meteo matics

Weather Data for Secure Energy Trading and Planning

Including Winter Outlook 2022/23

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Executive Summary

Weather has a highly relevant impact on the energy industry. Energy consumption, production, storage and transportation are directly dependent on the weather.

Accurate weather information is therefore central to successful business in the energy industry and can lead to the realization of competitive advantages.

Competitive advantages are created, among other things, through the use of unique technologies. Meteomatics offers several unique technologies that enable energy companies to achieve competitive advantages.

First, Meteomatics offers a unique weather API in terms of speed, flexibility, and amount of data and parameters.

Secondly, Meteomatics offers the EURO1k weather model, a unique high-resolution weather model for the whole of Europe. This weather model offers a 1 km resolution and hourly model updates, which greatly improves the accuracy of local forecasts. This offers enormous advantages especially in energy trading.

The first purpose of this white paper is to provide an overview of all weather impacts on the energy industry. Furthermore, it will be shown which weather data is relevant in which business context. Also, the solutions of Meteomatics and especially the advantages of the new weather model EURO1k will be presented. In addition, this paper also includes a seasonal winter outlook for Europe to show the importance of long-term forecasts for better planning.

Table of Contents

Why Is Weather Important for the Energy Industry?

Energy Demand

Weather has a direct impact on energy demand. If it is cold outside, the demand for energy for heating naturally increases. When it is very hot, the energy demand also increases due to the use of air conditioning.

This is true for both small households and industrial plants. With such high demand pressuring the sector, forecasting the weather to plan ahead is of the utmost importance.

Energy Production

The production of renewable energy is subject to fluctuations as it's dependent on daily weather conditions and seasonal variations.

For instance, in temperate zones, the amount of generated hydropower varies according to the season. In the rainy summer months or during the snowmelt in spring, the inflow is correspondingly greater than in winter, when precipitation remains stored in the form of snow. The situation is similar for wind and solar power generation, which is even more directly dependent on wind and global radiation.

Energy Transmission

Weather conditions influence the transmission capacity of high voltage power lines and thus have a direct impact on the efficient use of energy. Distribution System Operators need to precisely forecast their regional demand, which then must be brought into a balance with the energy supply required.

Transmission System Operators need to precisely forecast transmission capacities to operate the transmission systems as efficiently as possible. Inaccurate forecasts of environmental conditions, and thus transmission capacities, lead to an inefficient or even restricted use of the transmission system, and thus to significant losses.

Maintenance

Severe weather conditions can disturb the operational efficiency of power plants. Equipment and systems can malfunction or even break due to extreme cold or heat. Natural hazards can damage the infrastructure potentially leading to life-threatening accidents and financial loss.

Short-term weather conditions and long-term climate projections must therefore be considered when doing maintenance and planning for infrastructure renovations.

Site Assessment

Based on historical weather data, analyses can be performed for specific locations and thus a first assessment of the energy potential based on wind speeds or global radiation of the site can be made.

Through these analyses, the yield potential can be estimated, which greatly reduces the planning risk and the yields can subsequently be maximized with weather forecast data. This creates planning security and decisions can be made with confidence.

Energy Security and Planning

Like fossil fuels, renewable energies rely on natural resources to generate power. But, unlike fossil fuels, the natural resources it relies on are less predictable. The amount of water, solar radiation, or wind a power plant gets depends on the delicate dynamic of many weather events happening around the Earth.

In times of global uncertainty regarding the supply of energy coming from fossil fuels, it's on the renewable energy sector to absorb the high demand of the winter season. Efficiently planning the energy production, storage, and transmission to ensure energy security is a challenge that can only be met with precise hyperlocal weather forecasts and seasonal weather trend outlooks. In this paper, we include a winter outlook to show case how seasonal trend outlooks can be produced with current forecasting methods.

Weather Data to Accelerate the Energy Transition

Accurate weather data helps to better integrate renewable energy into the power grid, allowing renewable energy to be used more cost-effectively. The economic use of renewable energies helps the expansion and thus promotes the efforts towards energy transition and climate neutrality.

The more accurate the weather data, the better the power forecasts for renewable energies. With an installed capacity of over a gigawatt of solar, wind or hydro, even a 1% difference in forecast error can trigger economic losses of several million Euros per year.

However, precise weather data can be used for much more than renewable energy power forecasts. The flexible availability and integration of all required weather data helps to optimize digital processes and services and to drive innovations faster.

For example, smart energy management systems can be developed in buildings and factories, or proprietary forecasting solutions for private consumers in their own homes.

Which Type of Weather Data Is Important and What Is It Good For?

Energy usage has always been heavily influenced by the weather, and increasingly energy production is becoming dependent on weather conditions. The most important weather variables to consider for the energy industry are: temperature, which affects demand and the long-term weathering of transmission equipment; similarly precipitation; wind, which additionally affects the production of wind turbines; and similarly solar radiation for solar power.

Of these, useful forecasts of all variables can be produced up to 24 hours in advance; additionally, temperature, precipitation and wind speed and direction may typically be skillfully predicted with lead times of up to a week; and useful statements about temperature trends can be made at time-scales of up to approximately six months ahead of time. Furthermore, other hazards can be predicted on extremely short timescales. The following sections describe the methods of production of various types of forecast and explain some of the reasons for the relative skill of forecasts of the variables mentioned.

Nowcast (next 6 hours)

A nowcast is produced in a somewhat different way to a traditional weather forecast. Whilst the latter (see below) is achieved by running a full physical weather model, a nowcast is an extrapolation of current weather conditions. The important consideration is the motion of air masses; hence the important observations are remotely sensed, and include radar, satellite data, ceilometers and other profilers. Additionally, direct observations within the air mass from aircraft, radiosondes and Meteodrones are valuable where available.

These observations are extrapolated by numerical techniques operated by expert now-casters. Because of the spatial resolution of the data and the timescales considered in nowcasting, convective weather events which cannot be resolved by large scale weather models are made predictable. Because convective weather events are also potentially hazardous, the primary focus of nowcasting is on providing warnings about these events. The weather phenomena associated with convective regimes which can be predicted via nowcasting include:

- Thunderstorms
- Tornados
- Hail
- Heavy precipitation
- Severe wind (including wind shear: gust/downburst/microburst/vertical shear)
- Fog
- Winter precipitation types (snow, sleet, freezing rain, drizzle, icing)

These events have important implications for the safe operation and maintenance of infrastructure such as power lines and wind- and solar farms. Additionally, Nowcasts have huge relevance for intra-hour energy trading, as they provide the best estimate of weather conditions in near-real time.

Traditional Weather Forecasts (up to 1 week)

Predicting the weather without errors would require precise measurements of the locations of every molecule in the atmosphere as well as perfect physical models of how these interact with each other. Unfortunately, this is impossible, both theoretically and, more importantly, practically: there are limits to the number of calculations that can be carried out even by modern supercomputers.

Therefore, to return a skillful forecast within a useful timeframe, the atmosphere must be modelled as a three-dimensional grid whose properties, such as temperature, moisture, wind speed etc. evolve with time according to a set of physical equations. Global forecast models have a relatively coarse grid but can be used to inform regional models which are better able to resolve smaller-scale phenomena.

The initial state of the atmosphere in a computational model is provided by measurements. The gold standard for measurements come from ground-based meteorological observatories, which can make direct measurements of several variables of fundamental importance. Modern forecasts also make extensive use of 'data assimilation', a technique which uses real-time observations to nudge the output of a model in the correct direction.

The skill of a weather forecast (the ability of the forecast to accurately predict the future state of the atmosphere) varies according to the variable under consideration. Precipitation, for instance, depends on the transport of small packets of evaporated moisture - processes which are hard to parameterize within model grid cells (which may be tens of kilometers wide) - and high accuracy is only feasible for approximately two days; temperature, by contrast, is a fairly simple variable to model, hence forecasts remain skillful for up to a week (sometimes more in the event of strong circulation patterns such as blocking highs, which help to constrain models).

Traditional weather forecasts, which return reliable predictions of temperature, wind speeds and precipitation, amongst other things, are therefore valuable for forecasting energy demand trends in the coming week and predicting the output of non-dispatchable power sources, particularly wind farms. Additionally, certain types of weather, such as extreme winds or precipitation, can be damaging to infrastructure. Power lines in particular are subject to both gradual weathering and also acute stress from wind events. Knowing about such events in advance can help to shore up resilience in energy networks.

Sub-Seasonal (between 2-4 weeks)

All observations of physical variables have an uncertainty associated with them. Due to the chaotic nature of the dynamical systems which are modelled, these uncertainties grow over time, making a single forecast essentially useless after a period of approximately 10 days.

Despite this, there is a set of weather conditions which we can effectively rule out because, no matter what the initial conditions of the forecast are, the model evolves physically, and indeed the true initial conditions themselves are constrained by physical reality. Hence, it is possible to produce a large range of different forecasts with slightly different initial conditions and examine the spread of all of these "ensemble members".

