

SUMMARY ASSESSMENT OF SEASONAL FORECASTS FOR EUROPE

NOVEMBER, DECEMBER AND JANUARY 2020/21

Executive Summary

As with the previous assessment, seasonal forecast models and climate signals suggest November-January 2020/21 is most likely to be milder and wetter than average across Scandinavia, and northern Europe and drier than average across southern Europe.

Storms

The frequency of storms moving in from the North Atlantic is most likely to be above average for northern Europe and Scandinavia and below average for southern Europe, especially towards the end of the period.

Precipitation

Precipitation is most likely to be above average across northern Europe and Scandinavia and below average across southern Europe.

Temperature

Temperatures are most likely to be around or milder than the long-term climatological average across Europe.

Long-range Models

Numerical Weather Prediction models suggest November-January will most likely be around or wetter than average across northern Europe and Scandinavia and drier than average across southern Europe.

Climate Signals

Climate signals suggest there may be slightly more potential for milder, wetter and windier conditions across northern Europe and Scandinavia.

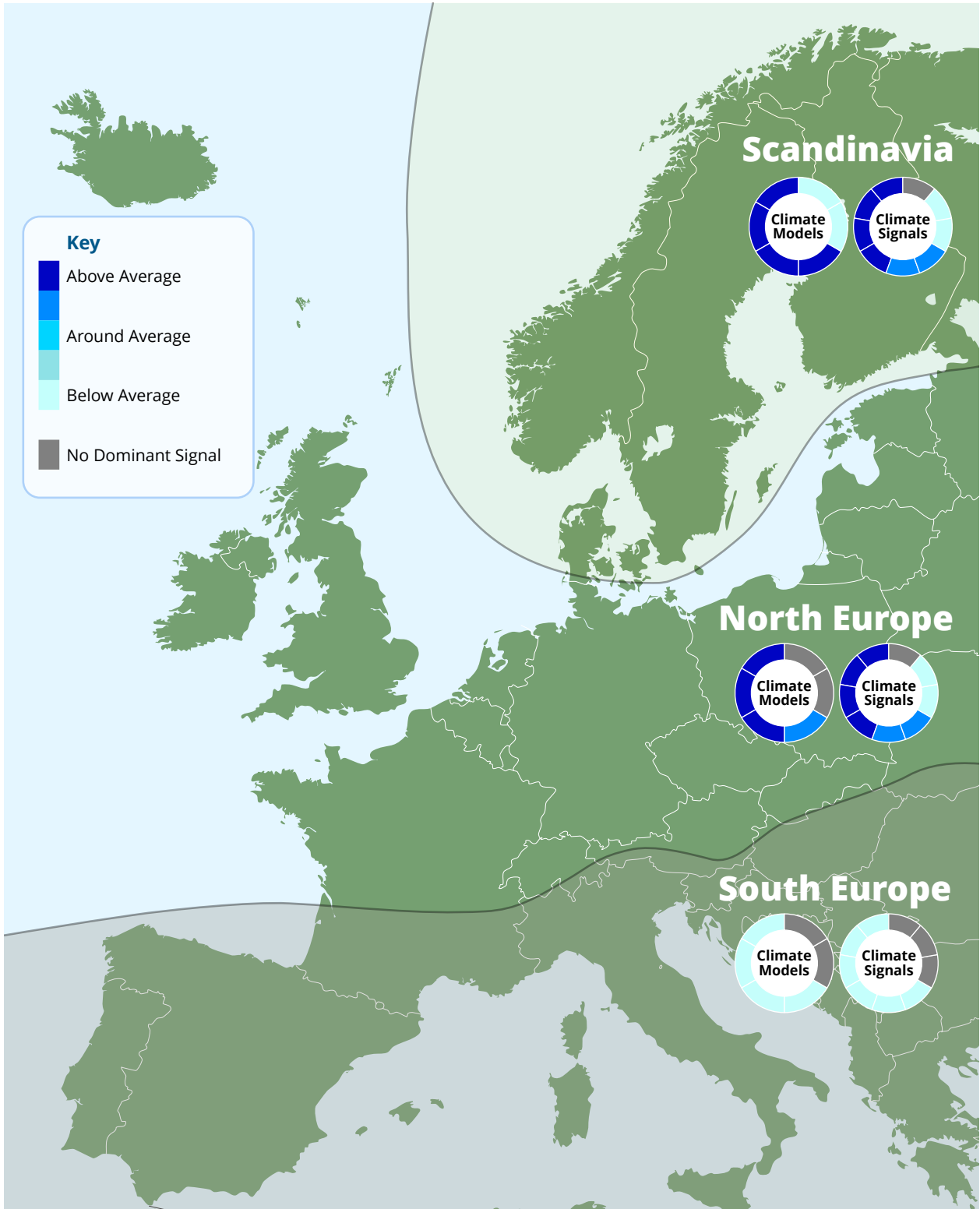
With this assessment we are also including the results from an analysis of climate drivers from previous years. This analysis has looked at periods, termed analogue years, when climate signals have shown a similar pattern to those exhibited currently. Analysis of climate drivers during October of previous years has indicated that the winter of 2013/14 is an appropriate analogue for this year. This suggests that both the number of wind storms and the maximum storm severity index for this winter is unlikely to be below average. For more details see the relevant section below. EuroTempest will be issuing a short report into the use of analogue years for forecasting likely storminess of the winter season ahead.

