ALARMING WARMING?

Reality Trumps Dire Predictions

by Christopher Monckton of Brenchley

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FOUR cold winters in a row ought to have raised questions in legislators' minds about the competence of the United Nations' Intergovernmental Panel on Climate Change, the IPCC, which they have generously but unwisely funded and trusted. The IPCC's dire predictions of dangerous warming are not happening in observed reality.

The failure of global temperatures to follow the IPCC's predicted path also raises questions about the integrity of those climate scientists who ought to have spoken out time and again against the IPCC's fundamentally unscientific approach but who have remained resolutely, culpably silent as larger and larger grants rolled in. For climate science is a monopsony[1]. The State is just about the only paying customer.

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In the United States, commentators had scarcely finished writing about the inability of "third-world" Britain to keep its main airports clear of unseasonally early snow when several Eastern-Seaboard airports were closed, also by record-breaking early snow.

In central England, the longest continuous record of regional temperatures shows that December 2010 was the coldest since records began in 1659 – more than 350 years ago.

In December 2010, at the UN's climate conference in Cancun, Mexico, delegates shivered as six days of record-breaking cold cut temperatures to the low 50s Fahrenheit.

Dr. James Hansen, more a hard-Left political agitator than a true scientist these days, has been saying that notwithstanding the extreme cold this December the rate of "global warming" over the past decade has been just as great as in previous decades. No, it has not: one can only obtain that result by averaging the warming over several decades.

His GISS surface-temperature dataset, on which he bases his claims, not only suffers from insufficient adjustment for the artificial warmth given off by cities (the urban heat-island effect), but also from evidence of repeated, successive tamperings[2] with the data from earlier decades this century so as artificially to increase the apparent overall rate of "global warming".

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1 http://scienceandpublicpolicy.org/originals/climate_money.html?Itemid=0.

2 http://sppiblog.org/news/more-temperature-data-tampering.

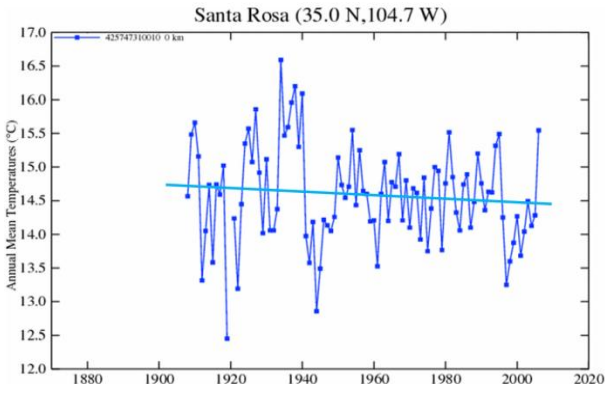
The failure of the terrestrial surface-temperature datasets properly to make adjustments for the urban heat-island-effect was detected three years ago by the formidable economist Professor Ross McKitrick, using a simple but ingenious method. He correlated changes in regional surface temperature taken from the terrestrial datasets with changes in economic prosperity, a proxy for the urban heat-island effect: the more economic activity, the more direct warming of the atmosphere by heat from power stations, automobiles, factories, and heating systems.

If Hansen and other keepers of surface-temperature records had made correct adjustments for this heat-island effect, there should have been no correlation whatsoever between regional warming and regional increases in economic activity. However, Professor McKitrick found a statistically-significant correlation between the two datasets – a correlation that should not have been present. For this and other reasons, the SPPI[3] no longer trusts or uses any of the terrestrial temperature datasets compiled from ground-mounted instruments.

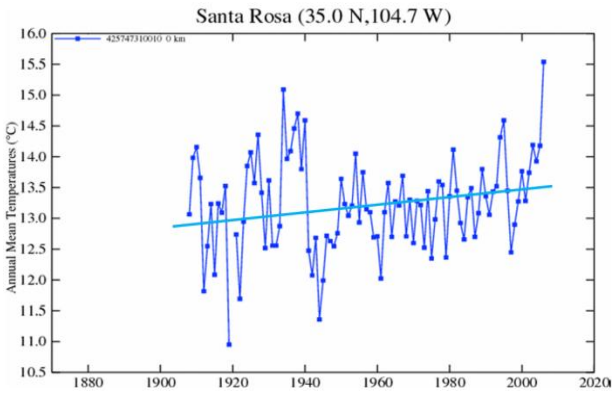
The data tampering with the GISS dataset was detected by the star blogger Anthony Watts, whose website at www.wattsupwiththat.com has exposed much of the scientific deception that underlies the "global warming" scare.

A startling example of the data tampering is the century-old temperature record for the temperature station at Santa Rosa, California, the headquarters of the National Oceanographic and Atmospheric Administration. The raw data show one thing: the processed data show quite another –

