

SUMMARY ASSESSMENT OF SEASONAL FORECASTS

JANUARY 2020 TO MARCH 2020

Executive Summary

The general indication from forecast models and current climate signals is that a relatively cold and dry January-March is unlikely.

Storms

Indications are that the frequency of storms moving into the UK from the North Atlantic will most likely be around or above average during the three-month period.

Precipitation

UK precipitation totals will most likely be around or higher than the long-term seasonal average.

Temperature

UK temperatures will most likely be warmer than the long-term seasonal average.

Long-range Models

Numerical Weather Prediction models strongly favour above average temperatures and generally favour average or above average precipitation totals.

Climate Signals

There are few dominant climate signals (e.g. ENSO is neutral) but the North Atlantic is relatively warm in the vicinity of the UK and the QBO is in a state consistent with a decreased chance of cold and dry weather. The chance of a very cold and dry period by winter's end is diminishing.

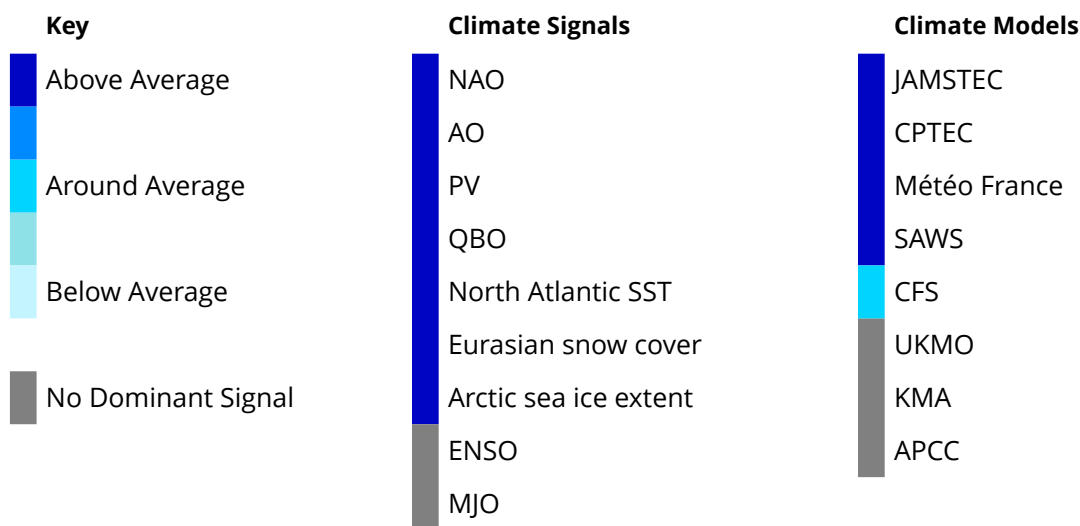
This is the final seasonal forecast assessment that will be issued for the current windstorm season.

