Climate4you update Year 2011

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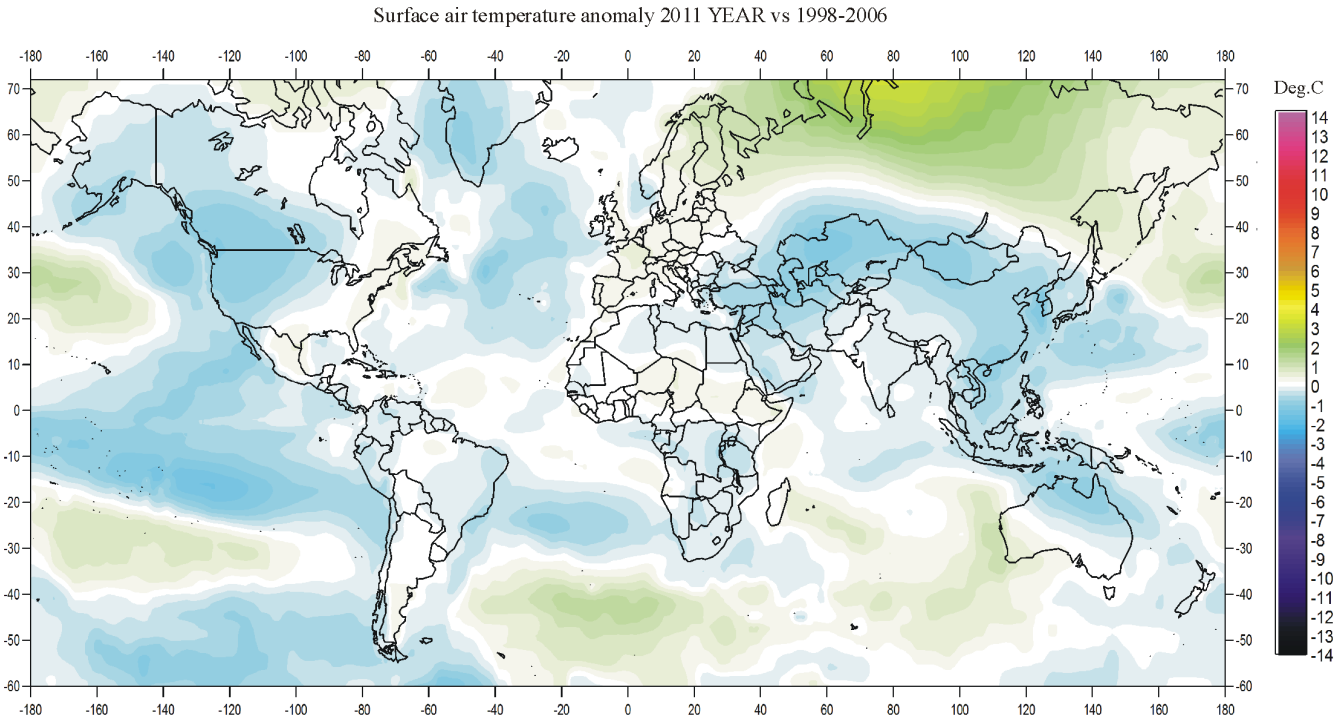
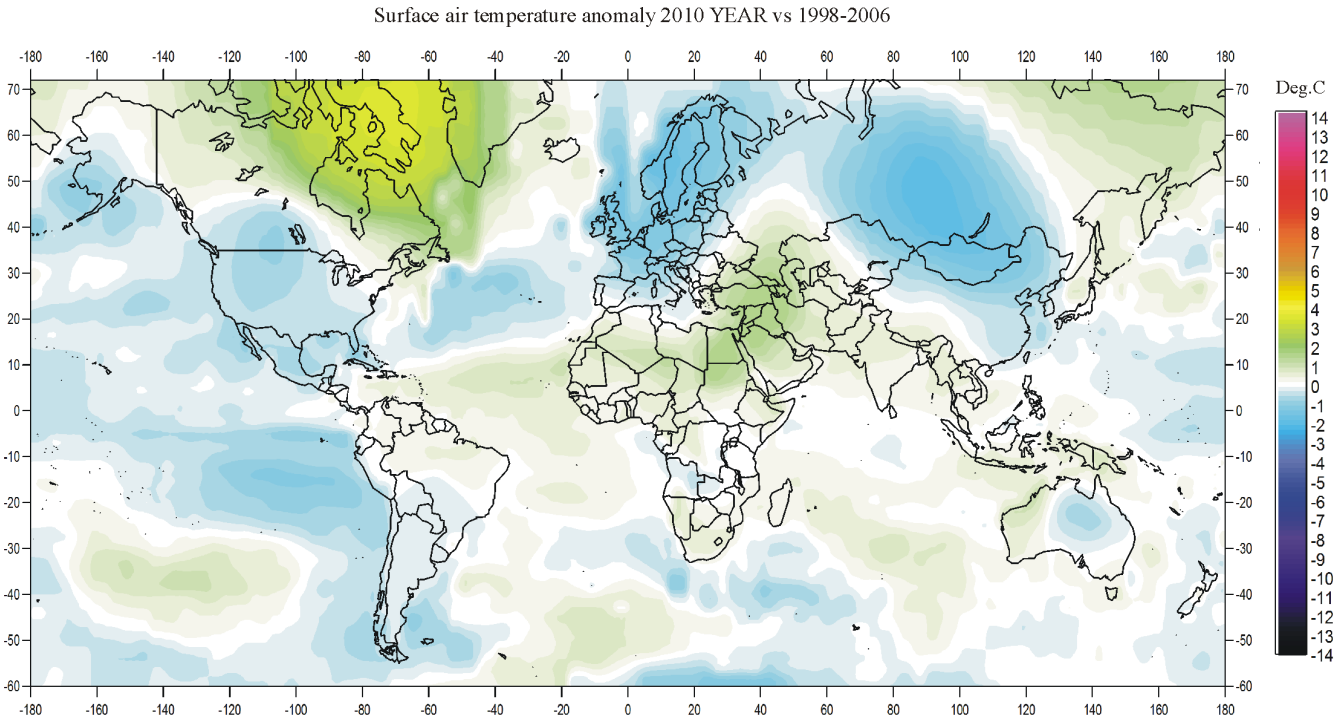
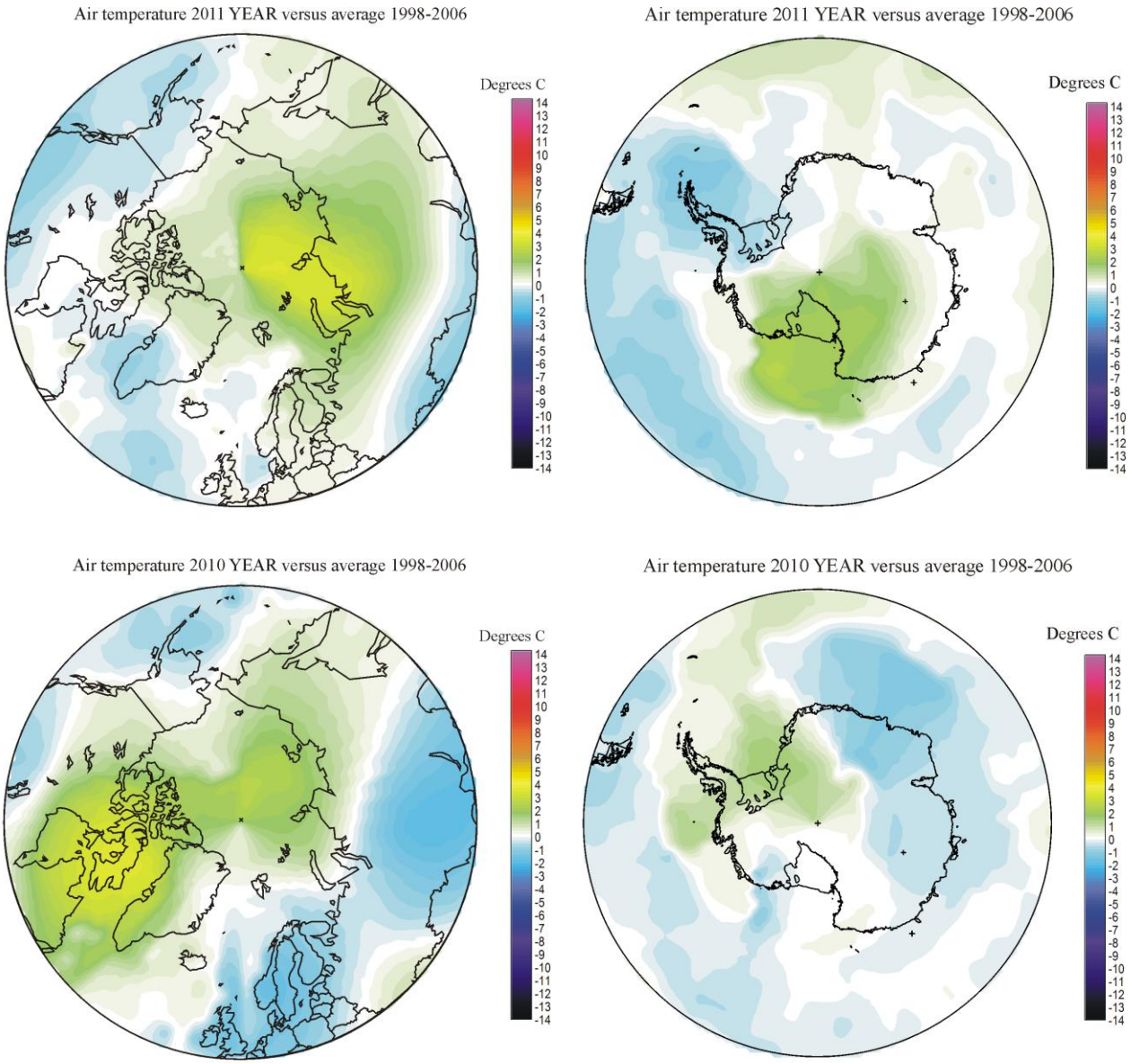
Year 2011 and 2010 global surface air temperature overview







