

## Global Temperature Report: December 2007

### Global Lower Troposphere

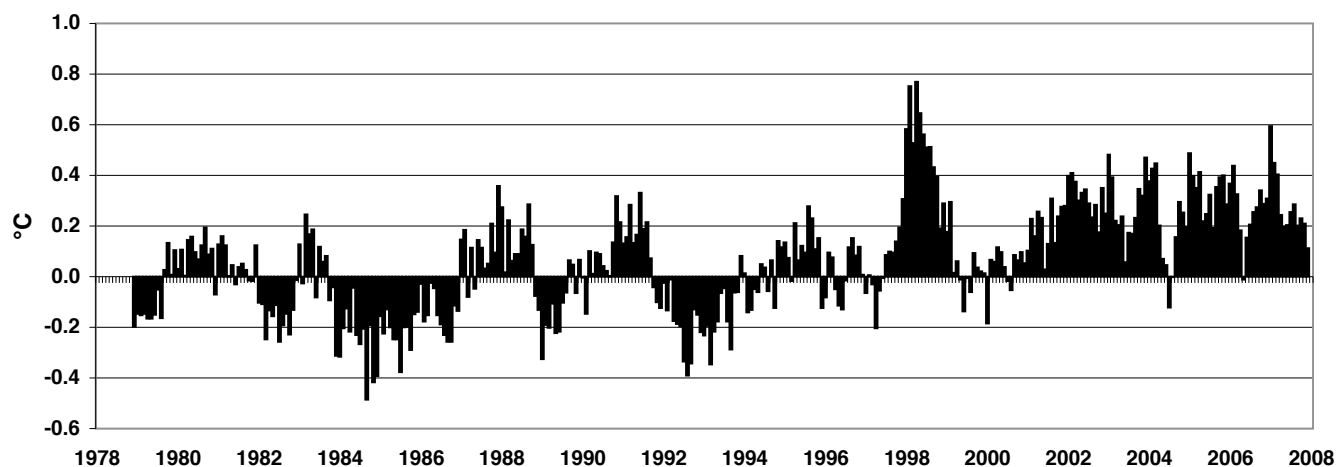


Fig. 1: Global variation from seasonal norms, in Celsius; Trend since Nov. 16, 1978: +0.14 C per decade

Global composite temp.: +0.11 C (about 0.20° Fahrenheit) above 20-year average for December.

Northern Hemisphere: +0.15 C (about 0.27° Fahrenheit) above 20-year average for December.

Southern Hemisphere: +0.08 C (about 0.14° Fahrenheit) above 20-year average for December.

November temperatures (revised): Global Composite: +0.21 C above 20-year average

Northern Hemisphere: +0.17 C above 20-year average

Southern Hemisphere: +0.25 C above 20-year average

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

#### Notes on data released Jan. 9, 2008:

Data from an advanced microwave sounding unit aboard the NASA research satellite AQUA has been added to the global temperature dataset processed and maintained at The University of Alabama in

Huntsville (UAH), according to Dr. John Christy, a professor of atmospheric science and director of UAH's Earth System Science Center (ESSC).

"The advantage of this spacecraft is that because

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of on-board propulsion, the satellite doesn't drift away from its initial orbital path," Christy said. "This makes the temperature readings very stable."

The satellite started collecting atmospheric temperature data in September 2002. The data from that time to this has been merged into the UAH dataset, which also uses data gathered by sensors aboard NOAA satellites.

"The new satellite had very little impact on the previous data, which is another confirmation that our corrections for orbital draft and decay continue to hit the mark," said Christy. "It also confirms the string of abnormally warm years we have reported since 2001. While those years were warmer than normal, six years is too short a period of time to reasonably identify as the indicators of a long-term climate trend rather than a short-term event.

"If you look at the entire satellite temperature record, the first 22 years were too chaotic to see any long-term climate trend there. As recently as well into the 1998-1999 El Niño Pacific Ocean warming event the long-term climate 'trend' was flat."

With an annual average temperature that was 0.282 C (0.51° Fahrenheit) warmer than seasonal norms, 2007 was the fourth warmest of the past 29 years, just ahead of 2003 and 2006. The warmest year in the satellite temperature record is 1998, with a composite average temperature 0.51 C (0.92° F) warmer than normal.

