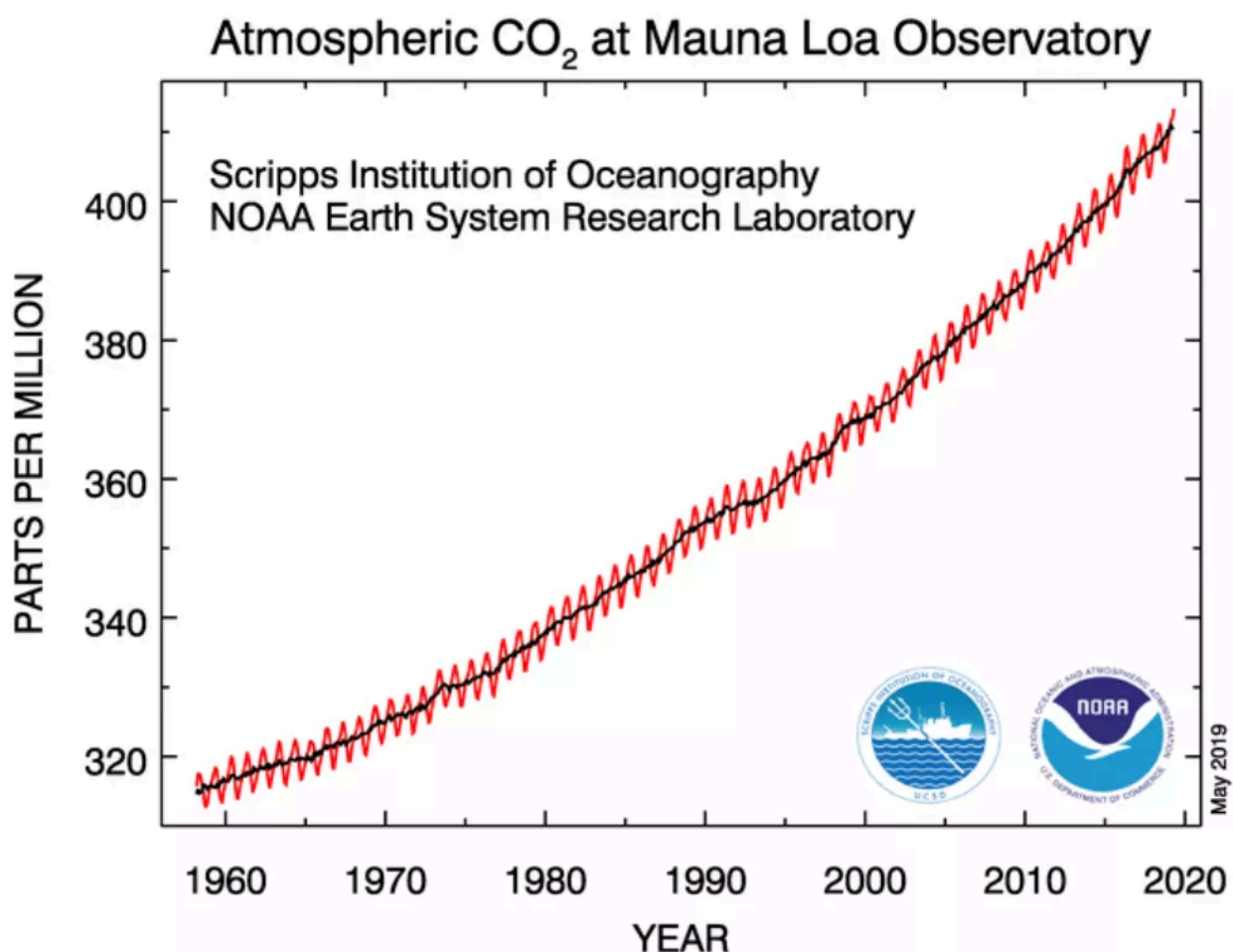




ARTICLE

Climate Corner, June 2019



NOAA and the Scripps Institution of Oceanography independently measure atmospheric carbon dioxide from NOAA's Mauna Loa Observatory. This May, they measured a new record high concentration of more than 414 parts per million. Their full data record is here: <https://www.esrl.noaa.gov/gmd/ccgg/trends/>