This is the principle of ensemble forecasting, which provides meaningful information about the probability of events in the coming four weeks.

Ensemble forecasts essentially inform about the same variables which are reported in traditional weather forecasts, but with less certainty. These forecasts can be used to obtain reasonable estimates of evolving weather conditions at longer timescales, allowing suppliers to prepare for likely demand scenarios. As events approach, the transition from an ensemble to a traditional forecast timescale helps to refine the range of possible outcomes.

Seasonal Forecast (up to 7 months)

The spread of ensemble members also continues to grow over time, to the point at which it is essentially no more skillful than a simple guess based on 'climatology' (the history of weather in a certain atmospheric regime). However, we can constrain the range of climatologically likely conditions based on a number of large-scale atmospheric signals with 'teleconnections'.

For instance, the phase and strength of the El Niño Southern Oscillation (ENSO) is observable in sea-surface temperatures in the equatorial central and eastern Pacific Ocean and has been shown to have a statistically significant effect on the mean temperature and precipitation in discrete regions across the world, via physical mechanisms which are at least partially understood. Other indicators such as the Madden-Julian Oscillation (MJO), the North Atlantic Oscillation (NAO) and the Pacific Decadal Oscillation (PDO) also influence the expected weather conditions across the globe at different timescales.

It should be noted that the name 'oscillation' here is misleading, as a true oscillation is perfectly periodic and hence provides no additional predictive power; a climate index, on the other hand, can be observed in specific signals but varies in time period. The term oscillation is used because of the tendency of these indicators to feature a positive- and a negative phase, with starkly contrasting (often opposite) impacts.

Seasonal forecasts allow energy networks to plan for demand trends several months in advance. In the event of an unusually cold winter, for example, stockpiling of fuel for dispatchable generation may be wise with enough time to complete transactions. Seasonal forecasts are therefore essential for energy security.

Historical Weather Data

At a fundamental level, we can look at the entire range of weather conditions to establish a climatology for the entire globe or any region of it. A temperature of -60ºC is all but impossible for the UK, but how likely is a temperature of -10ºC? Of course, numbers like these are subject to change as the climate changes and understanding this is another clear application of historical weather data.

This kind of information can clearly be translated into improvements in forecasts of the future. By studying what happened next when certain weather conditions were observed we gain a better understanding of atmospheric interactions which can be included in future weather models.

Additionally, historical data can be compared against historical trends in non-weather events. This kind of application is particularly relevant given the modern data science skills boom, and the consequential ability of businesses large and small to find correlations between the weather and consumer purchases, degradation of assets, equipment performance and many other variables of interest.

Describing the historical state of the atmosphere is not as straightforward as might at first be thought. Although these events have already happened, and 'forecasting' them is obviously not necessary, many parts of the atmosphere were not observed historically - particularly before the satellite era (typically dated to 1980) - and measurement equipment was not as precise as the instruments we use today. Still, we can run modern weather models to fill in the gaps, and data from these 'reanalyzes' provides an increasingly accurate and testable description of the weather and climate conditions of the past.

Historical weather data is particularly relevant to the energy industry when considering site locations for new wind and solar plants, as well as transmission infrastructure. By choosing locations with optimal conditions, owners can maximize the return on their investment, farming more energy whilst paying the same amount for the hardware.

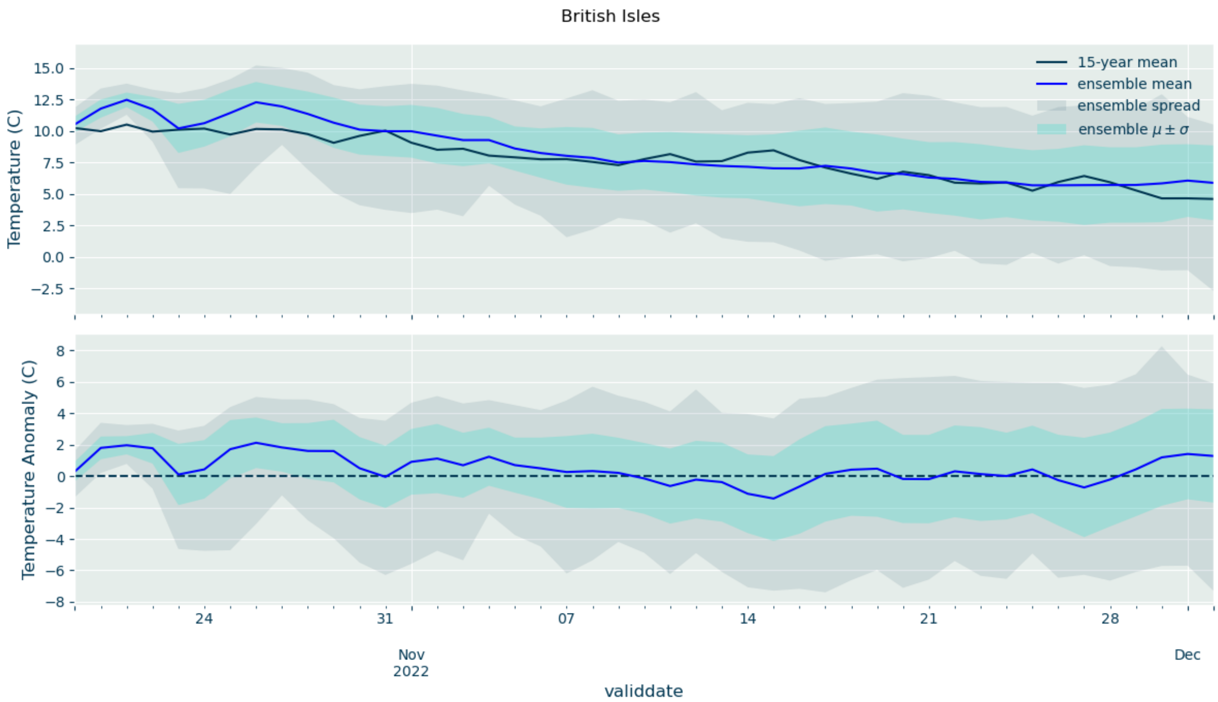
Seasonal Outlook: Winter 2022/23 in Europe

We include a winter outlook to show case how seasonal trend outlooks can be produced with current forecasting methods. The following time series of temperature data from ECMWF's VarEPS model show the range of possibilities (the ensemble spread), the most likely subset of these (which lie within the one standard deviation of the mean) and the expected value (the mean).

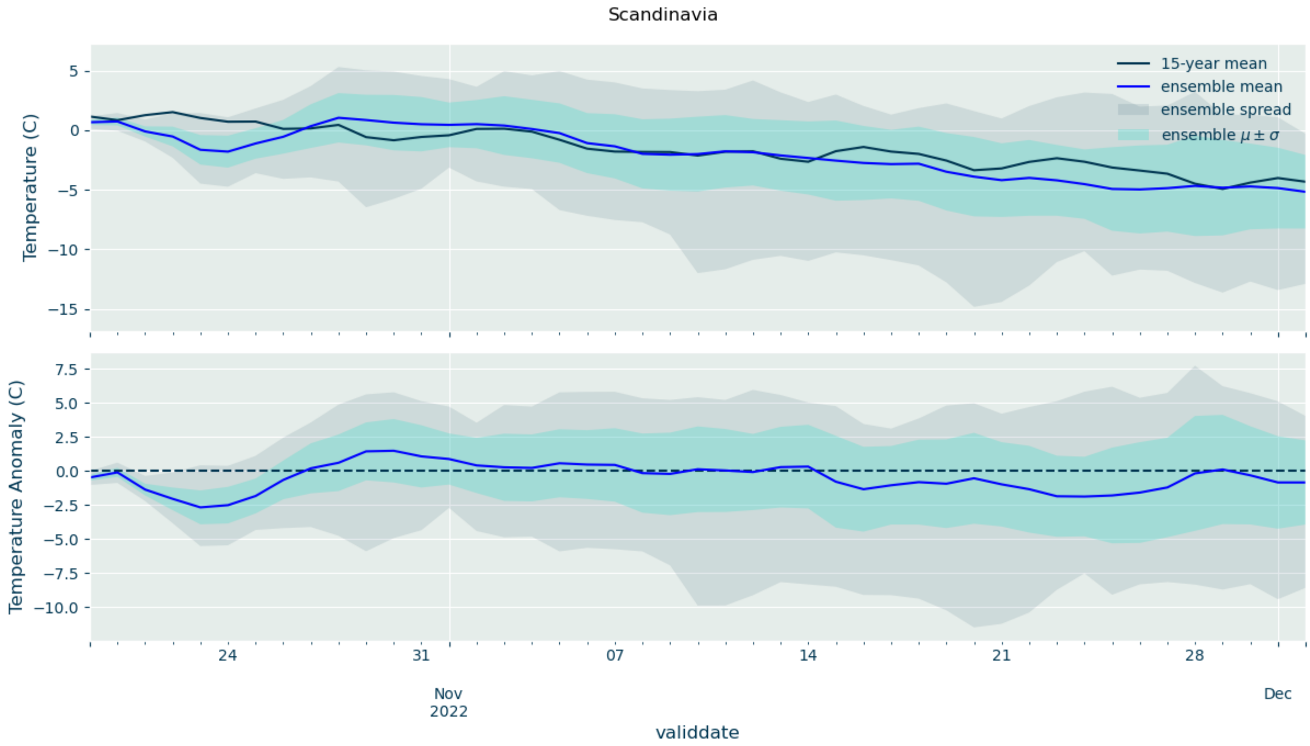
As described in Section Sub-Seasonal (between 2-4 weeks) the range of possibilities captured by the 50 different ensemble members, which are distinguished from each other only by the initial conditions of the model run, begins small, but quickly expands.

