

2nd warmest July on record;  
2nd warmest month in SH;  
2nd "warmest" month in Antarctic;  
Largest one-month warming

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Global Temperature Report: July 2009

Global climate trend since Nov. 16, 1978: +0.13 C per decade

July temperatures (preliminary)

Global composite temp.: +0.41 C (about 0.74 degrees Fahrenheit) above 20-year average for July.

Northern Hemisphere: +0.21 C (about 0.38 degrees Fahrenheit) above 20-year average for July.

Southern Hemisphere: +0.61 C (about 1.10 degrees Fahrenheit) above 20-year average for July.

June temperatures (revised):

Global Composite:  $\pm 0.00$  C above/below 20-year average

Northern Hemisphere: +0.03 C above 20-year average

Southern Hemisphere: - 0.03 C below 20-year average

(All temperature variations are based on a 20-year average (1979-1998) for the month reported.)

Notes on data released August 7, 2009:

The global average temperature jumped 0.41 C from June to July, the largest one-month jump in the 31-year global temperature record, according to Dr. John Christy, director of UAHuntsville's Earth System Science Center. The global average went from normal in June to the second hottest July on record.

"Part of that is an artificial artifact of where we put the calendar boundaries," Christy said. "Warmth from the new El Nino was not felt at all in June but really got going almost from the first day of July."

At 0.41 C warmer than seasonal norms, July 2009 was second only to July 1998 (+0.51 C). July 1998 was on the back end of the most powerful El Nino Pacific Ocean warming event of the 20th century. That El Nino also caused the warmest monthly average temperature in the climate record: +0.77 in April 1998.

At 0.61 C warmer than seasonal norms, temperatures in the Southern Hemisphere in July tied May 1998 (during that big El Nino) as the second warmest month south of the equator. It was also the second warmest month on record in the Antarctic, where the average temperature was 3.11 C (about 5.60 degrees Fahrenheit) warmer than seasonal norms for the Antarctic winter. The warmest (compared to seasonal norms) was May 2002, when the continent's average temperature was 3.30 C warmer than normal.

Largest One-Month Change  
Monthly Average Temperature  
June '09 to July '09: +0.41 C  
Dec. '06 to Jan. '07: +0.29 C  
Dec. '04 to Jan. '05: +0.29 C  
Sep. '84 to Oct. '84: +0.29 C  
Feb. '99 to Mar. '99: - 0.28 C  
Nov. '95 to Dec. '95: - 0.28 C  
Aug. '84 to Sep. '84: - 0.28 C

Color maps of local temperature anomalies may soon be available on-line at:

<http://climate.uah.edu/>

The processed temperature data is available on-line at:

[vortex.nsstc.uah.edu/data/msu/t2lt/uahncdc.lt](http://vortex.nsstc.uah.edu/data/msu/t2lt/uahncdc.lt)

As part of an ongoing joint project between The University of Alabama in Huntsville, NOAA and NASA, Christy and Dr. Roy Spencer, a principal research scientist in the ESSC, use data gathered by microwave sounding units on NOAA and NASA satellites to get accurate temperature readings for almost all regions of the Earth. This includes remote desert, ocean and rain forest areas for which reliable climate data are not otherwise available.

The satellite-based instruments measure the temperature of the atmosphere from the surface up to an altitude of about eight kilometers above sea level. Once the monthly temperature data is collected and processed, it is placed in a "public" computer file for immediate access by atmospheric scientists in the U.S. and abroad.

Neither Spencer nor Christy receives any research support or funding from oil, coal or industrial companies or organizations, or from any private or

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