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Global Temperature Report: December 2025 with Version 6.1

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

December Temperatures v6.1 (preliminary)

Global composite temp: +0.30°C (+0.54°F) above the seasonal average

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

Southern Hemisphere: +0.15°C (+0.28°F) above seasonal average

Tropics: +0.19°C (+0.34°F) above seasonal average

November Temperatures v6.1 (final)

Global composite temp: +0.43°C (+0.77°F) above the seasonal average

Northern Hemisphere: +0.59°C (+1.06 °F) above seasonal average

Southern Hemisphere: +0.27°C (+0.48°F) above seasonal average

Tropics: +0.24°C (+0.44°F) above seasonal average

Notes on data released Jan 06, 2026

[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 December temperature departure from the seasonal average decreased slightly again to +0.30°C (+0.54°F), down from +0.43°C (+0.77°F) in November. The cooling atmosphere across the Northern Hemisphere dominated the decline. The 47+ year temperature trend currently stands at +0.156°C/decade, but is rounded up to +0.16°C/decade. We estimate the error range of this trend over 47+ years at $\pm 0.03^\circ\text{C}/\text{decade}$, rendering the third decimal inconsequential. For the calendar year, 2025 ranked as the 2nd warmest of the past 47 year, with

a global mean temperature anomaly at +0.47°C (+0.85°F), trailing well behind 2024 at 0.77°C (1.39°F). Unlike 2024—when the major 2023-2024 was a large contributor—2025 occurred largely under ENSO-neutral conditions.

The annual map of anomalies for 2025 indicates exceptional warmth over western China, central Greenland, and parts of Antarctica, while most other regions experienced warmer-than-average values. The map of temperature trends from Dec 1978 to Dec 2025 indicates broad warming with the most rapid pace over most continental regions, except areas around Antarctica.

As mentioned in past reports, cool La Niña conditions are still present in the tropical Pacific. La Niña conditions are expected to persist for approximately the next month, with a transition back to “neutral” conditions likely (68% chance) during January-March 2026. 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 December occurred in near the Aleutian Islands in the Bering Sea at +6.2°C (+11.2°F). Other notably warm regions included roughly two thirds of the United States, Greenland, most of Europe, Western China, and East Antarctica.

With a reading of -4.76°C (-8.57°F), the coolest departure from average was found in the Eastern Northwest Territories in Canada. Colder than average temperatures were also found in other parts of the Southern Ocean, northern Russia, the Northeast United States, Spain, Portugal, and Morocco.

December was the warmest on record for the conterminous US, with temperatures +2.1°C (+3.78°F) above the seasonal mean. The western two thirds of the U.S. experienced the warmest departures from normal, while the Northeast recorded below-normal temperatures. Alaska was slightly cooler, resulting in a 49-state average at +1.77°C (+2.21°F) above normal, also the warmest December on record. [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 prepares the monthly reports as of October 2025.

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.

