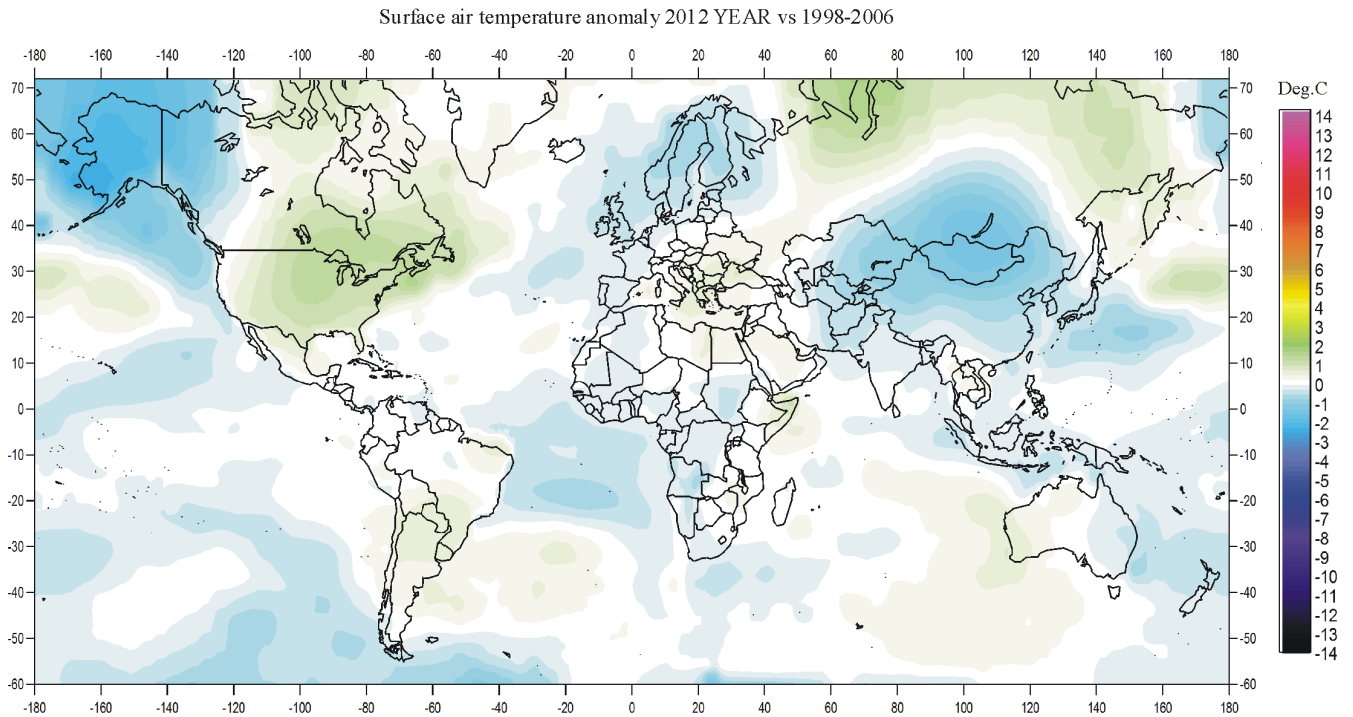


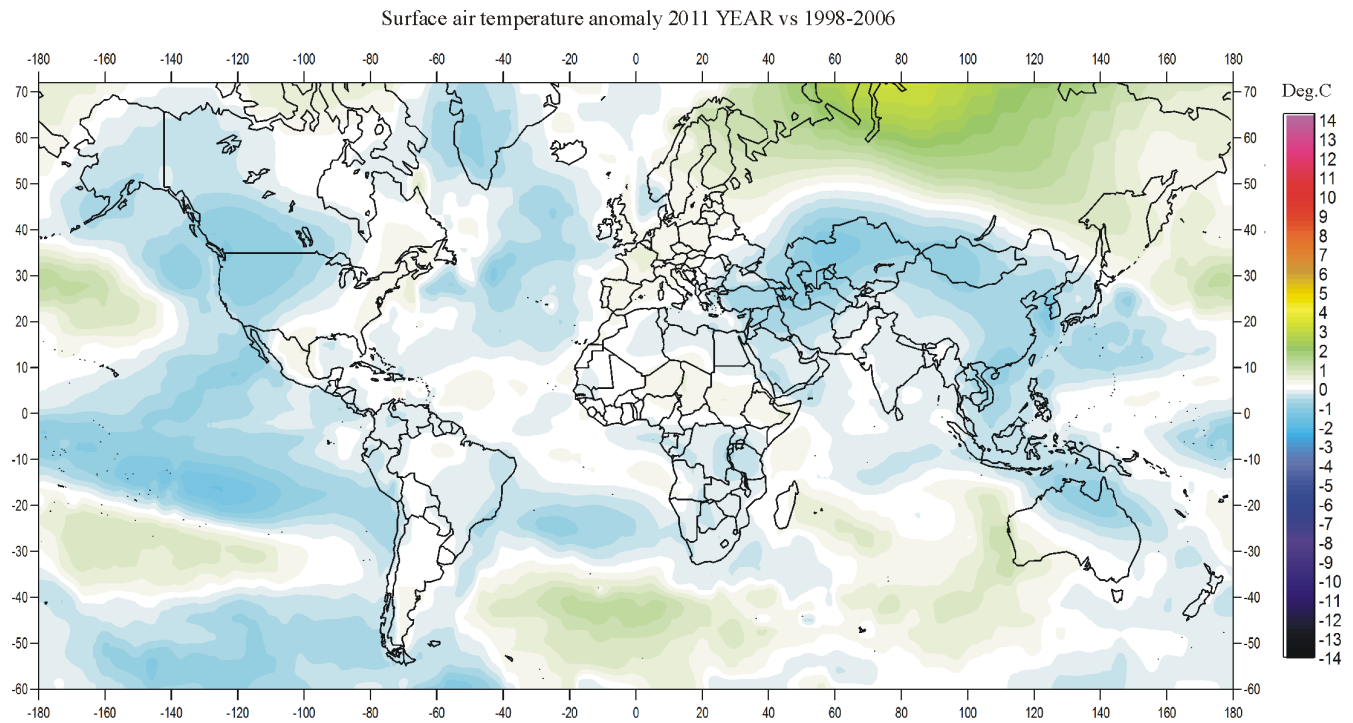
Climate4you update Year 2012

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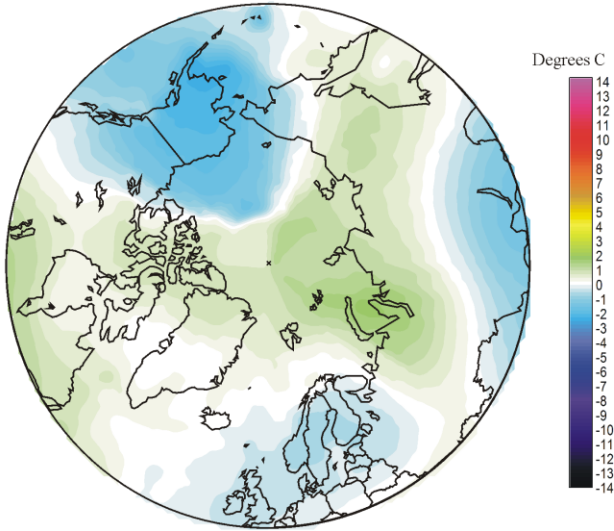
Year 2012 and 2011 global surface air temperature overview



