

SUMMARY ASSESSMENT OF SEASONAL FORECASTS FOR EUROPE

OCTOBER, NOVEMBER AND DECEMBER 2024

Executive Summary

There are indications, particularly from seasonal forecast models, of an enhanced likelihood of wetter and windier conditions across Scandinavia and drier and calmer conditions across southern Europe. Outcomes for northern Europe are more unclear, depending on the placement of the transition between these two regimes.

Storm Events

The closest analogue years to this year (years in which the long-range climate signals were similar) had around or above average numbers of notable events.

Westerly Winds

Seasonal forecast models and some climate signals suggest an increased likelihood of stronger than normal westerly winds over Scandinavia and weaker than normal westerly winds over southern Europe. The signal for northern Europe is less clear, depending on the placement of the dividing line between these two regions.

Precipitation

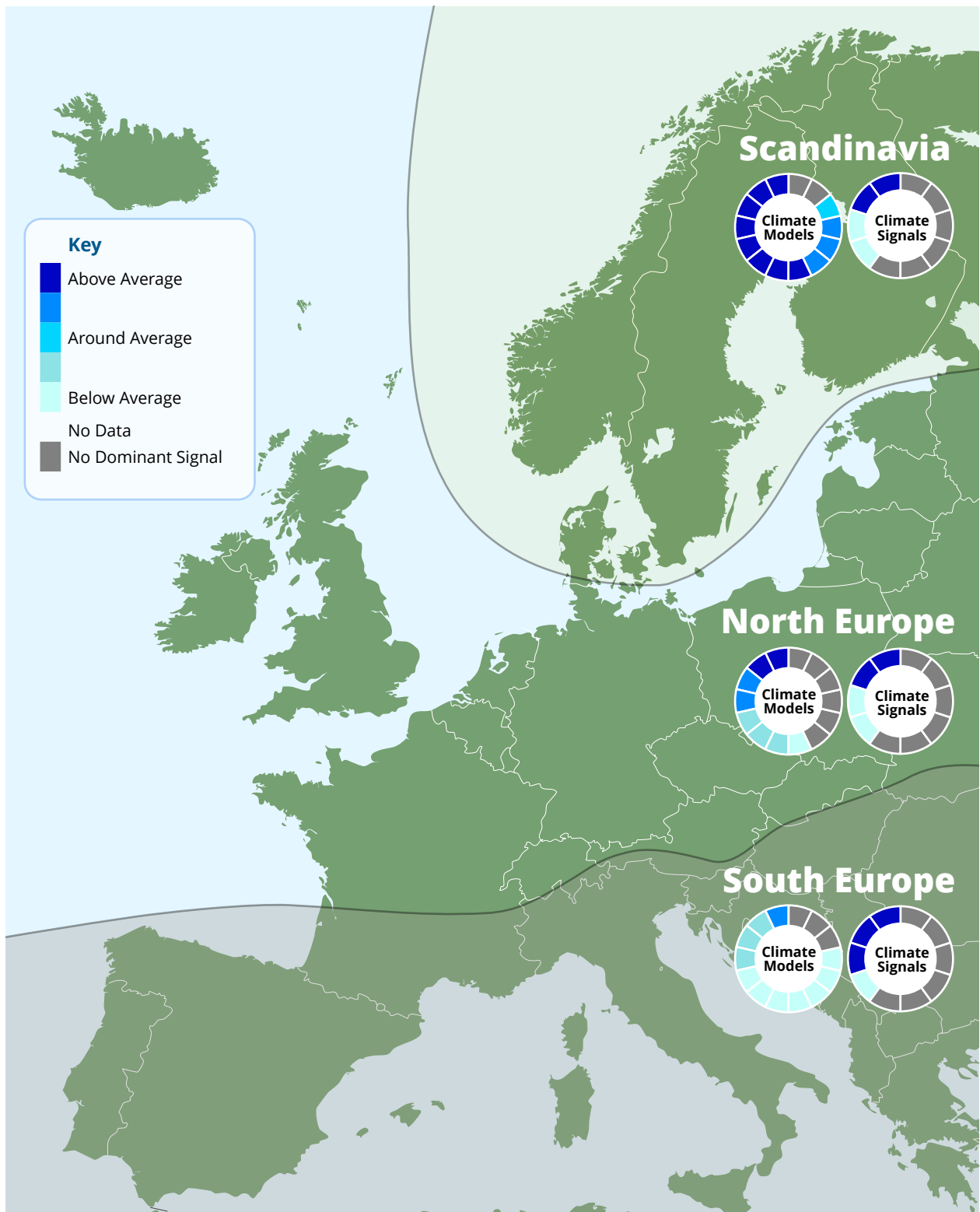
Seasonal forecast models are broadly consistent in suggesting an enhanced likelihood of above average precipitation totals across Scandinavia and below average precipitation across southern Europe.

