

TRENBERTH'S TWENTY-THREE  
SCIENTIFIC ERRORS  
IN ONE SHORT ARTICLE

by

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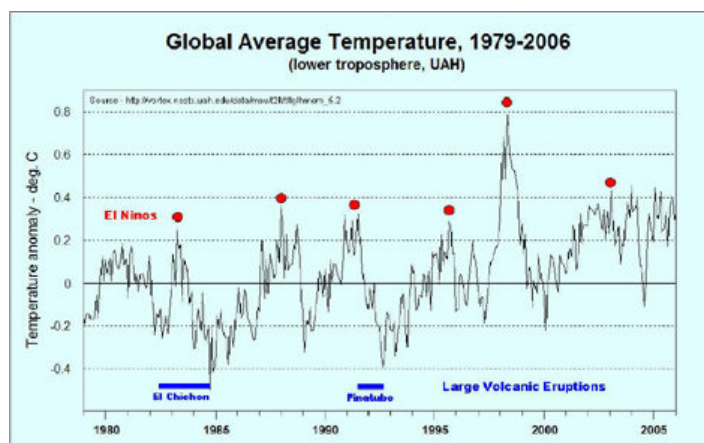
## TRENBERTH'S TWENTY-THREE SCIENTIFIC ERRORS IN ONE SHORT ARTICLE

Kevin Trenberth (*Rocky Mountain News*, October 24), commenting on Mike Rosen's article expressing legitimate doubts about the award of the Nobel Peace Prize to Al Gore, makes 23 scientific mistakes, each of which falls in the direction of magnifying the unjustifiable alarm stoked by panicky politicians and extravagantly-funded environmentalists in cahoots with a shrinking clique of scientists in denial of observational climate data.

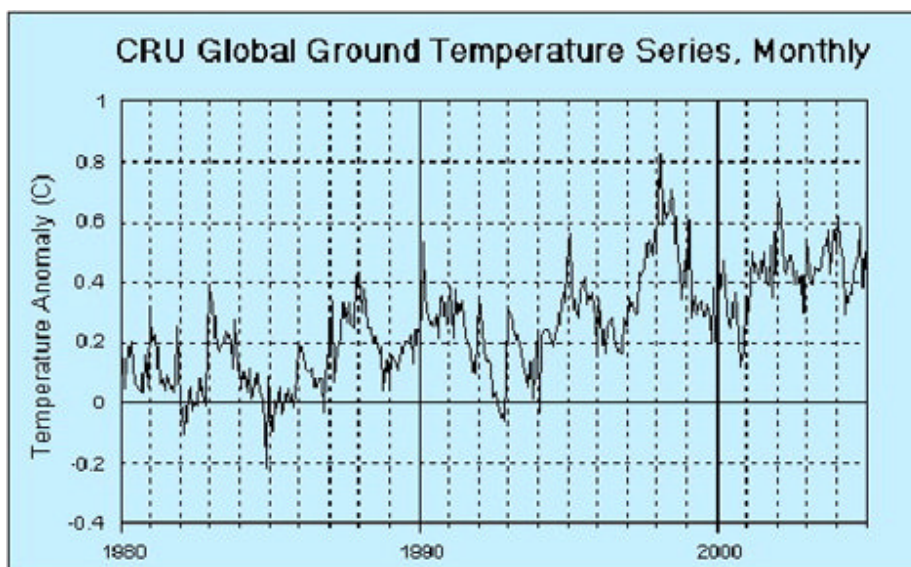
**Error 1.** Trenberth says he has played “a major role” in the UN Intergovernmental Panel on Climate Change for 20 years, implying that he is part of the scientific mainstream on climate change. However, he has appeared on a public platform opposing the consistent findings of the IPCC that there is no reason to suppose that hurricanes have become or will become more frequent as a result of “global warming”, and little reason to imagine that they will become more intense. His misconduct led to objections by Dr. Chris Landsea, who resigned as lead author for the IPCC on hurricanes when the bureaucracy failed to act on his objections.