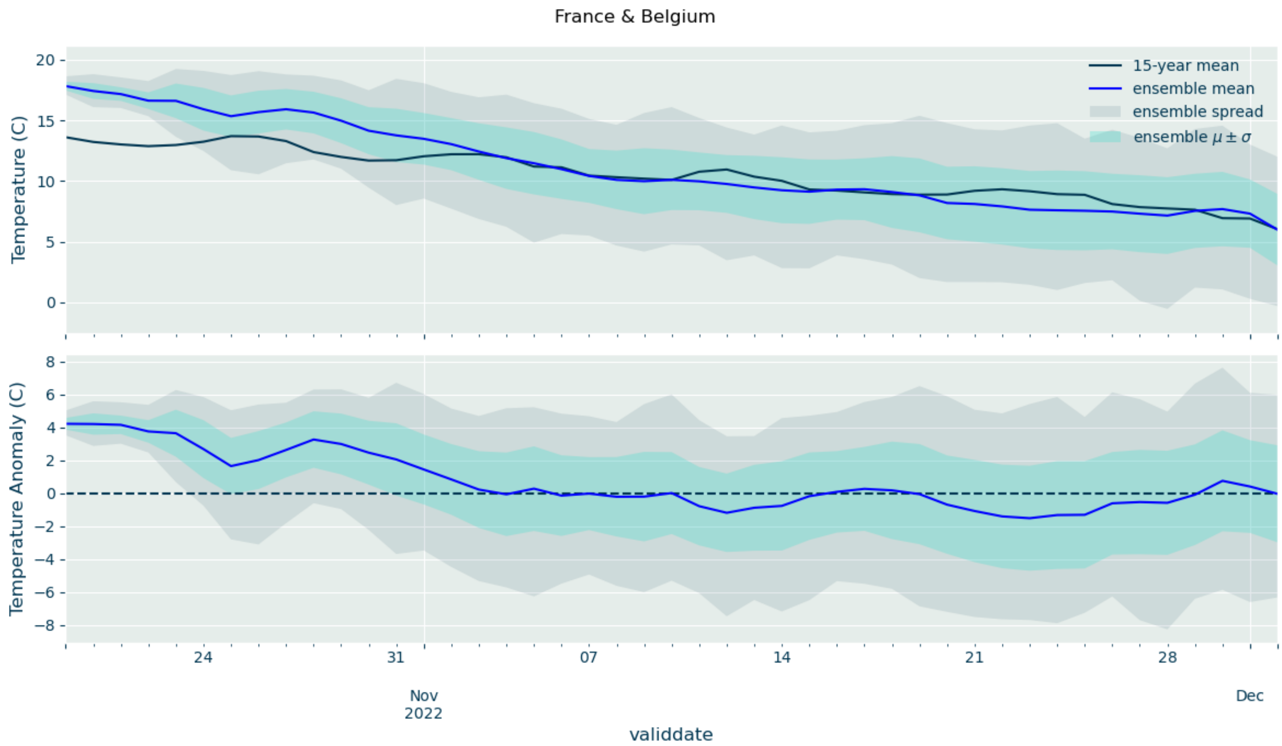
The time series were produced for regions of Europe which are climatically consistent. Also included for each region is the climatological background i.e., the expected temperature for the time of year, obtained from an average of the previous 15 years. In the upper panel of each plot these are shown as absolute values; in the lower panel the anomaly, which is determined by subtracting the climatology, is shown, to give an indication of the deviation from normal conditions to be expected (often a more important indication of the use of domestic heating than the absolute temperature itself).

