

## Summary Assessment of Seasonal Forecasts for November, December and January 2018-2019

### Executive Summary:

The winter season 2018-2019 has started out in a similar fashion to last year, with a high frequency of named storms and EuroTempest alerts during October. However, in contrast to last year, which saw a stormy start to the season followed by periods of calmer weather, this pattern has so far continued into the start of November.

Looking ahead, there is some consistency across current climate signals and seasonal forecast models towards the dominance of a westerly airflow pattern across the UK during NDJ 2018-19.

As a result:

- **Storms:** The frequency of storms moving in from the North Atlantic is likely to be around or greater than average
- **Precipitation:** There is likely to be greater than or around average precipitation
- **Temperature:** Temperatures are likely to be milder than or around average

This report is an early indication of conditions over winter 2018-19 and will be updated in December and again in January.

## Seasonal Forecast Assessment

In order to produce this seasonal forecast assessment, the outputs of various seasonal forecast models have been analysed, along with some key climate indicators. In terms of the seasonal forecast models, EuroTempest has chosen to focus on precipitation and temperature as all agencies used in this report provide forecasts for both of these parameters, enabling a comparison across all agencies. Owing to the relationship between the occurrence of North Atlantic storms and mild and wet conditions, temperature and precipitation have been used as a proxy for storminess, as forecast models do not provide a direct measurement of storm occurrence. Similarly, despite the relationship between most climate signals and UK weather being relatively weak, the status of these signals can often be suggestive of which weather types may be more likely to prevail, and so can be used to indicate trends in temperature, precipitation and storminess.

### Climate Models

Eight different seasonal forecasts derived from Numerical Weather Prediction (NWP) models are discussed in section 3. The implications of these models for UK weather during NDJ 2018 have been interpreted as follows:

Agency	PRECIPITATION	TEMPERATURE
UKMO	No dominant signal	No dominant signal
CFS	Around average	Above average
JAMSTEC	Above or around average	Below average
CPTEC	Around average	Around average
Météo France	No dominant signal	No dominant signal
SAWS	Above or Around average	Above or Around average
KMA	Around Average	Around Average
APCC	Around average (40%)	Above average (40%)

Percentages in brackets represent the approximate probability of the outcome described (if available)

### Climate Signals

The current and projected states of available climate signals are summarised in section 2, for more information on the characteristics of these signals please see the EuroTempest climate signals [factsheet](#). The impacts of these signals on UK weather during NDJ 2018 have been interpreted as follows:

Signal	PRECIPITATION	TEMPERATURE
NAO	Above average	Above average
AO	Above average	Above average
PV	Above average	Above average
QBO	Above average	Above average
ENSO	Above average	Above average
MJO	Above average	Above average
North Atlantic SST	Above average	Above average
Eurasian snow cover	Below average	Below average
Arctic sea ice extent	Below average	Below average

## 1. UK EuroTempest Alerts

This section compares the number of EuroTempest alerts that have been issued so far in the season with that of last year in order to provide a measure of difference/similarity between this season and previous seasons. EuroTempest issues wind and impact alerts to insurance customers based on set thresholds up to 5 days in advance. The thresholds are based on a EuroTempest ‘severity’ index, with the result that the number of alerts issued provides a measure of a season’s ‘storminess’. Subsequent issues of the seasonal forecast will include updated alert counts.

<p>Last Year (Sept 2017-August 2018): Wind Alerts</p> <ul style="list-style-type: none"> <li>• Red: 0</li> <li>• Amber: 1</li> <li>• Green: 20</li> </ul>	<p>NDJ 2017-18: Wind Alerts</p> <ul style="list-style-type: none"> <li>• Red: 0</li> <li>• Amber: 1</li> <li>• Green: 11</li> </ul>
<p>Sept – Oct 2017: Wind Alerts</p> <ul style="list-style-type: none"> <li>• Red: 0</li> <li>• Amber: 0</li> <li>• Green: 5</li> </ul>	<p>Sept – Oct 2018: Wind Alerts</p> <ul style="list-style-type: none"> <li>• Red: 0</li> <li>• Amber: 1</li> <li>• Green: 5</li> </ul>

Systems are classified by the status of the final alert issued

### Notable weather events Sept 2017 – Aug 2018:

- 10 named storms from Storm Aileen 12-13 September 2017 to Storm Hector 13-14 June 2018
- “Beast from the East” during February 2018

### Named weather events ONDJ 2017:

- Xavier: 5 October
- Ophelia: 16 October
- Brian: 21 October
- Caroline: 7 December
- Dylan: 30-31 December
- Eleanor: 2-3 January
- Fionn: 16 January
- David: 18 January
- Georgina: 24 January

#### 1.1 How does the forecast for this season differ from last season?

Similarly to last year, October 2018 was characterised by a high frequency of named storms and EuroTempest wind alerts. In 2017 the high level of windstorm activity in October did not persist into November, resulting in October alerts accounting for over 50% of the total number of alerts in the OND 2017 period. In contrast, two EuroTempest wind alerts have been issued in the first 10 days of November 2018. While it is possible that this year will also be characterised by a stormy start to the season, followed by periods of calmer weather, both climate signals and seasonal forecast models indicate a

relatively wet and mild NDJ 2018 compared to average climatological conditions, particularly towards the start of this period. In addition, the current and projected states of many climate signals suggest the dominance of a strong North Atlantic jet stream this season and therefore an increased likelihood of stormy conditions persisting throughout the NDJ 2018 period.

