

# SUMMARY ASSESSMENT OF SEASONAL FORECASTS FOR EUROPE

## NOVEMBER, DECEMBER, AND JANUARY 2022/23

### Executive Summary

There are some indications of a slightly increased likelihood of windstorm activity across Scandinavia as opposed to the rest of northern Europe for Nov 2022 to Jan 2023. Indications for the season are not conclusive as climate models and climate signals are currently providing conflicting indications or are not producing a strongly dominant signal in this regard. Seasonal forecast models are however consistent in suggesting that the next three months are likely to be warmer than average across the whole of Europe.

#### Storms

Long range forecast models and climate signals suggest that there is slightly enhanced likelihood of stormier than average conditions across Scandinavia during the next three months. There are some indications of an enhanced likelihood of calmer than average conditions across the rest of northern Europe although significant and impactful storms have occurred here in similar circumstances in the past and as such, their possibility this season cannot be ruled out.

#### Precipitation

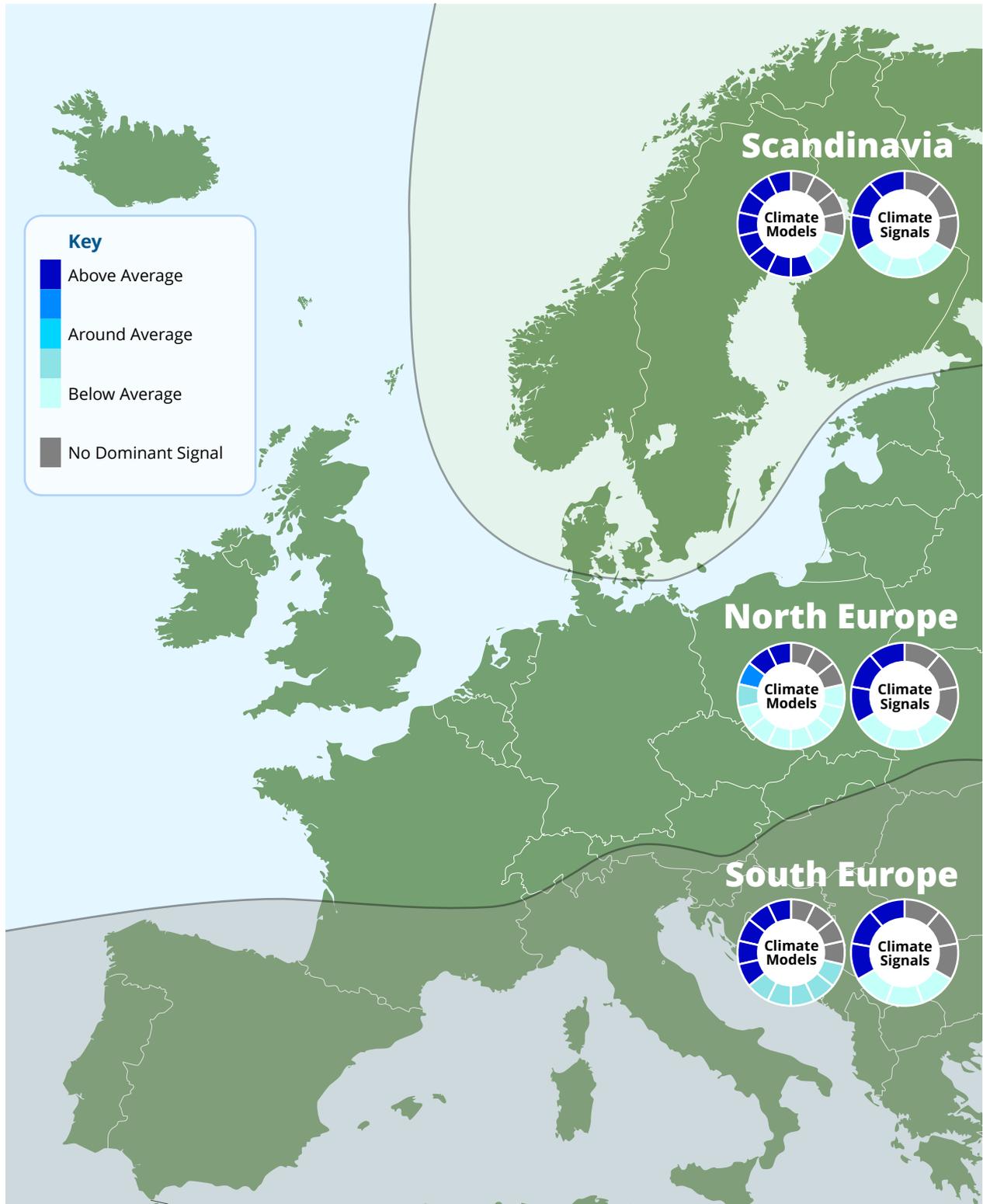
Long range forecast models and climate signals suggest a slightly enhanced likelihood of above average precipitation totals across Scandinavia and of below average totals across the rest of northern Europe.