Raw data show 100 years' cooling



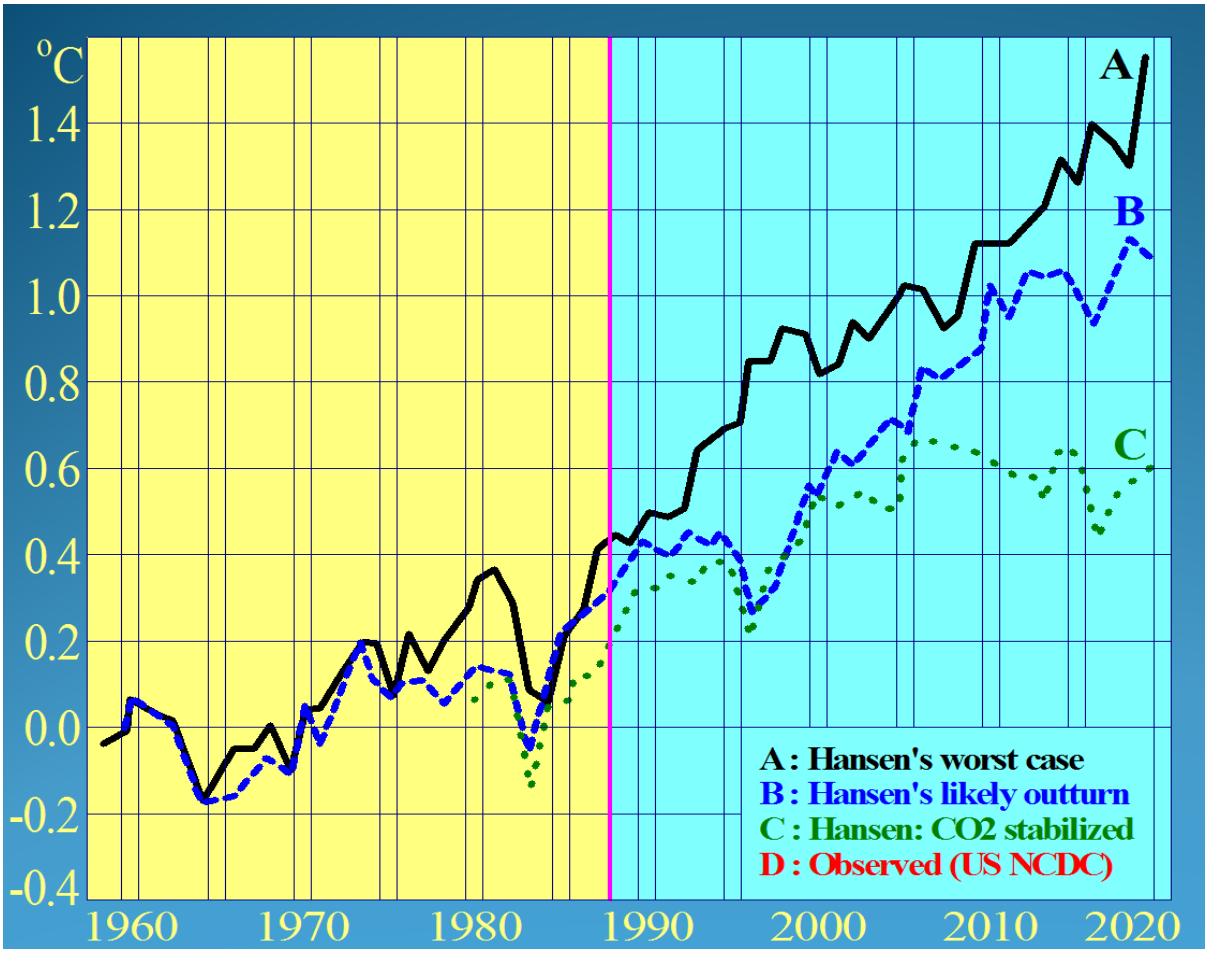
'Processed' data show warming



This discovery led Mr. Watts to investigate how GISS had changed its *processed* data over the years. Had the scientists increased the amount of 'processing' of the raw data over the years in a dishonest attempt to try to compensate for the continuing failure of global mean surface temperature to rise in accordance with the exaggerated predictions of the computer models, including that from GISS itself? The GISS model had long been notorious for over-predicting "global warming". For instance, in 1988 James Hansen, now director of GISS, had

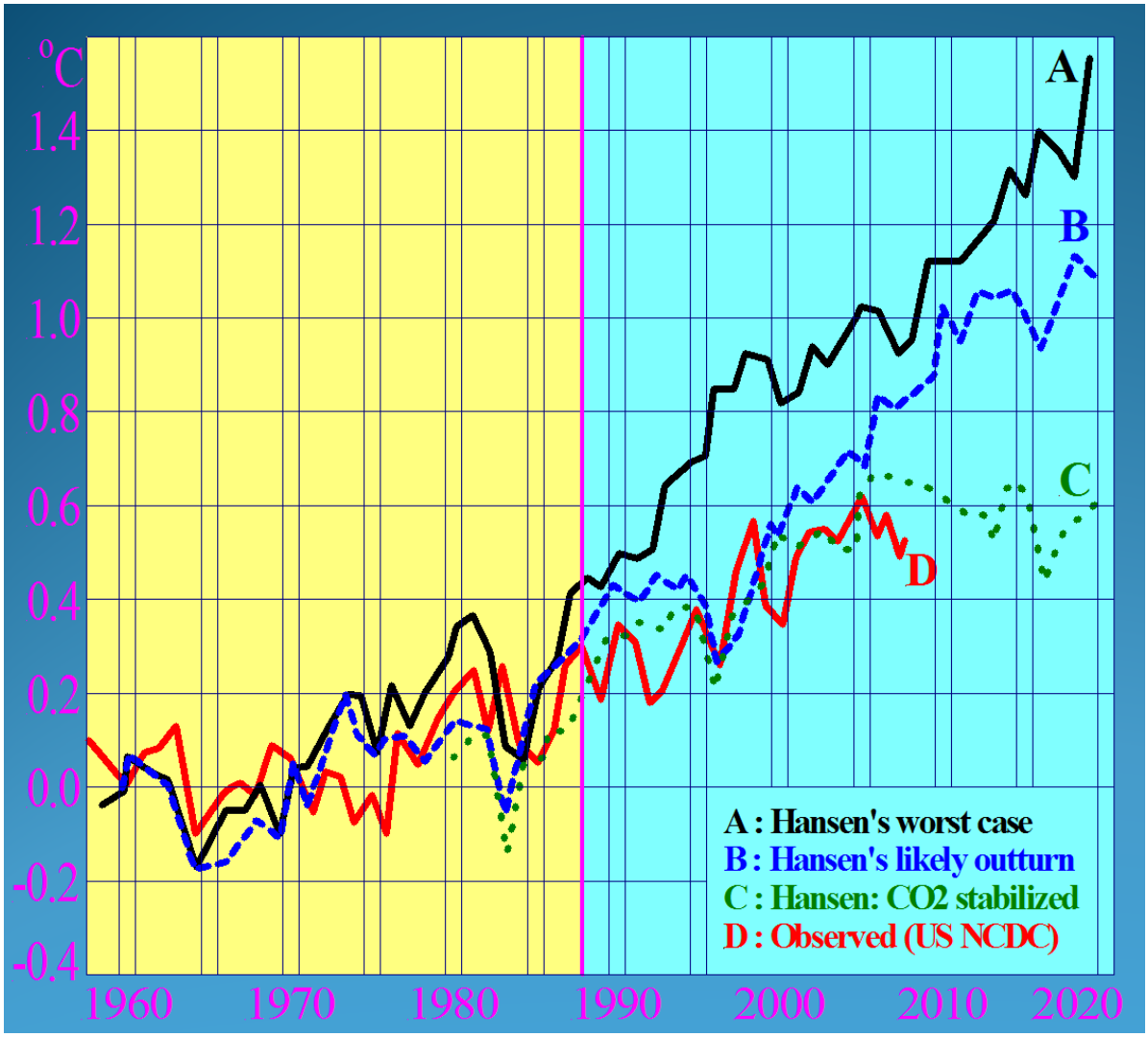
[3] http://scienceandpublicpolicy.org/monthly_report/november_2010.html.

testified on Capitol Hill on a day carefully chosen by the then Democrat administration because a heatwave had been forecast. He had displayed the following temperature graph –



The elected representatives who saw Hansen's graph on that hot day were understandably alarmed at what it foretold. However, there was no sound scientific basis for the graph: it depended upon an assumption that the warming effect of additional CO_2 concentrations in the atmosphere would be many times greater than is likely. Hansen told Congress that unless CO_2 concentration were stabilized by 2000 (the green dotted line on the graph) temperatures would be most likely to rise along the path of the blue dashed line, and might even follow the black solid line.

