Mar 2, 2019

Vol. 28, No. 11

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Global Temperature Report: February 2019

Global climate trend since Dec. 1 1978: +0.13 C per decade

February Temperatures (preliminary)

Global composite temp.: +0.36 C (+0.65 °F) above seasonal average

Northern Hemisphere.: +0.46 C (+0.83 °F) above seasonal average

Southern Hemisphere.: +0.26 C (+0.47 °F) above seasonal average

Tropics.: +0.43 C (+0.77 °F) above seasonal average

January Temperatures (final)

Global composite temp.: +0.37 C (+0.67 °F) above seasonal average

Northern Hemisphere.: +0.32 C (+0.58 °F) above seasonal average

Southern Hemisphere.: +0.42 C (+0.76 °F) above seasonal average

Tropics.: +0.37 C (+0.67 °F) above seasonal average

Notes on data released March 1, 2019 (v6.0)

February's globally-averaged, bulk-layer atmospheric temperature anomaly of +0.36°C (+0.65°F) is essentially unchanged from January. The NH warmed a bit, but that was counterbalanced by cooling in the SH. NOAA has declared that the long-awaited El Niño, a warming of tropical Pacific Ocean waters, has officially arrived, though as they had anticipated for several months, the strength of this one is minimal. Indeed, the month's tropical satellite temperature anomaly is a weak +0.43°C (+0.77°F), which is only half of February 2016's major El Niño value of +0.86°C (+1.55°F).

The month's coldest seasonally-adjusted temperature departure from average is easy to spot on the map: -5.6 °C (-10.1°F) northwest of Edmonton, Alberta – and it's already winter to begin with there! As we've often seen on these monthly maps, the warmest spot is nearby, just north of Alaska in the Beaufort Sea at +4.5°C (+8.1°F). When patterns become stationary, the largest departures of opposite sign tend to be close to each other.

The monthly map for February 2019 indicates many other colder than average regions such as North Africa, waters around Hawaii, North Atlantic and several areas in the southern oceans. On the warm side of things were the North Pacific, eastern US, Europe, Japan and scattered areas in the SH. The El Niño signature of very warm tropical temperatures is relatively weak this time around.

Spoiler Alert (Repeated until accomplished – no estimate yet): Well, the time is once again approaching when new changes are required for the currently operating satellites as their performance changes with age. NOAA-18 has been operating for 13 years and is now past its time frame for accurate diurnal adjustments based on initial drifting, meaning the adjustments are adding spurious warming to the time series. On the other hand, NOAA-19 has also drifted so far that it too is introducing an error, but given its direction of drift, these errors are of the opposite sign. The two satellites are almost compensating for each other, but not to our satisfaction. In addition, the current non-drifting satellite operated by the Europeans, MetOP-B, has not yet been adjusted or "neutralized" for it's seasonal peculiarities related to the diurnal cycle. While these MetOP-B peculiarities do not affect the long-term global trend, they do introduce error within a particular year in specific locations over land. So, all in all, we anticipate generating new adjustments for NOAA-18 and NOAA-19 to account for their behavior of late and shall also modify MetOP-B to account for it's unique seasonal cycle. This will be part of a coordinated plan to eventually merge NOAA's new microwave sensor (ATMS) carried on Suomi NPP and the new NOAA series JPSS. We are hoping that NOAA-19 will be the last spacecraft for which drifting adjustments will be required as the newer satellites (MetOP, NPP, JPSS) have on-board propulsion to keep them in stable orbits. With so many new items to test and then incorporate, we are waiting until we are confident that these adjustments/additions are appropriately stable before moving to the next version. In the meantime, we shall continue to produce v6.0.

