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For Additional Information:

Dr. John Christy, (256) 961-7763

john.christy@nsstc.uah.edu

Dr. Roy Spencer, (256) 961-7960

roy.spencer@nsstc.uah.edu

Global Temperature Report: October 2017

Warmest October in satellite temperature record

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

October temperatures (preliminary)

Global composite temp.: +0.63 C (about 1.13 degrees Fahrenheit) above 30-year average for October.

Northern Hemisphere: +0.67 C (about 1.21 degrees Fahrenheit) above 30-year average for October.

Southern Hemisphere: +0.59 C (about 1.06 degrees Fahrenheit) above 30-year average for October.

Tropics: +0.47 C (about 0.85 degrees Fahrenheit) above 30-year average for October.

September temperatures (revised):

Global Composite: +0.54 C above 30-year average

Northern Hemisphere: +0.51 C above 30-year average

Southern Hemisphere: +0.57 C above 30-year average

Tropics: +0.53 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. 2, 2017:

Apparently boosted by warmer than normal water in the equatorial eastern Pacific Ocean that peaked in June and July, global average temperatures in the atmosphere rose to record levels in October, according to Dr. John Christy, director of the Earth System Science Center (ESSC) at The University of Alabama in Huntsville. October 2017 was the seventh warmest month in the 39-year satellite temperature record. It joins September 2017 as the warmest months on record not associated with a typical El Niño Pacific Ocean warming event.

Of the 20 warmest monthly global average temperatures in the satellite record, only October and September 2017 were not during a normal El Niño. Compared to seasonal norms, the global average temperature in October made it the seventh warmest month in the satellite record.

Warmest months (global average)

(degrees C warmer than 30-year October average)

1. Feb. 2016 +0.85 C
2. March 2016 +0.76 C
3. April 1998 +0.74 C
4. April 2016 +0.72 C
5. Feb. 1998 +0.65 C
6. May 1998 +0.64 C
7. **Oct. 2017 +0.63 C**
8. June 1998 +0.57 C
9. Jan. 2016 +0.55 C
10. Sept. 2017 +0.54 C

Among the 39 Octobers in the satellite temperature dataset, October 2017 was the warmest for both the globe and the southern hemisphere by statistically significant amounts: Globally, at 0.63 C warmer than seasonal norms, October 2017 was 0.20 C warmer than October 2015 (+0.43 C). In the southern hemisphere, October 2017 was 0.59 warmer than seasonal norms. The second warmest southern hemisphere October was in 2016, with an average temperature that was 0.42 warmer than seasonal norms.

October 2017 was also the warmest October in the northern hemisphere, but by a smaller amount: +0.67 C in 2017 compared to +0.63 in 2015.

In the tropics, October 2017 was tied as the second warmest October in the temperature record. October 2015 was the warmest tropical October on record with an average temperature +0.54 C warmer than seasonal norms. Octobers in 2016 and 2017 tied for second at +0.47 C warmer than seasonal norms.

Warmest Octobers (global average)

(degrees C warmer than 30-year September average)

1. **2017 +0.63 C**
2. 2015 +0.43 C
3. 2016 +0.42 C
4. 1998 +0.40 C
5. 2003 +0.28 C
6. 2005 +0.27 C
7. 2014 +0.25 C
8. 2012 +0.24 C
9. 2006 +0.22 C
10. 2010 +0.20 C

Compared to seasonal norms, the coldest spot on the globe in October was in eastern Russian, near the town of Omtschak. Temperatures there were 1.97 C (about 3.55 degrees Fahrenheit) cooler than seasonal norms.

Compared to seasonal norms, the warmest place on Earth in October was over the Northeast Greenland National Park. Temperatures there averaged 4.61 C (about 8.30 degrees Fahrenheit) warmer than seasonal norms.

As part of an ongoing joint project between UAH, 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.

The complete version 6 lower troposphere dataset is available here:

http://www.nsstc.uah.edu/data/msu/v6.0/tlt/uahncdc_lt_6.0.txt

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

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

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