Earth breaks heat record in 2016 for third year in a row

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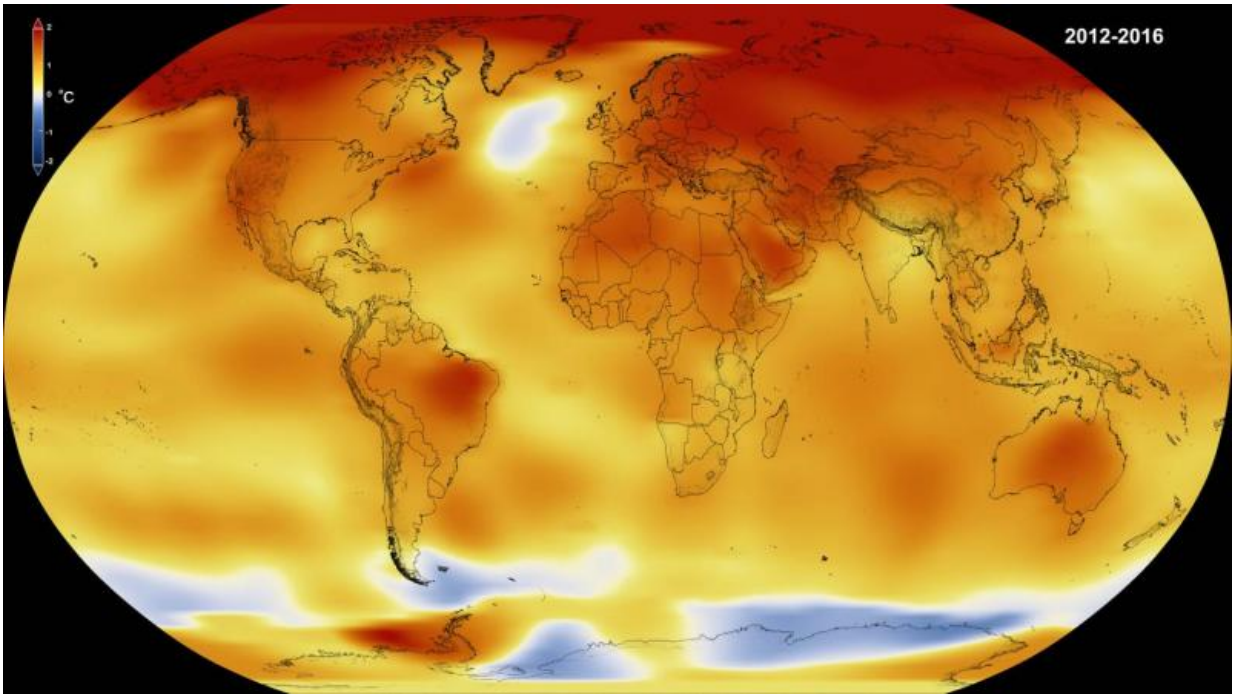


Credit: NASA's Goddard Space Flight Center

Last year, the Earth sweltered under the hottest temperatures in modern times for the third year in a row, US scientists said Wednesday, raising new concerns about the quickening pace of climate change.

Temperatures spiked to new national highs in parts of India, Kuwait and Iran, while sea ice melted faster than ever in the fragile Arctic, said the

report by the National Oceanic and Atmospheric Administration.