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, NASA and European 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/

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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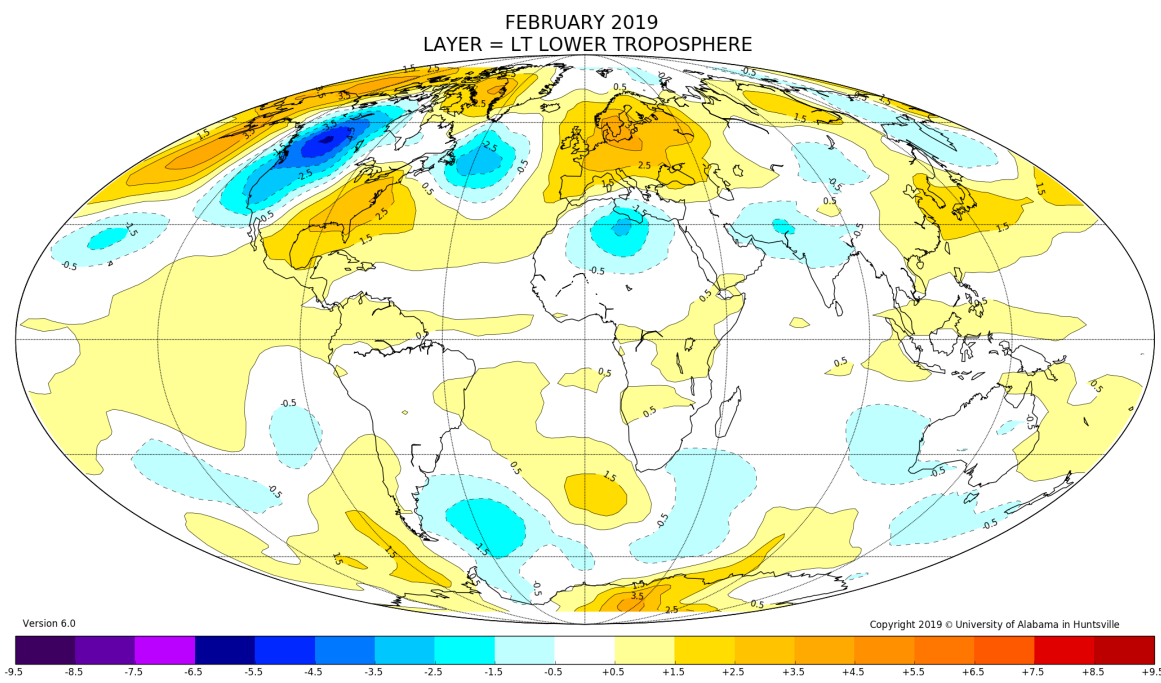
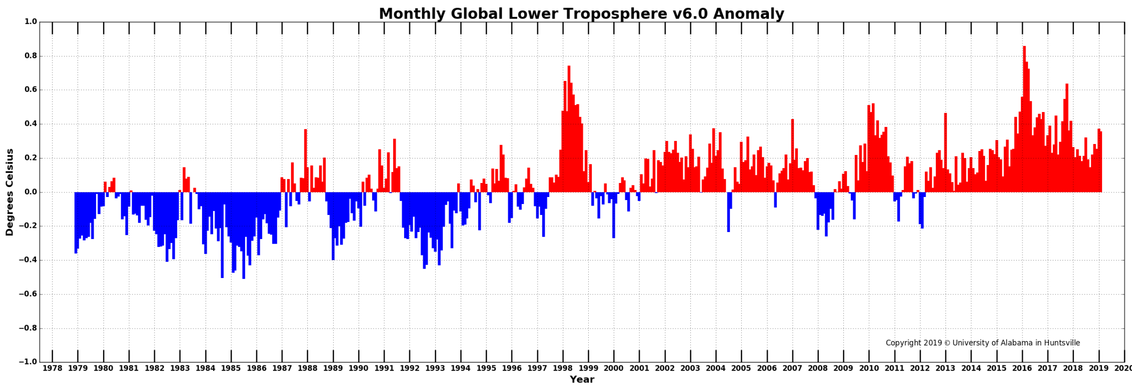


Broken lines outline areas that were cooler than seasonal norms; solid lines outline areas that were warmer than seasonal norms. Each contour represents one degree Celsius, starting at -0.5 and +0.5 degrees C.



December 1978 to February 2019