

CO₂ hits record highs in Southern hemisphere

Last month, the atmospheric concentration of carbon dioxide (CO₂) as measured at Amsterdam Island, in the southern Indian Ocean, for the first time exceeded the symbolic value of 400 ppm, or 0.04%. The CO₂ concentrations recorded at the Amsterdam Island research station are the lowest in the world (excluding seasonal cycles), due to the island's remoteness from anthropogenic sources. The 400 ppm threshold was already crossed in the Northern hemisphere during the 2012/2013 winter. In addition, the increase of CO₂ in the atmosphere is speeding up, growing by more than 2 ppm annually over the past four years.

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Due to its remote location, the air in Amsterdam Island is among the cleanest in the world, with the lowest CO₂ concentrations (excluding seasonal variations in the Northern hemisphere where, every summer, the amount of CO₂ in the atmosphere falls due to periodic absorption by plants). It has become a reference site for atmospheric chemistry in the Southern hemisphere and is one of the thirty stations in the WMO3 global network for atmospheric composition monitoring. The measurements carried out there are used to monitor changes in greenhouse gases (such as CO₂, CH₄, and N₂O) and to better quantify the role of the Southern Ocean as a carbon sink.

The concentration of CO₂ in the atmosphere has been continuously measured there over the past 35 years. For the first time ever, it exceeded 400 ppm in May 2016. The CO₂ value recorded by this observatory shows very little seasonal variation (<1 ppm), which means that the increase observed is indicative of the long-term trend.

Since 1981, CO₂ concentrations have risen from 339 to 400 ppm (+18%), which is an average increase of 1.75 ppm per year. In addition, researchers have recorded higher increase rates in the past few years: the increase of CO₂ in the atmosphere is accelerating, since the annual increase rate observed, which was 1.30 ppm in the 1980s, is now more than 2 ppm per year since 2012.

The 400 ppm value was already exceeded at monitoring stations in the Northern hemisphere in winter 2012-2013. Crossing the 400 ppm threshold at Amsterdam Island therefore means that this value has been reached practically all over the planet.