

Statistical climate data from the past 10 years shows that the Earth is warming at an alarming rate.

New research shows that the rate of global warming has accelerated sharply since 2015 and could cause the Earth to exceed 1.5°C before 2030.

A new analysis from the Potsdam Institute for Climate Impact Research (PIK) shows that global warming has accelerated since around 2015. After removing the influence of natural factors that could alter Earth's temperature, researchers have for the first time identified a statistically significant increase in the rate of warming of the planet.

Over the past decade, global temperatures have risen at a rate of approximately 0.35°C per decade, depending on the dataset used for analysis. This is significantly higher than the average rate of less than 0.2°C per decade recorded between 1970 and 2015.

According to the study, the last decade has also been the period of the fastest global warming since modern temperature measurements began in 1880.

Grant Foster, an American statistician and co-author of the study, said: "We have now been able to demonstrate that global warming has accelerated significantly and statistically since around 2015."

This study was published on March 6th in the scientific journal Geophysical Research Letters.



Foster said the research team removed natural factors that could influence temperature from the observational data. This helps reduce 'noise' and makes the long-term warming trend clearer.

In the short term, many natural phenomena can cause global temperatures to temporarily rise or fall. These factors include El Niño, volcanic eruptions, or solar cycles. They sometimes make long-term warming trends difficult to perceive.

To address this problem, the research team analyzed live temperature data from five popular global temperature datasets, including NASA, NOAA, HadCRUT, Berkeley Earth, and ERA5.

After adjusting the data to remove the impact of natural factors, scientists can isolate the long-term warming signal of the climate.

Stefan Rahmstorf, a PIK researcher and lead author of the study, said that the adjusted data showed that the rate of global warming has accelerated since 2015 with a statistical certainty of over 98%. This result appeared consistently across all datasets analyzed and was independent of the analytical methods used.

It's noteworthy that this study doesn't aim to pinpoint the exact reasons why the rate of warming is changing. Instead, its main objective is to see if the rate of Earth's warming changes over time.

After adjusting temperature data to remove the effects of El Niño and the recent period of strong solar activity, the record-breaking hot years of 2023 and 2024 are considered slightly 'cooler' in the analysis. Nevertheless, these two years still hold the distinction of being the two hottest years since modern temperature measurements began.

When analyzing all the datasets, researchers found that the acceleration of warming began to become apparent around 2013 or 2014.

To assess whether the rate of warming has changed since the 1970s, the research team employed two different statistical methods: quadratic trend analysis and fractional linear modeling. These methods helped identify when the long-term warming rate began to change.

The study did not attempt to pinpoint the exact cause of the accelerating warming. However, the authors noted that current climate models have predicted this trend, and it is consistent with current scientific understanding of climate change.

According to Stefan Rahmstorf, if the warming rate of the past 10 years continues, global temperatures could exceed the 1.5°C threshold of the Paris Agreement before 2030.

He emphasized that the rate at which the Earth continues to warm in the future will depend on how quickly humanity can reduce CO₂ emissions from fossil fuels to zero.

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