area is highly variable over the Earth.
2. Clouds of all types appear bright white! Clouds reflect dramatically more sunlight than the rest of the planet does!
3. The photos (along with a large number of careful measurements) strongly suggest that the average cloud reflectivity (of sunlight) is about 0.8 – 0.9. (For comparison, white paper has a reflectivity of  $\approx 0.99$ .)
4. The clear-sky (cloud-free) areas appear much darker than the clouds. The average reflectivity of land (green and brown areas) and ocean (dark blue areas) is  $\approx 0.16$ .
5. By contrast, AR6 (2021) and Wild *et al.* (2019) claim that cloud reflectivity is  $\approx 0.36$ , and that the whole Earth's reflectivity is almost the same, 0.3. Something is clearly very wrong with the IPCC's numbers.

# Clouds cast dark shadows.

- Clouds cast dark sharply-defined shadows on the surface below them. Just stand on a hillside or look down from an airplane on a partly cloudy day and watch the cloud shadows cast on the land below.
- Watch your solar-panel output when a solitary cloud passes in front of the sun. Typically, the output drops to 50% or less.
- Try reading a book indoors on a heavily overcast day without turning on the lights. You can't. It's too dark! Where did all of the missing sunlight go? Since water droplets negligibly absorb sunlight, the missing sunlight (typically 80-90% of it) got reflected back out into space.

# What does sunlight mostly do when it reaches the Earth's surface? The answer's details are given above in Part I

- Oceans cover 70% of the Earth's surface. Correspondingly, about 70% of incoming sunlight falls on the oceans.
- Oceans are the Earth's cloud factory. Virtually all of the Earth's exposed water surface occurs in the oceans.
- **73% of the input energy absorbed by the Earth's oceans is used, not for warming the Earth, but instead for making clouds.**





# Satellite observations of cloud-cover fraction by King *et al.* (2013) – p.2.

5826

IEEE TRANSACTIONS ON GEOSCIENCE AND REMOTE SENSING, VOL. 51, NO. 7, JULY 2013

## Spatial and Temporal Distribution of Clouds Observed by MODIS Onboard the Terra and Aqua Satellites

Michael D. King, Senior Member, IEEE, Steven Platnick, W. Paul Menzel, Steven A. Ackerman, and Paul A. Hubanks

Outgoing Short Wave Radiation  $W/m^2$   
 ARG with total (2014) JFC  
 TOASW inc =  $340 W/m^2$   $340 W/m^2$   
 (AVE)  $\alpha_{ALL-SKY} = 0.294$   $0.6$   
 $\alpha_{CLR-SKY} = 0.156$   $0.16$   
 $\alpha_{CLO} = 0.362$   $\alpha_{CLO} = 0.8$