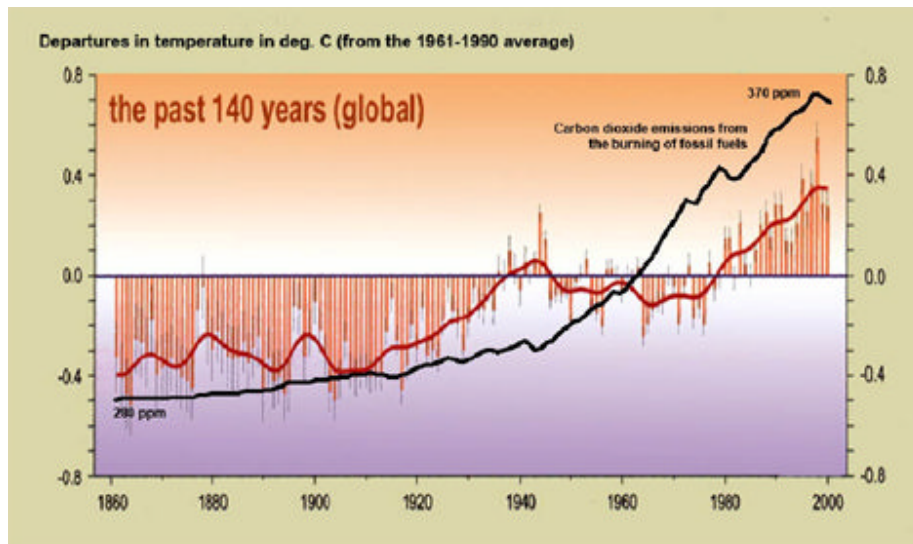
**Error 2.** Trenberth says most recent warming was “not from 1900 to 1940, but after 1970.” In fact, according to the land and sea temperature records of the National Climate Data Center the rate of warming in the 1920s and 1930s, before humankind had much influence on climate, was as great as it was in the 1980s and 1990s. Since the IPCC's previous report in 2001, there has been no statistically-significant “global warming” at all.<sup>1</sup>



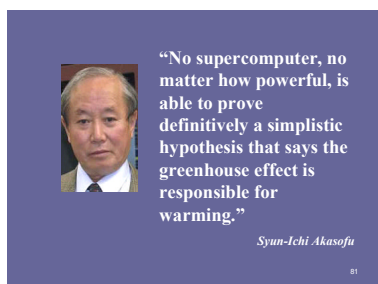
Lower tropospheric temperature anomaly since 1979 as measured by satellite-mounted microwave sounding units (MSU; from [http://vortex.nsstc.uah.edu/data/msu/t2lt/tltqghmam\\_5.2](http://vortex.nsstc.uah.edu/data/msu/t2lt/tltqghmam_5.2)). When the warming effect of El Ninos, and the cooling effect of the El Chichon and Pinatubo volcanic eruptions, are discounted, little if any greenhouse-forced warming is apparent for the last 25 years (Gray, 2006). Note also that these tropospheric measurements agree with the ground-based thermometer series (Below) in recording no significant warming since 1998, and probably none since 1982.<sup>2</sup>



Combined annual land surface-air and sea surface global temperature anomalies ( $^{\circ}$ C) for 1980-2005 relative to a 1961-1990-average baseline (data from Climate Research Unit, University of East Anglia). Though a warming of perhaps  $0.3^{\circ}$  C is recorded between 1980 and 1998 (a marked El Nino year), no warming has occurred in the seven subsequent years despite continued large increases in human-sourced atmospheric carbon dioxide.<sup>3</sup>



Combined annual land surface-air and sea surface global temperature anomalies ( $^{\circ}$ C) for 1861-2001 relative to a 1961-1990-average baseline, and plotted with the estimated two standard error uncertainty (after IPCC, 2001, Fig. 2). Also plotted, without error bars, is the estimated curve of atmospheric carbon dioxide values over the same period. Note the lack of correspondence between the two curves, and especially that cooling accompanied the marked increase in carbon dioxide emissions between 1950 and 1970.<sup>4</sup>



**Error 3.** Trenberth says, “We can prove – using climate models – that it is due to human influences changing the composition of the atmosphere”. One cannot prove anything with numerical forecasting models: Lorenz (1963) demonstrated, in his landmark paper that founded chaos theory, that climate forecasting for more than a few weeks ahead is altogether impossible.<sup>5</sup> Computer models are merely expensive forms of elaborate guesswork, to which the foolish cling in the near-total absence of any

analytical basis in theoretical physics for the absurdly exaggerated effects of insignificant increases in the atmospheric content of trace gases on temperature that are imagined by the IPCC.