Year 2011 (upper panel) and 2010 (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 (GISS)

All the above diagrams are constructed using data from the GISS database. This database has recently been affected by changes associated by a version change of the GHCN database (see page 8 for more on this). However, the above diagrams are unaffected by this change.

Comments to the Year 2011 global surface air temperature overview

This newsletter contains graphs showing a selection of key meteorological variables for the year 2011. 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 2011.

On the whole, the year 2011 was somewhat cooler than 2010. The corresponding sea surface temperature changes 2010-2011 is shown by the diagrams on pages 4-5.

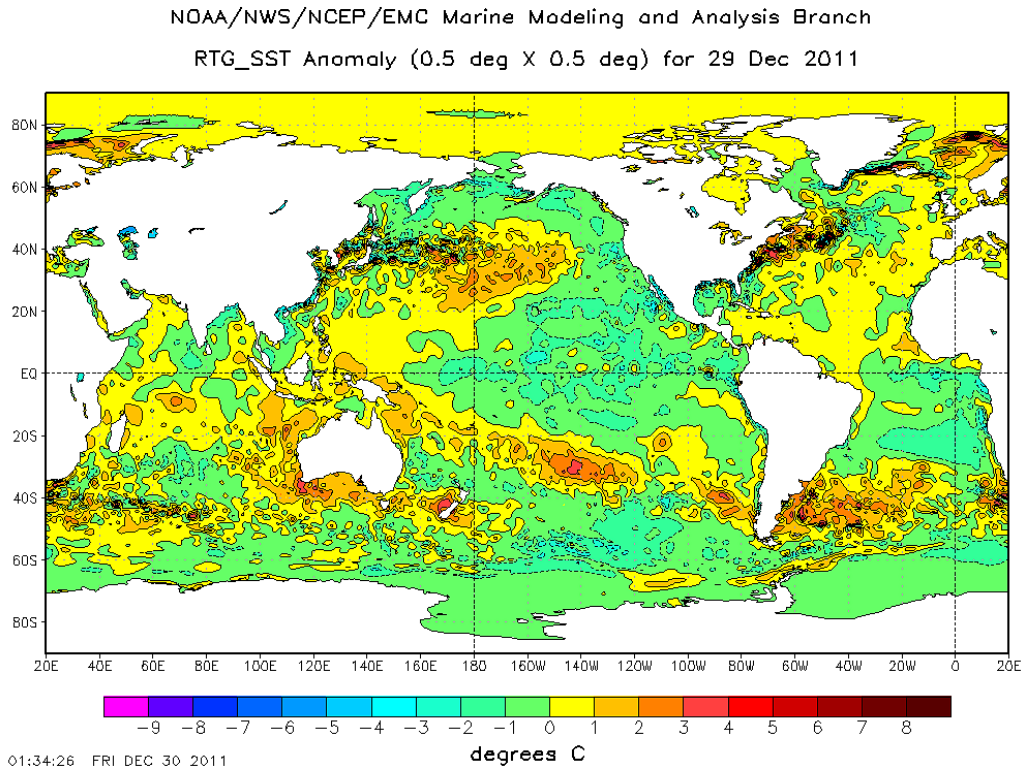
In the Northern Hemisphere close to normal or relatively low surface air temperatures characterized most regions. Relatively warm conditions characterised northern Siberia and –Russia, especially along the Arctic Ocean coast. This hotspot is presumably related to sea ice conditions.

