

SPPI MONTHLY CO₂ REPORT

July 2009 | Volume 1 | Issue 7



Science & Public Policy Institute
"science-based policy for a better world"

Christopher Monckton, EDITOR ♦ www.scienceandpublicpolicy.org

SPPI MONTHLY CO₂ REPORT :: JULY 2009

ACCURATE, AUTHORITATIVE ANALYSIS FOR TODAY'S POLICYMAKERS

UN exaggerated warming 6-fold: the scare is over

SPPI's authoritative **Monthly CO₂ Report** for July 2009 announces the publication of a major paper by Professor Richard Lindzen of MIT, demonstrating by direct measurement that outgoing long-wave radiation is escaping to space far faster than the UN predicts, showing that the UN has exaggerated global warming 6-fold. *Report, page 3.*

- ✚ **Lindzen's paper on outgoing long-wave radiation shows the "global warming" scare is over.** Thanks to recent peer-reviewed papers that have not been mentioned in the mainstream news media, we now know that the effect of CO₂ on temperature is small, we know why it is small, and we know that it is having very little effect on the climate. *Page 3.*
- ✚ The **IPCC assumes CO₂ concentration will reach 836 ppmv by 2100**, but, for almost eight years, CO₂ concentration has headed straight for only 570 ppmv by 2100. This alone **halves all of the IPCC's temperature projections.** *Pages 5-6.*
- ✚ Since 1980 **temperature has risen at only 2.5 °F (1.5 °C)/century**, not the 7 °F (3.9 °C) the IPCC imagines. *Pages 7-9.*
- ✚ **Sea level rose just 8 inches in the 20th century** and has been rising at just 1 ft/century since 1993. Sea level has scarcely risen since 2006. Also, **Pacific atolls are not being drowned by the sea**, as some have suggested. *Pages 10-12.*
- ✚ Arctic sea-ice extent is about the same as it has been at this time of year in the past decade. In the Antarctic, sea ice extent – on a 30-year rising trend – reached a record high in 2007. **Global sea ice extent shows little trend for 30 years.** *Pages 13-15.*
- ✚ Hurricane and tropical-cyclone activity is at its lowest since satellite measurement began. *Page 16.*
- ✚ Solar activity has declined again, after a large sunspot earlier in the month. **The Sun is still very quiet.** *Pages 17-18.*
- ✚ **The (very few) benefits and the (very large) costs of the Waxman/Markey Bill** are illustrated at *Pages 19-21.*
- ✚ **Science Focus** this month studies **the effect of the Sun on the formation of clouds. IT'S THE SUN, STUPID!** *Pages 22-23.*
- ✚ **As always**, there's our "global warming" ready reckoner, and **our monthly selection of scientific papers.** *Pages 24-27.*
- ✚ **And finally**, a Technical Note explains how we compile our **state-of-the-art CO₂ and temperature graphs.** *Page 28.*

EDITORIAL :: THE SCIENCE IS IN. THE SCARE IS OUT

RECENT PAPERS AND DATA GIVE A COMPLETE PICTURE OF WHY THE UN IS WRONG

NO LONGER can it be credibly argued that “global warming” is worse than previously thought. No longer can it be argued that “global warming” was, is, or will be any sort of global crisis. Recent papers in the peer-reviewed literature, combined with streams of data from satellites and thermometers, now provide a complete picture of why it is that the UN’s climate panel, the worldwide political class, and other “global warming” profiteers are wrong in their assumption that the enterprises of humankind will disastrously warm the Earth.

The global surface temperature record, which we update and publish every month, has shown no statistically-significant “global warming” for almost 15 years. Statistically-significant global *cooling* has now persisted for very nearly eight years. Even a strong el Nino – expected in the coming months – will be unlikely to reverse the cooling trend.

More significantly, the ARGO bathythermographs deployed throughout the world’s oceans since 2003 show that the top 400 fathoms of the oceans, where it is agreed between all parties that at least 80% of all heat caused by manmade “global warming” must accumulate, have been cooling over the past six years. That now-prolonged ocean cooling is fatal to the “official” theory that “global warming” will happen on anything other than a minute scale.

Not only in the oceans but also in the tropical upper atmosphere, real-world measurements are showing up the scaremongers’ computer models as useless. All of the models predict that at altitude in the tropics “global warming” should have happened at thrice the surface rate. But half a century of measurement has shown that that warming has not happened either. That, too, is fatal to the “official” notion.

A recent study by Paltridge *et al.* tells us *why* the tropical upper troposphere is not warming at thrice the surface rate. The modelers had told their X-Box 360s to predict that “hot-spot” because the Clausius-Clapeyron relation – one of the very few proven results in climatology – mandates that the space occupied by the warming atmosphere will carry near-exponentially more water vapor, which, by its sheer quantity in the atmosphere, is many times more significant than CO₂ as a greenhouse gas.

However, Dr. Paltridge’s paper demonstrates that subsidence drying carries the additional moisture down to lower altitudes where the water vapor has less effect because its absorption bands are already saturated there. Subsidence drying allows far more outgoing long-wave radiation to escape unimpeded to space than the models predict: obsessed with radiative transports in the atmosphere, they tend to undervalue non-radiative transports such as subsidence drying.

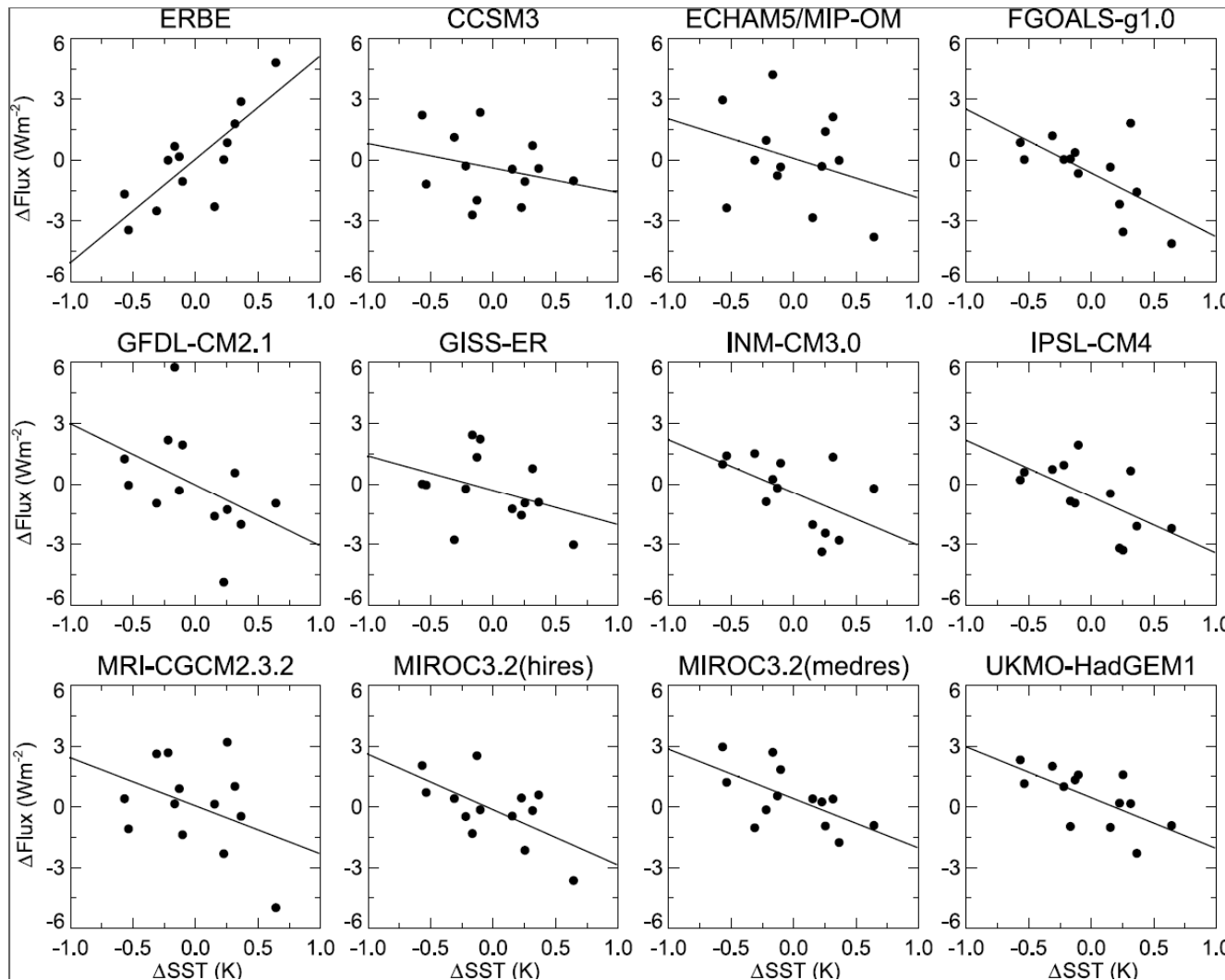
We not only know *why* the outgoing radiation is not being trapped as predicted – we now know *that* it is not being trapped. Professor Richard Lindzen of MIT has just published a paper – arguably the most important ever to be published on “global warming” – that plots real-world changes in outgoing long-wave radiation, as measured by the ERBE satellite system, against real-world changes in global mean surface temperature. See the startling graph on page 4.

Observed reality is entirely different from what 11 of the UN’s models predict. Instead of 6 F warming in response to a doubling of atmospheric CO₂ concentration, only 1 F can be expected, because nearly all the radiation that should be trapped in the atmosphere is escaping to space. The scare is truly over. **Monckton of Brenchley**

FEATURED :: THE END OF THE CLIMATE SCARE

PROFESSOR LINDZEN PROVES THE EFFECT OF CO₂ ON TEMPERATURE IS SMALL

Outgoing long-wave radiation is not being trapped as predicted



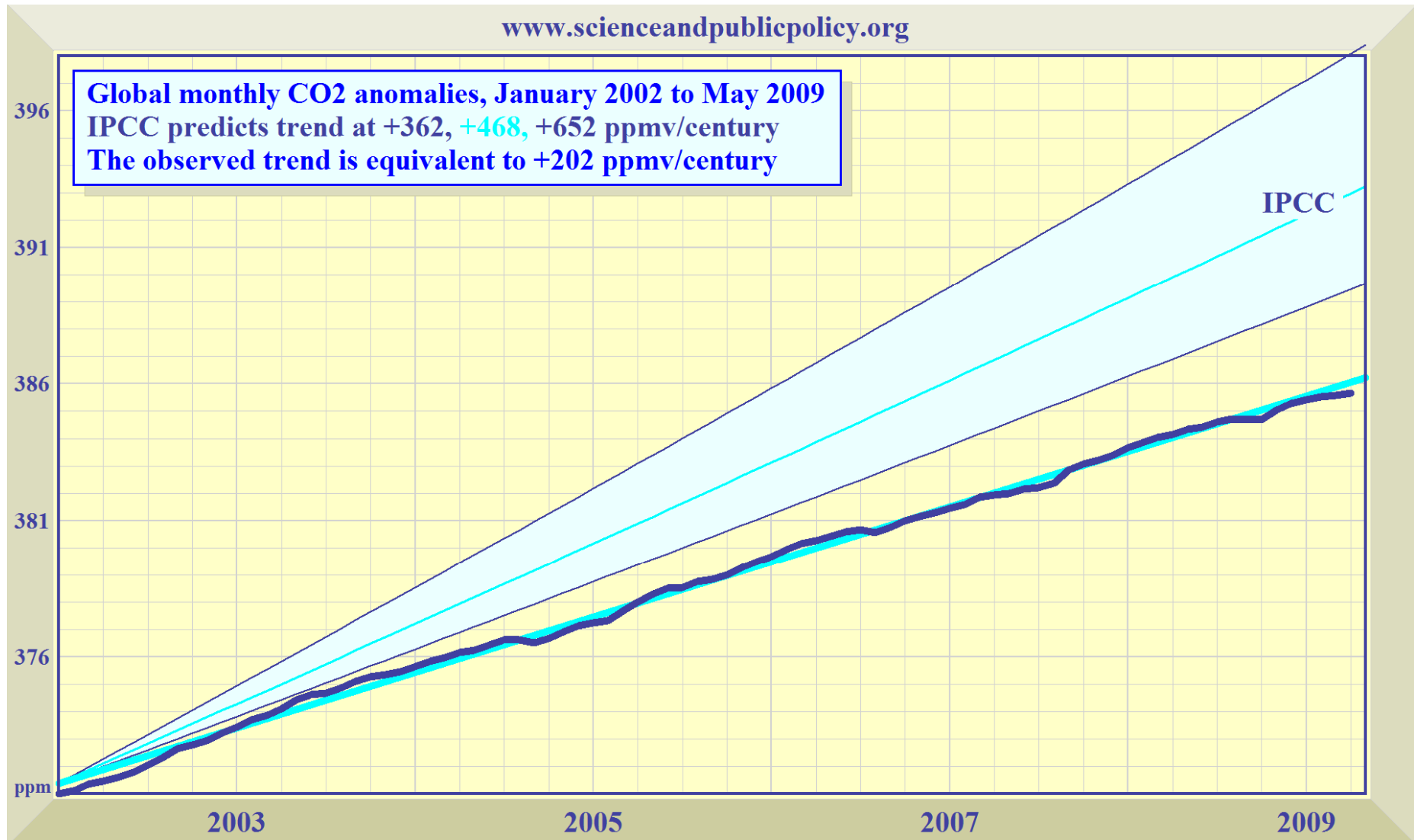
Observed reality vs. erroneous computer predictions: Scatter-plots of net flux of outgoing long-wave radiation, as measured by the satellites of the Earth Radiation Budget Experiment over a 15-year period (upper left panel) and as predicted by 11 of the computer models relied upon by the UN (all other panels), against anomalies in global mean sea surface temperature over the period.