**Error 4.** Trenberth says that most recent warming “... is due to human influences”. However, even the IPCC says the recent warming cannot be definitively attributed to anthropogenic influences, reflecting numerous peer-reviewed scientific papers such as Buentgen *et al.* (2006), who conclude, “The 20th-century contribution of anthropogenic greenhouse gases and aerosol remains insecure,” or Zhen-Shan and Xian (2007), who say, “The CO<sub>2</sub> greenhouse effect on global climate change ... could have been excessively exaggerated. It is high time to reconsider the trend of global climate changes.”

**Error 5.** Trenberth says the impact of human activity “does not continue to be overwhelmed by myriad other variables,” on the ground that the IPCC’s 2007 report says it is “unequivocal” that the climate is warming. Here, he commits the common logical solecism of assuming that the *fact* of recent warming tells us its *cause*. In fact, the model-predicted “fingerprint” of anthropogenic as opposed to natural warming – a rate of increase in temperature over the decades that is two or three times greater six miles up in the tropical troposphere than at the surface – is almost entirely absent from the observed records of the past half century.<sup>6</sup>

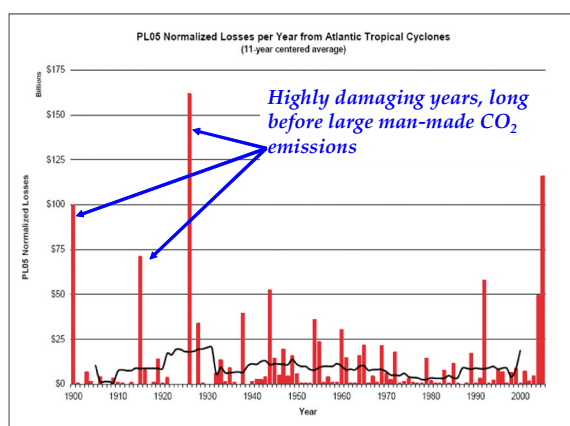
**Error 6.** Trenberth says the effects of warming “are already far-reaching and profound”. Since the warming itself has not yet brought global temperatures to the levels seen in the mediaeval warm period, when we were growing wine-grapes in Scotland and our Viking cousins were farming parts of south-western Greenland that remain under permafrost today, and since the warming has now ceased, it is nonsensical to suggest that the effects of that warming are anything other than insignificant and generally beneficial.

**Error 7.** Trenberth says water vapor accounts for just three-fifths of the greenhouse gases in the atmosphere. In fact, though water vapor accounts for about three-fifths of the “greenhouse effect,” the peer-reviewed literature suggests that its atmospheric concentration accounts for two-thirds to nine-tenths of the concentration of greenhouse gases. Interestingly, there is still no clear agreement among scientists about this important consideration.

**Error 8.** Trenberth says, “Human-induced warming has, however, increased water vapor over the global oceans by 4 per cent since 1970 and over land by 2-3%.” By the Clausius-Clapeyron relation, the space occupied by the atmosphere is capable of carrying near-exponentially more water vapor as temperature rises. However, Trenberth is again illogical in assuming that the *fact* of warming and of its consequences reveals the *cause*. Natural warming increases the atmospheric concentration of water vapor just as anthropogenic warming does.

**Error 9.** Trenberth says the “human-induced” warming provides “fuel for more powerful storms”. It does no such thing.<sup>7</sup> It is a matter of record that the mean annual number and intensity of severe hurricanes shows no change in 100 years, while tropical cyclones and typhoons have actually fallen in number. Several peer-reviewed papers attest to the influence of wind-shear in moderating what might otherwise be stronger storms. Outside the tropics, it is widely accepted that warmer weather will mean fewer and milder storms.

