Severe heatwaves on the rise

29 October 2021

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Extreme heatwaves that may have happened once every decade are in danger of becoming an annual occurrence unless steps are taken to address climate change, a study suggests.

Large areas of land could experience rises in annual maximum temperature of more than 6°C, according to experts who used the latest climate data to investigate how global warming might dictate future climate trends.

Researchers say this additional knowledge could inform strategies that could save lives and lessen the economic and environmental effect of such events.

University of Edinburgh scientists used the CMIP6 database—a repository of the latest climate change data—to determine how the most extreme annual temperatures could change compared to the present day.

Using four different climate models, the team analyzed the potential effects of three scenarios: the earth warming by 1.5°C and 2°C—the target levels set out in the legally binding 2016 Paris Agreement—and by 3°C, a scenario which could happen if the targets of the Paris Agreement are not met.

Rising temperatures

They found that in every projected scenario the most extreme annual temperatures increased almost everywhere in the world, except in some localized regions, mainly over the oceans.

Land areas, including parts of Southern Europe, Asia, South America, and the Arctic, saw some of the biggest projected increases. If global warming reaches 3°C, some areas could experience annual maximum temperatures of more than 6°C warmer than today, the study found.

Increased frequency

The study also discovered that extreme heat events that previously only happened once a decade were likely to become more frequent almost everywhere in the world.

On land, extreme heat events are projected to be three times more common at 1.5°C of global warming, and how they can be expected to change with global warming, as the Earth's atmosphere increases in temperature.

Global warming

This new study provides further understanding of the location, severity and frequency of heatwaves...
warming and around eight times more common at 3°C of warming. The frequency of longer heat events was predicted to increase more than that of shorter heat events.

At 3°C of global warming some regions saw a once-in-a-decade event become an annual occurrence.

"The record-breaking heatwaves seen in Canada and the US this summer shows us what a warmer world looks like, highlighting our need to better understand future temperature extremes driven by global warming. Our findings anticipate significant increases in the likelihood of current extreme temperatures and underline the serious need to limit further global warming to avoid even hotter events in the future," said Ross Slater, lead author, School of Physics and Astronomy, University of Edinburgh.

The study, published in Atmospheric Science Letters is available to read as an open access document: edin.ac/3eFD728


Provided by University of Edinburgh

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