Outlook for Specific European Areas of Interest

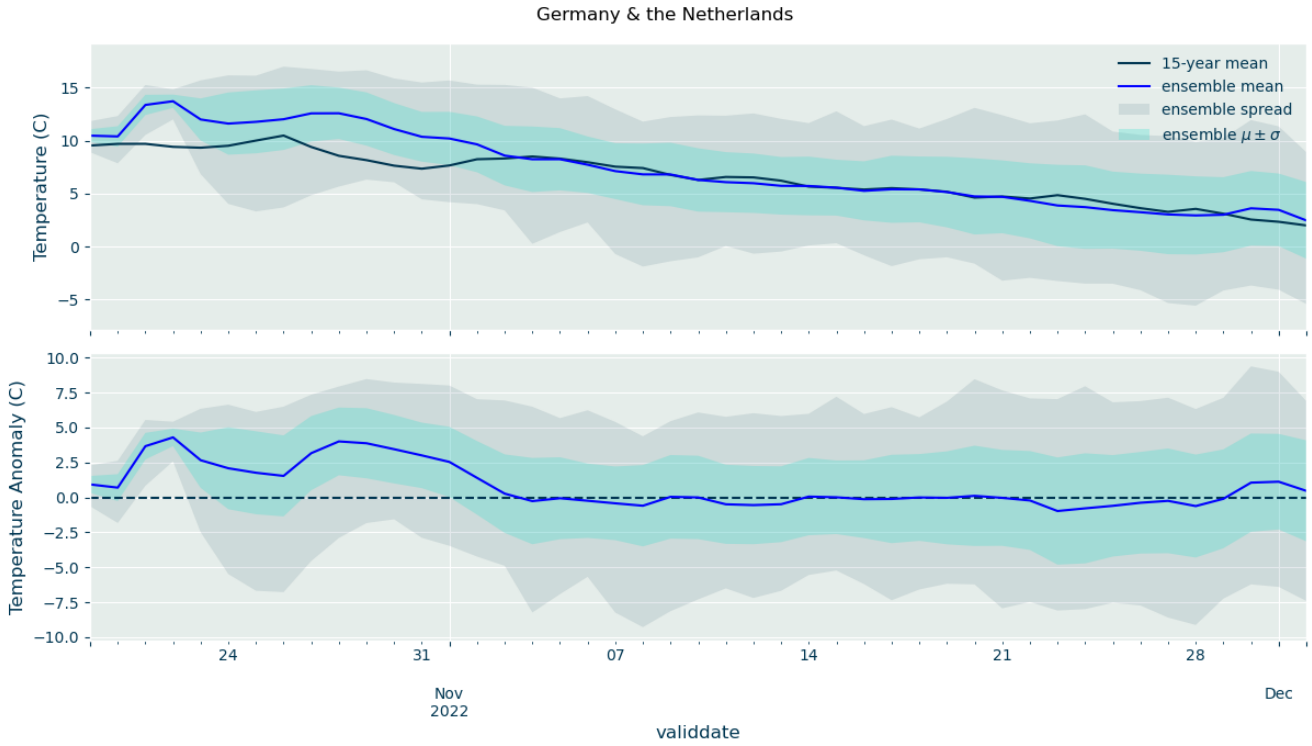


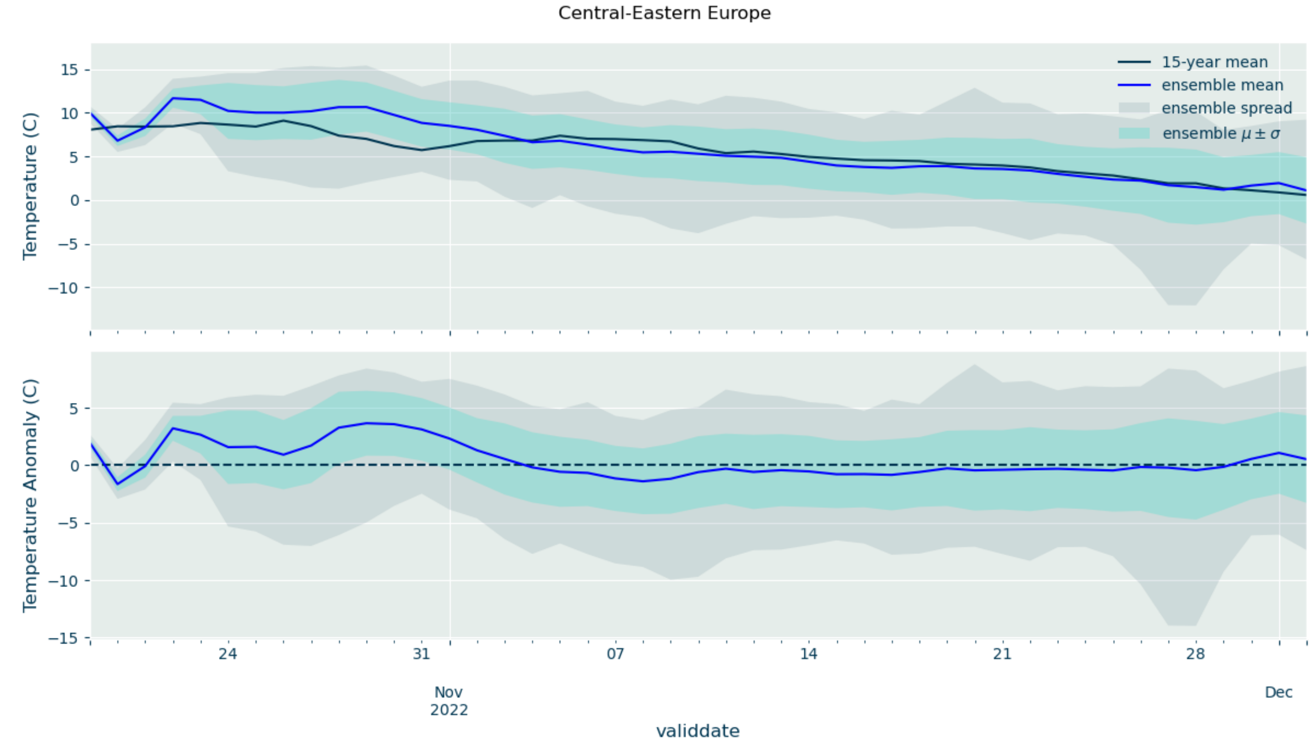
The United Kingdom and Ireland have seen a substantially warmer-than-average few days this week, and this pattern is expected to continue until the end of the month before returning to normal conditions. By contrast, Scandinavia can expect a colder-than-usual week ahead.



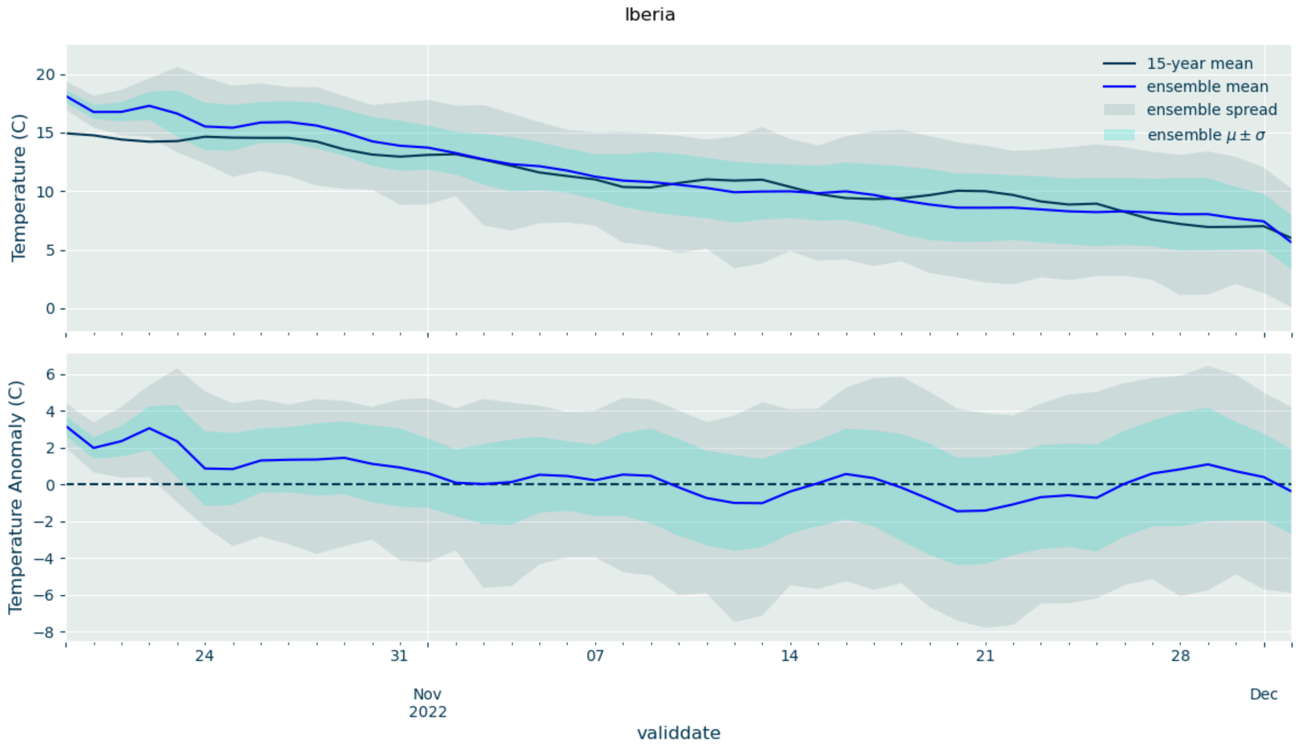


The warmer-than-average conditions in north-western Europe are much more pronounced in France, Belgium, the Netherlands and Germany. These regions can expect a significantly reduced heating demand in comparison to historical usage until the first week of November, when conditions will return to normal.