NOAA

Atmospheric Carbon Dioxide Levels Reach New Heights

Hawaii's Mauna Loa volcano rises more than 11,100 feet above the middle of the Pacific Ocean. Its peak is an ideal spot for measuring carbon dioxide (CO₂) concentrations in the atmosphere that are representative of much of the northern hemisphere. Scientists with the Scripps Institute of Oceanography have been doing just that at NOAA's Mauna Loa Observatory since 1958. NOAA began keeping CO₂ measurements there as well in 1974. Scripps' very first measurements were already above 300 parts per million (ppm). According to ice core measurements, that threshold had barely been breached before in the last 800,000 years (for scale, modern humans [*Homo sapiens*] are thought to have existed for less than half of that time). CO₂ concentrations have been on the rise ever since, with annual peaks occurring each May, just before the growing season causes plants to remove large quantities from the atmosphere. In May 2014, the monthly CO₂ concentration topped 400 ppm for the first time.

This May, the average CO₂ concentration atop Mauna Loa was the highest yet, reaching [414.7 ppm as measured by NOAA](#) (<https://research.noaa.gov/article/ArtMID/587/ArticleID/2461/Carbon-dioxide-levels-hit-record-peak-in-May>), and [414.8 ppm as measured by Scripps](#)

<https://scripps.ucsd.edu/programs/keelingcurve/2019/06/04/carbon-dioxide-levels-hit-record-peak-in-may/>). For both institutions, these values are 3.5 ppm higher than those they measured last May, representing the second highest annual jump in CO₂ yet recorded. The rise in concentrations has been accelerating due to humanity's increasing CO₂ emissions. Over the last decade, the average increase has been 2.2 ppm/year over the last decade. Meanwhile, it was 1.6 and 1.5 ppm/year in the 1980s and 1990s, and just .7 ppm in the early years of monitoring at Mauna Loa.

Rising CO₂ concentrations impact us all as the primary driver of climate change. Learn more about [climate change in our National Parks](https://www.nps.gov/subjects/climatechange/index.htm) (<https://www.nps.gov/subjects/climatechange/index.htm>), or check out specific examples of what [Golden Gate National Recreation Area](https://www.nps.gov/goga/sustainability.htm) (<https://www.nps.gov/goga/sustainability.htm>), [Pinnacles National Park](https://www.nps.gov/pinn/learn/news/arra-funded-west-pinnacles-visitor-contact-station-near-complete.htm) (<https://www.nps.gov/pinn/learn/news/arra-funded-west-pinnacles-visitor-contact-station-near-complete.htm>), and [Point Reyes National Seashore](https://www.nps.gov/pore/learn/nature/climatechange_whatisporedoing.htm) (https://www.nps.gov/pore/learn/nature/climatechange_whatisporedoing.htm) have done, or are doing, to reduce their carbon footprints.

Weather Forecast Model Upgraded to Improve Accuracy

NOAA has taken countless steps to improve its weather forecasting capabilities over the last 40 years. Yet one thing remained the same during that time: the underlying core weather model known as the Global Forecast System (GFS). On June 12th, that model got a significant upgrade. Scientists at NOAA tested the new model alongside the old for the last year, and tested it further with historical weather data. They found it to be as good or better at modeling a wide range of weather phenomena. In particular, it should improve forecasts of severe weather events like hurricanes and winter storms in terms of where they will hit, how intense they will be, and how much precipitation will fall.

Check out the [NOAA news release](https://www.noaa.gov/media-release/noaa-upgrades-us-global-weather-forecast-model) (<https://www.noaa.gov/media-release/noaa-upgrades-us-global-weather-forecast-model>), or this [New York Times article](https://www.nytimes.com/2019/06/12/climate/noaa-weather-forecast-gfs.html) (<https://www.nytimes.com/2019/06/12/climate/noaa-weather-forecast-gfs.html>) to learn more.

[See more from the Bay Area Nature & Science Blog](https://www.nps.gov/rlc/pacificcoast/blog.htm) (<https://www.nps.gov/rlc/pacificcoast/blog.htm>).



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