Carbon emissions and El Nino push oceans to record temperatures

March 8 2024

Credit: CC0 Public Domain

Months of record breaking temperatures and the El Niño weather phenomenon pushed the heating up of the world's oceans to a new peak in February, scientists said.

Oceans cover 70 percent of the planet and have kept the Earth's surface livable by absorbing 90 percent of the excess heat produced by carbon pollution from human activity since the dawn of the industrial age.

The world's oceans have been getting progressively hotter for around a decade, but last year scientists have said the temperatures were "off the charts", as the effects of human-caused climate change combined with the short term warming impacts of the naturally-occuring El Niño.

That trend has continued into 2024, with February seeing average sea surface temperatures of 21.06 degrees Celsius, the highest for any month on record, according to Copernicus Climate Change Service (C3S) data released on Thursday.

Overall across the planet last month was the hottest February on record globally, the ninth straight month of historic highs, C3S said.

Copernicus' data from across the planet goes back to the 1940s, but Carlo Buontempo, director of C3S, said that taking into account what scientists know about historical temperatures "our civilization has never had to cope with this climate".

Buontempo said heat levels in the upper oceans were "remarkable".

That's because they show just how much of the extra energy and carbon pumped into the climate system by human activities the oceans have absorbed.

Many climate-related records were broken in the last year by enormous margins, scientists have said, particularly temperatures in the oceans.

'Worrying'

Sea surface temperature influences weather and climate patterns.

Hotter oceans means more moisture in the atmosphere, leading to increasingly erratic weather, like fierce winds and powerful rain.

Warmer waters also impact marine life, from coral reefs to migratory species like humpback whales.

Since last year, El Niño—which warms the sea surface in the southern Pacific and leads to hotter weather globally—has intensified the longer term global warming that has driven a relentless increase in ocean temperatures over years.

"Ocean surface temperatures in the equatorial Pacific clearly reflect El Niño," World Meteorological Organization chief Celeste Saulo said on Tuesday.

But she added that was only part of the story.

"Sea surface temperatures in other parts of the globe have been persistently and unusually high for the past 10 months," she said.

January's sea surface temperatures were "by far" the highest on record for the month, she said, adding: "This is worrying and cannot be explained by El Niño alone".

Respite?

Copernicus has said last year's global temperatures were likely the hottest in over 100,000 years.

The period from February 2023 to January 2024 marked the first time Earth had endured 12 consecutive months of temperatures 1.5C hotter than the pre-industrial era.

And February continued the record-breaking stretch, averaging 1.77C warmer than the monthly estimate for 1850-1900, the pre-industrial benchmark.

That does not mark a breach of the 2015 Paris climate deal limit of "well below" 2C and preferably 1.5C, which is measured over decades.

And respite may be around the corner.

A rapid return of the cooling La Niña weather phenomenon in 2024 may actually decrease the risk that 2024 smashes last year's record heat, Europe's climate monitor told AFP.

El Niño peaked in December 2023, and the transition back to neutral is expected by the end of the Northern Hemisphere's spring and then to La Niña over the summer, according to Buontempo, though "there are some indications suggesting a transition to La Niña is happening faster than expected".

It means while 2024 "was on track to become another very warm year, potentially a record-breaking year... the chance may actually decrease," he said.

Citation: Carbon emissions and El Nino push oceans to record temperatures (2024, March 8) retrieved 27 April 2024 from https://phys.org/news/2024-03-carbon-emissions-el-nino-oceans.html