Seasonal Forecast Assessment Summary

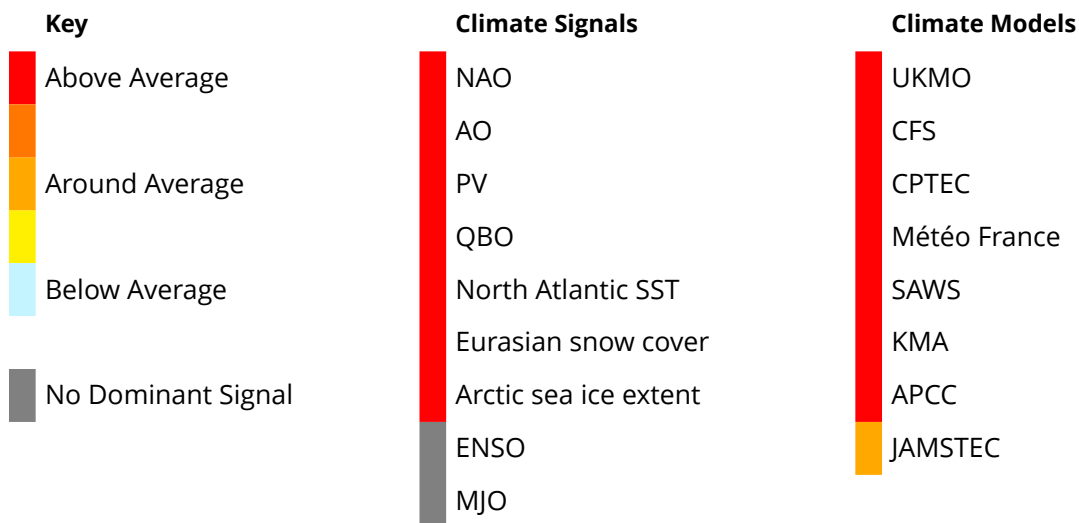
In order to produce this seasonal forecast assessment, the outputs of various seasonal forecast models have been analysed, along with some key climate indicators. In terms of the seasonal forecast models, EuroTempest has chosen to focus on precipitation and temperature as all agencies used in this report 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.

The seasonal forecasts and climate signals are summarised in the Seasonal Forecast Assessment section of this report. For more information on the characteristics of the signals please see the EuroTempest climate signals [factsheet](#). The implications of these models and signals on UK weather during JFM 2020 are shown in the diagram below.

Precipitation



Temperature



How stormy has the season so far been?

The table below shows the number of ‘windy days’ that occur on average each month through the UK winter windstorm season. It defines a ‘windy day’ in three different ways based on the percentage of UK weather observation stations that record maximum gusts of 45mph or higher.

% stations >45mph	Number of “Windy Days”											
	Average season								2019/2020 Season			
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	TOTAL	Sep	Oct	Nov	Dec
>10%	9	16	20	21	21	15	15	117	10	17	15	15
>20%	2	5	9	11	10	7	6	50	3	2	4	9
>50%	0	0	1	2	2	2	1	8	0	0	0	2

There has been a regular succession of low pressure systems moving in from the Atlantic and no sustained period of high pressure through most of the season so far. Unusually however, most of these low pressure systems have generally not developed very strong winds over the UK. The number of windy days so far this season has been below average overall with, for example, 18 days so far where more than 20% of stations have recorded gusts of over 45mph against an average for the Sep-Dec period of 27 days. In recent weeks stronger winds have developed but these systems have tracked to the north of the UK and delivered only a “glancing blow” here. At other times there has been unusual storm activity to the south of the UK, with wind damage and flooding affecting Portugal and Spain.

The low pressure systems coming into the UK have, however, delivered significant amounts of rainfall. Autumn 2019 (Sep-Nov) has been officially confirmed as the fifth wettest autumn on record for England and Wales (from records dating back to 1766) and, though not as significantly wet, December 2019 was another wetter than average month in all regions of the UK except Northern Ireland.

Extended Outlook

The following forecast is based on both the output of numerical weather prediction models and climate signals with a shorter-term impact.

Into mid-January

Weather models and some climate signals suggest that the next few weeks will likely be characterised by a continuation of recent unsettled conditions. Indications are that the [AO](#) and the [NAO](#) are most likely to remain in a positive phase. These signals are consistent with an increased likelihood of wet and windy UK, particularly in the north.

Remainder of January into early February

The last few weeks of January are likely to start unsettled. A continuing mild and wet period is the most likely outcome, though there are some indications that particularly the south of the country may be increasingly influenced by continental high pressure, leading to generally colder and drier conditions here.

Seasonal Forecast Assessment

Models

The general indication from the forecast models is that a relatively dry and cold three-month period is unlikely.

