

SPPI Monthly CO₂ Report



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Christopher Monckton, Editor

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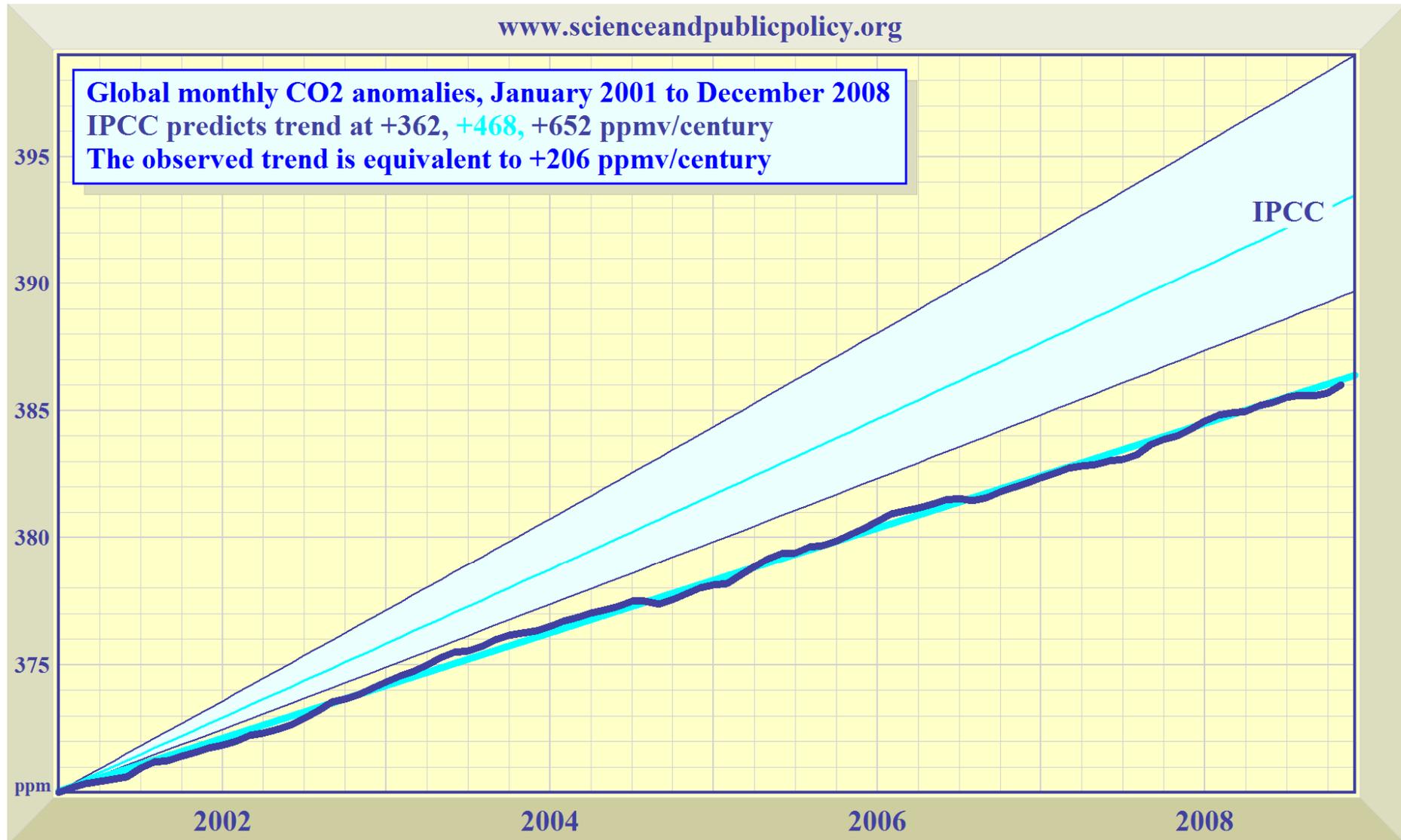
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The Bush Years: 8 years' global cooling

SPPI's **MONTHLY CO₂ REPORT** shows that throughout the eight years of George Bush's presidency there has been a **downtrend in global temperature at a rate equivalent to 2 °F (1.1 °C) per century. Main points –**