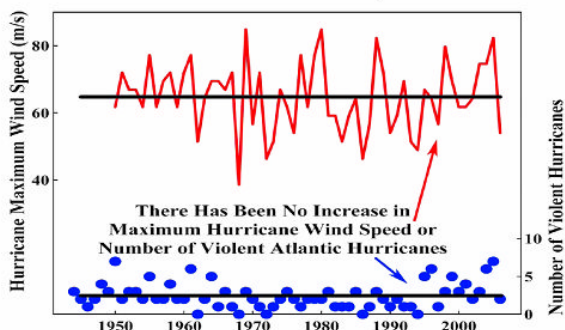
Hurricane damage normalized from 1900-2005, even after accounting for Katrina, show *no trend* of increasing absolute damage



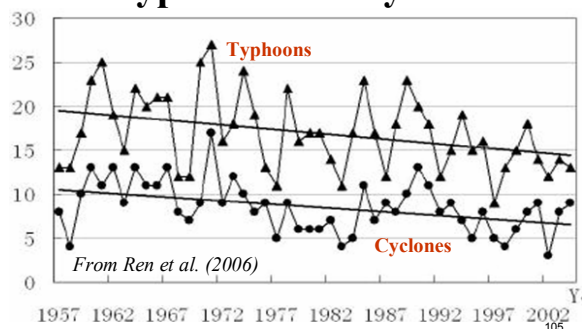
“The most damaging single storm is the 1926 Great Miami storm with \$140-157 billion of normalized damage. Unless action is taken to address the growing concentration of people and properties (such as by strengthening the ability of buildings to withstand storms) in coastal areas where hurricanes strike, damage will increase, and by a great deal, as more and wealthier people increasingly inhabit these coastal locations.”

Normalized Hurricane Damages in the United States: 1900-2005, Pielke, Jr. et al, submitted Nov. 6, 2006.

### Hydrocarbon use went up sixfold 1945-2006, but ...

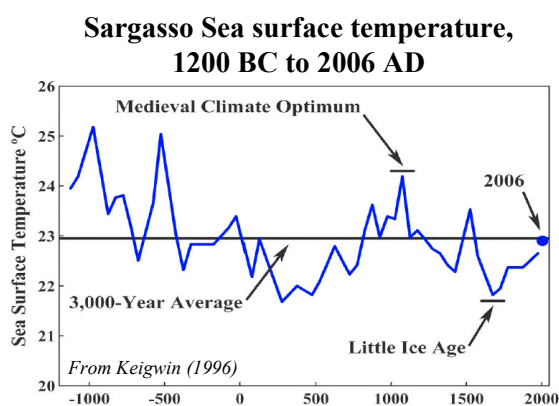


### Downtrend in frequency of typhoons and cyclones



**Error 10.** Trenberth says additional water vapor caused by “human-induced” warming will provide “an increased greenhouse effect”. In fact, any warming, whether natural or anthropogenic, will cause the sea to outgas carbon dioxide to the atmosphere, causing what is known as the “CO2 feedback”. However, the IPCC has no idea what the extent of this feedback will be – its high-end estimate is 800% larger than its low-end estimate.

**Error 11.** Trenberth says climate change “has not happened at current rates for thousands of years”. In fact, one need only go back to the 18<sup>th</sup> century to find that in central England between 1700 and 1735 the mean atmospheric temperature rose by 2.2 degrees Celsius in