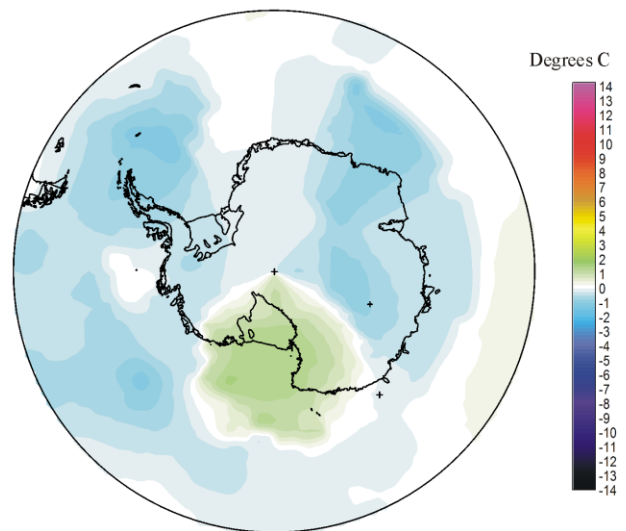
1



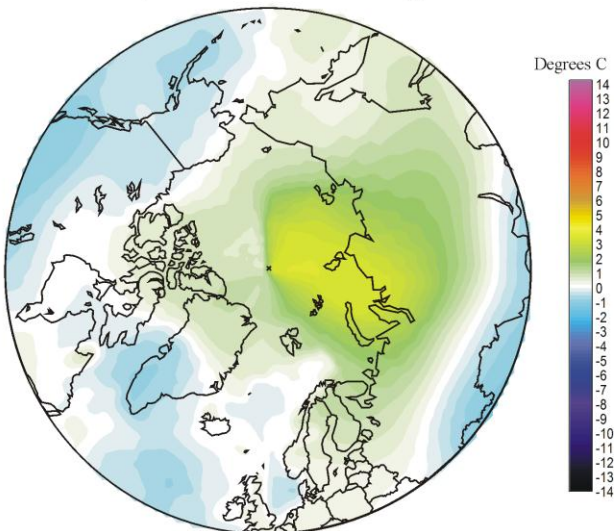
Air temperature 2012 YEAR versus average 1998-2006



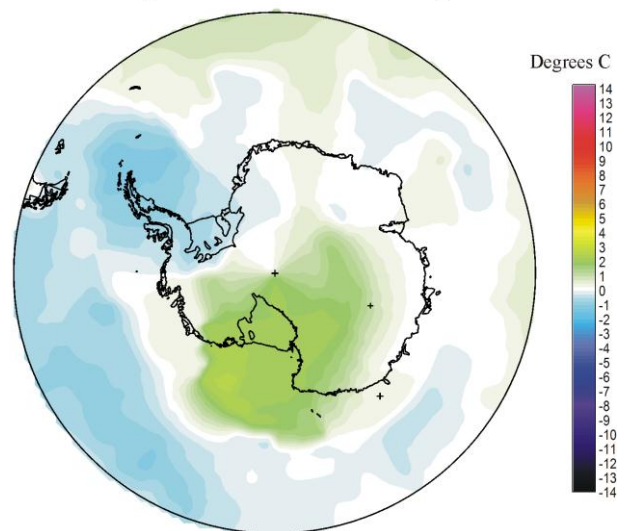
Air temperature 2012 YEAR versus average 1998-2006



Air temperature 2011 YEAR versus average 1998-2006



Air temperature 2011 YEAR versus average 1998-2006



Year 2012 (upper panel) and 2011 (lower panel) surface air temperature compared to the average for 1998-2006. Green-yellow-red colours indicate areas with higher temperature than the 1998-2006 average, while blue colours indicate lower than average temperatures. Data source: [Goddard Institute for Space Studies](http://www.giss.nasa.gov) (GISS)

Comments to the Year 2012 global surface air temperature overview

This newsletter contains graphs showing a selection of key meteorological variables for the year 2012. All temperatures are given in degrees Celsius.

In the above maps showing the geographical pattern of surface air temperatures, the period 1998-2006 is used as reference period. The reason for comparing with this recent period instead of the official WMO 'normal' period 1961-1990, is that the latter period is affected by the relatively cold period 1945-1980. Almost any comparison with such a low average value will therefore appear as high or warm, and it will be difficult to decide if modern surface air temperatures are increasing or decreasing. Comparing with a more recent period overcomes this problem.

In the other diagrams in this newsletter the thin line represents the monthly global average value and the thick line indicate the simple 3 year running average.

The average global surface air temperature for 2012.

On average, the year 2012 was not very different from 2011. The corresponding sea surface temperature changes 2011-2012 is shown by the diagrams on pages 4-5.

3

The Northern Hemisphere was characterised by regional contrasts. Alaska, western Canada, Europe and much of southern Asia had below annual average 1998-2006 temperature conditions, while eastern North America and northern Russia and Siberia had relatively warm conditions.

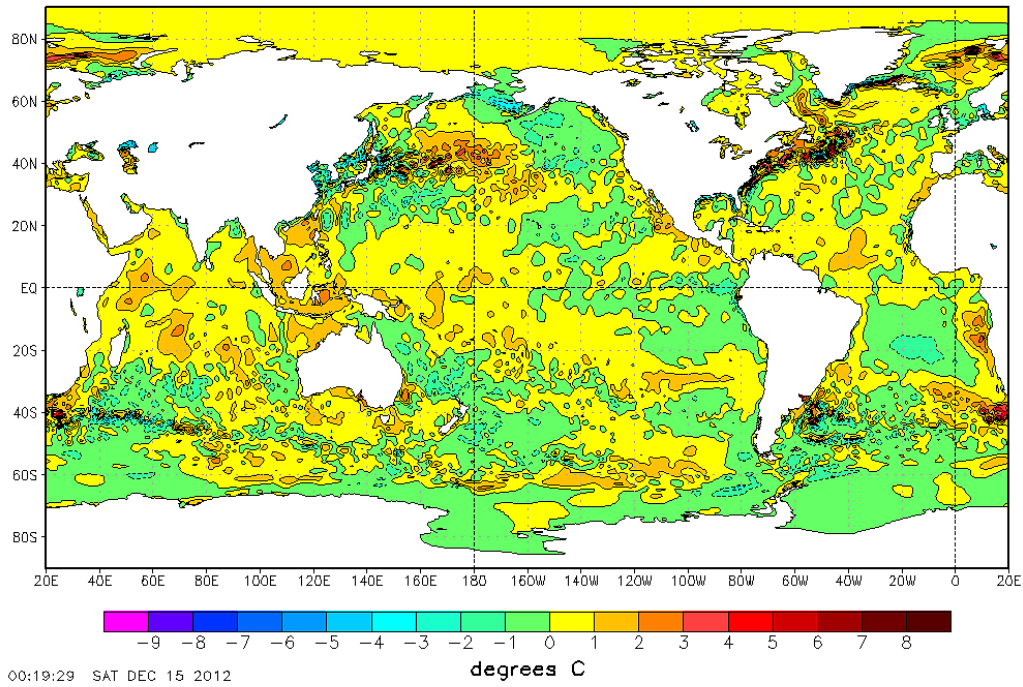
Temperature conditions near Equator were near or somewhat below the 1998-2006 temperature average.