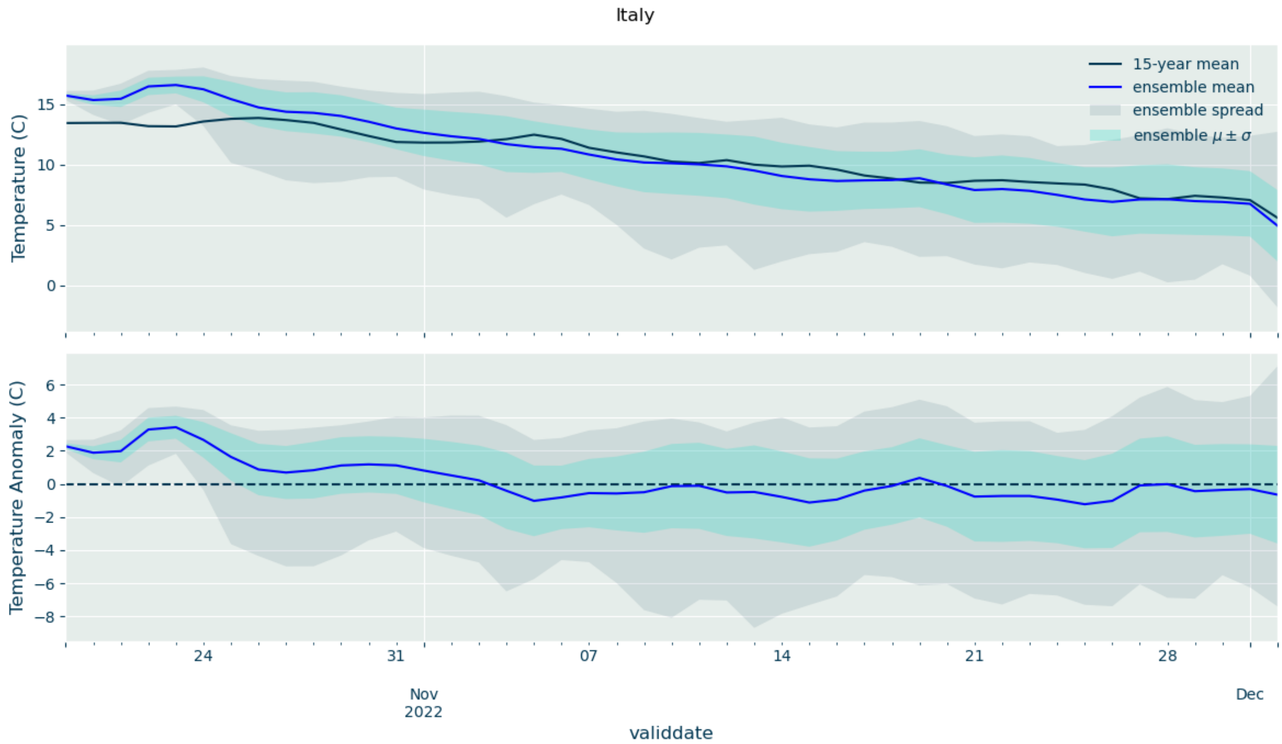




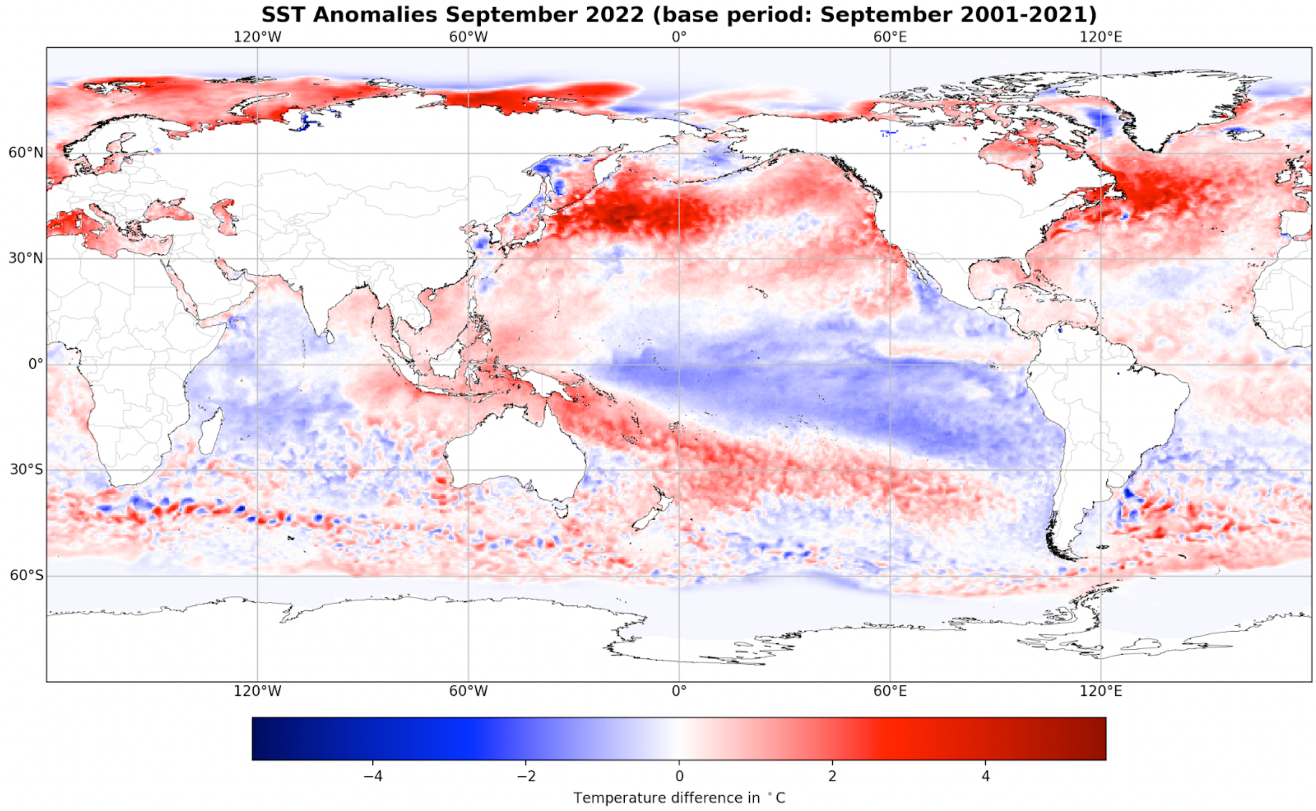
The same can be said of Poland, Hungary, Czechia, Slovakia and Austria.



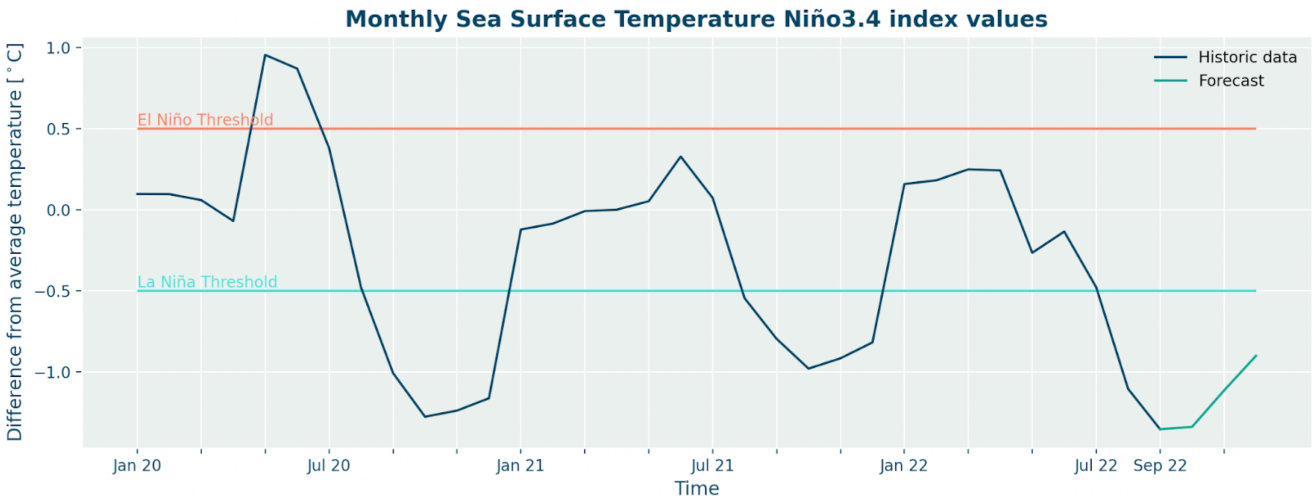
The pattern is much the same in southern Europe.



The general picture right now is of a warm fortnight, with anomalies gradually subsiding by the middle of the first week of November. The exception to this is the Nordic countries, which are currently experiencing colder conditions. However, for all regions, climatically normal conditions are expected to resume in two weeks and be sustained for the next month.



Looking further forward than the next 46 days, sea surface temperature anomalies in the equatorial pacific for the month of October are below the La Niña threshold for the fourth consecutive month. Whilst this does not count as a La Niña event until these conditions have been sustained for another month, the forecast of the Niño3.4 index suggests that this year will see a La Niña event for the third consecutive year - a rare occurrence - and by some estimates this year's event will be stronger than in the previous two.

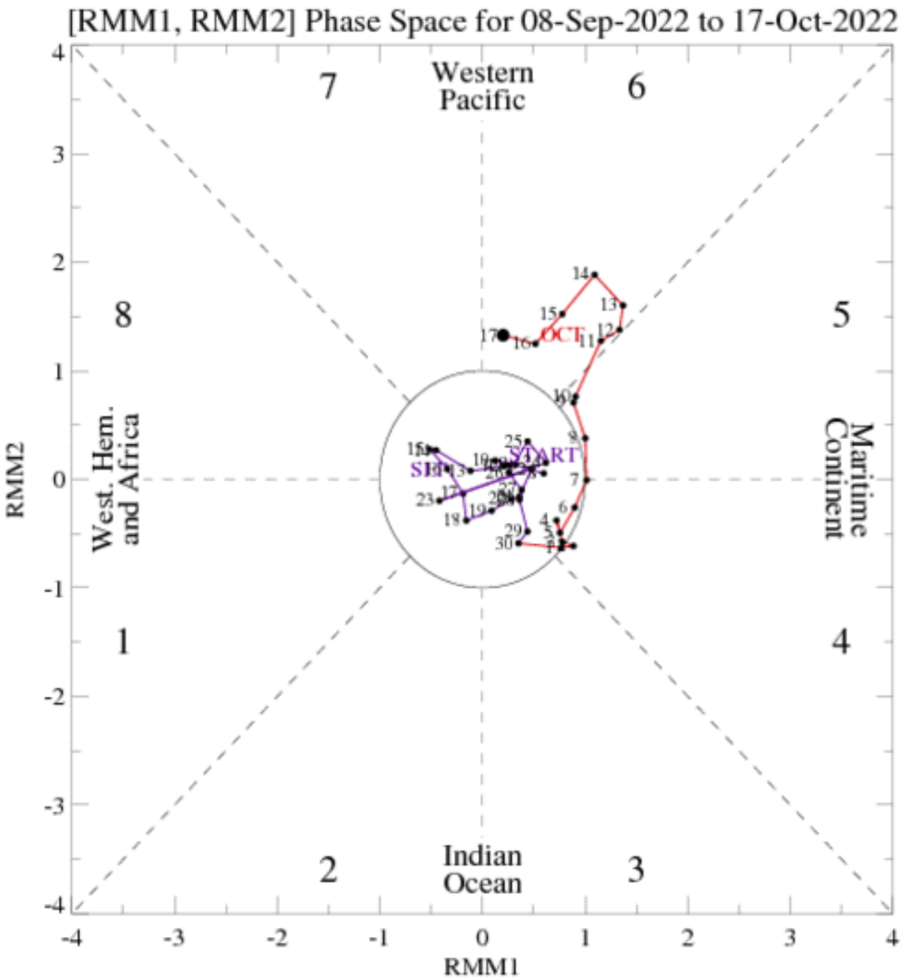


La Niña is known to affect precipitation in Europe, typically causing drier than usual conditions in the Iberian Peninsula and southern France. Temperatures, however, are not heavily influenced by La Niña in Europe, and so we can expect climatically normal temperatures at this point in time until January. Of course, in the coming months, ensemble forecasts for Europe will become available, and these will provide more trustworthy predictions for the region as they are published.