Conditions near Equator were influenced by the cold La Nina situation, which has prevailed for most of 2011. Most of equatorial Pacific thereby experienced average surface air temperatures below the 1998-2006 average temperatures.

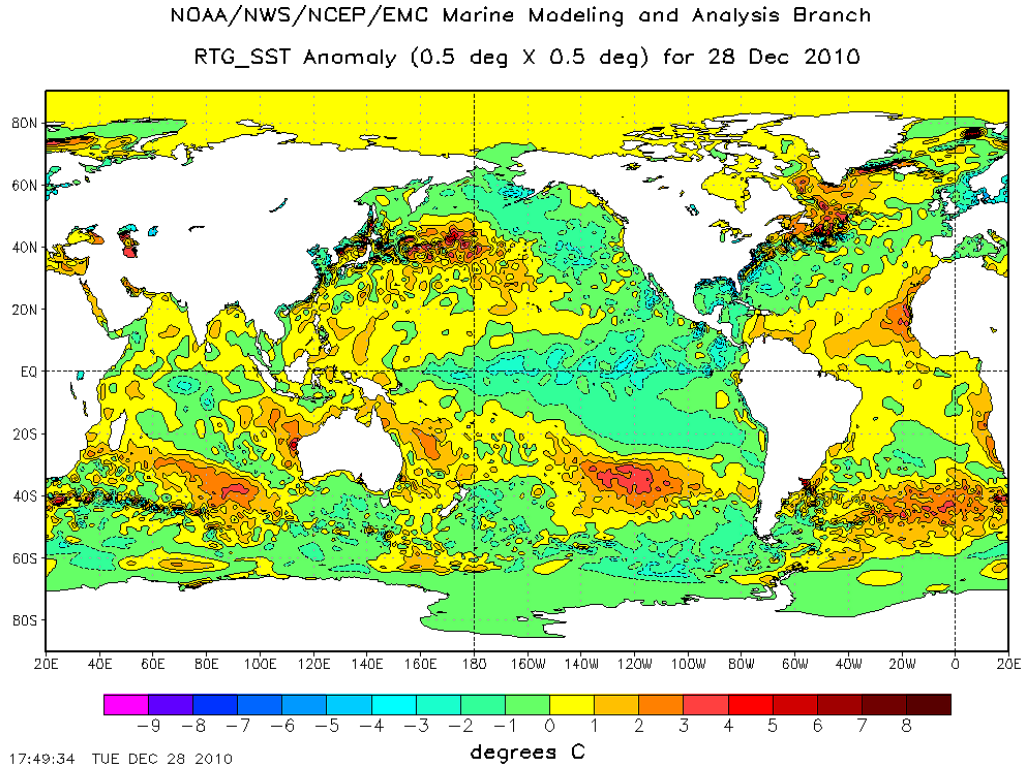
In the Southern Hemisphere surface air temperatures were close to average, or slightly below.

The Arctic was a region of relatively large contrasts. Most of the Arctic in 2011 had surface air temperatures near or above the 1998-2006 average, but along the northern coast of Siberia average 2011 temperatures were 3-4^{o}C above the 1998-2006 average. In contrast, most regions just south of the Arctic experienced temperatures below the average.

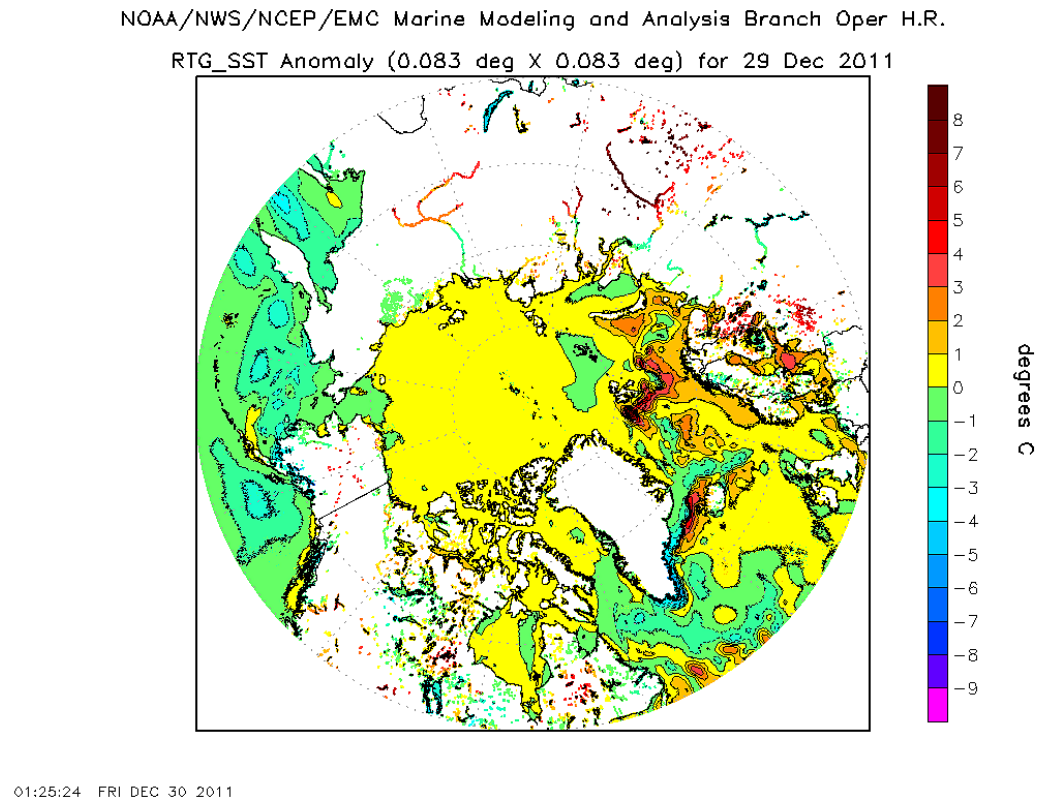
In the Antarctic regions around the Weddell Sea experienced in 2011 above average surface air temperatures, in contrast to 2010, where the same regions were colder than average. The Antarctic Peninsula experienced relatively low average temperatures in 2011.



