

The 10 most startling facts about climate in 2015 — the warmest year on record

Last year was unequivocally the warmest year on record for Earth. The **National Oceanic and Atmospheric Administration** released a 300-page report documenting the historic warmth as well as scores of other aspects of 2015's climate on August 2, 2016. The hefty report, [State of the Climate in 2015](#), was produced by more than 450 scientists from 62 countries around the world — more than any previous edition.

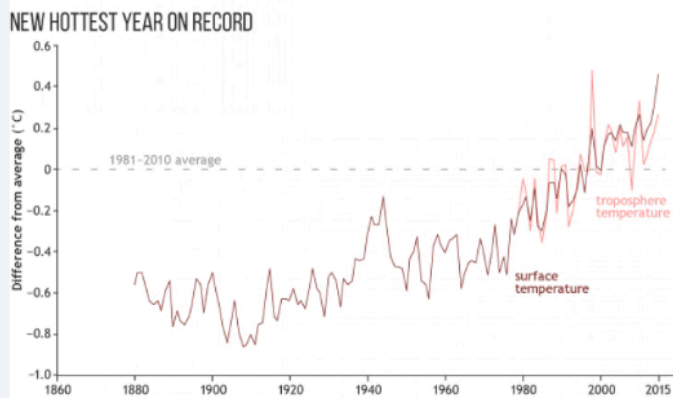
Every single direct indicator of temperature described in the report leaves no doubt that 2015's global surface temperature towered over any year preceding it. Numerous other climate indicators related to temperature exhibited characteristics consistent with such historic warmth.

2015's exceptional warmth was fueled by a record-challenging El Niño event, in which warmer-than-normal tropical Pacific Ocean waters infused heat into the atmosphere, and by record-setting concentrations of heat-trapping gases from human activity.

Here are the 10 most impressive findings from this report:

1. The global temperature was the highest on record.

Global average temperature in 2015 surpassed the record set just the year before by more than 0.1 of a degree Celsius. For the first time, the temperature surpassed preindustrial levels by more than 1 degree Celsius.



2. The average ocean surface temperature was warmest on record.

The average temperature over the ocean was 0.33 to 0.39 Celsius above average, besting the previous average by 0.10 to 0.12 Celsius. These warm waters fueled much higher than normal global tropical cyclone activity.

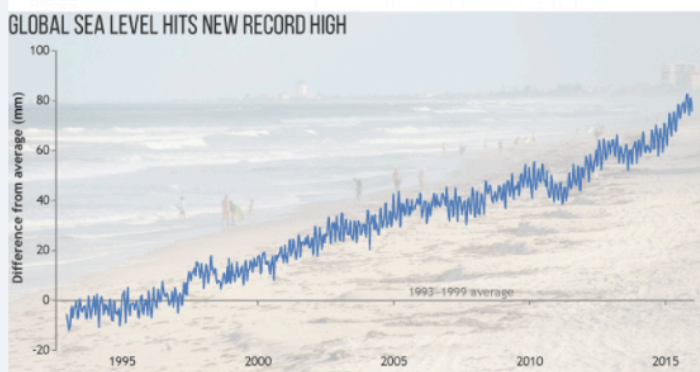
3. Upper ocean heat content was highest on record.

Five difference data sets showed record high amounts of heat stored in the upper layer of the ocean averaged around the globe.

4. Global sea level was highest on record.

Oceans expand as they warm, causing the sea level to rise. In addition, melting ice sheets and glaciers add to sea level. The sea level in 2015 was about 2.75 inches higher than 1993 average.

Over the past two decades, sea level has risen at a rate of 0.15 inches per year.

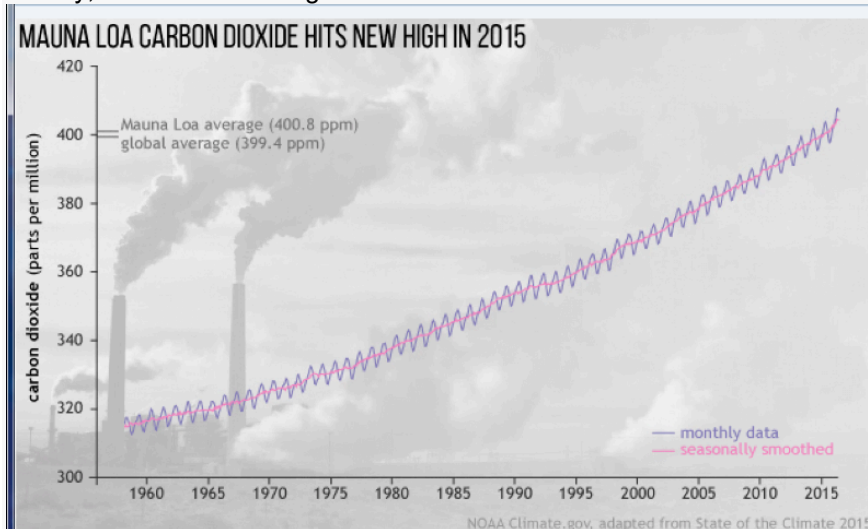


5. The El Niño event was among the strongest on record.

“By most measures, the 2015/16 El Niño was one of the strongest on record, on par with those of 1982/83 and 1997/98,” the report states. In addition to elevating global temperatures to record territory, the El Niño raised sea levels, intensified Pacific tropical cyclone activity, and led to drought in the parts of the tropics increasing wildfires and the release of carbon dioxide.

6. Greenhouse gases were highest on record.

The atmospheric concentration of carbon dioxide, for the first time, surpassed 400 parts per million in modern record. Methane and nitrous oxide, additional heat-trapping gases released into the atmosphere through human activity, also set record highs.



7. Record number of major tropical cyclones in Northern Hemisphere.

Thirty-one major tropical cyclones developed in the Northern Hemisphere, crushing the previous record of 23 set in 2004. Incredibly, 26 tropical cyclones reached Category 4 or 5 intensity, surpassing the previous record of 18.

8. Arctic sea ice had its lowest maximum extent

In February 2015, the maximum sea ice extent in the Arctic was 7 percent below the 1981-2010 average, and the smallest on record. Temperatures in the Arctic land surface averaged over the year tied for warmest on record with 2007 and 2011, 2.8 degrees Celsius (5 degrees Fahrenheit) above temperature in the early 20th century.

9. Glaciers continued shrinking

Last year marked the 36th straight year of Alpine glacier retreat globally.

10. Extreme temperatures were most extreme on record.

“Regionally, the frequencies of warm days and warm nights were the highest on record in western North America, parts of Central Europe, and Central Asia,” the report states. It added that 2015 had the fewest number of unusually cool days on record.

https://www.washingtonpost.com/news/capital-weather-gang/wp/2016/08/02/the-10-most-startling-facts-about-climate-in-2015-the-warmest-year-on-record/?refcode=em_x_tt_20160806_x_x_ofa_tnew&source=em_x_tt_20160806_x_x_ofa_tnew&utm_campaign=em_x_tt_20160806_x_x_ofa_tnew&utm_content=12&utm_medium=email&utm_source=obama