SUMMARY ASSESSMENT OF SEASONAL FORECASTS FOR EUROPE

JANUARY, FEBRUARY AND MARCH 2022

Executive Summary

The possibility of a significant windstorm within the coming months remains though there are few indications of a sustained period of windstorm activity during Jan to Mar 2022. More unsettled (wetter than average) conditions are more likely further to the north, particularly across Scandinavia. The chance of a spell of very cold weather across northern Europe within the first few months of the year remains but is diminishing.

Storms

There are few indications that a sustained period of frequent and active low-pressure systems across northern Europe and Scandinavia is likely. However, for northern Europe especially, models and signals are providing no dominant signal or have opposing influences. The possibility of an impactful windstorm within the next few months remains although relatively settled conditions are likely for at least the next few weeks.

Precipitation

Climate models generally suggest an increased likelihood of above average seasonal precipitation totals across Scandinavia and below average totals across southern Europe. Some (but not all) models also suggest an increased likelihood of drier than average conditions across northern Europe. Climate signals generally have neutral or opposing influences though there are some indications of a wetter than average season further to the north.

Temperature

Seasonal forecast models are consistent in suggesting that the next three months are likely to be warmer than average across the whole of Europe. Climate signals indicate that the chance of a spell of very cold weather across northern Europe within the first few months of the year remains but is diminishing.

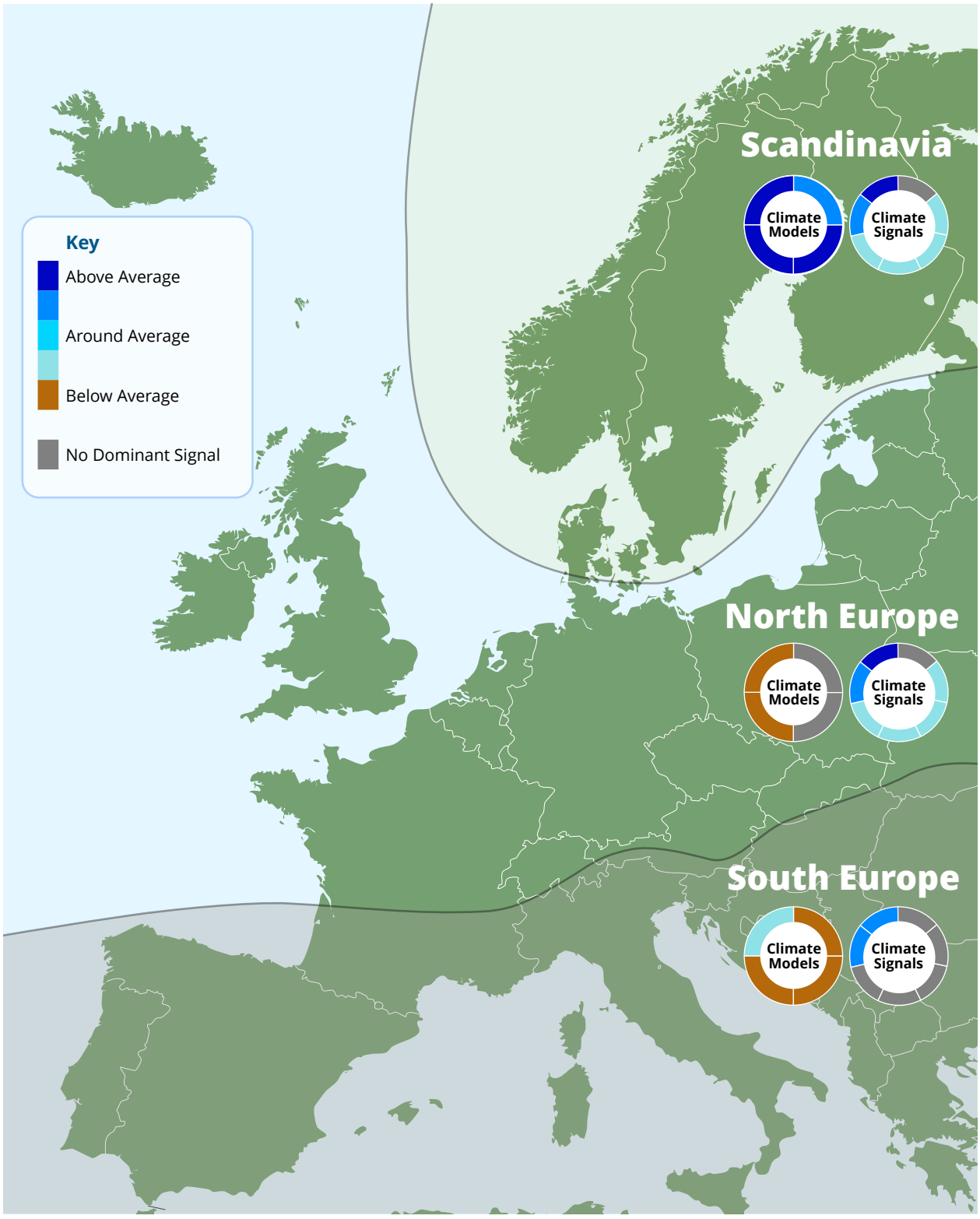
Analogue Years

Years in the historical record in which climate signals were in a similar pattern to that currently prevailing produced some notable windstorms in the few first few months of the year.