Madden-Julian Oscillation MJO

The Madden-Julian Oscillation (MJO) is a dipole of precipitation and wind speed anomalies which, when active, moves West to East around the globe with a period of between 30- and 60 days. Depending on the phase, the MJO affects Northern Hemisphere weather by impacting storm track locations, with corresponding effects on wind speeds.

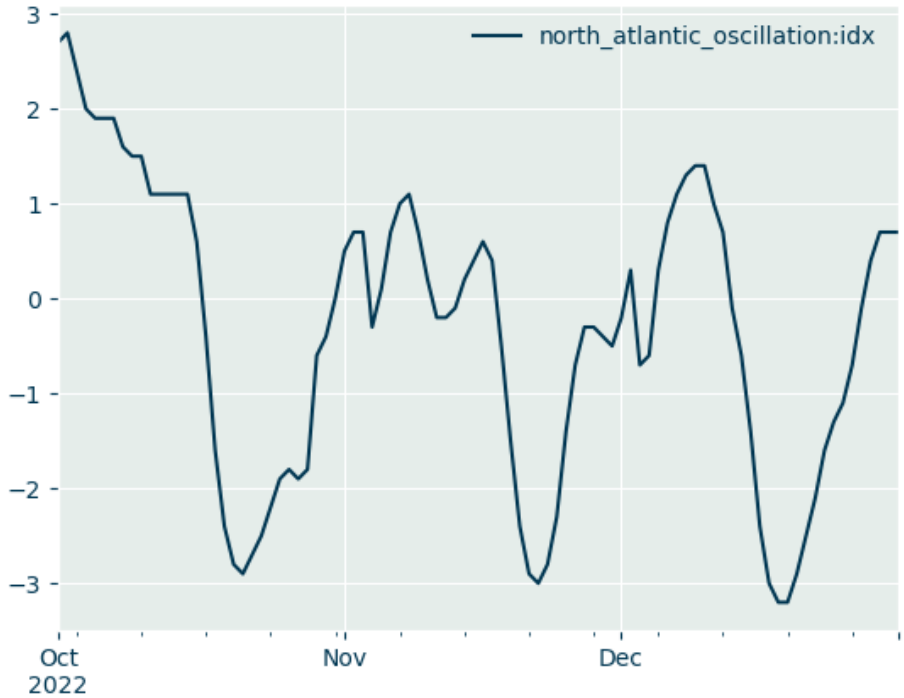
The following plot from the Climate Prediction Center shows that the MJO became active around the 7th of October, and is currently in phase 6, which tends to bring more extratropical storms to the pacific north-western United States.



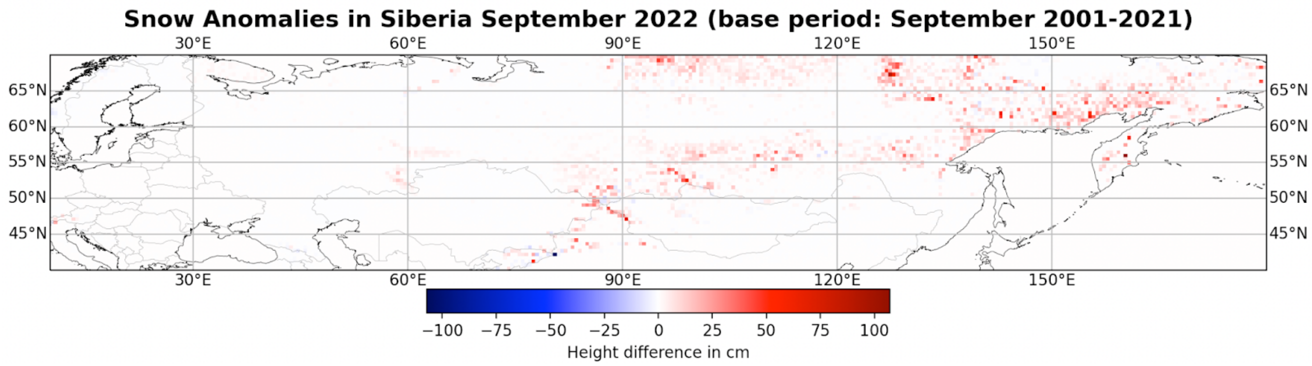
In the above, the phase of the MJO is indicated by the octant of the plot, and the intensity by the radial distance from the center, with the MJO becoming active when the threshold radius is crossed. Forecasts of the MJO are difficult to produce but based on the current situation it is likely that the MJO will proceed into phase 7, and possibly decay to a non-active state.

North Atlantic Oscillation NAO

The North Atlantic Oscillation (NAO) has a more direct effect on the weather in Europe, as it is essentially a representation of the pressure dipole over the Atlantic. A negative NAO implies that winds approaching Europe across the Atlantic are blocked by high pressures; in a positive NAO phase these winds are allowed through and will be enhanced.

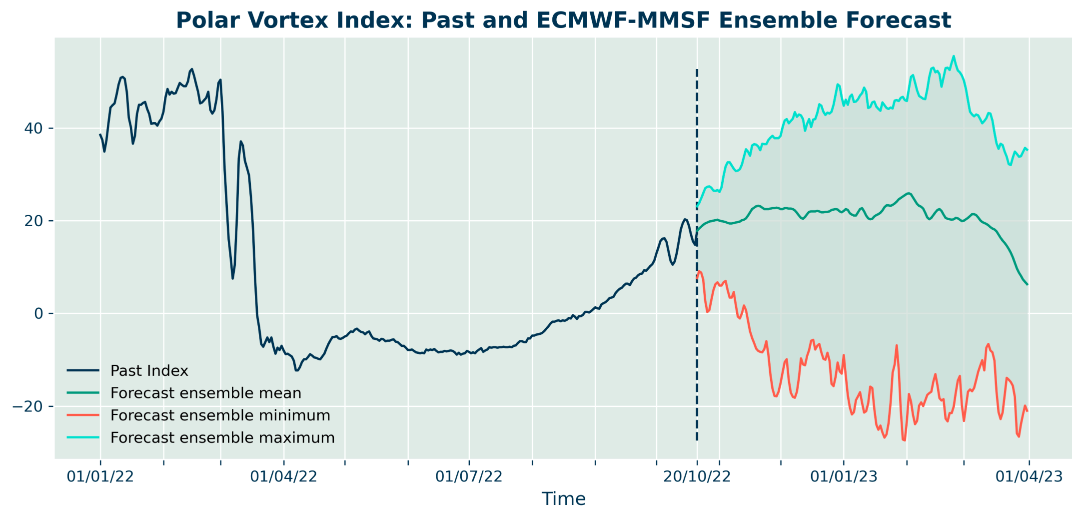


Our NAO forecast for the coming months shows that we are currently experiencing a negative phase, which is expected to continue until late October, with correspondingly reduced wind speed. We do not expect very strong positive phases of the NAO in the next two months, although for periods of early November and December wind speeds will be roughly climatologically normal.



Current predictions also point to the possible breakdown of the polar vortex in January. A reliable indication of this is the anomaly in snow-cover over Siberia, which we show to be significant in several key areas.

The strength of the stratospheric polar vortex can be measured by considering the upper atmospheric zonal winds (those which blow east-west) northwards of 60ºN. Under normal conditions, winds in the vortex blow from west to east, represented in the plot below by positive mean wind speeds. The polar vortex weakens as this wind speed decreases; a full breakdown occurs when the mean wind speed drops below 0, implying that the flow has been halted and even slightly reversed.



A polar vortex breakdown causes cold air from within the polar region to be allowed to spill into Europe and North America. This occurred in March last year, and was responsible for large quantities of unexpected snow in the United States. We see a small chance of an early polar vortex breakdown in 2023, with a sizable number of ensemble members making such predictions from January onwards. However, the mean of the ensembles currently suggests the vortex is most likely to break down sometime after March.

Conclusion

Taken together, our analyses suggest that temperatures across Europe are likely to continue to be above average for this time of year for the next two weeks. After that, temperatures (and hence heating demand) will return to normal. Meanwhile, wind speeds across the continent are likely to be significantly reduced for the next fortnight, returning to normal conditions in November.

The forecast included in this outlook includes temperature trends obtained from the VarEPS model for the next 45 days, as well as discussion of several large-scale signals (ENSO, MJO, NAO and SPV) which have impacts on general weather patterns at longer timescales.