The mismatch between reality and prediction is entirely clear. It is this astonishing graph that provides the final evidence that the UN has absurdly exaggerated the effect not only of CO₂ but of all greenhouse gases on global mean surface temperature.

What it means: If the atmospheric CO₂ concentration doubles, global temperature will rise not by the 6 F imagined by the UN's climate panel, but by a harmless 1 F.

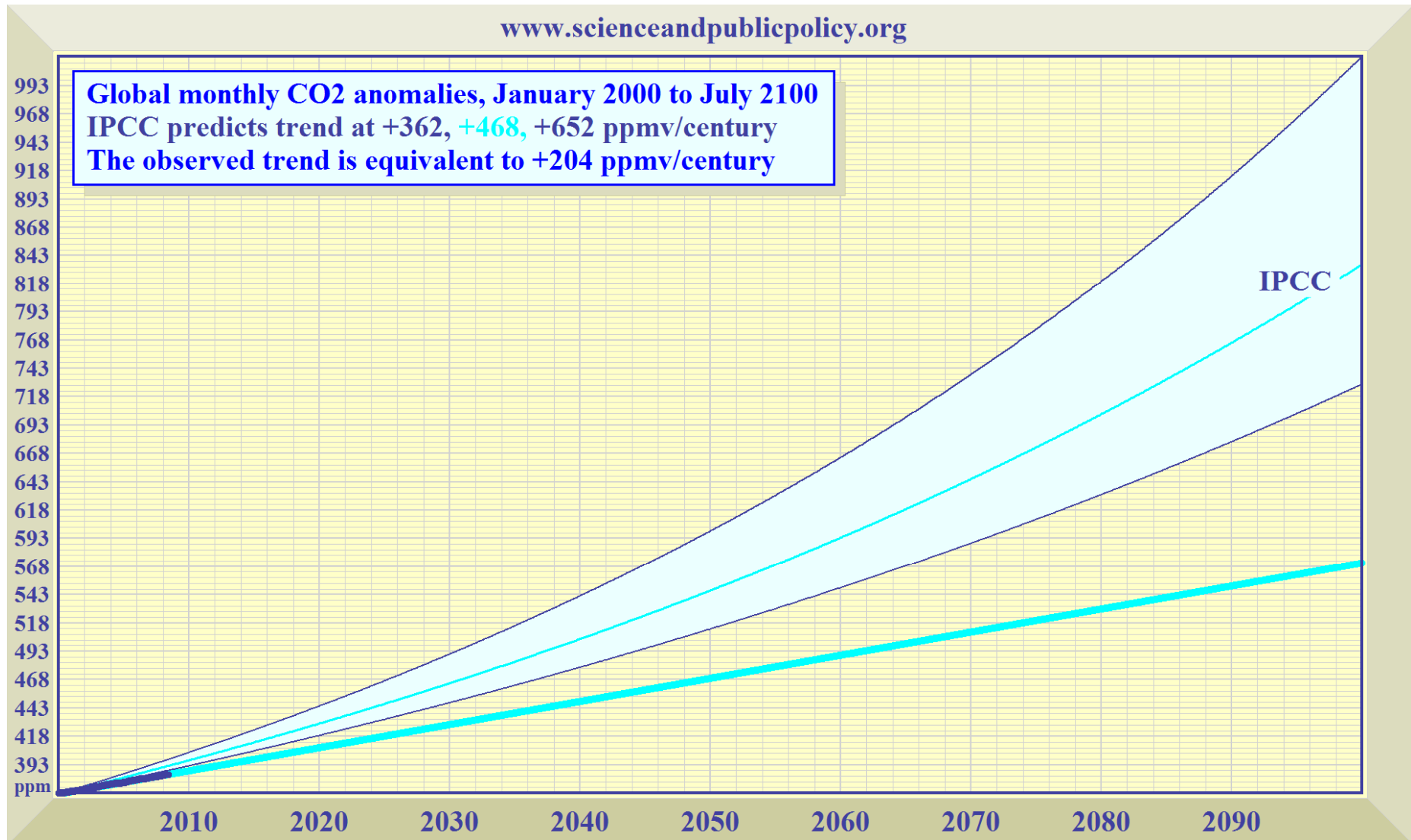
Source: Lindzen & Choi (2009).

CO₂ concentration is rising, but the rate of increase is slowing



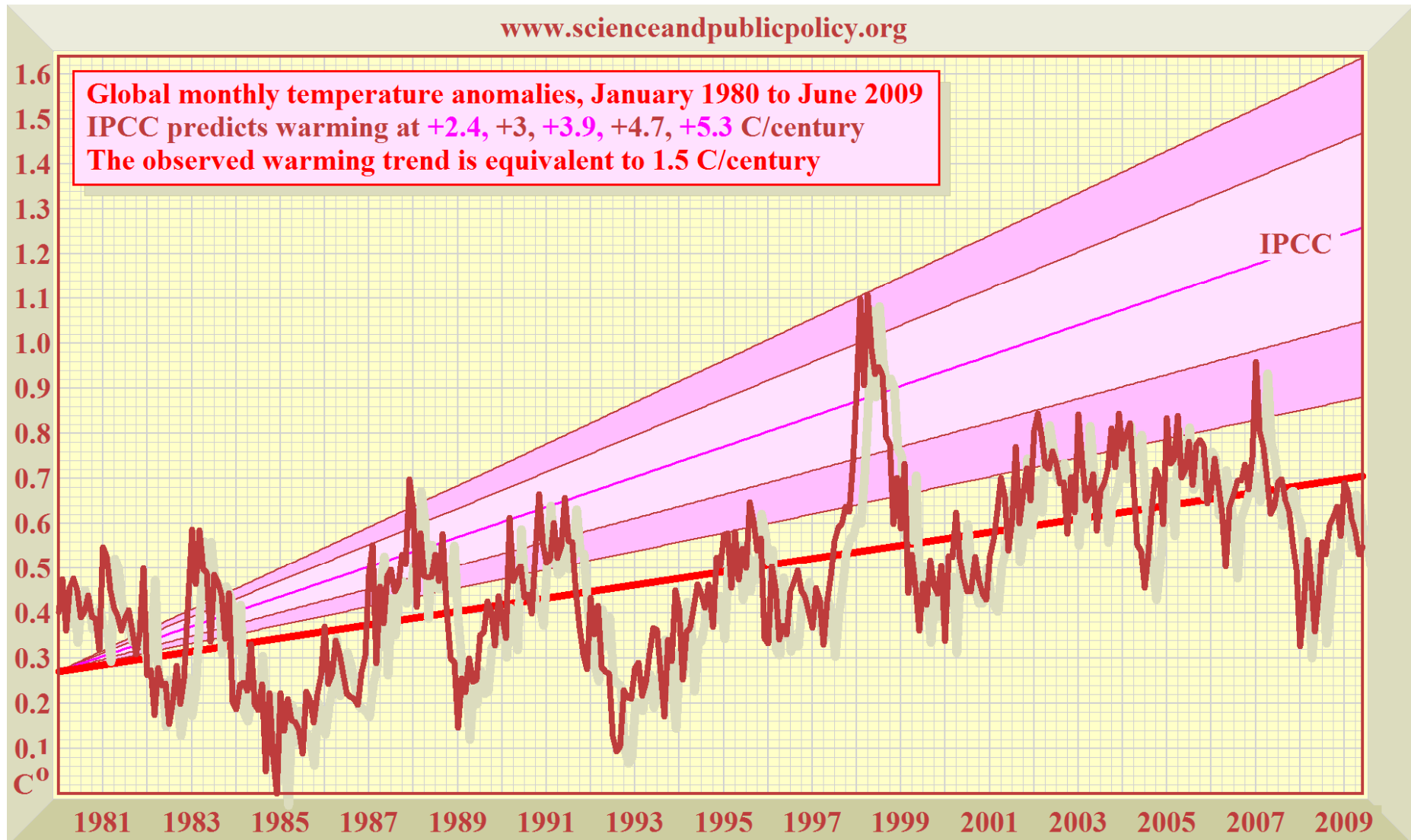
CO₂ is rising in a straight line, well below the IPCC's projected range (pale blue region). The deseasonalized real-world data are shown as a thick, dark-blue line overlaid on the least-squares linear-regression trend. There is no sign of the exponential growth the IPCC predicts. Despite rapidly-rising CO₂ emissions, the rate of increase in CO₂ concentration has slowed from 204 ppmv/century in January 2009 to 202 ppmv/century now. Data source: NOAA.

IPCC predicts rapid, exponential CO₂ growth that is not occurring



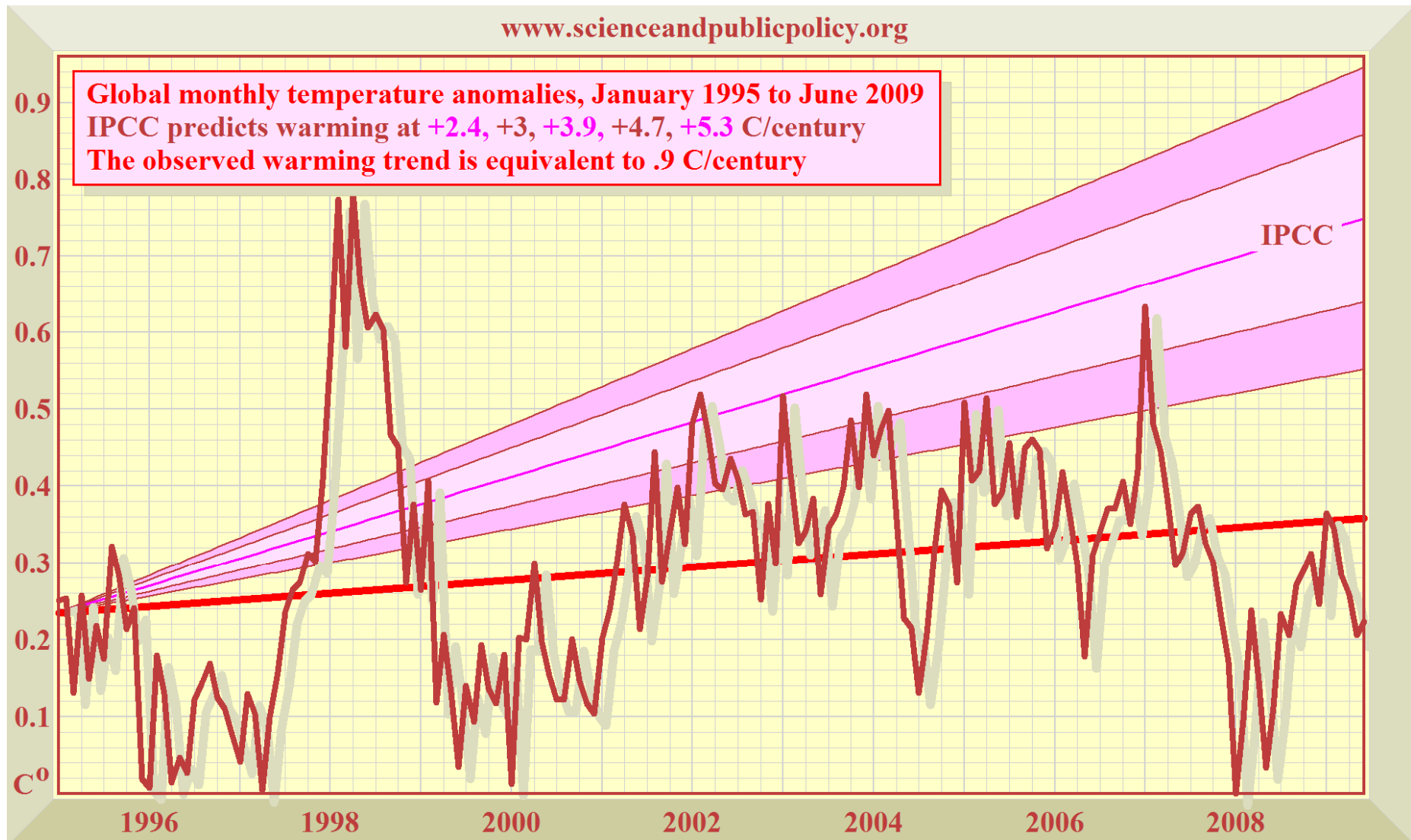
Observed CO₂ growth is linear, and is also well below the exponential-growth curves (bounding the pale blue region) predicted by the IPCC in its 2007 report. If CO₂ continues on its present path, the IPCC's central temperature projection for the year 2100 must be halved. Data source: NOAA.

