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Global Temperature Report: December 2015

2015 was third warmest; expect warmer months.

Global climate trend since Nov. 16, 1978: +0.11 C per decade

December temperatures (preliminary)

Global composite temp.: +0.44 C (about 0.79 degrees Fahrenheit) above 30-year average for December.

Northern Hemisphere: +0.51 C (about 0.92 degrees Fahrenheit) above 30-year average for December.

Southern Hemisphere: +0.37 C (about 0.67 degrees Fahrenheit) above 30-year average for December.

Tropics: +0.61 C (about 1.10 degrees Fahrenheit) above 30-year average for December.

November temperatures (revised):

Global Composite: +0.33 C above 30-year average

Northern Hemisphere: +0.43 C above 30-year average

Southern Hemisphere: +0.23 C above 30-year average

Tropics: +0.52 C above 30-year average

(All temperature anomalies are based on a 30-year average (1981-2010) for the month reported.)

Notes on data released Jan. 6, 2016:

The El Niño Pacific Ocean warming event continued to push temperatures to record highs in December, putting a record end to the third warmest year in the satellite temperature dataset, said Dr. John Christy, director of the Earth System Science Center at The University of Alabama in Huntsville. 2015 finished with an average temperature that was 0.27 C (about 0.49 degrees F) warmer than the 30-year norm. The warmest year on record is 1998, when the annual average temperature was 0.48 C (about 0.86 degrees F) warmer than normal. The five warmest years in the satellite temperature record are:

1998	+0.48 C
2010	+0.34 C
2015	+0.27 C
2002	+0.21 C
2005	+0.20 C

Ocean temperatures related to the El Niño Pacific Ocean warming event are falling, which in the short term should mean temperatures in the atmosphere will continue to rise: The eastern central Pacific cools as it releases heat into the atmosphere. There is a lag between the two, so the atmosphere should continue to see El Niño-influenced high (even record high) temperatures for the next several months. This is a pattern seen in most of the El Niño events during the past several decades.

For the globe and the southern hemisphere, December 2015 was the warmest December in the satellite temperature dataset. It was the second warmest December in the northern hemisphere, and the third warmest in the tropics.

Compared to seasonal norms, the warmest average temperature anomaly on Earth in December was over central New Hampshire, just north of Lake Winnipesaukee. December temperatures there averaged 5.80 C (about 10.44 degrees F) warmer than seasonal norms. Compared to seasonal norms, the coolest average temperature on Earth in December was over north central Greenland, where the average December 2016 temperature was 5.54 C (about 9.97 degrees F) cooler than normal.

The complete version 6 beta lower troposphere dataset is available here:

http://vortex.nsstc.uah.edu/data/msu/v6.0beta/tlt/uahncdc_lt_6.0beta4.txt

Archived color maps of local temperature anomalies are available on-line at:

http://nsstc.uah.edu/climate/

As part of an ongoing joint project between UAHuntsville, NOAA and NASA, Christy and Dr. Roy Spencer, an ESSC

principal scientist, use data gathered by advanced 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 where 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 are collected and processed, they are placed in a "public" computer file for immediate access by atmospheric scientists in the U.S. and abroad.

Neither Christy nor Spencer receives any research 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 federal and state grants or contracts.