

# Onward marches the Great Pause

Global temperature update: the Pause is now 18 years 2 months

*By Christopher Monckton of Brenchley*

Since October 1996 there has been no global warming at all (Fig. 1). This month's RSS temperature plot pushes up the period without any global warming from 18 years 1 month to 18 years 2 months (indeed, very nearly 18 years 3 months). Will this devastating chart be displayed anywhere at the Lima conference? Don't bet on it.

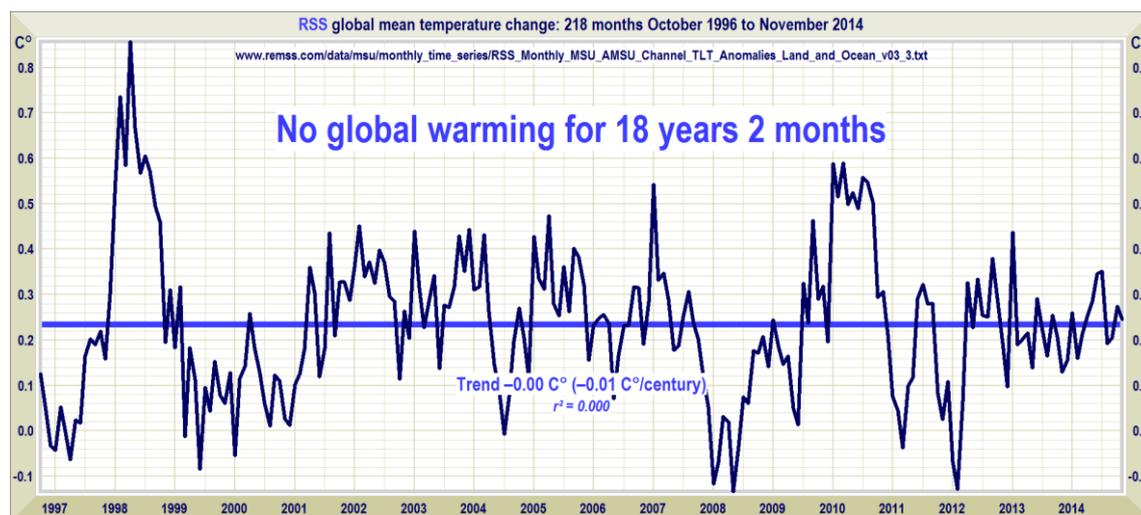


Figure 1. The least-squares linear-regression trend on the RSS satellite monthly global mean surface temperature anomaly dataset shows no global warming for 18 years 2 months since October 1996.

The hiatus period of 18 years 2 months, or 218 months, is the farthest back one can go in the RSS satellite temperature record and still show a sub-zero trend.

What will the chart look like this time next year, at the beginning of the Paris world-government conference, at which the Treaty of Copenhagen will be dusted off and nodded through by the scientifically illiterate national negotiating delegates of almost 200 nations, ending the freedom and democracy of the West and putting absolute economic and political power in the hands of the grim secretariat of the UN climate convention?

When the November 2015 RSS data are available, how many years and months of zero global warming will have occurred? Enter our friendly competition by putting your best estimate in comments. For guidance, at the December 2012 Doha conference I was banned from UN climate yadayadathons for life for the grave sin of telling the truth that there had been no global warming for 16 years. And an el Nino of unknown magnitude is expected during the boreal winter, followed by a compensating la Nina.

