

2024 Global Climate Highlights

Copernicus Climate Change Service
Report

Overview

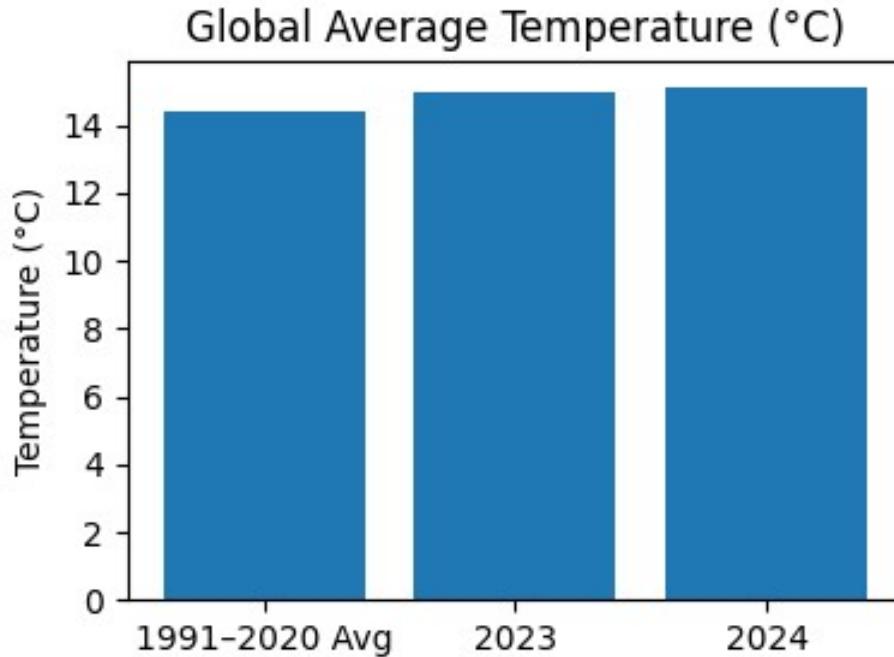
- In 2024, global surface temperatures reached unprecedented levels, exceeding 1.5°C above the pre-industrial baseline. The Copernicus Climate Change Service reported that 2024 was not only the warmest year on record but also the first calendar year to surpass the 1.5°C threshold. Human-induced climate change is the primary driver of these extreme temperatures, with phenomena like El Niño adding variability.

[1]

2024 Climate Highlights

- 2024 recorded a global average temperature of 15.10°C, which is 0.72°C above the 1991–2020 average and 0.12°C warmer than 2023.
- 2024 is the first calendar year to exceed 1.5°C above pre-industrial levels.
- Each year from 2015 to 2024 ranks among the ten warmest years on record.
- Monthly global temperatures exceeded 1.5°C for 11 months, with a record daily high of 17.16°C on July 22, 2024.
- 2024 was the warmest year for almost all continental regions, except Antarctica and Australasia.

Global Average Temperature Comparison



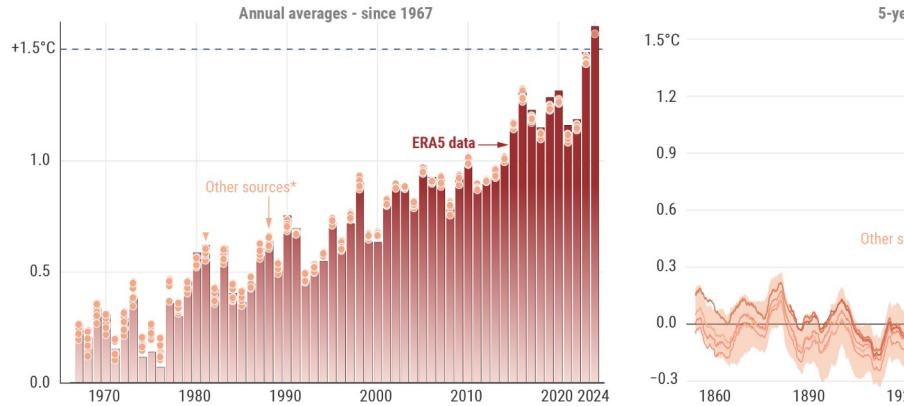
This bar chart compares the 1991–2020 average global surface temperature with the record-breaking years 2023 and 2024. The 2024 bar stands tallest, highlighting the unprecedented warming that exceeded the 1.5°C threshold above pre-industrial levels.

Temperature Trends & Anomalies



Global surface temperature increase above pre-industrial

Reference period: pre-industrial (1850–1900) • Credit: C3S/ECMWF



*Other sources include JRA-3Q, GISTEMPv4, NOAA GlobalTempv6, Berkeley Earth and the HadCRUT5 ensemble mean. Shading shows the range of the HadC



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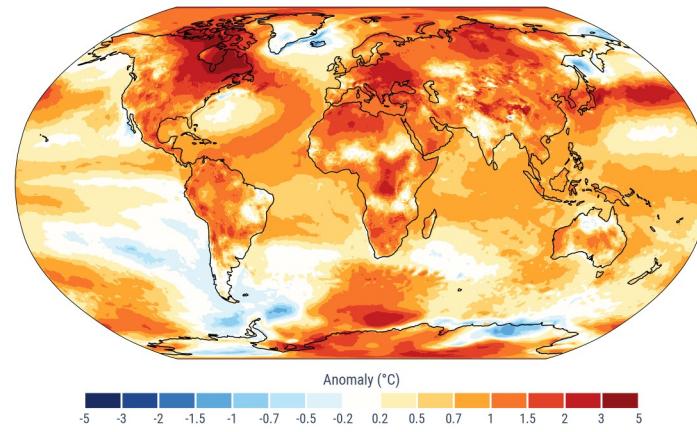


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Surface air temperature anomalies in 2024

Data: ERA5 • Reference period: 1991–2020 • Credit: C3S/ECMWF



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Global surface temperature increase above pre-industrial (ERA5 & other sources).

[5]

Surface air temperature anomalies in 2024 relative to 1991–2020.

Conclusions & Outlook

- Leading climate scientists warn that the unprecedented warmth of 2024 underscores an urgent need for evidence-based responses. According to Carlo Buontempo, the future is in our hands, and decisive action can alter the trajectory of our climate.
- Strategic Lead Samantha Burgess notes that every year in the last decade ranks among the warmest on record, and global temperatures are already above the 1.5°C threshold set by the Paris Agreement.
- High temperatures coupled with record atmospheric water vapour have led to more frequent heatwaves and heavy rainfall, causing adverse impacts on human societies and ecosystems.