

18th June 2011

UK Long Range Winter Weather Forecast 2011-2012

My UK long range winter weather forecast in Layman's terms and the reasoning behind my basis of a severe winter weather warning for 2011-2012.

Low Solar Activity

Periods of low solar activity at present and what we have seen in recent years influence the Earth's atmosphere by allowing the stratosphere to cool. This has a somewhat more profound effect over Northern Europe and the UK in terms of colder and snowier winters, due to jet stream patterns that block warm air from reaching us and create more moisture. Although sunspot activity has increased somewhat this year and there has been an increase in solar flare activity, the activity is minuscule in comparison to what it should be like during a solar maximum and in terms of frequency. Periods of low solar activity such as this have future repercussions of low solar activity in future cycles and produce extra cloud cover that reflects sunlight with a cooling influence on Earth. The lack of major sunspots and solar flares clearly indicate a slower conveyor belt within the sun. We are now in a very weak solar maximum and my observations indicate that the next solar cycle will also be weak.

La Niña

La Niña is the cooling of the Pacific Ocean near the equator and influences changes to atmospheric pressure and wind changes. In terms of the UK this makes the jet streams in the North Atlantic stronger and therefore offers more precipitation in the form of widespread heavy snowfall during below average temperatures as cold easterlies dominate. Recent indicators from the NOAA suggest neutral conditions for the season ahead, but it is also important to consider the current Pacific Decadal Oscillation (PDO) which switched to a cold phase during 2008. The PDO is a pattern of Pacific climate variability that switches phases and lasts for 20-30 years, resulting in stronger La Niña and weaker El Niño conditions that make the likelihood of La Niña conditions returning very high. However, any return to La Niña conditions this year will not be as strong or have the same influence on the much needed respite that we received in the latter part of last winter, in terms of the milder weather conditions from the high pressure systems it produced in the North Atlantic.

Gulf Stream/North Atlantic Drift

It is visible to see from recent NOAA satellite images that the Gulf Stream/North Atlantic Drift has drastically altered within the last few years. The Gulf Stream is basically a huge volume of heated water that brings warmth to the UK in terms of a mild atmosphere. This softens the climate we experience for the latitude we lie on. For example let's take Newfoundland who lie on a similar latitude to the UK, yet they experience much harsher winters as they do not benefit from this valuable heat source.

Here is a quotation from Matthew Fontaine Maury who was nicknamed "Father of Modern Oceanography" and "Scientist of the Seas".

"A SIMPLE calculation will show that the quantity of heat discharged over the Atlantic from the waters of the Gulf Stream in a winter's day would be sufficient to raise the whole column of atmosphere that rests upon France and the British Islands from the freezing point to summer heat" (Physical Geography of the Sea, 1855).

Volcanoes

The Icelandic volcanic eruptions Eyjafjallajökull 2010 and Grimsvotn 2011 are important in terms of sunlight reflection over the Northern Hemisphere. The dust and ash particles can remain within the atmosphere for one to two years and reflect heat away from an already quiet sun. Converted sulfur dioxide emissions from volcanic eruptions can also cause sunlight reflection in the atmosphere. It is also important to consider the currently erupting Chaiten volcano in Chile as this may have the potential to cause long-term climatic effects globally.

Conclusion

I therefore expect the 2011-2012 winter to follow a similar pattern in terms of how November and December was in 2010 for the vast majority of this winter. It will be exceptionally cold and snowy with well below average temperatures. I fully expect to see records broken with the highlands of Scotland being once again particularly hard hit. It is therefore vital to start preparing now in terms of high energy bills and raising awareness amongst the most vulnerable and elderly people of society.

James Madden (UK Long Range Forecaster)

www.ExactaWeather.com Published: 18th June 2011 (21:29) BST