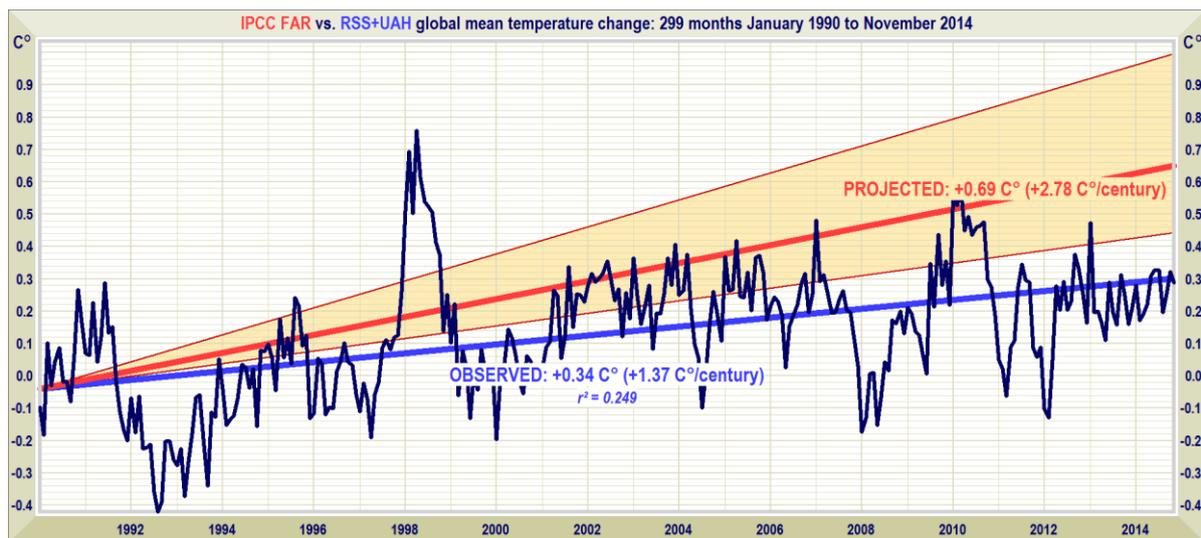


Figure 2. Near-term projections of warming at a rate equivalent to 2.8 [1.9, 4.2] K/century, made with “substantial confidence” in IPCC (1990), January 1990 to November 2014 (orange region and red trend line), vs. observed anomalies (dark blue) and trend (bright blue) at less than 1.4 K/century equivalent, taken as the mean of the RSS and UAH satellite monthly mean lower-troposphere temperature anomalies.

A quarter-century after 1990, the global-warming outturn to date – expressed as the least-squares linear-regression trend on the mean of the RSS and UAH monthly global mean surface temperature anomalies – is 0.34 C°, equivalent to just 1.4 C°/century, or a little below half of the central estimate in IPCC (1990) and well below even the least estimate (Fig. 2).

The Great Pause is a growing embarrassment to those who had told us with “substantial confidence” that the science was settled and the debate over. Nature had other ideas. Though approaching 70 mutually incompatible and more or less implausible excuses for the Pause are appearing in nervous reviewed journals and among proselytizing scientists, the possibility that the Pause is occurring because the computer models are simply wrong about the sensitivity of temperature to manmade greenhouse gases can no longer be dismissed, and will be demonstrated in a major paper to be published shortly in the Orient’s leading science journal.

Remarkably, even the IPCC’s latest and much reduced near-term global-warming projections are also excessive (Fig. 3).