## 1.2 Storm Surge Conditions

Significant storm surge events are most likely to happen when extreme astronomical tidal heights coincide with a storm event. Tidal ranges are currently rising gradually and will peak again in late 2019. However, despite being generally higher than those experienced last year, astronomical tidal ranges are currently around the long term average. As such, the highest astronomical tides of this season will not be extreme, which makes a significant surge event less likely.

## 2. Climate Signals (see [climate signals factsheet](#) for more information)

### NAO: North Atlantic Oscillation

**Current State:** Weakly positive

**Projected State:** Expected to remain weakly positive before becoming slightly more positive later in November

**Implications for UK weather:** Slight increased chance of mild, wet and stormy weather

### AO: Arctic Oscillation

**Current State:** Weakly positive

**Projected State:** Expected to remain near neutral before becoming more positive later in November

**Implications for UK weather:** Increased likelihood of a mild and wet period towards the end of the month

### PV: Polar Vortex

**Current State:** Around or just above average strength for the time of year

**Projected State:** Expected to strengthen

**Implications for UK weather:** Potential for milder, wetter and stormier weather

### QBO: Quasi-Biennial Oscillation

**Current State:** Entering a westerly phase

**Projected State:** Westerly

**Implications for UK weather:** Increased chance of mild, wet and stormy weather

### ENSO: El Nino Southern Oscillation

**Current State:** Neutral

**Projected State:** 70-75% chance of El Nino developing through the NDJ period

**Implications for UK weather:** May increase the likelihood of a positive NAO, therefore suggesting an increased chance of milder, wetter and stormier weather

### **MJO: Madden Julian Oscillation**

**Current State:** Phase 3

**Projected State:** No consistent timescale for the progression through the phases

**Implications for UK weather:** Once the MJO has progressed from phase 3, the likelihood of a positive NAO may increase, therefore suggesting an increased chance of milder, wetter and stormier weather

### **North Atlantic SST**

**Current State:** Warmer than average between 30 and 50°N, while cooler than or around average elsewhere.

**Projected State:** This pattern is expected to persist

**Implications for UK weather:** Increased likelihood of NAO positive, therefore suggesting an increased chance of milder, wetter and stormier periods.

### **Eurasian Snow Cover and Arctic Sea Ice Extent**

**Current State:** Eurasian snow cover continues to increase while Arctic sea ice extent is currently well below normal

**Projected State:** Eurasian snow cover is expected to be above normal and Arctic sea ice is expected to remain below normal

**Implications for UK weather:** Increased likelihood of colder and drier periods

## **3. Seasonal Forecast Models**

Models used:

- **UKMO:** UK Met Office
- **CFS:** The US National Centers for Environmental Prediction Climate Forecast System
- **JAMSTEC:** Japan Agency for Marine-Earth Science and Technology
- **CPTEC:** Center for Weather Forecasts and Climate Studies (Brazil)
- **Météo-France:** National Met Agency of France
- **SAWS:** South African Weather Services
- **KMA:** Korea Meteorological Administration
- **APCC:** APEC Climate Center (South Korea)

### **Precipitation:**

There is an indication of some consistency in these seasonal forecast models towards around or above average precipitation for NDJ with:

- Six of the eight NWP seasonal forecasts used in this report indicating average or above average precipitation
- Two suggesting below, above or around average precipitation are equally likely

**Temperature:**

There is also some consistency in the seasonal forecasts models towards around or above average temperature for NDJ with:

- Five of the eight NWP seasonal forecasts indicating around or above average temperatures
- Two suggesting below, above or around average temperatures are equally likely
- One indicating below average temperatures for the coming three months in the UK

The general indication from the forecast models is that the chance of an average to above average 3 months in terms of precipitation outweighs the chance of a relatively dry three months, while a colder than average UK NDJ period is much less likely than an average or warm NDJ period. However, it should be noted that these agencies generally define “average” conditions as the mean of the last 30 years or so. The generally increasing trend of warmer conditions as a result of climate change makes it more likely that temperatures will exceed these historical averages. Therefore, temperatures this NDJ period that are colder than those that the UK has experienced within the last few years could still be above “average” by this definition.