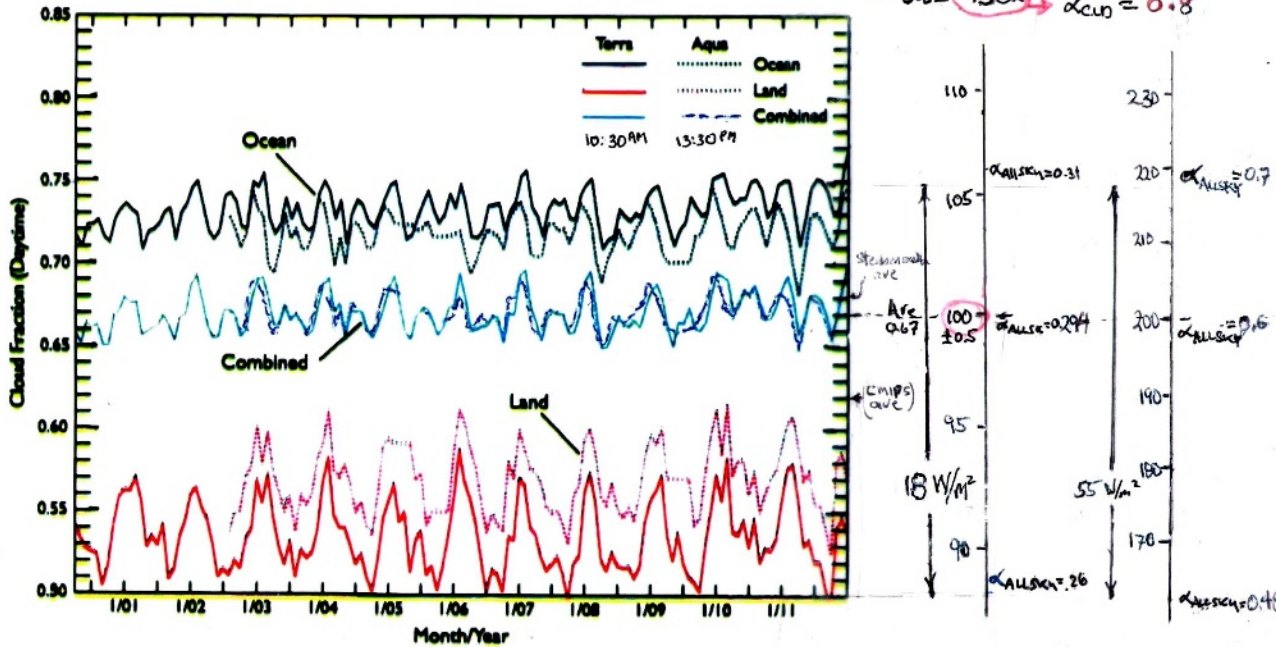


Fig. 5. Global mean daytime cloud fraction as a function of time for Terra and Aqua differentiated by surface type.

The left-hand scale uses the parameters from the 2021 AR6 report. It assumes an all-sky albedo = 0.3, and a clear-sky albedo = 0.16.

Energy conservation (see Appendix B) further requires a cloudy-sky reflectivity (albedo) = 0.36. (an unreasonable value).

On this scale, reflected SW power fluctuates by as much as  $18 W/m^2$ .

# Satellite observations of cloud-cover fraction by King *et al.* (2013) – p.3.

5826

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Outgoing Short Wave Radiation  $W/m^2$

ARG with total (2009) JFC  
 $340 W/m^2$   
 $0.6$   
 $0.16$   
 $0.362 \rightarrow \alpha_{cloud} = 0.8$

(AVE)  $\alpha_{ALL-SKY} = 0.294$   
 $\alpha_{CLR-SKY} = 0.156$

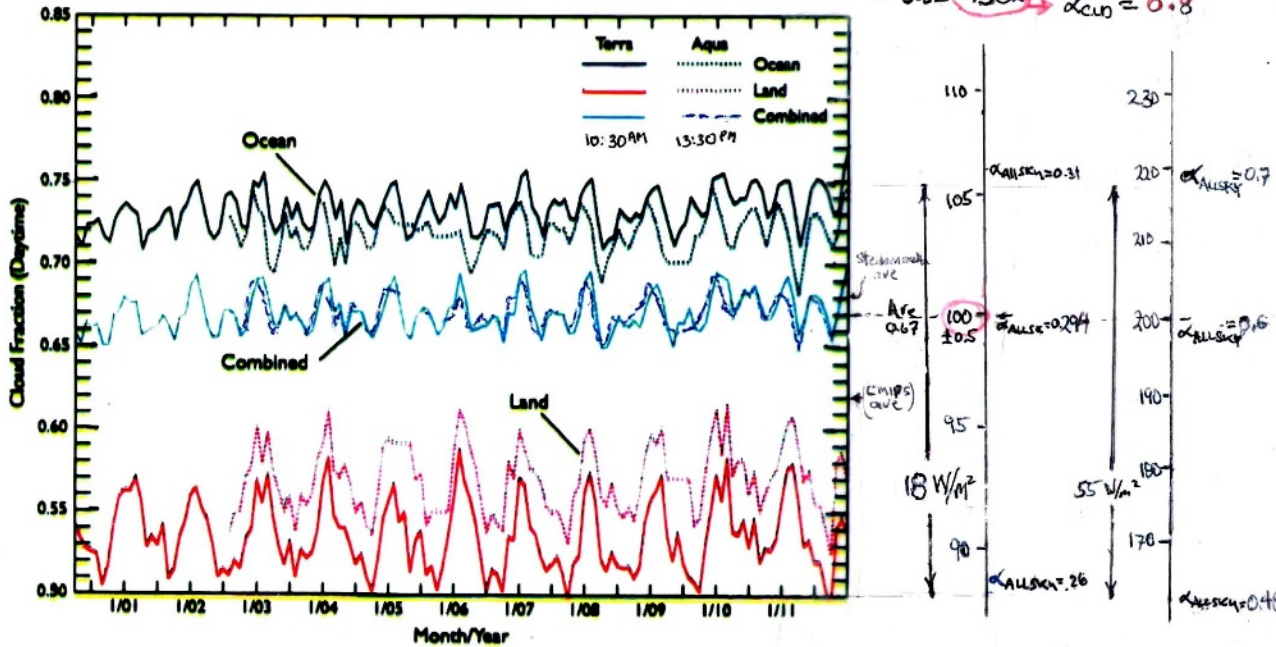


Fig. 5. Global mean daytime cloud fraction as a function of time for Terra and Aqua differentiated by surface type.

The right-hand scale uses the same parameters, except that it assumes a cloudy-sky albedo = 0.8, as per the cloud photos and various measurements.

Reflected SW power then fluctuates by as much as 55  $W/m^2$ .