This report is an early indication of conditions over winter 2020-2021 and will be updated in December.

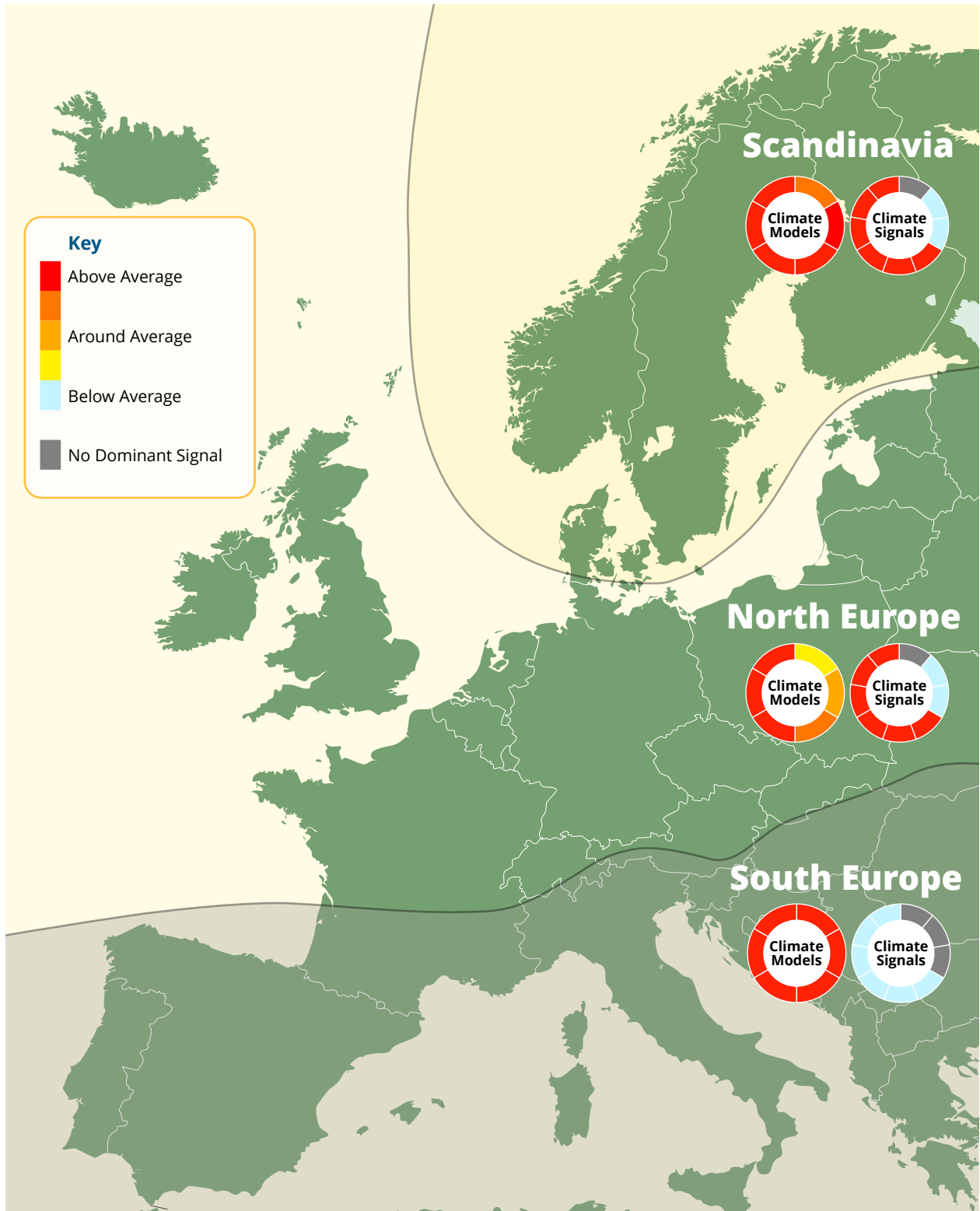
Europe Climate Regions for November 2020 – January 2021