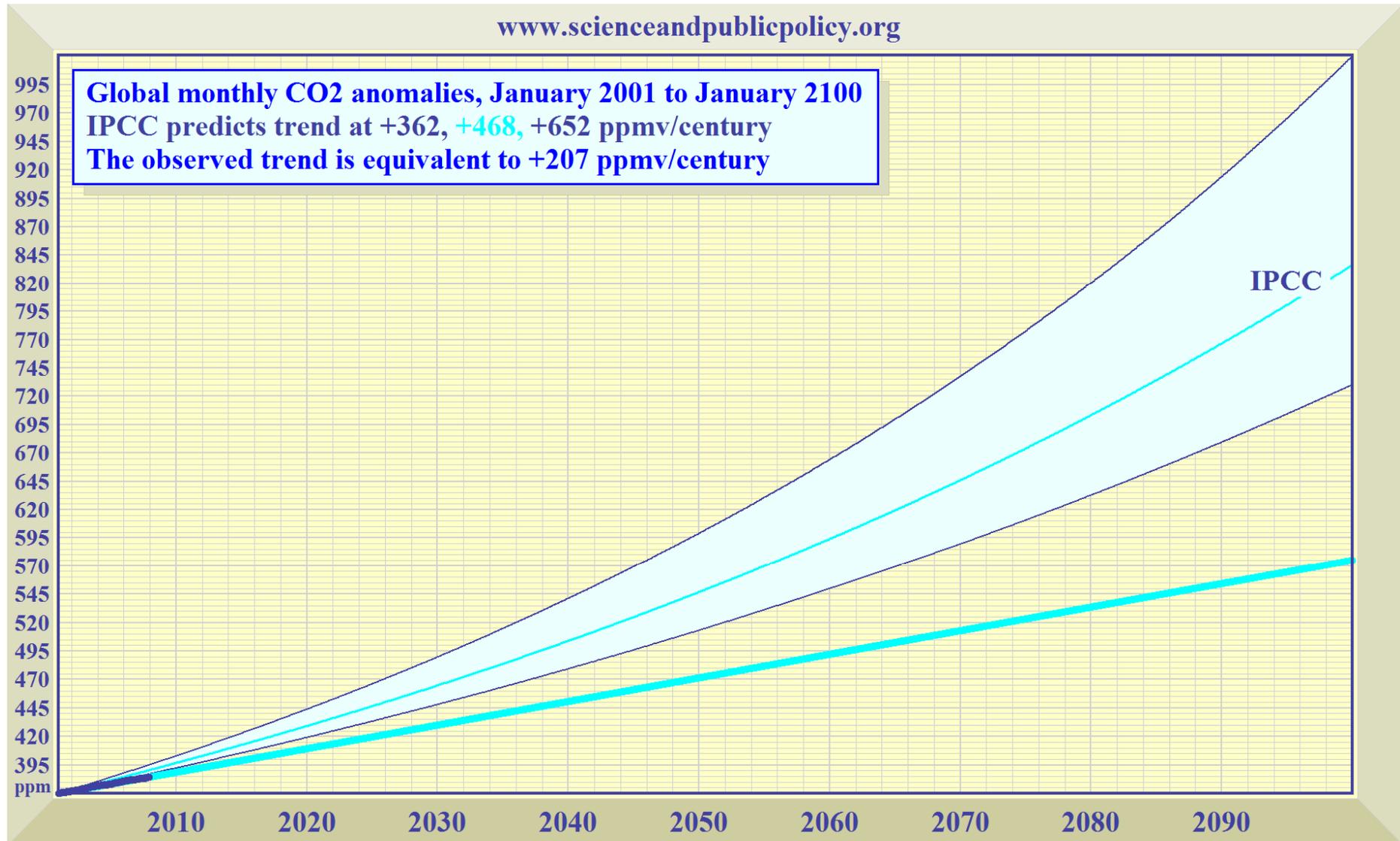
- ✚ Since Al Gore's climate movie *An Inconvenient Truth* was launched in January 2005, global *cooling* has occurred at the equivalent of 11 °F (6 °C) per century. If this very rapid cooling were to continue, the Earth would be in **an Ice Age by 2100.**
- ✚ The UN's climate panel, the IPCC, had projected temperature increases at 4.5 to 9.5 °F (2.4 to 5.3 °C) per century, with a central estimate of 7 °F (3.9 °C) per century. **None of the IPCC's computer models had predicted a prolonged cooling.**
- ✚ The **IPCC's estimates of growth in atmospheric CO₂ concentration are excessive.** They assume CO₂ concentration will rise exponentially from today's 385 parts per million to reach 730 to 1020 ppm, central estimate 836 ppm, by 2100.
- ✚ However, during President Bush's eight-year term, CO₂ concentration rose in a straight line towards just 575 ppmv by 2100. This alone **halves the IPCC's temperature projections.** Since 1980 temperature has risen at only 2.5 °F (1.5 °C) per century.
- ✚ The University of Colorado has published no sea-level data from the JASON monitoring satellite since the summer of 2008. However, **sea level has been rising at just 1 ft (32 cm) per century,** well below the IPCC's recently-reduced 2 ft maximum.
- ✚ Sea ice extent in the Arctic recovered to the 30-year average during the early winter of 2008. In the Antarctic, sea ice extent reached a record high late in 2007, and has remained plentiful since. **Global sea ice extent shows no trend for 30 years.**
- ✚ The Accumulated Cyclone Energy Index is a 24-month running sum of monthly energy levels in all hurricanes, typhoons and tropical cyclones. **The Accumulated Cyclone Energy Index hit a 30-year low in October 2008.**
- ✚ A paper explaining how SPPI's CO₂ and temperature graphs are computer-generated is under peer review and will be available soon. For future editions of the **MONTHLY CO₂ REPORT**, go to www.scienceandpublicpolicy.org.

CO2 concentration is rising, but is well below IPCC predictions



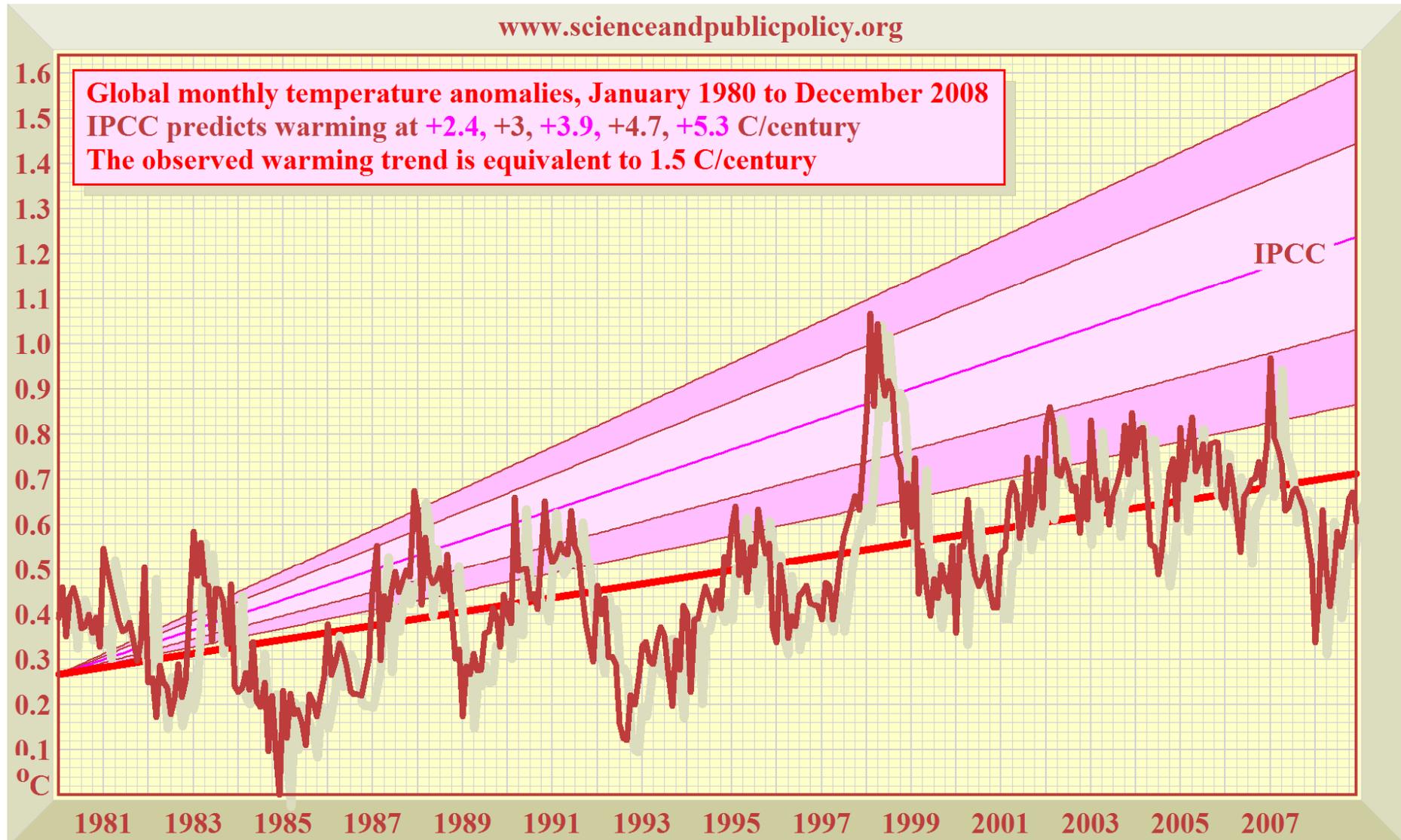
CO2 is rising in a straight line, well below the IPCC's projected range of increases in CO2 concentration (pale blue region). The deseasonalized real-world data are shown as a thick, dark-blue line superimposed on the least-squares linear-regression trend. **Data source:** NOAA.