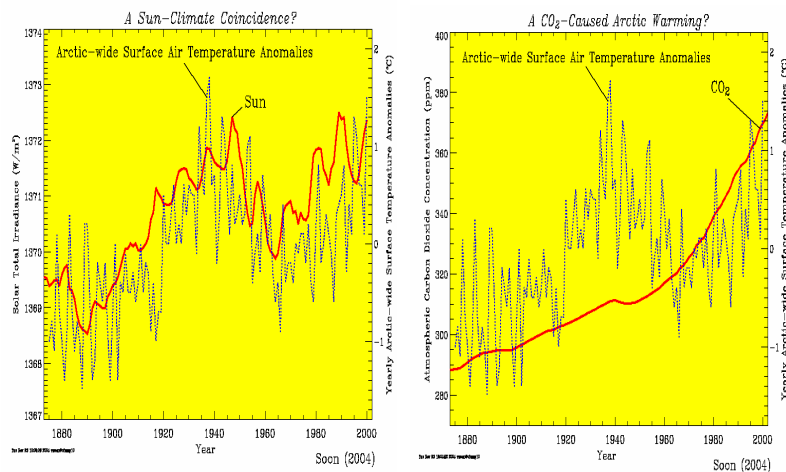


a third of a century compared with 0.8 Celsius, most of it natural, in the 20<sup>th</sup> century. The Mediaeval, Roman and Bronze Age warm periods were warmer than the present, as were each of the last four ice ages. The temporal resolution of the ice-cores upon which “thousands of years” of temperature reconstructions are based is insufficient to allow us to draw any conclusions whatsoever as to the rates at which temperatures changed during previous ice ages.

**Error 12.** Trenberth says, “Solar activity does not dwarf all other factors.” There is insufficient data to draw this conclusion. Solanki *et al.* (2005), say, “The level of solar activity during the past 70 years is exceptional. The previous period of equally high activity occurred more than 8,000 years ago ... During the past 11,400 years the Sun spent only of the order of 10% of the time at a similarly high level of magnetic activity. Almost all of the earlier high-activity periods were shorter than the present episode.”

**Error 13.** Trenberth says the changes in solar activity are “tiny (less than 0.1% as part of the 11-year sunspot cycle”<sup>8</sup>. However, the great astronomer William Herschel, as far

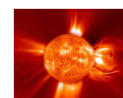
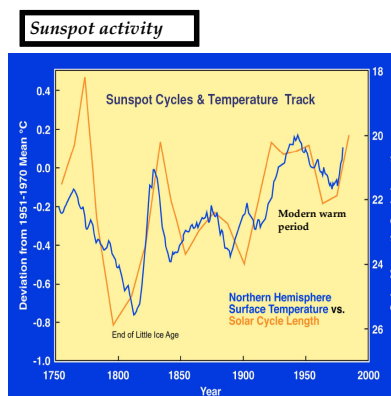
Solar activity (left panel), not CO2 levels (right panel), highly correlate with Arctic temperature anomalies



back as 1801, noticed an inverse correlation between the number of sunspots in the 11-year cycle and the price of grain on Earth as published in a table by Adam Smith in his *Wealth of Nations*. The more sunspots, the finer the weather, and the finer the weather the more the grain grows, and the more the grain

grows the lower the price. Trenberth's implication that even the small fluctuations between the 11-year solar minima and maxima are insignificant is accordingly long-proven incorrect. It was, after all, the Sun that caused the 2.2 degree C rise in temperature in just a third of a century a couple of hundred years back.

**Error 14.** Trenberth says “the changed greenhouse effect is about 1% of the sun’s energy entering the Earth system”. However, the IPCC admits that the level of scientific understanding of most of the anthropogenic forcings and all of the climate feedbacks that together make up our effect on the climate is low. Numerous scientists have concluded, by different methods, that the IPCC’s estimate of the influence of CO2 on the flux of radiant energy in the Earth/troposphere system is exaggerated twofold or even threefold.

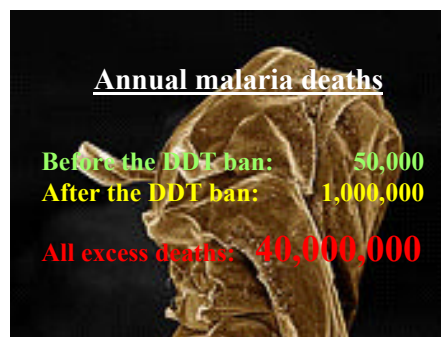


There is good correlation between solar sunspot and temperature variability.