Temperature

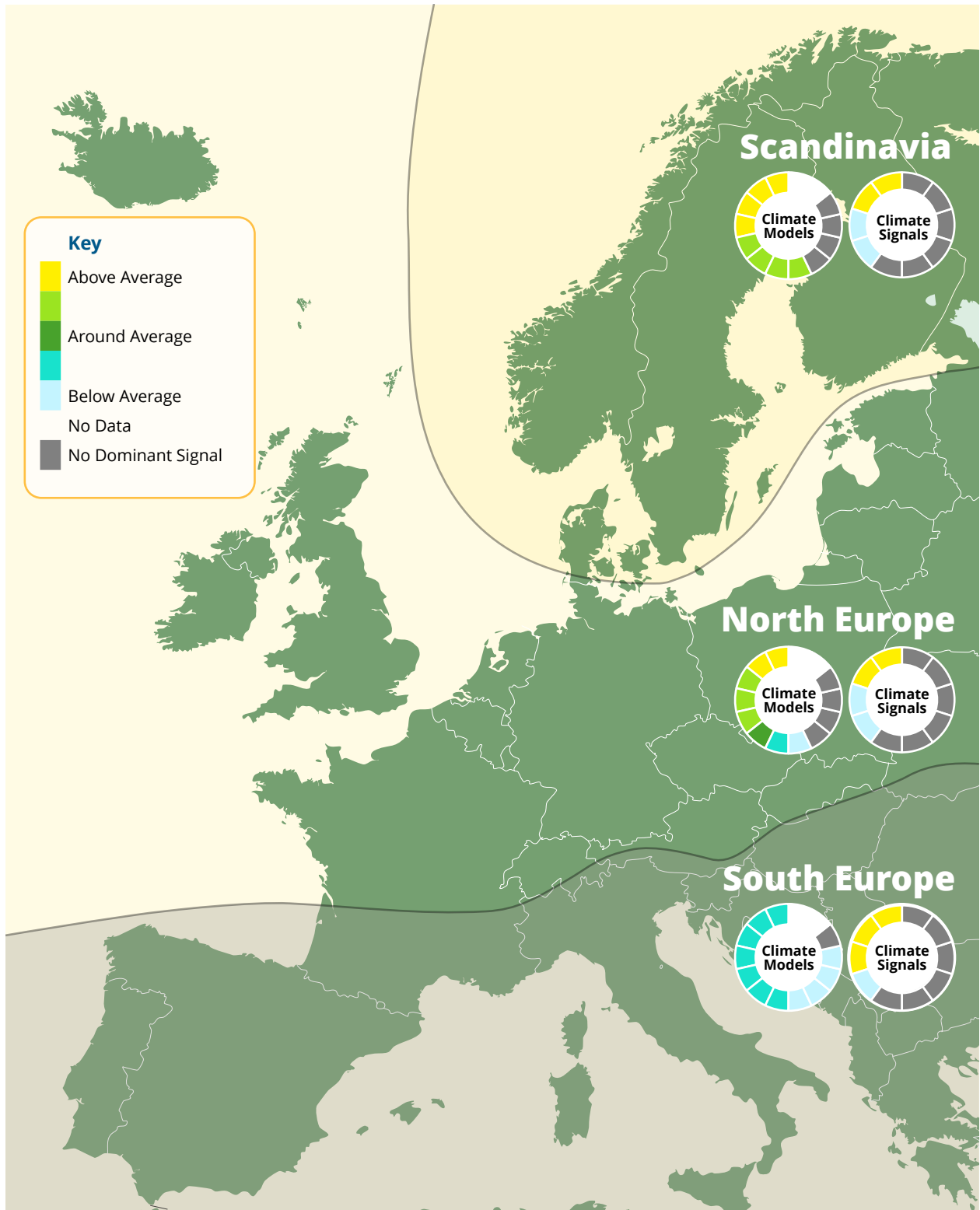
Temperatures are most likely to be warmer than the long-term climatological average across Europe. There is some disagreement between climate signals and forecast models, with analogue years suggesting the potential for below average temperatures across southern Europe, especially the south-west.