IPCC predicts rapid, exponential CO₂ growth that is not occurring



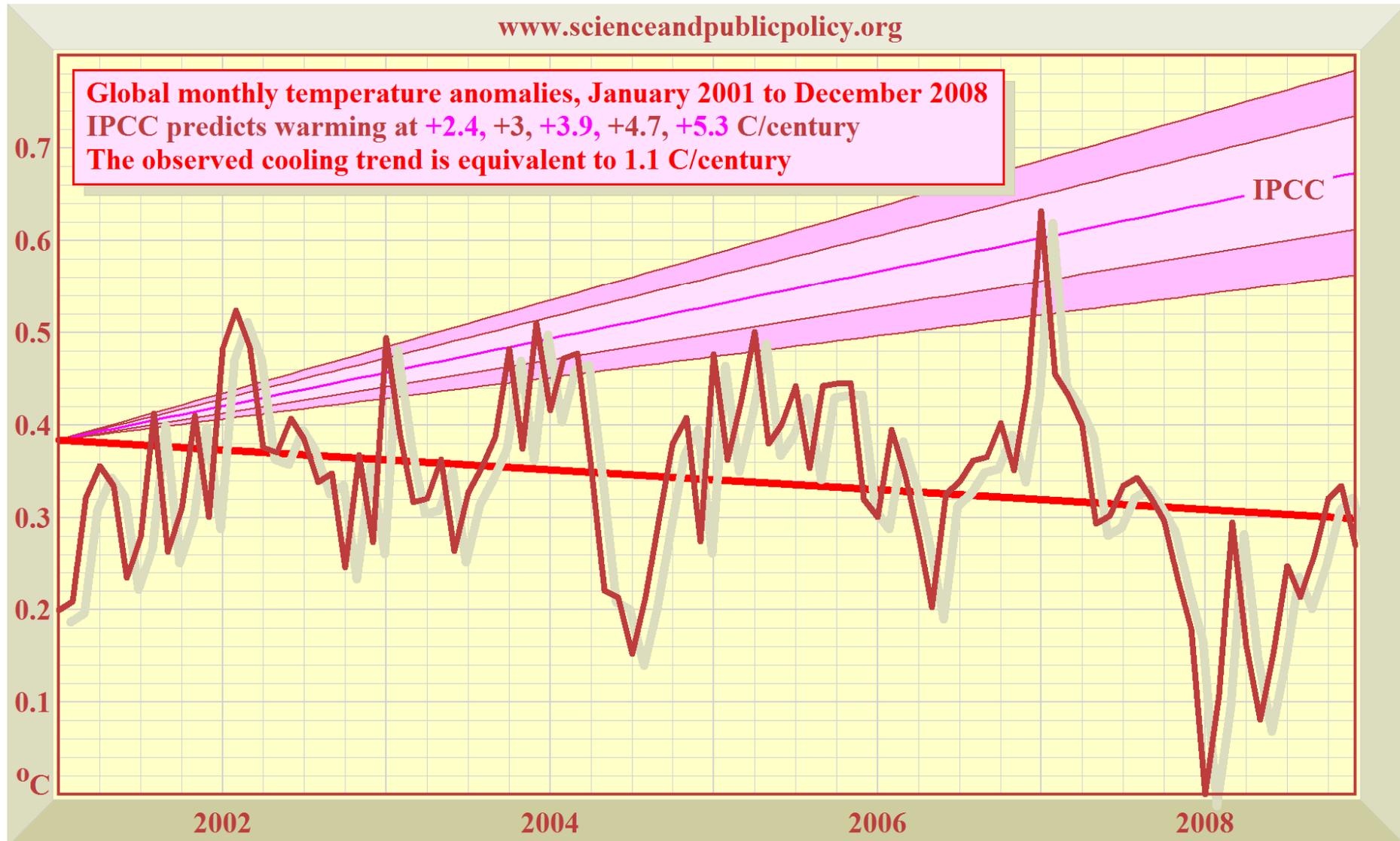
Observed CO₂ growth is linear, and is also well below the exponential-growth curves (bounding the pale blue region) predicted by the IPCC in its 2007 report. If CO₂ continues on its present path, the IPCC's central temperature projection for the year 2100 must be halved. Data source: NOAA.