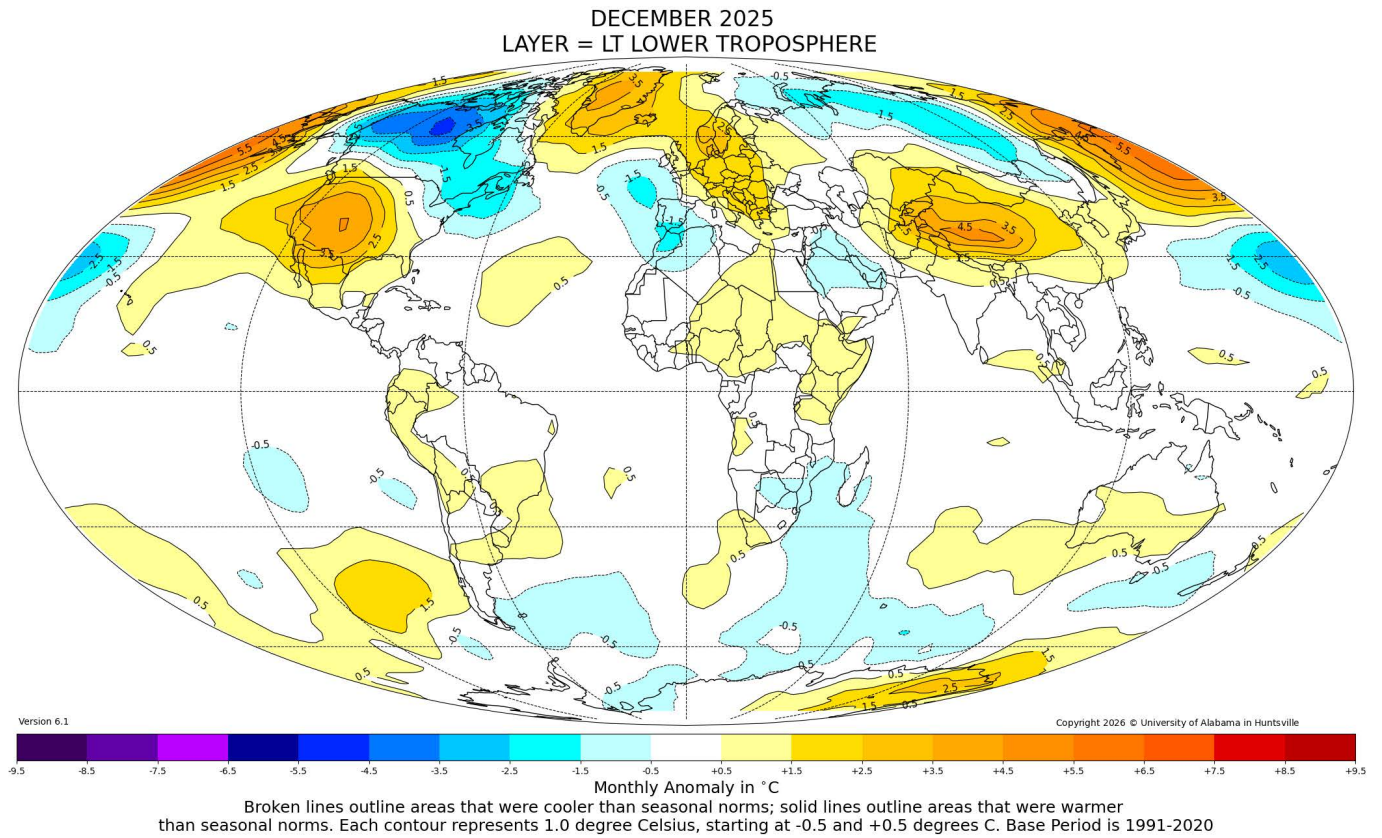


Figure 1. Lower tropospheric temperature anomalies for September 2025. Contour interval 1.0°C