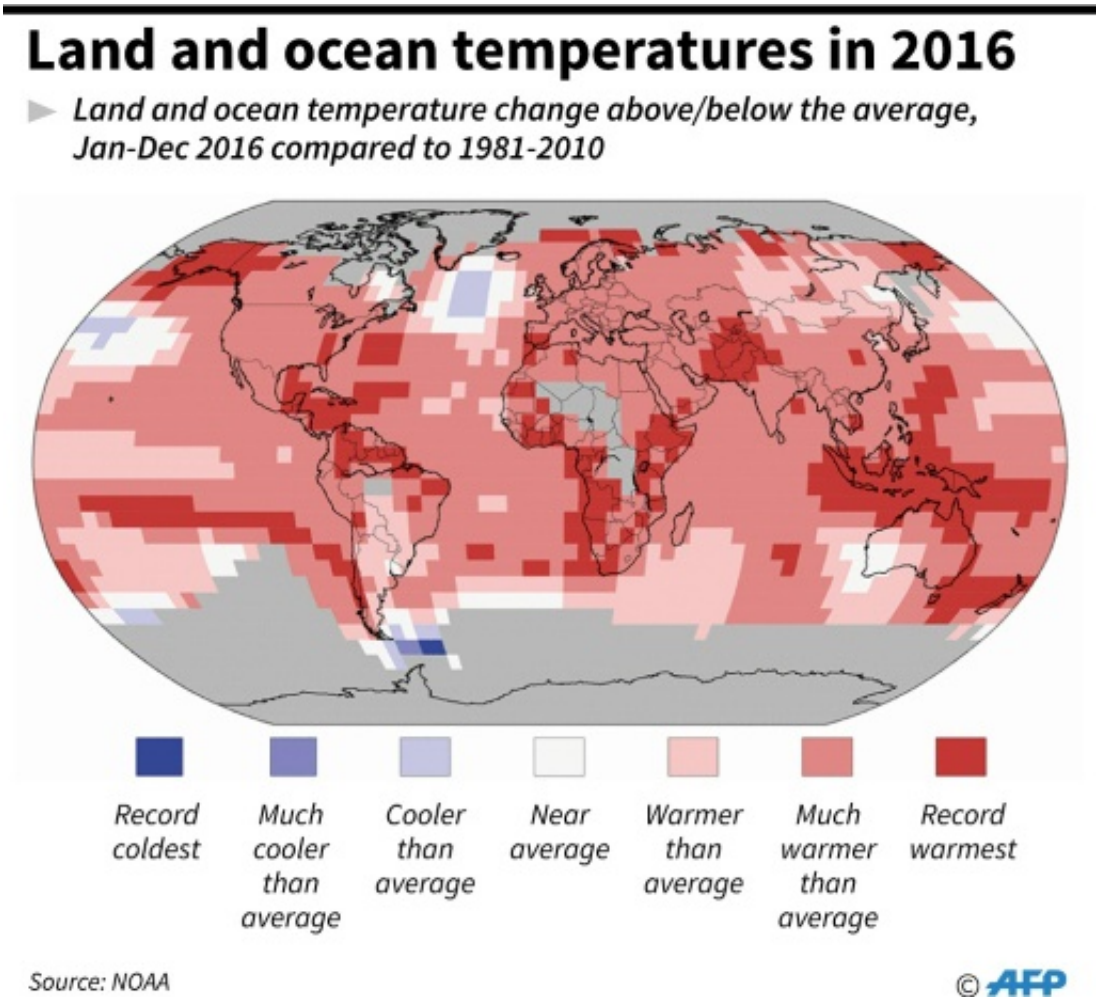
Taking a global average of the land and sea surface temperatures for the entire year, NOAA found the data for "2016 was the highest since record keeping began in 1880," said the announcement.

The global average temperature last year was 1.69 Fahrenheit (0.94 Celsius) above the 20th century average, and 0.07 degrees F (0.04 C) warmer than in 2015, the last record-setting year, according to NOAA.

This was "not a huge margin to set a new record but it is larger than the typical margin," Deke Arndt, chief of NOAA global climate monitoring, said on a conference call with reporters.

A separate analysis by the US space agency NASA also found that 2016 was the hottest on record.

The World Meteorological Organization in Geneva confirmed the US findings, and noted that atmospheric concentrations of both carbon dioxide and methane reached new highs.



Land and ocean temperature change above/below the average in 2016

Upward trend

The main reason for the rise is the burning of fossil fuels like oil and gas, which send carbon dioxide, methane and other pollutants known as greenhouse gasses into the atmosphere and warm the planet.

