Jan. 3, 2014

Vol. 23, No. 9

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Global Temperature Report: December 2013

2013 was 4th warmest year in the satellite era

Global climate trend since Nov. 16, 1978: +0.14 C per decade

December temperatures (preliminary)

Global composite temp.: +0.27 C (about 0.49 degrees Fahrenheit) above 30-year average for December.

Northern Hemisphere: +0.27 C (about 0.49 degrees Fahrenheit) above 30-year average for December.

Southern Hemisphere: +0.26 C (about 0.47 degrees Fahrenheit) above 30-year average for December.

Tropics: +0.06 C (about 0.11 degrees Fahrenheit) above 30-

year average for December.

November temperatures (revised):

Global Composite: +0.19 C above 30-year average

Northern Hemisphere: +0.16 C above 30-year average

Southern Hemisphere: +0.23 C above 30-year average

Tropics: +0.02 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. 3, 2014:

2013 was the fourth warmest year in the satellite era, trailing only 1998, 2010 and 2005, according to Dr. John Christy, a professor of atmospheric science and director of the Earth System Science Center at the University of Alabama in Huntsville. The warmest areas during the year were over the North Pacific and the Antarctic, where temperatures for the year averaged more than 1.4 C (more than 2.5 degrees Fahenheit) warmer than normal. There were small areas of cooler than normal temperatures scattered about the globe, including one area over central Canada where temperatures were 0.6 C (about 1.1 degrees Fahrenheit) cooler than the 30-year norm.

Global average temperature
(*Departures from 30-year norm, degrees C*)

1. 1998 0.419
2. 2010 0.398
3. 2005 0.260

4. **2013 0.236**
5. 2002 0.218
6. 2009 0.209
7. 2007 0.204
8. 2003 0.187
9. 2006 0.186
10. 2012 0.170
11. 2011 0.130
12. 2004 0.108
13. 2001 0.107
14. 1991 0.020
15. 1987 0.013
16. 1995 0.013
17. 1988 0.012
18. 1980 -0.008
19. 2008 -0.009
20. 1990 -0.022
21. 1981 -0.045
22. 1997 -0.049
23. 1999 -0.056
24. 1983 -0.061
25. 2000 -0.061
26. 1996 -0.076
27. 1994 -0.108
28. 1979 -0.170
29. 1989 -0.207
30. 1986 -0.244
31. 1993 -0.245
32. 1982 -0.250
33. 1992 -0.289
34. 1985 -0.309
35. 1984 -0.353

Compared to seasonal norms, in December the warmest area on the globe was the northeastern Pacific Ocean, where the average temperature for the month was 4.91 C (about 8.8 degrees F) warmer than seasonal norms. The coolest area was in central Manitoba, near Lake Winnipeg, where

temperatures in the troposphere were 5.37 C (almost 9.7 degrees F) cooler than seasonal norms.

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 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 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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