The 29-year global warming trend is just 2.5 °F (1.5 °C) per century



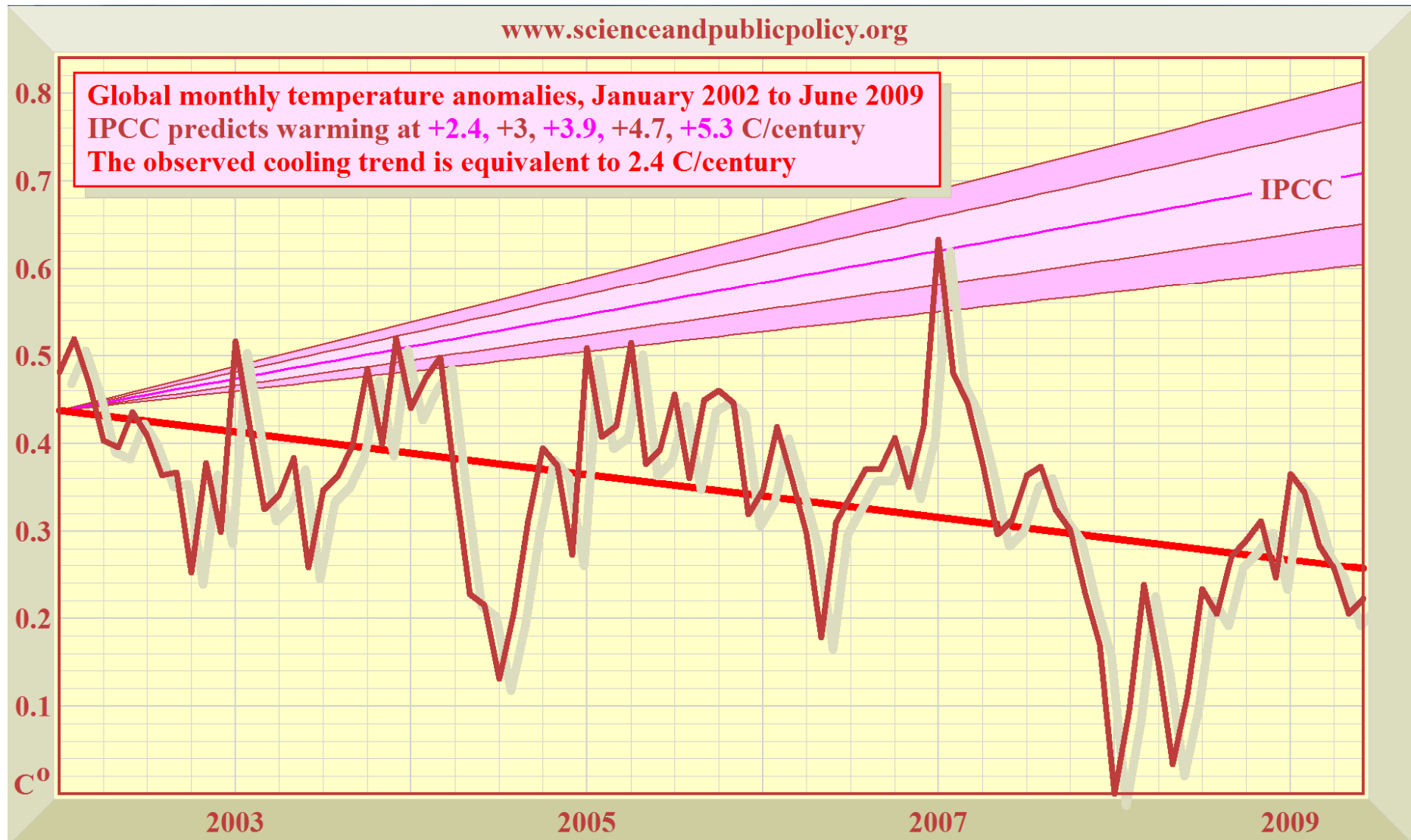
Global temperature for the past 29 full years has been undershooting the IPCC's currently-predicted warming rates (pink region). The warming trend (thick red line) has been rising at well below half of the IPCC's central estimate. **Data source:** SPPI index, compiled from HadCRUt3, RSS, and UAH.

Almost a decade and a half with no statistically-significant warming



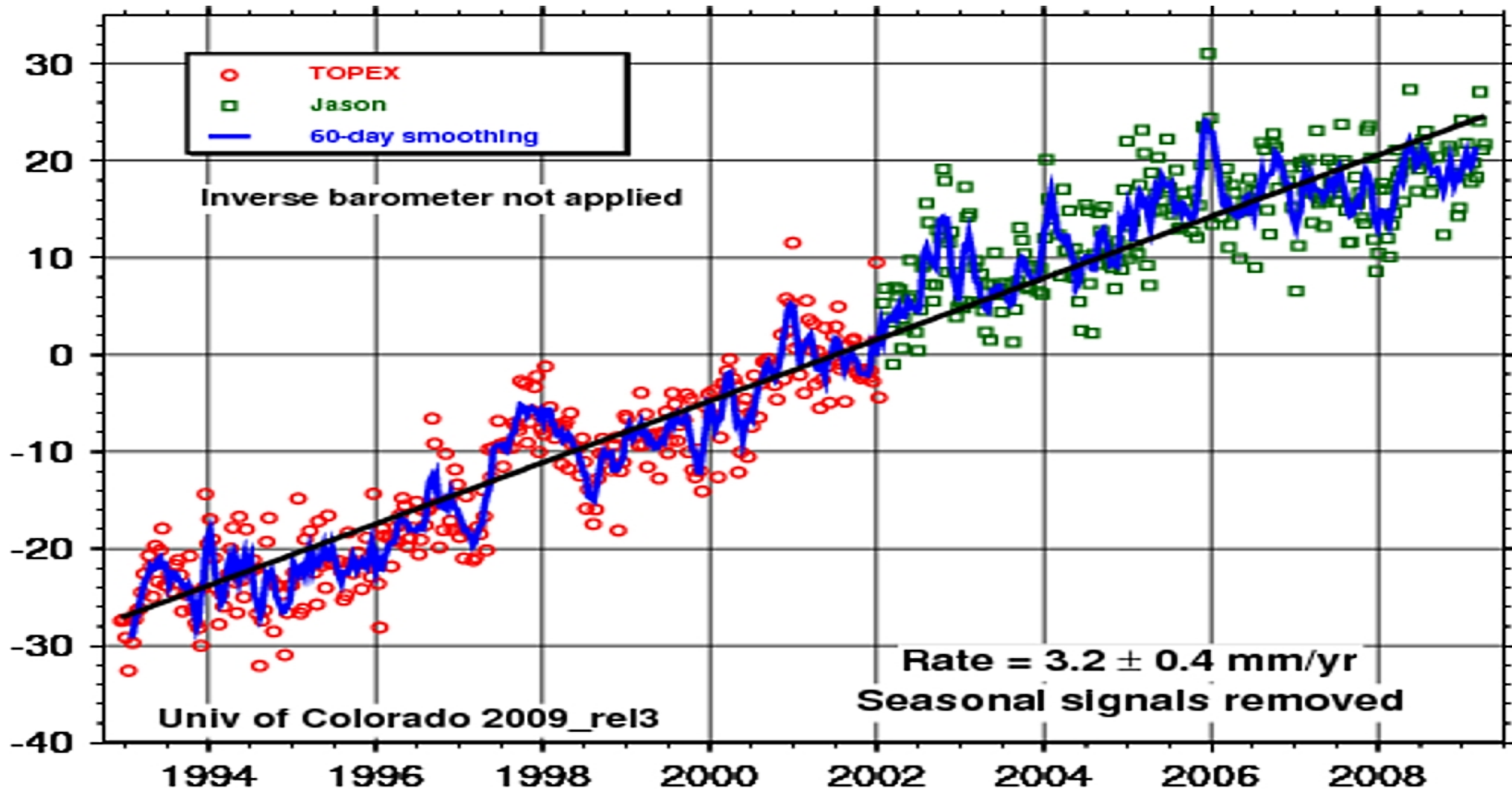
*Since the beginning of 1995, there has been no statistically-significant “global warming”. The warming over this period would only be significant if the temperature at the end of the period were high enough to be clear of the “error-bars” (not shown in this graph) that reflect the uncertainty in measuring global mean surface temperature accurate. **Source:** SPPI global temperature index.*

Seven and a half years' global cooling at 4.3 F° (2.4 C°) / century



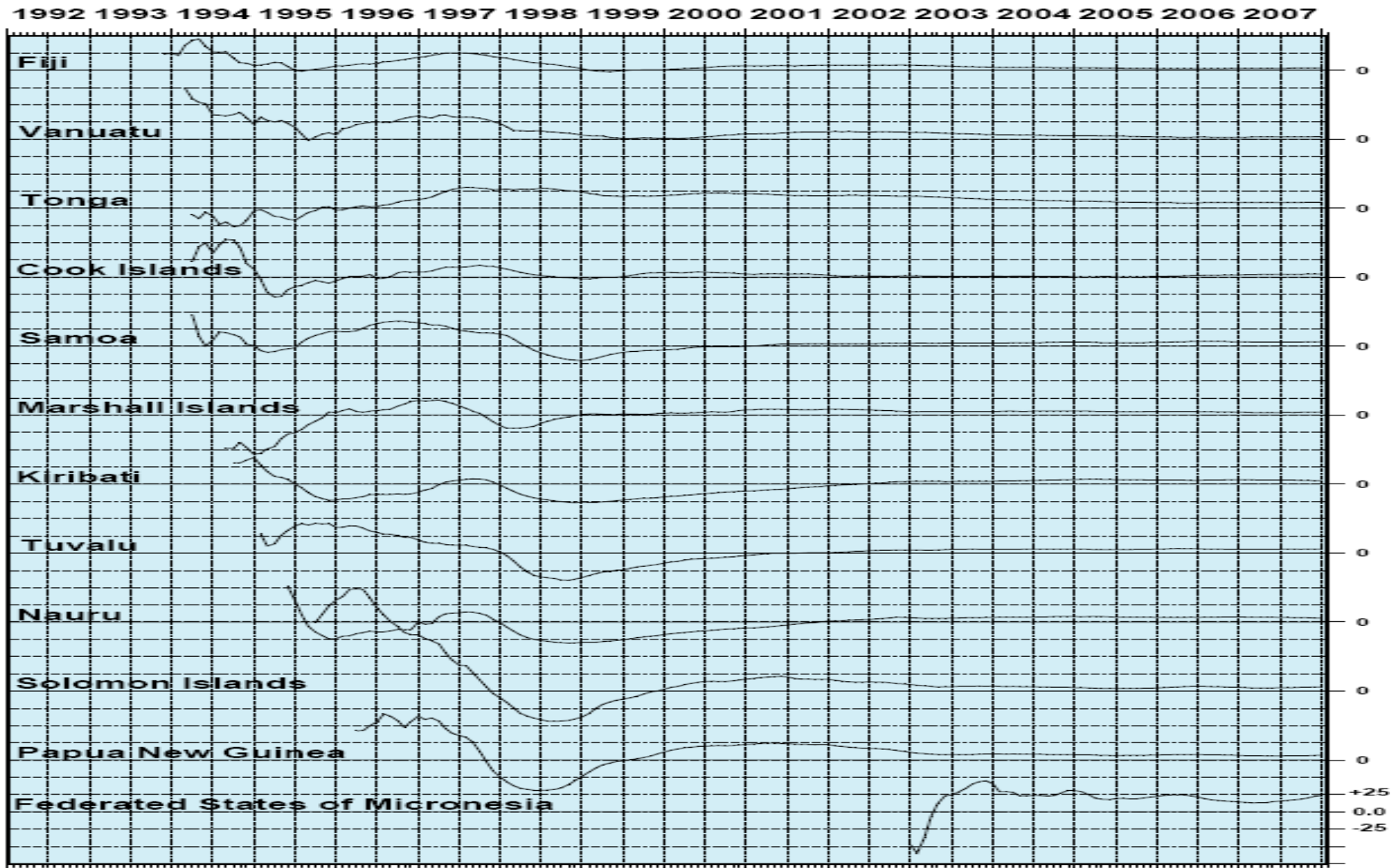
For seven and a half years, global temperatures have been falling rapidly. The IPCC's predicted warming path (pink region) bears no relation to the global cooling that has been observed in the 21st century to date. Source: SPPI global temperature index.