This report is an assessment of the potential weather conditions across Europe during Oct – Dec 2024. The next EuroTempest Seasonal Forecast Assessment for the 2024-25 winter season will be issued in November 2025.

Assessment Summary – Precipitation October, November and December 2024



Assessment Summary – Westerly Winds October, November and December 2024



Extended Outlook

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

Next few weeks

Over the next few weeks changeable conditions with some periods of wet and windy weather are expected across northern Europe. Elsewhere across Europe conditions are likely to be calmer and drier, especially across eastern and south-west Europe.

Next Month

There are few dominant signals that suggest any particular outcome is more likely during the first few weeks of November, although there are some weak indications from climate signals suggesting drier and more settled conditions are possible across northern Europe and Scandinavia.

Seasonal Forecast Assessment

Climate Models Summary

While there are some differences between the climate models they are generally consistent in suggesting an enhanced likelihood of wetter than average conditions across Scandinavia and drier than average conditions across southern Europe for October to December 2024 (OND). The signal for northern Europe is less clear with almost half the models showing no dominant signal. In fact, the majority of the climate models show more of a south-west/north-east split in precipitation, with the wettest conditions across Scandinavia and the driest conditions across Iberia.

There is also good agreement between the available climate models for an enhanced likelihood of stronger than normal westerly winds across Scandinavia and weaker than normal winds across southern Europe. Where the models tend to differ is in how far north they put the dividing line between these two regimes; however, most of the models have much of northern Europe in the region of stronger than normal westerly winds.

The seasonal forecast models also suggest that a warmer than average three months is much more likely than an average or cold period across Europe, although there is a stronger signal for above average temperatures across southern Europe than across northern Europe or Scandinavia. 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 OND period that are colder than those that Europe has experienced within the last few years could still be above “average” by this definition.

Climate Signals¹

In terms of their influence on European weather for the last three months of the year the main global climate signals of ENSO and the QBO are somewhat in “competing” phases, although the signal for ENSO is currently weak. The current westerly phase of the QBO (the QBO has switched from the easterly to westerly phase since last autumn/winter) tends to increase the likelihood of wet and stormy weather across northern Europe and Scandinavia. The current state of ENSO is cold-neutral, with a weak La Niña phase likely (although not certain) to develop at some time through the next three months. La Niña tends to enhance the likelihood of drier, calmer, and colder weather in northern Europe and Scandinavia during the last three months of the year. Well above average sea surface temperatures (SSTs) in the influential region of the north Atlantic suggest an enhanced likelihood of wetter and warmer than average conditions.

Looking at indications for the shorter term in particular, there are no strong signals for any particular type of weather dominating. Predictability at this range is currently lower than normal due to the presence of ex-tropical storms in the mid-latitudes, which disrupts the jet

¹ For more information on the characteristics of the signals please see the [EuroTempest climate signals factsheet](#).

stream. Models of the North Atlantic Oscillation (NAO) and Arctic Oscillation (AO) suggest a wide range of possible outcomes. The MJO may well move into phase 6 later in October, which would suggest the potential for some drier and calmer weather in early-to-mid November, but this certainly doesn't rule out the possibility of wetter and windier weather. The MJO is much less directly related to weather in the European region than the NAO or AO.

Looking ahead to the longer term (that is, towards the beginning of next year): although the existence of a La Niña ENSO phase tends to enhance the likelihood of cooler, calmer, and drier conditions in northern Europe and Scandinavia during the final three months of the year, there is evidence that this influence flips at around the turn of the year and so acts to increase likelihood of wetter, stormier, and milder weather in the first three months of the year. In the absence of any unexpected change in ENSO or the QBO any influence these factors have on European weather will likely no longer be competing but will become more aligned (towards an enhanced chance of stormier and milder conditions) at around this time.

Historical Analogues²

Possible characteristics of upcoming months can be investigated by looking at previous years in which there was a similar climatic set up.

There are two years in the last 40 in which the broader climate at the end of September matches the conditions at the end of this last September, that is, were in a cold-neutral ENSO state, had a westerly QBO and also had warmer than normal north Atlantic SSTs (2013 and 2016). There is also one year in which the ENSO state and QBO match this year, but the SST anomaly was not as strongly positive and was instead near-neutral (2008).

