

# Summer of extreme temperatures continues, to the beat of climate change

By **Brandon Miller**, CNN

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July's wildfires and record heat waves 00:54

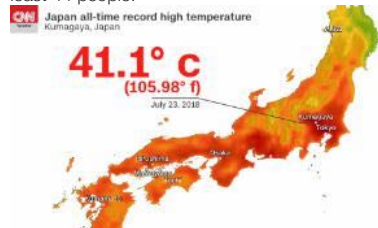
## Story highlights

Summer has brought record heat waves this month on four continents  
"The impacts of climate change are no longer subtle," one expert says

**(CNN)**The summer of temperature extremes just keeps going, with record heat waves this month on all four continents that occupy the non-tropical Northern Hemisphere where it is now summer.

On Monday, Japan [recorded a temperature never before reached](#) on the island nation since reliable records began in the 1800s.

Kumagaya, a city only 40 miles from Tokyo, hit 41.1 degrees Celsius (106 degrees Fahrenheit) in the midst of a multiweek heat wave that has killed at least 44 people.



The extreme temperatures are also affecting other countries in East Asia: South and North Korea have set heat records with temperatures climbing near 40 C (104 F).

It is these types of heat waves that scientists have been warning would be a consequence of warming the planet through greenhouse gas emissions. "The impacts of climate change are no longer subtle," said Michael Mann, a climate scientist and director of the Earth System Science Center at Penn State University.

"We are seeing them play out in real time in the form of unprecedented heat waves, floods, droughts and wildfires. And we've seen them all this summer," he said.

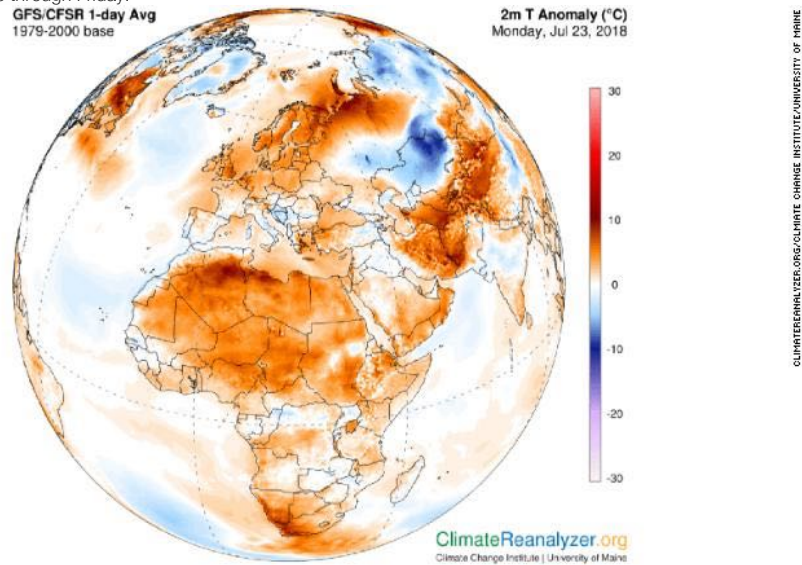
## Temperatures soar in Europe and Arctic

Much of Europe has been baking under a massive high-pressure ridge that is allowing tropical heat to climb all the way to the Arctic and blocking cooling rainfalls from ending the stretch of hot weather.

Temperatures above 32 C extended to the [northern reaches of Scandinavia](#), setting records in Sweden, Finland and Norway for stations above the Arctic Circle.

The result has been a string of unprecedented wildfires in Sweden that have prompted the country to request assistance from other nations such as Italy, with more resources to fight wildfires.

The United Kingdom is [off to its driest start to a summer](#), according to the Met Office, and it has been one of the hottest on record, coming in just 0.1 C behind the average temperature during the hottest summer on record in the UK, which averaged 21 C in 1976. [The heat wave is ongoing](#), with a "level three heat-health watch" issued for much of south and east England through this week as temperatures will climb in to the 30s Celsius through Friday.



Temperatures compared to normal, with red/orange showing temperatures well above average for much of the Northern Hemisphere.