Sea level has not risen significantly in the past four years



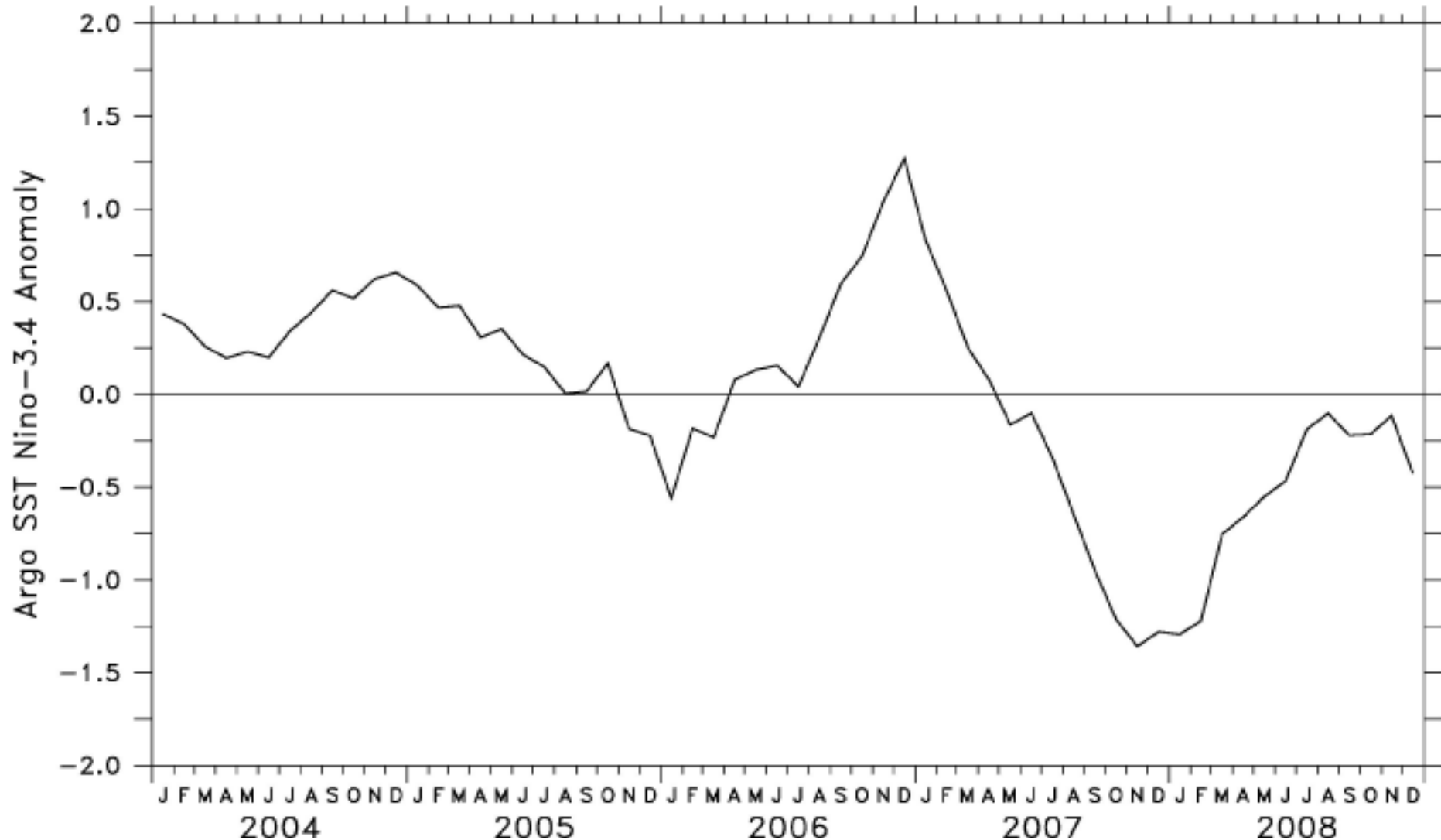
Sea level is scarcely rising: The average rise in sea level (mm/yr) over the past 10,000 years was 4 feet/century. During the 20th century it was 8 inches. In the past four years, sea level has scarcely risen at all. As recently as 2001, the IPCC had predicted that sea level might rise as much as 3 ft in the 21st century. However, this maximum was cut by more than one-third to less than 2 feet in the IPCC's 2007 report. Moerner (2004) says sea level will rise about 8 inches in the 21st century. Mr. Justice Burton, in the UK High Court, bluntly commented on Al Gore's predicted 20ft sea-level rise as follows: "The Armageddon scenario that he depicts is not based on any scientific view." *A fortiori*, James Hansen's prediction of a 246ft sea-level rise is mere rodomontade. Sea-level rise since the beginning of 2006 has been negligible. **Source:** University of Colorado, 2009, release 3.

Sea level rise in the Pacific atolls shows a steady trend



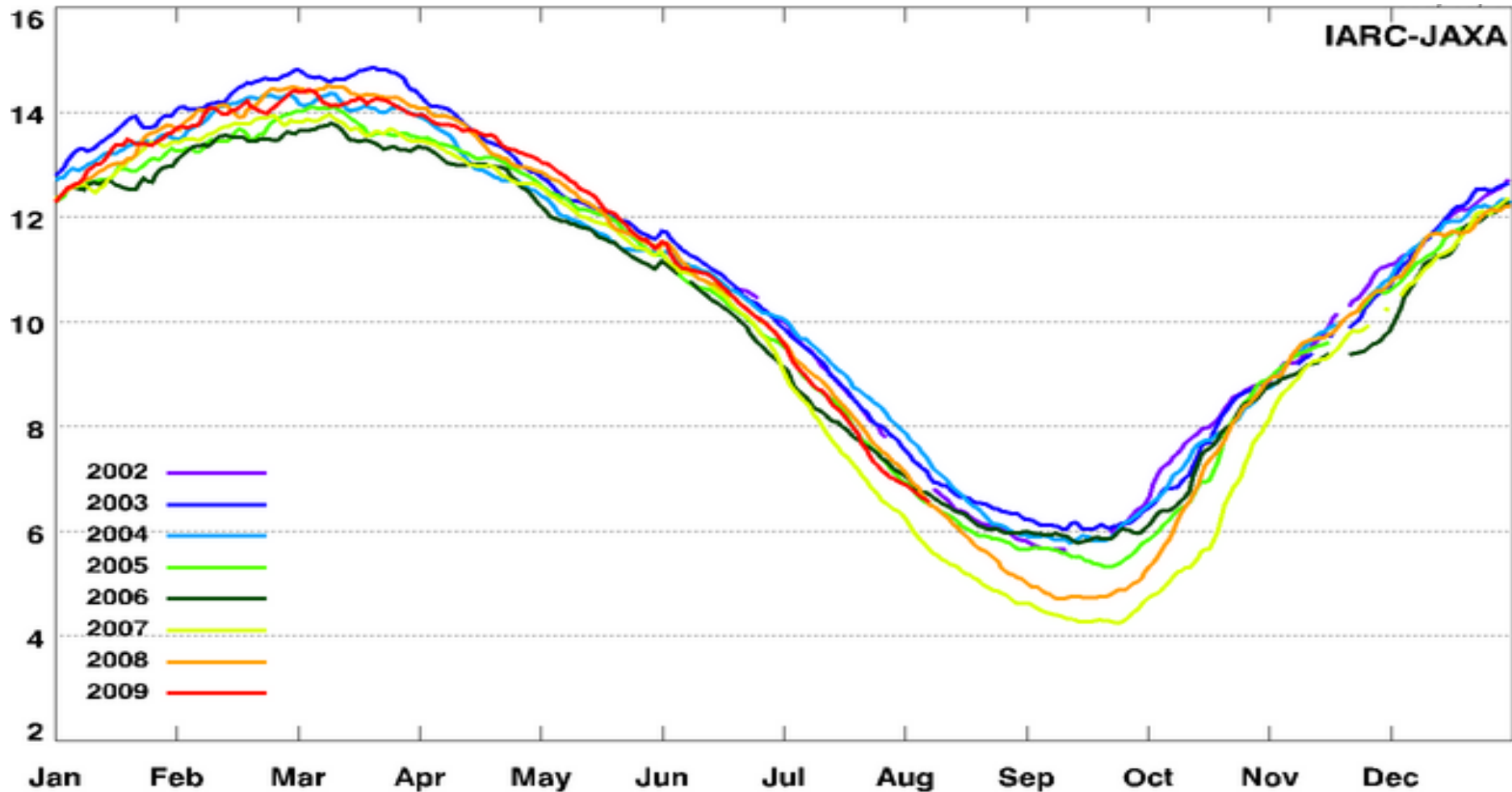
Pacific atolls are not at risk: Though it has often been said that Pacific coral atolls are liable to be flooded by rising sea level, the rate of rise is small and steady, as shown in this island-by-island graph from the Australian Government. For each island, the trend settles after a few years' recording.

Hard evidence disproves theory: the ocean is not warming



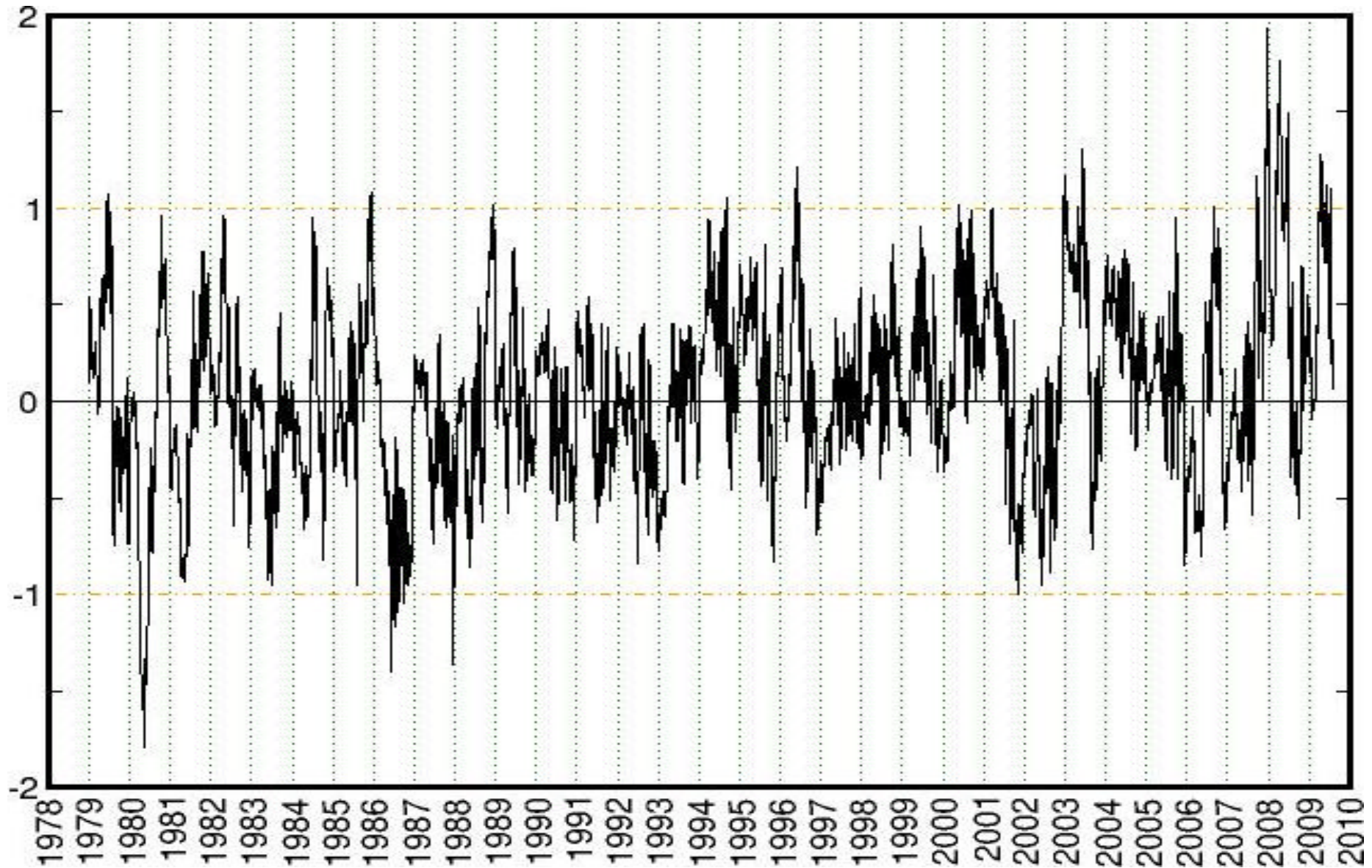
*The 3300 Argo bathythermograph buoys deployed throughout the world's oceans since late in 2003 have shown a slight cooling of the oceans over the past five years, directly contrary to the official theory that any "global warming" not showing in the atmosphere would definitely show up in the first 400 fathoms of the world's oceans, where at least 80% of any surplus heat would be stored. **Source:** ARGO project, June 2009.*