In the Southern Hemisphere surface air temperatures were near or below the 1998-2006 average. No major region had above average annual temperature.

The Arctic was a region of relatively large contrasts. Westernmost Canada, Alaska and easternmost Siberia had below 1998-2006 average temperatures, while most of the remaining part of the Arctic (Incl. Greenland) had above average temperatures.

Most of the Antarctic continent had below average temperature conditions, the only exception being the Ross Sea region.

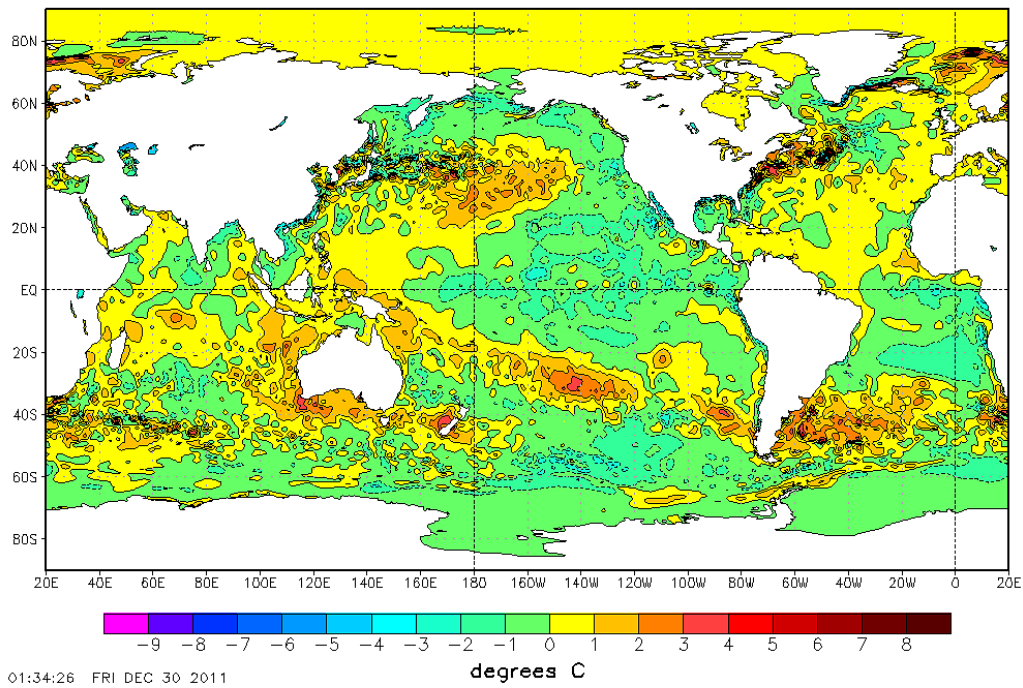
NOAA/NWS/NCEP/EMC Marine Modeling and Analysis Branch
RTG_SST Anomaly (0.5 deg X 0.5 deg) for 14 Dec 2012



Sea surface temperature anomaly in December 2012.

4

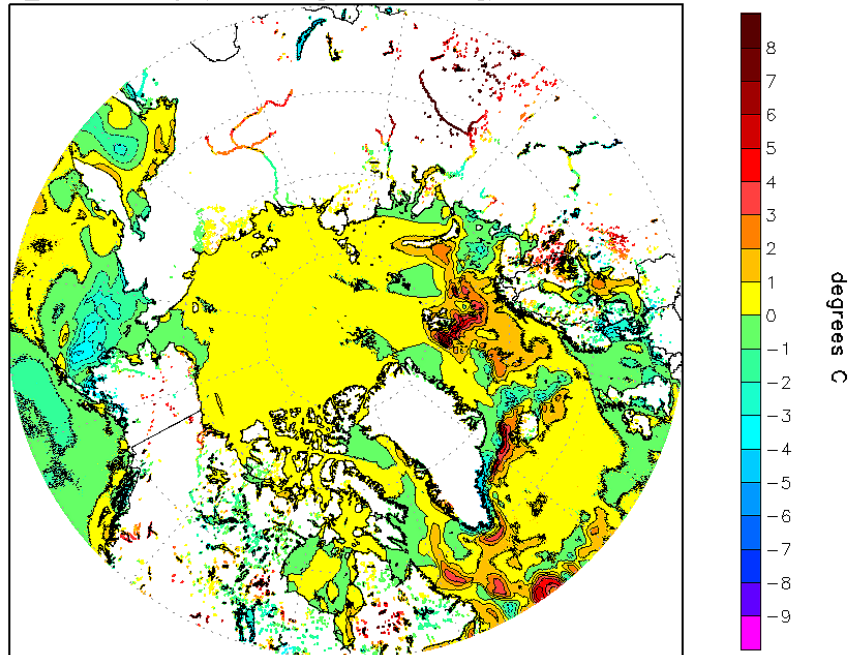
NOAA/NWS/NCEP/EMC Marine Modeling and Analysis Branch
RTG_SST Anomaly (0.5 deg X 0.5 deg) for 29 Dec 2011



Sea surface temperature anomaly at the end of 2011.

NOAA/NWS/NCEP/EMC Marine Modeling and Analysis Branch Oper H.R.

