SUMMARY ASSESSMENT OF SEASONAL FORECASTS FOR EUROPE

OCTOBER, NOVEMBER AND DECEMBER 2022

Executive Summary

Storms

Long range forecast models and climate signals suggest that there is no notably enhanced likelihood either way of stormier or calmer than average conditions across northern Europe during the last three months of 2022 as a whole, although they do suggest that calmer than average conditions are more likely than average during much of November.

Precipitation

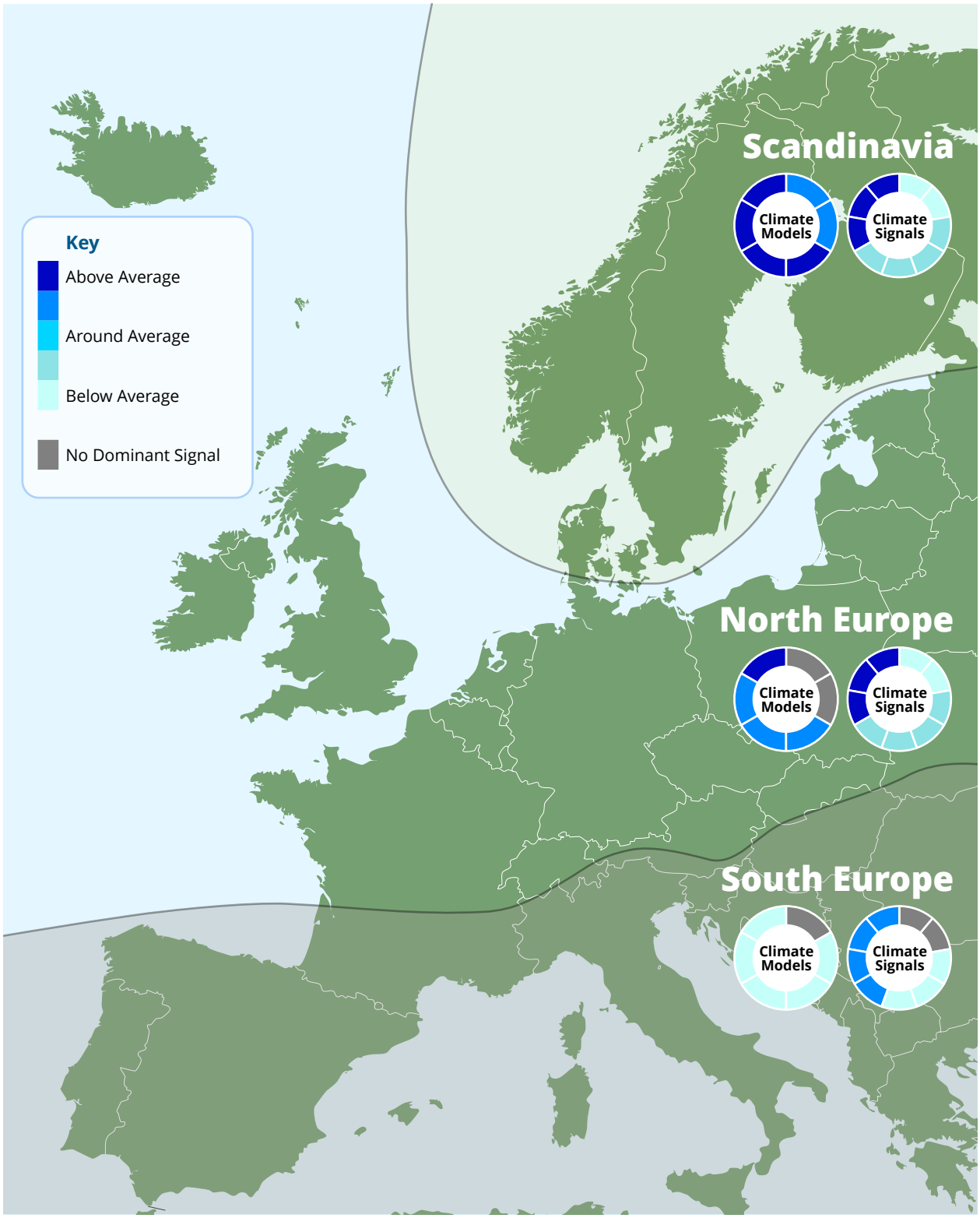
Long range forecast models suggest an enhanced likelihood of above average precipitation totals across Scandinavia and below average totals across southern Europe.