Arctic sea-ice extent remains within the 10-year normal range



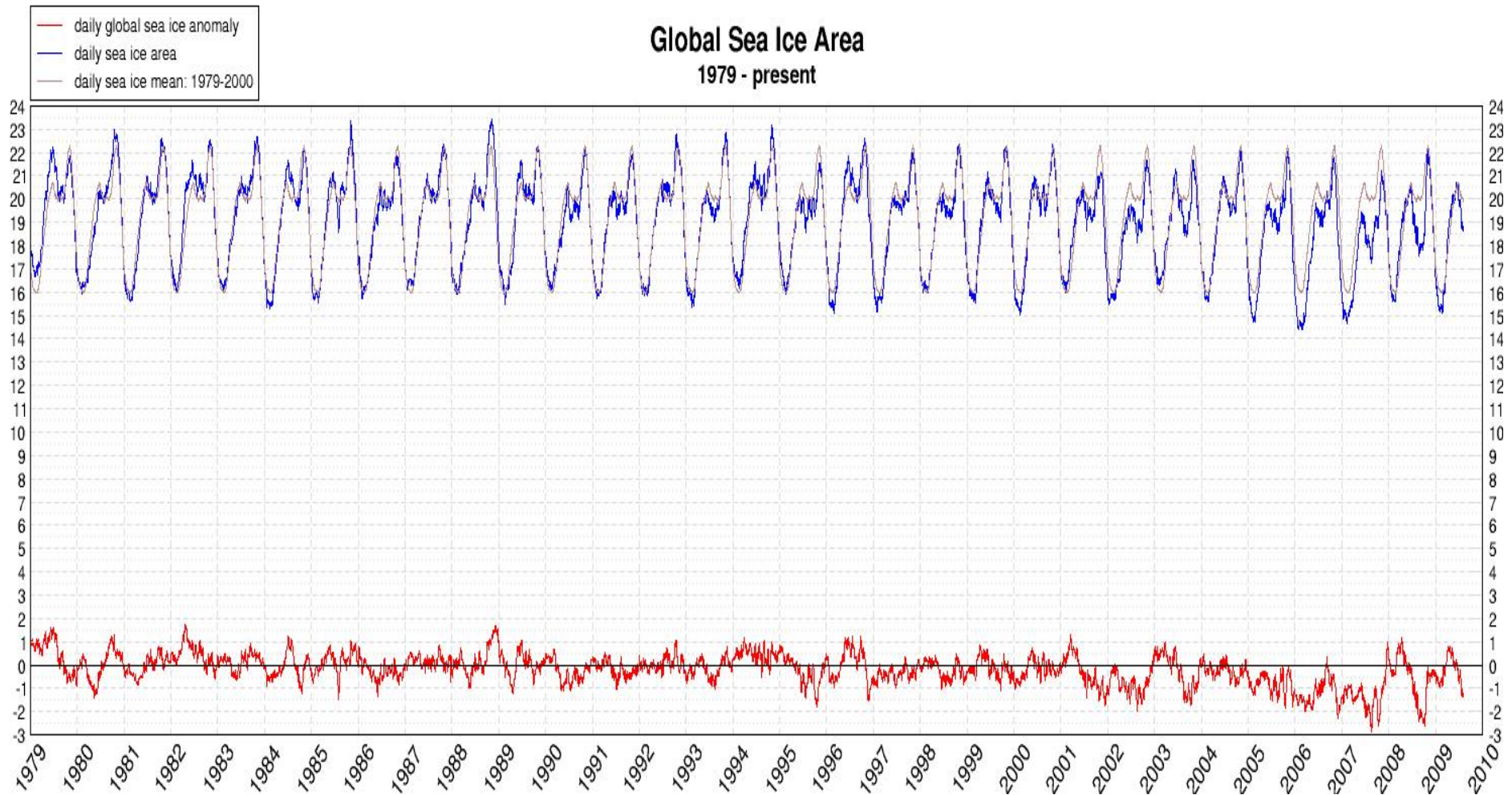
Arctic sea ice extent (millions of square kilometers: left scale): The red curve shows that the extent of sea ice in the Arctic is now comfortably within the range that has been normal over the past decade. In 2005, 2007, and 2008, sea-ice extent during the September low season was below the 30-year minimum. However, the presence of more multi-year ice this year may prevent sea ice from declining as far this year. Arctic summer sea ice covered its least extent in 30 years during the late summer of 2007. However, NASA has attributed that sudden decline to unusual poleward movements of heat transported by currents and winds: the Arctic climate has long been known to be volatile. The decline cannot have been caused by “global warming”, because, as the SPPI Global Temperature Index shows, there has been a rapid cooling globally during the past seven and a half years – a cooling that applies to the oceans as well as to the atmosphere. At almost the same moment as summer sea-ice extent reached its 30-year minimum in the Arctic, sea-ice extent in the Antarctic reached its 30-year maximum, though the latter event was very much less widely reported in the media than the former. Source: IARC JAXA, Japan, July 2009.

Antarctic sea-ice extent has been rising gently for 30 years



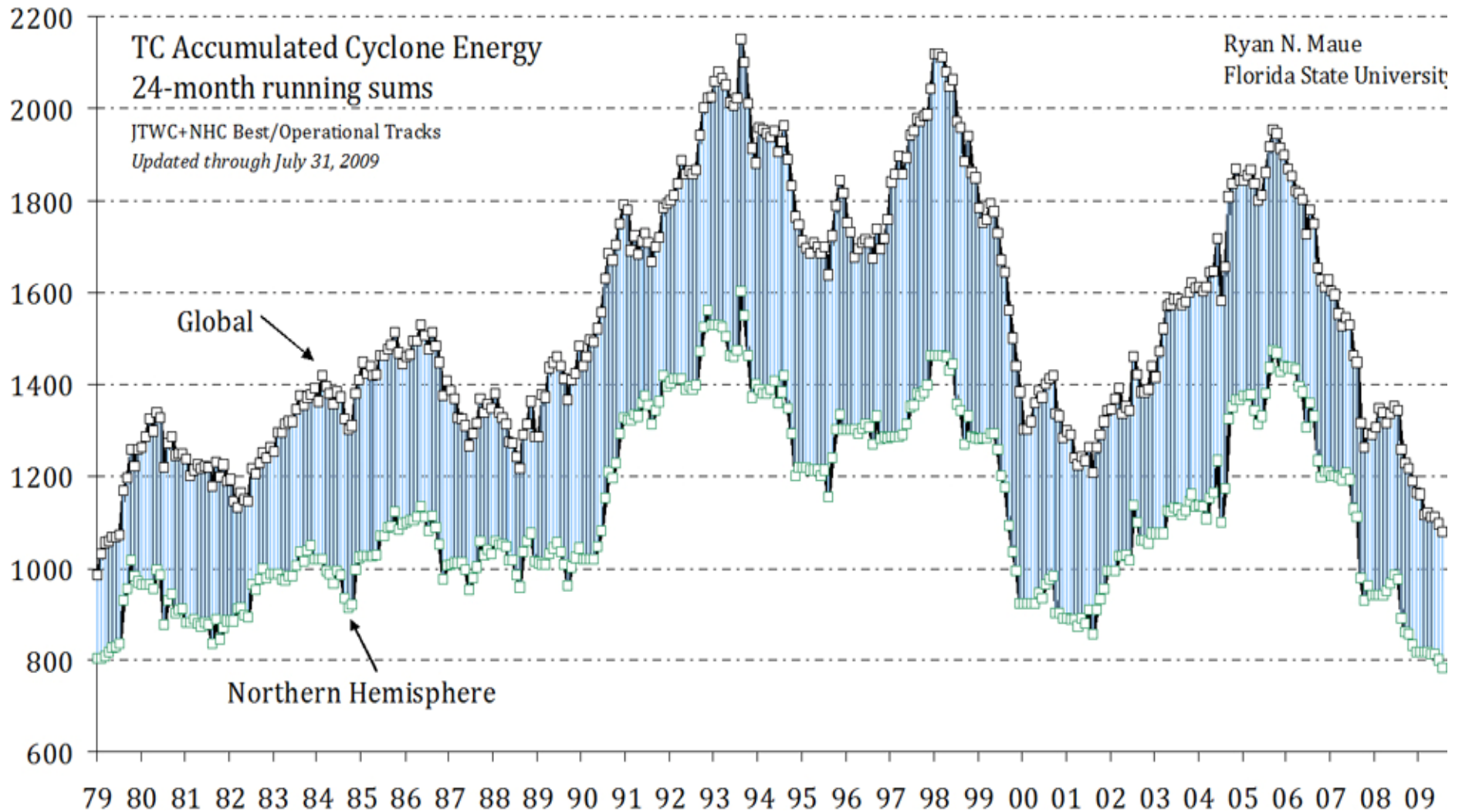
Antarctic sea-ice extent (anomaly from 1979-2000 mean, millions of km²: left scale) shows a gentle but definite uptrend over the past 30 years. The peak extent, which occurred late in 2007, followed shortly after the decline in Arctic sea ice in late summer that year. Source: University of Illinois, July 2009.

The regular “heartbeat” of global sea-ice extent: steady for 30 years



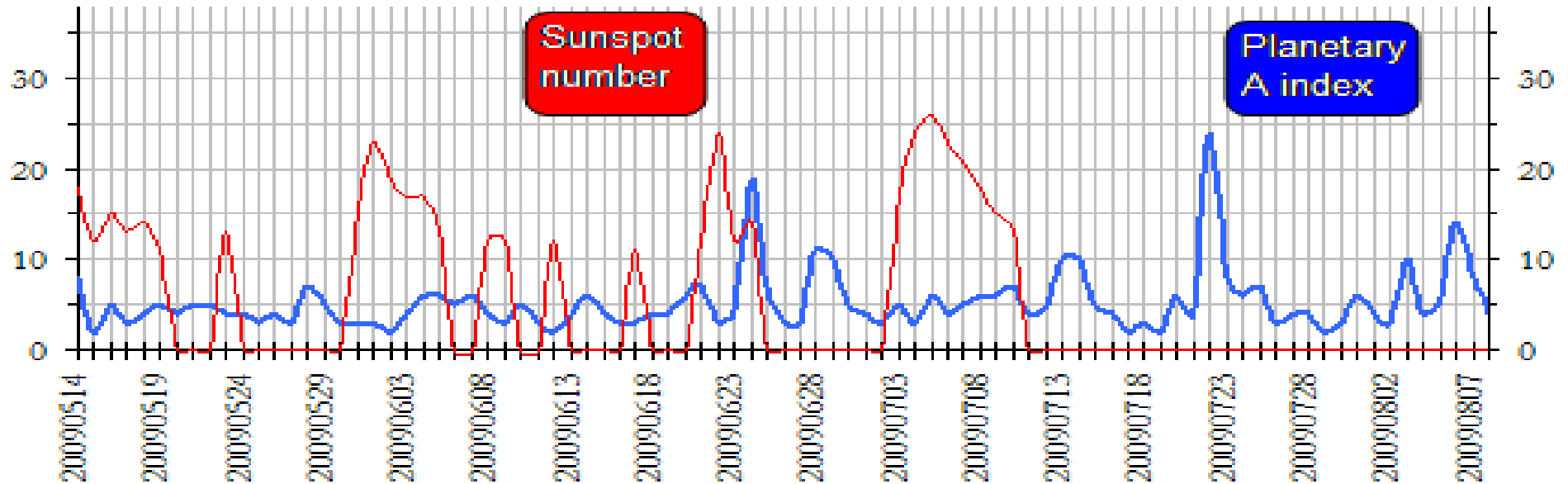
Planetary cardiogram showing global sea-ice area (millions of square kilometers): There has been a very slight decline in the trend (red) of global sea-ice extent over the decades, chiefly attributable to loss of sea ice in the Arctic during the summer, which was well below the mean in 2007, with some recovery in 2008. However, the 2008 peak sea-ice extent was exactly on the 1979-2000 mean, and current sea-ice extent is a fraction below the 1979-2000 mean. The decline in summer sea-ice extent in the Arctic, reflected in the global sea-ice anomalies over most of the past eight years, runs counter to the pronounced global atmospheric cooling trend over the same period, suggesting that the cause of the regional sea-ice loss cannot have been “global warming”. Seabed volcanic activity recently reported in the Greenland/Iceland gap, with seabed temperatures of up to 574 °F, may have contributed to the loss of Arctic sea-ice. **Source:** University of Illinois, July 2009.

