1: Global Temperature Record

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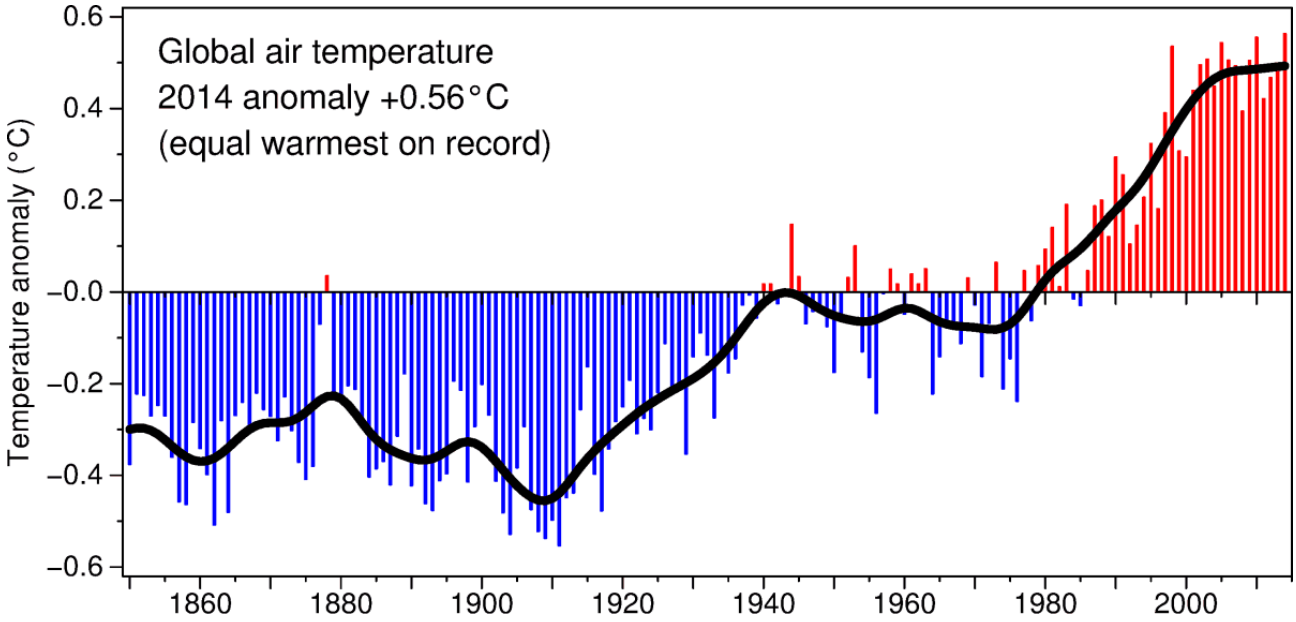

(this graph of HadCRUT4 is also available as Encapsulated PostScript and PDF suitable for publication and the data are available as Comma-Separated Values)

The time series shows the combined global land and marine surface temperature record from 1850 to 2014. This year was the equal warmest on record. This record uses the latest analysis, referred to as HadCRUT4 (Morice *et al.*, 2012).

The period 2001-2010 (0.488°C above the 1961-90 average) was 0.214°C warmer than the 1991-2000 decade (0.274°C above the 1961-90 average). The equal warmest years of the series are 2010 and 2014. The value for 2014, given uncertainties discussed in Morice *et al.* (2012), is not distinguishable from the years 2010 (0.555°C), 2005 (0.543°C) and 1998 (0.535°C). The coldest year of the 21st century (2008 with a value of 0.394°C) was warmer than all years in the 20th century with the exception of 1998. The average of the first four years of the present decade (2011-2014) is 0.002°C cooler than the average for 2001-2010, but warmer than all years before 2001 except for 1998.

This time series is compiled jointly by the Climatic Research Unit and the UK Met Office Hadley Centre. Increased concentrations of greenhouse gases in the atmosphere due to human activities are most likely the underlying cause of warming in the 20th century. The warmth or coldness of individual years is strongly influenced by whether there was an El Niño or a La Niña event occurring in the equatorial Pacific Ocean (see Information Sheet 12).

The Intergovernmental Panel on Climate Change in its most recent report (AR5) in 2013 stated:

'Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased'

'Human influence on the climate system is clear. This is evident from the increasing greenhouse gas concentrations in the atmosphere, positive radiative forcing, observed warming, and understanding of the climate system'

'Human influence has been detected in warming of the atmosphere and the ocean, in changes in the global water cycle, in reductions in snow and ice, in global mean sea level rise, and in changes in some climate extremes. This evidence for human influence has grown since AR4. It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century'

Links

Global temperature anomaly datasets	http://www.cru.uea.ac.uk/cru/data/temperature/
CET data	http://hadobs.metoffice.com/hadcet/
IPCC: the Intergovernmental Panel on Climate Change	http://www.ipcc.ch/
Latest IPCC report from Working Group 1	http://www.ipcc.ch/ipccreports/ar4-wg1.htm

The key reference for this time series is:

Morice, C.P., Kennedy, J.J., Rayner, N.A. and Jones, P.D., 2012: Quantifying uncertainties in global and regional temperature change using an ensemble of observational estimates: the HadCRUT4 dataset. *Journal of Geophysical Research,* **117**, D08101, doi:10.1029/2011JD017187

For further information on this subject please email
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