Three out of the eight models now suggest that no particular outcome for precipitation (i.e. below average, average, or above average) is more likely than any other. The other five models suggest an average or above period is more likely than a dry period. Overall, the climate models are somewhat more ambiguous about precipitation than they have been in previous months this season but most still suggest that the probability of a relatively dry three month period is still low (~20%). The signal remains strong for temperature however, with many models suggesting that the chance of a warmer than average JFM is >50% - i.e. that it is not only the favoured outcome but also more likely than the two alternative outcomes (of an average or a colder than average winter) combined.

It should be noted that the forecast models 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.

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)

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

Though the climate signals are currently more ambiguous than the forecast models, in that some remain in a fairly weak or neutral state, they generally suggest that milder, wetter and windier conditions are more likely than cooler, drier and calmer weather. Warm sea surface temperatures close to the UK contribute to a slightly increased likelihood of a positive NAO during the JFM period, which in turn indicates a slightly increased likelihood of mild, wet and windy weather. A strong polar vortex and the current phase of the QBO make an extended period of cold weather in the latter half of the winter (Jan-Feb) less likely than would otherwise be the case. The polar vortex can have an increased tendency to weaken at times of minimum solar activity (as is currently the case) but there is no other indication that such a weakening is to be expected at the moment. Furthermore, Eurasian snow cover is now below average for the time of year and Arctic sea ice is now around average. Both of these factors further decrease the possibility of an extended deep, cold spell.

NAO: North Atlantic Oscillation

Current State: Slightly positive

Projected State: Expected to remain slightly positive over the next few weeks.

Implications for UK weather: Slightly increased chance of wet and windy conditions while in a positive phase.

AO: Arctic Oscillation

Current State: Positive

Projected State: Expected to remain positive over the next few weeks.

Implications for UK weather: Slightly increased chance of wet and windy conditions while in a positive phase.

PV: Polar Vortex

Current State: Strong

Projected State: Expected to remain strong but has greater potential to weaken than would otherwise be the case due to the current minimum in solar activity.

Implications for UK weather: Increased likelihood of wet and warm weather unless the PV weakens, in which case periods of cold, dry weather become more possible.

QBO: Quasi-Biennial Oscillation

Current State: Westerly phase

Projected State: Westerly

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

ENSO: El Niño Southern Oscillation

Current State: Neutral

Projected State: ENSO is expected to remain in a neutral or near-neutral state through the JFM period. A distinct El Niño or La Niña event is unlikely.

Implications for UK weather: ENSO is not currently expected to have much effect on the UK weather over the coming three months.

MJO: Madden Julian Oscillation

Current State: The MJO is currently weak and not well defined.

Projected State: Movement into a phase which has little effect on UK weather.

Implications for UK weather: IMJO is not currently expected to have much effect on the UK weather over the next few weeks.

North Atlantic SST

Current State: Warmer than average across mid-latitudes and below average across high-latitudes.

Projected State: This pattern is expected to persist

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

Eurasian Snow Cover and Arctic Sea Ice Extent

Current State: Eurasian snow cover is now below average and Arctic sea ice extent is now around average for the time of year.

Projected State: Current state expected to continue.

Implications for UK weather: Slightly increased likelihood of milder and wetter periods.

Appendices

Seasonal Forecast Assessment - Notes

- 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 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 three month period, 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.

Seasonal Forecast Assessment - Method

In order to have any confidence in whether a 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, 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 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.

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 period being in the top third (above average), middle third (average) or bottom third (below average) of historical periods in terms of observed mean precipitation or temperature.

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 period based on the historical record. Forecasts using this method are generally either stated as being above or below the average.

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).

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 season 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 summary tables.

The entries in the table 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 winter season EuroTempest has taken account of forecasts produced by eight agencies. 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)

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-saisonnieres>

South African Weather Services (SAWS)

<http://www.weathersa.co.za/home/longrangeforecast>

Korea Meteorological Administration (KMA)

https://www.wmolc.org/seasonPmmeUI/plot_PMME

APEC Climate Center (APCC) – South Korea

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