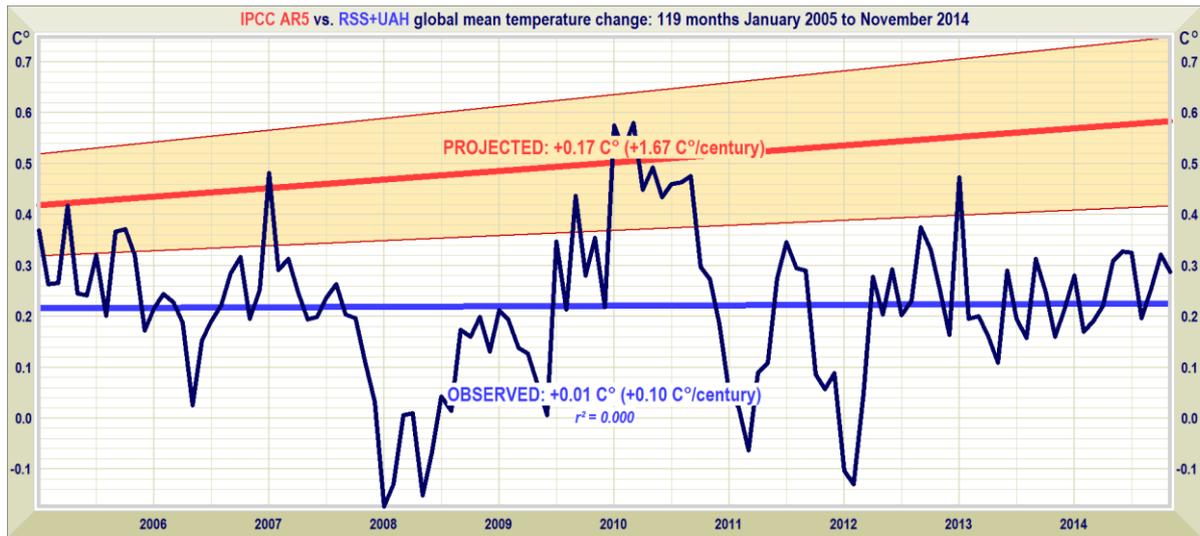


Figure 3. Predicted temperature change, January 2005 to October 2014, at a rate equivalent to 1.7 [1.0, 2.3] C°/century (orange zone with thick red best-estimate trend line), compared with the observed anomalies (dark blue) and zero real-world trend (bright blue), taken as the average of the RSS and UAH satellite lower-troposphere temperature anomalies.

In 1990, the IPCC's central estimate of near-term warming was higher by two-thirds than it is today. Then it was 2.8 C°/century equivalent. Now it is just 1.7 C° equivalent – and, as Fig. 3 shows, even that is proving to be a substantial exaggeration.

On the RSS satellite data, there has been no global warming statistically distinguishable from zero for more than 26 years. None of the models predicted that, in effect, there would be no global warming for a quarter of a century.

## Key facts about global temperature

- The RSS satellite dataset shows no global warming at all for 218 months from October 1996 to November 2014 – more than half the 430-month satellite record.
- The global warming trend since 1900 is equivalent to 0.8 C° per century. This is well within natural variability and may not have much to do with us.
- Since 1950, when a human influence on global temperature first became theoretically possible, the global warming trend has been equivalent to below 1.2 C° per century.
- The fastest warming rate lasting ten years or more since 1950 occurred over the 33 years from 1974 to 2006. It was equivalent to 2.0 C° per century.
- In 1990, the IPCC's mid-range prediction of near-term warming was equivalent to 2.8 C° per century, higher by two-thirds than its current prediction of 1.7 C°/century.
- The global warming trend since 1990, when the IPCC wrote its first report, is equivalent to below 1.4 C° per century – half of what the IPCC had then predicted.
- Though the IPCC has cut its near-term warming prediction, it has not cut its high-end business as usual centennial warming prediction of 4.8 C° warming to 2100.
- The IPCC's predicted 4.8 C° warming by 2100 is well over twice the greatest rate of warming lasting more than ten years that has been measured since 1950.
- The IPCC's 4.8 C°-by-2100 prediction is almost four times the observed real-world warming trend since we might in theory have begun influencing it in 1950.
- From September 2001 to September 2014, the warming trend on the mean of the 5 global-temperature datasets is nil. No warming for 13 years 1 month.
- Recent extreme weather cannot be blamed on global warming, because there has not been any global warming. It is as simple as that.

## Technical note

Our latest topical graph shows the least-squares linear-regression trend on the RSS satellite monthly global mean lower-troposphere dataset for as far back as it is possible to go and still find a zero trend. The start-date is not “cherry-picked” so as to coincide with the temperature spike caused by the 1998 el Niño. Instead, it is calculated so as to find the longest period with a zero trend.

But is the RSS satellite dataset “cherry-picked”? No. There are good reasons to consider it the best of the five principal global-temperature datasets. The indefatigable Steven Goddard demonstrated in the autumn of 2014 that the RSS dataset – at least as far as the Historical Climate Network is concerned – shows less warm bias than the GISS or UAH records. The UAH record is shortly to be revised to reduce its warm bias and bring it closer to conformity with RSS.

