

Greenhouse gases reach record levels, report finds

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Updated 1916 GMT (0316 HKT) August 12, 2019

Source: CNN

Undeniable climate change facts 02:24

(CNN)The dominant greenhouse gases released into the Earth's atmosphere reached record levels in 2018, and their global warming power is now 43% stronger than in 1990, according to a new report by the American Meteorological Society released Monday.

The [State of the Climate in 2018](#) study (<https://www.ametsoc.org/index.cfm/ams/>) also reported other key findings:

- 2018 was the fourth-warmest year on record. The three other warmest years were 2015, 2016 and 2017, with 2016 as the warmest year since records first began being kept in the mid-1800s.
- Sea levels rose to record levels for a seventh consecutive year.
- Glaciers continue to melt at a concerning rate for the 30th straight year.

"Every year since the start of the 21st Century has been warmer than the 1981-2010 average," the report said. "In 2018, the dominant greenhouse gases released into Earth's atmosphere -- carbon dioxide, methane, and nitrous oxide -- continued to increase and reach new record highs."

In fact, the report found greenhouse gases warming influence on the planet have increased an alarming 43% since 1990. Global carbon dioxide concentrations, which represent the bulk of the gases warming power, rose during 2018 to a record 407.4 parts per million, the study found. That is "the highest in the modern instrumental record and in ice core records dating back 800,000 years," the report said.



NOAA NCEI Climate



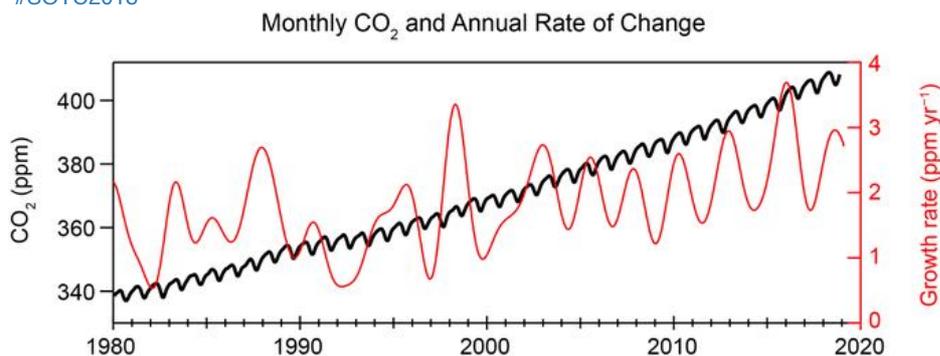
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2018 saw record high greenhouse gas concentrations per [@NOAA](#) [@ametsoc](#) [#StateOfClimate2018](#) report:

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The report was led by National Oceanic and Atmospheric Administration's Centers for Environmental Information and was based on contributions from more than [475 scientists from 57 countries](#). The annual report is often described by meteorologists as the "annual

physical of the climate system."

Deke Arndt, one of the main authors and the chief of NOAA's Climate Monitoring Branch, said scientists over the last couple decades have "gone through three stages of this 'annual physical' of the climate system."

"It began with monitoring the temperature and anticipating related symptoms, like sea level rise and heavy precipitation. Then those related symptoms appeared, and we started anticipating costly impacts," he said. "Now, those costly impacts have materialized, and the annual physical is forced to document some of those."

Scientists used tens of thousands of measurements from multiple independent datasets to reach their findings.



Climate change could pose 'existential threat' by 2050: report

"This is yet another in a series of expert, science-based reports that continue to sound the alarm about the climate crisis," said Marshall Shepherd, a professor of Geography and Atmospheric Sciences at the University of Georgia. He is also a former president of the American Meteorological Society.

Shepherd went on to say that the "DNA of climate change is clearly seen now in our weather, agriculture productivity, water supply challenges, public health, and even national security concerns."

"The findings from their State of the Climate report rises above some blog or opinion on social media," Shepherd said. "Through the process of science, they are sounding an alarm about the 'here-and-now' climate crises."