In fact, none of these scenarios proved to have any contact with reality. Indeed, on the 20th anniversary of Hansen's failed prediction, not one of the carefully-selected and impeccably sycophantic journalists to whom Hansen granted interviews was impolite enough, or journalist enough, to ask him why his prediction had not come to pass. And this was a strange question not to ask, because the month of June 2008 was colder, globally, than the month of June 1988, 20 years previously. The red line on the graph below shows what actually happened to global mean surface temperature –



Temperatures indeed rose from 1988 until 2009, but the rose at a rate that turned out to be well below that which Hansen had predicted on the assumption that global CO_2 emissions would be stabilized in the year 2000 and would rise no further thereafter. However, in fact CO_2 emissions continued to rise at 2 ppmv per year throughout the new millennium, but temperatures failed to rise.

Indeed, had the red line above not been taken from the GISS/NCDC temperature dataset, the warming over the years following Hansen's prediction would have appeared even less than on this graph. Hansen's prediction had proven to be a very substantial exaggeration.

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Why is this important? The reason is that it is Hansen's method for calculating the warming effect of CO_2 on global temperature that the UN's climate panel chiefly relies upon. Since his method produces a visible and substantial exaggeration of future warming, by implication the forecasts made by the UN's climate panel are likely to produce similar very large exaggerations. As we shall see, that is what has happened.

Perhaps it was disappointment that the GISS temperature projections directed by Hansen had proven to be such a failure that led his organization to tamper more and more over time with the temperature data for past decades, to produce ever-increasing estimates of the rate of "global warming" that had occurred in the 20th century.

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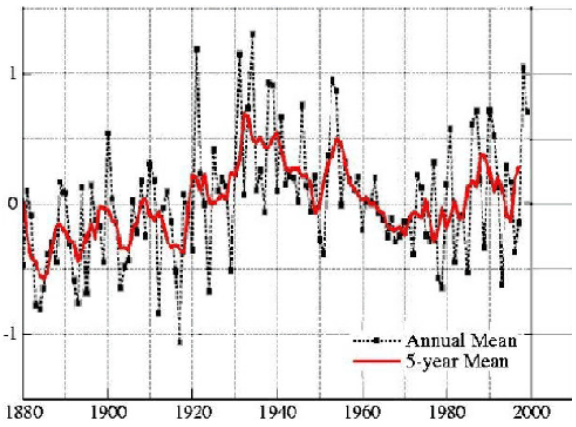
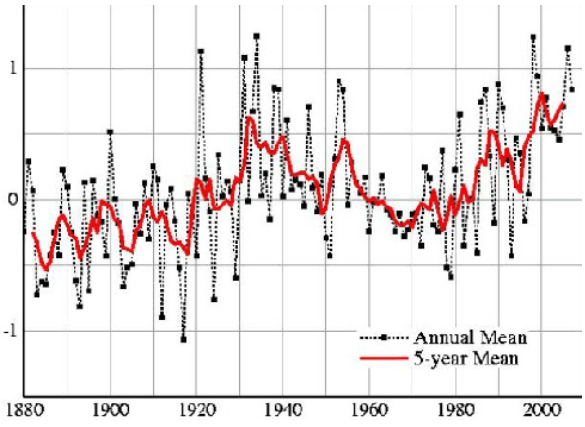
Anthony Watts, having noticed that the raw data for many individual stations in the GISS dataset had been "processed" so as to turn a century of actual cooling into a century of spurious warming, wondered whether the "processed" data had been altered over time with the aim of producing an ever-higher apparent (but bogus) rate of "global warming" over the 20th century. He found that this was indeed so –

1999 global processed data ...



... and 2008 global processed data



The GISS global-temperature dataset, after adjustment by "processing" of the raw data, as it stood in 1999 (left) and in 2008 (right), showed that the data peak in the 1930s has been reduced in the later version of the dataset, and the 1998 peak has been markedly increased, artificially increasing the 20th-century warming rate and implying that tampering has increased over the years.

As an experiment, see this progressively increased tampering clearly by taking the two graphs above and setting them up as successive slides in a PowerPoint presentation. Now turn your computer into a "blink-comparator" by flicking backwards and forwards between the two graphs. Note how the temperature peak in the 1930s has been reduced appreciably in the 2008 dataset. There is no legitimate scientific justification for going back and rewriting the temperature record of three quarters of a century ago in this way.