#### Temperature

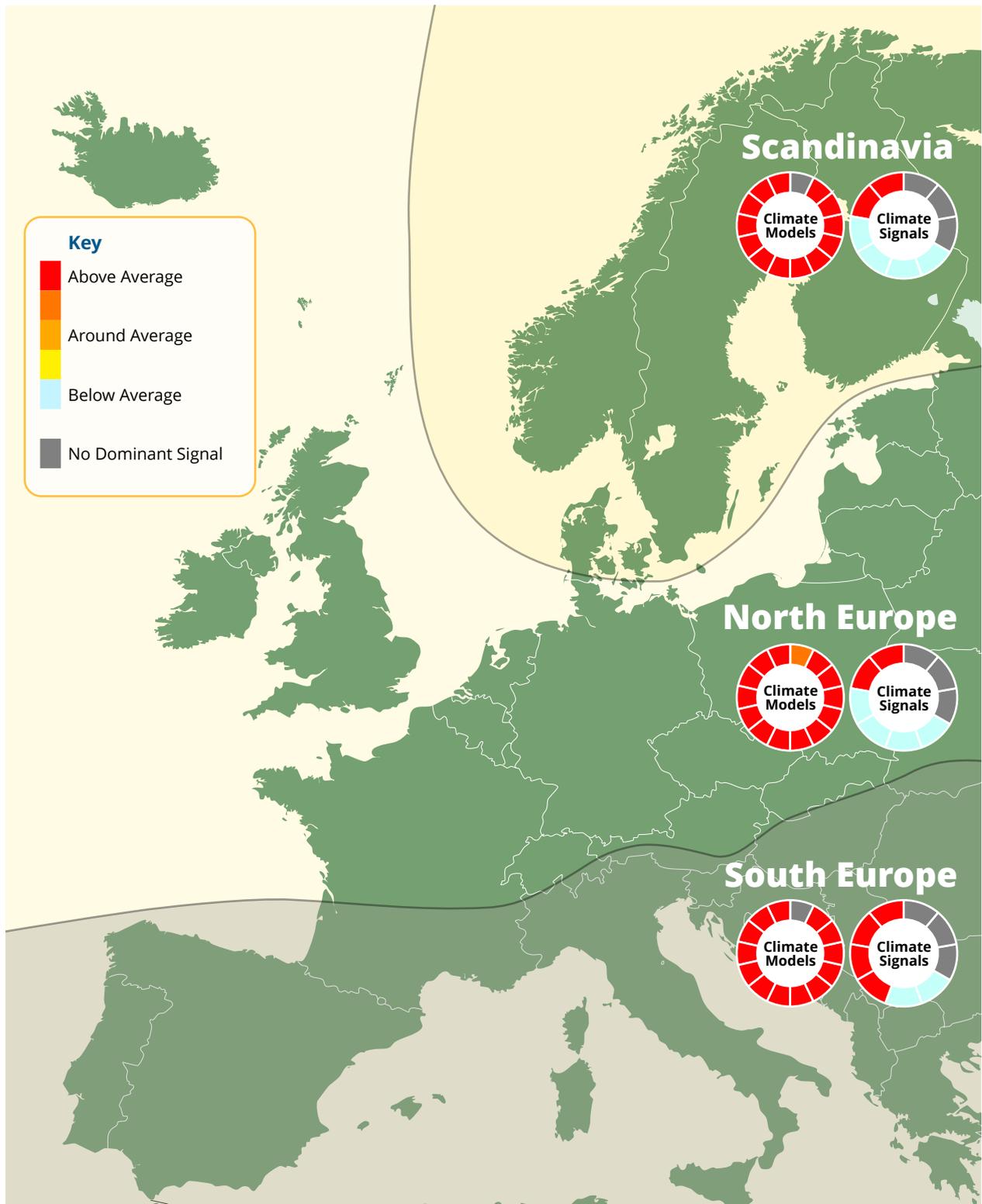
Temperatures are most likely to be warmer than the long-term climatological average across Europe.

This report is an early indication of conditions over winter 2022-2023 and will be updated in mid-December.

# Assessment Summary – Precipitation November, December and January 2022/23



# Assessment Summary – Temperature November, December and January 2022/23



## 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

There are currently no indications of any particularly unusual or extreme weather during the end of November and into December but unsettled, wet and windy conditions are likely at times across western Europe and Scandinavia. More settled conditions are likely further east.

### Next Month

More settled, drier and colder conditions look to become more likely across northern Europe and Scandinavia from early December, with warmer conditions more likely across southern Europe.