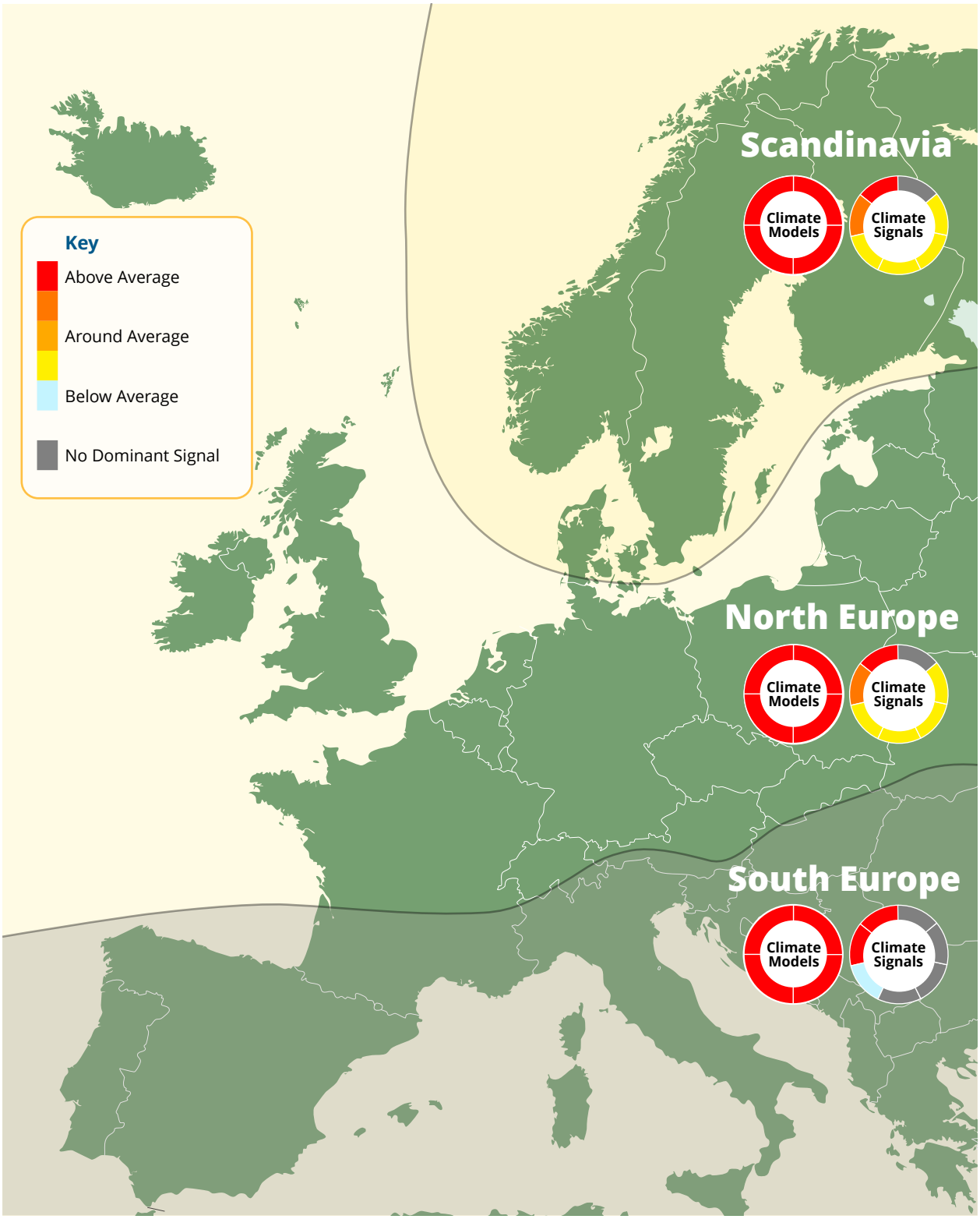
This is the final Seasonal Forecast Assessment of autumn / winter 2021-2022.

Euro Tempest

Assessment Summary – Precipitation
January, February and March 2022



Assessment Summary – Temperature
January, February and March 2022



Extended Outlook

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

Next few weeks

Largely settled conditions are most likely across northern Europe and Scandinavia over the next few weeks but occurrences of wetter and more unsettled conditions are likely to continue across southern Europe.