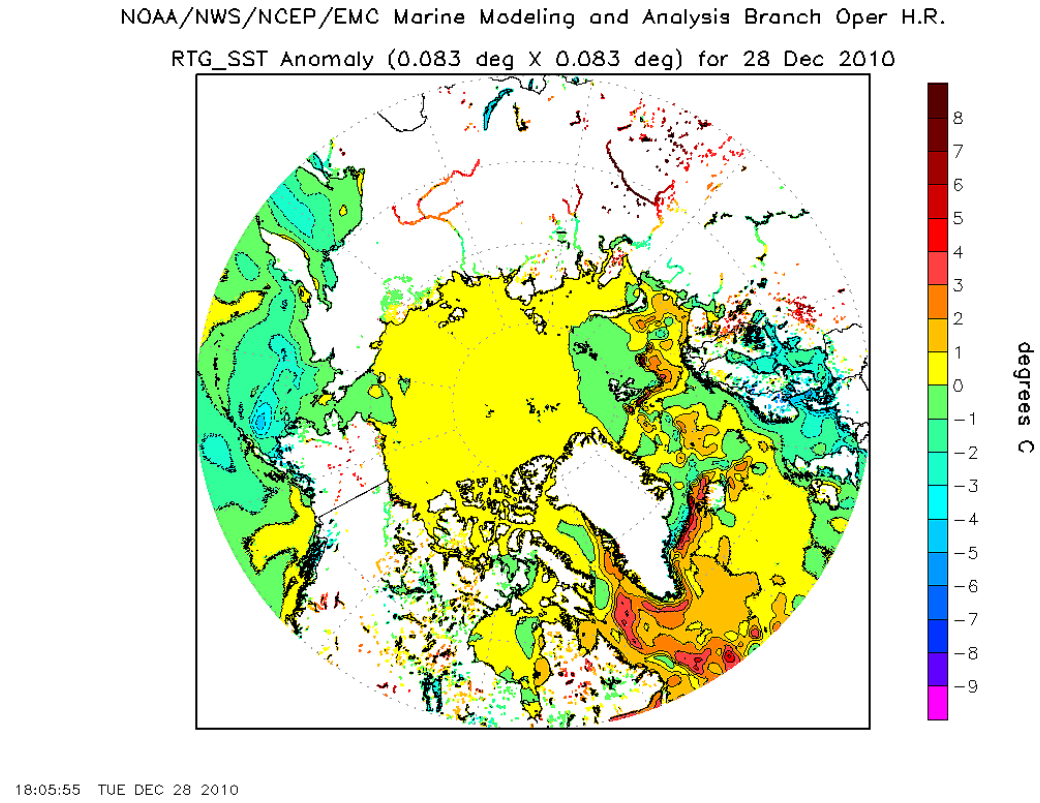
Sea surface temperature anomaly at the end of 2011.



Sea surface temperature anomaly at the end of 2010.

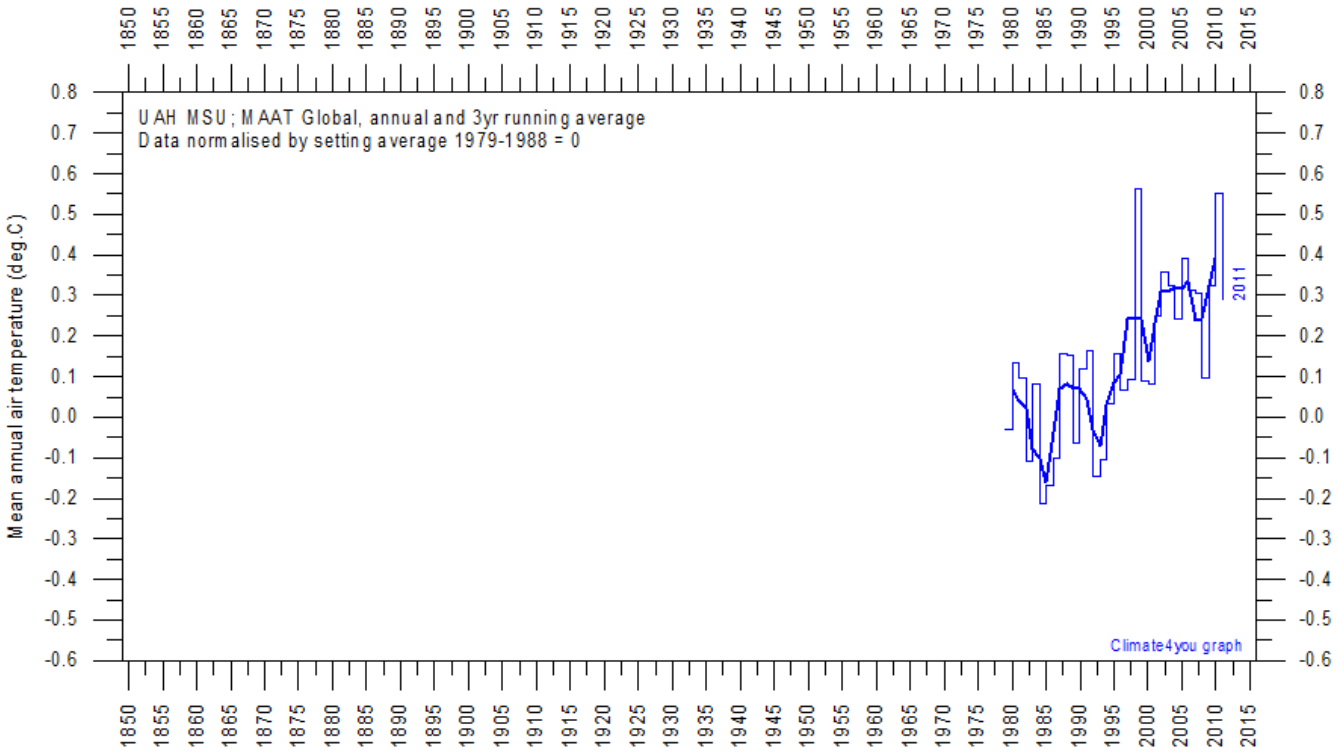


Arctic sea surface temperature anomaly at the end of 2011.