Temperature

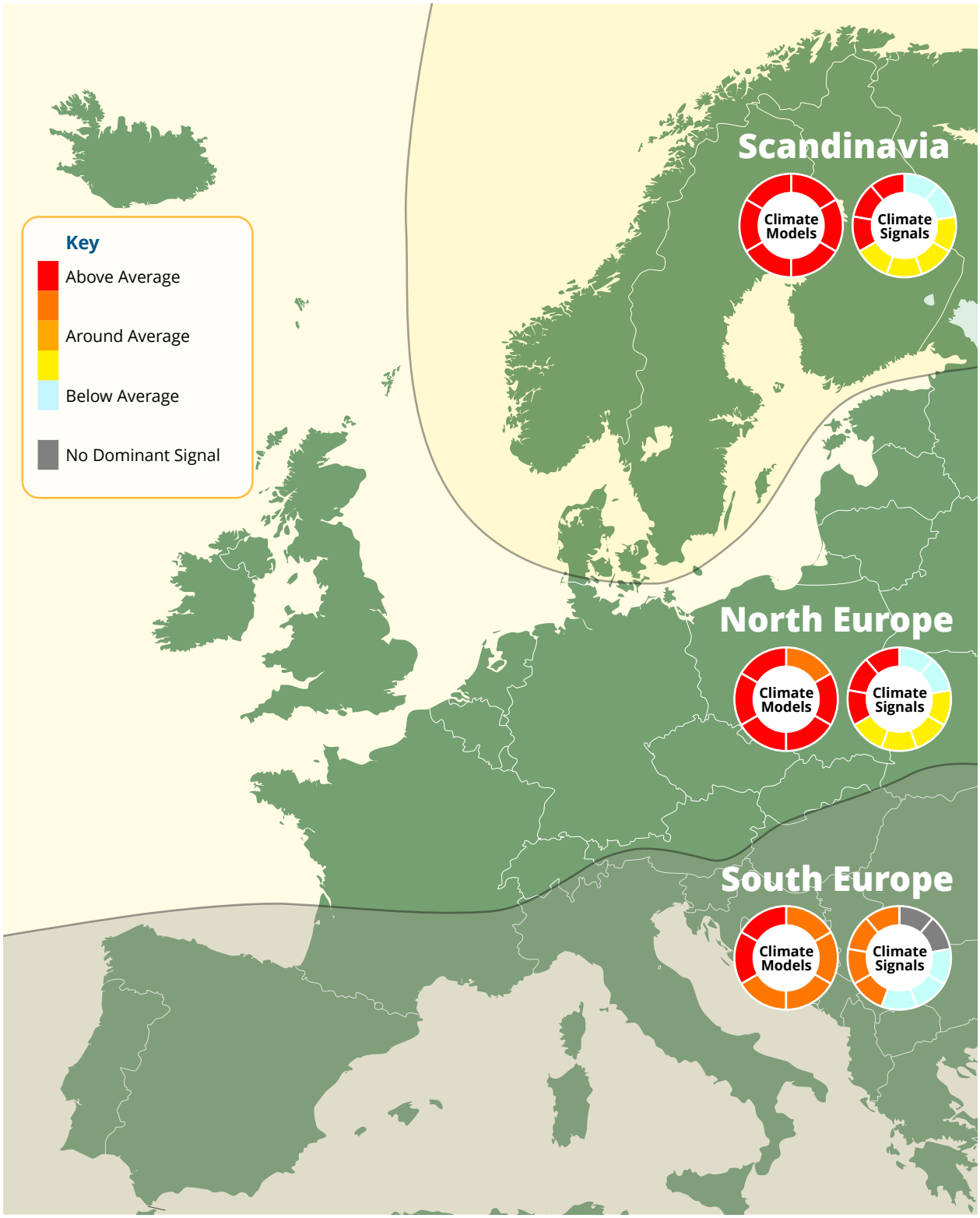
Temperatures are most likely to be warmer than the long-term climatological average across Europe.

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

Assessment Summary – Precipitation
October, November and December 2022



Assessment Summary – Temperature
October, November and December 2022



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 October and into November but some 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 November, with warmer conditions more likely across southern Europe.

Seasonal Forecast Assessment

Climate Models Summary

Climate models are currently reasonably consistent in suggesting an enhanced likelihood of wetter than average conditions across Scandinavia for the last three months of the year and of drier than average conditions across southern Europe. Projections for northern Europe (excluding Scandinavia) 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 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 Signals

In terms of their influence on European weather for the last three months of the year the main global climate signals of ENSO and QBO are currently 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 November at least and projections for the NAO concur with this. The Arctic Oscillation (AO) is currently also in a phase suggestive of calmer weather in early November but is projected to drift into the opposite mode through the course of the month.

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.

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 during the last three months of the year.
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	Developing	Expected to continue to develop over the next month	These climate signals don't have as strong an influence on upcoming European weather now as they could a little later in the season.
Arctic Sea Ice Extent	Developing	Expected to continue to develop over the next month	These climate signals don't have as strong an influence on upcoming European weather now as they could a little later in the season.
MJO: Madden Julian Oscillation	Phase 6	Weakly in phase 6	Increased potential for colder, drier and calmer periods across northern Europe and Scandinavia
NAO: North Atlantic 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.
AO: Arctic Oscillation	Negative	Expected to be around average or slightly positive over the next month	Increasing potential for warmer, wetter and stormier periods across northern Europe and Scandinavia over the course of the month.
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.

For more information on the characteristics of the signals please see the EuroTempest climate signals factsheet.

Historical Analogues to the Current Climatic Set Up

Possible characteristics of upcoming months can be investigated by looking at previous years in which there was a similar climatic set. There are 3 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 October. However, despite these broad climatological similarities, the OND weather outcomes in Europe in these three analogue years share few common features and were very varied. The three years include one in which the last three months of the year were generally relatively dry in Europe and saw lighter winds than average (1996), one with relatively wet but not unusually windy conditions (2020) and one with a number of notable windstorms, particularly later in the period (1999). While this suggests that a period as stormy as late 1999 can't be ruled out for this year, it also suggests that a period as relatively settled as 1996 is at least as likely. At best, the historical analogues to this year suggest that the particular climatic set up currently prevailing has little clear influence in Europe at this time of year and so provides little indication towards likely outcomes. This is perhaps unsurprising given the competing influences of ENSO and the QBO as outlined above.

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