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CLIMATE CHANGE

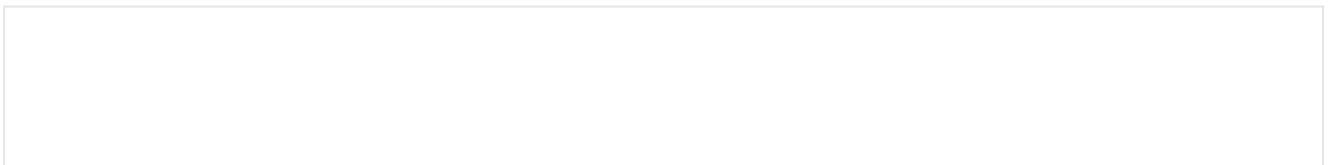
Heat Waves Fueled by Climate Change Topple Records around the Globe

High temperature records have been set from Portugal to Thailand as heat waves fueled by climate change have arrived early this spring

By Chelsea Harvey, E&E News on May 8, 2023



A group of people on a horse-drawn carriage protect themselves from the sun with an umbrella in Seville on April 26, 2023 as Spain is bracing for an early heat wave. Credit: Cristina Quicler/AFP via Getty Images



CLIMATEWIRE | A record-breaking heat wave in the western Mediterranean last month would have been nearly impossible without the influence of climate change, new research finds.

And even with the help of global warming, it was an extraordinary event. Statistically speaking, a heat wave of its magnitude should only have about a 1-in-400 chance of occurring in any given year.

That's the latest report from World Weather Attribution, a science initiative that investigates the links between climate change and extreme weather events. It's the organization's fastest study yet, released just a week after the Mediterranean heat wave subsided.

The event was an early kick-start to the Northern Hemisphere's summer disaster season. Temperatures skyrocketed across parts of Portugal, Spain, Morocco and Algeria in the final week of April, reaching levels not typically seen until the peak of summer.

Portugal broke its national record for April heat at nearly 98.5 degrees Fahrenheit, and Spain broke its April record with temperatures approaching 102 F. Algeria saw temperatures topping 104 F in some cities, breaking some local records, and the city of Marrakech, Morocco, approached a record-breaking 106 F.

Across the region, temperatures rose about 20 degrees Fahrenheit higher than average for this time of year.

These kinds of temperatures are "usually only seen in July and August, so they arrived at least two months earlier than usual," said Fatima Driouech, a scientist at Mohammed VI Polytechnic University in Morocco and a co-author of the new study, at a press conference announcing the new findings.

The new study used a combination of regional weather data and climate models to investigate the extent to which global warming influenced the extreme heat. Models allow scientists to simulate a world in which human-caused global warming didn't exist, then compare it to the present-day climate.

In a world without climate change, the study found, the heat wave would have been at least 3.5 degrees Fahrenheit cooler — if it happened at all. Such an event would have been at least 100 times less likely to occur without the influence of global warming.

"It was a rare event in the current climate, but an event of this extremity would have been almost impossible in the past colder climate," said Sjoukje Philip, climate scientist at the Royal Netherlands Meteorological Institute and another coauthor of the study.

At the same time, extreme heat is likely to worsen across the region as the planet grows hotter. The world already has warmed by more than 1 degree Celsius (more than 2 degrees Fahrenheit). If global warming hits the 2 C threshold, future heat waves of this magnitude in the Mediterranean likely will be at least 1 C (1.8 F) hotter.

In general, climate models indicate that heat waves all over the globe will grow more frequent and more intense as the world warms.

That means world leaders should be preparing for a hotter world, said study co-author Roop Singh, senior climate risk adviser at the Red Cross Red Crescent Climate Centre. Extreme heat is one of the deadliest natural disasters worldwide. And it can be even deadlier when it strikes early in the season, as it did last month.

“People at the end of April have not necessarily prepared their homes in terms of bringing out air conditioning or fans for heat,” she said.

And humans haven’t yet acclimatized to prolonged hot weather the way they have later in the summer — they just aren’t ready for the shock of a sudden extreme heat wave.

Yet early heat is striking all over the globe this year, not just in the Mediterranean.

Much of Asia also suffered extreme heat last month, including Thailand, Vietnam, Laos, Myanmar, Bangladesh and parts of China. The city of Dhaka, Bangladesh, recorded its highest temperature in nearly six decades on April 16 at a blistering 105.1 F. And Thailand saw its hottest temperature ever recorded on April 14 when the city of Tak reached an eye-popping 114 F.

In certain parts of South Asia, April and May are often the hottest times of the year. Even so, this year’s heat wave was one of the most severe in recent history, toppling records across the region.

North America also has seen an outbreak of unusual spring heat this season. A large swath of the United States saw temperatures rise as much as 20 F higher than average last month, soaring into the 90s in places such as Arizona and Nevada. Daily and monthly temperature records tumbled across much of the nation.

The spring heat has exacerbated other climate-related disasters around the world.

High temperatures in California triggered flood warnings as mountain snow began to rapidly melt. Yosemite National Park was forced to close due to flood risks.

Meanwhile, much of the Mediterranean is suffering from persistent drought conditions, which are worsened by extreme heat. The droughts have taken a toll on agricultural yields, including wheat and barley crops.

“It highlights the cascading impacts that heat waves, in combination with other hazards, can have on the economy, livelihoods and health,” Singh said.

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Chelsea Harvey covers climate science for *Climatewire*. She tracks the big questions being asked by researchers and explains what's known, and what needs to be, about global temperatures. Chelsea began writing about climate science in 2014. Her work has appeared in *The Washington Post*, *Popular Science*, *Men's Journal* and others.

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