RTG_SST Anomaly (0.083 deg X 0.083 deg) for 14 Dec 2012



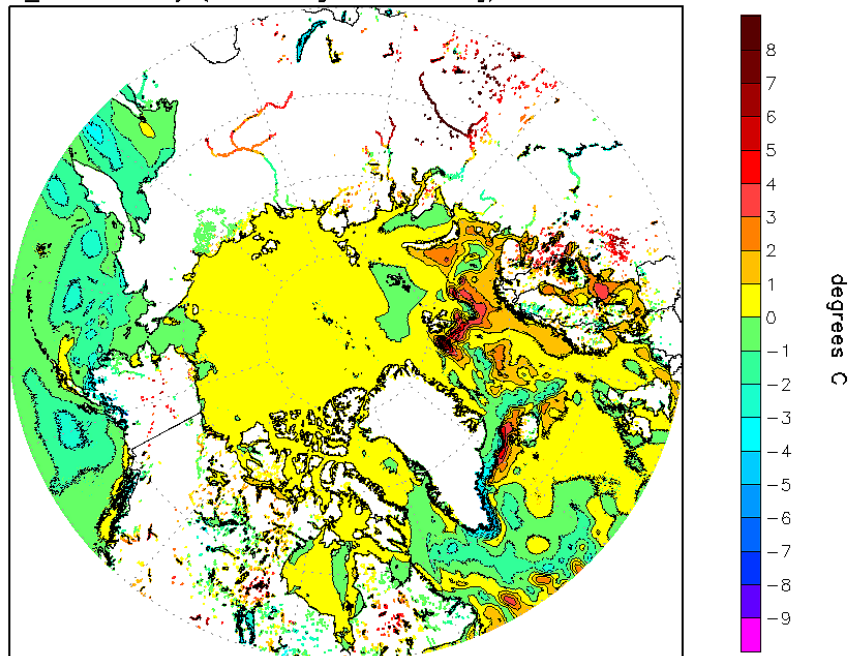
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Arctic sea surface temperature anomaly in December 2012.

5

NOAA/NWS/NCEP/EMC Marine Modeling and Analysis Branch Oper H.R.

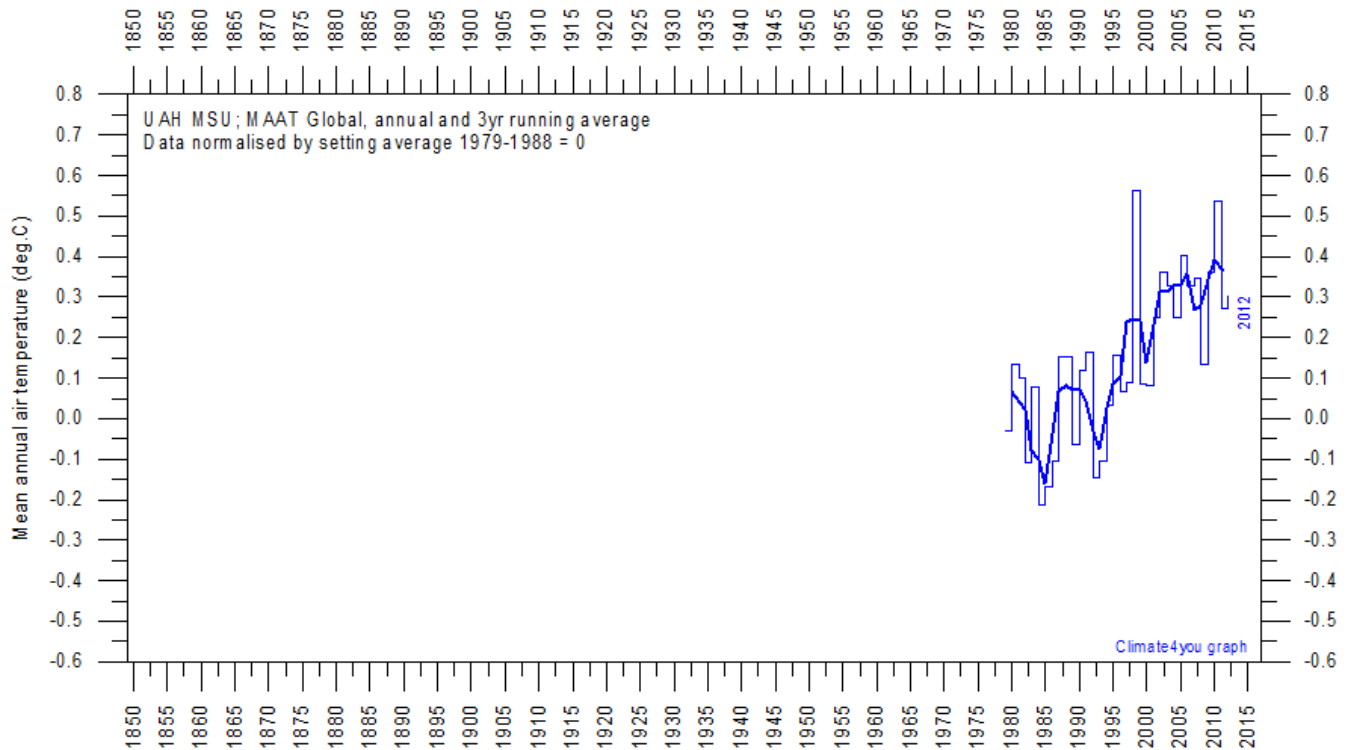
RTG_SST Anomaly (0.083 deg X 0.083 deg) for 29 Dec 2011



01:25:24 FRI DEC 30 2011

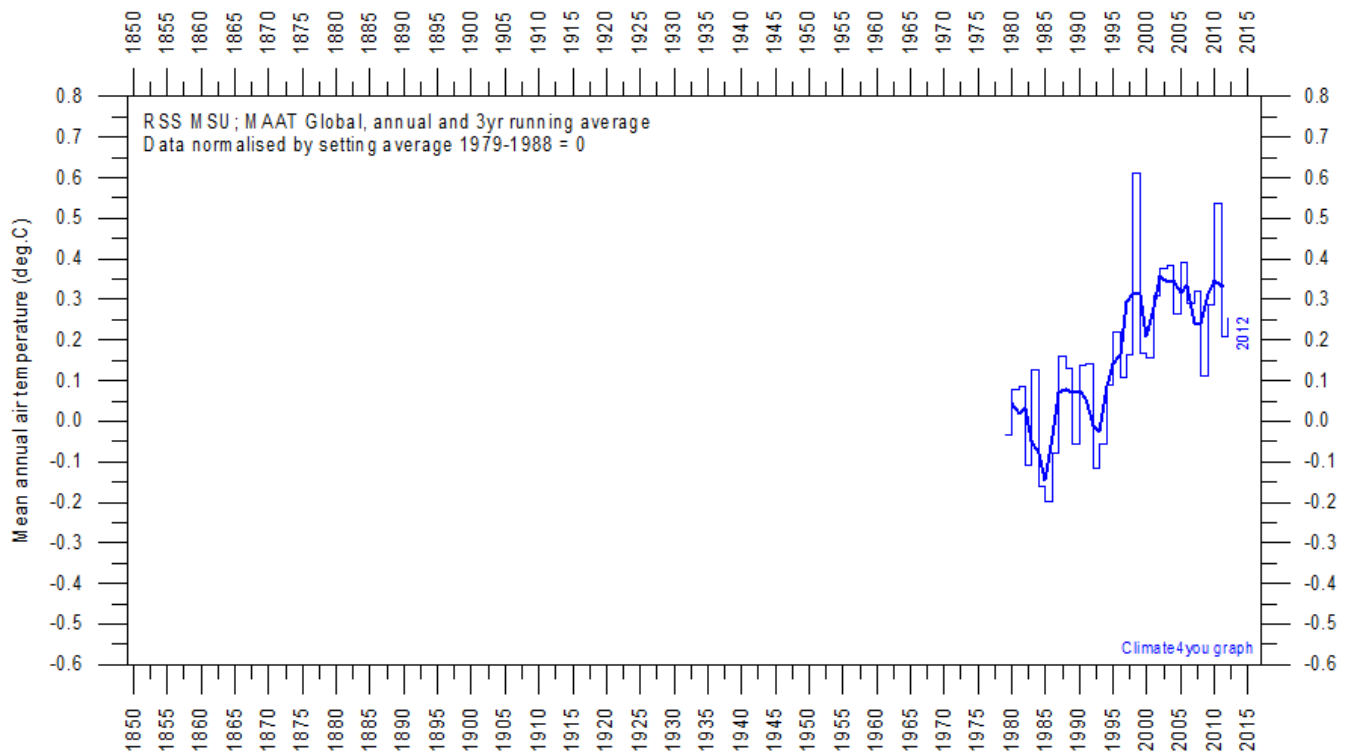
Arctic sea surface temperature anomaly at the end of 2011.