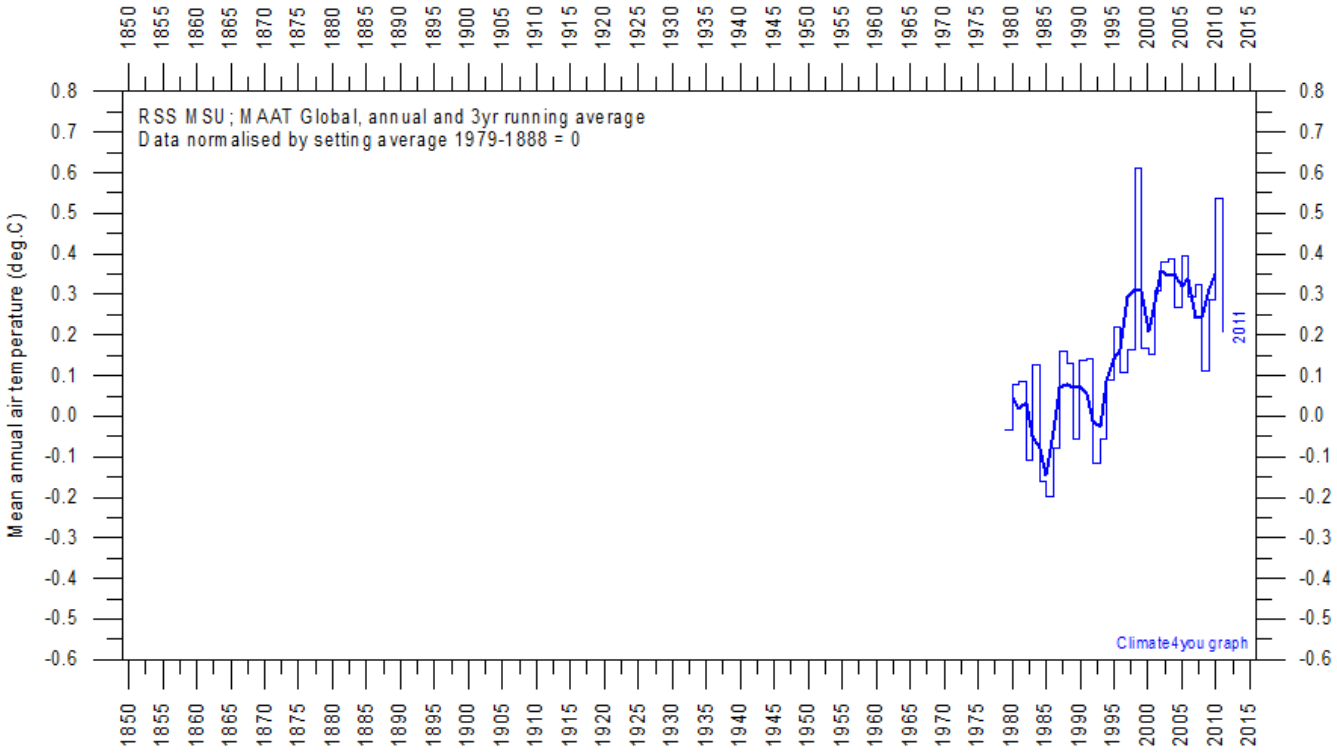


Arctic sea surface temperature anomaly at the end of 2010.

Lower troposphere temperature from satellites, updated to year 2011

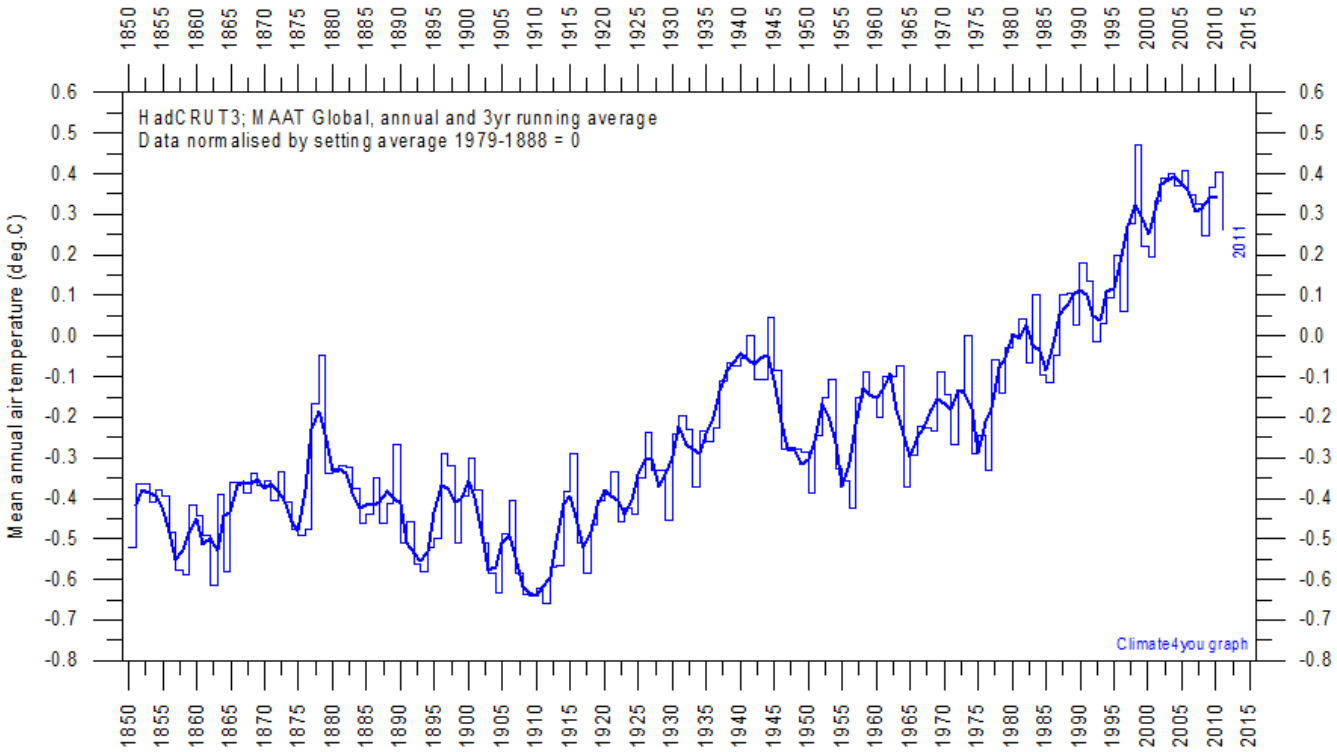


Mean annually lower troposphere temperature anomaly (thin line) since 1979 according to University of Alabama at Huntsville, USA. The thick line is the simple running 3 year average. The average for 1979-1988 (10 yrs) has been set to zero, to make comparison with other temperature data series easy.