Hurricane activity is at its lowest since satellite monitoring began

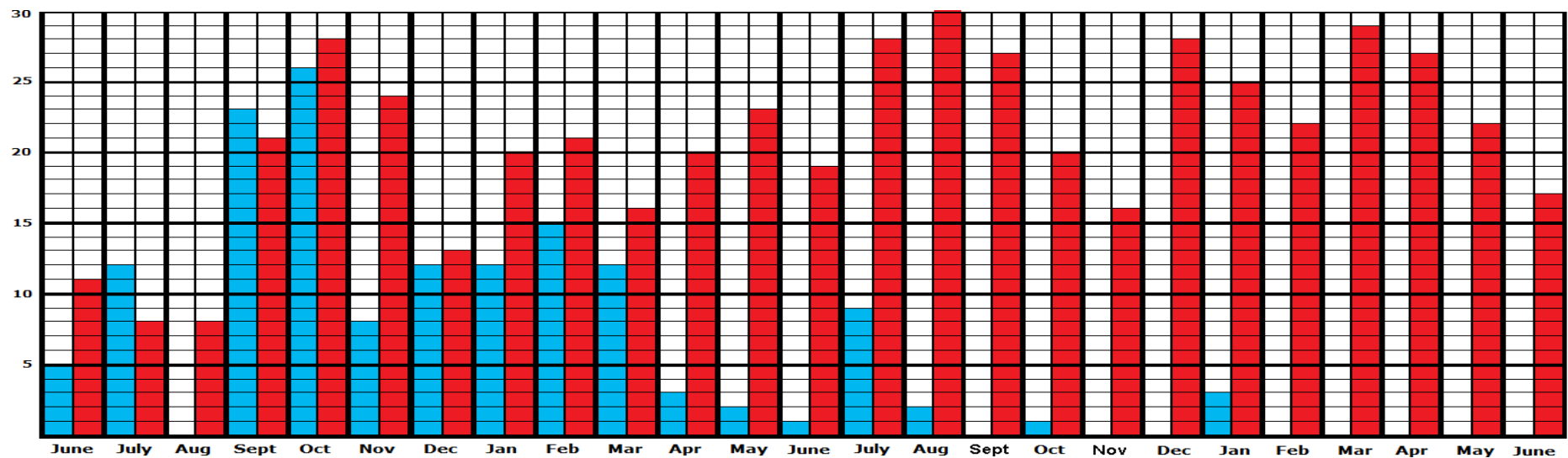


*“Urrricanes ’ardly hever ’appen”, as Eliza Doolittle sang in “My Fair Lady”. Hurricanes, typhoons, and other tropical cyclones have declined recently. Global activity of intense tropical storms is measured using a two-year running sum, the Accumulated Cyclone Energy Index, now standing at almost its least value in 30 years in the Northern Hemisphere, and also globally. The graph shows the 24-month running sum of tropical-cyclone energy for the entire globe (top) and the Northern Hemisphere only (green). The difference between the two time series is the Southern Hemisphere total. Data are shown from June 1979 to May 2009. Intensity estimates of southern-hemisphere cyclones are often missing before the start-date of the graph. **Source:** Ryan Maue, July 2009.*

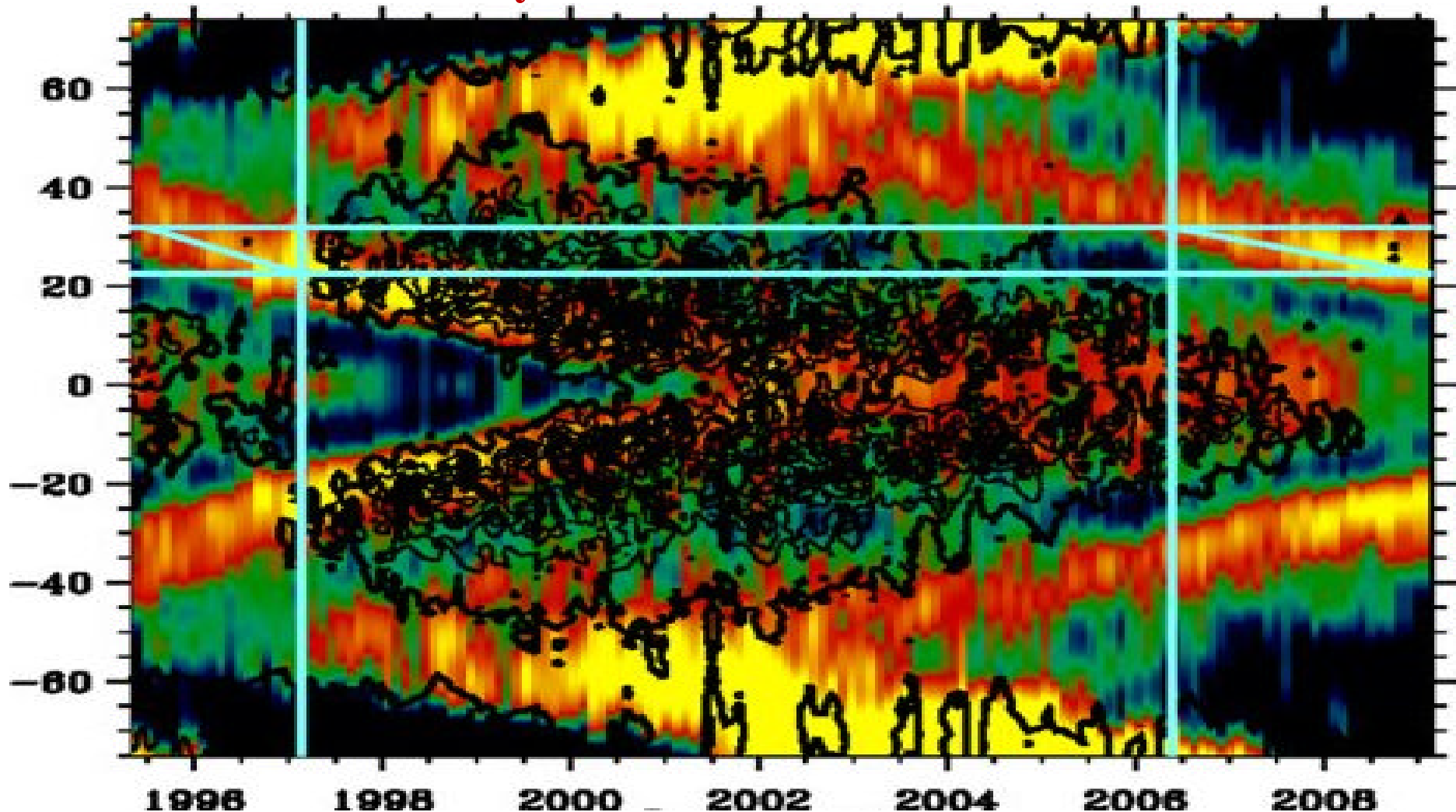
A super-sunspot, then nearly a month without any sunspots



Upper panel: Sunspot numbers (red), 15 March to 8 June 2009. Sunspot activity has been less than for 100 years. **Lower panel:** Number of days without any visible sunspots during the previous solar minimum (blue) and the present solar minimum (red). During the last ~11-year solar minimum, in September/October 2006, the longest period without sunspots was 37 days, compared with 44 days in March/April 2009. **Source:** Jan Alvestad, April 2009.

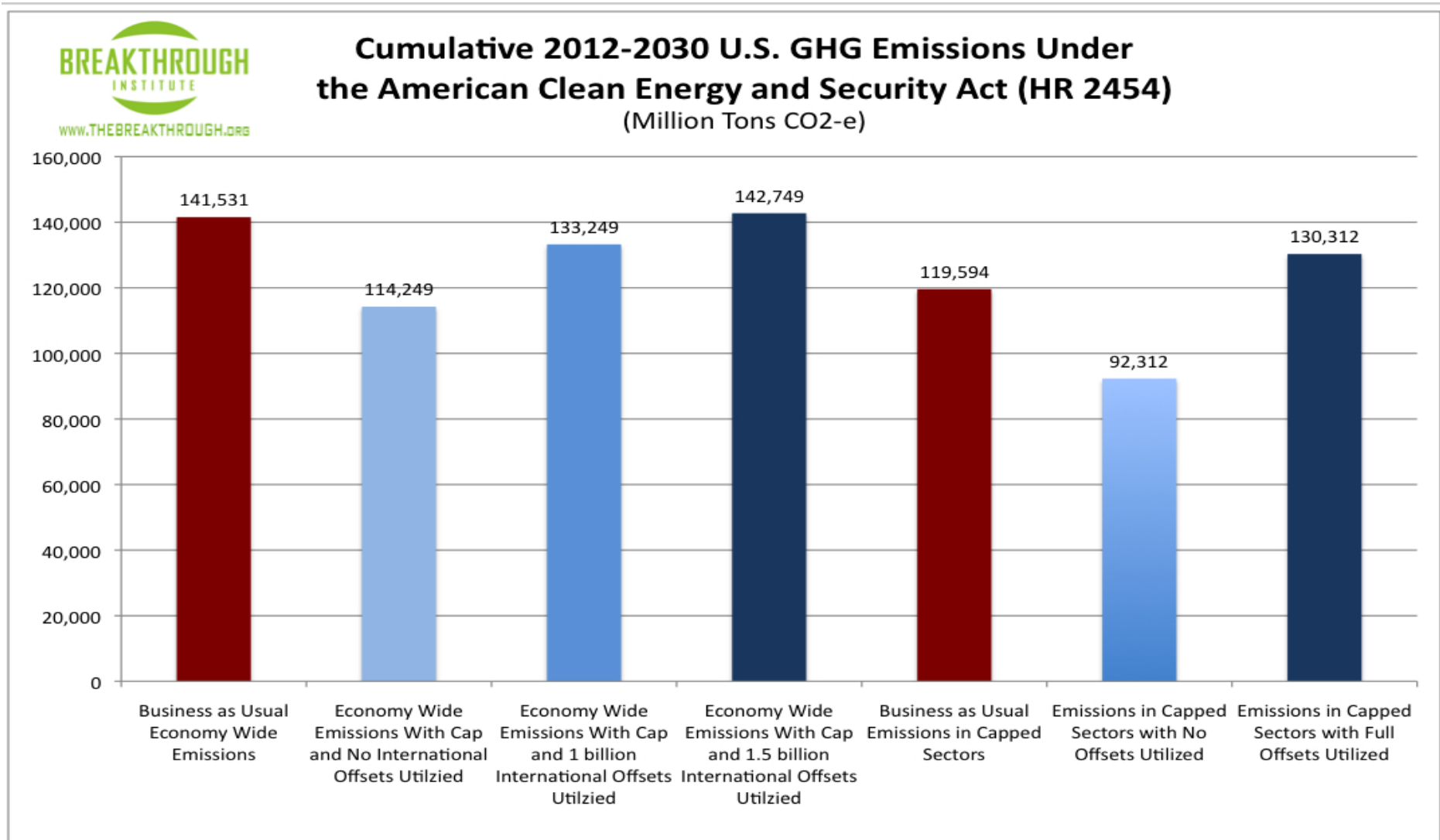


Is the Sun's three-year slumber about to come to an end?



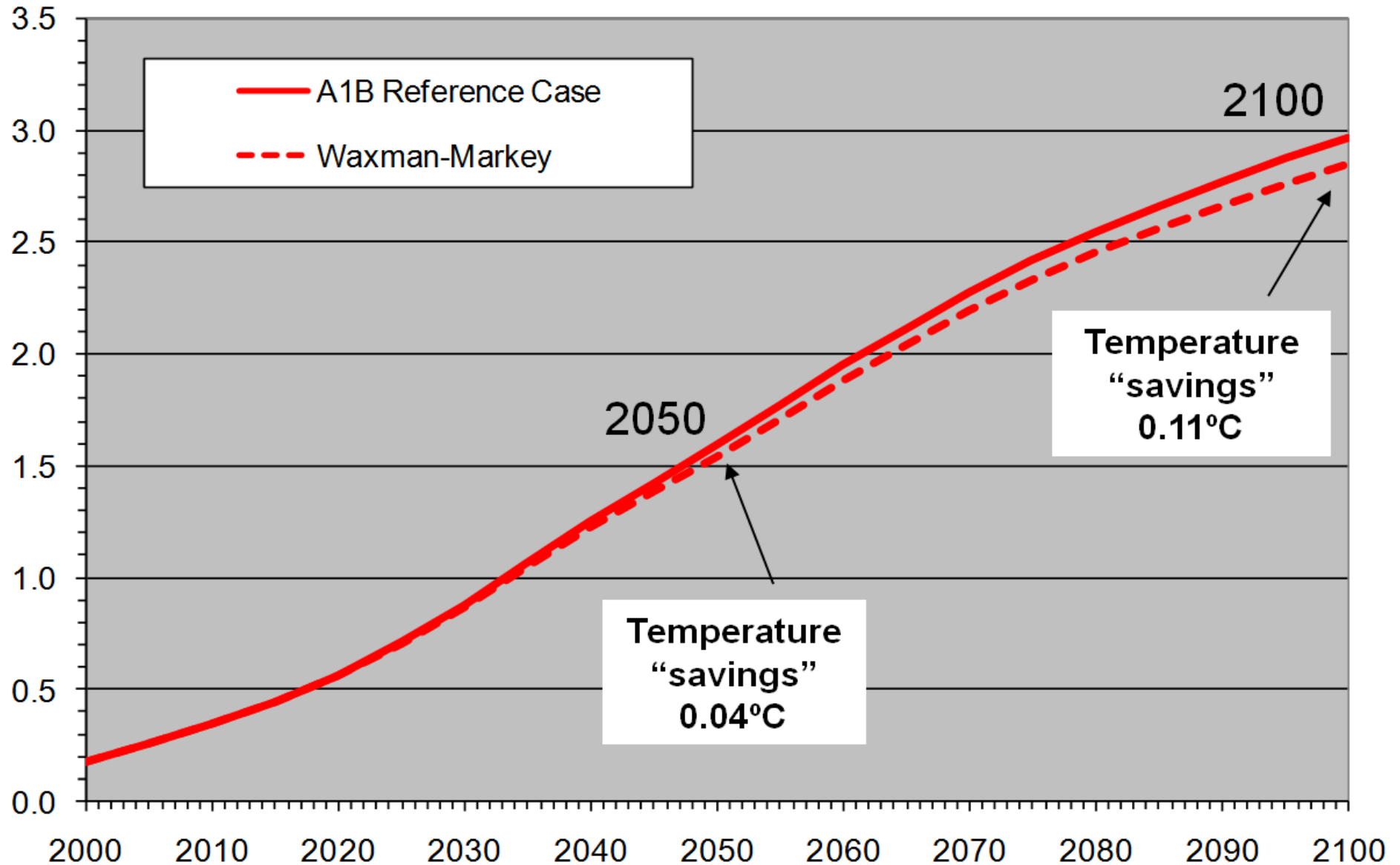
*This colorful helioseismic map of the solar interior shows solar jet-streams as angled red-yellow bands. Black contours denote sunspot activity. When the jet streams reach a critical latitude around 22 degrees (see left scale), sunspot activity intensifies. The previous solar minimum lasted two years. The present solar minimum has already lasted almost three years, and – as our temperature graphs show – global cooling has resulted, suggesting that the Earth's climate may be more sensitive to very small changes in solar output than is currently admitted. See our special feature on how the Sun influences clouds, later in this Report. **Source:** National Solar Observatory, Tucson, Arizona, June 2009.*