Lower troposphere temperature from satellites, updated to year 2012



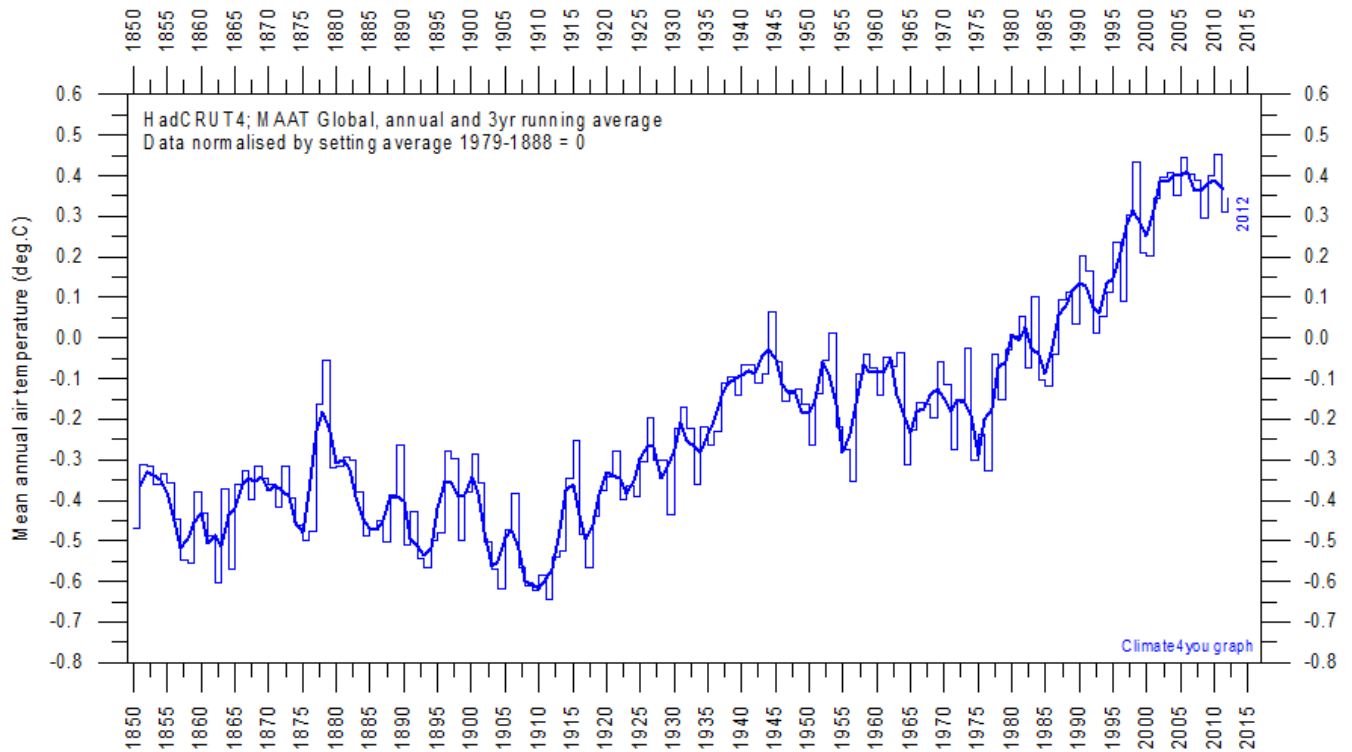
Mean annually lower troposphere temperature anomaly (thin line) since 1979 according to [University of Alabama](#) at Huntsville, USA. The thick line is the simple running 3 year average. The average for 1979-1988 (10 yrs) has been set to zero, to make comparison with other temperature data series easy.

6



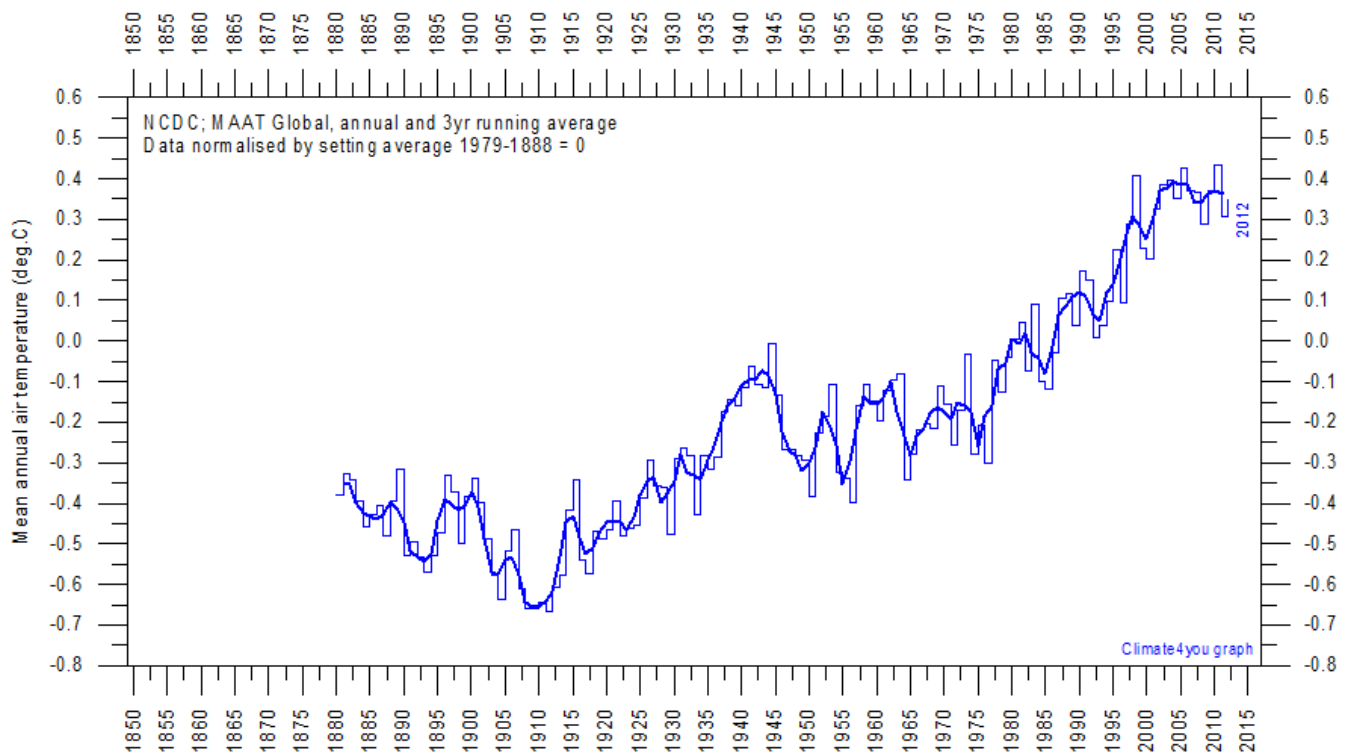
Mean annual lower troposphere temperature anomaly (thin line) since 1979 according to according to [Remote Sensing Systems](#) (RSS), USA. The thick line is the simple running 3 year average. The average for 1979-1988 (10 yrs) has been set to zero, to make comparison with other temperature data series easy.

