Simulations Compared with Atmospheric Measurements
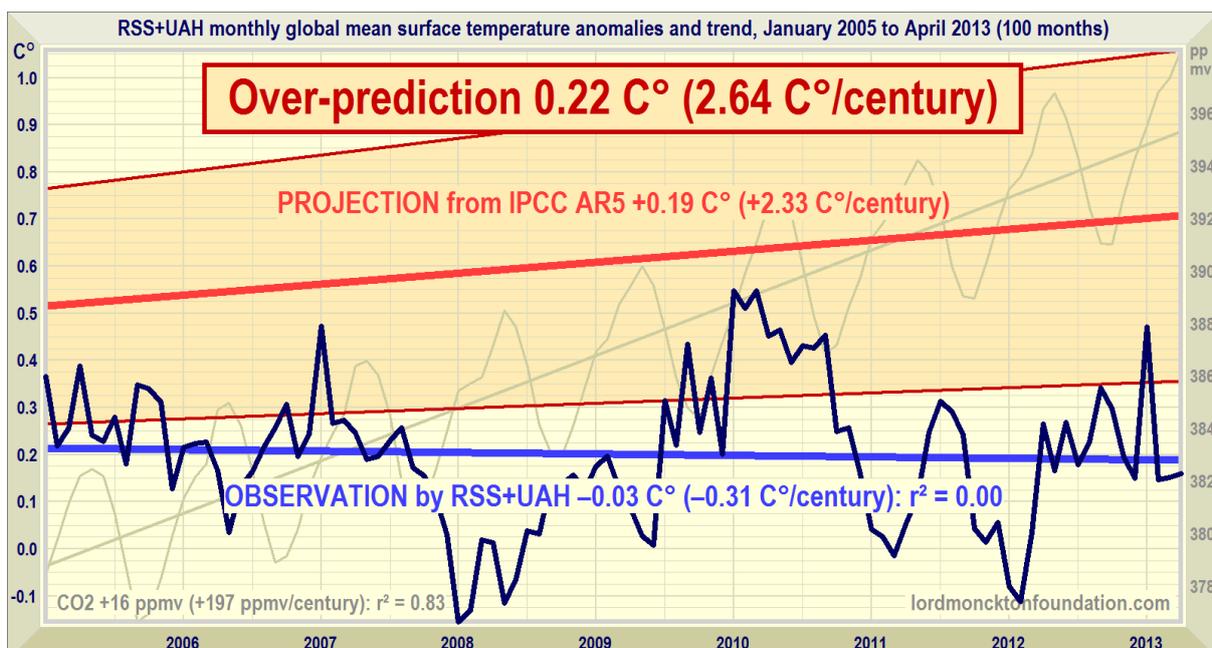
Are global warming predictions accurate?

May 2013: Is global warming happening faster than we thought? At the predicted rate? At all? Or is it cooling? The LMF monthly-updated one-page prediction-vs.-measurement index and graph answer these questions at a glance by comparing official projections of global warming since January 2005 with satellite-measured temperature change. Over the past 100 months, projection has overshot observation by 0.22 C° (equivalent to 2.64 C°/century):

Lord Monckton Foundation Index, May 2013

Central projection from IPCC AR5, Fig. 11.33a, vs. RSS & UAH satellite measurements

Temperature trend from January 2005 to April 2013 (100 months)

Models' projection	Thermometers	Over-prediction
+0.19 C°	**–0.03 C°**	**+0.22 C°**
(+2.33 C°/century)	*(–0.31 C°/century)*	*(+2.64 C°/century)*
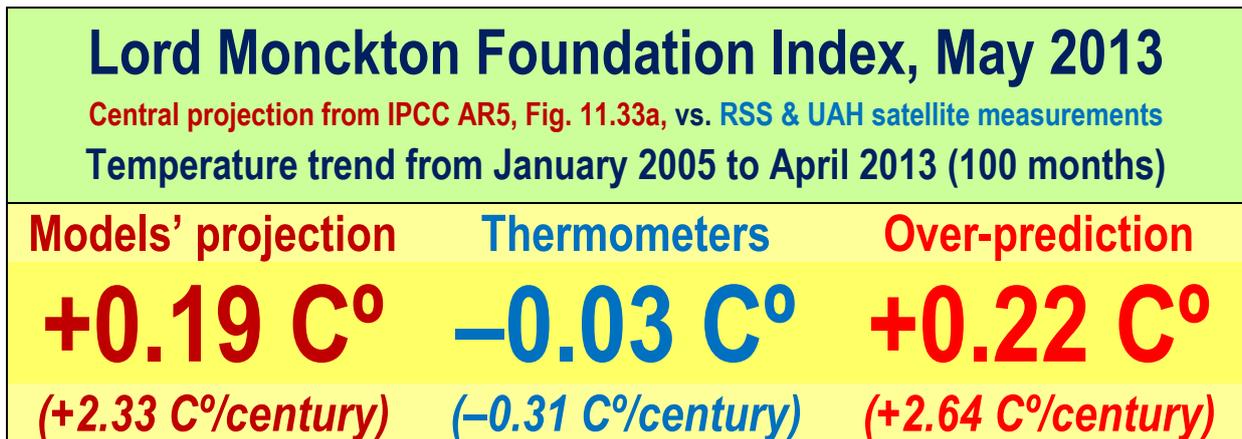
The IPCC's forthcoming *Fifth Assessment Report* (AR5: Fig. 11.33a) shows 34 models' projections of global warming from 2005-2050. The projections are displayed as an orange region on the monthly comparison graph (below). The central projection, the thick red line, is that the world should have warmed by 0.19 C° since January 2005 (a rate equivalent to +2.33 C°/century).