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



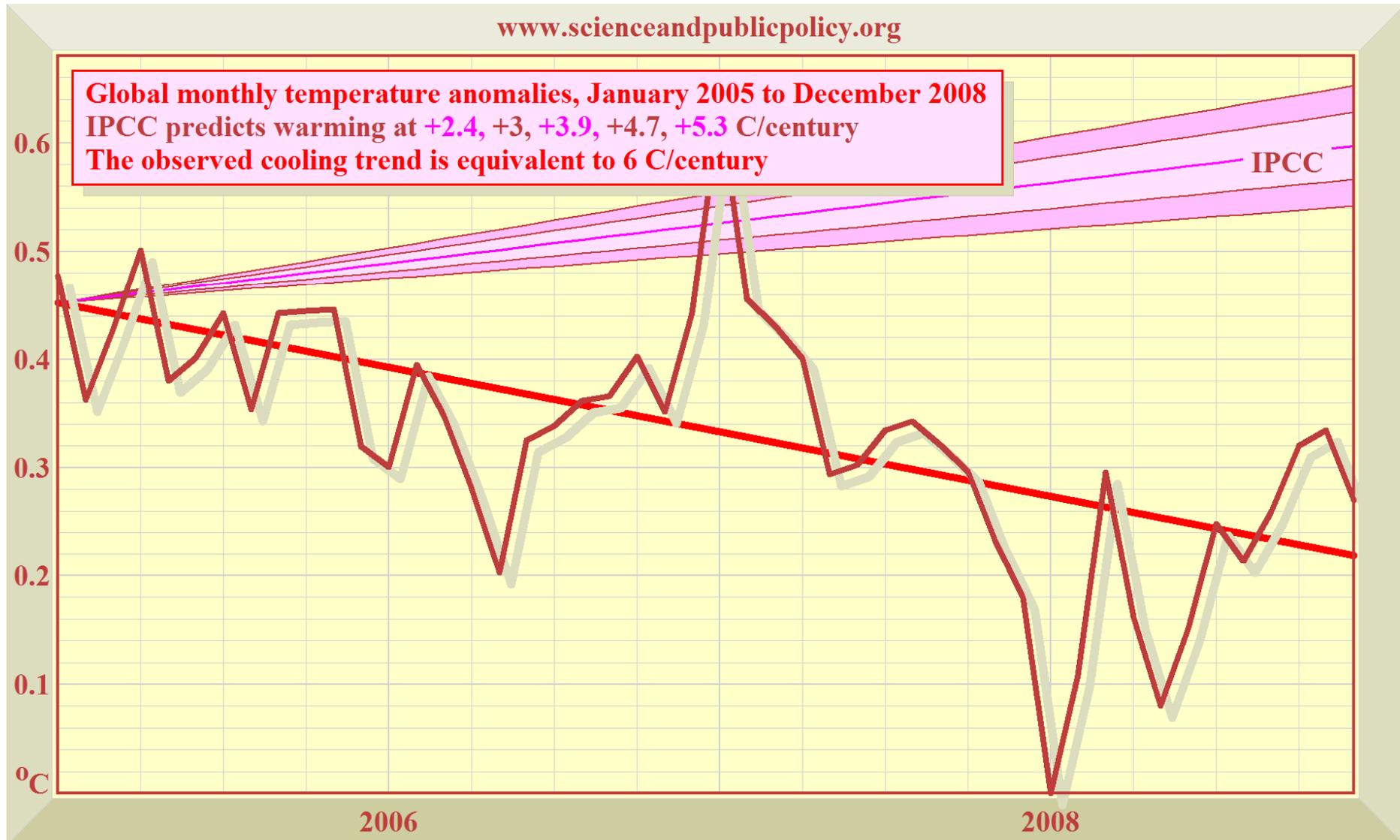
Global temperature for the past 29 years has been undershooting the IPCC's currently-predicted warming rates (pink region). The warming trend (thick red line) has been rising at well below half of the IPCC's central estimate. **Data source:** SPPI index, compiled from HadCRUt3, NCDC, RSS, and UAH.

The Bush Years: 8 years' global cooling at 2 °F (1.1 °C) per century



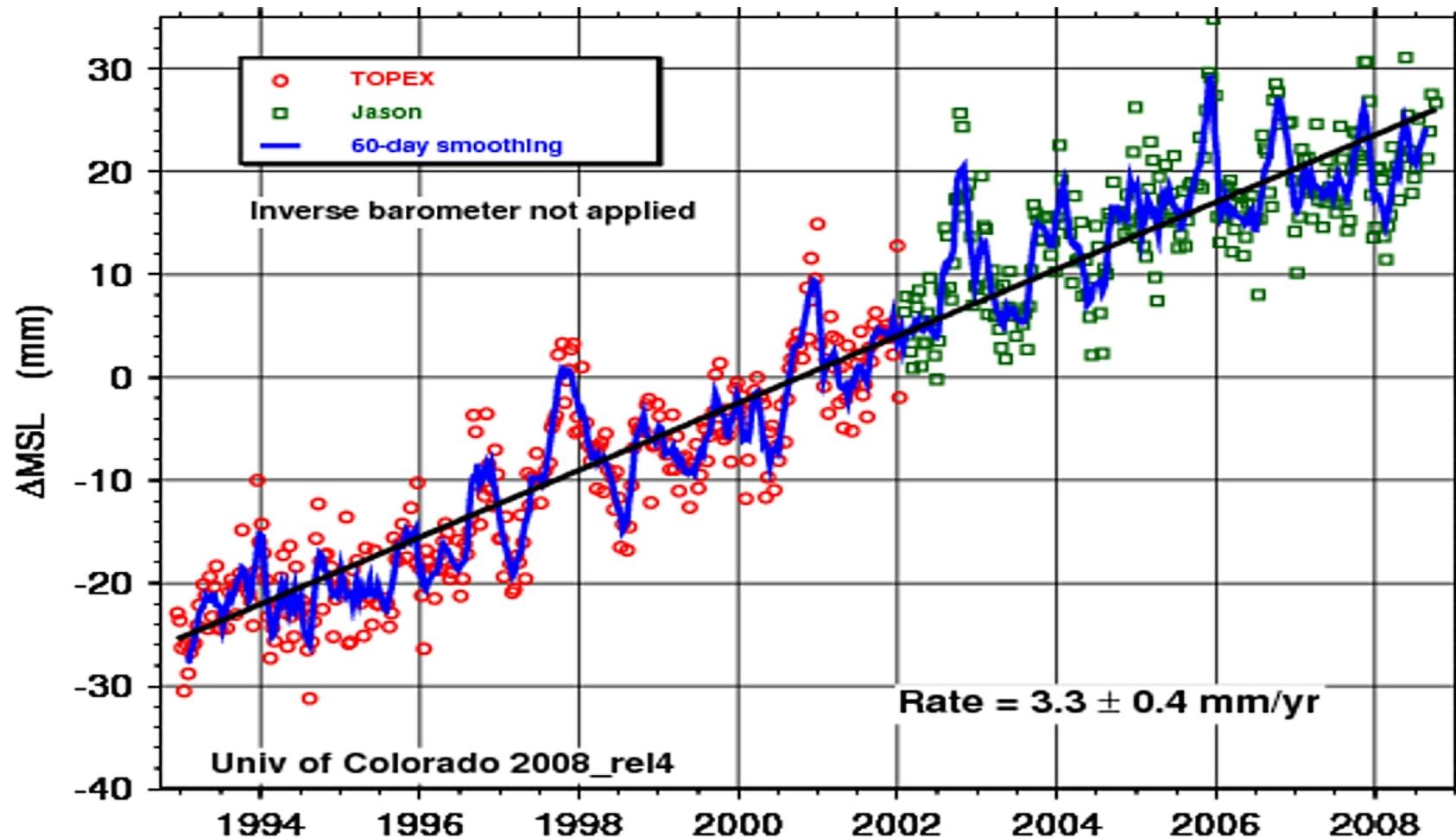
In defiance of prediction, throughout the Bush presidency global temperatures were on a pronounced downtrend. The IPCC's predicted warming path (pink region) bears no relation to the global cooling that has been observed in the 21st century to date. Source: SPPI global temperature index.

