

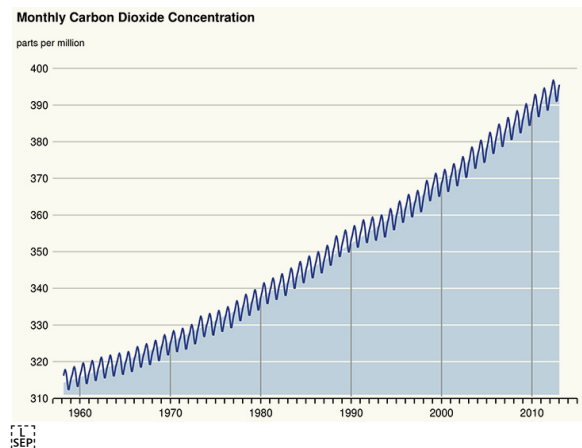
April 23, 2013 | By Robert Monroe

As CO₂ Reaches Symbolic Milestone, Scripps Launches Daily Keeling Curve Update

Levels of the greenhouse gas are approaching 400 parts per million; Scripps offering daily Twitter feed, news and analysis of climate indicators

For the first time in human history, concentrations of the greenhouse gas carbon dioxide (CO₂) could rise above 400 parts per million (ppm) for sustained lengths of time throughout much of the Northern Hemisphere as soon as May 2013.

To provide a resource for understanding the implications of rising CO₂ levels, Scripps Institution of Oceanography at UC San Diego is providing daily updates of the “Keeling Curve,” the record of atmospheric CO₂ measured at Hawaii’s Mauna Loa. These iconic measurements, begun by Charles David (Dave) Keeling, a world-leading authority on atmospheric greenhouse gas accumulation and Scripps climate science pioneer, comprise the longest continuous record of CO₂ in the world, starting from 316 ppm in March 1958 and approaching 400 ppm today with a familiar saw-tooth pattern. For the past 800,000 years, CO₂ levels never exceeded 300 parts per million.



Measure of atmospheric carbon dioxide levels, which are approaching 400 parts per million.

“I wish it weren’t true, but it looks like the world is going to blow through the 400-ppm level without losing a beat,” said Scripps geophysicist Ralph Keeling, who has taken over the Keeling Curve measurement from his late father. “At this pace we’ll hit 450 ppm within a few decades.”

The website keelingcurve.ucsd.edu offers background information about how CO₂ is measured, the history of the Keeling Curve, and resources from other organizations on the current state of climate. An accompanying Twitter feed, @keeling_curve, also provides

followers with the most recent Keeling Curve CO₂ reading in a daily tweet.

Dave Keeling began recording CO₂ data at Mauna Loa and other locations after developing an ultraprecise measurement device known as a manometer. Ralph Keeling took over the program in 2005 and also heads a program at Scripps to measure changes in atmospheric oxygen. The Scripps O₂ and CO₂ programs make measurements of CO₂ and other gases at remote locations around the world, including Antarctica, Tasmania, and northern Alaska. The Scripps programs are complementary to many other programs now measuring CO₂ and other greenhouse gases worldwide.

Scientists estimate that the last time CO₂ was as high as 400 ppm was probably the Pliocene epoch, between 3.2 million and 5 million years ago, when Earth's climate was much warmer than today. CO₂ was around 280 ppm before the Industrial Revolution, when humans first began releasing large amounts of CO₂ to the atmosphere by the burning of fossil fuels. By the time Dave Keeling began measurements in 1958, CO₂ had already risen from 280 to 316 ppm. The rate of rise of CO₂ over the past century is unprecedented; there is no known period in geologic history when such high rates have been found. The continuous rise is a direct consequence of society's heavy reliance on fossil fuels for energy.

Each year, the concentration of CO₂ at Mauna Loa rises and falls in a sawtooth fashion, with the next year higher than the year before. The peak of the sawtooth typically comes in May. If CO₂ levels don't top 400 ppm in May 2013, they almost certainly will next year, Keeling said.

"The 400-ppm threshold is a sobering milestone, and should serve as a wake up call for all of us to support clean energy technology and reduce emissions of greenhouse gases, before it's too late for our children and grandchildren," said Tim Lueker, an oceanographer and carbon cycle researcher who is a longtime member of the Scripps CO₂ Group.

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