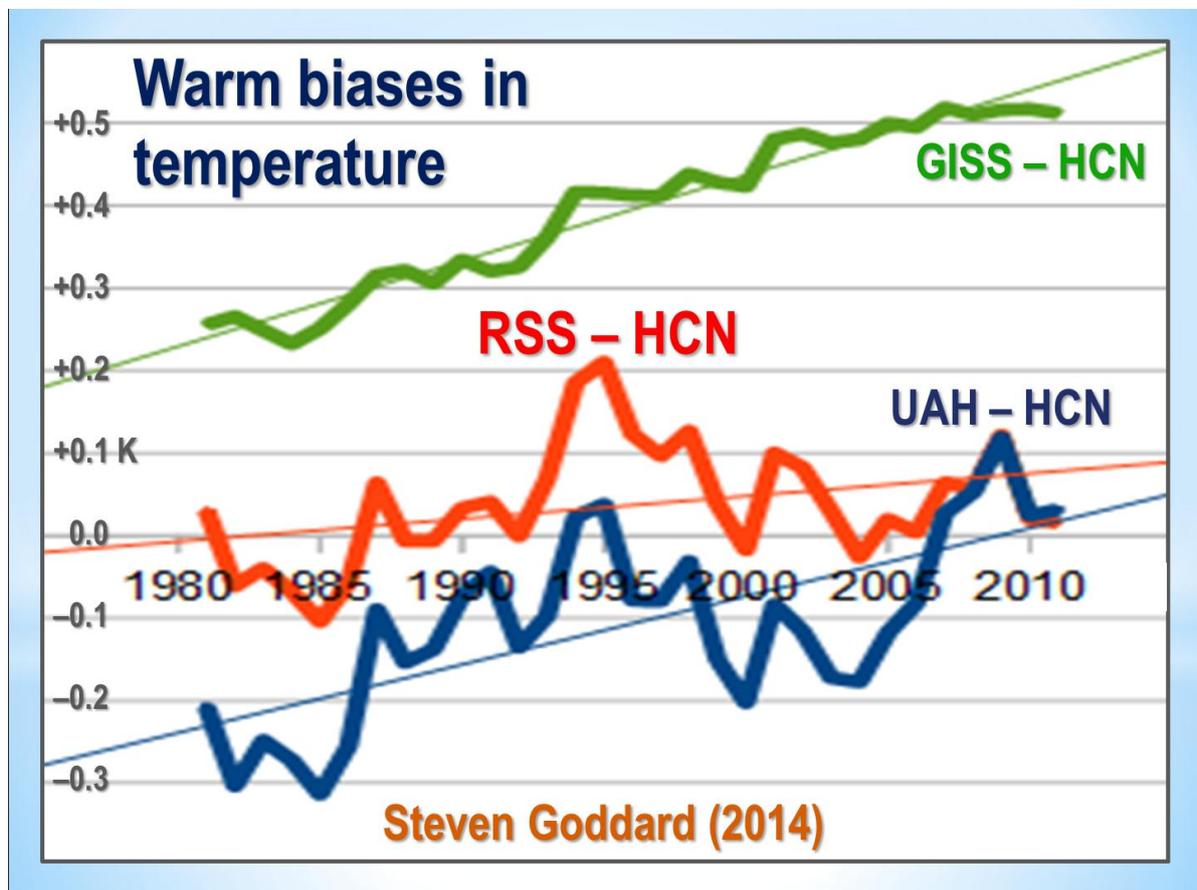


Figure 4. Warm biases in temperature. RSS shows less bias than the UAH or GISS records. UAH, in its forthcoming Version 6.0, will be taking steps to reduce the warm bias in its global-temperature reporting.

Steven Goddard writes: “The graph compares UAH, RSS and GISS US temperatures with the actual measured US HCN stations. UAH and GISS both have a huge warming bias, while RSS is close to the measured daily temperature data. The small difference between RSS and HCN is probably because my HCN calculations are not

gridded. My conclusion is that RSS is the only credible data set, and all the others have a spurious warming bias.”

Also, the RSS data show the 1998 Great El Nino more clearly than all other datasets. That el Nino, and that alone, caused widespread global coral bleaching, providing an independent verification that RSS is better able to capture such fluctuations without artificially filtering them out than other datasets.

