NEWS RELEASE

weathernews

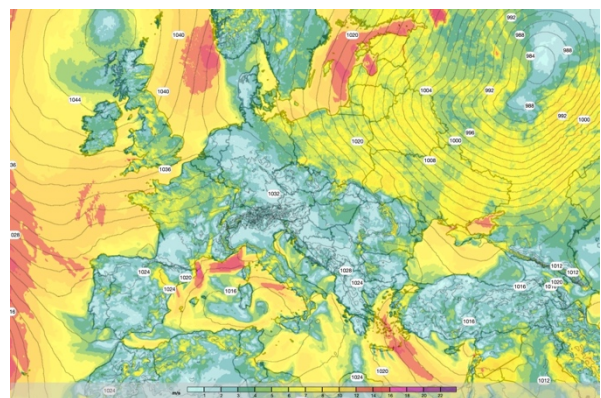*Always WITH you!*

July 22, 2024

Weathernews Launches Proprietary AI-based High-resolution Weather Forecast Model with the Highest Accuracy in Europe

Introducing 2km Mesh High-Resolution Weather Forecasts for Europe,

Suitable for Renewable Energy Generation Forecasting

Weathernews Inc. (Headquarters: Chiba, Japan; European Regional CEO, Craig West） launched our new two-kilometer mesh European weather forecasts. This service, part of our WxTech® (WeatherTech) offering, delivers high-precision weather data for temperature, barometric pressure, humidity, precipitation, snowfall, wind direction, wind speed, and solar radiation at 15-minute intervals.

In Europe, where weather data is increasingly being used for business purposes, there is a demand for weather forecast data that is more accurate, higher in resolution, and more frequent than each country's meteorological agencies. Therefore, we have developed our proprietary weather forecast model that forecasts all of Europe every 15 minutes with a two-kilometer mesh resolution. We have achieved the highest forecast accuracy in Europe by incorporating vast amounts of observation data and forecast model data from various countries into our unique AI-based weather forecasting model. Our forecast accuracy for wind, temperature, and solar radiation is approximately 10% higher than that of European national weather agencies and 20% higher than that of the European Centre for Medium-Range Weather Forecasts (ECMWF) global model. Typically, weather data specifications vary from country to country. However, this service allows uniform data to be obtained via an API regardless of country.

This data can be used for various applications, including energy-related businesses, store sales and customer visitation forecasts, delivery time calculations for delivery services, crop growth management, and data linkage with home appliances. We provide 15-minute interval solar radiation forecasts tailored to the European electricity market, which is leading in renewable energy. We also offer wind forecasts 100 and 200 meters above the ground, matching the height of

Wind Speed Forecast for Europe

wind turbines used in wind-generated electricity. These forecast times can be changed to coincide with electricity trading hours. Please get in touch with us if your company is interested in utilizing weather data in the European region.

◆ **Developing a Two-kilometer Mesh Weather Forecast Model Specialized for Europe**

For some time, we have provided weather data and specialized information mainly to energy, manufacturing, retail, and agricultural companies in European countries. In December 2021, we expanded our WxTech® service globally, a weather data provision service that promotes corporate digital transformation (DX) with weather data and the latest technology. At this time, we began providing a five-kilometer mesh global weather forecast API for companies doing business overseas (*1). We also sell market-specific WxTech® services, such as wind power generation forecasts and Energy demand forecasts, to European utilities (*2).

*1: Weathernews launches 5km Mesh High Resolution World Weather Forecast Service
   https://global.weathernews.com/news/16462/
*2: Weathernews to launch highly accurate Wind Power Forecast
   https://global.weathernews.com/news/16768/

Given the high technological capabilities of European meteorological agencies and other meteorological organizations, Weathernews has, to date, mainly used government weather forecast data to provide power generation forecasts and demand forecasts for renewable energy. However, in the energy-related market in Europe, where weather data is increasingly being used, there is a growing demand for more advanced weather data than that available from European weather agencies and the five-kilometer mesh global weather forecasts we have provided.

To this end, we have developed an AI-based two-kilometer mesh (grid) weather forecast model that covers the entire European region. We have also started providing highly accurate and high-resolution weather forecast data for the European region, the Two-kilometer Mesh European Weather Forecast, through our weather data provision service, WxTech®.

◆ **Highest Level of Forecast Accuracy in Europe**

This forecast data has improved accuracy and resolution by incorporating forecast values and observed data from European weather organizations into Weathernews' proprietary forecast model and correcting them using AI. The forecast of wind, temperature, and solar radiation showed a 10% improvement in accuracy compared to the forecast models of European national meteorological agencies. In addition, the accuracy was improved by about 20% compared to the global model of the European Centre for Medium-Range Weather Forecasts (ECMWF).

The root mean squared error (RMSE), a basic indicator of forecast error in numerical forecast models, is used to evaluate accuracy. For comparison against European national weather agencies, we averaged forecast errors of approximately 360 locations (solar radiation in 35 locations) over three

months. For the ECMWF, the comparison was made by averaging the forecast errors of roughly 3,300 locations over six months.