### Calendar Year Global Temperature Anomalies

*In Celsius*

Year	Temp	Year	Temp
1979	-0.073	1994	-0.011
1980	0.089	1995	0.110
1981	0.053	1996	0.021
1982	-0.153	1997	0.048
1983	0.036	1998	0.512
1984	-0.256	1999	0.040
1985	-0.212	2000	0.035

1986	-0.147	2001	0.198
1987	0.110	2002	0.311
1988	0.110	2003	0.275
1989	-0.110	2004	0.193
1990	0.075	2005	0.338
1991	0.117	2006	0.260
1992	-0.192	2007	0.282
1993	-0.148		

A La Niña Pacific Ocean cooling event is now apparent in the atmospheric temperature data. Air over a large portion of the tropical Pacific was cooler than seasonal norms in December.

The global temperature map in December shows a world of polar opposites: While the Arctic saw temperatures that were generally warmer than seasonal norms for wintry December, most of the Antarctic was cooler than the normal balmy December.

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/tltglhmmam\\_5.2](http://vortex.nsstc.uah.edu/data/msu/t2lt/tltglhmmam_5.2)

As part of an ongoing joint project between UAH, 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.

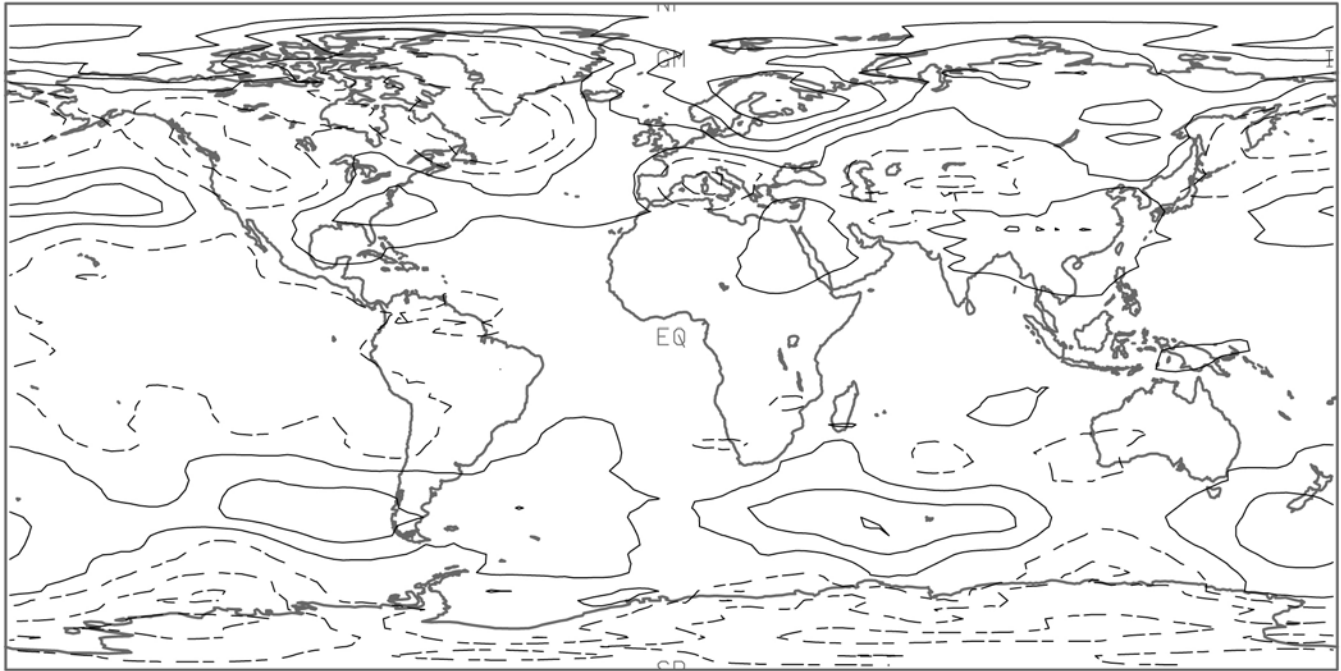
Once the monthly temperature data is collected and processed, it is placed in a "public" computer file for immediate access by atmospheric scientists in the U.S. and abroad.

*Neither Spencer nor Christy receives any research*

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*support or funding from oil, coal or industrial companies or organizations, or from any private or special interest groups. All of their climate research funding comes from state and federal grants or contracts.*

DEC 2007  
LAYER = LT LOWER TROPOSPHERE



ZERO CONTOUR OFF  
CONTOUR FROM -10.500 TO 10.500 CONTOUR INTERVAL OF 1.0000 PT(3,3)= -1.9300

Broken lines outline areas cooler than seasonal norms; solid lines outline areas warmer than seasonal norms. Each contour represents one degree Celsius, starting at -0.5 and +0.5 degrees C.