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# UK faces more harsh winters in solar activity dip

By Mark Kinver Environment reporter, BBC News



Average temperatures for the past three winters have been colder than the previous three decades

Britain is set to face an increase in harsh winters, with up to one-in-seven gripping the UK with prolonged sub-zero temperatures, a study has suggested.

The projection was based on research that identified how low solar activity affected winter weather patterns.

However, the authors were keen to stress that their findings did not suggest that the region was about to be plunged into a "little ice age".

The findings [appear in the journal Environmental Research Letters](#).

"We could get to the point where one-in-seven winters are very cold, such as we had at the start of last winter and all through the winter before," said co-author Mike Lockwood, professor of space environment physics at the University of Reading.

Using the Central England Temperature (CET) record, the world's longest instrumental data series that stretches back to 1659, the team said that average temperatures during recent winters

had been markedly lower than the longer-term average.

"The mean CET for December, January and February for the recent relatively cold winters of 2008/09 and 2009/10 were 3.50C and 2.53C respectively," they wrote.

"Whereas the mean value for the previous 20 winters had been 5.04C.

"The cluster of lower winter temperatures in the UK during the last three years had raised questions about the probability of more similar, or even colder, winters occurring in the future."

Last year, Professor Lockwood and colleagues published a paper that identified a link between [fewer sunspots and atmospheric conditions that "blocked" warm westerly winds](#) reaching Europe during winter months, opening the way for cold easterlies from the Arctic and Russia to sweep across the region.

Professor Lockwood, while acknowledging that there were a range of possible meteorological factors that could influence blocking events, said the latest study moved things forward by showing that there was "improvement in the predictive skill" when solar activity was taken into account.

### **Be prepared**

In December 2010, heavy snow and prolonged sub-zero temperatures severely disrupted the UK's transport infrastructure, affecting the Christmas getaway plans of thousands of people.



Government agencies and local authorities found it difficult to cope with the severe conditions. This prompted Transport Secretary Phillip Hammond to ask his department's chief scientific adviser to [assess whether the government should be planning for more severe winters](#) in the future.

Professor Lockwood welcomed Mr Hammond's call for a review, but added a word of caution.

"The key message we are trying to get over here is that past experience is not a good guide here, even recent experience is not a good guide," he told BBC News.

"Taking the averages from over the past 20 or 30 years is not a good way to plan for the future because there may be real systematic shifts.

"We have to do the science to actually understand the combined influence and then draw our conclusions about what level our winter preparedness needs to be over the next 50 years."

### **'No deep freeze'**

Professor Lockwood was keen to point out that his team's paper did not suggest that the UK and mainland Europe was about to be plunged into a "little ice age" as a result of low solar activity, as some media reports had suggested.



The late 17th Century is often called the Little Ice Age, wrongly says Professor Lockwood. The Maunder Minimum, a period of extremely low solar activity that lasted for about half a century from the late 17th Century, has been dubbed by some as the Little Ice Age because Europe experienced an increase in harsh winters, resulting in rivers - such as the Thames - freezing over completely.

Professor Lockwood said it was a "pejorative name" because what happened during the Maunder Minimum "was actually nothing like an ice age at all".

"There were colder winters in Europe. That almost certainly means, from what we understand about the blocking mechanisms that cause them, that there were warmer winters in Greenland," he observed.

"So it was a regional redistribution and not a global phenomenon like an ice age. It was nothing like as cold as a real ice age - either in its global extent or in the temperatures reached.

"The summers were probably warmer if anything, rather than colder as they would be in an ice age."

He added that the Maunder Minimum period was not an uninterrupted series of cold, harsh winters.

Data from the CET showed that the coldest winter since records began was 1683/84 "yet just two years later, right in the middle of the Maunder Minimum, is the fifth warmest winter in the whole record, so this idea that Maunder Minimum winters were unrelentingly cold is wrong".

He explained that a similar pattern could be observed in recent events: "Looking at satellite data, we found that when solar activity was low, there was an increase in the number of blocking events of the jetstream over the Atlantic.

"That led to us getting colder weather in Europe. The same events brought warm air from the tropics to Greenland, so it was getting warmer.

"These blocking events are definitely a regional redistribution, and not like a global ice age."