

CLIMATE

## 2023 was the hottest year on record. Is this how it's going to be now?

UPDATED JANUARY 9, 2024 - 7:20 AM ET

HEARD ON MORNING EDITION

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3-Minute Listen

+ PLAYLIST



SunPower Corp. solar panels technician Jose Arrechiga braves the extreme heat as he installs solar panels on a residence's roof in Pasadena, Calif., Wednesday, July 19, 2023. The European climate agency calculates that 2023 was the hottest year ever recorded globally.  
Damian Dovarganes/AP

Last year was the hottest ever recorded, according to temperature data going back to 1850. And it beat the previous record by a wide margin, [according to new data](#) released by the European Union's weather and climate monitoring agency, Copernicus.

2023 beat out 2016, the previous leader for hottest recorded global average temperature, by nearly two-tenths of a degree Celsius (about four-tenths of a degree Fahrenheit), according to the E.U. data. The high average temperatures reflected record-high ocean temperatures globally and were exacerbated by a [strong El Niño climate pattern](#).

Global temperatures last year were nearly 1.5 degrees Celsius (2.7 degrees Fahrenheit) higher than average global temperatures in the late 1800s, when humans first began emitting large amounts of planet-warming carbon dioxide into the atmosphere by burning fossil fuels like coal and oil.

That brings the planet one step closer to the threshold set by the international Paris Climate Agreement, which aims to limit warming to no more than 1.5 degrees Celsius to avoid the most [catastrophic effects of climate change](#). Hitting that threshold in one year doesn't mean the planet has officially crossed it – the Paris agreement seeks to [avoid warming of more than 1.5 degrees](#) over a sustained period.

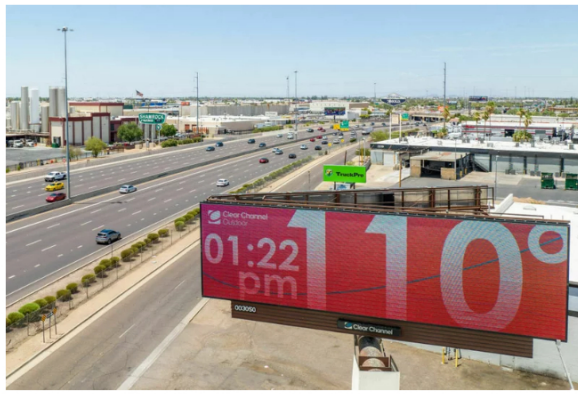
The record-breaking temperatures in 2023 underscore the larger, and more important, warming trend for the planet. "The last eight years were the [warmest eight years on record](#)," says Samantha Burgess, deputy director of the E.U.'s Copernicus Climate Change Service, which released the new data.

The record-breaking year helped fuel climate-driven disasters around the globe – from extreme heat that plagued Arizona for weeks, to devastating floods in Libya, to record-hot oceans that caused corals to bleach off Florida. Scientists say the extreme temperatures are in line with forecasts for how the planet will continue to warm.

"If we don't change things, if we keep going on the trajectory that we're going, we will look back at 2023 and think of it as: remember that year that wasn't so bad?" says Tessa Hill, marine scientist at the University of California Davis.

### Many months during 2023 topped the charts

2023's record-breaking status was largely fueled by extremely hot temperatures during the second half of the year. Every month from June to November was the [hottest ever recorded globally](#), according to the National Oceanic and Atmospheric Administration.



Prolonged heat hit Arizona for weeks over the summer, part of what scientists are finding is the hottest year on record.  
Brandon Bell/Getty Images

It was the hottest in 174 years of record-keeping where humans have directly measured the temperature of the planet. It's also likely to be the hottest in the last 125,000 years, which scientists measure by reconstructing temperature records from physical evidence like tree rings and layers of polar ice that have grown over time.

The biggest driver of the heat is the buildup of greenhouse gasses in the atmosphere from burning fossil fuels.

"We know why this is happening," says Zeke Hausfather, climate scientist at Berkeley Earth, a non-profit that analyzes climate trends. "A year like this would not have occurred without the trillion tons of carbon we've put into the atmosphere over the last century."

Some scientists see evidence that the pace of climate change is accelerating, though others say not enough years have passed to confidently show that trend.

### 2024 could vie for the top spot

The hotter climate drove extremes around the world in 2023. Over the summer, Phoenix, Arizona baked for weeks, [spending 31 days above 110 degrees](#). More than 500 people died in the area from heat-related causes. But it wasn't alone – China, southern Europe and Mexico also saw intense heat.

"The major lesson is how unprepared we are," says Kristie Ebi, who studies the effects of heat at the University of Washington. "There are places with heat wave early warning and response systems. They certainly saved lives. They didn't save enough."

Heat waves hit the ocean as well. Off the coast of Florida, the [water temperature reached 100 degrees Fahrenheit](#) (about 38 degrees Celsius), the same conditions as a hot tub. Heat-sensitive corals can't survive prolonged heat, with many bleaching, turning a ghostly white color, or dying outright.

Even with the chart-topping heat last year, 2024 could be equally as hot. A [strong El Niño climate pattern](#), which began last June, is continuing into the new year, warming ocean water in the eastern Pacific. El Niño years are typically hotter, because a large amount of heat that's stored in the ocean is released to the atmosphere.

Even if 2024 doesn't take the top spot, climate scientists say the years ahead will continue to rank highly, if humans keep burning fossil fuels at the current rate.

"There's absolutely still time to act," Hill says. "Everything we do to change course today will make things better in the future."

heat climate change



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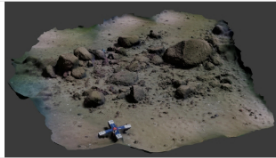
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