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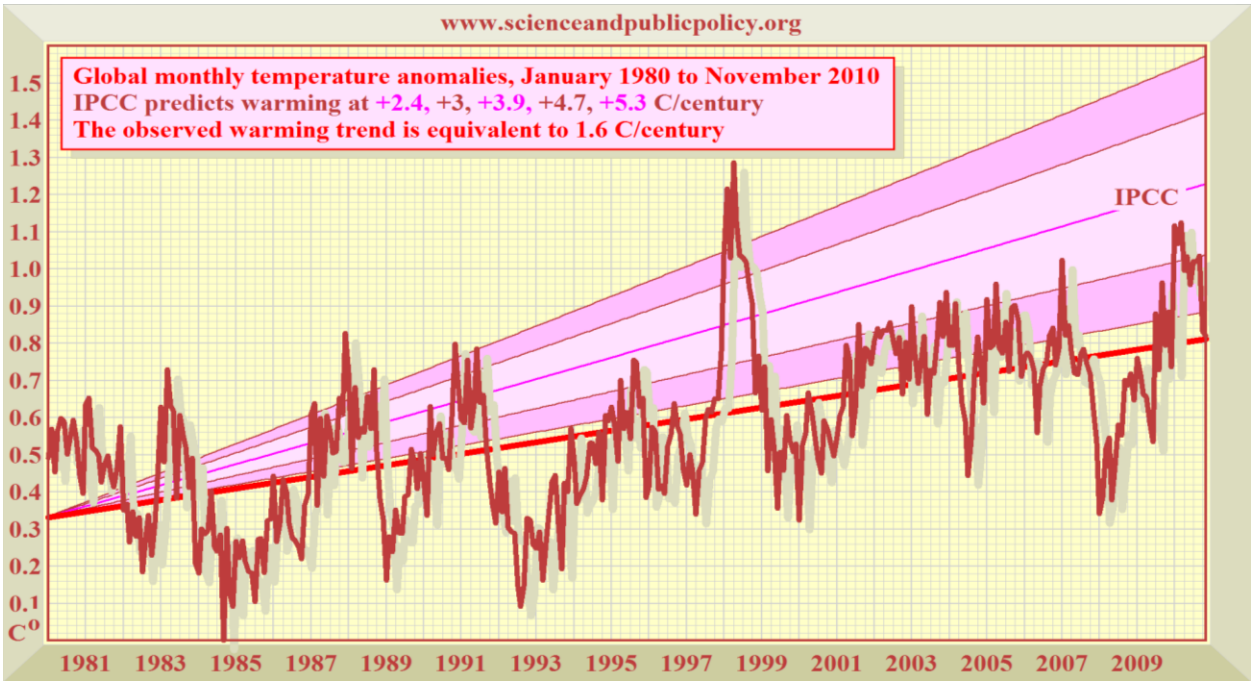
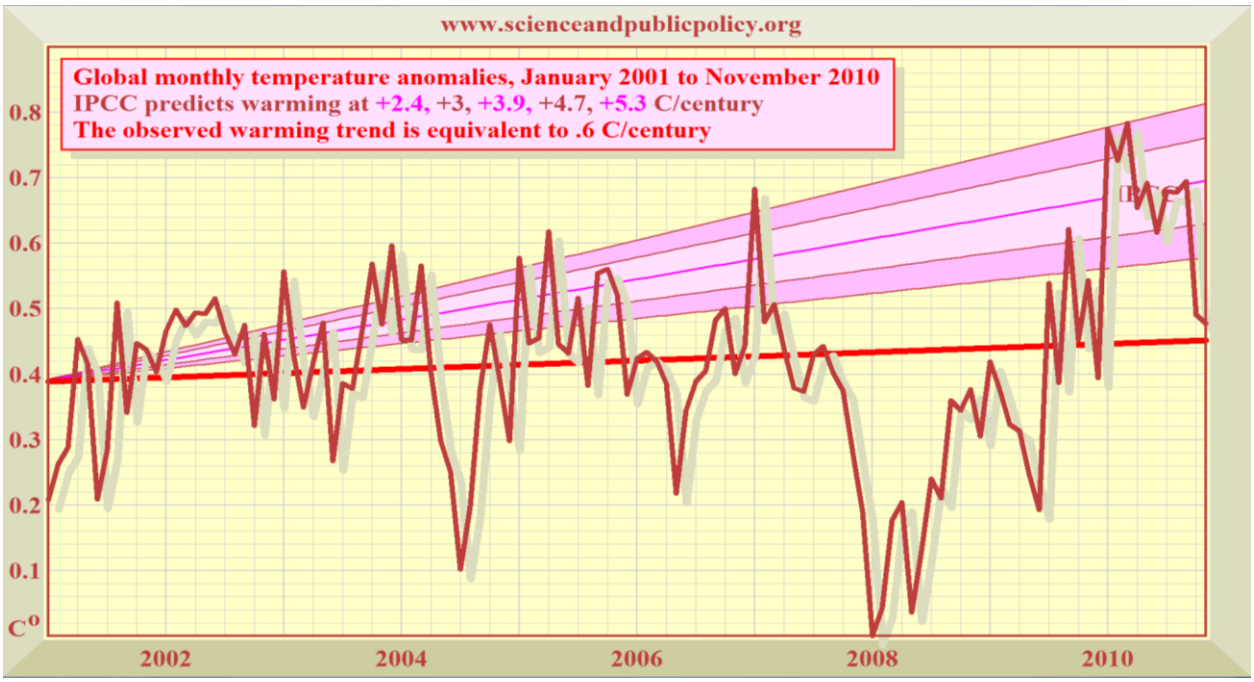
To overcome all the accidental and deliberate biases in the terrestrial data, we can use temperatures measured by satellites. Platinum-resistance thermometers – the most accurate thermometers yet devised – point to outer space to use the known background temperature of 2.73 Kelvin as a reference, and to Earth to measure the temperature of the lower troposphere (the air just above the ground). Satellites have been monitoring global lower-troposphere temperatures accurately for the past 30 years. The two groups publishing a monthly global anomaly are Remote Sensing Systems, Inc., and the University of Alabama at Huntsville. Here is their combined record for the past 30 years:

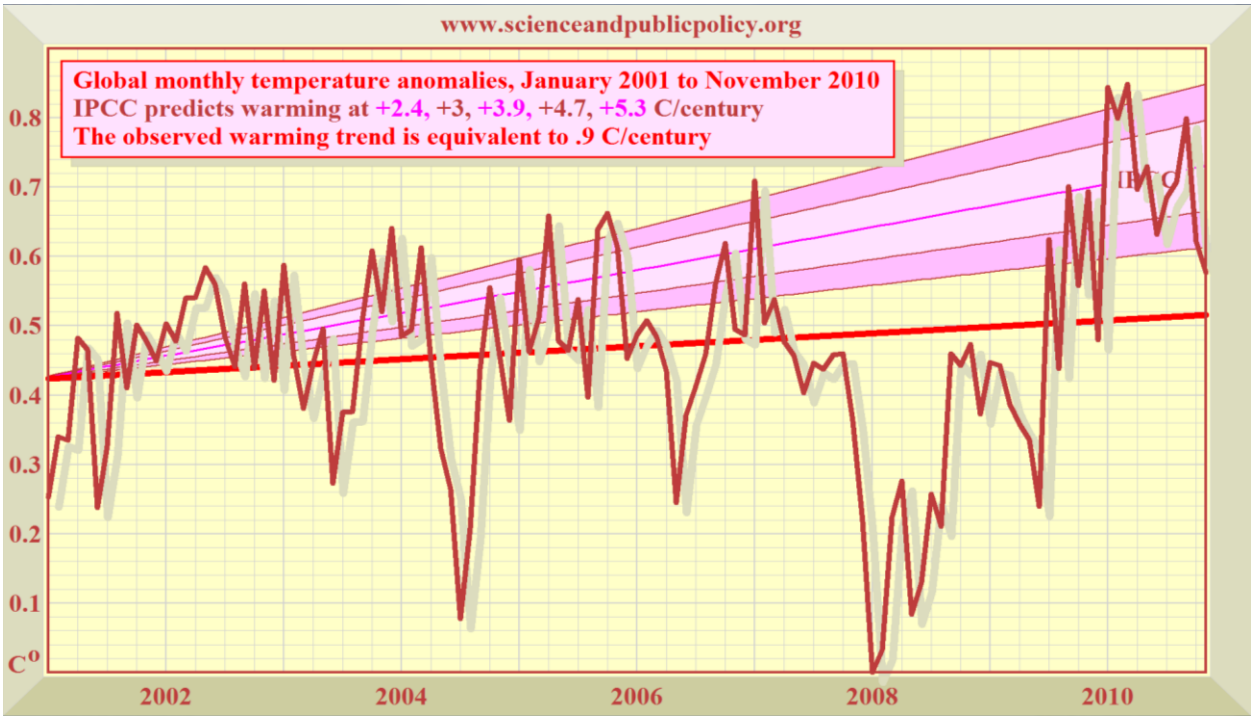


During the 30 years of the satellite record, the observed warming rate – taken as the least-squares linear-regression trend on the mean of the monthly global anomalies reported by RSS and by UAH – has been equivalent to 1.6 Celsius degrees per century.

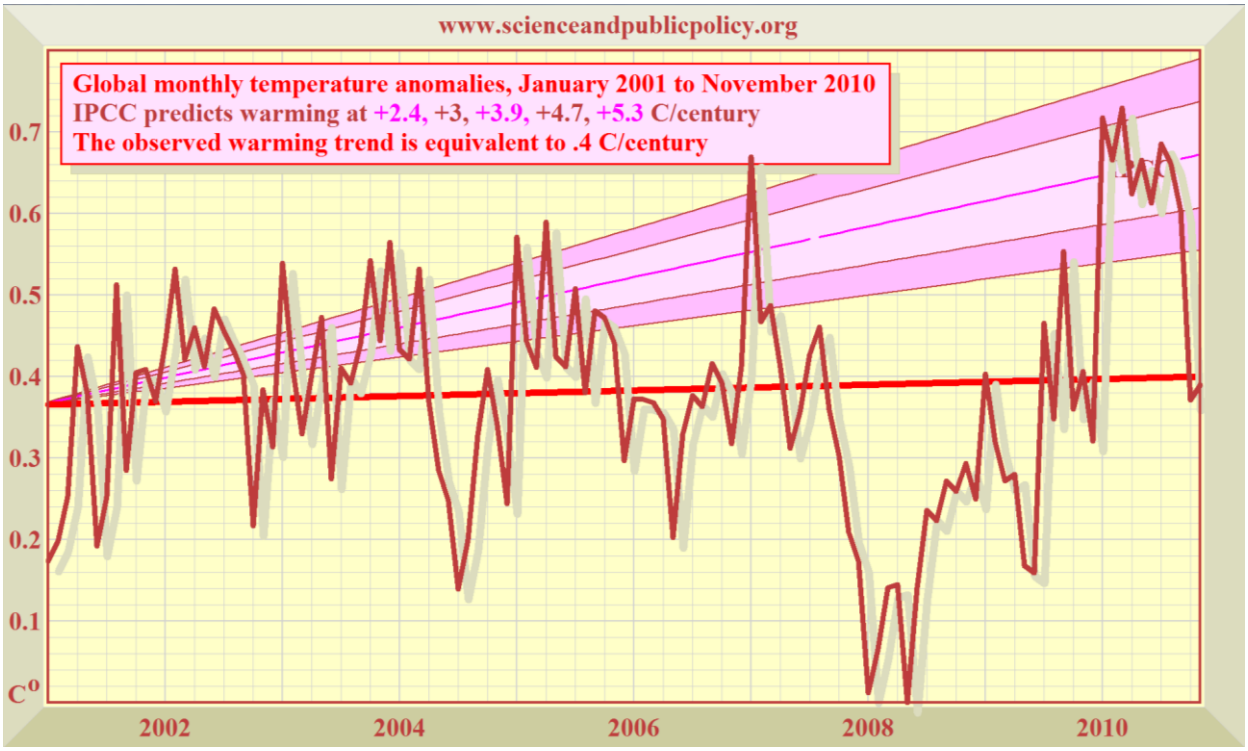
However, over the past decade the SPPI Index, compiled from the two satellite datasets, shows a warming of little more than one-third of that rate, equivalent to just 0.6 Celsius degrees per century, a rate a little less than the 0.74 C° of warming recorded over the entire 20th century:



For completeness, here is the UAH record for the past decade –



… and here is the RSS record –



Despite record rises in CO_2 emissions over the past decade, global mean surface temperature has not, as Hansen had suggested, been rising as fast as in previous decades. Indeed, until a substantial el Niño event took hold in the first nine months of 2010, there had been global cooling for almost a decade. There is no scientific basis for Hansen's assertion that the most recent decade has shown warming as fast as that of previous decades.

Hansen and others have suggested that the colder winters of the past four years are exactly what we should expect as a result of "global warming". However, this, too, is false. The IPCC, in its 2007 *Fourth Assessment Report,* gives the lie to any such notion:

> "Cold episodes are projected to decrease significantly in a future warmer climate. Almost everywhere, daily minimum temperatures are projected to increase faster than daily maximum temperatures, leading to a decrease in diurnal temperature range. Decreases in frost days are projected to occur almost everywhere in the middle and high latitudes, with a comparable increase in growing-season length."

How, then, are the IPCC's projections of "global warming" faring? As the above graphs suggest, the rate of warming in the past decade has been substantially below what the IPCC would predict.