**Error 15.** Trenberth says, “To suggest that we will adapt to climate change as we have in the past is to grossly underestimate the rates and magnitudes of changes expected in the next century.” Given that “global warming” has stopped for almost a decade – and a decade in which the IPCC says the “CO2 radiative forcing has increased by 20%” – Trenberth ought perhaps to have been more cautious in believing the extreme forecasts which he and others have been circulating. Cold kills far more people than warmth.<sup>9</sup>

**Error 16.** Trenberth says, “Of course we will adapt, but with how much loss of life and hardship brought on by climate change?” Though the IPCC fatuously estimates that 150,000 people a year are being killed by “global warming” – a “global warming” that is not in fact happening – the truth is that warmer weather kills fewer people than cooler weather, which is why in the US alone it is estimated that thanks to warmer weather 174,000 fewer people a year are dying because of cold.<sup>10</sup>

**Error 17.** Trenberth says, “At least we should plan for the coming changes.” The “precautionary principle” – plan against a danger even if the scientific basis for it is unsound or incomplete - killed 30 to 50 million people from malaria when the environmental movement succeeded in getting DDT banned worldwide. Before the ban, 30 years ago, just 50,000 people a year were killed by malaria. After the ban, the mean annual death-rate rose to 1 million. On 15 September 2006, the World Health Organization at last lifted this murderous ban, caused by needless and heedless “planning”. Its spokesman said that science and the data had to replace politics in future. Trenberth, please note.





**Error 18.** Trenberth says we are not currently planning for “the coming changes”. Not so. In the UK we have built the Thames Barrier, though it is not used any more often now than when it was built a quarter of a century ago. In the Netherlands a sea wall has been built along the entire coastline. These are sensible adaptations – though of course Al Gore’s suggestion that sea level will imminently rise by 20 feet is almost a 10,000% exaggeration of the combined total of just 2.5 inches of sea-level rise from melting the Greenland and Antarctic ice sheets that IPCC expects between now and 2100.

**Error 19.** Trenberth says, “The IPCC process is very open.” It is not.<sup>11</sup> The IPCC tends to deselect scientists known to disagree with its alarmist viewpoint. For instance, Paul Reiter, nominated by the US to assist the IPCC with the 2007 report because he is the world’s foremost expert on malaria, was passed over in favour of two non-experts who had published only one peer-reviewed paper on malaria between them, but had each published alarmist reports in conjunction with the green movement. When Reiter asked why these two were chosen over him, the IPCC lied to the effect that he had not been nominated. He checked with the US Government, and he had indeed been nominated.

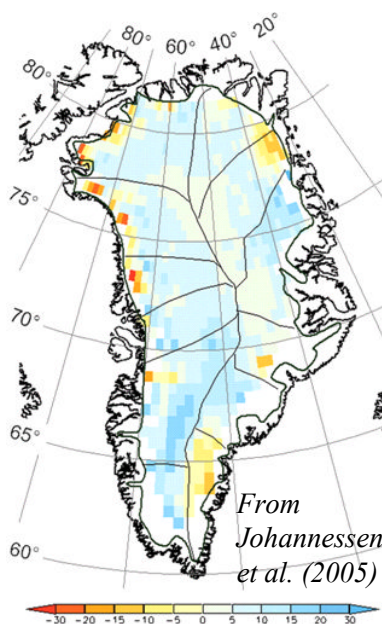
**Error 20.** Trenberth says the IPCC’s reports “are thoroughly reviewed”. They are not.<sup>12</sup> The crucial chapter in which the IPCC blames climate change on humanity was reviewed by only 40 people chosen by the IPCC itself. The authors of the IPCC’s chapter decided to reject more than half of the reviewers’ comments (and very nearly all of the comments that were critical). This is not peer-review in the accepted sense. Only a tiny handful even of the hand-picked “reviewers” explicitly agreed with the IPCC’s conclusion that humankind is chiefly responsible for recent warming of the climate.

**Error 21.** Trenberth says, “Most of the so-called ‘deniers participate’ in the IPCC process, “and their comments are fully taken into account”. This is known to be untrue. For instance, Paul Reiter pointed out during discussions on the draft 2001 report that the ban on DDT had done far more to spread malaria than “global warming,” that the malaria mosquito does not need temperatures any higher than 15 degrees C and is not therefore tropical, and that the largest recent outbreak of malaria was in Siberia in the 1920s and 1930s, when 13 million were infected and 600,000 died, 30,000 of them at Archangelsk on the Arctic Circle. All his comments were rejected in favour of a nonsensical statement to the effect that “global warming” would spread malaria. It will not. When Paul Reiter asked for his comments to be taken into account, the IPCC refused. He resigned, and then had to threaten to sue before the IPCC would take his name off the defective chapter on the imagined ill effects of “global warming” on human health.