If one further includes the 22  $W/m^2$  variation from the Earth's orbit ellipticity, it fluctuates by as much as 77  $W/m^2$ .

# Satellite observations of cloud-cover fraction by King *et al.* (2013) –p.4.

5826

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 $\alpha_{CLR-SKY} = 0.156$   $0.16$   
 $\alpha_{CLD} = 0.362$   $\alpha_{CLD} = 0.8$

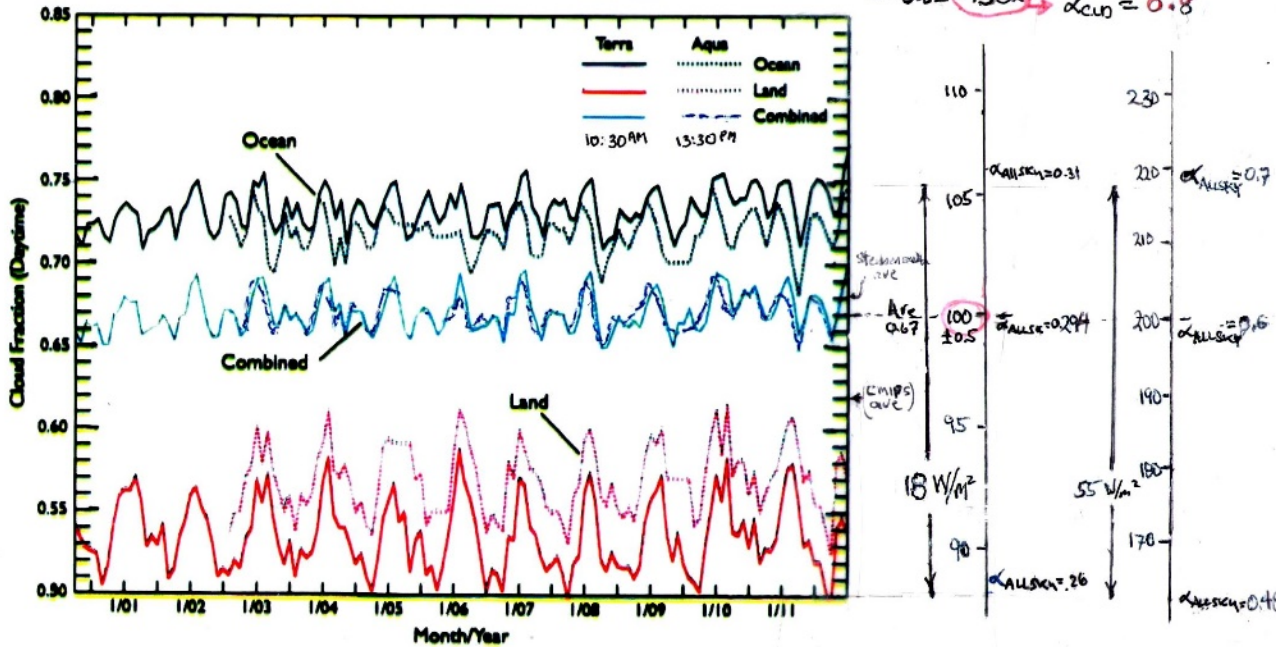


Fig. 5. Global mean daytime cloud fraction as a function of time for Terra and Aqua differentiated by surface type.

The cloud-fraction variation is extremely strong and very rapid.

The difference between the adjacent solid and dotted lines (for land and ocean) is the average everyday variation in only three hours – from 10:30AM to 13:30PM.

# Satellite observations of cloud-cover fraction by King *et al.* (2013) -5.

5826

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Michael D. King, Senior Member, IEEE, Steven Platnick, W. Paul Menzel, Steven A. Ackerman, and Paul A. Hubanks

Outgoing Short Wave Radiation  $W/m^2$   
 ARG with total (2014) JFC  
 $TOASW_{inc} = 340 W/m^2$   $340 W/m^2$   
 (AVE)  $\alpha_{ALL-SKY} = 0.294$   $0.6$   
 $\alpha_{CLR-SKY} = 0.156$   $0.16$   
 $\alpha_{CLD} = 0.362$   $\alpha_{CLD} = 0.8$

