

Climate crisis

Hottest year on record sent planet past 1.5C of heating for first time in 2024

Tuesday 14 January 2025, by [CARRINGTON Damian](#) (Date first published: 10 January 2025).

Highest recorded temperatures supercharged extreme weather - with worse to come, EU data shows

The average person was exposed in 2024 to an extra six weeks of dangerously hot days. Photograph: Brook Mitchell/Getty Images

Climate breakdown drove the annual global temperature above the internationally agreed 1.5C target for the first time last year, supercharging extreme weather and causing “misery to millions of people”.

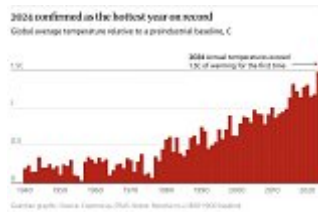
The average temperature in 2024 was 1.6C above preindustrial levels, [data from the EU’s Copernicus Climate Change Service](#) (C3S) shows. That is a jump of 0.1C from 2023, which was also a record hot year and represents levels of heat never experienced by modern humans.

The heating is primarily caused by the burning of fossil fuels, and the damage to lives and livelihoods will continue to escalate around the world until coal, oil and gas are replaced. The Paris agreement target of 1.5C is measured over a decade or two, so a single year above that level does not mean the target has been missed, but does show the climate emergency continues to intensify. Every year in the past decade has been one of the 10 hottest, in records that go back to 1850.

The C3S data also shows that a record 44% of the planet was affected by strong to extreme heat stress on 10 July 2024, and that the hottest day in recorded history struck on 22 July.

“There’s now an extremely high likelihood that we will overshoot the long-term average of 1.5C in [the Paris agreement](#) limit,” Dr Samantha Burgess, deputy director at C3S, said. “These high global temperatures, coupled with record global atmospheric water vapour levels in 2024, meant unprecedented heatwaves and heavy rainfall events, causing misery for millions of people.”

Dr Friederike Otto, at Imperial College London, said: “This record needs to be a reality check. A year of extreme weather showed just how dangerous life is at 1.5C. The [Valencia floods](#), [US hurricanes](#), [the Philippines typhoons](#) and [Amazon drought](#) are just four disasters last year that were worsened by climate change. There are many, many more.”



“The world doesn’t need to come up with a magical solution to stop things from getting worse in 2025,” Otto said. “We know exactly [what we need to do](#) to transition away from fossil fuels, halt deforestation and make societies more resilient.”

Carbon emissions in 2024 are [expected to have set a new record high](#), meaning there is no sign yet of the transition away from fossil fuels pledged by the world’s nations at the UN climate conference in Dubai in December 2023. The world is on track for a catastrophic [2.7C of global heating](#) by the end of the century.

The next big opportunity for action comes in February when countries have to submit new [emissions-cutting pledges](#) to the UN. The likelihood of [keeping below the 1.5C limit even over the longer term appears increasingly remote](#). Fossil-fuel emissions must fall by 45% by 2030 to have a chance of limiting heating to 1.5C. Several other major temperature analyses are expected to be published on Friday and to find similar levels of heat, including the UK Met Office which also found 2024 had passed 1.5C in 2024.

Temperatures were boosted in the first half of 2024 by the [natural El Niño climate phenomenon](#), but remained very high in the second half of the year even when El Niño dissipated. Some scientists fear an unexpected factor has kicked in, causing a worrying acceleration of global heating, although an unusual year-to-year natural variation could also be the reason.

A [fall in pollution from shipping](#) and in [low-level clouds](#), both of which reflect sunlight, have contributed some extra heating, but scientists are still [searching for a full explanation](#) of the extreme temperatures in 2024.

Warmer air holds more water vapour and the record level recorded by C3S in 2024 is significant as it increases extreme rainfall events and floods. It also combines with high sea surface temperatures, which power big storms, to fuel devastating hurricanes and typhoons. The average person was exposed last year to an [additional six weeks of dangerously hot days](#), intensifying the fatal impact of heatwaves around the world.

The supercharging of extreme weather by the climate crisis was already clear, with heatwaves of [previously impossible intensity and frequency](#) now striking around the world, along with fiercer droughts and wildfires.

Prof Joeri Rogelj, at Imperial College London, said: “Every fraction of a degree - whether 1.4C, 1.5C, or 1.6C - brings more harm to people and ecosystems, underscoring the continued need for ambitious emissions cuts. The cost of solar and wind energy is falling rapidly and is now cheaper than fossil fuels in many countries.”

Prof Andrew Dessler, a climate scientist at Texas AM University in the US, has responded to new temperature records being set year after year by providing the same statement to the media: “Every year for the rest of your life will be one of the hottest [on] record. This, in turn, means that 2024 will end up being among the coldest years of this century. Enjoy it while it lasts.”

Damian Carrington Environment editor

P.S.

- The Guardian. Fri 10 Jan 2025 04.00 CET:
<https://www.theguardian.com/environment/2025/jan/10/world-temperature-in-2024-exceeded-15c-for-first-time>

Damian Carrington articles in The Guardian:

<https://www.theguardian.com/environment/climate-crisis>

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