First few weeks of January

There are currently no strong signals indicating the likely development of particularly unsettled or impactful weather during the end of January and into the start of February. However, wet and windy conditions typical for the time of the year are possible at times, particularly further to the north.

Seasonal Forecast Assessment

Climate Models Summary

The available climate models are reasonably consistent in suggesting an enhanced likelihood of wetter than average conditions across Scandinavia during January-March 2022 (JFM) and of drier than average across southern Europe. The models are somewhat more ambiguous about likely conditions across northern Europe, though indications are that generally drier conditions are slightly more likely than normal here, particularly towards the west of the continent. Indications are that storms are more likely to track toward the north of the UK and into Scandinavia than from the Bay of Biscay into northern and central Europe. The climate models, as is often the case, suggest that a warmer than average JFM is much more likely than an average or cold three months across the continent but, as ever, it should be noted that "average" conditions are generally defined as the mean of the last 30 years or so. The general trend of increasingly warm conditions associated with climate change makes it more likely that temperatures now will exceed these historical averages and temperatures this JFM 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

The polar vortex is in (and is expected to continue to be in) a relatively neutral state, which reduces the likelihood of sustained periods of frequent and active low-pressure systems across northern Europe and Scandinavia over the next few months. By contrast however, there are other climate signals present that have been associated with more active, wet, windy and unsettled winter weather across northern Europe and Scandinavia in the early part of the year. For example, sea surface temperatures (SSTs) in the north Atlantic are slightly above average and ENSO continues to be in a (albeit weak) La Niña phase which is expected (95% chance) to continue through the next three months. The state of the polar vortex, the QBO and ENSO all together suggest that a very cold spell across Europe within the next few months can't yet be ruled out but the chance of such a spell has diminished since December and continues to do so. While the polar vortex is certainly not at full strength neither is it weak enough to suggest that a period of very cold weather is a strong likelihood. Furthermore, there is no evidence of the build-up of a (relatively) cold air mass over northern Russia, ready to encroach westward into Europe - on the contrary, air temperatures across central and northern Asia are currently generally well above average. Overall, the climate signals suggest that largely neutral or normal conditions are most likely but they also reflect some of the ambiguity observed in the climate models around northern Europe. They suggest that the chance of an active period of windstorms has decreased since last month, with the confirmation of a neutral polar vortex and a slight decrease in Atlantic SSTs (relative to average for the time of year), though this is moderated by the expectations of a continuing La Niña.

Signal	Current State	Projected State	Implications for European Weather
NAO: North Atlantic Oscillation	Slightly Positive	Expected to become negative over the next week or so, then average	Settled for northern Europe and Scandinavia and unsettled for southern Europe for the next 2 weeks
AO: Arctic Oscillation	Neutral	Most likely to remain near neutral however there are a wide range of potential outcomes indicated by the available models	Neutral conditions
PV: Polar Vortex	Neutral	Isn't expected to develop significantly over the next month	Mostly neutral conditions (reduced chance of prolonged periods of very unsettled weather). Slightly enhanced chance of a very cold spell.
QBO: Quasi-Biennial Oscillation	Easterly Phase	Remaining easterly	Mostly neutral conditions (reduced chance of prolonged periods of very unsettled weather). Slightly enhanced chance of a very cold spell.
ENSO: El Nino Southern Oscillation	La Niña	La Niña is expected (~95% chance) to persist throughout the Northern Hemisphere winter	Increased chance of periods of unsettled weather in Scandinavia and northern Europe
MJO: Madden Julian Oscillation	Phase 7	Expected to move into phase 8 during the next week	Settled conditions across northern Europe for the next two weeks, diminishing influence thereafter
North Atlantic SST	Slightly above average	Remaining slightly above average	A slightly increased potential for warmer, wetter conditions across northern Europe and Scandinavia

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 this upcoming winter can be proposed by finding years in which there was a similar climatic set up. The closest recent analogues for this year (with La Niña conditions, slightly warmer than average Atlantic sea surface temperatures and an easterly phase of the QBO at this time of year) are 1984, 2008 and 2012. Strictly speaking, of these years only 2008 produced a notable windstorm beyond this point in the year – windstorm Emma affected much of central Europe in late Feb 2008 leading to losses of US$1.4bn. There were, however, two storms in close succession during the second week of January in 1984 that separately affected the UK, Scandinavia and the Netherlands and windstorm Ulli affected the UK in the first week of January 2012. The presence of a number of notable windstorms during similar climatic years affirms the possibility of a similar occurrence during the coming months even if (as described above) more benign, neutral conditions may prevail much of the rest of the time.

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