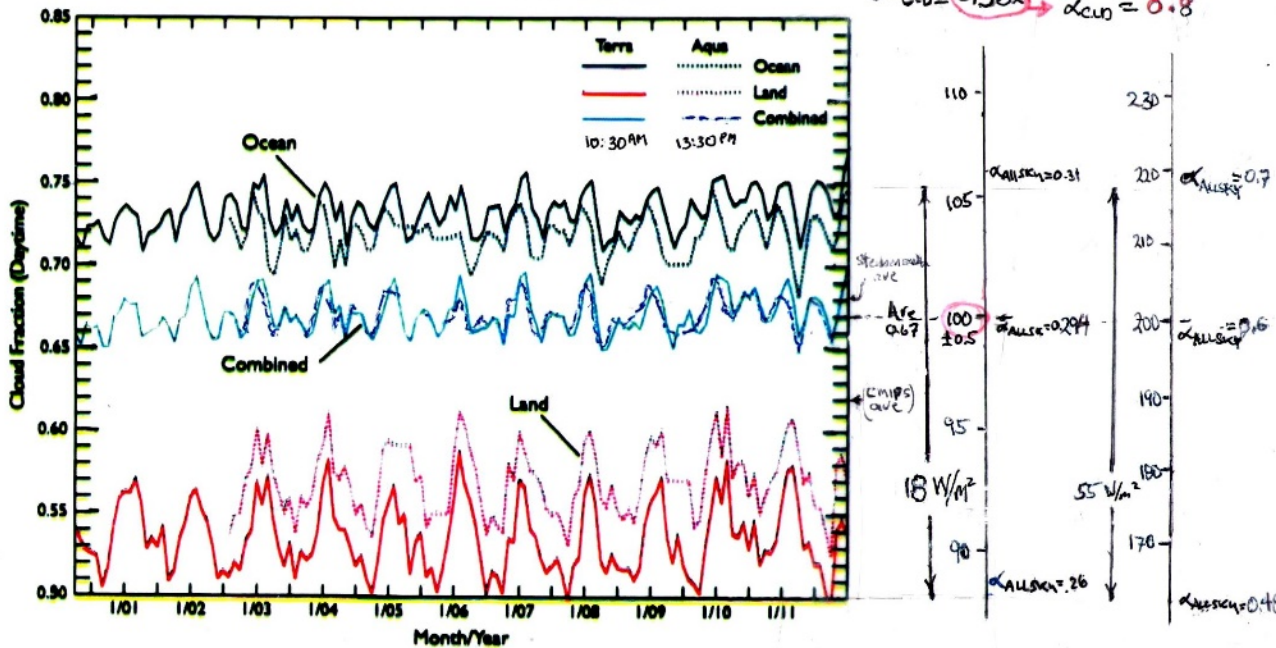


Fig. 5. Global mean daytime cloud fraction as a function of time for Terra and Aqua differentiated by surface type.

The albedo fluctuation data presented by Stephens *et al.* (2015, see earlier slide), when compared with this Figure, shows that the albedo fluctuation is dominantly due to cloud-cover fraction variation.

Conclusion: Cloud-fraction variation, especially for clouds passing from ocean to land, strongly modulates the Outgoing sunlight power, and strongly affects the Earth's power imbalance.

# My cloud thermostat model – how does it work? p.1

1. Recall that the IPCC's AR6 power-flow map asserts that 73% of the input energy absorbed by the Earth's oceans is used, not for warming the Earth, but instead simply for evaporating seawater and making clouds, rather than for raising the Earth's surface temperature. Recall that the Earth has a strongly varying cloud cover and albedo.
2. Temperature control of the Earth's surface by this mechanism works exactly the same way as does a common home thermostat. A thermostat automatically corrects a structure's temperature in the presence of varying modest heat leaks. For the earth, the presence of significant CO<sub>2</sub> in the earth's atmosphere, manmade or not, provides, in fact, a very small heat leak (at most, about 2 W/m<sup>2</sup>). Note that, just like the Earth, the power imbalance for a thermostatically controlled system is never zero. It is always fully heating or fully cooling.

## My cloud thermostat model – how does it work? p.2

3. How does the cloud thermostat work? It works just like the furnace in your home. Clouds produce dark shadows. A high cloud-cover fraction equals a highly shadowed area, especially over the oceans. When clouds are present, the Earth's furnace is effectively turned OFF. When clouds are not present, the Earth's furnace is ON. As a result, cloudy days are cooler than sunny days.
4. When the ocean's cloud-cover fraction is too high and the furnace is turned OFF, then the sea-surface temperature is too low. Importantly, sunlight is needed to evaporate seawater. With reduced temperature, the evaporation rate of seawater is significantly reduced. As a result, the ocean's too-high cloud-cover fraction obediently starts to decrease. Very quickly, the too high cloud-cover fraction decreases (by evaporation and precipitation), and the temperature increases. Equilibrium cloud cover and temperature are restored.