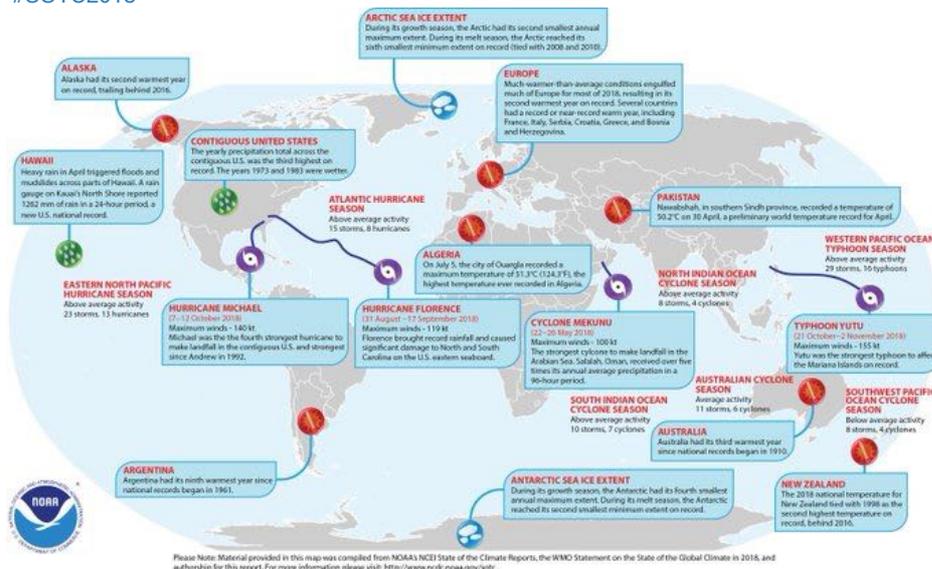
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The report adds to the growing list of studies about the alarming impact of global warming. One recent [report from the United Nations](#) found that food will become scarcer and that the climate crisis will change what kinds of crops farmers can grow.

Another major [US government report released last year](#) gave a dire warning about climate change, saying the economy could lose hundreds of billions of dollars -- or, in the worst-case scenario, more than 10% of its GDP.

Sea levels continue to rise

Monday's report found that global annual sea levels rose for the seventh consecutive year and hit a record high for the 26 years since satellite recordings began, having risen about 3.2 inches, or 81 millimeters, in that time above the 1993 average.

"The new high reflects an ongoing trend," the report said. "Ongoing trends and year-to-year changes in sea level impact coastal communities by increasing the magnitude and frequency of positive sea level extremes that cause flooding and erosion."



Climate change will shrink US economy and kill thousands, government report warns

Global sea level has been rising at an average rate of 1.2 inches (3.1 centimeters) per decade. The report found that sea surface temperatures cooled since the record El Niño year of 2016, but was still far warmer than the 1981-2010 mean.

"The deeper ocean continues to warm year after year. For the seventh consecutive year, global annual mean sea level became the highest in the 26-year record," the report said. "As anticipated in a warming climate, the hydrological cycle over the ocean is accelerating: dry regions are becoming drier and wet regions rainier."

The report went on to say this about the warming trend: "Along with warmer average conditions across the globe, there were more positive, and fewer negative, temperature extremes during 2018 than in nearly all the 68 previous years in the observational record."

The study said a number of prolonged heat waves in North America, Europe, Australia, and East Asia were widely reported, along with some unusually cold periods, like the "[Beast from the East](#)" for example, in Europe. "It is clear that lakes are also affected by the warm conditions, as the majority of the lakes assessed show continual increases in annual temperatures, especially in the northern mid-latitudes," the study said.

The report also said preliminary data indicate that "glaciers across the world continued to lose mass for the 30th consecutive year."

"For the 25 reporting glaciers, only one reported a positive mass balance for the year. Since 1980, the cumulative loss is the equivalent of slicing 24 meters (78.7 feet) off the top of the average glacier," the report said.

The full State of the Climate in 2018 can be [read here](#).

<https://www.ametsoc.org/ams/index.cfm/publications/bulletin-of-the-american-meteorological-society-bams/state-of-the-climate/>