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# Global Temperature Report: July 2025 with Version 6.1

Global climate trend since Dec. 1 1978: +0.16 C per decade

**July Temperatures v6.1 (preliminary)**

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

Northern Hemisphere: +0.49 C (+0.88 °F) above seasonal average

Southern Hemisphere: +0.23 C (+0.41°F) above seasonal average

Tropics: +0.45 C (+0.81°F) above seasonal average

**June Temperatures v6.1 (final)**

Global composite temp: +0.48 C (+0.86°F) above the seasonal average

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

Southern Hemisphere: +0.47 C (+0.85°F) above seasonal average

Tropics: +0.30 C (+0.54°F) above seasonal average

**Notes on data released Aug 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 global mean July temperature departure from the seasonal average dropped slightly to +0.36 C (+0.65 °F) from +0.48 C (+0.86 °F) in June. The drop marks the first time in the last 8 months with the temperature falling outside the range of +0.55 C ±0.1 and is the coolest value since June

2023. The cooling atmosphere over the southern oceans dominated the decline. The 46+ year trend remains at +0.155 C/decade, but is rounded up to +0.16 C/decade. We estimate the error range of this trend over 46+ years at ±0.03 C/decade which renders the third decimal inconsequential.

The tropical Pacific is still in "neutral" conditions. While the general trend in global temperature has been a decline since the peak last April (+0.94 C), the decline has not been steady. Interestingly, the NOAA forecast for the coming NH winter has equal chances for "neutral" and "La Niña." For the latest in the El Niño/La Niña situation, 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 July occurred over the northern Sea of Japan at +3.4 C (+6.1 °F) as the part of a wavy warmer-than-average band from New England eastward over northern Europe to northern China and across northern Japan to the Pacific Ocean. Argentina, Chile and the South Pacific Ocean near the dateline were much above average as well.

With a reading of -2.3 C (-4.2 °F), the coolest departure from average was found over Eastern Antarctica. Colder than average temperatures were found on either side of South America in the southern oceans. Northwestern Canada was also cooler than average.

The conterminous US in July was near average at +0.32 C (+0.58 °F) above the seasonal mean. It was slightly warmer in Alaska, so the 49-state average came in at +0.38 C (+0.68°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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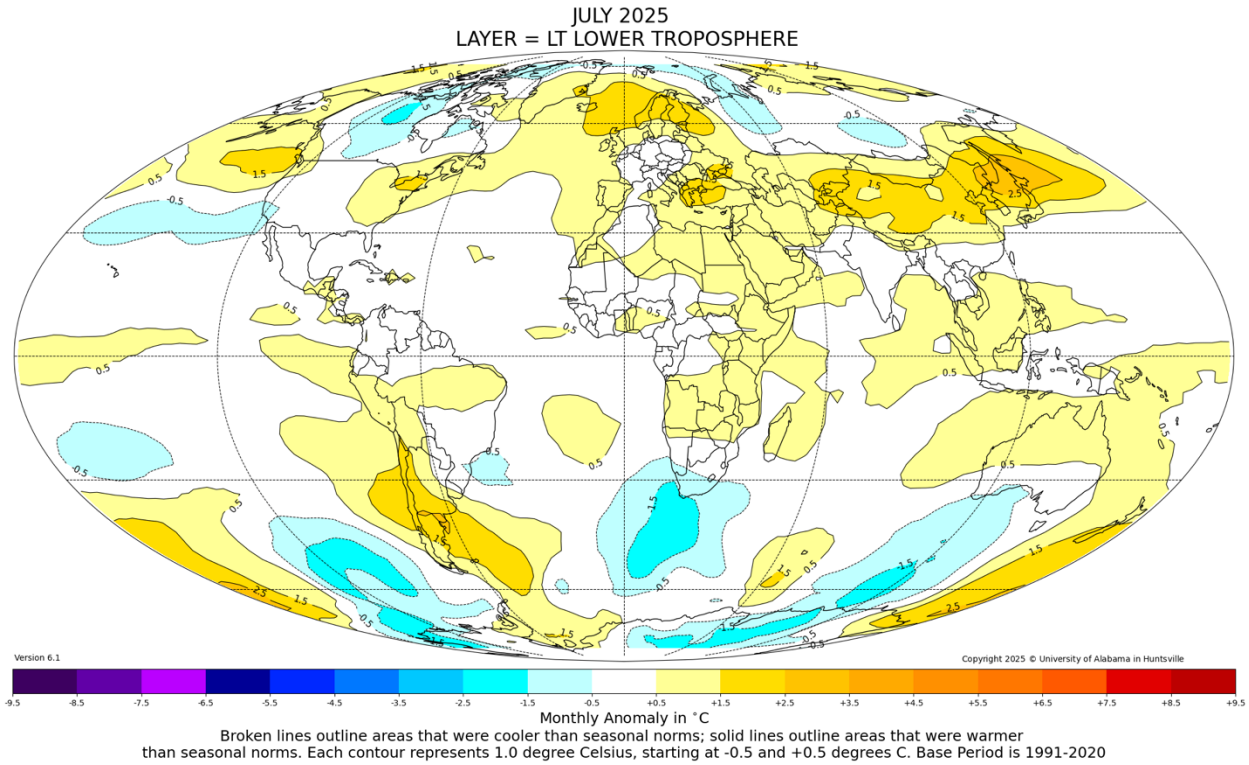


Figure. Lower tropospheric temperature anomalies for July 2025. Contour interval 1.0 °C.

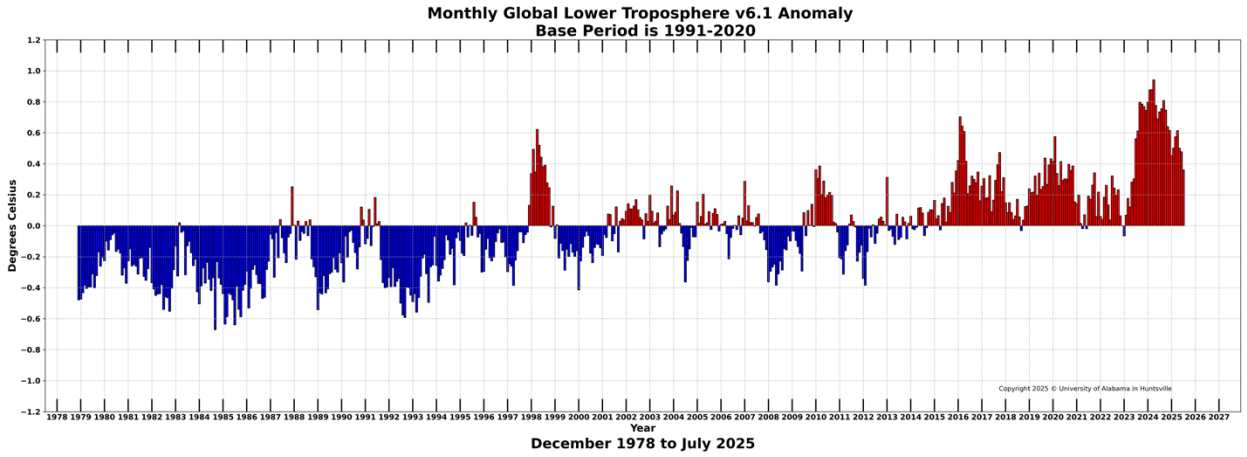


Figure. Bar chart of global monthly lower tropospheric temperature anomalies.