## My cloud thermostat model – how does it work? p.3

5. When the ocean's cloud-cover fraction is too low, the surface temperature becomes too high, and the reverse process occurs. With low cloud cover, lots of sunlight reaches the ocean surface. Increased sunlit area then evaporates more seawater. The cloud-production rate obediently increases and the cloud-cover fraction stops being too low . Equilibrium cloud cover and temperature are again restored.
6. **Depending on one's assumption regarding cloud albedo, the cloud thermostat mechanism has minimally anywhere between 18 and 55 W/m<sup>2</sup> power available from cloud-fraction variability to overcome a wimpy 0.7 W/m<sup>2</sup> heat leak (allegedly blamed on greenhouse gasses) and to stabilize the Earth's temperature, no matter what the greenhouse gas atmospheric concentration is!**

# Analysis of atmospheric feedback systems

1. The IPCC's second sacred task was to estimate the so-called feedback stability of the Earth's atmosphere and its sensitivity to external perturbations, such as increased greenhouse gasses, volcanism, etc.
2. Given huge observed fluctuations in Outgoing power, the Earth obviously maintains a surprisingly stable long-term temperature. Why?
3. Climate scientists have proposed the existence of a variety of feedback mechanisms that account for the evident stability.
4. Climate feedback systems are discussed extensively by the 2003 National Research Council / National Academy report "*Understanding Climate Change Feedbacks*", by Sherwood *et al.* (2020 – *the Ringsberg Castle study*), and by AR6 (2021, Chapter 7.4).
5. The detailed calculation methodology used by Sherwood *et al.* (2020) is outlined in Appendix C.
6. By removing one of Sherwood *et al.* (2020)'s overly restrictive assumptions, their methodology becomes applicable to the cloud thermostat mechanism, as is shown in Appendix D.



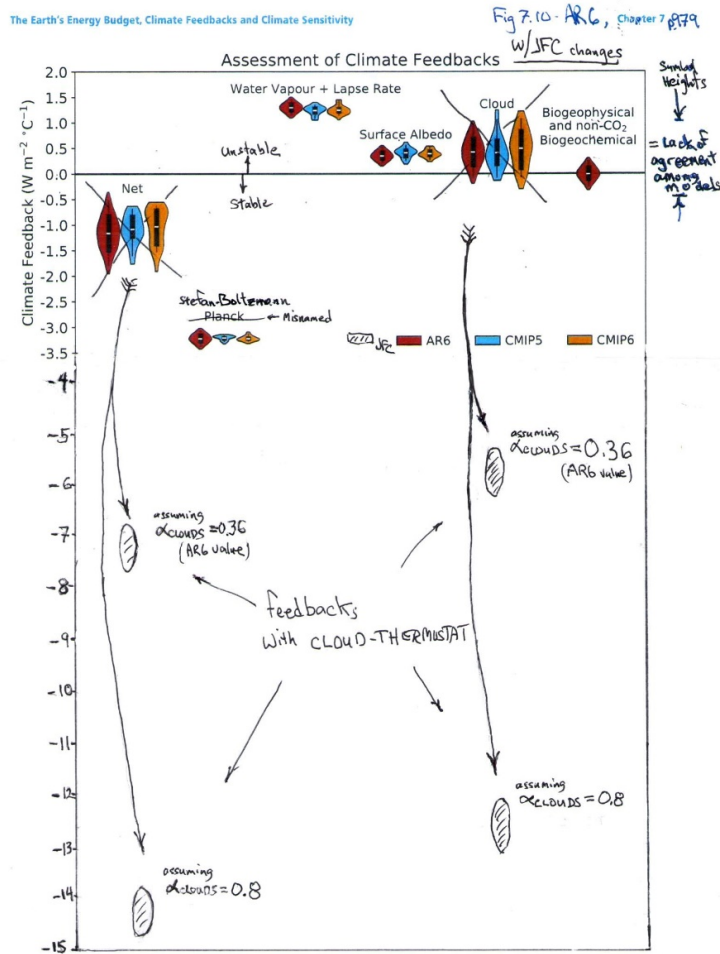
# Feedback strength of the cloud thermostat mechanism p.1

1. The cloud-thermostat mechanism's feedback parameter is now readily evaluated under the two scenarios associated with two choices for cloud albedo. The details of the calculation are shown in Appendix D.
2. Using the AR6 choice for cloud albedo,  $\alpha_{\text{Clouds}} = 0.36$ , we have  $\lambda_{\text{Clouds}} \approx -5.7$  W/m<sup>2</sup> K, which is 1.7 times larger than (the misnamed)  $\lambda_{\text{Planck}}$ , heretofore the strongest feedback term.
3. Alternatively, using the more reasonable choice for cloud albedo,  $\alpha_{\text{Clouds}} = 0.8$ , we have  $\lambda_{\text{Clouds}} \approx -12.7$  W/m<sup>2</sup> K, which is 3.8 times larger than (the misnamed)  $\lambda_{\text{Planck}}$ .