Appendices:

### Seasonal Forecast Assessment - Notes

- “NDJ 2018” is defined as November 2018 – January 2019 inclusive.
- This is not a EuroTempest forecast. This is a EuroTempest summary of a number of World Meteorological Organization (WMO) designated global producing centres for long-range forecasts.  
(<http://www.wmo.int/pages/prog/wcp/wcasp/gpc/gpc.php>)
- The brief summary of the possible climate signals during NDJ 2018, gives some indications of possible weather patterns. However, these signals only give some suggestions and are not as detailed or refined as the WMO centres forecasts.
- There is little tendency for one type of weather to prevail over any three month period and this assessment does not dismiss the possible occurrence of other weather types over shorter time periods during the winter.
- Seasonal forecasts are for average conditions over a period (November 2018 to January 2019 inclusive). They are not forecasts for weather conditions persisting throughout the whole of the period.
- This report is produced for information only. Please contact us if you require further information or have any feedback. Contact details are provided in the “Contacts” section below.

### Seasonal Forecast Assessment - Method

In order to have any confidence in whether any season will likely turn out as forecast (by any agency) it is necessary to consider:

- a. whether there is a strong indication in any given forecast towards conditions for the coming season which are different from what might be expected from an average season based on the long term historical record
- b. consistency across a range of available forecasts

In assessing the outlook for the UK NDJ 2018-19 EuroTempest has taken account of forecasts produced by WMO designated global producing centres for long-range forecasts, these are either National Meteorological Agencies or other meteorological centres. These centres are listed in the “Seasonal Forecast Assessment – Sources” section below.

EuroTempest has chosen to focus on precipitation and temperature forecasts as all eight agencies produce forecasts for both of these parameters, enabling a comparison across all agencies. Unlike currently available seasonal forecasts for e.g. Atlantic hurricane numbers, no agency currently produces seasonal forecasts for the number of UK winter windstorms.

No two agencies present their forecasts in exactly the same way. Some present forecasts in terms of probabilities – e.g. the probabilities of the upcoming NDJ period being in the top third (above average), middle third (average) or bottom third (below average) of historical NDJ periods in terms of observed mean precipitation or temperature. Agencies that use this method have probabilities, expressed as percentages, given next to their forecasts within the forecast summary table.

Other agencies present forecasts in terms of anomalies - i.e. the expected difference in the mean precipitation or temperature over the coming season from what would be expected from an average NDJ periods based on the historical record. Forecast using this method are generally either stated as being above or below the average. For agencies that use this method only the forecasts (i.e. above or below average) are given within the forecast summary table.

For example the probability of above average precipitation should be considered against the “climatological” chance of an above average period. This is 1 in 3, or around 33%, because any period will fall in either the top third (above average), middle third (average), or bottom third (below average). Generally speaking, the current numerical weather prediction model forecasts indicate that the chance of an average to above average 3 months in terms of precipitation outweighs the chance of a relatively dry three months.

It should be noted that these agencies generally define “average” conditions as the mean of the last 30 years or so. The generally increasing trend of warmer conditions as a result of climate change makes it more likely that temperatures will exceed these historical averages. Therefore, temperatures this NDJ period that are colder than those that the UK has experienced within the last few years could still be above “average” by this definition.

Also, the resolution of the forecasts (both spatial and in terms of the forecast parameter) differs between agencies. As such, absolute direct comparisons are not possible. EuroTempest has assessed each of the forecasts and summarised its conclusions in the results table below. The entries in the table below represent EuroTempest’s standardised interpretation (applied to the UK) of the forecasts provided by each agency and do not necessarily represent a specific forecast for the UK by each agency.

It is also important to note that all agencies advise treating seasonal forecasts with caution – e.g. the UKMO seasonal forecast website states “Raw data are displayed for use by international meteorological centres. This does not constitute a seasonal forecast for a given location.”

## Seasonal Forecast Assessment - Sources

In assessing the outlook for the UK NDJ 2018-19 EuroTempest has taken account of forecasts produced by eight agencies in October/November 2018. These are either National Meteorological Agencies or other meteorological organisations. All eight of these agencies/organisations are World Meteorological Organization (WMO) designated global producing centres for long-range forecasts.  
(<http://www.wmo.int/pages/prog/wcp/wcasp/gpc/gpc.php>)

### **UK Met Office (UKMO)**

<http://www.metoffice.gov.uk/research/climate/seasonal-to-decadal/gpc-outlooks/glob-seas-prob>

### **The US National Centers for Environmental Prediction Climate Forecast System (CFS)**

<http://www.cpc.ncep.noaa.gov/products/people/wwang/cfsv2fcst/>

### **Japan Agency for Marine-Earth Science and Technology (JAMSTEC)**

<http://www.jamstec.go.jp/frcgc/research/d1/iod/e/seasonal/outlook.html>

### **Center for Weather Forecasts and Climate Studies (CPTEC) - Brazil**

<http://clima1.cptec.inpe.br/gpc/pt>

### **Météo-France**

<http://www.meteofrance.com/accueil/previsions-saisonnières>

### **South African Weather Services (SAWS)**

<http://www.weathersa.co.za/component/content/article/2-uncategorised/179-long-range-forecast?Itemid=168>

### **Korea Meteorological Administration (KMA)**

[http://www.wmolc.org/~GPC\\_Seoul/](http://www.wmolc.org/~GPC_Seoul/)

### **APEC Climate Center (APCC) – South Korea**

<http://www.apcc21.net/ser/outlook.do?lang=en>