Why ‘Taxman/Malarkey’ won’t change the global climate one iota



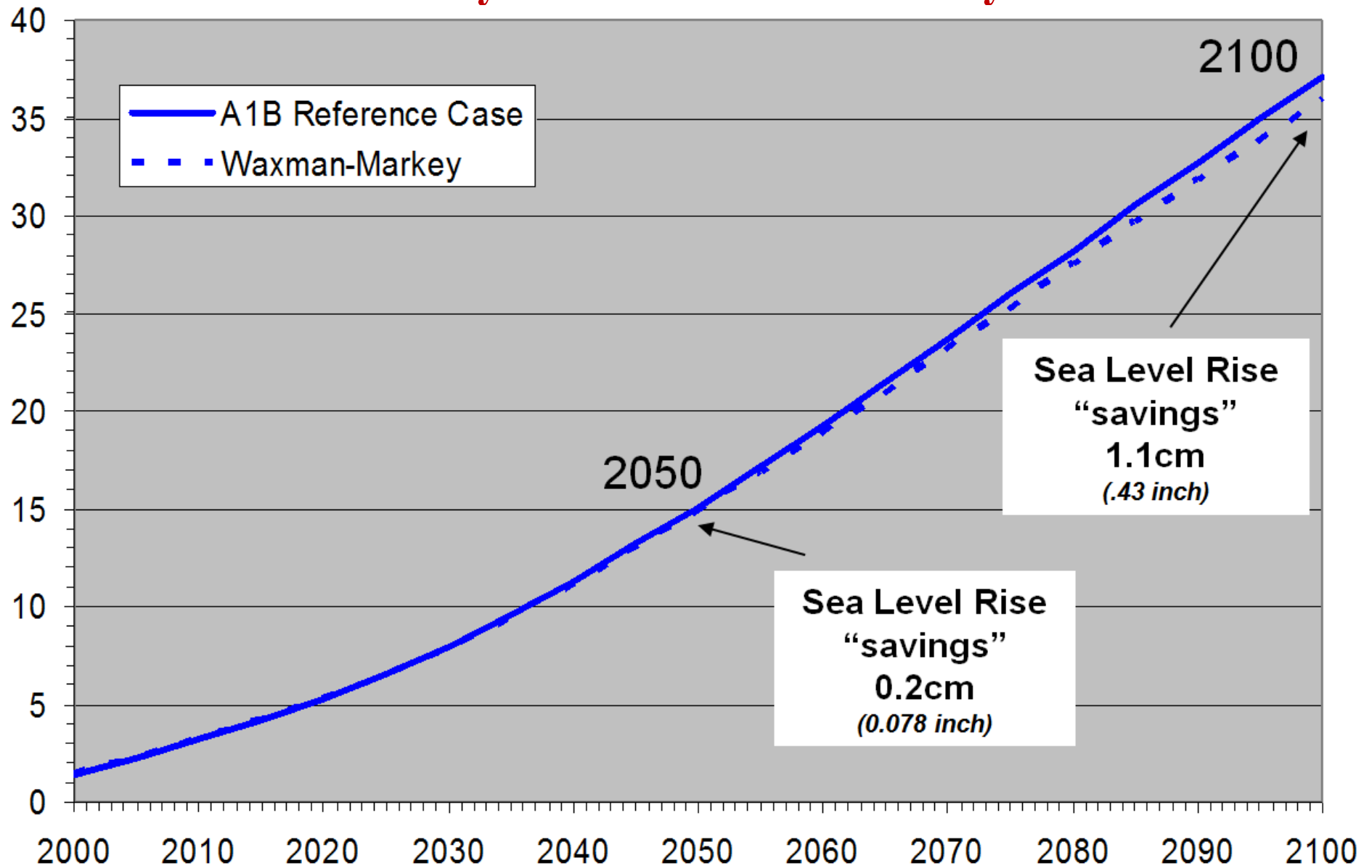
A pointless Bill: The Waxman/Markey Bill will cost billions to implement, but will reduce US carbon emissions hardly at all, unless the numerous exceptions in the Bill are implemented, in which event it will not reduce US carbon emissions at all. **Source:** www.breakthrough.org.

The Waxman/Markey Climate Bill will scarcely affect temperatures



Temperature change predicted by the UN, and (dotted line) adjusted to reflect the negligible impact of the Waxman/Markey Climate Bill, which might cut temperatures by 0.2-0.02 F by 2100, at a cost of \$18 trillion. Source: Chip Knappenberger: cost estimates \$180 bn/year from the White House.

The Waxman/Markey Climate Bill will scarcely affect sea level



Sea-level change predicted by the UN, and (dotted line) adjusted to reflect the negligible impact of the Waxman/Markey Climate Bill, which might cut sea-level by less than half an in by 2100, at a cost of \$18 trillion. Source: Chip Knappenberger: cost estimates \$180 bn/year from the White House.

The Sun, not humankind, drives the climate

A paper by Danish researchers implies that the Sun has more influence over the climate than the UN admits

Billions of tonnes of water droplets vanish from the atmosphere in events that reveal in detail how the Sun and the stars control our everyday clouds. Svensmark *et al.*, in a recent paper, analysed the consequences of eruptions on the Sun that screen the Earth from cosmic rays – energetic particles that reach the Earth from exploding stars. Their research will have a substantial impact on the debate about whether humankind has any significant effect on the global climate.

When solar explosions interfere with cosmic rays, there is a temporary shortage of small aerosols, chemical specks in the air that normally grow until water vapour can condense on them, seeding the liquid water droplets of low-level clouds. Because of the shortage, clouds over the ocean can lose as much as 7 per cent of their liquid water within seven or eight days of the cosmic-ray minimum.

The paper concludes that “a link between the Sun, cosmic rays, aerosols, and liquid-water clouds appears to exist on a global scale”. Svensmark’s latest result provides powerful confirmation of more than a decade of research by him and his team at the Danish National Space Institute, pointing to a key role for cosmic rays in climate change. In particular, it connects observable variations in the world’s cloudiness to laboratory

experiments in Copenhagen showing how cosmic rays help to form the aerosols that form the nuclei of clouds. Other investigators had reported difficulty in finding significant effects of the solar eruptions on clouds.

The Danish researchers studied Forbush decreases, sudden declines in the cosmic-ray count in the Earth’s atmosphere count of cosmic rays. Their earlier research had predicted that the effects should be most noticeable in the lowest 3000 metres of the atmosphere. The team identified 26 Forbush decreases since 1987 that had caused substantial reductions in low-altitude cosmic rays, and looked for the consequences.

They found that the shortage of cosmic rays causes a subtle change in the color of sunlight, as seen by the ground stations of the aerosol robotic network AERONET. By analysing data during and after the reductions in cosmic rays, they found that violet light from the Sun looked brighter than usual. A shortage of small aerosols, which normally scatter violet light as it passes through the air, was the most likely reason. The colour change was greatest about five days after the cosmic-ray counts had fallen to their minimum.

This five-day delay occurs because the immediate action of cosmic rays, seen in laboratory experiments, creates micro-clusters of sulphuric acid and water molecules that are too small to affect the AERONET observations. Only when the clusters

have grown for a few days will they be large enough to be detectable, or else to be noticeable by their absence. The evidence from the aftermath of the Forbush decreases, as scrutinized by Svensmark and his team, gives aerosol experts valuable information about the formation and fate of small aerosols in the Earth's atmosphere.

After five days, the growing aerosols would be capable of affecting sunlight, but would not yet be large enough to collect water droplets. The full impact on clouds only becomes evident two or three days later. It takes the form of a loss of low-altitude clouds, because of the earlier loss of small aerosols that would normally have grown into cloud condensation nuclei capable of seeding the clouds. Three independent sets of satellite observations all confirmed the disappearance of clouds about a week after the cosmic-ray minimum.

Averaging satellite data on the liquid-water content of clouds over the oceans, for the five strongest Forbush decreases between 2001 and 2005, the researchers found a 7 per cent decrease, equivalent to 3 billion tonnes of liquid water disappearing from the atmosphere. The water remains there in vapour form, but unlike cloud droplets it does not impede radiant energy from the Sun. After the same five Forbush decreases, satellites measuring the extent of liquid-water clouds revealed an average reduction of 4 per cent. Other satellites showed a 5 per cent reduction in clouds below 3200 metres over the ocean.

Svensmark has commented: "The effect of the solar explosions on the Earth's cloudiness is huge. A cloud loss of 4 or 5 per cent may not sound very much, but it briefly increases the sunlight reaching the oceans by about 2 Watts per square meter, equivalent to all the 'global warming' during the 20th Century."

Forbush decreases are too short-lived to have a lasting effect on the climate, but they dramatically illustrate the mechanism that

operates during the 11-year solar cycle. When the Sun becomes more active, the decline in low-altitude cosmic radiation is greater than that seen in most Forbush events, and the loss of low cloud cover persists for long enough to warm the world. Svensmark's paper concludes that this explains the alternations of warming and cooling seen in the lower atmosphere and in the oceans during solar cycles.

The director of the Danish National Space Institute, Eigil Friis-Christensen, who co-authored a paper on the effect of cosmic rays on cloud cover with Svensmark in 1996, says: "The evidence has accumulated, first for the link between cosmic rays and low-level clouds and then, by experiment and observation, for the mechanism involving aerosols. All these consistent scientific results illustrate that the current climate models used to predict future climate are failing to incorporate important elements of the physics".

Forbush decreases take their name from the American physicist Scott E. Forbush, who first noticed them more than 70 years ago. Nowadays they are known to be the result of ejections of magnetized gas from the Sun that pass near the Earth and sweep aside some of the incoming cosmic rays. The team analysed dozens of Forbush decreases since 1987. They used data from 146 stations that count cosmic-ray neutrons, and from a multi-directional telescope in Japan that observes muons, the most important cosmic-ray particles near the Earth's surface. Each solar outburst altered the pattern of cosmic-ray energies in a distinctive way, making it possible to calculate cosmic-ray intensities in the lower atmosphere.

The significance of Svensmark's results is considerable. His work establishes that very small changes in solar irradiance, persisting over time, can cause substantial changes in global mean surface temperature. The UN had assumed the Sun's influence was negligible. The UN, it seems, was wrong.

SPPI MONTHLY CO₂ REPORT :: YOUR ZONE

HOW TO CALCULATE THE EFFECT OF CO₂ ON TEMPERATURE FOR YOURSELF

Your ‘global-warming’ ready reckoner

Here is a step-by-step, do-it-yourself ready-reckoner which will let you use a pocket calculator to make your own instant estimate of global temperature change in response to increases in atmospheric CO₂ concentration.

- ✚ **STEP 1:** Decide how far into the future you want your forecast to go, and estimate how much CO₂ will be in the atmosphere at that date. *Example:* Let us do a forecast to 2100. The **MONTHLY CO₂ REPORT** charts show CO₂ rising to **C = 575** parts per million by the end of the century, compared with **B = 385** parts per million in late 2008.
- ✚ **STEP 2:** Next, work out the *proportionate increase C/B* in CO₂ concentration. In our example, **C/B = 575/385 = 1.49**.
- ✚ **STEP 3:** Take the *natural logarithm ln(C/B)* of the proportionate increase. If you have a scientific calculator, find the natural logarithm directly using the “ln” button. If not, look up the logarithm in the table below. In our example, **ln 1.49 = 0.40**.