The Gore Years: 4 years' rapid cooling at 11 °F (6 °C) per century



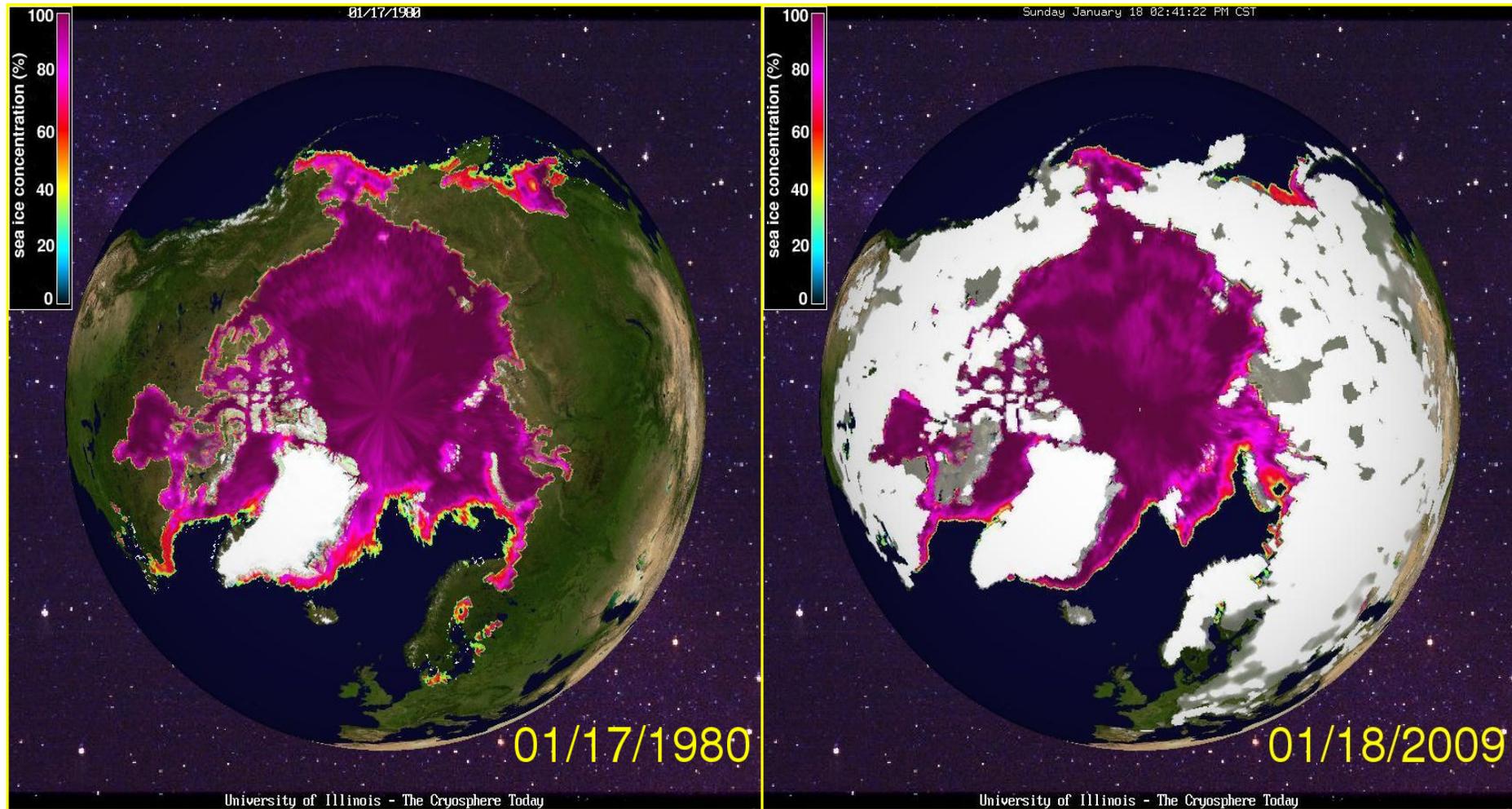
Global cooling has been particularly rapid since Al Gore launched his climate movie. If the cooling trend of the past four years were to persist, there would be an Ice Age by 2100. The cooling has been caused partly by a prolonged la Nina, partly by the current prolonged solar minimum. **Source:** SPPI Index.

Sea level is rising 1 ft/century, half the IPCC's projected maximum



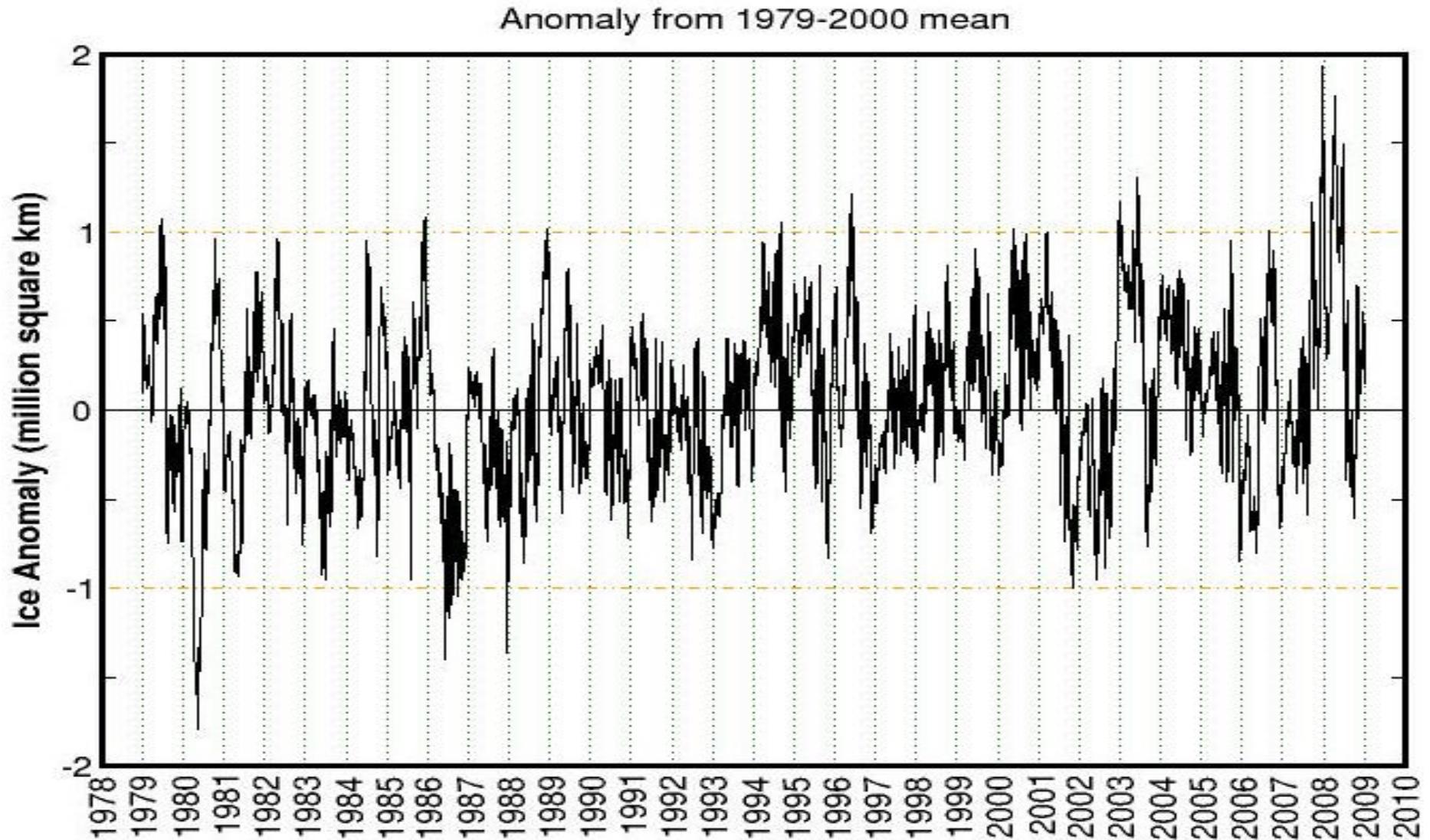
Steady rise in sea level: The average rise in sea level over the past 10,000 years was 4 feet/century. Now, sea-level rise is little more than 1 ft/century. As recently as 2001, the IPCC had predicted that sea level might rise as much as 3 ft in the 21st century. However, this maximum was cut by more than one-third to less than 2 feet in the IPCC's 2007 report. Moerner (2004) says there is little reason to suppose that sea level will rise in the 21st century by more than the 8 inches observed in the 20th 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." **Source:** University of Colorado.

