

Most countries may see annual heat extremes every second year: study

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Researchers found that 92 percent of 165 countries studied are expected to experience extremely hot annual temperatures, defined as a once-in-one-hundred-year hot year in the pre-industrial era, every two years.

Almost every country on Earth could experience extremely hot years every other year by 2030, according to new research Thursday

highlighting the outsized contribution of emissions from the world's major polluters.

The modeling study combined data on historical emissions and pledges made before the COP26 climate summit for cuts from the top five emitters—China, the US, the European Union, India and Russia—to make regional warming predictions by 2030.

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Alexander Nauels of Climate Analytics, who co-authored the study published in the journal *Communications Earth and Environment*, said that in itself was "very striking".

"It just really shows the urgency and how we're heading into a world that is just so much hotter for everybody," he told AFP.

To look at the scale of the contribution from the world's five biggest emitters to this prediction, the authors looked at what the picture would be without their emissions since 1991, when the Intergovernmental Panel on Climate Change (IPCC) first warned governments of human-made climate change.

They found that the proportion of countries affected by extreme hot years would shrink to around 46 percent.

Lead author Lea Beusch, of the Institute for Atmospheric and Climate Science at ETH Zurich university, said the study found "a clear imprint" of the actions of top emitters on the regional scale.

"This is I think very important, because we usually talk about these abstract quantities of emissions, or [global temperatures](#), which we know about, but we can't really feel," she said.

"Whereas regional climate change is much closer to what we're going to experience—we're going to experience this warming in our country and this increasing frequency of extremely hot years."

The researchers found the biggest impact in terms of the frequency of extremely hot years in tropical Africa.

"Because this is a region that traditionally has quite low year-to-year temperature variability, even the moderate mean warming it is set to experience, compared to other regions, really puts it out of its known [climate](#) envelope," she said.

But she added that the greatest overall temperature increases are in northern high latitude areas, which are warming at a faster rate than the tropics.

The authors stressed that the prediction for the frequency of extreme years could be changed if countries significantly step up efforts to cut pollution.

Current plans would see emissions increase 13.7 percent by 2030, according to the United Nations [climate change](#) body UNFCCC, when they must fall by roughly half to keep the Paris Agreement [warming](#) limit of 1.5C within reach.

More information: Lea Beusch, Responsibility of major emitters for country-level warming and extreme hot years, *Communications Earth & Environment* (2022). [DOI: 10.1038/s43247-021-00320-6](https://doi.org/10.1038/s43247-021-00320-6).
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