Global surface air temperature, updated to year 2012

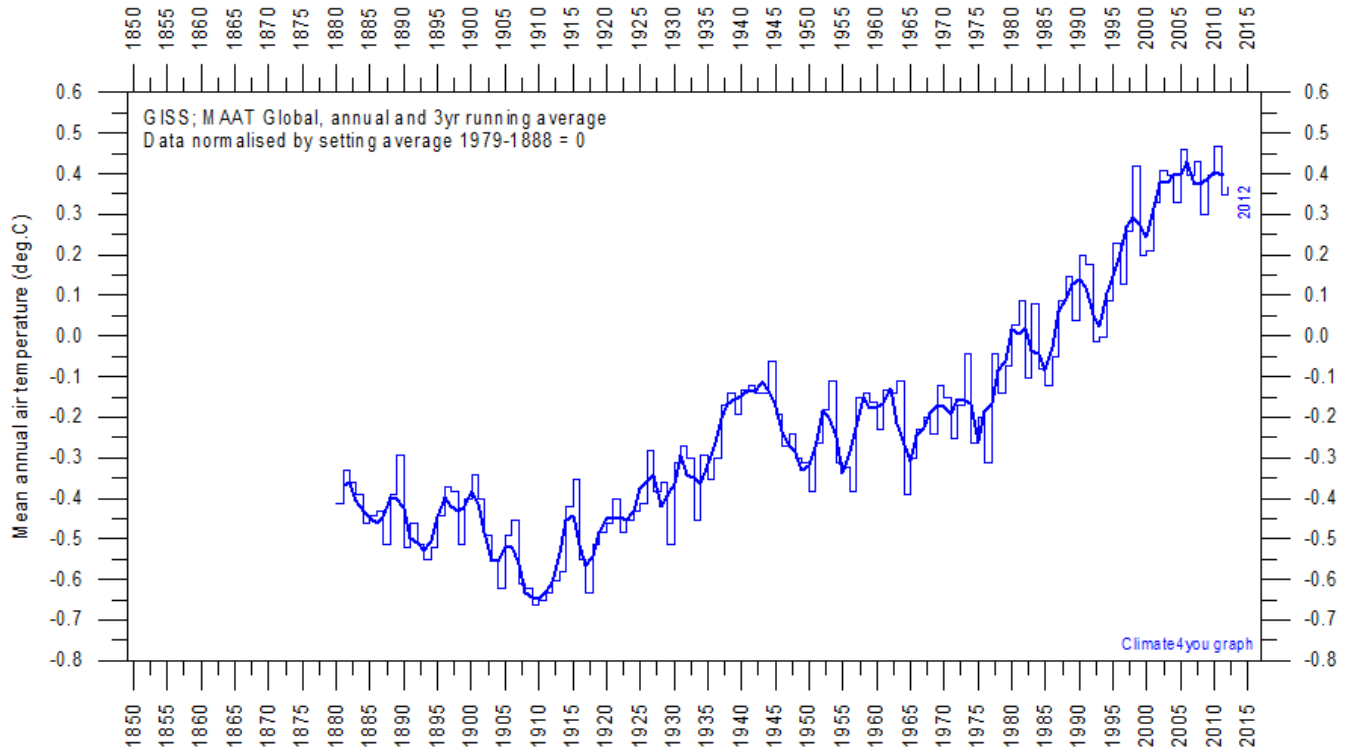


Mean annual global surface air temperature (thin line) since 1850 according to according to the Hadley Centre for Climate Prediction and Research and the University of East Anglia's [Climatic Research Unit \(CRU\)](#), UK. The thick line is the simple running 3 year average. The average for 1979-1988 (10 yrs) has been set to zero.