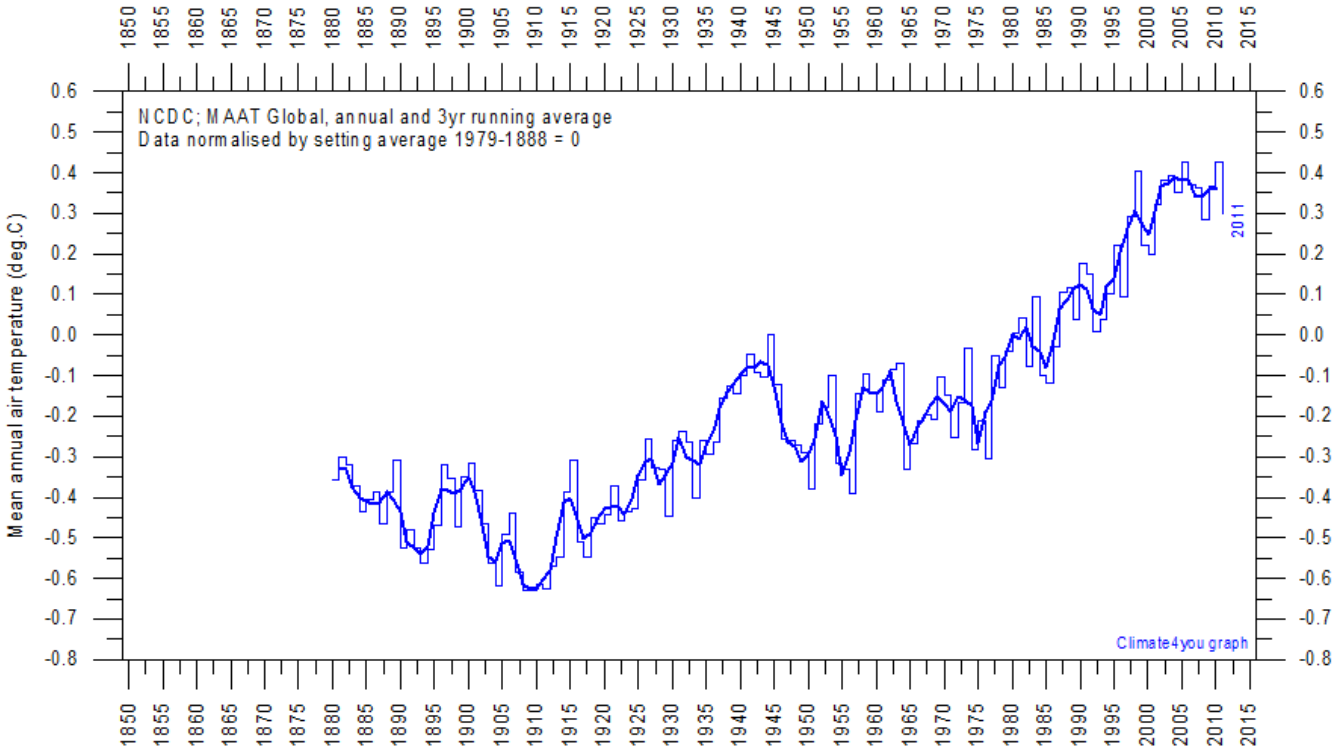


Mean annual lower troposphere temperature anomaly (thin line) since 1979 according to according to Remote Sensing Systems (RSS), USA. The thick line is the simple running 3 year average. The average for 1979-1988 (10 yrs) has been set to zero, to make comparison with other temperature data series easy.

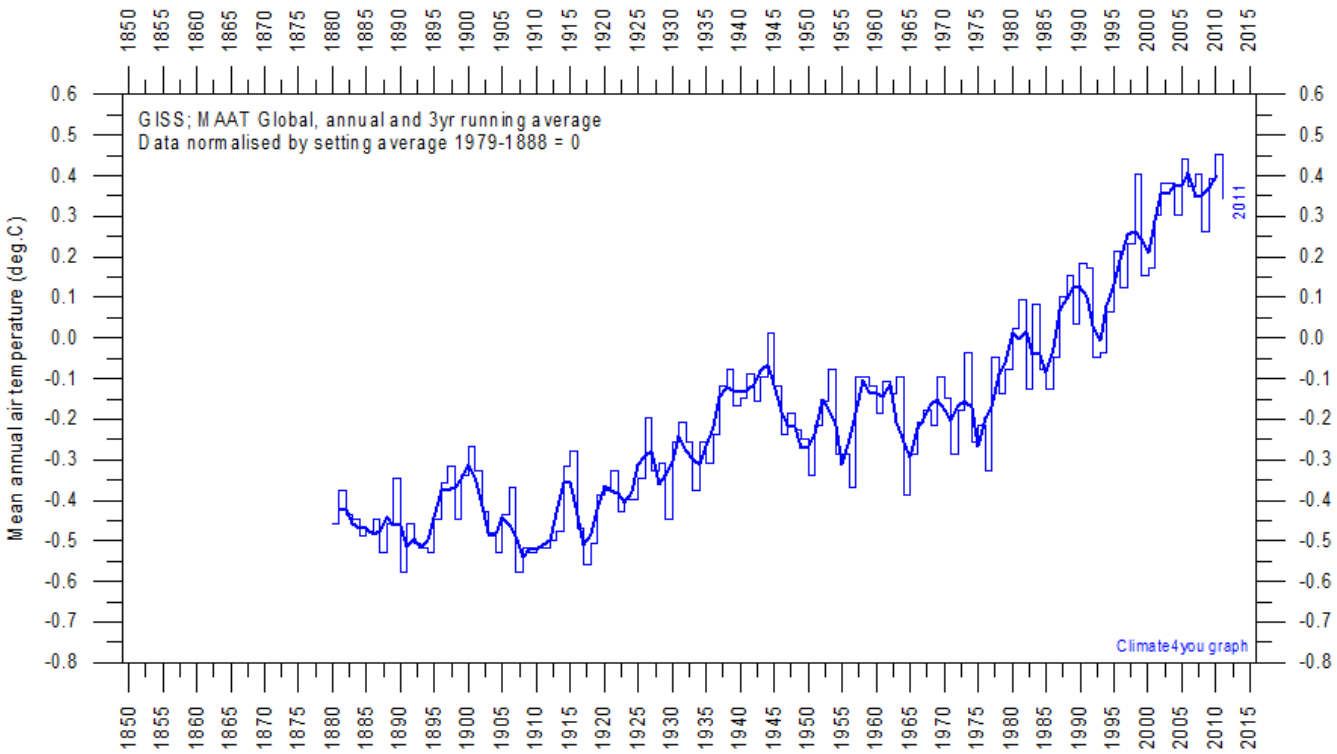
Global surface air temperature, updated to year 2011