In Northern Africa's Sahara Desert, certainly no stranger to sweltering temperatures, a record high was recorded July 5 in Ouargla, Algeria. The mark of 51.3 C (124 F) is the highest temperature ever reliably recorded on the African continent, [according to the World Meteorological Organization](#).

## Numerous heat waves in North America

This month, a brutal heat wave also struck Canada, which saw temperatures peak in Montreal on July 2 with a record of 36.6 C (98 F). There were at least 70 heat-related deaths across the province of Quebec; CNN's news partner CBC reported that the [number of deaths overwhelmed Montreal's morgue](#).

In the United States, July heat waves have stretched from the highly populated Northeast to the desert Southwest.



Climate change study ties warming temperatures to rising suicide risk

An exceptional stretch of heat in Dallas-Fort Worth has brought four consecutive days with record highs, hitting 108 or 109 F each day (42 to 43 C).

July has seen [41 heat records set across](#) the United States -- but zero record minimums.

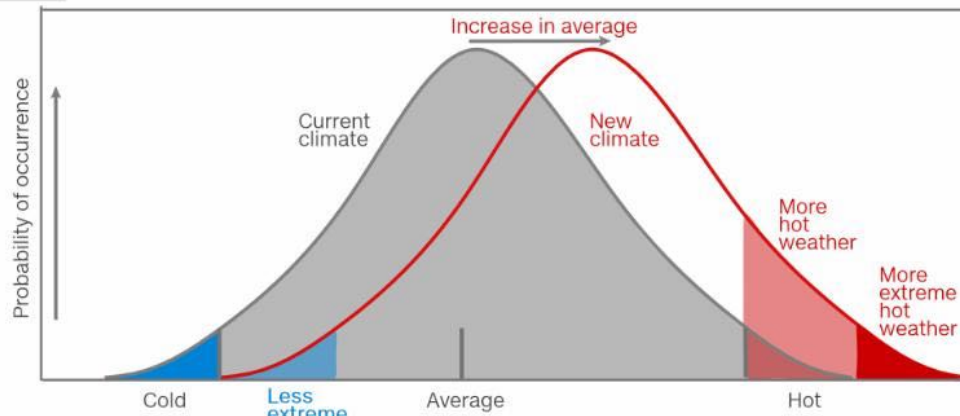
This lopsided tally has become the norm, as climate change has tipped the scales so far in the direction of warmer temperatures.

## This is climate change

"Cold and hot, wet and dry -- we experience natural weather conditions all the time," said Katharine Hayhoe, a climate scientist at Texas Tech University.



## Climate change and extreme weather



Source: US Environmental Protection Agency

"But today, climate change is loading the dice against us, making certain types of extremes, such as heat waves and heavy rain events, much more frequent and more intense than they used to be," Hayhoe said.

Remember the series of brutal nor'easter snowstorms that hit New England during a particularly cold stretch in late winter and early spring? The frequent bouts of snow and ice had many people wondering, "what happened to global warming?"



**Donald J. Trump**



@realDonaldTrump

We are experiencing the coldest weather in more than two decades-most people never remember anything like this. GLOBAL WARMING anyone?

11:19 AM - Jan 7, 2014

446

1,226 people are talking about this

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Well, here it is. And this is what it looks like. Although it will still get cold during the winter and there will be colder-than-normal spells from time to time, the heat will return, and summers are getting hotter.

2018 is the hottest La Niña year on record (the cooling of the ocean waters in the Pacific during La Niña tends to cool the planet), according to the World Meteorological Association, and with La Niña fading away and El Niño (which warms the Pacific Ocean) likely to take its place, things are only going to get hotter.

