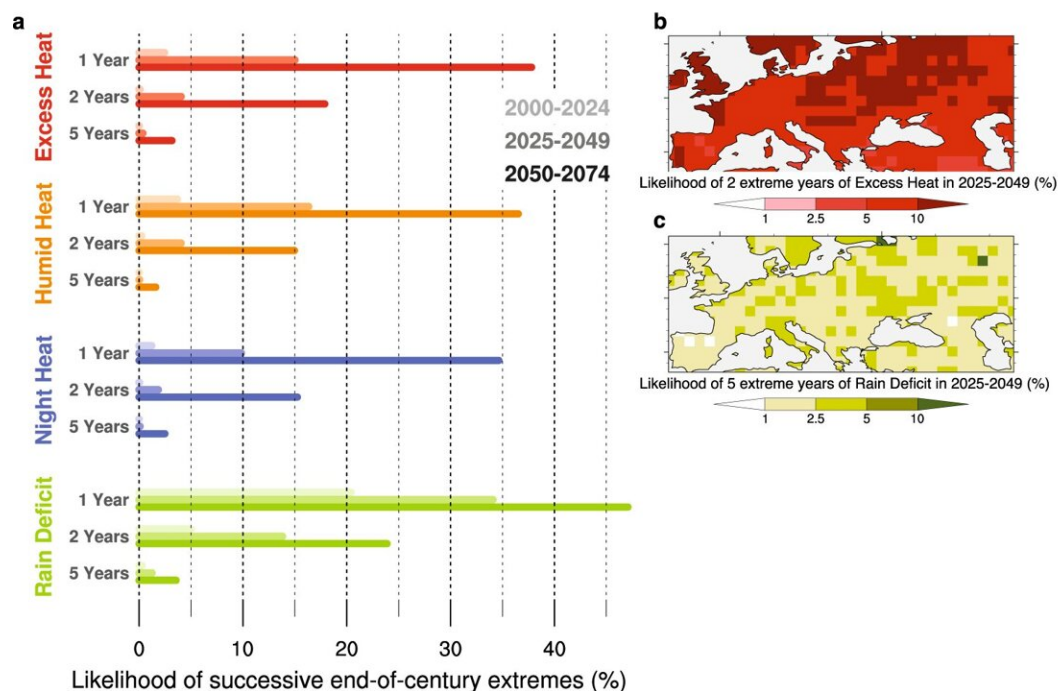


'End of century' extreme heat and drought conditions in Europe could occur much earlier than previously thought

December 1 2023



Likelihood of successive end-of-century extremes. Credit: *Communications Earth & Environment* (2023). DOI: 10.1038/s43247-023-01075-y

Simultaneous episodes of extreme heat and drought—typical of a moderate warming scenario predicted for the end of the 21st century—could occur earlier and repeatedly in Europe, reports a study

published in [*Communications Earth & Environment*](#).

The study suggests that there is a greater than 10% chance of two successive years of end-of-century extreme heat occurring by 2050 to 2075, while 5-year long European megadroughts may also occur.

Climate change is leading to more frequent occurrences of simultaneous extreme weather and [climate events](#)—such as drought, heat waves, floods, or fires—that can cause severe socio-economic damage. Additionally, it is not clear how increased variability in the North Atlantic system may affect these [extreme events](#) in Europe.

Laura Suarez-Gutierrez and colleagues investigated how soon end-of-century heat and [drought stress](#) could occur in Europe—and the role North Atlantic variability over the decades may play—under a moderate climate scenario that leads to warming of approximately 2.25° Celsius by the end of the century. The authors used a range of metrics of single and compound heat stress and drought extremes and a set of 100 simulations from the Max Planck Institute Grand Ensemble climate model.

The authors found that the probability that single and compound end-of-the-century extreme heat stress and drought events will occur repeatedly year after year is greater than one in 10 by 2050–2074. All forms of heat stress (when air is hot and moist during the day or hot during the night) could already reach a probability of 1 in 10 by 2030–2039.

Additionally, above-average sea surface temperatures in the North Atlantic will contribute to dry and hot conditions in Europe. The authors calculate that end-of-century temperatures will be twice as likely in decades from 2030 under these conditions.

The authors conclude that North Atlantic climate variability could increase the frequency of multi-year periods of [extreme heat](#) and

drought in Europe and that preparedness for such devastating events must increase.

More information: Laura Suarez-Gutierrez et al, Extreme heat and drought typical of an end-of-century climate could occur over Europe soon and repeatedly, *Communications Earth & Environment* (2023). [DOI: 10.1038/s43247-023-01075-y](https://doi.org/10.1038/s43247-023-01075-y)

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