7

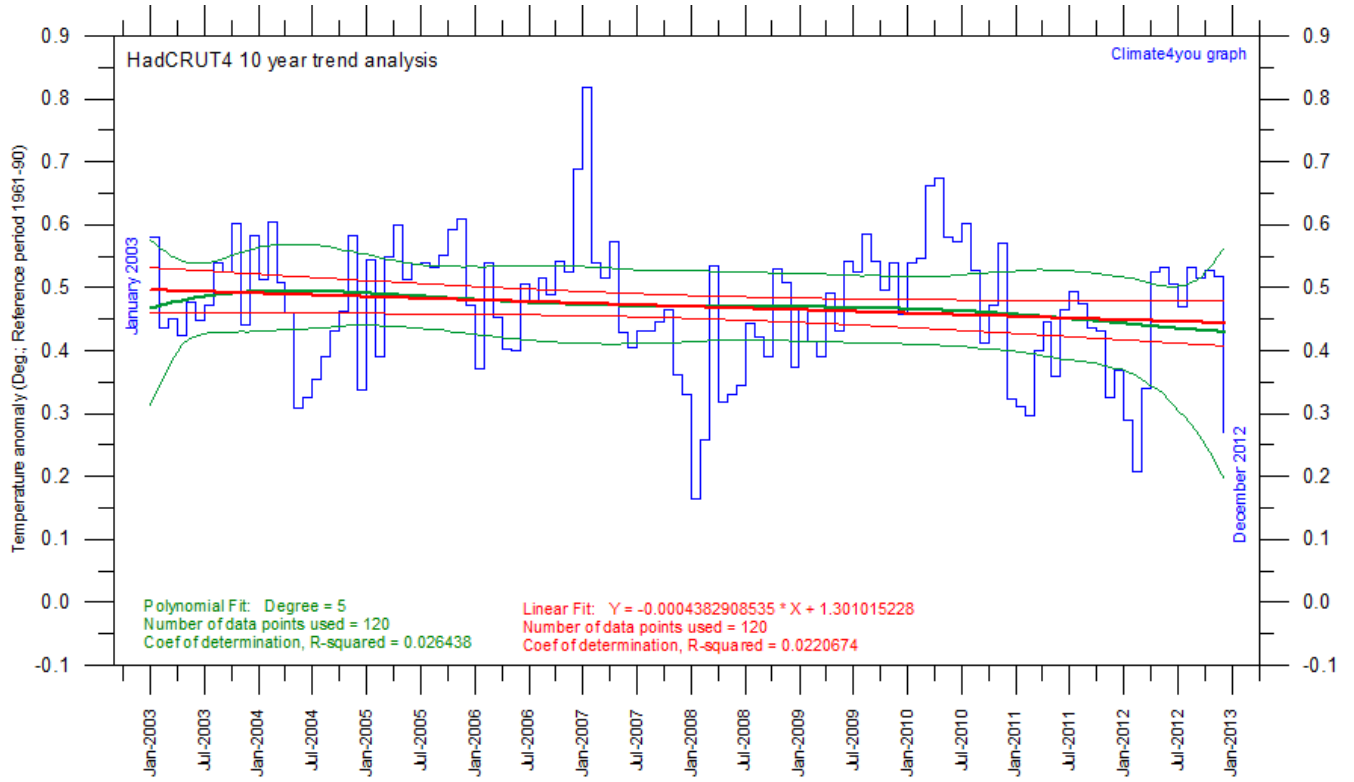


Mean annual global surface air temperature since 1880 according to according to the [National Climatic Data Center \(NCDC\)](#), USA. The thick line is the simple running 3 year average. The average for 1979-1988 (10 yrs) has been set to zero, to make comparison with other temperature data series easy.

