

Global heat, sea level hit record highs in 2015 (Update)

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Earth's average land and ocean surface temperatures warmed to record levels in 2015

Global heat, greenhouse gases and sea levels all climbed to record highs last year, making 2015 the worst in modern times across a range of key environmental indicators, international scientists said Tuesday.

A dire picture of the Earth's health is painted in the State of the Climate

report, a peer-reviewed 300-page tome that comes out once a year and is compiled by 450 scientists from around the world.

The record heat that the planet experienced last year was driven partially by global warming, and was exacerbated by the ocean heating trend known as El Nino, it said.

El Nino, which just ended in July, was one of the strongest the Earth has seen "since at least 1950," said the report, led by the National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information.

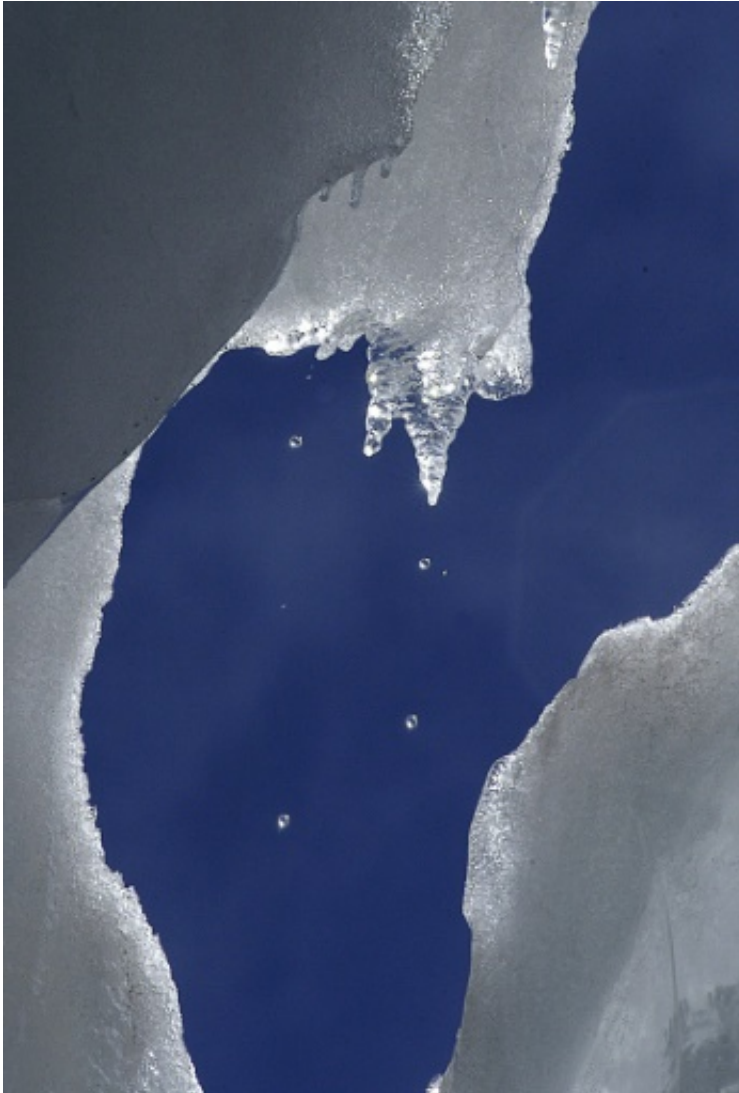
Thomas Karl, director of the NOAA division, described the report as an "annual physical" of the Earth's health.

"Clearly, the report in 2015 shows not only that the temperature of the planet is increasing, but all the related symptoms that you might expect to see with a rising temperature are also occurring," he told reporters on a conference call.

"El Nino certainly gave it a boost, so to speak, from the standpoint of global temperatures."

Adding to the health metaphor, the report also featured a haiku by co-author Gregory Johnson, an oceanographer with NOAA, who wrote:

"El Nino waxes,
warm waters shoal, flow eastward,
Earth's fever rises."



Glaciers have retreated for the 36th year in a row, according to the 'State of the Climate' report

New records

Major concentrations of greenhouse gases—including carbon dioxide (CO₂), methane and nitrous oxide—are the by-products of fossil fuel burning.

All three "rose to new record high values during 2015," said the findings, based on tens of thousands of measurements from multiple independent datasets.

The annual average atmospheric carbon dioxide (CO₂) concentration at Mauna Loa, Hawaii, reached 400.8 parts per million (ppm), surpassing 400 ppm for the first time, marking "the largest annual increase observed in the 58-year record."

On average globally, 2015's CO₂ level was 399.4 ppm, an increase of 2.2 ppm over 2014.

This "means that 2016 is easily going to surpass this milestone," said climatologist Jessica Blunden, lead editor at NOAA's National Centers for Environmental Information.

The report also confirmed the NOAA and NASA finding that Earth's average land and ocean surface temperatures warmed to record levels in 2015.



The increasing temperatures have led to thinner and smaller sea ice cover across the Arctic

Karl and Blunden said experts foresee 2016 will set a new record for global heat.

"Just because the El Nino has ended does not mean that we are going to go back to where we were before. We are going to continue to climb," said Blunden.

Global sea levels swelled to their highest point yet, about 70 millimeters (about 2.75 inches) higher than the 1993 average.

Sea level is creeping up gradually around the globe, averaging about 3.3 millimeters per year, said the report.

Some places in the western Pacific and Indian Ocean are seeing waters

rise faster.

Even though the current pace may appear slow, experts warn that sea level rise will accelerate in the coming decades as glaciers and polar ice caps melt, putting millions of lives at risk in coastal communities around the world.

More extremes

More extreme weather was seen in 2015, too, with an above-normal rainy season prompting major floods in some parts of the world.

Meanwhile, areas in severe drought nearly doubled, from eight percent of the planet in 2014 to 14 percent in 2015.



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The Arctic, which is considered particularly sensitive to climate change, continued to warm, and increasing temperatures led to thinner and smaller sea ice cover.

"The Arctic land surface temperature tied with 2007 and 2011 as the highest since records began in the early 20th century, representing a 2.8 Celsius (5 Fahrenheit) increase since that time," said the report.

The Antarctic was colder than average, and the influence of El Nino on atmospheric circulation helped shift sea ice cover "from record high levels in May to record low levels in August," it said.

Across the globe, alpine glaciers continued to retreat for the 36th year in a row.

June's late spring snow cover in the northern hemisphere marked the second lowest in the 49-year satellite record.

Warming waters are also blamed for the severity of a widespread algal bloom last summer that stretched from central California to British Columbia, Canada, resulting in "significant impacts to marine life, coastal resources and the human communities that depend on these resources."

The Atlantic hurricane season was unusually mild for the second year in a row, largely due to El Nino, but tropical cyclones "were well above average overall," said the report.

There were 101 tropical cyclones across all ocean basins in 2015, well above the 1981-2010 average of 82 storms.

The eastern and central Pacific was roiled by 26 big storms, the most since 1992.

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