We have extended our seasonal forecast to cover the whole of Europe which, for the purposes of this forecast analysis, can be broadly split into three climate regions: Northern Europe, Southern Europe and Scandinavia. The maps below summarise the conclusions from six climate models and nine climate signals.

Assessment Summary – Precipitation November, December and January 2020/21



Assessment Summary – Temperature November, December and January 2020/21

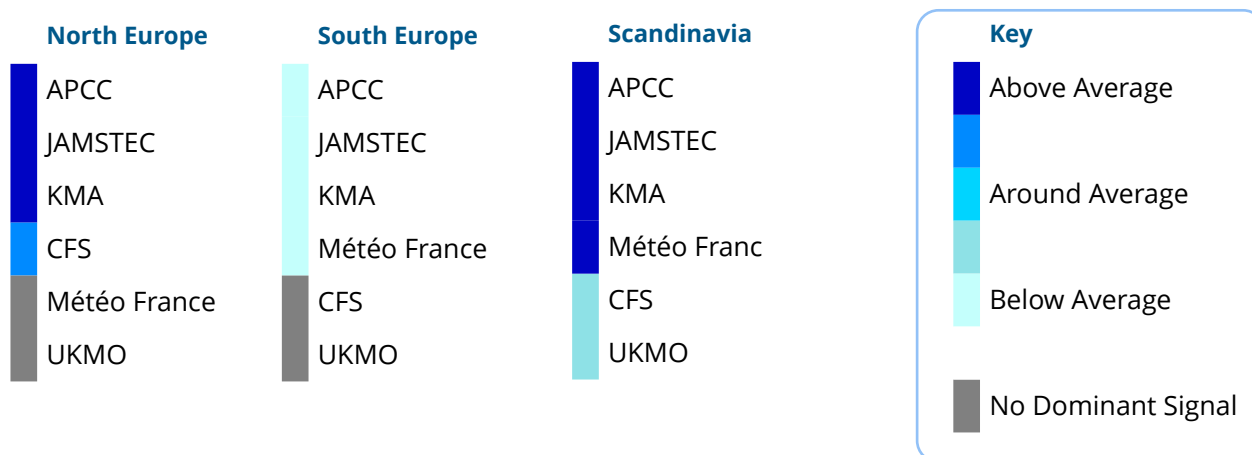


Seasonal Forecast Assessment Summary

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 European 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 NDJ 2020/21 are shown in the diagram below.