Terrestrial temperatures are measured by thermometers. Thermometers correctly sited in rural areas away from manmade heat sources show warming rates appreciably below those that are published. The satellite datasets are based on measurements made by the most accurate thermometers available – platinum resistance thermometers, which provide an independent verification of the temperature measurements by checking via spaceward mirrors the known temperature of the cosmic background radiation, which is 1% of the freezing point of water, or just 2.73 degrees above absolute zero. It was by measuring minuscule variations in the cosmic background radiation that the NASA anisotropy probe determined the age of the Universe: 13.82 billion years.

The RSS graph (Fig. 1) is accurate. The data are lifted monthly straight from the RSS website. A computer algorithm reads them down from the text file, takes their mean and plots them automatically using an advanced routine that automatically adjusts the aspect ratio of the data window at both axes so as to show the data at maximum scale, for clarity.

The latest monthly data point is visually inspected to ensure that it has been correctly positioned. The light blue trend line plotted across the dark blue spline-curve that shows the actual data is determined by the method of least-squares linear regression, which calculates the  $y$ -intercept and slope of the line via two well-established and functionally identical equations that are compared with one another to ensure no discrepancy between them. The IPCC and most other agencies use linear regression to determine global temperature trends. Professor Phil Jones of the University of East Anglia recommends it in one of the Climategate emails. The method is appropriate because global temperature records exhibit little auto-regression.

Dr Stephen Farish, Professor of Epidemiological Statistics at the University of Melbourne, kindly verified the reliability of the algorithm that determines the trend on the graph and the correlation coefficient, which is very low because, though the data are highly variable, the trend is flat.

RSS itself is now taking a serious interest in the length of the Great Pause. Dr Carl Mears, the senior research scientist at RSS, discusses it at [remss.com/blog/recent-slowing-rise-global-temperatures](http://remss.com/blog/recent-slowing-rise-global-temperatures).

Dr Mears’ results are summarized in Fig. T1:

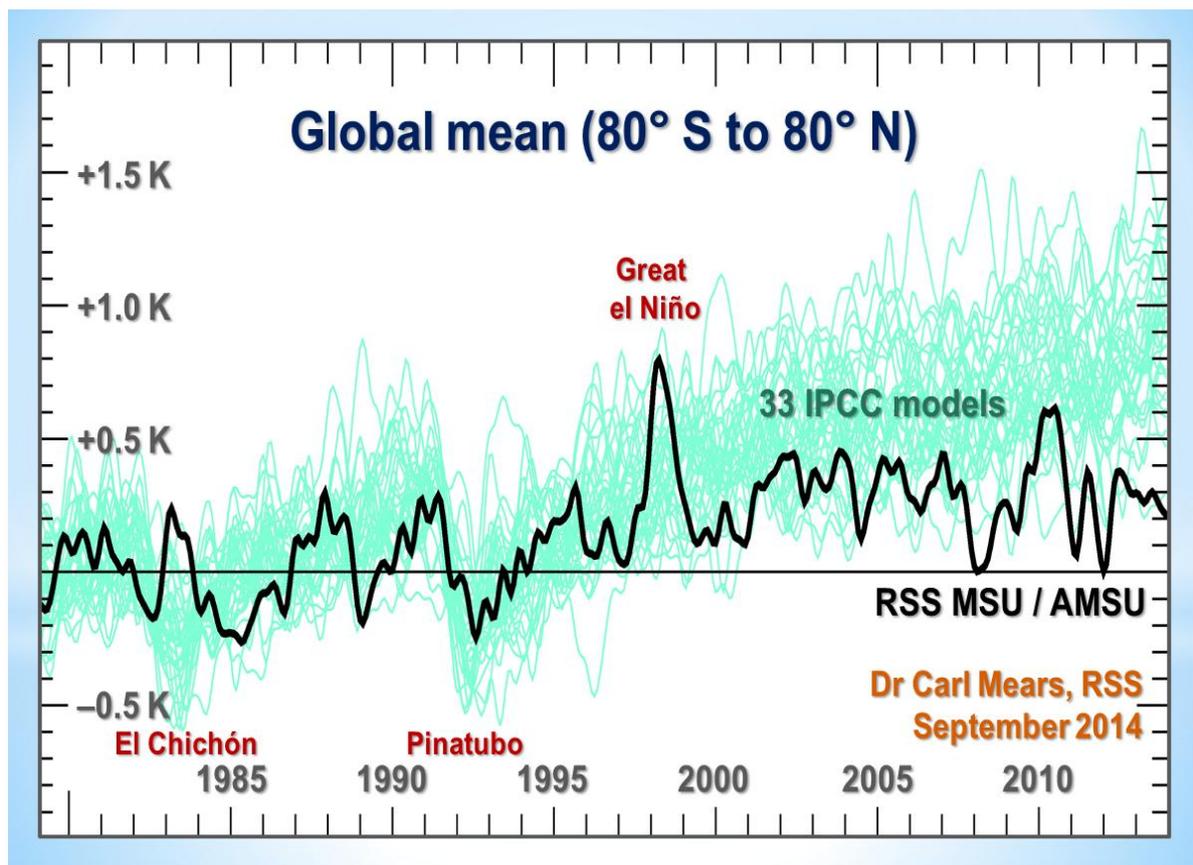


Figure T1. Output of 33 IPCC models (turquoise) compared with measured RSS global temperature change (black), 1979-2014. The transient coolings caused by the volcanic eruptions of Chichón (1983) and Pinatubo (1991) are shown, as is the spike in warming caused by the great el Niño of 1998.

Dr Mears writes:

“The denialists like to assume that the cause for the model/observation discrepancy is some kind of problem with the fundamental model physics, and they pooh-pooh any other sort of explanation. This leads them to conclude, very likely erroneously, that the long-term sensitivity of the climate is much less than is currently thought.”

Dr Mears concedes the growing discrepancy between the RSS data and the models, but he alleges “cherry-picking” of the start-date for the global-temperature graph:

“Recently, a number of articles in the mainstream press have pointed out that there appears to have been little or no change in globally averaged temperature over the last two decades. Because of this, we are getting a lot of questions along the lines of ‘I saw this plot on a denialist web site. Is this really your data?’ While some of these reports have ‘cherry-picked’ their end points to make their evidence seem even stronger, there is not much doubt that the rate of warming since the late 1990s is less than that predicted by most of the IPCC AR5 simulations of historical climate. ... The denialists really like to fit trends starting in 1997, so that the huge 1997-98 ENSO event is at the start of their time series, resulting in a linear fit with the smallest possible slope.”

In fact, the spike in temperatures caused by the Great el Niño of 1998 is largely offset in the linear-trend calculation by two factors: the not dissimilar spike of the 2010 el Niño, and the sheer length of the Great Pause itself.

Replacing all the monthly RSS anomalies for 1998 with the mean anomaly value of 0.55 K that obtained during the 2010 el Niño and recalculating the trend from September 1996 [not Dr Mears' "1997"] to September 2014 showed that the trend values " $-0.00\text{ C}^\circ$  ( $-0.00\text{ C}^\circ/\text{century}$ )" in the unaltered data (Fig. 1) became " $+0.00\text{ C}^\circ$  ( $+0.00\text{ C}^\circ/\text{century}$ )" in the recalculated graph. No cherry-picking, then.

The length of the Great Pause in global warming, significant though it now is, is of less importance than the ever-growing discrepancy between the temperature trends predicted by models and the far less exciting real-world temperature change that has been observed.

IPCC's *First Assessment Report* predicted that global temperature would rise by 1.0 [0.7, 1.5]  $\text{C}^\circ$  to 2025, equivalent to 2.8 [1.9, 4.2]  $\text{C}^\circ$  per century. The executive summary asked, "How much confidence do we have in our predictions?" IPCC pointed out some uncertainties (clouds, oceans, etc.), but concluded:

"Nevertheless, ... we have substantial confidence that models can predict at least the broad-scale features of climate change. ... There are similarities between results from the coupled models using simple representations of the ocean and those using more sophisticated descriptions, and our understanding of such differences as do occur gives us some confidence in the results."

That "substantial confidence" was substantial over-confidence. For the rate of global warming since 1990 is about half what the IPCC had then predicted.