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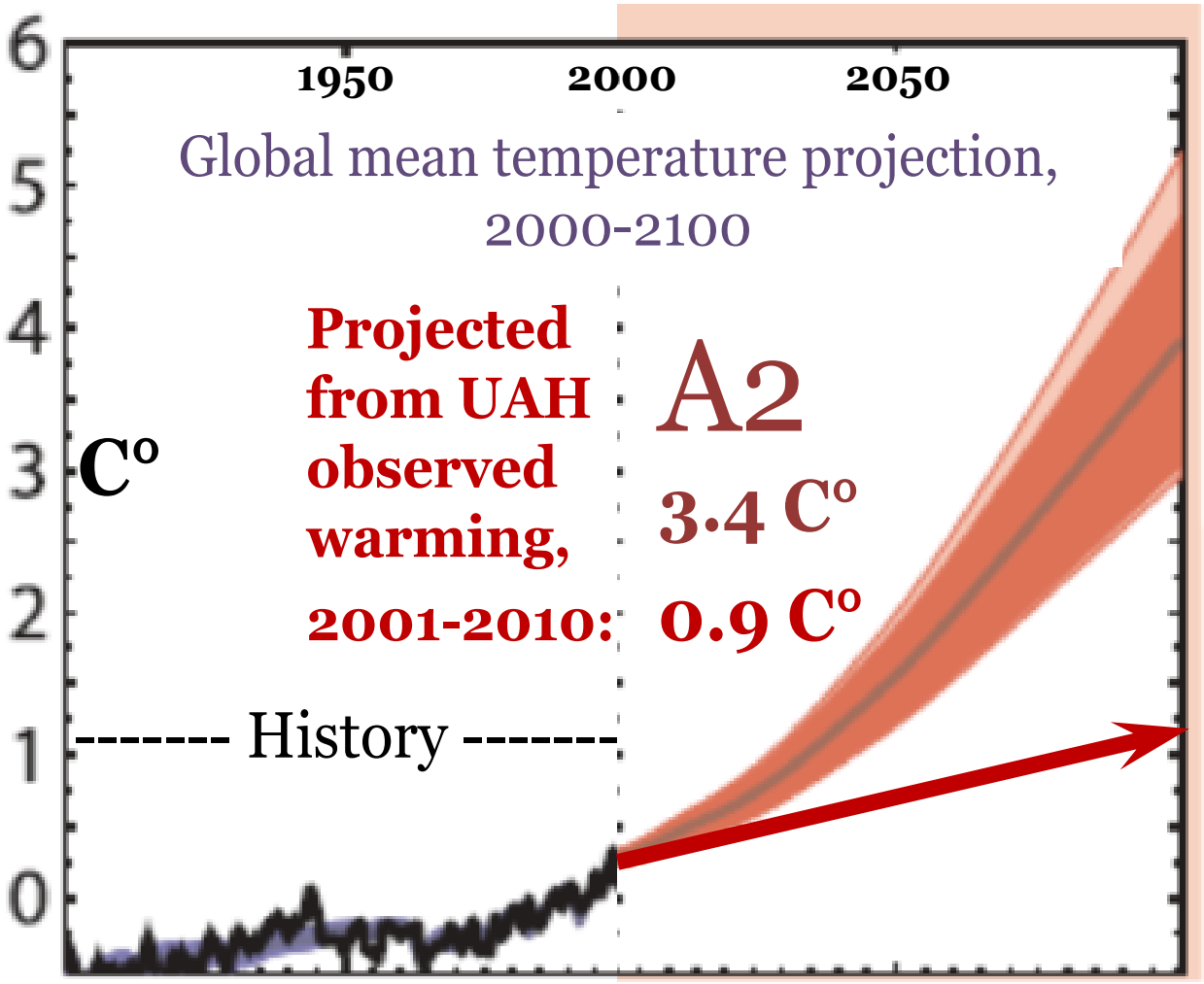
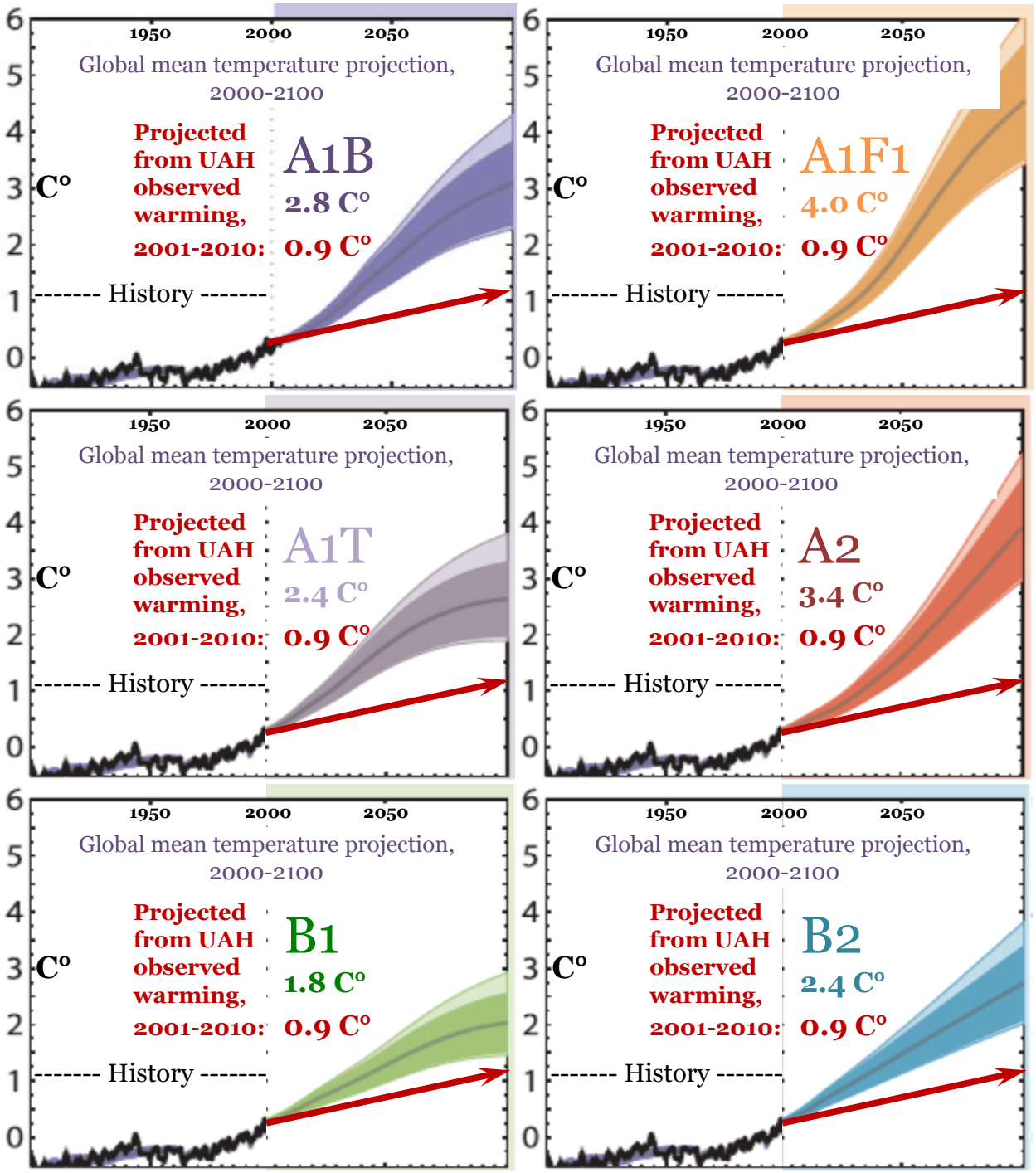
the IPCC would predict. However, it is only when the predictions are extended to 2100, and compared with the temperature trend of the past decade projected forward to that year, that the full extent of the IPCC's failure to get its predictions right can be appreciated:



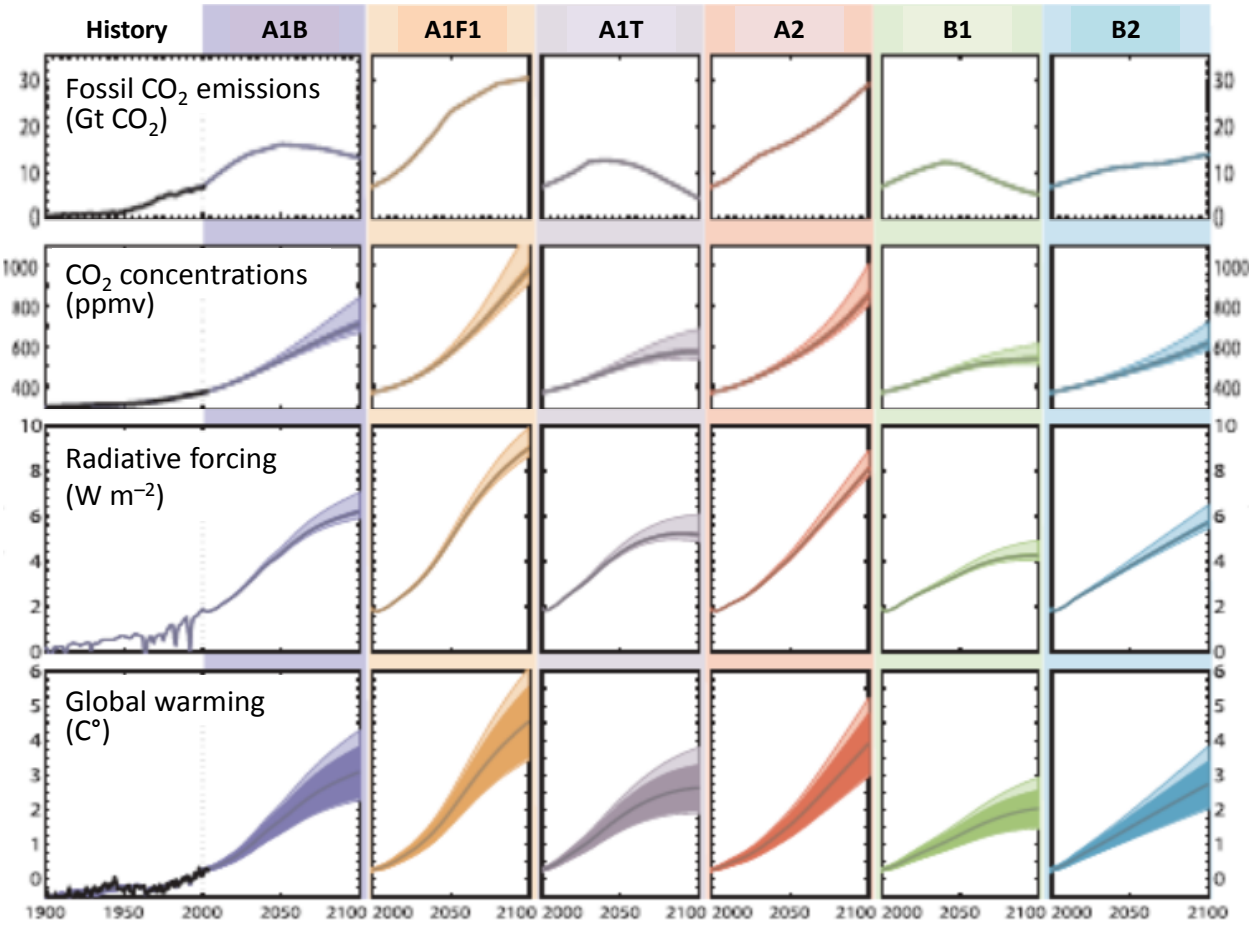
The A2 "emissions scenario" is one of six scenarios published and used by the IPCC. Of the six, it is the closest to the true current rate of emissions. It shows that by 2100 the IPCC expects 3.4 C° (6 F°) of "global warming" to occur, with a minimum of 2 C° (3.5 F°) and a maximum of 5.4 C° (10 F°). However, once the UAH data for the decade 2001-2010 are overlaid on the diagram and projected outward to 2100 (the red arrow), the startling difference between what the IPCC predicts and what is actually occurring can be seen all too clearly. If we had used the RSS dataset, the discrepancy between prediction and reality would have been even starker. Here are the IPCC's central estimates of temperature change over the next 100 years for all six scenarios, with the UAH trend over the past decade shown as a red arrow projected to 2100 –



What are the IPCC getting wrong? Some clues lie in the following graph, adapted from the 2007 *Fourth Assessment Report*. For each of the six emissions scenarios, the graph compares projections over the current century for Man's CO_2 emissions, atmospheric CO_2 concentrations, the total manmade "radiative forcing" from increases in the concentrations of CO_2 and all other greenhouse

Multiple oddities can be most clearly seen in Scenario A2.

gases, and the temperature change that the IPCC expects to occur in consequence of the additional radiant energy remaining in the atmosphere. The multiple oddities can be most clearly seen in Scenario A2 –



The first oddity is that, while Man's CO2 *emissions* are shown as increasing in what is almost a straight line, atmospheric CO2 *concentrations* – the accumulation of CO2 in the air – are shown as increasing ever more rapidly, on an *exponential* curve. This is the very reverse of what has happened to date: CO2 *emissions* have been rising exponentially, and so had CO2 *concentrations,* until the last decade, when they began leveling out towards a straight line.