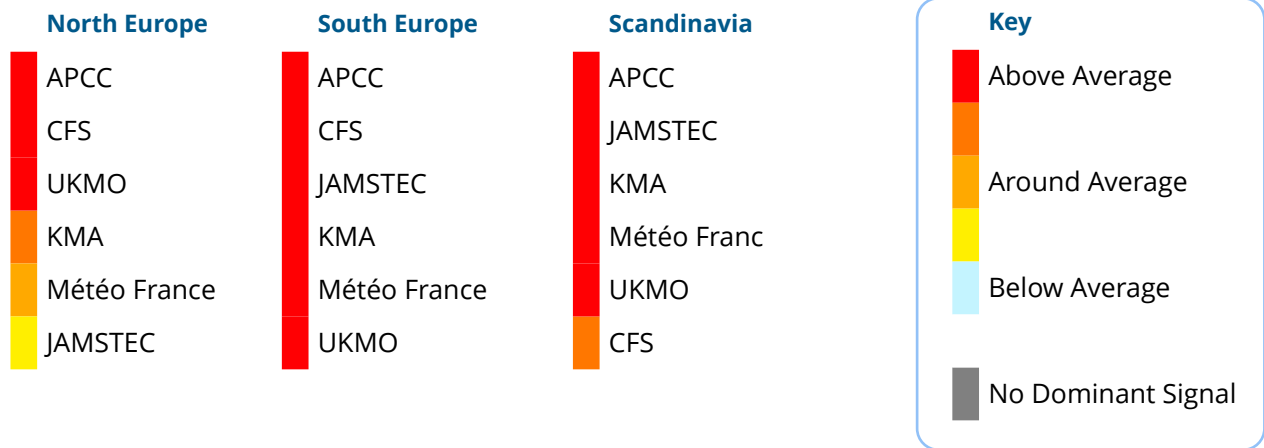
Precipitation - Climate Models



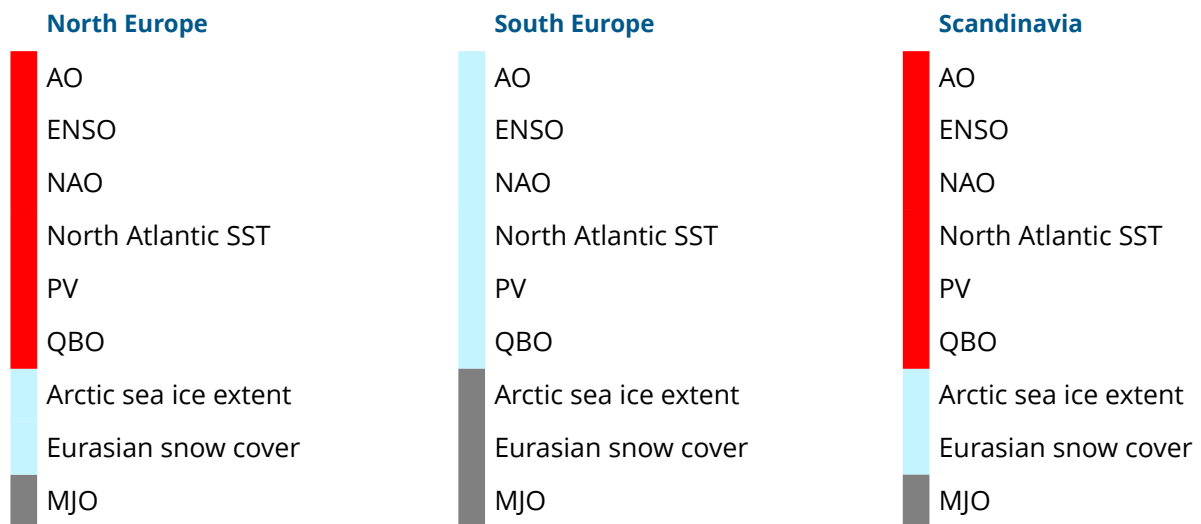
Precipitation - Climate Signals



Temperature - Climate Models



Temperature - Climate Signals



Extended Outlook

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

Weather models and some climate signals suggest that the next week or so will be characterised by conditions gradually turning drier and more settled across much of Europe. From mid to late November conditions are likely to be milder and wetter than average across much of northern Europe with drier and cooler conditions across southern Europe.

Seasonal Forecast Assessment

Climate Models Summary

Precipitation:

There is some consistency in the seasonal forecast models towards above average precipitation across Scandinavia and northern Europe, below average precipitation across southern Europe for NDJ with:

- four of the six NWP seasonal forecasts used in this report indicating above or around average precipitation across Scandinavia
- two models indicating below or around average precipitation for Scandinavia
- two models suggesting each outcome (below, above or around average precipitation) is equally likely for northern Europe.

Temperature:

There is also some consistency in the seasonal forecast models towards above or around average temperatures across Europe for the NDJ period with:

- five of the six NWP seasonal forecasts indicating above average temperatures across all of Europe
- just one model suggesting below average temperatures - for Scandinavia and southern Europe.

