http://www.sciencemag.org/news/2016/05/atmospheric-carbon-dioxide-soars-past-crucial-milestone

Measurements at the Cape Grim Baseline Air Pollution Station in Tasmania, Australia, indicate atmospheric carbon dioxide now exceeds 400 parts per million.

CSIRO

Atmospheric carbon dioxide soars past crucial milestone

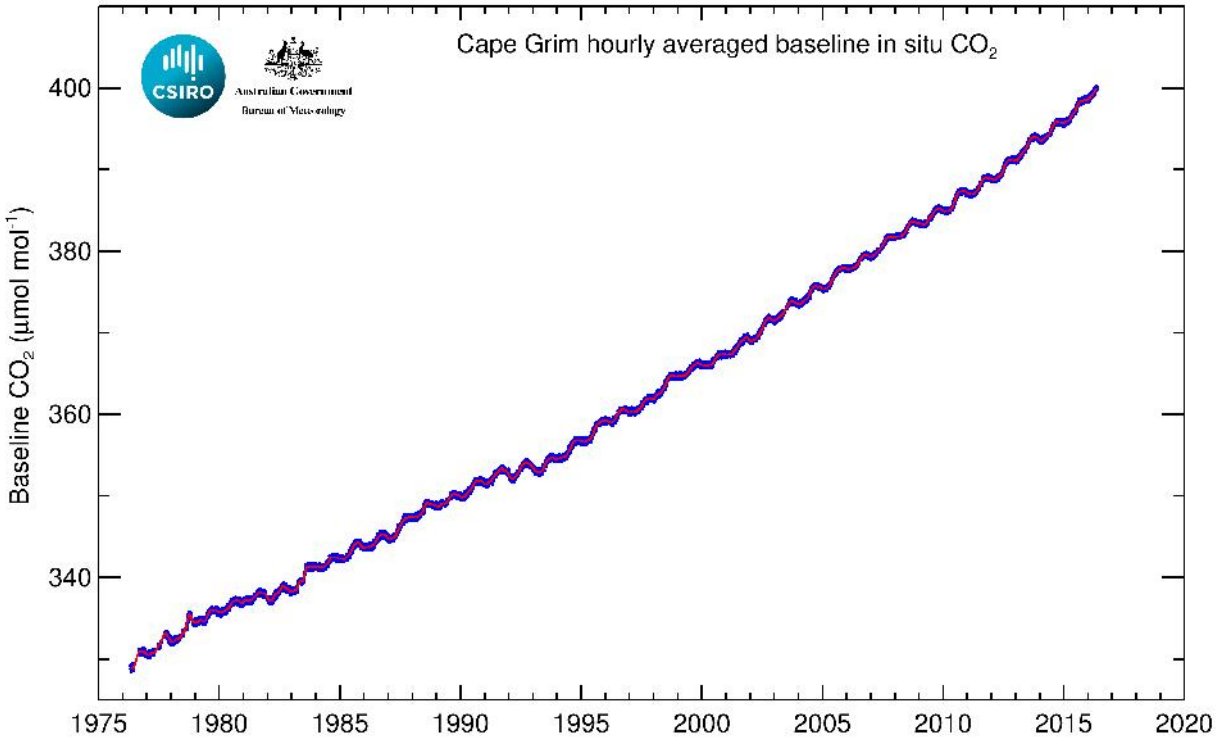
By Leigh Dayton | May. 16, 2016 , 4:45 AM

Earth has passed an “unfortunate milestone,” read an email alert sent out last Saturday evening Australia time. “During the last 4 days, the CO_2 [carbon dioxide] levels at Cape Grim have risen

above 400 parts per million (ppm)," Paul Krummel, an atmospheric scientist at the Commonwealth Scientific and Industrial Organisation (CSIRO) wrote to scientists.

Although the measurement was expected, it is a clear warning that the level of atmospheric CO_2 is entering dangerous territory, up from 280 ppm at the start of the industrial age around the year 1800. Scientists figure that the accumulation of greenhouse gases has pushed global temperatures up nearly 1.5°C since 1850. They estimate that 2°C of warming will occur at 450 ppm. Under the Paris agreement, reached at last December's climate conference, 195 nations pledged to avoid dangerous climate change by limiting global warming to below 2°C above preindustrial levels.

Because greenhouse gases like CO_2 and methane are driving global warming, reaching what some call "400 Day" highlights the importance of sticking to the global commitment to reduce emissions. "Because we reached this threshold so early, we really need to reduce our emissions dramatically in order to reach the Paris agreement target of 2°C," says Wenju Cai, a CSIRO climate modeler.



Data from the two instruments at the Cape Grim Baseline Air Pollution Station in Tasmania will be sent to CSIRO's climate change laboratory in Melbourne for processing, and air samples collected at the site will also be analyzed in Melbourne to confirm the finding.

Located near Tasmania's isolated northwestern tip, the Cape Grim station is jointly operated by the Bureau of Meteorology and CSIRO. Currently, efforts of this valuable outpost are under a cloud because **looming job cuts will see 74 of 150 scientists lose their positions** in the CSIRO Oceans & Atmosphere division.

Cape Grim is one of three premier baseline observatories in the **Global Atmosphere Watch program of the World Meteorological Organization**, along with stations in Mauna Loa, Hawaii, and Pt. Barrow, Alaska.

CO_2 measurements taken at Hawaii's Mauna Loa observatory briefly surpassed 400 ppm for the first time in May 2013. And 400 ppm has been briefly topped at Mauna Loa every year since.

The reason for the fluctuating reading in Northern Hemisphere observatories is that they are subject to huge seasonal cycles. CO_2 emissions from burning fossil fuels are concentrated in the Northern Hemisphere, but growing plants spread over the huge land mass pull CO_2 from the air in spring and summer. In contrast, Cape Grim has a "very, very small" seasonal cycle, Krummel says. And thanks to its location in the Roaring 40s, where strong westerly winds blow at latitudes 40 and 50 in the Southern Ocean, the air is clean. So if it's 400 Day at Cape Grim, it's 400 Day worldwide.

"That's why I don't believe we'll go below 400 for many years—if at all," Krummel says.

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