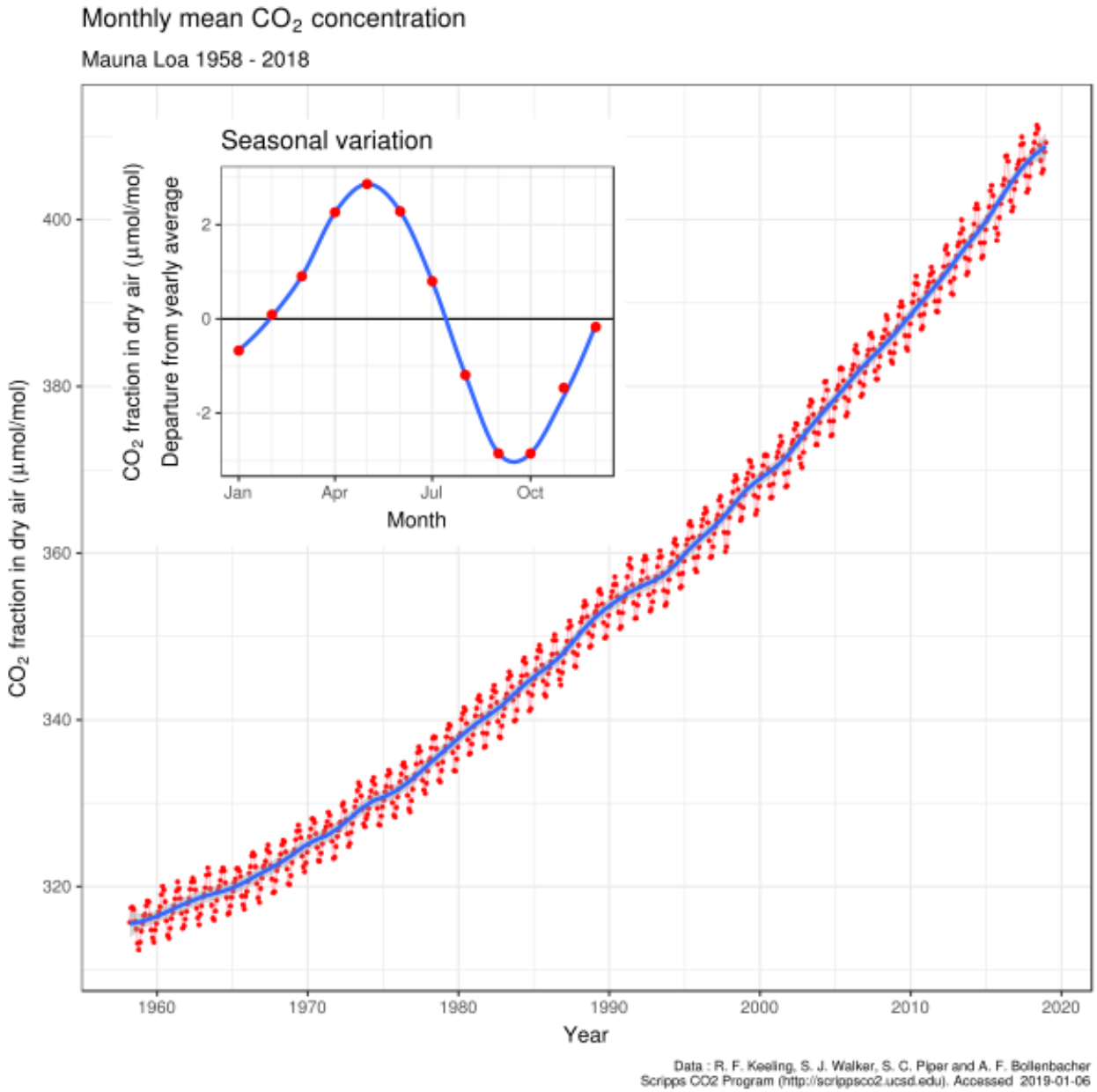
Keeling Curve

By Lennart Kiil



The Keeling curve of the carbon dioxide content of the atmosphere, measured at Mauna Loa, Hawaii, since 1958.

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A graph showing the rising atmospheric content of carbon dioxide, CO_2.

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The curve is named after the late Dr. Charles David Keeling, who directed the first CO_2 monitoring program in 1958 at the South Pole and at the summit of the Mauna Loa volcano in Hawaii. Both locations were chosen for their remoteness from human influence. Eventually measuring was only continued at the Hawaii site due to funding problems.

The detailed measurements were the first documentation that the CO_2 content of the atmosphere was rising. Today, 50 years later, the Keeling curve is also unique as it is the longest running uninterrupted record of CO_2 levels.

The measurements also, rather surprisingly, revealed that the atmospheric CO_2 content is characterized by annual oscillating variation. The variation is caused by seasonal variation in the amount of photosynthesis by land plants in the northern hemisphere. In spring when plants start photosynthesizing, the CO_2 level decreases, and in the fall when plants die and decay, the levels rise again.

The results from Keeling's program eventually raised a lot of interest, and sparked research in the influence of rising CO_2 levels on the climate. Several similar CO_2 monitoring stations have since confirmed the CO_2 trends found in Keeling's measurements.

Stationary monitoring stations, like the one at Mauna Loa, are today supplemented by an extensive atmosphere monitoring program, where samples of air collected from around the planet are analyzed weekly.

How to cite this entry

Lennart Kiil: "Keeling Curve". Climate Encyclopedia, climate-encyclopedia.com/keeling-curve, retrieved 17 November 2026.

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