Looking at the outcomes in terms of broad European weather patterns across our candidate analogue years (as opposed to specific weather events): all three of the analogue years (2008, 2013, and 2016) show windier conditions over the UK and Scandinavia, around average westerly winds across the rest of northern Europe, and calmer conditions across southern Europe.

Most years (2008 and 2013) show a north-west/south-east split in temperature, with above average temperatures across Scandinavia and below average temperatures across Iberia. In contrast, 2016 was around average across most of Europe and below average across the far east of Europe. The outcomes for precipitation are more varied. Precipitation in 2013 was above average across northern Europe and Scandinavia and below average across Iberia. There was an east/west split in 2008, with below average precipitation across western Europe and above average precipitation across parts of central and eastern Europe. In contrast, 2016 showed above average precipitation across Iberia and below average precipitation across much of the rest of continental Europe. Rainfall across Scandinavia was around average in 2016.

There is a wide range of outcomes in terms of number of notable weather events³ in our analogue years. One of which, 2008, had no major weather events during OND, 2016 was around average, while 2013 had an above average number of notable weather events. However, 2008 is the weakest analogue as only QBO and ENSO match this year (not SST). The other two years are better analogues.

Arguably the closest historical match to this year in terms of climate signals is 2016. ENSO, QBO, and SSTs were in a similar state (to now) at this time of year in 2016, and the Indian Ocean Dipole (IOD) was also not positive. 2013 experienced a positive IOD, which is known to increase the likelihood of wetter, windier, and milder conditions for northern Europe and Scandinavia during the last three months of the year independent of the state of ENSO.

² For more information on analogue years and how they are selected please see the [EuroTempest climate signals factsheet](#).

³ a "notable" European weather event is defined as one that appears in the XWS European Windstorm Catalogue (XWS Datasets: © Copyright Met Office, University of Reading and University of Exeter) and/or is identified by PERILS AG as a qualifying event.

Summary

There is generally good agreement regarding westerly winds between the climate signals, analogue years, and the output from the available seasonal forecast models which all suggest a north-south split across Europe with windier weather further north and drier calmer conditions further south. There is less consensus in temperature, with climate models suggesting above average temperatures are likely across the whole of Europe, especially southern Europe, while some analogue years experienced below average temperatures across southern Europe. While climate models show good agreement regarding precipitation (towards wetter conditions across Scandinavia and drier conditions across southern Europe), there is no consensus between the analogue years. Finally, the closest analogue years to this year (2013, 2016) had around or above average numbers of notable events. However, below average activity cannot be ruled out, as there were a below average number of notable events in the next closest analogue year (2008).

Longer range climate signals influential up to 3 months ahead

Signal	Current State	Projected State	Implications for European Weather
ENSO: El Nino Southern Oscillation	Neutral	Weak La Niña likely to develop sometime throughout OND	Increased potential for cold, dry, and calm periods across northern Europe and Scandinavia.
IOD: Indian Ocean Dipole	Neutral	Neutral	No increased potential for any particular type of weather.
QBO: Quasi-Biennial Oscillation	Westerly	Westerly	Increased potential for warm, wet, and windy periods across northern Europe and Scandinavia.
North Atlantic SST	Above average	Above average	Increased potential for warm, wet, and windy periods across northern Europe and Scandinavia.
Eurasian Snow Cover	Around average	Around average	No increased potential for any particular type of weather.
Arctic Sea Ice Extent	Below average	Below average	No increased potential for any particular type of weather.
PV: Polar Vortex	N/A	The polar vortex begins to develop from November	No increased potential for any particular type of weather.

Shorter range climate signals influential up to 1 month ahead

Signal	Current State	Projected State	Implications for European Weather
MJO: Madden Julian Oscillation	No signal	Potentially in phase 6 late October	Currently no effect, but potentially some dry, calm, and cold weather across northern Europe and Scandinavia in early-to-mid November.
NAO: North Atlantic Oscillation	Negative	By early next week no dominant signal.	No increased potential for any particular type of weather.
AO: Arctic Oscillation	Negative	By early next week no dominant signal.	No increased potential for any particular type of weather.

For more information on the characteristics of climate signals and their effects on European weather please see the [EuroTempest climate signals factsheet](#).