# Feedback strength of the cloud thermostat mechanism p.2

4. These values are plotted as an extension of the AR6 Figure 7.1, which shows the feedback strength for various mechanisms. The total system strength is shown in the left-hand column.
5. Viewed as a temperature-control feedback mechanism, in either scenario, the cloud thermostat has the strongest negative (stabilizing) feedback of any mechanism heretofore considered.
6. It very powerfully controls and stabilizes the Earth's climate and temperature.

# Comparative feedback sensitivities for various mechanisms.



- AR6 (2021, Fig. 7.10, p. 979) estimates for the so-called feedback strengths (sensitivities) for various mechanisms.
- The AR6 Figure is corrected by replacing their estimate of  $\lambda_{Clouds}$ , with the estimates calculated here for the cloud-feedback mechanism, under two scenarios - assuming cloud albedo = 0.36, and 0.8. In both scenarios, the cloud-feedback mechanism is dominant. [See Appendix D]

## Part II - Conclusions

1. I have introduced here the cloud-thermostat mechanism. I show that it is the overwhelmingly dominant climate controlling feedback mechanism that controls stabilizes the Earth's climate and temperature. It thereby prevents global warming and climate change.
2. The IPCC's 2021 AR6 report (p.978) claims that climate stabilizing natural feedback mechanisms have a net (total) stabilizing strength of  $-1.16 \pm 0.6$  W/m<sup>2</sup>/K.
3. My cloud feedback mechanism has a net stabilizing strength of anywhere between  $-5.7$  to  $-12.7$  W/m<sup>2</sup>/K, depending on the assumed cloud albedo (0.36 = IPCC value or 0.8 = observed value).

## Part II - Conclusions

4. My mechanism's overwhelmingly dominant strength confirms that it is the dominant feedback mechanism controlling the Earth's climate.
5. The mechanism gains its strength from the Earth's observed very large cloud-cover variation and the associated large power imbalance variation. The power imbalance is actually observed to be continuously strongly fluctuating by anywhere between 18 to 55 W/m<sup>2</sup> (40 to 77 W/m<sup>2</sup> , if you include the solar constant's annual variation). This large variation is the effective furnace strength.
6. My cloud thermostat mechanism provides nature's own *Solar Radiation Management System*. This mechanism already exists. It is built in to nature's own cloud factory. It works very well to stabilize the Earth's temperature on a long term basis. And, it is free! By comparison, the IPCC's various proposed mechanisms each cost trillions of dollars per year.

# Recommendations for policy makers – p.1

1. There is no climate crisis! There is, however, a very real problem with providing a decent standard of living to the world's now enormous population. There is indeed an energy shortage crisis. The latter is being unnecessarily exacerbated by what, in my opinion, is incorrect climate science, and by government's associated incorrect muddled response to it.
2. Government and business are currently needlessly spending trillions of dollars on efforts to limit the greenhouse gasses, CO<sub>2</sub> and CH<sub>4</sub>, in the Earth's atmosphere.
3. CO<sub>2</sub> and CH<sub>4</sub> are not pollutants. They must be removed from every list of defined pollutants. They have a negligible effect on the climate. Trillions of dollars can be saved by this one simple measure alone! Additionally, the CO<sub>2</sub> Coalition points out that atmospheric CO<sub>2</sub> is actually beneficial.

## Recommendations for policy makers – p.2

4. The IPCC mandates that trillions of dollars must be spent to stop greenhouse gas release into the environment with a so-called “zero-carbon” policy. This policy should be summarily terminated!
5. I recommend that all efforts to limit environmental carbon should be terminated immediately! Trillions of dollars can be saved by eliminating carbon caps, carbon credits, carbon sequestration, carbon footprints, zero-carbon targets, carbon taxes, anti-carbon policies and fossil-fuel limits, in energy policy and elsewhere.
6. Government subsidies for electric vehicles, all electric power, solar and wind power, etc. should all be eliminated.
7. Fossil fuels are perfectly OK to use.

## Recommendations for policy makers – p.3

8. The IPCC also mandates multi-trillion dollar per year geoengineering projects including Solar Radiation Management Systems to stabilize the Earth's climate, capture and otherwise reduce the atmospheric CO<sub>2</sub> levels. These projects should be cancelled.
9. All geoengineering programs to reduce global warming should be cancelled.
10. To paraphrase (and update for inflation) the late Sen. Everett Dirksen's 1969 comment about the Vietnam war and Apollo programs, and redirect it to the IPCC's anti-carbon policies - "*A trillion here, a trillion there, and pretty soon you're talking real money.*"



# Appendix A. An energy-conservation Theorem phrased in terms of albedos

*Theorem: The albedo of a composite area is the area-weighted average of the individual component areas' albedos -*

$$\alpha_{\text{ALL-sky}} = f_{\text{Clouds}} \times \alpha_{\text{Clouds}} + f_{\text{CLR-sky}} \times \alpha_{\text{CLR-sky}}$$

Definitions:

$OSR_{\text{ALL-sky}} \equiv$  Outgoing SW Radiation irradiance for the whole Earth.