Without that dubious and extreme assumption, the warming to be expected from a doubling of CO2 concentration will be a great deal less than the IPCC wishes us to believe.

The only way to justify a CO2 *concentration* increasing on such a rapid exponential curve as that shown for the A2 scenario is to assume that so much "global warming" will occur as a result of earlier CO2 emissions that the sea will become warmer, outgassing stored CO2 into the atmosphere in addition to Man's emissions, and at a very rapid rate. However, no one – including the IPCC – knows at what rate CO2 will be outgassed from the

ocean if, say, 3.26 C° of "global warming" occurs in response to a doubling of CO2 concentration. The IPCC estimates the outgassing will add somewhere between 25 and 225 ppmv CO2 to the atmosphere. But the IPCC can only obtain the severe exponential curve of increasing CO2 concentrations in response to a linear increase in emissions by assuming that the warming oceans will outgas CO2 at the upper end of its enormous range of estimates. Without that dubious and extreme assumption, the warming to be expected from a doubling of CO2 concentration will be a great deal less than the IPCC wishes us to believe.

The second oddity in the IPCC's graph is also visible in scenario A2. Note this time that *both* the CO2 concentration curve *and* the radiative forcing curve are exponential, rising ever more steeply. This implies a linear relationship between the increase in CO2 concentration and the consequent radiative forcing. However, the relationship between CO2 concentration and the CO2 forcing, in the IPCC's own methodology, is in fact logarithmic, not exponential. The CO2 forcing (which the IPCC expects will account for at least 75% of Man's total influence on the climate by 2100) is expressed by the function

$$\Delta F_{CO2} \approx 5.35 \ln(C/C_0),$$

where the bracketed term is any proportionate increase in CO2 concentration. Given an *exponential* increase in CO2 concentration, and a *logarithmic* relationship between CO2 concentration and the consequent radiative forcing, one would expect the curve of the forcing on the A2 scenario to be a straight line. However, it is shown as exponential, for reasons which are far from clear. This error, too, leads to a very substantial overstatement of the true quantum of "global warming" to be expected in response to a given increase in CO2 concentration.

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The third oddity is evident in the relationship between the radiative forcing projected under each of the six scenarios and the consequent temperature change. Since the curves for radiative forcing and consequent warming are identical in form on each scenario, the relationship between the forcing and the consequent temperature change is linear. This is to be expected from the IPCC's method.

What is startling, though, is the *magnitude* of the relationship. Roughly speaking, for every Watt per square meter of additional forcing caused by our adding greenhouse gases to the atmosphere, the IPCC expects 0.5 C° of warming to occur by the end of the century.

However, the IPCC's central estimate of the warming in response to a doubling of CO2 concentration is 3.26 C°. Divide this by the radiative forcing at CO2 doubling – i.e. 5.35 ln 2 ≈ 3.7 Wm^{-2} – and the implication is that almost 0.9 C° of "global warming will occur in response to a doubling of atmospheric CO2 concentration. This implicit estimate for the climate sensitivity parameter is almost double that which is evident in the IPCC's graph.

What the IPCC is saying, in effect, is that the *transient* temperature response to radiative forcings by the end of this century is just 0.5 C° W^{-1} m^2, while the *equilibrium* response that will occur in 1000 years' time when the atmosphere has settled back to a steady state after our perturbation of it will be nearer 0.9 C° W^{-1} m^2, or almost double the transient warming. This result is implausible.

The mean residence time of CO2 in the atmosphere is just 7 years, or – after allowing for repeated exchanges with the biosphere and hydrosphere – 40 years at most (the IPCC assumes 50-200 years, but is greatly at odds with the literature). Yet we are told to expect discernible warming 1000 years hence. And so much of the warming is deferred that little more than half of it will have occurred by 2100. This, too, is implausible, and might have been tailor-made to detune the IPCC's estimates for the relatively near future, with the objective of concealing some part of the very wide discrepancy between the IPCC's predictions and the far lesser warming that was actually observed. That discrepancy – despite this and other fudges and dodges – is becoming more painfully evident with every passing year.

To summarize: the following table shows observed rates of warming (in red) compared with the IPCC's projections (in purple, as central estimates plus or minus one standard deviation) under all six of its emissions scenarios:

Equiv. Warming Rate	Source
0.6[0.4, 0.9] C°/century	RSS/UAH observed: **2001-2010**
0.7 C°/century	Hadley observed: **1900-2000**
1.6 C°/century	Hadley observed: **1976-2001**
1.6 C°/century	Hadley observed: **1910-1940**
1.6 C°/century	Hadley observed: **1860-1880**
1.8[1.1, 2.9] C°/century	IPCC emissions scenario **B1**
2.4[1.4, 3.8] C°/century	IPCC emissions scenario **B2**
2.4[1.4, 3,8] C°/century	IPCC emissions scenario **A1T**
2.8[1.7, 4.4] C°/century	IPCC emissions scenario **A1B**
3.4[2.0, 5.4] C°/century	IPCC emissions scenario **A2**
4.0[2.4, 6.4] C°/century	IPCC emissions scenario **A1F1**

The table shows that the observed rate of warming from 2001-2010, equivalent to 0.6[0.4, 0.9] C°/century, was substantially less than the fastest rates of supra-decadal warming observed in the global temperature record: 1.6 C°/century from 1860-1880, 1910-1940 and 1976-2001. All of these real-world, observed warming rates, including the fastest, are below the least of the IPCC's central estimates on its six fantasy emissions scenarios. Even the fastest rate of warming seen in the global instrumental temperature record – the 1.6 C°/century that has occurred three times in 150 years – is less than half the predicted 3.4 C°/century warming of the 20th century.

"Global warming" is happening (as it has been for more than 300 years), but it is simply not happening at anything like the rate predicted by the IPCC. The IPCC has erred by exaggerating the likely warming effect of CO_2, and by fudging its methods and results so as to conceal the growing discrepancy between its lurid predictions and the soberer, les profitable reality: the world may continue to warm, but not by anything like enough to worry about.

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Cover photo of snowy Alpine trees from dynamicmarching.com.