How well can weather experts predict unprecedented heat waves?

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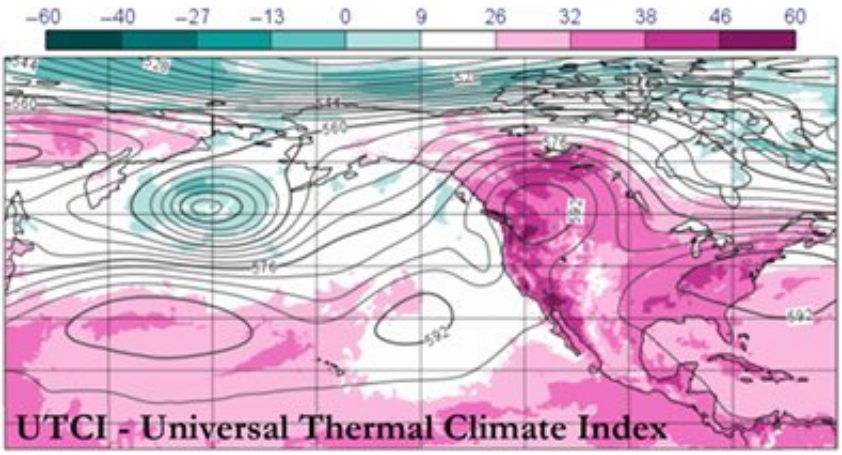

Credit: *Weather* (2022). DOI: 10.1002/wea.4257

In late June 2021, an extreme heat wave impacted the Pacific Northwest of North America, with temperatures surpassing previous records by significant margins, causing more than 1,000 excess deaths and affecting infrastructure and wildlife. An analysis published in *Weather* evaluated the prediction of this heat wave by the European Center for Medium-Range Weather Forecasts' (ECMWF) Integrated Forecasting System. The results showed that forecasts were able to, and did, predict this unprecedented extreme event, with a magnitude beyond anything the model had seen before, and with very high confidence.

The study's authors stress that because we will see more, and more

extreme, extreme events, it will be important to consider how we can increase trust and encourage preparedness and early action, when forecasts begin to tell us to expect the unprecedented.

"It is a credit to the continuous improvements made to our forecast models and our understanding of the Earth system, that we can not only predict unprecedented events and extreme weather, but in some cases begin to predict them weeks in advance," said lead author Rebecca Emerton, Ph.D., of the ECMWF. "With climate change, more intense extremes are projected, but we are also likely to see more events that break records by large margins, like the Pacific Northwest heat wave in 2021, and the heatwave of July 2022 in the U.K. and Europe. Extreme heat poses significant and varied risks, including to health, so it is important to consider impact-based forecasts of heat stress such as the ones discussed in this paper."

More information: R. Emerton et al, Predicting the unprecedented: forecasting the June 2021 Pacific Northwest heatwave, *Weather* (2022). DOI: 10.1002/wea.4257

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