

Nov. 1, 2016

Vol. 26, No. 7

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## **Global Temperature Report: October 2016**

### **La Niña Pacific cooling event strengthens**

Global climate trend since Nov. 16, 1978: +0.12 C per decade

#### **October temperatures (preliminary)**

Global composite temp.: +0.41 C (about 0.74 degrees Fahrenheit) above 30-year average for October.

Northern Hemisphere: +0.42 C (about 0.76 degrees Fahrenheit) above 30-year average for October.

Southern Hemisphere: +0.39 C (about 0.70 degrees Fahrenheit) above 30-year average for October.

Tropics: +0.46 C (about 0.83 degrees Fahrenheit) above 30-

year average for October.

**September temperatures (revised):**

Global Composite: +0.44 C above 30-year average

Northern Hemisphere: +0.50 C above 30-year average

Southern Hemisphere: +0.39 C above 30-year average

Tropics: +0.37 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 Nov. 1, 2016:**

A La Niña Pacific Ocean cooling event strengthened slightly in October, with tropical Pacific Ocean temperatures cooling a bit, according to Dr. John Christy, director of the Earth System Science Center at The University of Alabama in Huntsville. The cooling Pacific released heat into the atmosphere, likely causing a slight warming in the tropical troposphere. If the La Niña continues as forecast, cooling atmospheric temperatures will likely follow after a lag of a month or two.

If global average temperatures stay warm for another two months, that could push 2016 into position as the warmest calendar year in the satellite global temperature record. For the first ten months of the year, 2016 is a trifling amount (0.007 C) cooler than 1998, well within the margin of error. The two years could end in a statistical tie. Temperatures in both 1998 and 2016 were raised by an El Niño Pacific Ocean warming event.

Compared to seasonal norms, the warmest average temperature anomaly on Earth in October was over the Chukchi Sea (north of easternmost Siberia) near Wrangel Island. October temperatures there averaged 6.04 C (about 10.87 degrees F) warmer than seasonal norms. Compared to seasonal norms, the coolest average temperature on Earth in October was near the city of Novosibirsk in Siberia, southern Russia. October's temperatures there averaged 5.28 C (about 9.50 degrees F) cooler than seasonal norms.

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

[http://vortex.nsstc.uah.edu/data/msu/v6.0beta/tlt/uahncdc\\_it\\_6.0beta5.txt](http://vortex.nsstc.uah.edu/data/msu/v6.0beta/tlt/uahncdc_it_6.0beta5.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.

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