**Error 22.** Trenberth says, “Gore’s statement that ice-sheets melting in Greenland or the West Antarctic would raise sea level by 20 feet is correct, although it was misleading that he did not put a time-frame on this.” Though Trenberth “played a major part” in the IPCC process, he somehow failed to point out that the IPCC itself has said that temperatures would have to remain 5.5 degrees Celsius higher than today’s *for several millennia* before the Greenland ice sheet would lose even half of its ice. The Greenland ice sheet has in fact recently thickened by 2 inches per year – a total of 20 inches in 10 years (Johannesen *et al.*, 2005).<sup>13</sup>

**Greenland ice  
grows 2 inches a  
year**

**“Colours indicate ice-sheet elevation change rate in cm/year ... from ... satellite altimeter data, 1992-2003. The spatially averaged *increase* is  $5.4 \pm 0.2$  cm/year.”**



**Error 23.** Trenberth says that Al Gore’s climate change movie “should be viewed by all children. I recommend it.” However, only weeks ago a High Court Judge in the UK found nine serious departures from the scientific mainstream in the film, which he referred to as “errors”, and said that if the UK Government had not agreed to send to each school a list of corrections to the movie he would have found its distribution of the movie to all UK schools to be unlawful. There are in fact some 35 serious scientific errors in the movie, which ought not to be shown to any child.<sup>14</sup>

### **Conclusions**

Trenberth’s shallow analysis discredits both him and the IPCC in which he plays “a major part”. The likelihood that Trenberth, in a short article, would have made as many as 23 errors all falling in the direction of undue alarmism and flagrant exaggeration by mere accident is less than 1 in 8 million. Sir John Houghton, the first chairman of the IPCC, in which Trenberth plays “a major part”, wrote in 1994 that “Unless we announce disasters, no one will listen.” If Trenberth and the IPCC, in which he plays “a major part”, go on announcing disasters when none are in truth at all likely, then indeed no one will listen, and no one should. From now on, we want honest, unbiased science. No more lies. Tell us the unvarnished, unexaggerated truth. Then, and only then, we will listen.

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**Endnotes:**

<sup>1</sup> “The global temperature stasis between 1998 and 2006 occurred despite continuing rises in atmospheric carbon dioxide over that period. Consistent with this, Karner (2002) showed from an analysis of global temperature series that “... *antipersistence in the lower tropospheric temperature increments does not support the science of global warming developed by IPCC. Negative long-range correlation of increments during the last 22 years means that negative feedback has been dominating in the Earth climate system during the period*”. These facts, and the lack of a discernable human greenhouse effect in late 20th century temperature records, are consistent with Khilyuk and Chilingar’s (2006) estimate that the human greenhouse forcing is 4-5 orders of magnitude less than the major natural forcing agents.” See: [http://scienceandpublicpolicy.org/sppi\\_originals/the\\_myth\\_of\\_dangerous\\_human\\_caused\\_climate\\_change.html](http://scienceandpublicpolicy.org/sppi_originals/the_myth_of_dangerous_human_caused_climate_change.html)

<sup>2</sup> “The Myth of Dangerous Human Caused Climate Change”  
[http://scienceandpublicpolicy.org/sppi\\_originals/the\\_myth\\_of\\_dangerous\\_human\\_caused\\_climate\\_change/page-5.html](http://scienceandpublicpolicy.org/sppi_originals/the_myth_of_dangerous_human_caused_climate_change/page-5.html)

<sup>3</sup> Ibid.

<sup>4</sup> Ibid.