<i>n</i>	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00
ln	0.05	0.10	0.14	0.18	0.22	0.26	0.30	0.34	0.37	0.41	0.44	0.47	0.50	0.53	0.56	0.59	0.62	0.64	0.67	0.69
<i>n</i>	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00
ln	0.72	0.74	0.77	0.79	0.81	0.83	0.85	0.88	0.90	0.92	0.94	0.96	0.97	0.99	1.01	1.03	1.05	1.06	1.08	1.10

- ✚ **STEP 4:** Choose a *climate sensitivity coefficient c* from the table below –

Coefficient <i>c</i> ...	SPPI minimum	SPPI central	SPPI maximum	IPCC minimum	IPCC central	IPCC maximum
... for C°	0.7	1.4	2.1	2.9	4.7	6.5
... for F°	1.25	2.50	3.75	5.25	8.5	11.75

- ✚ **STEP 5:** Find the *temperature change ΔT* by multiplying the natural logarithm of the proportionate increase in CO₂ concentration by your climate sensitivity coefficient. In our example, we’ll chose the SPPI central estimate **c = 2.50 F**. Then –

$$\Delta T = c \ln(C/B) = 2.50 \times 0.40 = 1.0 \text{ F}^\circ, \text{ your predicted manmade warming to 2100. It's as simple as that!}$$

SPPI MONTHLY CO₂ REPORT :: NEW SCIENCE

BREAKING NEWS IN THE JOURNALS, FROM [WWW.CO2SCIENCE.ORG](http://www.co2science.org)

The *Monthly CO₂ Report* summarizes key recent scientific papers, selected from those featured weekly at www.co2science.org, that significantly add to our understanding of the climate question. This month we review papers about wind catastrophes, global drought, ocean acidification and infectious diseases. Our final paper gives evidence that the Middle Ages were warmer than today.

Thirty-Second Summary

- **Wind-caused catastrophes in the United States show "no upward or downward trend" since the 1950s.**
- **Global drought activity of the last half of the 20th century was greatest at the start of that period, when atmospheric CO₂ concentrations and mean global temperatures were far less than they were at its end.**
- **The possibility cannot be rejected that the modern rise in atmospheric CO₂ has had no effect on the pH of the South China Sea.**
- **Although the globe is "significantly warmer than it was a century ago, there is little evidence that climate change has already favored infectious diseases."**
- **718 scientists from 420 institutions in 41 countries on the [co2science.org](http://www.co2science.org) Medieval Warm Period database say the Middle Ages were warmer than today.**

Wind-Caused Catastrophes in the United States

- Changnon, S.A. 2009. Temporal and spatial distributions of wind storm damages in the United States. *Climatic Change* **94**: 473-482.

Working with data from the insurance industry -- which the U.S. National Academy of Sciences considers "the best of all forms of historical storm loss data in the nation" -- Changnon (2009) analyzed "catastrophes caused solely by high winds" that had had their losses adjusted so as to make them "comparable to current year [2006] values." Results indicated that although the *average monetary loss* of each year's catastrophes "had an upward linear trend over time, statistically significant at the 2% level," when the *number* of each year's catastrophes was considered, it was found that "low values occurred in the early years (1952-1966) and in later years (1977-2006)," while "the peak of incidences came during 1977-1991." Thus, it was not surprising, as Changnon describes it, that **"the fit of a linear trend to the annual [catastrophe number] data showed no upward or downward trend."** Given these findings, whereas climate alarmists contend that storms with extremely destructive winds become more frequent as the world warms, this impressive set of real-world data indicates that such is not the case in the United States.

Global Droughts of the Last Half of the 20th Century

- Sheffield, J., Andreadis, K.M., Wood, E.F. and Lettenmaier, D.P. 2009. Global and continental drought in the second half of the twentieth century: severity-area-duration analysis and temporal variability of large-scale events. *Journal of Climate* **22**: 1962-1981.

Sheffield *et al.* (2009) note that drought is "among the costliest and most widespread of natural disasters," and that it is "generally driven by extremes in the natural variation of climate ... modulated by external forcings such as variations in solar input and atmospheric composition, either natural or anthropogenic." Using "observation-driven simulations of global terrestrial hydrology and a cluster algorithm that searches for spatially connected regions of soil moisture," the authors "identified 296 large scale drought events (greater than 500,000 km² and longer than 3 months) globally for 1950-2000." Results indicated that "the mid-1950s showed the highest drought activity and the mid-1970s to mid-1980s the lowest activity." Given these results, if anthropogenic CO₂ emissions and the global warming they are supposed to produce are responsible for catastrophic droughts, as the U.S. Environmental Protection Agency has recently declared them to be, it seems strange indeed that **the global drought activity of the last half of the 20th century was greatest at the start of that period, when atmospheric CO₂ concentrations and mean global temperatures were far less than they were at its end.** Thus, the supposed *twin evils* of the radical environmentalist movement are not in any way responsible for the temporal variation of extreme drought activity over the last half of the 20th century.

Reconstructing Seawater pH in the South China Sea

- Liu, Y., Liu, W., Peng, Z., Xiao, Y., Wei, G., Sun, W., He, J. Liu, G. and Chou, C.-L. 2009. Instability of seawater pH in the South China Sea during the mid-late Holocene: Evidence from boron isotopic composition of corals. *Geochimica et Cosmochimica Acta* **73**: 1264-1272.

There is much concern that the current and ongoing rise in the atmosphere's CO₂ concentration is leading to a significant decrease in the pH of the world's oceans, in response to the ocean's absorption of a large fraction of global anthropogenic CO₂ emissions each year. Already, it has been estimated, for example, that global seawater has been acidified by 0.1 pH units relative to pre-industrial times, and model calculations predict an additional 0.7 unit drop by the year 2300 (Caldeira and Wickett, 2003), which decline is hypothesized to cause great harm to marine life, especially calcifying organisms such as corals. But how valid are such claims? Has the 100 ppm rise, or 36% increase, in atmospheric CO₂ concentrations truly reduced oceanic pH since pre-industrial times as the models say it has? What role does natural variability play? An intriguing new study sheds some revealing light on such questions.

Noting that "seawater pH records that exceed a single decade are not yet available which [time period] is too short to distinguish anthropogenic and natural external forcing and fully understand natural variability of the ocean pH," Liu *et al.* analyzed the boron isotopic composition ($\delta^{11}\text{B}$) of fossil corals in an effort to reconstruct a Holocene history of sea surface pH variations for the South China Sea. Results indicate that the $\delta^{11}\text{B}$ -derived pH values for the South China Sea fluctuated between a pH of 7.91 and 8.29 during the past seven thousand years, revealing a large natural fluctuation in this parameter that is nearly *four times* the 0.1 pH unit decline the acidification alarmists predict should have occurred since pre-industrial times. Given these results, **one cannot reject the possibility that the modern rise in atmospheric CO₂ has had no effect on the pH of the South China Sea.**

Climate Change and Infectious Diseases

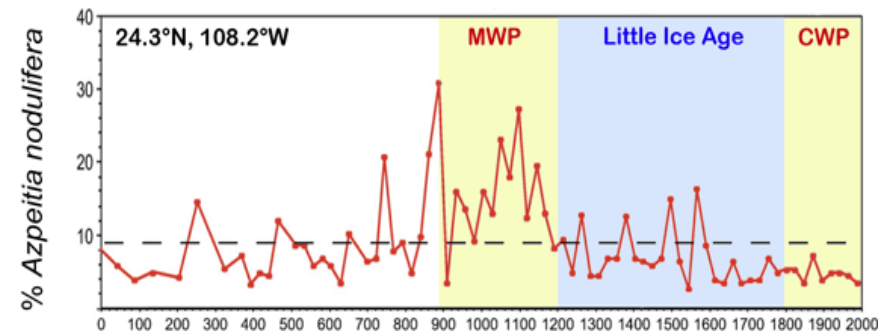
- Lafferty, K.D. 2009. The ecology of climate change and infectious diseases. *Ecology* **90**: 888-900.

The "conventional wisdom," in the words of Lafferty (2009), "is that global climate change will result in an expansion of tropical diseases, particularly vector-transmitted diseases, throughout temperate areas," examples of which include "schistosomiasis (bilharzia or snail fever), onchocerciasis (river blindness), dengue fever, lymphatic filariasis (elephantiasis), African trypanosomiasis (sleeping sickness), leishmaniasis, American trypanosomiasis (Chagas disease), yellow fever, and many less common mosquito and tick-transmitted diseases of humans," as well as many diseases of "nonhuman hosts." After reviewing the scientific literature, however, the U.S. government researcher concludes that "while climate has affected and will continue to affect habitat suitability for infectious diseases, climate change seems more likely to shift than to expand the geographic ranges of infectious diseases," and that "many other factors affect the distribution of infectious disease, dampening the proposed role of climate." In fact, he concludes that "shifts in climate suitability might actually reduce the geographic distribution of some infectious diseases." And of perhaps even greater import (because it is a real-world *observation*), he reports that **"although the globe is significantly warmer than it was a century ago, there is little evidence that climate change has already favored infectious diseases."** So, will global warming lead to dramatic increases in the incidence of various infectious diseases, as climate alarmists claim it will? Lafferty's review of pertinent biological phenomena suggests that it *need* not do so, while his review of real-world observations suggests that it *has* not done so. Hence, in all likelihood, it probably *will* not do so.

The Middle Ages were warmer than today: Pescadero Basin, Gulf of California, Mexico

- Barron, J.A. and Bukry, D. 2007. Solar forcing of Gulf of California climate during the past 2000 yr suggested by diatoms and silicoflagellates. *Marine Micropaleontology* **62**: 115-139.

Barron and Bukry (2007) developed high-resolution records of diatoms and silicoflagellate assemblages spanning the past 2000 years from analyses of a sediment core extracted from Pescadero Basin in the Gulf of California (24°16.78'N, 108°11.65'W). Results indicated that **the relative abundance of *Azpeitia nodulifera* (a tropical diatom whose presence suggests the occurrence of higher sea surface temperatures), was found to be far greater during the Medieval Warm Period than at any other time over the 2000-year period studied**, while during the Modern Warm Period its relative abundance was actually *lower* than the 2000-year *mean*.



TECHNICAL :: HOW WE COMPILE OUR GRAPHS

HOW WE DEMONSTRATE THAT “GLOBAL WARMING” IS NOT “GETTING WORSE”

Letting the real-world data speak out

BEFORE we began producing the *Monthly CO₂ Reports*, it was easy for “global warming” profiteers to pretend, and repeatedly to state, that “global warming” is “getting worse”, and that the climate is changing “faster than expected”. Now they are unable to get away with such falsehoods as easily as before.

The centerpieces of our monthly series of graphs showing what is happening in the real world are our CO₂ and temperature graphs, now regarded as the definitive standard worldwide.

Our CO₂ concentration graphs show changes in real-world CO₂ concentration as measured by monitoring stations worldwide and compiled by NOAA. We also calculate and display the least-squares linear-regression trend on the real-world data. Because this trend has been very close to a straight line since late 2001, it is the best guide to future CO₂ concentration. We also display the range of UN projections for CO₂ concentration, based on its A2 “business as usual” scenario – the one that comes closest to reality at present. The one difference is that, for clarity, we zero the UN’s projections to the start-point of the linear regression trend on the real-world data.

The UN predicts that, this century, CO₂ concentration will rise exponentially – at an ever-increasing rate – towards **836** [730, 1020] parts per million by volume in 2100. In reality, however, for eight years CO₂ concentration has been trending in a straight line towards just **575 ppmv** by 2100. If this linear trend continues, all of the UN’s predictions for 21st-century warming will have to be halved.

Our global-temperature graphs show changes in real-world temperature at or near the Earth’s surface. Each temperature graph represents the mean of one surface and two satellite datasets: the monthly surface temperature anomalies from the Hadley Center in the UK, and the lower-troposphere anomalies from the satellites of Remote Sensing Systems, Inc., and of the University of Alabama at Huntsville. We do not use the NCDC/GISS datasets.

On each graph, the anomalies are zeroed to the least element in the dataset. For clarity, the IPCC’s range of predictions is zeroed to the start-point of the least-squares linear-regression trend on the real-world data. Since late 2001, global temperature has been falling fast.

To preserve consistency with the IPCC’s published formulae for evaluating climate sensitivity to atmospheric CO₂ enrichment, the IPCC’s projections are evaluated directly from its projected *exponential* growth in CO₂ concentration using the IPCC’s own *logarithmic* formula for equilibrium temperature change, yielding a *net-linear* range of projections.

Equilibrium change – final temperature response when the climate has settled down after an external perturbation – is greater than the *transient* change predicted by the UN. However, on the A2 scenario that we use, the difference by 2100 is just 0.5 C° (0.9 F°). Therefore, when “global-warming” profiteers say warming “in the pipeline” will go on for “thousands of years”, 0.5 C° of additional warming is all that they are talking about.

Monckton of Brenchley