Arctic sea-ice extent has scarcely declined in the 29 years since 1980



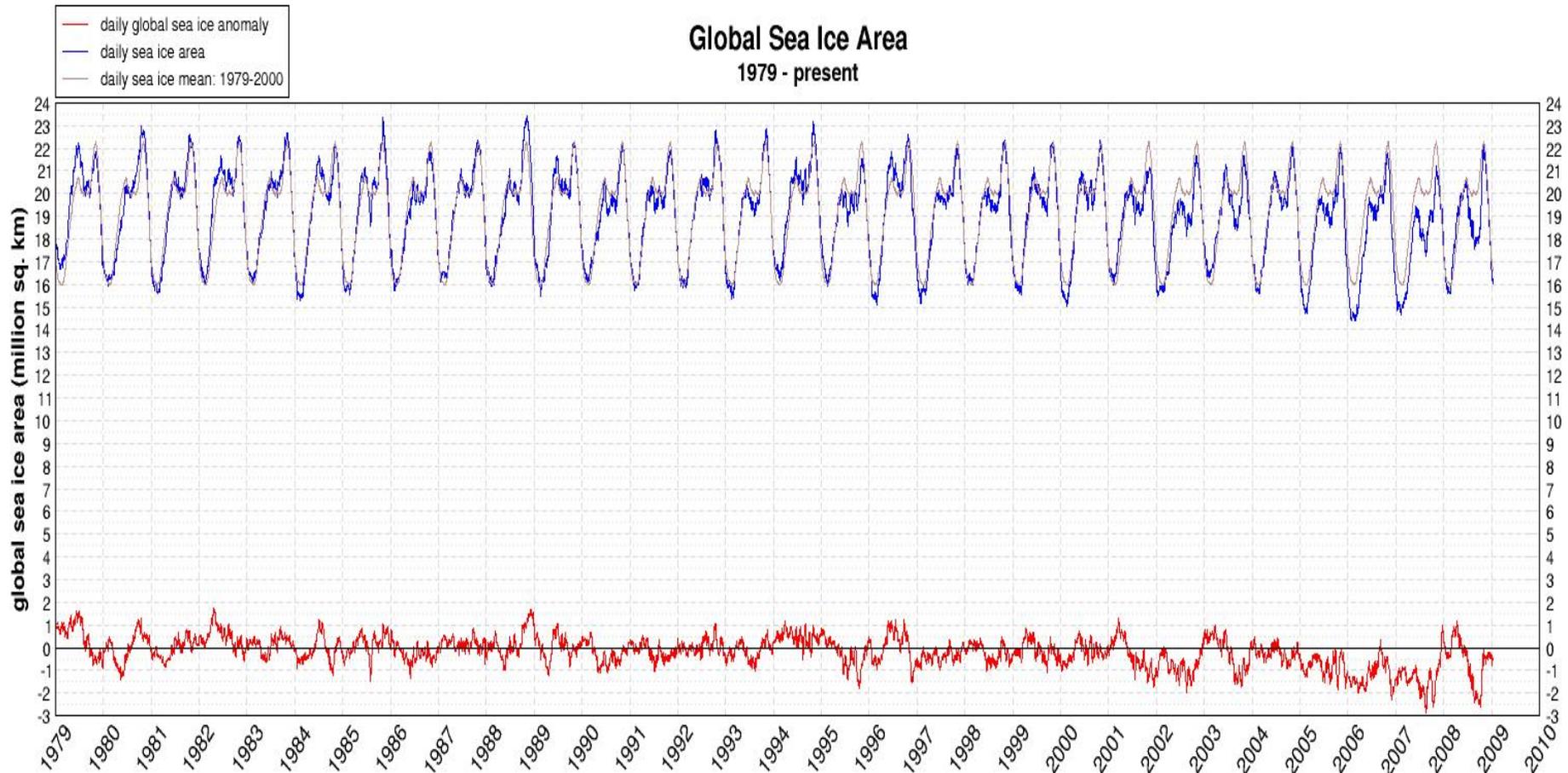
Arctic sea ice (purple region) covered almost the same area of the Northern Hemisphere in mid-January 2009 as it had done 29 years previously in mid-January 1980. Except in Greenland, snow cover was not shown in 1980, but is shown (white) in 2009. Summer sea ice covered its least extent in 30 years during the late summer of 2007. However, NASA has attributed that sudden decline to unusual poleward movements of heat transported by currents and winds. The decline cannot have been caused by “global warming”, because, as the SPPI Global Temperature Index shows, there has been a cooling trend globally during the past eight years. At almost the same moment as summer sea-ice extent reached its minimum in the Arctic, sea-ice extent in the Antarctic reached its maximum, though the latter event was very much less widely reported in the media than the former. **Source:** University of Illinois.

