

Ozone pact helped cool the planet, study reports

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Credit: NASA

A slowdown in global warming that climate sceptics cite in favour of their cause was partly induced by one of the world's most successful environment treaties, a study said on Sunday.

The UN's Montreal Protocol, designed to phase out industrial gases that destroy Earth's protective ozone layer, coincidentally applied a small brake to the planet's warming, it said.

Without this treaty, Earth's surface temperature would be roughly 0.1 degrees Celsius (0.2 degrees Fahrenheit) higher today, according to its authors.

"Paradoxically, the recent decrease in warming, presented by [global](#)

[warming](#) sceptics as proof that humankind cannot affect the climate system, is shown to have a direct human origin," according to the paper, published in the journal *Nature Geoscience*.

Signed in 1987 and implemented in 1989, the Montreal Protocol committed signatories to scrapping a group of chlorine- and bromine-containing chemicals.

Used in aerosol sprays, solvents and refrigerants, these substances destroy ozone molecules in the stratosphere that filter out cancer-causing ultraviolet light.

Some of the chemicals also happen to be hefty [greenhouse gases](#), with a powerful ability to trap the Sun's heat.

So their phaseout, which began to hit its stride in the 1990s, was also a small but perceptible gain in the fight against [climate change](#), the scientists said.

From 1998 to 2012, Earth's mean global temperature rose by an average of 0.05 C (0.09 F) per decade, a benchmark measure of warming.

This is far less than the average decadal increase over half a century of 0.12 C (0.2 F), and is out of sync with the ever-rising curve of greenhouse-gas emissions.

As a result, sceptics claim the 15-year "Pause" as proof that climate change has natural causes, showing that green calls to reduce fossil-fuel emissions are flawed or a scam.

The paper, led by Francisco Estrada, an atmospheric physicist at the Autonomous National University of Mexico, is a statistical comparison of carbon emissions and warming during the 20th century.

Overall, temperatures rose last century by 0.8 C (1.4 F).

Cooling and warming

Two World Wars contributed to cooling, as did the Great Depression—massively so. From 1929 to 1932, annual emissions of [carbon dioxide](#) (CO₂) fell by 26 percent.

It took until 1937 for CO₂ emissions to return to their pre-1929 levels. The cooling effect took some time to kick in, but it lasted until the middle of the century.

The post-World War II boom led to a surge in emissions that, from 1960, began to be perceived in a clear signature of sustained warming, according to the investigation.

The paper said that the "Pause" may also be attributable, but in a far smaller way, to changes in rice farming in Asia, a generator of the [potent greenhouse gas](#) methane.

In a comment on the study, Alex Sen Gupta, of the Climate Change Research Centre at the University of New South Wales in Australia, said the cooling benefits from the Montreal Protocol "are going to be short-lived."

"In the end, the continuing rise in other greenhouse gases, particularly carbon dioxide, will keep temperatures marching upwards."

In September, the UN's paramount group of climate experts scoffed at the "Pause," essentially calling it a non-issue.

They said the period of 1998-2012 was far too short to give a long-term view of climate trends.

They also hinted at selective bias, noting that the period began with a strong El Nino, a heat-linked weather phenomenon, thus making following years seem cooler by comparison.

More information: Paper: [dx.doi.org/10.1038/ngeo1999](https://doi.org/10.1038/ngeo1999)

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