◆ **Providing European Weather Forecast Data via an API**

The Two-kilometer Mesh European Weather Forecast provides high-resolution every 15-minute forecasts in a two-kilometer mesh for the next 72 hours and hourly forecasts up to two weeks in advance, depending on your needs. We have a variety of weather elements, such as temperature, barometric pressure, humidity, precipitation, snowfall, wind direction, wind speed, and solar radiation.
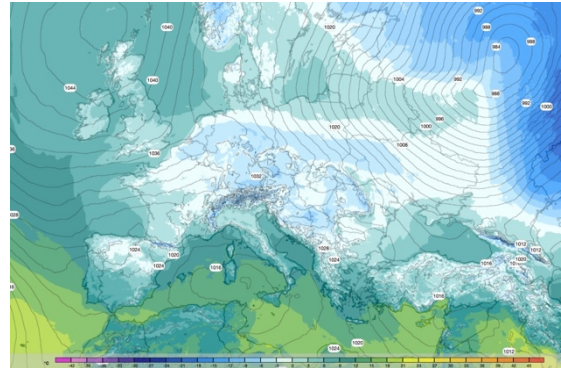
Temperature Forecast for Europe

Typically, European weather agencies provide hourly weather forecasts for each country and its surrounding areas. Specifications vary from country to country, with spatial resolution ranging from a 1 km to 10 km mesh, update frequency from every 3 to 6 hours, and forecast time from 48 to 90 hours ahead.

On the other hand, the Two-kilometer Mesh European Weather Forecast covers the entire European region, providing the same high-quality, uniform forecast data every 15 minutes in a two-kilometer mesh, with a higher accuracy than national meteorological offices at any location. In addition, since forecast data is provided via an API on the cloud, companies can easily obtain highly accurate and stylistically uniform weather data and link it to their systems simply by specifying location information.

This ability to obtain highly accurate and uniform data via an API is a significant advantage for companies that need high-frequency, pinpoint weather data in Europe and companies doing business in multiple countries.

This forecast data can be used for a variety of applications, such as adjusting the supply and demand of electricity, forecasting the amount of renewable energy able to be generated, managing growth in agriculture, forecasting customers at retail stores, forecasting delivery times, displaying weather information on websites and signage, and linking systems between home appliances and weather.

◆ **Supporting the European Electricity Market, the Most Advanced in Renewable Energy**
  Weather Data Optimal for Forecasting Wind and Solar Power Generation and Electricity Demand

While this data can be used in various markets, our impetus for developing this new service came from the desire of European electric utilities to obtain weather data with high resolution and accuracy for multiple countries. In Europe, where renewable energy technologies are most advanced, the data is optimized for energy market applications in various aspects, including not only forecast accuracy but also the lineup of weather elements such as wind speed and solar radiation, and the intervals between forecast values, so that the data can be used as the basis for electricity demand forecasts and wind and solar power generation forecasts.

For example, for solar radiation, the service calculates direct and scattered solar radiation forecasts in addition to general total solar radiation to meet the needs of solar power generation forecasting. It provides forecasts at time intervals that match electricity trading hours (every 15 or 30 minutes), which vary from country to country. For wind, we can provide wind direction and speed forecast at the height of wind turbines (10 m, 100 m, 200 m above
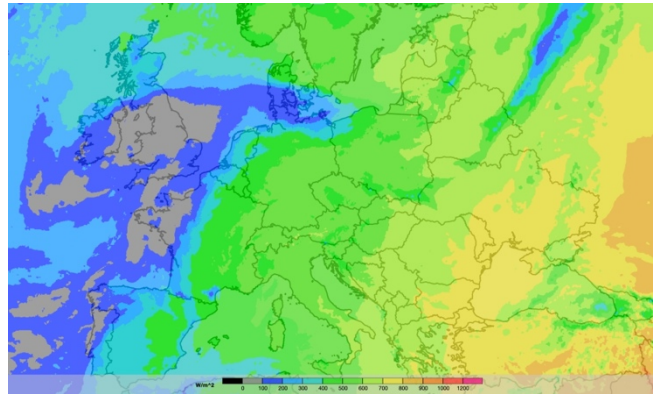
Solar Radiation Forecast for Europe

ground), which is necessary for wind power generation forecasting. Companies can use our data to formulate supply-demand plans and improve the quality of wind and solar power generation by linking it via API with their existing systems for power generation forecasting and supply-demand management.

◆ **Service Specifications**

Area	All of Europe
Spatial resolution	Two-kilometer mesh
Time resolution	Every 15 minutes (up to 72 hours ahead (30-minute and 1-hour increments also available) Every 1 hour (up to 14 days ahead)
Update frequency	Updated every 3 hours
Weather elements	Temperature, barometric pressure, humidity, precipitation, snowfall, wind direction and speed (10 m, 100 m, and 200 m above ground, wind direction and speed at specified height), maximum wind speed, solar radiation (total, direct, and scattered), cloud cover, visibility, weather
Data provision	API (CSV output also available)

▼ Corporate Inquiries

https://global.weathernews.com/contact/inquiries-about-our-services/

Weathernews uses weather data to support the business development of European and global companies worldwide, including Japan, in various markets, including electric power, such as renewable energy generating businesses and power transmission and distribution companies, as well as shipping, aviation, manufacturing and retail, logistics, and other markets.