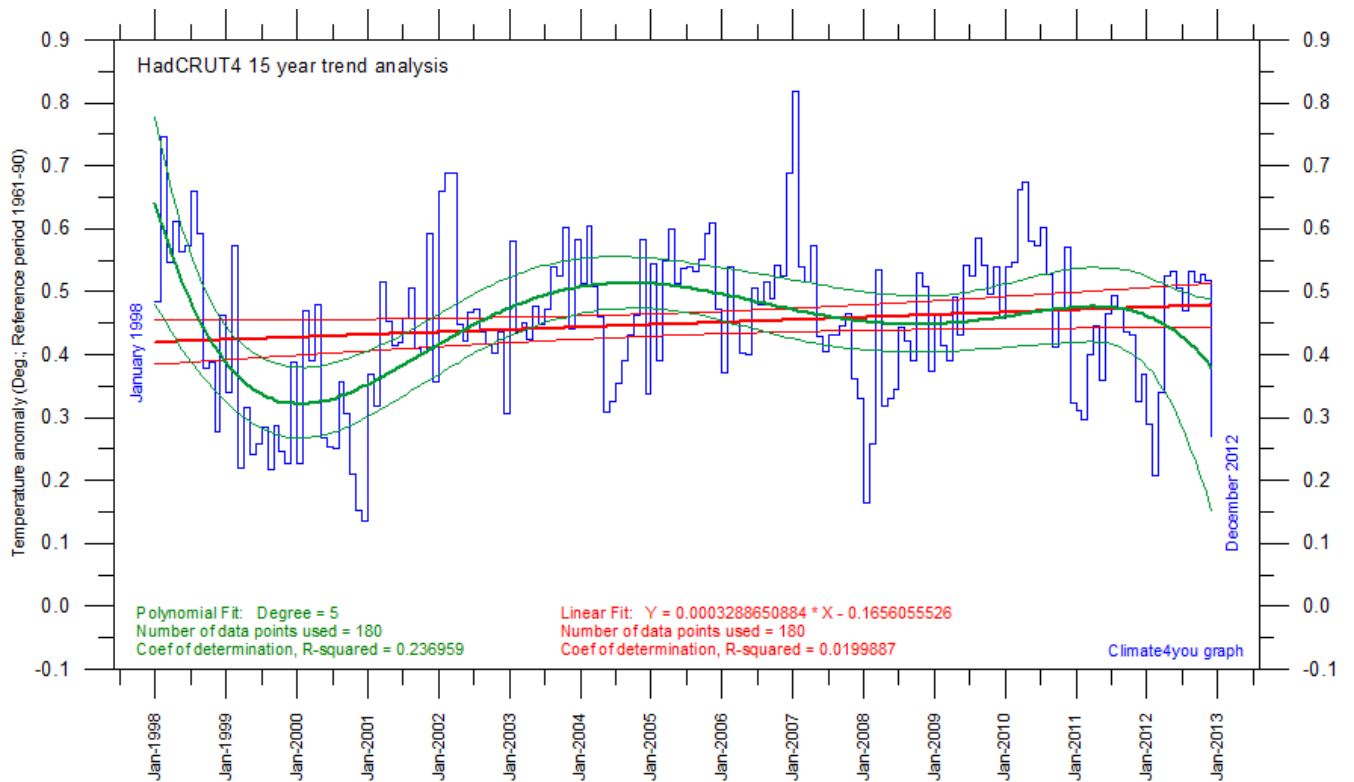


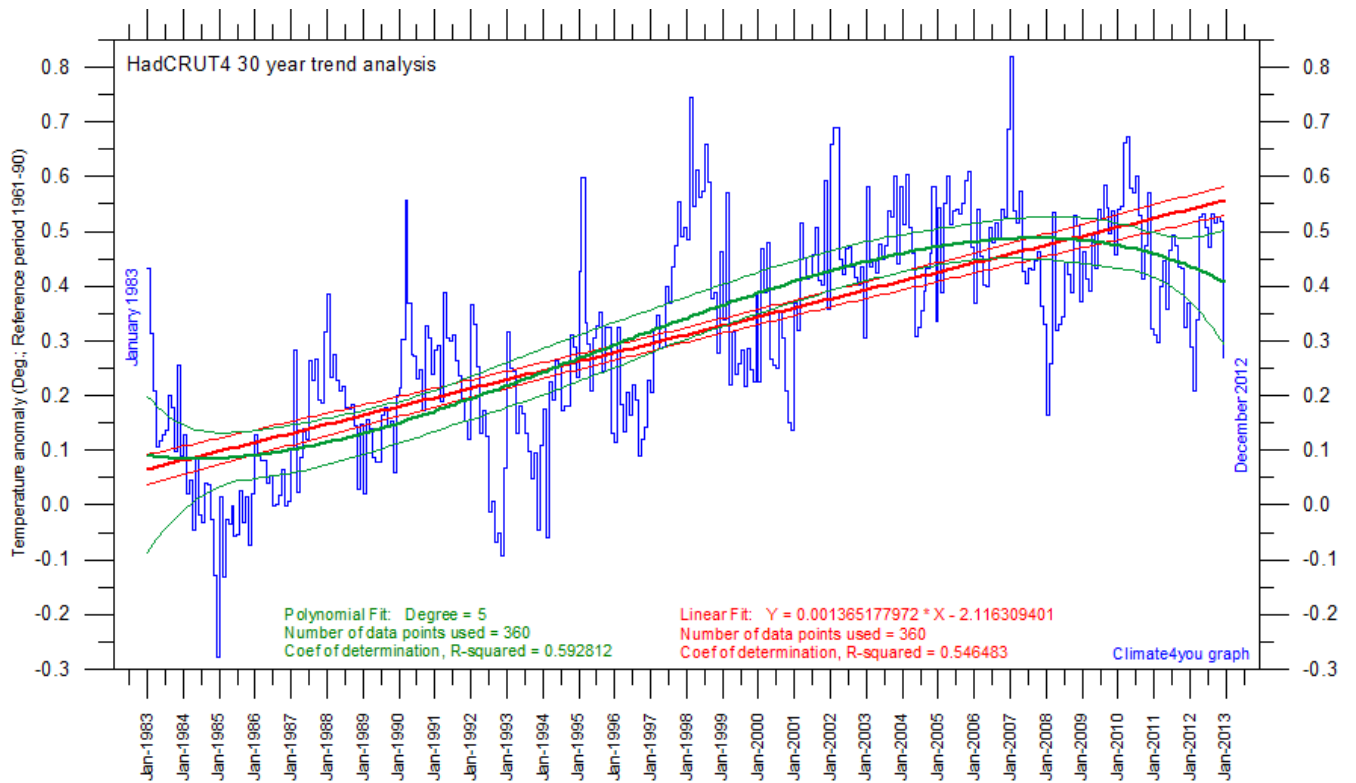
Mean annual global surface air temperature (thin line) since 1880 according to according to the [Goddard Institute for Space Studies](#) (GISS), at Columbia University, New York City, USA. The thick line is the simple running 3 year average. The average for 1979-1988 (10 yrs) has been set to zero, to make comparison with other temperature data series easy.

HadCRUT4 global surface air temperature last 10, 15 and 30 years



9





Last 10, 15 and 30 years global monthly average surface air temperature according to Hadley CRUT4. The thin blue line represents the monthly values. The thick red line is the linear fit, with 95% confidence intervals indicated by the two thin red lines. The thick green line represents a 5-degree polynomial fit, with 95% confidence intervals indicated by the two thin green lines. A few key statistics is given in the lower part of the diagrams.

Global surface air temperature trends calculated for different periods before December 2012

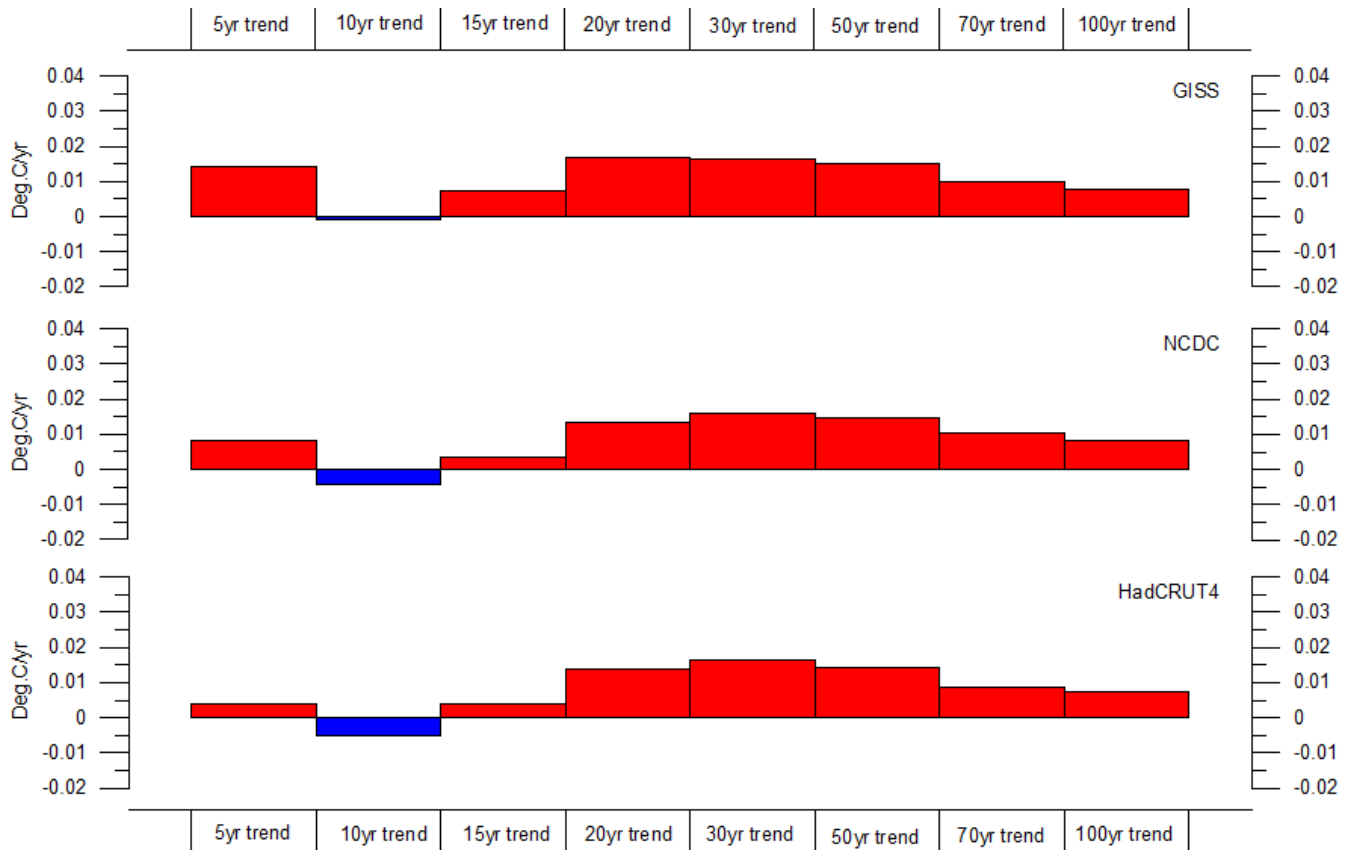


Diagram showing the latest 5, 10, 15, 20, 30, 50, 70 and 100 yr linear annual global temperature trend, calculated as the slope of the linear regression line through the data points, for three surface-based temperature estimates (GISS, NCDC and HadCRUT3). Last month included in analysis: December 2012.

All above diagrams with supplementary information (including links to data sources and previous issues of this newsletter) are available on www.climate4you.com

Yours sincerely, Ole Humlum (Ole.Humlum@geo.uio.no)

February 26, 2013.