Most of Europe (with the exception of Scandinavia) has been experiencing anomalously warm temperatures for the past week. This pattern is expected to continue until November, at which point a return to the climatological mean is expected. These conditions are then likely to be sustained throughout November.

The El Niño Southern Oscillation (ENSO) is predicted to enter a La Niña phase in the next month. These conditions are associated with normal temperatures in Europe. The Madden-Julian Oscillation (MJO) is predicted to enter a weak phase 7. Effects on Europe as a result of this are also negligible.

More important for Europe is the North Atlantic Oscillation (NAO). The general pattern here is one of climatologically normal windspeeds, although current forecasts suggest that a period of blocking in November will lead to reduced windspeeds across the continent. A similar period of blocking in December is currently forecast, but with less accuracy corresponding to the lead time of the forecast.

Ensemble forecasts of the Stratospheric Polar Vortex (SPV) predict average conditions, although ensemble spread is large. An early breakdown is possible but the ensemble mean suggests that this will occur later in the season.

In summary, the long-term climate signals suggest that the weather of the coming season will be unextraordinary.

Disclaimer on Seasonal Forecasts

It is now well understood that an accurate long-range or seasonal forecast is an extraordinary challenge, hence the projections above are all shown with estimates of uncertainty generally derived from ensemble member statistics. The ensemble mean is the expected value, but should not be considered a predetermined fact.

Further, it should be noted that the polygons used to obtain time series for Europe are agglomerations of countries - large areas - and that a single time series is produced for each. Whilst this represents our best estimate of mean conditions over large geographical areas, the method neither takes account of the distribution of populations, which may be densely collected in a few key locations, nor does it facilitate the comprehension of local scale fluctuations and extremes. In the event that such a small-scale fluctuation was to occur in a municipality with a large population, the effect on energy demand may be significant and cannot be shown with this method.

EURO1k: Why Data Accuracy Makes a Huge Difference

Intraday and Day-ahead Energy Trading

In today's energy market, wind and solar radiation are increasingly significant aspects of the weather, due to the increase in non-dispatchable generation integrated into the energy grid. By providing information on these variables a day ahead of time, grid operators can predict the shortfall in capacity and dispatch additional generation to cover the gap, ensuring that the network continues to operate safely.

The feed-in of wind, solar and hydro power can fluctuate depending on weather conditions. This leads to uncertainty in the electricity supply. It is, therefore, particularly important for the energy market to be able to depend on reliable and, above all, precise forecast data.

At Meteomatics, we aim for the highest possible accuracy based on the most accurate weather data. This allows you to utilize the full potential of renewable energies and integrate them into the electricity market in the best possible way - at the lowest attainable cost. This has a positive impact on the energy transition and helps shape it in the long term.

Accurate Forecast Data Makes Risks Calculable

The secret of accurate forecasts starts with the quality of the underlying data. Not only do we use the best global and regional forecast models, but we also refine them through a downscaling process to a resolution of 90 meters. Furthermore, all parameters are calculated by applying further interpolation methods to the corresponding heights (hub heights).

- Renewable energy plant performances with combination of weather forecast and plant simulation
- Weather model data combined with real-time data
- Combination of different weather models and integration of local conditions

Forecast periods are ranging from a few minutes (intrahour) to hours (intraday) to days (day-ahead) and beyond:

- Short- and medium-term e.g. day-ahead forecasts for the next day or e.g. 15 days in advance
- Nowcasting e.g. intraday forecasts until end of day
- Short-term forecast: up to 5-minute updates for the first 6 hours

EURO1k – European High-Resolution Weather Model

EURO1k is an extremely high-resolution weather model for all of Europe, which is calculated by our team of experts to a resolution of 1 km. This resolution is unique for a weather model, as the standard for global weather models is a resolution of 20 km.

Our 1 km resolution can model even the smallest meteorological phenomena (thunderstorms, hail, storms, etc.). Using downscaling algorithms based on the most accurate geodata, EURO1k even achieves model resolutions of up to 90 meters. To further refine the forecasts, the model is recalculated hourly with the latest weather data.

Unique High-Resolution Data for Best Trading Results Possible

The renewable energy sector needs extremely accurate local weather data not only to ensure an efficient power supply to the population, but also to guarantee successful trading results.

For energy traders, the next 24 and 48 hours are critical, and granular weather data is crucial for intraday and day-ahead energy trading. EURO1k's hourly updates increase the short-term forecasts precision, ensuring that traders have the most up to date weather information. As bidding is based on projected energy production and demand, it's in the energy traders' best interest to have access to the best weather forecasts.

Today, EURO1k is the weather model that can better meet this need thanks to its unique 1 km resolution and hourly updates.

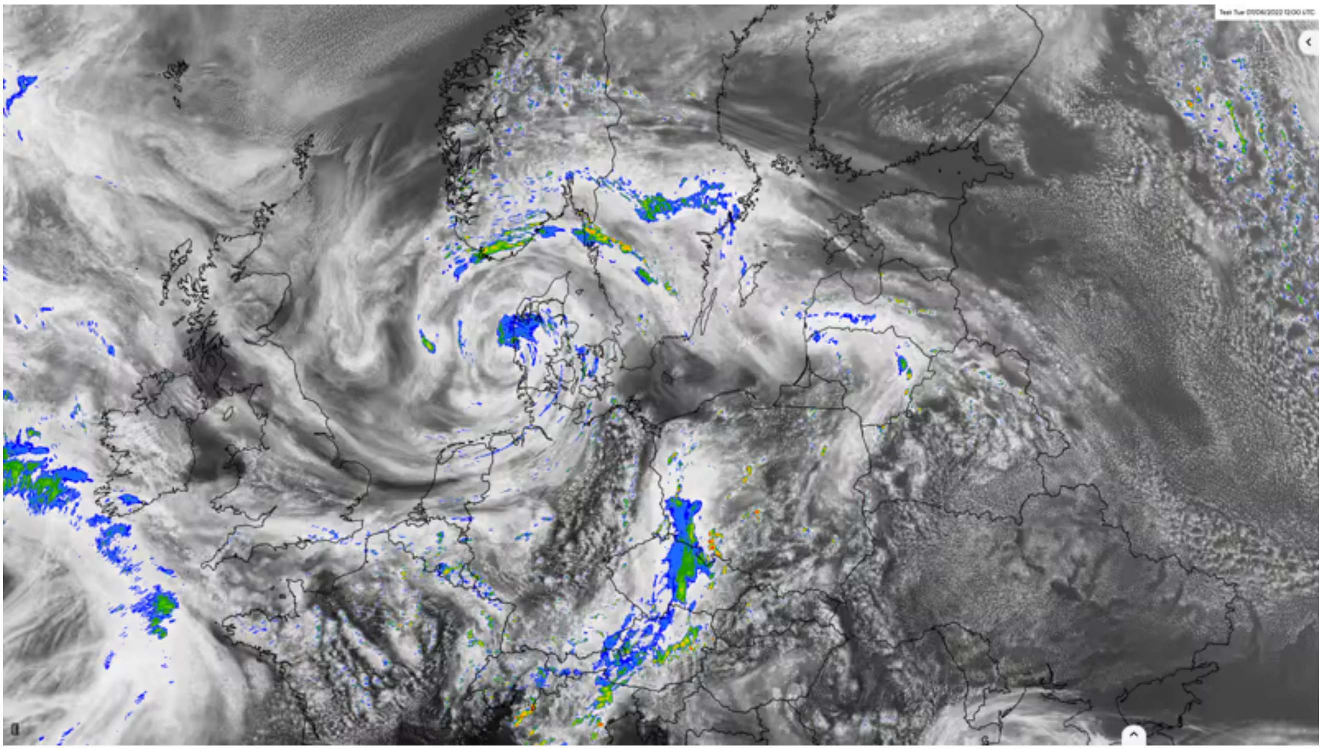
What Makes EURO1K So Special

- A resolution of 1 km
- Geographical coverage of all of Europe
- Hourly update of the weather model with integration of all measurement and observation data available in Europe
- Exclusive use of weather drones
- Downscaling enables resolution of up to 90 meters
- Over 1800 available weather parameters
- Real-time data availability
- Boundary condition: ECMWF-IFS

