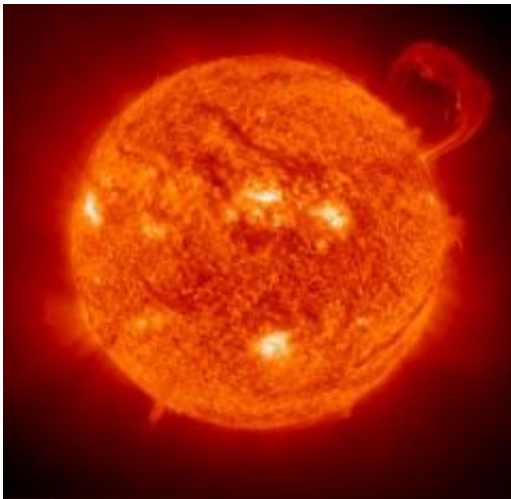


# Link between solar activity and the UK's cold winters

April 15 2010

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The Sun. Image: SOHO

A link between low solar activity and jet streams over the Atlantic could explain why, despite global warming trends, people in regions North East of the Atlantic Ocean might need to brace themselves for more frequent cold winters in years to come.

A new report published today, Thursday 15 April, in IOP Publishing's *Environmental Research Letters* describes how we are moving into an era of lower [solar activity](#) which is likely to result in UK winter temperatures more like those seen at the end of the seventeenth century.

Lead author Mike Lockwood of the University of Reading said: "This year's winter in the UK has been the 14th coldest in the last 160 years and yet the global average temperature for the same period has been the 5th highest. We have discovered that this kind of anomaly is significantly more common when solar activity is low."

The new paper, 'Are cold winters in Europe associated with low solar activity?', differs from previous efforts to explain the UK's recent cold winters by comparing the most comprehensive, but regionally specific, temperature dataset available (the Central England Temperature dataset) to the long-term behaviour of the Sun's [magnetic field](#), and to trends across the entire [Northern Hemisphere](#).

The paper is being published now as the researchers have just had the opportunity to put this year's data to the test and found that this year's results fit well with the trends they have discovered.

The researchers suggest that the anomaly in Northern Europe's [winter temperatures](#) could be to do with a phenomenon called 'blocking'.

'Blocking' is related to the jet stream which brings winds from the west, over the Atlantic, and into Northern Europe but, over the past couple of winters, could have lost its way, for weeks at a time, in an 'anticyclone' before it reaches Europe.

The researchers have found strong correlations between weak solar activity and the occurrences of 'blocking'. As the temperature is affected by a weak Sun so the wind's patterns also change and, as the warmer westerly winds fail to arrive, the UK is hit by north-easterlies from the Arctic.

The researchers, from the Department of Meteorology at the University of Reading, the Science and Technology Facilities Council Space

Science and Technology Department, and the Max-Planck Institute for Solar System Research in Katlenburg-Lindau, Germany, are keen to stress the regional and seasonal (European and winter) nature of their research.

Professor Mike Lockwood has explained that the trends do not guarantee colder winters but they do suggest that colder winters will become more frequent. He said: "If we look at the last period of very low solar activity at the end of the seventeenth century, we find the coldest winter on record in 1684 but, for example, the very next year, when solar activity was still low, saw the third warmest [winter](#) in the entire 350-year record.

"The results do show however that there are a greater number of cold UK winters when solar activity is low."

**More information:** The paper can be found in IOP Publishing's open-access journal *Environmental Research Letters* at [stacks.iop.org/1748-9326/5/024001](https://stacks.iop.org/1748-9326/5/024001) .

Provided by Institute of Physics

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