<sup>5</sup> For a discussion upon the mathematical reason why long-run climate prediction is impossible, see: [http://scienceandpublicpolicy.org/monckton\\_papers/the\\_mathematical\\_reason\\_why\\_long-run\\_climatic\\_prediction\\_is\\_impossible.html](http://scienceandpublicpolicy.org/monckton_papers/the_mathematical_reason_why_long-run_climatic_prediction_is_impossible.html)

<sup>6</sup> For a more detailed discussion, see: [http://scienceandpublicpolicy.org/monckton\\_papers/greenhouse\\_warming\\_what\\_greenhouse\\_warming.html](http://scienceandpublicpolicy.org/monckton_papers/greenhouse_warming_what_greenhouse_warming.html)

<sup>7</sup> “Florida has the distinction of holding several not-so-enviable records when it comes to hurricane strength, frequency, and subsequent death and damages (Blake et al., 2007). The Florida Keys Hurricane of 1935 was among of the most intense Atlantic hurricanes ever to strike land, passing over Florida’s middle keys on September 2, 1935. It killed 408 Floridians...” For a fuller discussion of hurricanes see: <http://scienceandpublicpolicy.org/originals/hurricanethreat.html>

<sup>8</sup> The sun plays a role in our climate in direct and indirect ways; however, many questions still remain about the actual mechanisms involved and the sun’s variance on century and longer timescales. For discussions on these issues, see: [http://scienceandpublicpolicy.org/sppi\\_originals/the\\_unruly\\_sunne\\_cannot\\_be\\_ruled\\_out\\_as\\_a\\_cause\\_of\\_recent\\_climate\\_variation.html](http://scienceandpublicpolicy.org/sppi_originals/the_unruly_sunne_cannot_be_ruled_out_as_a_cause_of_recent_climate_variation.html)  
[http://scienceandpublicpolicy.org/sppi\\_originals/shining\\_more\\_light\\_on\\_the\\_solar\\_factor\\_a\\_discussion\\_of\\_problems\\_with\\_the\\_royal\\_society.html](http://scienceandpublicpolicy.org/sppi_originals/shining_more_light_on_the_solar_factor_a_discussion_of_problems_with_the_royal_society.html)  
[http://scienceandpublicpolicy.org/sppi\\_reprint\\_series/a\\_critique\\_on\\_the\\_lockwood\\_frochlich\\_paper\\_in\\_the\\_royal\\_society\\_proceedings.html](http://scienceandpublicpolicy.org/sppi_reprint_series/a_critique_on_the_lockwood_frochlich_paper_in_the_royal_society_proceedings.html)  
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[http://scienceandpublicpolicy.org/sppi\\_reprint\\_series/what\\_do\\_we\\_really\\_know\\_about\\_the\\_sun-climate\\_connection.html](http://scienceandpublicpolicy.org/sppi_reprint_series/what_do_we_really_know_about_the_sun-climate_connection.html)

<sup>9</sup> See: [http://scienceandpublicpolicy.org/sppi\\_originals/bad\\_news\\_for\\_science\\_in\\_newsweek.html](http://scienceandpublicpolicy.org/sppi_originals/bad_news_for_science_in_newsweek.html)

<sup>10</sup> Ibid.

<sup>11</sup> The IPCC would have us believe that its reports are diligently reviewed by many hundreds of scientists and that these reviewers endorse the contents of the report. An analysis of the reviewers' comments for the scientific assessment report by Working Group I show a very different and very worrying story. See: <http://scienceandpublicpolicy.org/peerreview.html>

See also: [http://scienceandpublicpolicy.org/sppi\\_originals/fallacies\\_about\\_global\\_warming.html](http://scienceandpublicpolicy.org/sppi_originals/fallacies_about_global_warming.html)

<sup>12</sup> Ibid.

<sup>13</sup> For an in-depth examination of current science relative to the Poles and Greenland, including discussions of Greenland sea ice, Polar Bears, permafrost and methane, the Antarctica ice mass and sea level rise see: [http://scienceandpublicpolicy.org/sppi\\_originals/current\\_issues\\_in\\_climate\\_science\\_focus\\_on\\_the\\_poles.html](http://scienceandpublicpolicy.org/sppi_originals/current_issues_in_climate_science_focus_on_the_poles.html)

<sup>14</sup> For a discussion of 35 errors in the Gore film, see: <http://scienceandpublicpolicy.org/monckton/goreerrors.html>