

End of Season Review: How Unusual Was The 2018-19 Storm Season?

Executive Summary:

Storms: The frequency of unsettled weather over the 2018-19 storm season (October – March), characterised by the number of ‘windy days’ per month, was generally around average. Despite this general trend two months were of particular note, with January characterised by more settled weather than average, while a greater than average number of windy days were recorded in March.

Precipitation: Monthly precipitation was generally around or below average throughout the storm season. Precipitation totals were particularly low in January and February, while March experienced greater than average precipitation.

Temperature: In general, temperatures were above average throughout the period, however there were notable cold snaps during January and early February.

Based on the analysis of the 2018-19 storm season, both seasonal forecast models and climate signals were able to provide some useful insights into expected conditions, with climate indicators occasionally providing more useful information in the shorter term. EuroTempest will continue to monitor long range forecasts and climate signals for the European storm season in order to evaluate how useful they could be for insurers in longer term planning for weather impacts.

Storms

Prior to the onset of the 2018-19 storm season (October – March), the UK was affected by a cluster of low-pressure systems between mid-to-late September. The cumulative impact of these systems, which included ex-hurricane Helene (18th September) and windstorms Ali (19th September) and Bronagh (20-21st September), resulted in a small-to-moderate uplift in weather related insurance claims, estimated by EuroTempest to be around 10,000 storm claims across the UK. Following this bout of storm activity, the first half of the extended winter period (OND 2018) was generally characterised by around average¹ storminess (table 1), with westerly flow frequently bringing unsettled weather to the UK. During this period, there were two named storms, Callum (12-13th October) and Deirdre (15-16th December), both of which were fairly low impact events.

In contrast, the beginning of 2019 was largely dominated by high pressure, interspersed with periods of northerly / north-westerly flow, resulting in below average storminess for January. Following the relatively settled start to the year, conditions turned slightly more unsettled in February, with brief periods of westerly airflow bringing systems such as windstorm Erik (8-9th February) across the UK. March was particularly unusual from a wind perspective, with westerly airflow dominating in the first half of the month, resulting in the passage of multiple systems, including named storms Freya (3-4th March) and Gareth (12-13th March), across the UK. While, individually, each of these systems were classified as low impact events, the clustering of multiple systems in quick succession resulted in a moderate cumulative impact for the UK. EuroTempest estimates there were around 30,000 storm claims across the UK during March.

	O	N	D	J	F	M
10%	+1	-3	0	-3	+4	+10
20%	+3	+1	+3	-4	-2	+11
50%	+1	+1	-1	-1	0	+7

Table 1: Comparison of the number of 'windy days' per month this season to the 10-year average number of 'windy days' per month. 'Windy days' are defined as days where greater than 10%, 20% or 50% of all UK weather stations record maximum gusts of 45mph or higher. The value in each cell represents the difference between the number of 'windy days' in each category during the winter season 2018-19 and the average i.e. +1 indicates an increase of one day above average.

Precipitation

Monthly precipitation volumes were generally around average for the first half of the extended winter period, with UK weather stations recording >90% of average monthly totals in October, November and December. In line with the pattern in storminess, the beginning of 2019 was characterised by drier conditions than normal, with just over half the monthly average precipitation received in January, and just over three-quarters in February. Again, March stands out as being particularly unusual, with frequent bands of rain moving in from the Atlantic due to the dominant westerly airflow, resulting in a monthly precipitation total of over 150% of average.

¹ Average indicates monthly averages using station data from the previous 10 winter seasons.

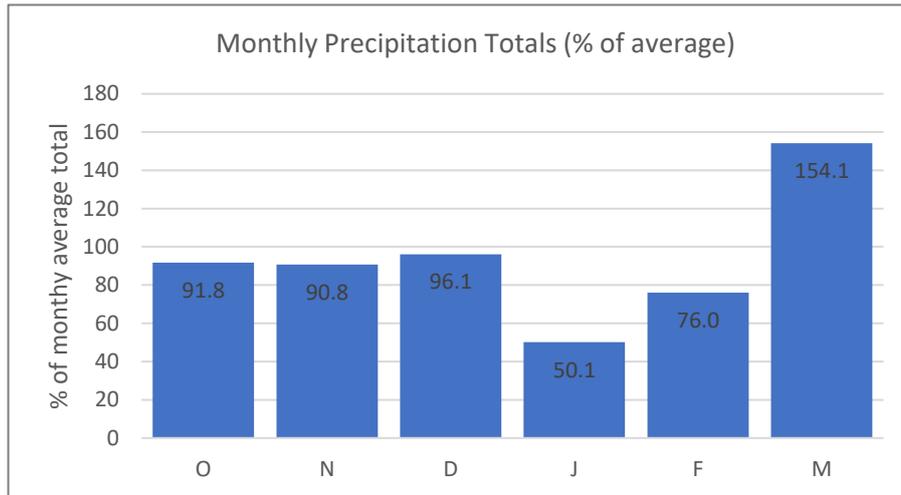


Figure 1: Monthly precipitation totals (calculated by aggregating 24 hour precipitation totals from all UK weather stations) as a percentage of the 10-year mean monthly precipitation totals.

