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For Additional Information:
Dr. John Christy, (256) 961-7763
christy@nsstc.uah.edu
Dr. Roy Spencer, (256) 961-7960
spencer@nsstc.uah.edu

Global Temperature Report: Jan 2025 with Version 6.1

Global climate trend since Dec. 1 1978: +0.15 C per decade

January Temperatures v6.1 (preliminary)

Global composite temp: +0.46 C (+0.83°F) above the seasonal average

Northern Hemisphere: +0.70 C (+1.26 °F) above seasonal average

Southern Hemisphere: +0.21 C (+0.38°F) above seasonal average

Tropics: +0.24 C (+0.43°F) above seasonal average

December Temperatures v6.1 (final)

Global composite temp: +0.62 C (+1.12°F) above the seasonal average

Northern Hemisphere: +0.76 C (+1.37 °F) above seasonal average

Southern Hemisphere: +0.48 C (+0.86°F) above seasonal average

Tropics: +0.53 C (+0.95°F) above seasonal average

Notes on data released February 4, 2025

[Please note that we provide these data out of our own initiative, and are only able to produce these updates at times convenient to our working schedules.]

The decline in tropical temperature of -0.29°C (-0.52°F) from December was substantial and when included in the global temperature the January 2025 global anomaly of +0.46°C (+0.83°F) produced the coolest anomaly since Jun 2023 and continues the decline begun in November.

As mentioned in the past few reports, the El Niño of 2023-24 has ended and cool La Niña conditions are becoming more evident, especially through this month. If past experience holds, we should see further declines in the atmospheric temperature above the tropics in the months ahead. To see the latest on NOAA's La Niña Advisory (not a Watch) see: https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf.

The planet's warmest atmospheric temperature departure in January occurred over the Tibetan Plateau with a value of +5.4°C (+9.7°F). Warm areas included much of Asia and eastern Europe, the eastern North Pacific through Alaska to northern Canada as well as the subtropical North Atlantic.

With a reading of -2.6°C (-4.7°F), the coolest departure from average was found over southeastern Ontario. This cold spot was the center of a colder-than-average region from the Rocky Mountains eastward to the North Atlantic. Patches of cooler than average temperatures were found in the higher latitudes of the southern oceans.

The conterminous US in January averaged -1.06 °C (-1.91°F) as the eastern two thirds of the country experienced several cold spells. It was warmer than usual in Alaska, so the 49-state January average came in at -0.62 °C (-1.12 °F). [We don't include Hawaii in the US results because its land area is less than that of one satellite grid square, so it would have virtually no impact on the overall national results.]

Background notes.

New v6.1 due to termination of NOAA-19 in 2021 and adding METOP-C.

https://www.drroyspencer.com/2024/11/uah-global-temperature-update-for-october-2024-truncation-of-the-noaa-19-satellite-record/

New Reference Base Jan 2021 and forward. As noted in the Jan 2021 GTR, the situation comes around every 10 years when the reference period or "30-year normal" that we use to calculate the departures is redefined. With that, we have averaged the absolute temperatures over the period 1991-2020, in accordance with the World Meteorological Organization's guidelines, and use this as the new base period. This allows the anomalies to relate more closely to the experience of the average person, i.e. the climate of the last 30 years. Due to the rising trend of global and regional temperatures, the new normals are a little warmer than before, i.e. the global average temperature for Januaries for 1991-2020 is 0.14 °C warmer than the average for Januaries during 1981-2010. So, the new departures from this now warmer average will appear to be cooler, but this is an artifact of simply applying a new base period. It is important to remember that changes over time periods, such as a trend value or the relative difference of one year to the next, will not change. Think about it this way, all we've done is to take the *entire* time series and shifted it down a little.

To-Do List: There has been a delay in our ability to utilize and merge the new generation of microwave sensors (ATMS) on the NPP and JPSS satellites, but we are renewing our efforts as Dr. Braswell is now focused on this task. The delay is due to the incredibly slow rate at which the data may be accessed. In addition, the current non-drifting satellite operated by the Europeans, MetOP-B, has not yet been adjusted or "neutralized" for its seasonal peculiarities related to its unique equatorial crossing time (0930). 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. We have now added MetOP-C to replace the truncated data from NOAA-19.

Dr. Christy and Dr. Roy Spencer, an ESSC principal scientist, use data gathered by advanced microwave sounding units on NOAA, NASA and European satellites to produce 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. Dr. Danny Braswell has reconstituted the code which converts the satellite radiances to temperature values and Dr. Rob Junod assists with visuals in the preparation of these reports.

