



(http://www.noaa.gov)

Earth System Research Laboratory (https://www.esrl.noaa.gov)
Global Monitoring Division (/gmd/)



Global Greenhouse Gas Reference Network
(/gmd/ccgg/)



(/gmd/webdata/ccgg/trends/rss.xml)



Trends in Atmospheric Carbon Dioxide

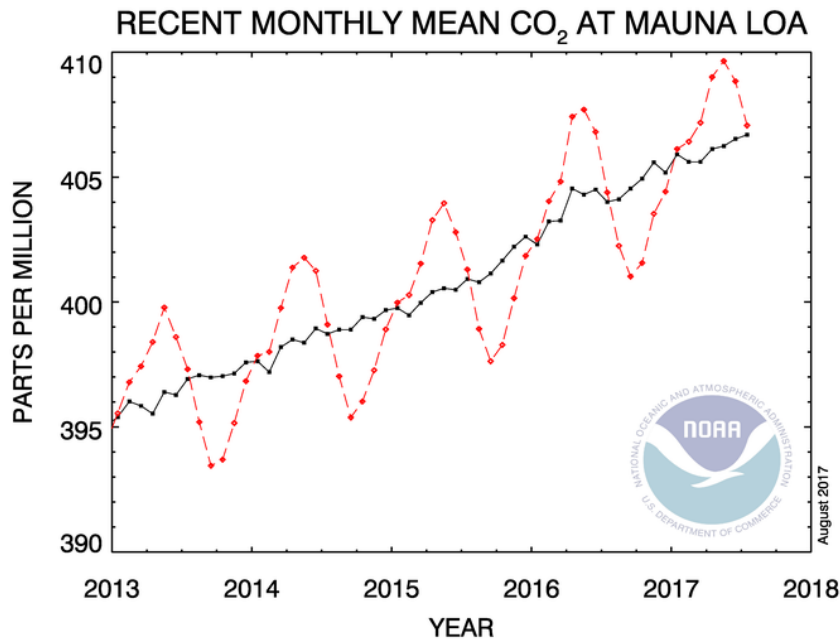
Mauna Loa, Hawaii (index.html)
Global (global.html)
CO₂ Movie (history.html)
CO₂ Emissions (ff.html)
Last Month (monthly.html)
Last 1 Year (weekly.html)
Last 5 Years (index.html)
Full Record (full.html)
Growth Rate (gr.html)
Data (data.html)
Interactive Plots (graph.html)

Recent Monthly Average Mauna Loa CO₂

July 2017: 407.07 ppm

July 2016: 404.39 ppm

Last updated: August 7, 2017



PNG Version (/gmd/webdata/ccgg/trends/co2_trend_mlo.png)

PDF Version (/gmd/webdata/ccgg/trends/co2_trend_mlo.pdf)





The graph shows recent monthly mean carbon dioxide measured at Mauna Loa Observatory, Hawaii.

The last four complete years of the Mauna Loa CO₂ record plus the current year are shown. Data are reported as a dry air mole fraction defined as the number of molecules of carbon dioxide divided by the number of all molecules in air, including CO₂ itself, after water vapor has been removed. The mole fraction is expressed as parts per million (ppm). Example: 0.000400 is expressed as 400 ppm.

In the above figure, the dashed red line with diamond symbols represents the monthly mean values, centered on the middle of each month. The **black line** with the square symbols represents the same, after correction for the average seasonal cycle. The latter is determined as a moving average of SEVEN adjacent seasonal cycles centered on the month to be corrected, except for the first and last THREE and one-half years of the record, where the seasonal cycle has been averaged over the first and last SEVEN years, respectively.

The last year of data are still **preliminary**, pending recalibrations of reference gases and other quality control checks. The Mauna Loa data are being obtained at an altitude of 3400 m in the northern subtropics, and may not be the same as the **globally averaged CO₂ concentration at the surface** ([global.html#global](#)).

U.S. Department of Commerce (<https://www.commerce.gov/>) | National Oceanic and Atmospheric Administration (<http://www.noaa.gov/>)
Earth System Research Laboratory ([/](#)) | Global Monitoring Division ([/gmd/](#))

 (<https://www.facebook.com/NOAAESRL>)  (https://twitter.com/NOAA_ESRL)  (<https://www.youtube.com/user/NOAAESRL>)  (https://www.flickr.com/photos/noaa_esrl)
Privacy Policy (<http://www.noaa.gov/privacy.html>) | Accessibility (<https://www.esrl.noaa.gov/about/accessibility.html>) | Disclaimer (</gmd/about/disclaimer.html>) | USA.gov (<https://www.usa.gov/>)
Contact Us (</gmd/about/contacts.html>) | Webmaster (<mailto:webmaster.gmd@noaa.gov>)
Site Map (</gmd/sitemap>)