$OSR_{\text{CLR-sky}} \equiv$  Outgoing SW Radiation irradiance in only the cloud-free areas of the Earth.

$OSR_{\text{Clouds}} \equiv$  Outgoing SW Radiation irradiance in only the cloudy areas of the Earth.

$TOA_{\text{INC}} \equiv$  Incident SW Radiation irradiance for the whole Earth.

$f_{\text{Clouds}} \equiv$  cloudy-area fraction of the Earth.

$f_{\text{CLR-sky}} \equiv$  cloud-free area fraction of the Earth.

$\alpha_{\text{ALL-sky}} \equiv OSR_{\text{ALL-sky}} / TOA_{\text{INC}} =$  albedo (SW reflectivity) for the whole Earth.

$\alpha_{\text{CLR-sky}} \equiv OSR_{\text{CLR-sky}} / TOA_{\text{INC}} =$  albedo for cloud-free areas of the Earth.

$\alpha_{\text{Clouds}} \equiv OSR_{\text{Clouds}} / TOA_{\text{INC}} =$  albedo for cloudy areas of the Earth.

Assumptions:

Conservation of area:  $f_{\text{Clouds}} + f_{\text{CLR-sky}} = 1.$  (1)

Conservation of energy,  $OSR_{\text{ALL-sky}} = OSR_{\text{CLR-sky}} + OSR_{\text{Clouds}}.$  (2)

Proof:

Evaluate the above expressions, using Equations (1) and (2) for  $\alpha_{\text{ALL-sky}}$ ,  $\alpha_{\text{Clouds}}$ , and  $\alpha_{\text{CLR-sky}}$ ,

$$\alpha_{\text{ALL-sky}} = f_{\text{Clouds}} \times \alpha_{\text{Clouds}} + f_{\text{CLR-sky}} \times \alpha_{\text{CLR-sky}}, \quad (3)$$

Corollary:

$$\alpha_{\text{Clouds}} = \alpha_{\text{ALL-sky}} / f_{\text{Clouds}} - ((1/ f_{\text{Clouds}}) - 1) \alpha_{\text{CLR-sky}} \quad (4)$$

This latter formula is useful for evaluating the cloudy-sky albedo when ALL-sky albedo, CLR-sky albedo, and cloud fraction are all known.

## Appendix B. Application of the albedo conservation Theorem to data from the Fig. X.6 AR6 (2021 p.934) power-flow map data

The IPCC's numbers from AR6 are shown here to require the (silly) number,  $\alpha_{\text{Clouds}} = 0.36$ . The notation used here is defined above in Appendix A

The clear-sky area fraction is  $f_{\text{CLR-sky}} = 0.33$ , and the cloudy-sky fraction is  $f_{\text{Clouds}} = 0.67 (= 1 - f_{\text{CLR-sky}})$ . [King et al. (2013), Schmidt et al. (2014)].

The AR6 all-sky diagram implies that the all-sky albedo is  $\alpha_{\text{ALL-sky}} \equiv \text{OSR}_{\text{ALL-sky}} / \text{TOA}_{\text{INC}} = 100 / 340 = 0.3$ .

The AR6 clear-sky diagram implies that the clear-sky albedo is  $\alpha_{\text{CLR-sky}} \equiv \text{OSR}_{\text{CLR-sky}} / \text{TOA}_{\text{INC}} = 53 / 340 = 0.16$ .

The albedo conservation corollary (in Appendix A) then shows that the cloudy sky albedo is  $\alpha_{\text{Clouds}} = 0.36$ .

This value for  $\alpha_{\text{Clouds}}$  seems conspicuously wrong by about a factor of two! If true, then clouds in the NASA satellite photos of Fig. X.7 should appear as barely brighter (more reflective of light) than the whole-Earth average. They don't. For comparison, a sheet of white paper is about 99% reflective. Clouds in the photos appear visually a lot brighter than desert-color brown or ocean-color blue, and appear much closer to paper-color white,.

Also, note that the commonly accepted value for nearly all types of clouds is about  $\alpha_{\text{Clouds}} = 0.8 - 0.9$ . See, for example, the measurements and estimates by Griggs (1968), Cheylek et al. (1984), Wetherald and Manabe (1988), Stephens and Greenwald (1991). The measurements of  $\alpha_{\text{Clouds}}$  for Pacific Ocean stratus clouds by Griggs (1968) were done from a DC3 aircraft, and, of course, do not include the added contribution from atmospheric (blue-sky) Rayleigh (back) scattering, that Top of Atmosphere albedos  $\alpha_{\text{Clouds}}$  and  $\alpha_{\text{CLR-sky}}$  must both further add.