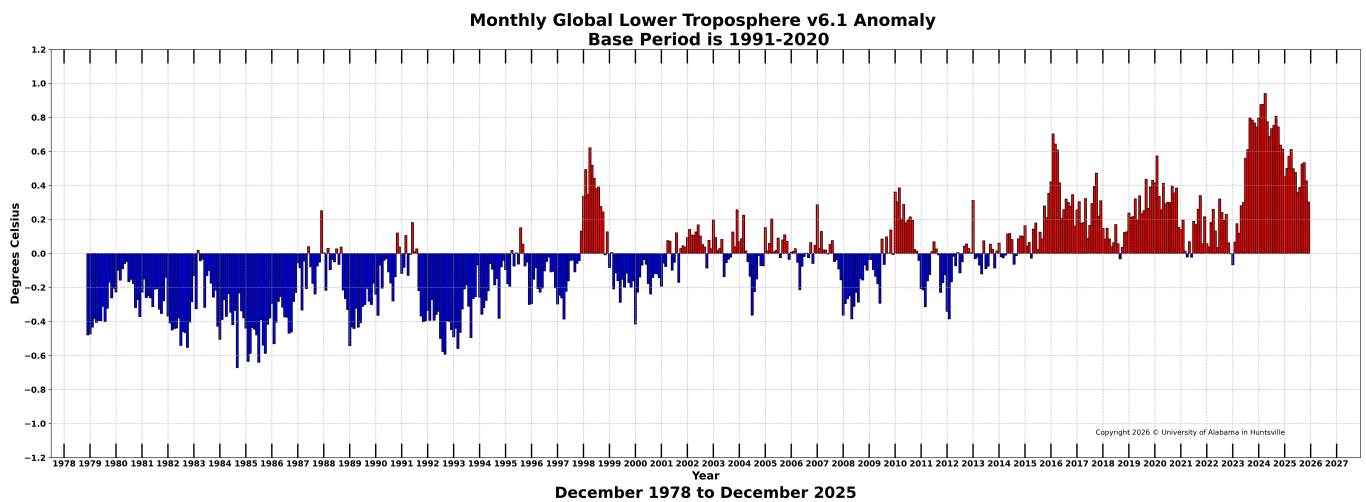


Figure 2. Bar chart of global monthly lower tropospheric temperature anomalies

2025 LT Anomaly
LAYER = LT LOWER TROPOSPHERE

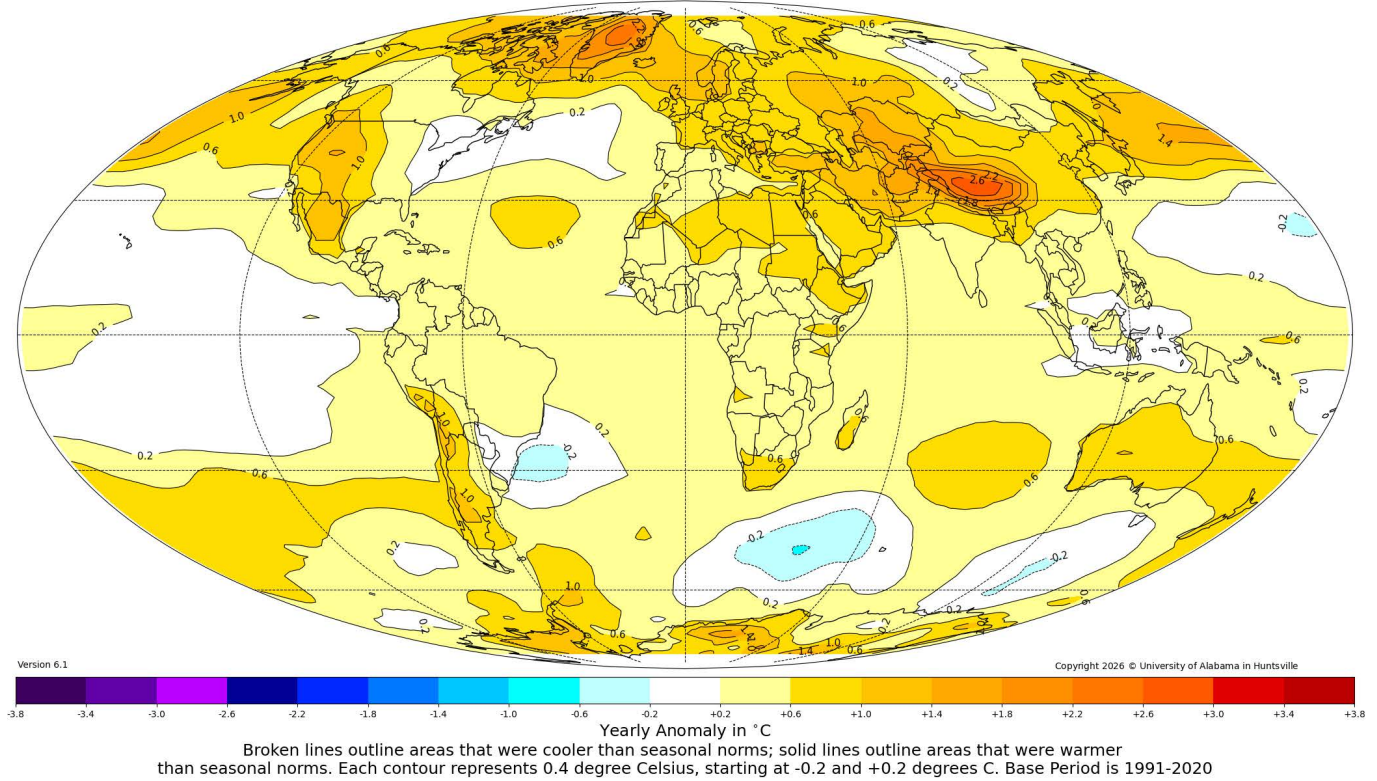


Figure 3. Lower tropospheric temperature anomalies for 2025. Contour interval 0.4°C