## Extreme temperatures 'especially likely for next four years'

**Cyclical natural phenomena that affect planet's climate will amplify effect of manmade global warming, scientists warn**

**Jonathan Watts**

Tue 14 Aug 2018 16:00 BST

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"If the warming trend caused by greenhouse gas emissions continues, years like 2018 will be the norm in the 2040s, and would be classed as cold by the end of the century." Photograph: Toby Melville/Reuters

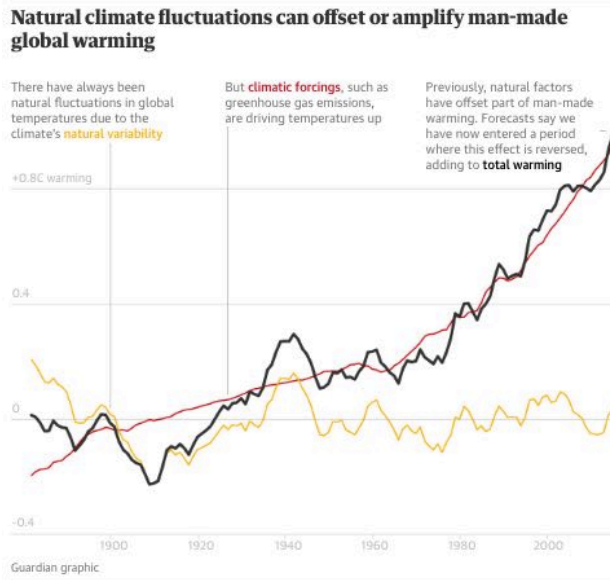
The world is likely to see more extreme temperatures in the coming four years as natural warming reinforces manmade climate change, according to a new global forecasting system.

Following a summer of heatwaves and forest fires in the northern hemisphere, the study in the journal *Nature Communications* suggests there will be little respite for the planet until at least 2022, and possibly not even then.



Rising greenhouse gas emissions are steadily adding to the upward pressure on temperatures, but humans do not feel the change as a straight line because the effects are diminished or amplified by phases of natural variation.

From 1998 to 2010, global temperatures were in a "hiatus" as natural cooling (from ocean circulation and weather systems) offset anthropogenic global warming. But the planet has now entered almost the opposite phase, when natural trends are boosting man-made effects.



"Everything seems to be adding up," said the author of the paper, Florian Sévellec of the French National Centre for Scientific Research. "There is a high possibility that we will be at the peak of a warm phase for the next couple of years."

The scientist built his forecasting system by statistical "hind-casting". This crunches the data from previous climate models to measure which combination was most effective in predicting past temperature trends.

Based on this analysis, Sévellec says the statistical upward nudge from natural variation this year is twice as great of that of long-term global warming. Next year,

it is likely to be three times higher.

He cautions that this should not be seen as a prediction that Europe will definitely have more heatwaves, the US more forest fires, South Africa more drought or the Arctic more ice melt. The likelihood of these events will increase, but his model is on a broad global scale. It does not predict which part of the world will experience warming or in which season.

But his data clearly suggests that water in the oceans will warm faster than air above land, which could raise the risks of floods, hurricanes, typhoons and cyclones.

“Natural variability is a wriggle around the freight train that is global warming,” he says. “On a human scale, it is what we feel. What we don’t always feel is global warming. As a scientist, this is frightening because we don’t consider it enough. All we can do is give people information and let them make up their own mind.”

He said his model should not be seen as the final word, but be taken alongside other forecasting systems, including those that look in more detail at what is happening on a regional level.



Last year was warmest ever that didn't feature an El Niño

Dr Sam Dean, chief climate scientist at New Zealand's National Institute of Water and Atmospheric Research, said the paper indicated mankind will have to rely less on “fortuitously cool years” from natural processes. Instead of the cooling La Niñas experienced in the first decade of the century, he said there have been more warming El Niños since 2014 and this trend looks set to continue.

“While we can’t be sure exactly how things will play out, at the moment the odds are higher for hot years,” he said.

Other scientists praised the paper but concurred on the need for wider analysis. “The findings suggest it’s more likely we’ll get warmer years than expected in the next few years. But their method is purely statistical, so it’s important to see what climate models predict based on everything we know about the atmosphere and the oceans. Those are more expensive to run but also use more climate physics and observational information,” said Prof Gabi Hegerl of Edinburgh University.

Professor James Renwick of Victoria University of Wellington said the new forecasting system was clever, but its value will only be clear in the future. The broader trend, however, was clear.

“If the warming trend caused by greenhouse gas emissions continues, years like 2018 will be the norm in the 2040s, and would be classed as cold by the end of the century,” he wrote.