The satellite-based instruments measure the temperature of the atmosphere from the surface up to an altitude of about nine 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 6.1 lower troposphere dataset is available here:

http://www.nsstc.uah.edu/data/msu/v6.1/tlt/uahncdc_lt_6.1.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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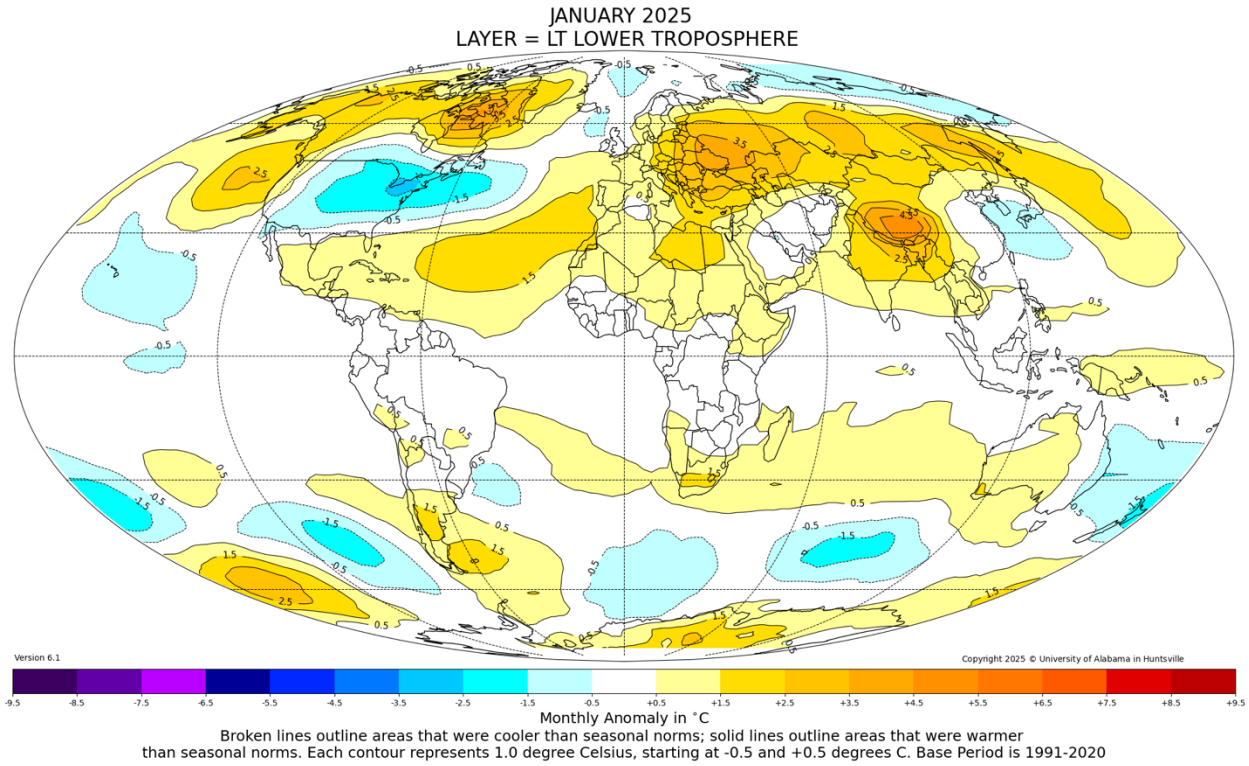

Figure. Lower tropospheric temperature anomalies for January 2025. Contour interval 1.0 °C.

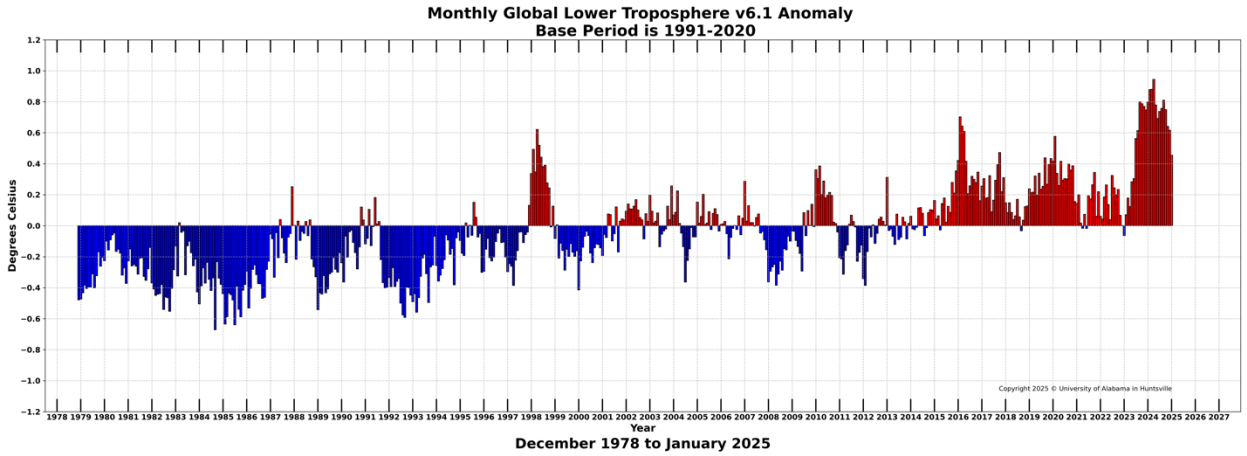

Figure. Bar chart of global monthly lower tropospheric temperature anomalies.