# Appendix C. Feedback Analysis of climate systems [as per Sherwood *et al.* (2020)]

- Sherwood *et al.* (2020) use the symbol  $\Delta N$ , to represent the **downward-flowing energy imbalance**, calculated at the Top of Atmosphere. This is the quantity the I have discussed above that is used by the IPCC to define global warming. It is the primary target of the IPCC's computer modelling and observational efforts.
- If the imbalance,  $\Delta N$ , is negative, the earth is cooling. If it is positive, the Earth is warming.
- For any given feedback mechanism, Sherwood *et al.* (2020) calculate the overall feedback strength (sensitivity) as the derivative of  $\Delta N$  with respect to the Earth's surface temperature,

$$\lambda \equiv d\Delta N / dT_{\text{Surface}}$$

If  $\lambda$  is negative, the feedback stabilizes the system. If , if  $\lambda$  is positive, the system is unstable.

- If the system has a variety of independent mechanisms, and each mechanism, labeled  $j$ , relies on an associated intermediate variable,  $x_j$ , then the total system's feedback strength is calculated using the chain rule for derivatives, as per

$$\lambda \equiv \sum_j \lambda_j = \sum_j (\partial\Delta N / \partial x_j) \times (\partial x_j / \partial T_{\text{Surface}}).$$

- For example, the primary temperature stabilizing feedback mechanism is via the Stefan-Boltzmann law's  $\sigma T^4$  dependence of far-infrared (LW) energy reemission by the Earth. Here,  $\sigma$ , is the Stephan-Boltzmann constant. Sherwood *et al.* (2020, p.19) calculate the (misnamed) feedback parameter,  $\lambda_{\text{Planck}}$ , for Stefan-Boltzmann law negative feedback, as  $\lambda_{\text{Planck}} = -3.3 \text{ W/m}^2/\text{K}$ .

(The Stefan-Boltzmann Law was discovered in 1879. Planck's law was not discovered until 1900. The quantity called  $\lambda_{\text{Planck}}$  should properly be called  $\lambda_{\text{Stefan-Boltzmann}}$ .)

# Appendix D. Feedback strength of the cloud thermostat mechanism

- To calculate the feedback strength for the cloud thermostat, note that the shadowing of the oceans by clouds modulates the sunlight irradiance reaching the surface,  $SW_{\text{down}}$ . In doing so, it similarly modulates  $\Delta N$ . A first step in the calculation is to use the albedo conservation theorem, and the terminology introduced in Appendix A, to evaluate  $SW_{\text{down}}$ , as per

$$\begin{aligned} SW_{\text{down}} &\equiv (1 - \alpha_{\text{ALL-sky}}) TOA_{\text{INC}} \\ &= [1 - (f_{\text{Clouds}} \alpha_{\text{Clouds}} + f_{\text{CLR-sky}} \alpha_{\text{CLR-sky}})] TOA_{\text{INC}}, \end{aligned}$$

where  $TOA_{\text{INC}}$  is the incident sunlight power.

- Sherwood *et al.* (2020) arbitrarily and unnecessarily structure the allowable forms for  $\Delta N$  to prohibit the use of  $f_{\text{Clouds}}$  as an intermediate variable  $x_{\text{Clouds}}$ . I ignore their (silly) restriction here! [Cess (1976) did use  $f_{\text{Clouds}}$  as an intermediate variable and obtained similar results to those presented here.]
- The climate feedback parameter for the specific cloud thermostat process is

$$\lambda_{\text{Clouds}} \equiv d SW_{\text{down}} / dT_{\text{surface}} .$$

It may be expanded using the chain rule, and  $f_{\text{Clouds}}$  as an intermediate variable, yielding

$$\begin{aligned} \lambda_{\text{Clouds}} &= d SW_{\text{down}} / dT_{\text{surface}} = (\partial SW_{\text{down}} / \partial f_{\text{Clouds}}) \times (\partial f_{\text{Clouds}} / \partial T_{\text{surface}}) \\ &= - (f_{\text{Clouds}} \alpha_{\text{Clouds}}) TOA_{\text{INC}} (\partial f_{\text{Clouds}} / \partial T_{\text{surface}}). \end{aligned}$$

- Finally one may reasonably estimate the remaining important factor,  $\partial f_{\text{Clouds}} / \partial T_{\text{surface}}$ . It is found by noting that both the precipitation rate of clouds and the evaporation rate are a sensitive functions of surface temperature. Both are *directly proportional to the vapor pressure of seawater, whose temperature dependence is about 7-8% per degree Kelvin (or Celsius). i.e.  $\partial f_{\text{Clouds}} / \partial T_{\text{surface}} \approx 0.07/\text{K}$*