However, the mean of the RSS and UAH satellite measurements, the dark blue spline-curve over a bright blue trend-line, shows global cooling of 0.03 C° since January 2005 (equivalent to –0.31 C°/century). The over-prediction is thus 0.22 C° since 2005 (equivalent to +2.64 C°/century). The CO_2 concentration increase since January 2005 was 16 ppmv (equivalent to +197 ppmv/century).

RSS+UAH monthly global mean surface temperature anomalies and trend, January 2005 to April 2013 (100 months)

The correlation coefficient is low and the period of study is short. That said, warming since 2005 is nothing like as rapid as predicted. Note the mismatch between the significant increase in CO_2 concentration (the dogtooth curve in gray) and the statistically insignificant cooling since 2005.

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How the monthly LMF graph is compiled

The IPCC's forthcoming *Fifth Assessment Report* (AR5), for which Lord Monckton is an Expert Reviewer, reveals that all four previous *Reports* have over-projected global warming (AR5, Fig. 1.4: left panel).

The *Fifth Assessment Report* backcasts to 2005 its plots of the combined global-warming projections made by up to 34 climate models on each of four radiative-forcing scenarios (AR5, Fig. 11.33a: center panel).
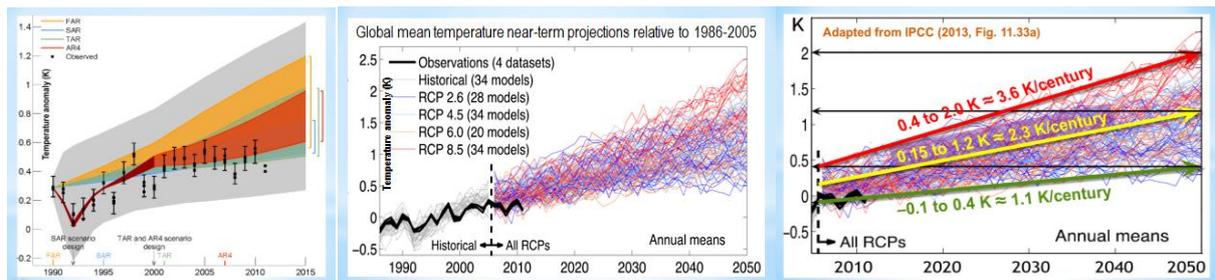
The 34 models' high, central and low projections of global warming since 2005, derived from the IPCC's Figure 11.33a as shown (right panel above), are represented by the red region of the monthly comparison graph (overleaf).

During the training period from 2005-2013, most of the models' backcast projections fall appreciably above the observed temperature record (in black in the center panel above).

This unusual relationship between the starting-points of the models' global-warming projections and of the observed temperature change since January 2005 is reproduced exactly in the comparison graph.

The graph benchmarks official projections of global warming, shown in red, against satellite-measured temperature change, shown as a dark blue spline-curve overlying the bright blue least-squares linear-regression trend-line.

Linear regression was preferred because higher-order polynomial fits are not suitable where – as here – the combined uncertainties arising from measurement and sampling errors, statistical bias, and incomplete coverage are substantial.

The temperature values represented in dark blue in the comparison graph are the arithmetic mean of the latest monthly global mean surface temperature anomalies from Remote Sensing Systems, Inc., and the University of Alabama at Huntsville. The CO_2 record is from Mauna Loa.

Data sources

Intergovernmental Panel on Climate Change, 2013, *Fifth Assessment Report* [in press], Fig. 11.33a.

National Oceanographic and Atmospheric Administration, 2013, Monthly mean CO_2 concentration at Mauna Loa, Hawaii, since March 1958, ftp://ftp.cmdl.noaa.gov/ccg/co2/trends/co2_mm_mlo.txt.

Remote Sensing Systems, Inc., 2013, Monthly global mean lower-troposphere temperature anomalies, remss.com/data/msu/monthly_time_series/RSS_Monthly_MSU_AMSU_Channel_TLT_Anomalies_Land_and_Ocean_v03_3.txt.

University of Alabama at Huntsville, 2013, Monthly global mean lower-troposphere temperature anomalies, vortex.nsstc.uah.edu/data/msu/t2lt/uahncdc.lt.

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