Antarctic sea-ice extent reached a 30-year peak in late 2007



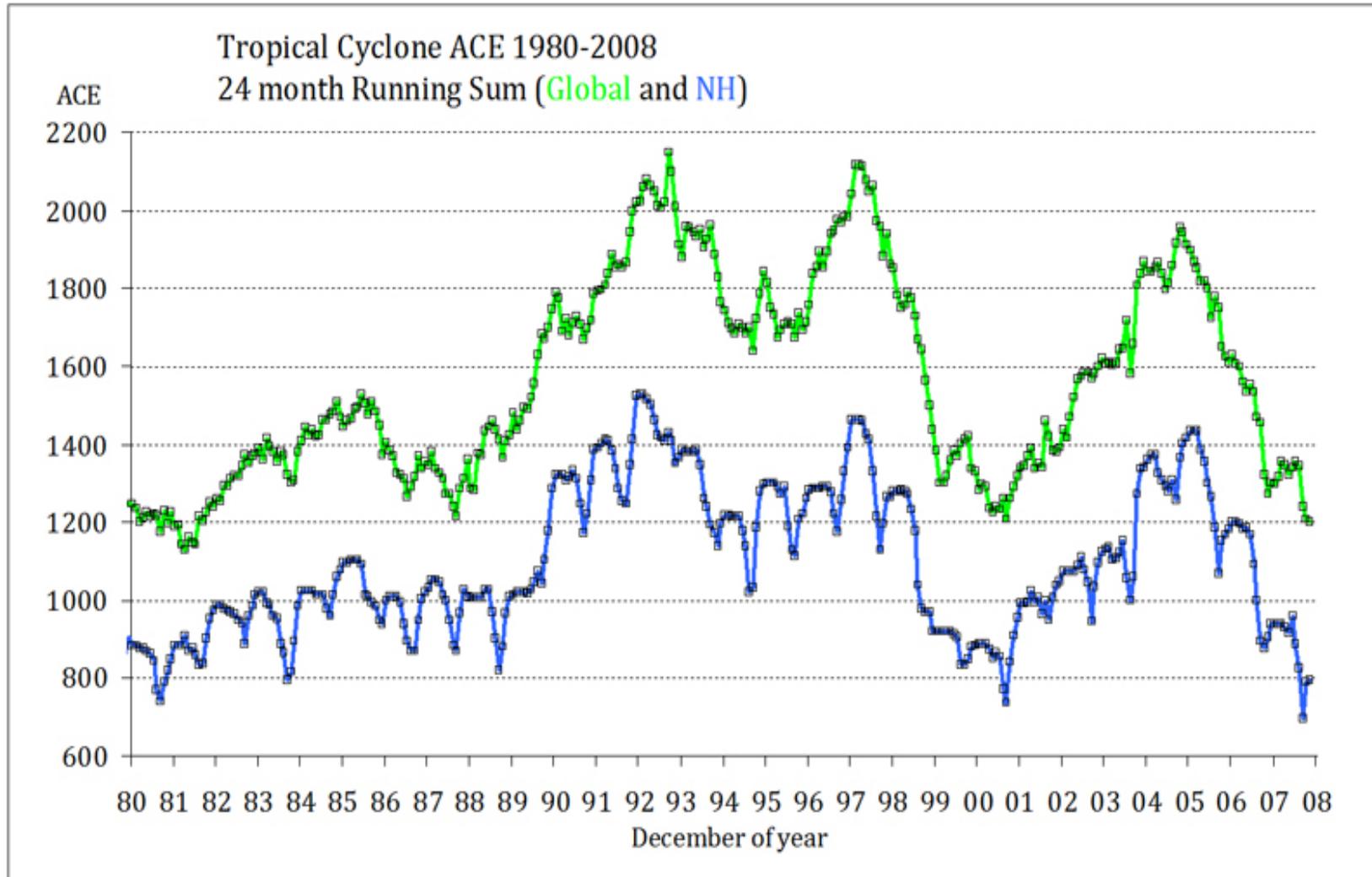
No threat to penguins: The extent of Antarctic sea ice shows a gentle but definite uptrend over the past 30 years. The peak extent, which occurred late in 2007, followed shortly after the sharp decline in Arctic sea ice in the late summer of that year. **Source:** University of Illinois, 2009.

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



Planetary “cardiogram”: There has been a very slight decline in the trend (red) of global sea-ice extent over the decade, 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 2009 peak sea-ice extent was exactly on the 1979-2000 mean. The decline in summer sea-ice extent in the Arctic, reflected in the global anomalies over most of the past eight years, runs counter to the global 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.

Hurricane and tropical cyclone activity reached a new low in 2008



Hurricanes, typhoons, and other tropical cyclones have declined recently. Global activity of intense tropical storms is measured using a two-year running sum, known as the Accumulated Cyclone Energy Index, whose least value in 30 years was recorded in October 2008. **Source:** ACE.

SPPI MONTHLY CO₂ REPORT :: SCIENCE FOCUS

SPOTLIGHT ON THE CHANGING SCIENCE BEHIND THE CHANGING CLIMATE

Your climate-sensitivity ready reckoner

Every month we spotlight a scientific issue in plain English. Here is a step-by-step ready-reckoner which will let you use a pocket calculator to make your own instant estimate of global temperature change in response to CO₂ increase.

- ✚ **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 c ...	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 IPCC central estimate $c = 8.5$ F. Then –

$$\Delta T = c \ln(C/B) = 8.5 \times 0.40 = \underline{3.4 \text{ F}^\circ}, \text{ your predicted manmade warming to 2100. It's as simple as that!}$$

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 the effects of “global warming” on hurricanes, wildfires, sea-level rise, and permafrost. Our final paper gives evidence that the Middle Ages were warmer than today.

Thirty-Second Summary

- **Recent increases in cyclone frequency are not caused by “global warming”.**
- **Human activities have led to a decrease in wildfires over the past 150 years.**
- **Sea level will not rise by more than 0.8 meters this century.**
- **The permafrost will not be thawing anytime soon.**
- **657 scientists from 384 institutions in 40 countries on the [co2science.org](http://www.co2science.org) Medieval Warm Period database say the Middle Ages were warmer than today.**

Tropical Atlantic and Caribbean cyclones

- Chenoweth, M. and Divine, D. 2008. A document-based 318-year record of tropical cyclones in the Lesser Antilles, 1690-2007. *Geochemistry, Geophysics, Geosystems* **9**: 10.1029/2008GC002066.