Dec 1978 to Dec 2025 Trend (°C/Decade)
LAYER = LT LOWER TROPOSPHERE

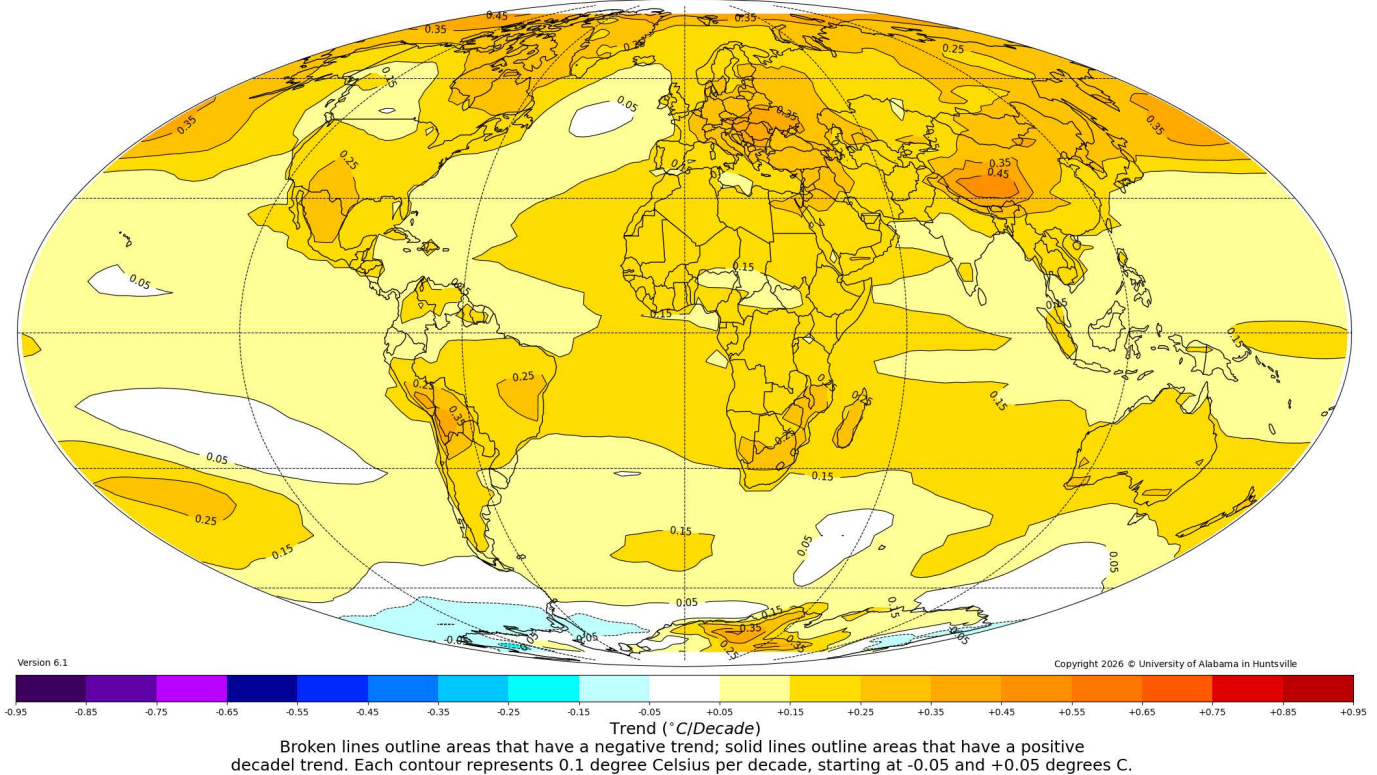


Figure 4. Trend values (°C/decade) for Dec 1978 to Dec 2025. Contour interval 0.1 °C/decade.