

Sea temperature changes contributing to droughts

July 19 2017



A photograph of a farmer showing his affected plot due to drought in Karnataka, India, 2012. Credit: Pushkarv/Wikipedia

Fluctuations in sea surface temperature are a factor in causing persistent droughts in North America and around the Mediterranean, new research suggests.

A team from the universities of Exeter, Montpellier and Wageningen

analysed data from 1957-2002 and found sea surface temperatures in the North Pacific and North Atlantic became increasingly variable, and extremes lasted for longer.

Ocean temperatures are a major driver of conditions on land, and the researchers showed that the changes they observed correlated with increases in land [temperature](#) variability, and persistence of extreme temperatures.

This in turn was associated with persistent droughts in North America and on land around the Mediterranean.

"Our evidence shows that larger and more persistent variations in [sea surface](#) temperature have occurred in the North Atlantic and North Pacific and these contributed to more extreme and persistent temperature anomalies on parts of the world's land surface," said Professor Tim Lenton, of the University of Exeter.

The researchers, who systematically scanned monthly temperature data to look for trends, note that such extended periods of high or low temperatures can have an effect "greater than the sum of their parts".

"For instance, a long heatwave can have greater impacts on human mortality than the sum of individual hot days, and multi-year droughts can have greater agricultural economic impacts than the sum of individual dry years," Professor Lenton said.

An ongoing drought in the Eastern Mediterranean, which began in 1998, has been described by NASA as the "worst drought of the past nine centuries" in the region.

There have also been persistent droughts in the south west of North America in recent years, often referred to as the "California Drought".

The paper, published in the *Nature* journal *Scientific Reports*, is entitled: "Observed trends in the magnitude and persistence of monthly temperature variability."

More information: Timothy M. Lenton et al, Observed trends in the magnitude and persistence of monthly temperature variability, *Scientific Reports* (2017). [DOI: 10.1038/s41598-017-06382-x](https://doi.org/10.1038/s41598-017-06382-x)

Provided by University of Exeter

Citation: Sea temperature changes contributing to droughts (2017, July 19) retrieved 27 April 2024 from <https://phys.org/news/2017-07-sea-temperature-contributing-droughts.html>

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