EURO1k compared to ECMWF and ICON EU

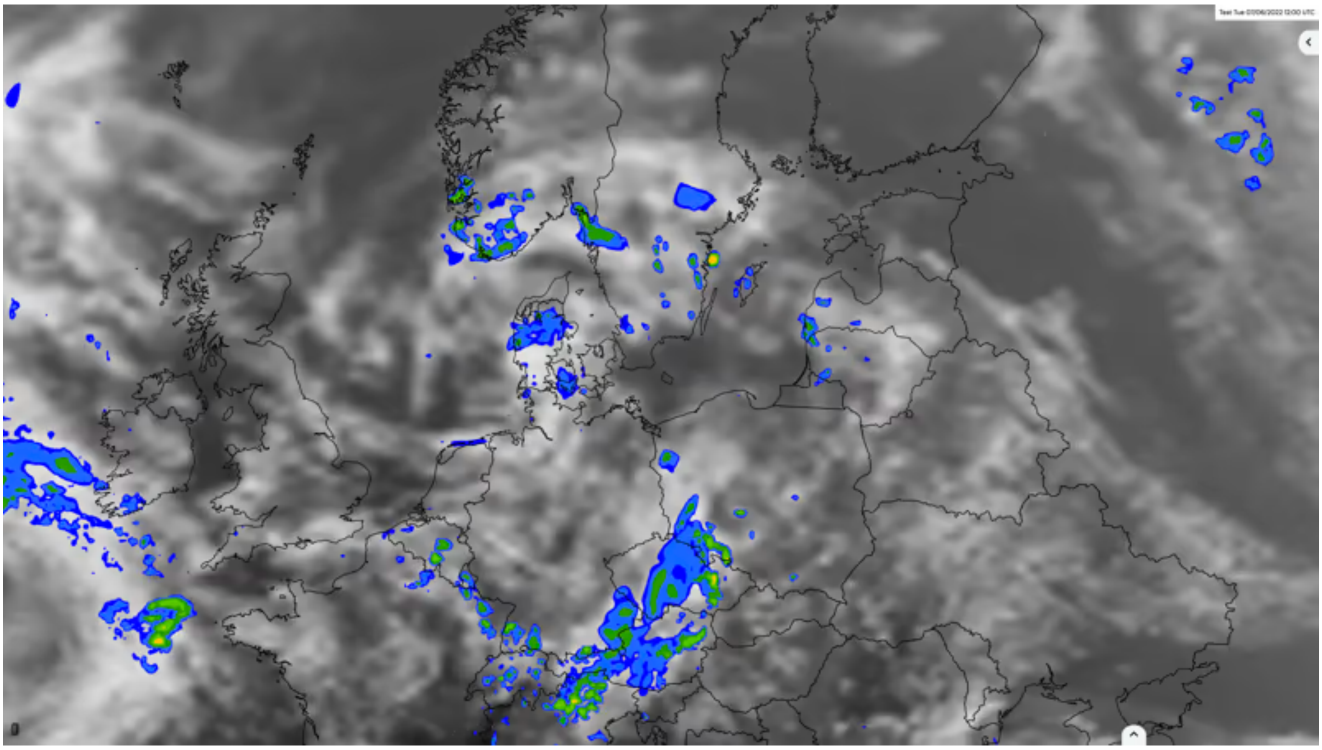
Features	EURO1k	ECMWF	ICON EU
Spatial Resolution	1 km	9-10 km	5-6 km
Time Resolution	20 min	Hourly	Hourly
Downscaling	90 m	90 m	90 m
Lead Time	24 hours	10 days	5 days
Daily Updates	24	4	8
Model Coverage in Grid Points	~4600 (n-s) x ~4300 (e-w) => ~20 mio. grid points	~1800 (n-s) x ~3600 (e-w) => ~6.48 mio. grid points	~656 (n-s) x ~1,069 (e-w) => ~701,200 grid points
Vertical Levels	80 in 10 - 100 m steps/intervals	137 in 20 - 5,800 m steps/intervals	60 in 10 - 2,600 m steps/intervals

EURO1k by Meteomatics: 1 km resolution



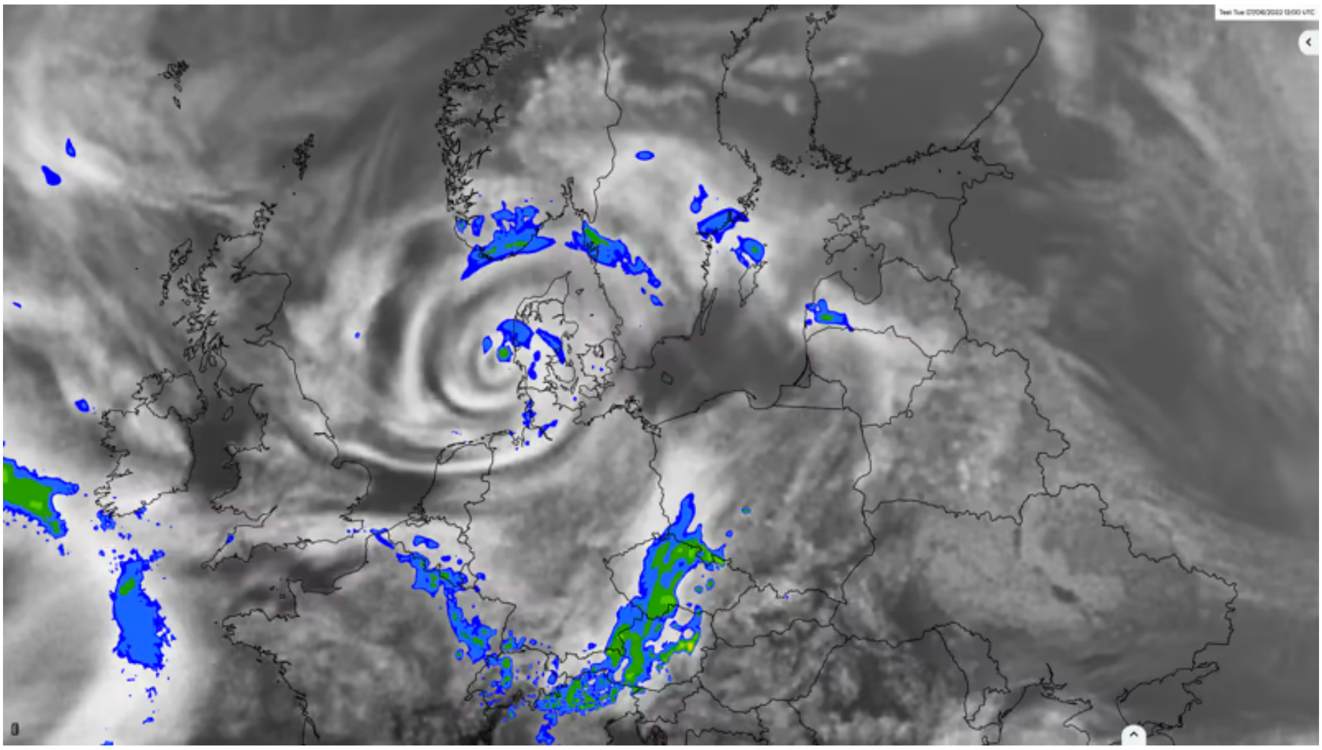
Global radiation and precipitation over Europe

ECMWF: 9-10 km resolution



Global radiation and precipitation over Europe

ICON EU: 5-6 km resolution



Global radiation and precipitation over Europe

Weather Data Access with Meteomatics

Data Access Solutions

EURO1k

EURO1k is an extremely high-resolution weather model for all of Europe, which is calculated by our team of experts to a resolution of 1 km. The model is able to produce highly precise forecasts spatially and temporally, and this completely individually for relevant sectors.

Please note that EURO1k is a premium service and is not included in free trials and regular API packages.

EURO1k

Weather API

With our weather API you get continuous access to worldwide high-resolution weather, ocean, environment and climate data as well as historical data, real-time data, forecasts and climate scenarios up to 2100.

Weather API

Weather Visualization – MetX

Visualise all weather events in a high-resolution map view - with our web-based weather map tool MetX based on the Weather API.

MetX

Weather Data Shop

If you only need one-time access to certain weather data, you can directly download individual weather data sets from our weather data shop. You will find a comprehensive selection of current and historical weather data as well as sector-specific weather parameters.

Data Shop

Weather Drones – Meteodrones

Our Meteodrones offer the possibility to collect weather data from the lower and middle atmosphere. With Meteodrones, it is possible to carry out high-resolution and direct measurements of temperature, humidity, air pressure and wind, to incorporate these into weather model calculations and thus demonstrably improve weather forecasts.

Meteodrones

Free Trials

We offer you the possibility of testing our Weather API and our MetX tool during 14 days for free.

Please note that EURO1k is a premium product and is not included in the free trial offers and regular API packages.

Included in your trial packages:

Weather API	**MetX**
• 1000 queries (50 queries / minute, 10 queries / parallel) Upon request: • Subset of historical data • WMS interface, including 20,000 queries in total	• Minute-by-minute temporal resolution • The possibility to use various maps, such as topographic maps, border maps, aeronautical maps and many more. • The use of layers to display a wide range of weather parameters • Clear display of up to 4 maps on one screen (quartering of the screen) • Data export for each point on the map
Try Now	Try Now

Talk to Our Experts

Our team of meteorologists, engineers and sales managers are happy to help you with any questions you may have.

Contact us if you have questions about specific industry applications or if you need advice from our experts.

We are looking forward to receiving your message!

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