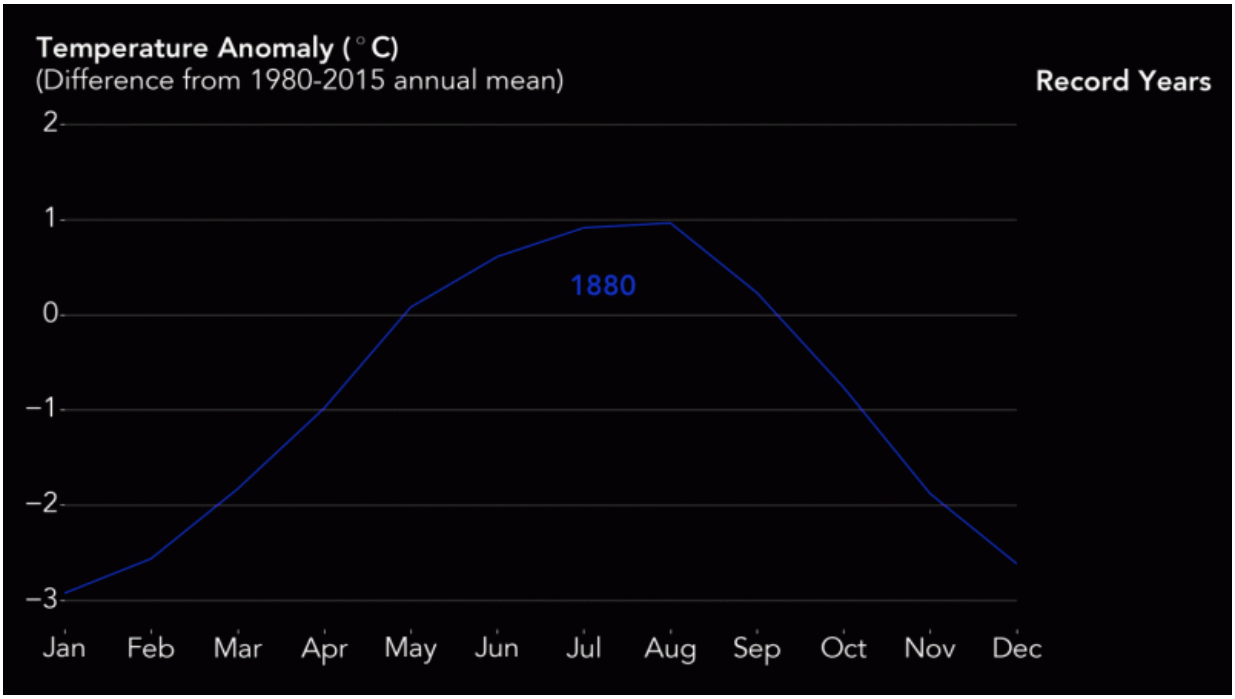
The mounting toll of industrialization on the Earth's natural balance is increasingly apparent in the record books of recent decades.

"Since the start of the 21st century, the annual global temperature record has been broken five times (2005, 2010, 2014, 2015 and 2016)," said NOAA.

Another factor has been the Pacific Ocean warming trend of El Nino, which experts say exacerbates the planet's already rising warmth.

El Nino comes and goes. The latest episode became particularly strong in 2015, and subsided about halfway through 2016.

But El Nino was responsible for just a small fraction of last year's warmth, according to Peter Stott, acting director of Britain's Met Office Hadley Center.



The planet’s long-term warming trend is seen in this chart of every year’s annual temperature cycle from 1880 to the present, compared to the average temperature from 1880 to 2015. Record warm years are listed in the column on

the right. Credit: NASA/Joshua Stevens, Earth Observatory

"The main contributor to warming over the last 150 years is human influence on climate from increasing greenhouse gases in the atmosphere," he said.

This year is likely be cooler, but probably not by much, said Gavin Schmidt, director of NASA's Goddard Institute for Space Studies in New York.