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.



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.



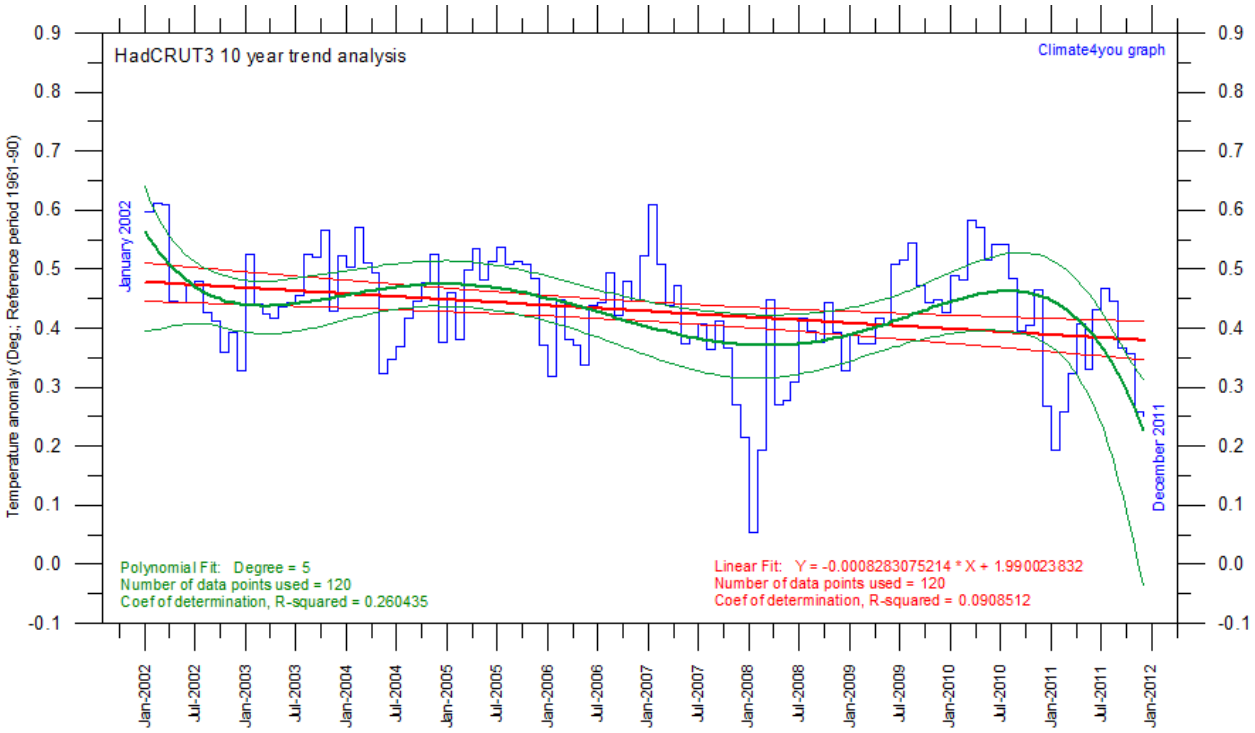
Mean annual global surface air temperature (thin line) since 1880 according to according to the Goddard Institute for Space Studies (GISS), at Columbia University, New York City, USA. The thick line is the simple running 3 year average. The average for 1979-1988 (10 yrs) has been set to zero, to make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

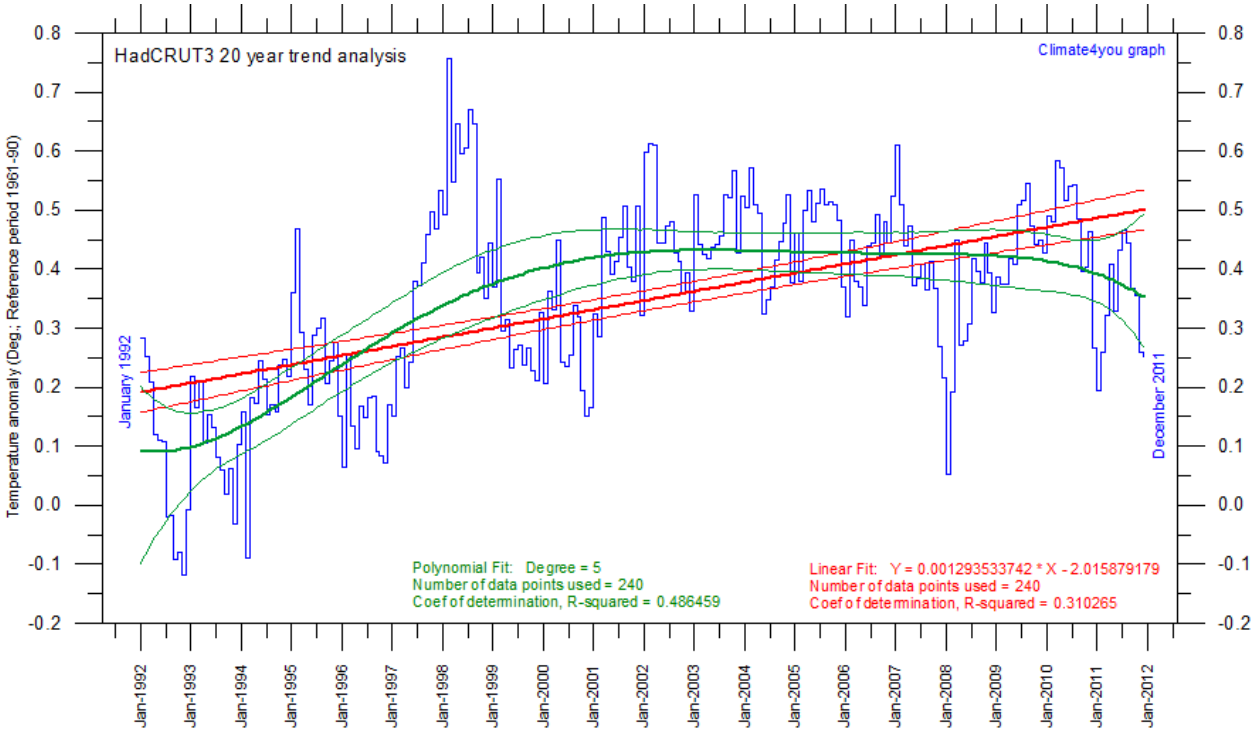
Note:

Please note that as the GHCN v2 database is no longer being updated, and since late November 2011 the GISS surface temperature analysis is based on the adjusted GHCN version 3 data. Graphs comparing results of the GISS analysis using GHCN v2 and v3 are available on the GISS homepage for comparison. Apparently this change also resulted in some surprising effects for several individual station data series available from the GISS database, which raises a number of concerns, see, e.g., http://wattsupwiththat.com/2012/01/25/another-giss-miss-this-time-in-iceland/#more-55440

In general, the corrections associated with taking the adjusted GHCN v3 database into use are apparently quite substantial for years before 1993, especially concerning the early 20th century warm period around 1925-45, as least for some stations. However, changes for the years following 1993 are small or absent. The maps shown on pages 1-2 in this newsletter are therefore not affected by these somewhat unanticipated changes of the original data.

HadCRUT3 global surface air temperature 10 and 20 yr trend 2002-2011





Last 10 and 20 years global monthly average surface air temperature according to Hadley CRUT, a cooperative effort between the Hadley Centre for Climate Prediction and Research and the University of East Anglia's Climatic Research Unit (CRU), UK. 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 2011

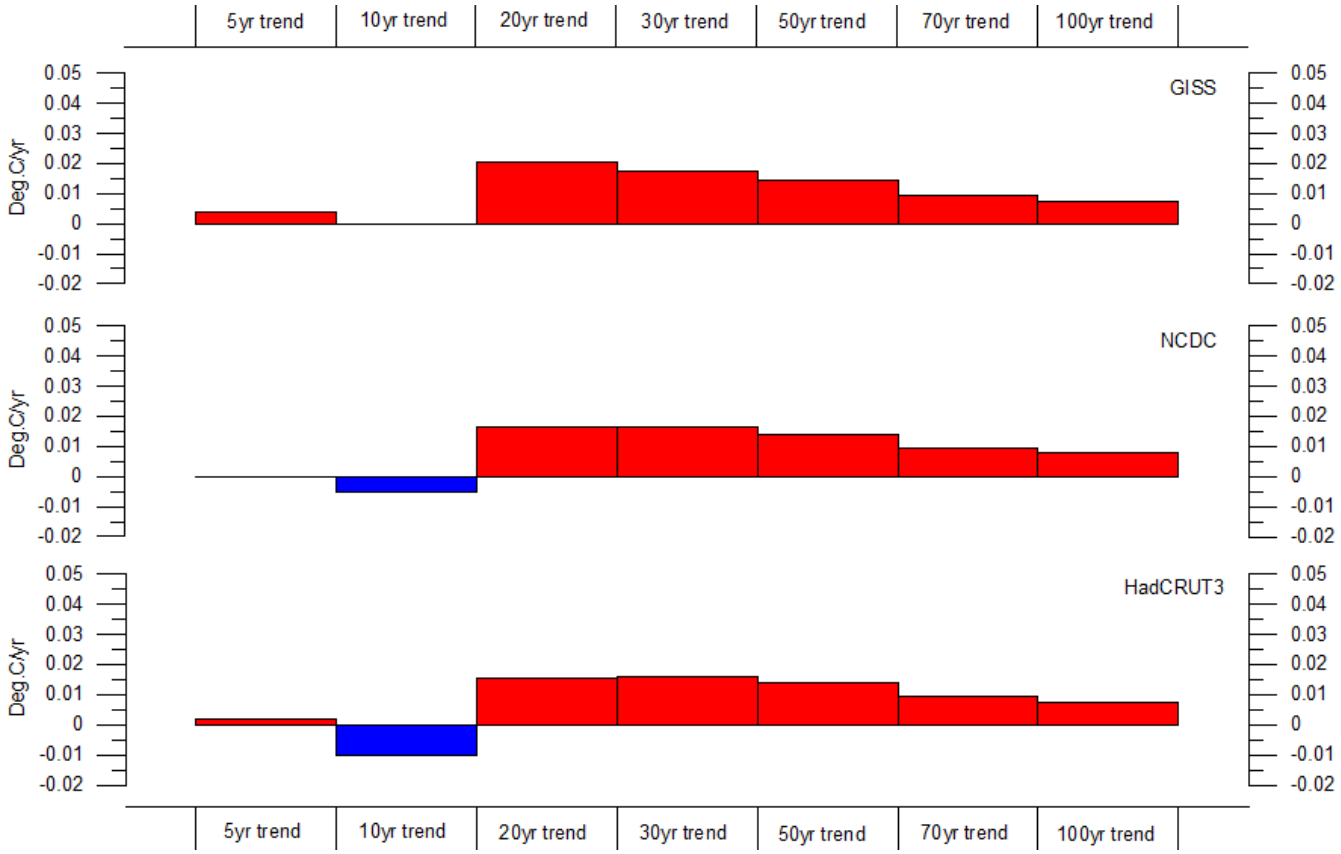


Diagram showing the latest 5, 10, 20, 30, 50, 70 and 100 yr linear annual global temperature trend, calculated as the slope of the linear regression line through the data points, for three surface-based temperature estimates (GISS, NCDC and HadCRUT3). Last month included in analysis: December 2011.

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)

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