

Arctic warming linked to fewer European and US cold weather extremes, study shows

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Climate change is unlikely to lead to more days of extreme cold, similar to those that gripped the USA in a deep freeze last winter, new research has shown.

The Arctic amplification phenomenon refers to the faster rate of warming in the Arctic compared to places further south. It is this phenomenon that has been linked to a spike in the number of severe cold spells experienced in recent years over Europe and North America.

However, new research by University of Exeter expert Dr James Screen has shown that Arctic amplification has actually reduced the risk of cold extremes across large swathes of the Northern Hemisphere.

The intriguing new study, published in leading scientific journal *Nature Climate Change*, questions growing fears that parts of Europe and North America will experience a greater number, or more severe, extreme cold days over the course of the next century.

Dr Screen, a Mathematics Research Fellow at the University of Exeter, said: "Autumn and winter days are becoming warmer on average, and less variable from day-to-day. Both factors reduce the chance of extremely cold days."

The idea that there was a link between Arctic amplification and extreme weather conditions became prevalent during the severe winter weather that plagued large areas of the United States in January 2014, leading to

major transport disruption, power cuts and crop damage.

In his study, Dr Screen examined detailed climate records to show that autumn and winter temperature variability has significantly decreased over the mid-to-high latitude Northern Hemisphere in recent decades.

He found that this has occurred mainly because northerly winds and associated cold days are warming more rapidly than southerly winds and warm days.

Dr Screen said: "Cold days tend to occur when the wind is blowing from the north, bringing Arctic air south into the mid-latitudes. Because the Arctic air is warming so rapidly these cold days are now less cold than they were in the past."

Using the latest mathematical climate modelling, Dr Screen has also been able to show that these changes will continue in to the future, with projected future decreases in temperature variability in all seasons, except summer.

'Arctic amplification decreases temperature variance in northern mid-to-high-latitudes', by James Screen, is published in *Nature Climate Change* online, on Sunday, June 15.

More information: *Nature Climate Change* [DOI: 10.1038/nclimate2268](https://doi.org/10.1038/nclimate2268)

Provided by University of Exeter

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