From newspaper accounts, ships' logbooks, meteorological journals and other records, the authors reconstructed the history of tropical cyclones passing through the 61.5 °W meridian between the coast of South America (~9.7 °N) and 25.0 °N from 1690-2007, “the longest and most complete record for any area of the world.” The authors found “no evidence of statistically significant trend in the number of tropical cyclones passing through the region on any timescale”, but “hurricane frequency is down about 20% in the 20th century compared to earlier centuries” and “this decline is consistent with the 20th-century observed record of decreasing hurricane landfall rates in the U.S. The authors’ results strongly suggest that short-term increases in cyclone frequency appear to be nothing more than a simple recovery from a short-term dip (within a century-scale lull) in yearly cyclone numbers that had reduced them to their lowest frequency in three centuries. **Recent increases in cyclone frequency have nothing to do with anthropogenic “global warming”.**

“Global warming” and wildfires

- Marlon, J.R., Bartlein, P.J., Carcaillet, C., Gavin, D.G., Harrison, S.P., Higuera, P.E., Joos, F., Power, M.J. and Prentice, I.C. 2008. Climate and human influences on global biomass burning over the past two millennia. *Nature Geoscience* **1**: 697-702.

The authors say, “Large, well-documented wildfires have recently generated worldwide attention, and raised concerns about the impacts of humans and climate change on wildfire regimes.” To see what the global wildfire “range of natural variability” has actually been, they used “sedimentary charcoal records spanning six continents to document trends in both natural and anthropogenic biomass burning [over] the past two millennia”. They report that “global biomass burning declined from AD 1 to ~1750, before rising sharply between 1750 and 1870”, after which it “declined abruptly”. They say the initial long-term decline in global biomass burning was due to “a long-term global cooling trend”, while they suggest that the rise in fires that followed was “linked to increasing human influences”. The authors say the decline in fires after 1870 occurred “despite increasing air temperatures and population.” They add that the “reduction in the amount of biomass burned over the past 150 years to the global expansion of intensive grazing, agriculture and fire management”. Despite evidence from prior centuries that planet-wide warming may indeed have had a tendency to promote wildfires on a global basis (since global cooling had a tendency to reduce them), technological developments during the industrial age appear to have overpowered this natural tendency: **Man has become a dominant factor for good in leading to a decrease in global wildfires over the past 150 years.**

Estimating 21st-century sea-level rise

- Pfeffer, W.T., Harper, J.T. and O'Neel, S. 2008. Kinematic constraints on glacier contributions to 21st-Century sea-level rise. *Science* **321**: 1340-1343.

In his testimony of 26 April 2007 before the U.S. House of Representatives’ Select Committee on Energy Independence and “Global Warming”, NASA’s James Hansen said, “There is increasing realization that sea level rise this century may be measured in meters if we follow business-as-usual fossil fuel emissions.” But is this really so? The answer is important because, as Pfeffer *et al.* write in the introduction to their new analysis, “underestimates will prompt inadequate preparation for change, [but] overestimates will exhaust and redirect resources inappropriately.”

The three U.S. researchers gave particular emphasis to Greenland in view of its supposed “vulnerability to ongoing Arctic warming and meltwater-related feedbacks, recent accelerations of ice motion, and its large volume reductions during the last interglacial”, as well as to Antarctica. They used “a simple kinematic approach” that determined the velocities of their outlet glaciers that would be “required to achieve various magnitudes of sea level rise by 2100”. They concluded that “increases in excess of 2 meters are physically untenable”, noting that “a total sea-level rise of about 2 meters by 2100 could occur under physically possible glaciological conditions but only if all variables are quickly accelerated to extremely high limits”, after which “more plausible but still accelerated conditions lead to total sea-level rise by 2100 of about 0.8

meters”. For comparison they indicate that the consensus estimate of the IPCC's most recent Fourth Assessment Report was a sea-level rise of only 0.18 to 0.59 meters by 2100. **James Hansen and Al Gore are wrong to say sea level may rise by several meters this century.**

How permanent is permafrost?

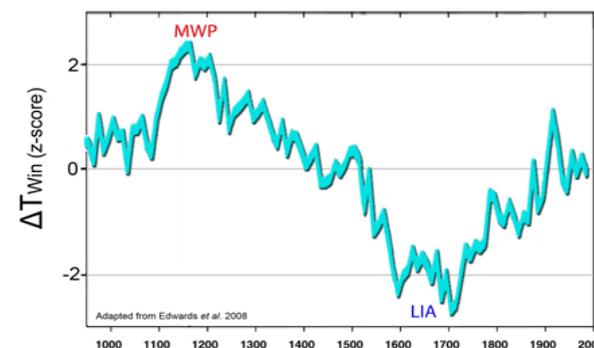
- Froese, D.G., Westgate, J.A., Reyes, A.V., Enkin, R.J. and Preece, S.J. 2008. Ancient permafrost and a future, warmer Arctic. *Science* **321**: 1648.

Warming-induced thawing of peatland permafrost has been predicted to turn boreal and tundra biomes into major carbon sources, releasing massive amounts of long-sequestered carbon to the atmosphere as CO₂ and methane, possibly freeing enough of the two trace gases to rival direct anthropogenic emissions, considerably amplifying “global warming”. Froese *et al.* investigated relict ground ice within the discontinuous permafrost zone of Canada's central Yukon Territory, where they found large vertically-foliated ice wedges within a few meters of the surface that were overlain by a volcanic ash layer (Gold Run tephra). Measurements provided “a weighted-mean age of 740,000 ± 60,000 years before present”, consistent with “faunal ages associated with this bed and the normal magnetic polarity of the surrounding sediments”. Their observations indicate that “permafrost has survived within the discontinuous permafrost zone since at least the early-Middle Pleistocene”, noting that “this age range includes several glacial-interglacial cycles ... considered to be longer and warmer than the present interglaciation”. They say their finding “highlights the resilience of permafrost to past warmer climate and suggests that permafrost and associated carbon reservoirs more than a few meters below the surface may be more stable than previously thought”. **The permafrost will not be thawing any time soon.**

The Middle Ages were warmer than today: Columbia Icefield, Canadian Rockies, Canada

- Edwards, T.W.D., Birks, S.J., Luckman, B.H. and MacDonald, G.M. 2008. Climatic and hydrologic variability during the past millennium in the eastern Rocky Mountains and northern Great Plains of western Canada. *Quaternary Research* **70**: 188-197.

The authors developed a cellulose $\delta^{13}\text{C}$ dendrochronology from cross-dated 10-year increments of 16 sub-fossil snags and living-tree ring sequences of Englemann spruce trees from upper-alpine treeline sites near Athabasca Glacier and subfossil material from the forefield of Robson Glacier plus living and snag material of whitebark pines adjacent to Bennington Glacier, spanning the period AD 951-1990, as well as an oxygen isotope ($\delta^{18}\text{O}$) dendrochronology for the same period. Using pairs of data from these sources, they calculated past changes in temperature over Canada's Columbia Icefield at 53°N, 118°W. They reported “**evidence of previously unrecognized winter warmth during the Medieval Climate Anomaly (~AD 1100-1250)**” –



Columbia Icefield mean winter temperature (T_{win}) relative to 1941-1990.