For precipitation, the indication from the forecast models is that for Scandinavia the chance of an average or wet NDJ outweighs that of a relatively dry one, while for southern Europe the chance of an average or dry NDJ outweighs that of a wet NDJ. As for likely temperatures, a colder than average OND period is much less likely than an average or warm NDJ period across the whole of Europe. It should be noted however that "average" conditions are generally defined as the mean of the last 30 years or so. The generally increasing trend of warmer conditions associated with climate change makes it more likely that temperatures now will exceed these historical averages. Temperatures this NDJ period that are colder than those that Europe 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**Météo-France:** National Met Agency of France**KMA:** Korea Meteorological Administration**APCC:** APEC Climate Center (South Korea)**Climate Signals**

There is an indication from climate signals of a greater potential for milder, wetter and windier conditions across northern regions of Europe (including Scandinavia) over the next three months. A currently positive NAO and AO suggest further spells of unsettled weather across northern Europe. The combination of warm sea surface temperatures across the north Atlantic and a favourable phase of the QBO are consistent with an increased likelihood of a positive NAO event towards the end of the NDJ period. Likewise, the influence of La Niña changes through the season, slightly decreasing the potential for mild, wet and stormy weather in the near term but having the opposite effect from around December onwards.

Analogue Year**Comparison year:** The winter of 2013/14.

By analysing the overall state of the climate during October of this year, 2013/14 has been identified as an appropriate analogue year for the upcoming winter season. This is based on the similarity of the phases and magnitudes of several climate drivers, such as QBO and ENSO, between this October and the October of previous years. The winter of 2013/14 had an above average storm season with both an above average number of severe storms and an above average maximum storm severity index value. There were 4 storms which triggered the PERILS €200m reporting threshold. One of these, Christian (the St Jude's Day Storm) in late October 2013, caused widespread damage across northern Europe with claims in excess of €1bn. So, taking 2013/14 as an analogue year indicates for this winter that a below average number of storms is less favorable and that the maximum storm severity index for this winter is unlikely to be below average.

NAO: North Atlantic Oscillation**Current State:** Positive**Projected State:** Expected to be slightly positive or near average over the next month.**Implications for European weather:** Increased potential for mild, wet and stormy periods across northern Europe and Scandinavia.**AO: Arctic Oscillation****Current State:** Positive**Projected State:** Expected to be slightly positive or near average over the next month.**Implications for European weather:** Increased potential for mild, wet and stormy periods across northern Europe and Scandinavia.**PV: Polar Vortex****Current State:** Strong**Projected State:** Expected to remain strong**Implications for European weather:** Potential for warmer and wetter conditions across northern Europe and Scandinavia, particularly later in the season.**QBO: Quasi-Biennial Oscillation****Current State:** Westerly phase**Projected State:** Westerly**Implications for European weather:** Increased potential for mild, wet and stormy weather across northern Europe and Scandinavia and an increased chance of drier weather across southern Europe.

ENSO: El Nino Southern Oscillation

Current State: La Niña conditions

Projected State: ~85% chance of La Niña conditions continuing through the NDJ period.

Implications for European weather: La Niña slightly increases the potential for mild, wet and stormy weather across northern Europe and Scandinavia from around December onwards but has the opposite effect in preceding months.

MJO: Madden Julian Oscillation

Current State: Currently weakly in phase 7

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

Implications for European weather: This climate signal isn't likely to have a strong influence on European weather during the next month.

North Atlantic SST

Current State: Warmer than average in the north Atlantic.

Projected State: This pattern is expected to persist.

Implications for European weather: Increased potential for a positive NAO during this phase and increased potential for mild, wet and stormy periods across northern Europe and Scandinavia.

Eurasian Snow Cover and Arctic Sea Ice Extent

Current State: Eurasian snow cover is around average while Arctic sea ice extent is below normal

Projected State: Arctic sea ice is expected to remain below normal

Implications for European weather: Some potential for colder and drier periods, especially across northern regions.

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. Contact details are provided in the “Contacts” section below.

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 Europe, 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 Europe 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 Europe) of

the forecasts provided by each agency and do not necessarily represent a specific forecast for Europe 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 European winter season EuroTempest has taken account of forecasts produced by six agencies. These are either National Meteorological Agencies or other meteorological organisations. All six 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>

Météo-France

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

Korea Meteorological Administration (KMA)

http://www.wmolc.org/~GPC_Seoul/

APEC Climate Center (APCC) – South Korea

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