## Seasonal Forecast Assessment

### Climate Models Summary

While there is evident variability between the climate models they are reasonably consistent in suggesting a slightly enhanced likelihood of wetter than average conditions across Scandinavia for November, December and January (NDJ) as a whole and of drier than average conditions across the rest of northern Europe. Projections for southern Europe show no dominant signal and suggest all outcomes are equally likely. The climate models also suggest that a warmer than average three months is much more likely than an average or cold period across 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.

### Climate Signals

In terms of their influence on European weather at this time of the year the main global climate signals of ENSO and QBO remain in “competing” phases. The ENSO La Niña phase currently prevailing (and which has prevailed since early 2020) tends to reduce the likelihood of wet, stormy weather in northern Europe and Scandinavia during the last three months of the year. Conversely, the current westerly phase of the QBO (the QBO has switched from the easterly to the westerly phase since last autumn/winter) tends to enhance the likelihood of wet and stormy weather here. Near average sea surface temperatures (SSTs) in the influential region of the north Atlantic suggest no enhanced likelihood either way of stormier or calmer than average conditions.

There is somewhat more consistency in signals and projections influential in the shorter term. The MJO is currently in a phase suggestive (albeit weakly) of an enhanced likelihood of more settled conditions in northern Europe and Scandinavia during the first couple of weeks of December at least and projections for the NAO concur with this. The Arctic Oscillation (AO) is also expected to move into a phase suggestive of calmer weather in early December.

Looking ahead to the longer term (ie, towards the beginning of next year): although the existence of a La Niña ENSO phase tends to reduce the likelihood of wet, stormy weather in northern Europe and Scandinavia during the final three months of the year there is evidence that this influence flips around the turn of the year to an increase in the likelihood of such weather in the first three months of the year. In the absence of any large shift in ENSO or the QBO (which is not currently anticipated), any influence they have on European weather will no longer be competing but will become aligned (towards an enhanced chance of stormy conditions) at around this time.

## Longer range climate signals influential up to 3 months ahead

Signal	Current State	Projected State	Implications for European Weather
ENSO: El Nino Southern Oscillation	La Nina conditions	75% chance of La Niña conditions persisting until the New Year	Increased potential for colder, drier and calmer periods across northern Europe and Scandinavia at first.
QBO: Quasi-Biennial Oscillation	Westerly Phase	Westerly	Increased potential for warmer, wetter and stormier periods across northern Europe and Scandinavia.
North Atlantic SST	Around average	This pattern is expected to persist	No increased potential for any particular type of weather.
Eurasian Snow Cover	Around Average	This pattern is expected to persist	No increased potential for any particular type of weather.
Arctic Sea Ice Extent	Around Average	This pattern is expected to persist	No increased potential for any particular type of weather.
PV: Polar Vortex	Developing	Expected to continue to develop over the next month	This climate signal doesn't have as strong an influence on upcoming European weather now as it does later in the season.

## Shorter range climate signals influential up to 1 month ahead

Signal	Current State	Projected State	Implications for European Weather
MJO: Madden Julian Oscillation	Neutral	Phase 6 and 7	Increased potential for colder, drier and calmer periods across northern Europe and Scandinavia
NAO: North Atlantic Oscillation	Near Neural	Expected to be around average or slightly negative over the next month	Increased potential for colder, drier and calmer periods across northern Europe and Scandinavia.
AO: Arctic Oscillation	Negative	Expected to be around average or slightly negative over the next month	Increased potential for colder, drier and calmer periods across northern Europe and Scandinavia.

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

## Historical Analogues

Possible characteristics of upcoming months can be investigated by looking at previous years in which there was a similar climatic set. There are four such years within the last 40 which are possible analogues for this year ie, which had an ongoing La Niña event, a westerly QBO and North Atlantic SSTs around average at the start of November. These are 2020, 2016, 2010 and 1999. Despite the broad climatological similarities, the NDJ weather outcomes in Europe in these four analogue years were rather varied, though there are a few common and notable features. Three of the four years (1999, 2010 and 2016) were relatively dry, particularly across continental Europe and they were also generally around or colder than average here. 2010 saw a particularly calm (and cold) season there. And while winds in the far north of Europe (northern UK and Scandinavia) were generally above average in three of the four years (1999, 2016 and 2020), only one of these years (1999) saw stronger than average winds extend further south into continental Europe. Only two of the four analogue years saw windstorms of any note, Egon (Jan 2017) and of course the damaging storms of late 1999 (Anatol, Lothar and Martin). While this continues to suggest that a period as stormy as late 1999 can't be ruled out for this year, it also suggests that a relatively calm period is at least as likely, and particularly that a drier and colder than average season is perhaps a more common outcome for this particular climate set up. The historical analogues to this year, though hinting towards the possibility of a drier than average season overall, still do not preclude any particular outcome. This is perhaps unsurprising given the competing influences of ENSO and the QBO outlined above.

For more details on this method see the report entitled "Using Climate Signals to Forecast the UK Winter Storm Season" published [here](#).