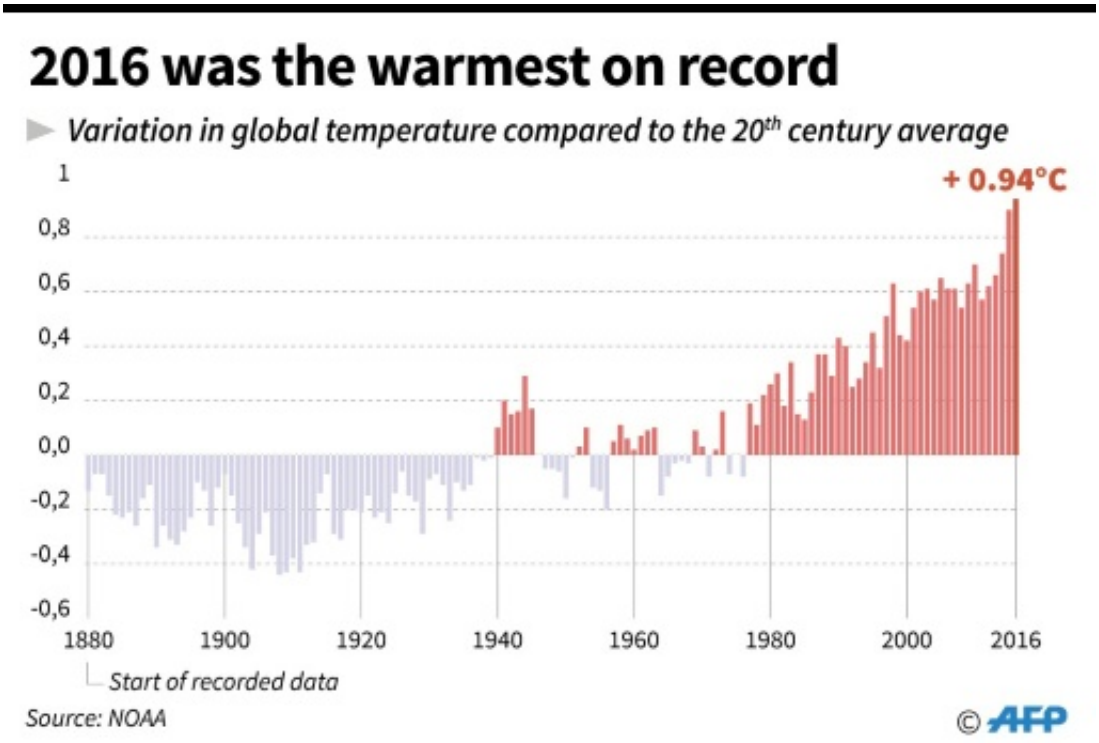
"Because the long-term trends are so clear, it is still going to be a top-five year in our analysis. I'm pretty confident about that." he told reporters.

Scenes from a warming world

Last year, all of North America was the warmest since records began in 1910, breaking that region's last record set in 1998.

Europe and Asia each saw their third hottest years on record, while Australia marked its fourth warmest year since records began more than a century ago.

Unusual spikes in temperature were seen in Phalodi, India, which reached 124 F (51 C) on May 19—marking India's hottest temperature ever.



Variation in global temperature compared to the 20th century average

Dehloran, Iran hit 127 F (53 C) on July 22, a new national record.

Meanwhile, Mitribah, Kuwait hit an all-time high of 129 F (54 C) on July 21, which may be the highest temperature ever recorded in all of Asia, NOAA said.

Planet-wide, the heat led to more melting at the poles. In the Arctic, average annual sea ice extent was approximately 3.92 million square miles (10.2 million square kilometers), the smallest annual average in the record, NOAA said.

Antarctic annual sea ice extent was the second smallest on record.

Dangers

Unusually hot years wreak havoc on the planet by increasing rainfall in some parts of the world while leading to drought in others, damaging crops.

Fish and birds must migrate farther than ever to find suitable temperatures and habitats.

Climate experts say the only solution to the rising temperatures is to reduce our dependence on fossil fuels

Diseases can spread faster in the warming waters, sickening marine life and killing corals.

Glaciers and polar ice caps melt, accelerating sea level rise that will eventually swallow many of the globe's coastal communities, home to

some one billion people.

Experts say the only solution is to reduce our dependence on fossil fuels, in favor of Earth-friendly renewable energy such as wind and solar.

"Climate change is one of the great challenges of the twenty first century and shows no signs of slowing down," said Mark Maslin, professor of climatology at University College London.

"The decarbonization of the global economy is the ultimate goal to prevent the worst effects of climate change."

More information: The full 2016 surface temperature data set and the complete methodology used to make the temperature calculation are available at: data.giss.nasa.gov/gistemp