Temperature

In general, the 2018-19 storm season was characterised by above average² temperatures, interspersed with colder periods. The most notable cold periods occurred during January and the beginning of February, which saw daily mean temperatures falling below average across many regions of the UK for extended periods of time, resulting in widespread frost. However, these cold periods were not exceptional, with the average weather station temperature across the UK falling below 0 only very briefly. In contrast, the end of February and March were exceptionally mild, with record breaking temperatures contributing to UK-mean temperatures 2.4 and 1.3 °C above the 1910-2010 average respectively (Met Office).

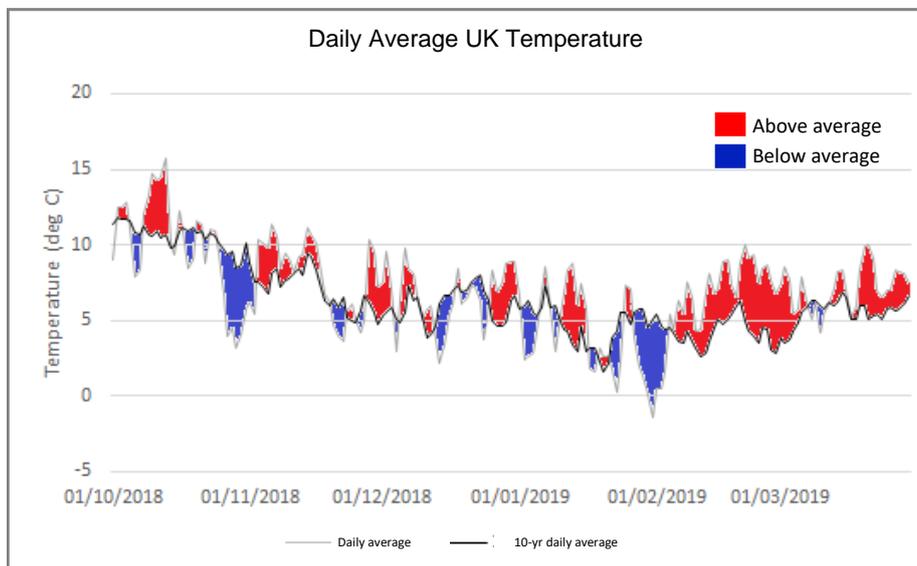


Figure 2: Average UK daily temperature (calculated by averaging over all UK weather stations) is represented by the grey line, while the 10-year average daily temperature is represented by the black line. Red (blue) shading indicates where the average UK temperature this winter was warmer (colder) than the average for that day.

² In this context, above or below 'average' refers to the comparison of the UK mean temperature for each day of the winter season compared to the UK 10-year average mean temperature for that day of the year.

How did the seasonal forecast models and climate signals do?

Forecast Conditions	Nov 2018	Dec 2018	Jan 2019	Feb 2019	Mar 2019
NDJ: models	Around or above average storminess, precipitation and temperature				
NDJ: signals	Around or above average storminess, precipitation and temperature				
DJF: models		Around or potentially above average storminess, around or above precipitation and temperature			
DJF: signals		No clear consensus			
JFM: models			Around or above average storminess, precipitation and temperature		
JFM: signals			Below average storminess, precipitation and temperature, particularly in January and early February		
Actual Conditions	Around average storminess and precipitation, above average temperature	Around average storminess and precipitation, above average temperature	Below average storminess and precipitation , around average temperature	Around average storminess, below average precipitation , above average temperature	Above average storminess, precipitation and temperature

Table 2: Comparison of model and climate signal predictions and actual conditions, as indicated by station information. Orange (blue) shading indicates where storminess, precipitation and temperature were expected to be (or were) above (below) average. No shading indicates where there was no clear consensus in one direction.

In general, the seasonal forecast models indicated around or above average conditions in terms of precipitation and temperature for each of the three month periods (NDJ, DJF, JFM). Due to the relationship between UK winter precipitation and temperature and the passage of Atlantic storms, the seasonal models were also interpreted as indicating around or above average storminess. While these forecasts were somewhat representative of the actual conditions - in terms of three-month average conditions – for storminess and temperature, they were less successful at capturing the precipitation trend. In contrast, due to the ability of some climate signals to provide a stronger indication of weather patterns in the shorter term, below average precipitation during January and February was successfully indicated by these signals in the JFM assessment.

Summary

In the context of the previous ten seasons, the extended winter period October-March 2018-19 was generally characterised by around average conditions in terms of storminess and precipitation, while temperatures were typically above average. Seasonal forecast models were somewhat successful at capturing mean conditions, providing an early indication of around or above average conditions for each of the 3-month periods considered in the EuroTempest Seasonal Forecast Assessments. However, they were not able to distinguish



the monthly variation within a period, with drier, calmer months (e.g. January) and wetter, windier months (e.g. March) balancing each other out. In addition, many of the seasonal forecast models implied the potential for wetter than average conditions throughout the season, which did not come to fruition and was particularly misleading in the January-March forecast. Climate signals also successfully indicated wet, mild and unsettled conditions at the beginning of the winter period (NDJ) and, unlike the forecast models, were also able to provide some indication of calmer and drier conditions in January and early February. The success of the climate signals in the January-March forecast was largely due to the negative NAO forecast, along with indicators which were forecast to reinforce this negative NAO signal.

Based on the analysis of the 2018-19 UK storm season, both seasonal forecast models and climate signals were able to provide some useful insights into the expected conditions over the winter months, with climate indicators occasionally providing more useful information in the shorter term. EuroTempest will continue to monitor long range forecasts and climate signals for the European storm season in order to evaluate how useful they could be for insurers in longer term planning for weather impacts.

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