UK gridded percentiles

Name

Met Office Blended Probabilistic Forecast – UK gridded percentiles

Description

This product provides gridded percentile weather forecasts. The grid resolution is approximately 2km and covers the UK and parts of Western Europe. It is produced by the Met Office IMPROVER Blended Probabilistic Forecast system. It is available in NetCDF format.

Blended Probabilistic Forecast data is derived from the Met Office's operational NWP (Numerical Weather Prediction) ensembles and nowcasts. To give more reliable predictions, these are then blended and calibrated using the IMPROVER pipeline, and verified using spread–skill and reliability checks.

This is 1 of 8 Blended Probabilistic Forecast products published by the Met Office on the Registry of Open Data on AWS. Data is available for the Global and UK domains, as gridded and spot (site-specific), and represented as percentiles and probabilities.

This info is correct as of April 2026, but some things (like the number of sites, parameters and timesteps) may change in future.

How percentiles work

Ensemble forecasts show a range of possible weather outcomes. However, some users may find it more useful to see ensemble forecasts presented as percentiles, particularly when they want to see where each member of an ensemble sits within the full range of possible outcomes.

Percentiles are generated from an ensemble forecast by first sorting all the members of that ensemble, for example from the coldest temperature to the warmest. To then identify a particular percentile forecast (e.g. the 10th percentile), we find the temperature at which 10% of the ensemble members predict colder conditions. As only 10% of the ensemble members are predicting a lower temperature than the 10th percentile forecast, this indicates that it is giving a relatively low forecast of temperature. Similarly, 90% of ensemble members would predict a lower temperature than the 90th percentile forecast, indicating that it is giving a relatively high forecast of temperature.

Precipitation percentiles should be used cautiously

Precipitation percentiles are potentially useful for experts. But we don't recommend that most people use them, as they are hard to interpret.

Precipitation is spatially noisy (i.e. it can vary a lot over small distances), especially when it is showery. This means that the individual ensemble forecasts that the percentiles are generated from are likely to have their heaviest precipitation positioned in different places. As a result, a high percentile (e.g. 95th) will pick up the high values from all those different locations and make it appear that heavy rain could occur over a wider area than is physically plausible. In other words, the spatial extent of the precipitation when using a high percentile is not physically realistic. High percentiles can be very useful for finding out what the values at the higher end may be, but not how they are spatially organised.

Likewise, the spatial extent of the precipitation will be greatly reduced for the lower percentiles. If there are differences between the ensemble forecasts about where it will rain or not, it is possible that a low percentile precipitation field may show zero precipitation everywhere. Again, that is potentially misleading because it suggests it might be dry everywhere, which is not what the individual forecasts are necessarily saying. It is better to view different percentile maps together (5th, 50th, 95th) to get a more informative impression.

Even the 50th percentile can be misleading as, by definition, it will never include the highest predicted values. Nor is there any guarantee that the peaks in the 50th percentile grid will align with the peaks in the 95th percentile grid.

About the grid

The grid resolution is approximately 2km and covers the UK and parts of Western Europe.

Numerical weather prediction (NWP) models generate forecasts for each grid point within a geographical area of interest. Each of these gridded forecasts corresponds to a particular diagnostic (e.g. precipitation rate) at a particular time. IMPROVER then takes an ensemble of these gridded forecasts and applies post-processing techniques to enhance them and represent them probabilistically. The resulting grid of values represents probabilities of exceeding or falling below a particular threshold.

Aspect	Values
Projection	Lambert Azimuthal Equal Area
Longitude of Prime Meridian	0.0° W

Reference datum	ETRS89 - uses the GRS80 as a reference ellipsoid.
Nominal resolution	2 km
Extreme West	-1158 km
Extreme East	924 km
Extreme North	902 km
Extreme South	-1036 km
Northwest Corner (Long, Lat)	-24.5099247, 61.31885886
Northeast Corner (Long, Lat)	15.27976922, 61.9206868
Southwest Corner (Long, Lat)	-17.11712928, 44.51715281
Southeast Corner (Long, Lat)	9.21255933, 44.899873
Semi Major Axis	6378.137 km
Semi MinorAxis	6356.75231414036 km
Longitude of Projection Origin	2.5° W
Latitude of Projection Origin	54.9° N
False Eastings	0.0 km
False Northings	0.0 km
East-West points	1042
North-South points	970
Grid type	Arakawa A

Parameters and timesteps

There are 44 weather parameters available including:

- Cloud
- Temperature
- Pressure
- Humidity
- Visibility
- Precipitation rate and accumulations (see note above about care required with use)
- UV
- Wind

For most parameters, the following timesteps are available:

- Every hour from 0 to 120 hours
- Every 3 hours from 123 to 186 hours

However, timesteps vary significantly for some parameters. Check the parameter documentation for more details.

Latency
Data is made available shortly after the model blend time.

Archive length
Data is available for the past 30 days.

Business needs
This product supports risk-based decision-making by providing uncertainty ranges rather than single deterministic values. Typical uses include:

- assessing uncertainty for operational planning
- evaluating weather-related risk thresholds
- deriving deterministic products (e.g. 50th percentile) from probabilistic outputs

Gridded forecasts show how a diagnostic varies spatially across a domain at a given time. By using a time series of gridded fields, you can determine how a weather diagnostic is expected to evolve across a geographic area.

If you need a forecast for a specific location, a spot forecast may suit your needs better than gridded data. Spot Blended Probabilistic Forecasts are also available as percentiles and probabilities for both the UK and Global domains.

Update frequency

The data is continuously updated by blending multiple sources. The latest version is what was available at the latest blend time.

We check for new model data every 15 minutes and include it in the blend as it becomes available. For the first 5 days of the forecast, we include data from models that run 24 updates per day. Beyond day 5, we get new model data every 6 hours.

This means that the data comes through as a continuous stream of rolling updates, rather than a coherent set of data from a single model run. Instead of waiting for a complete set of data, it's best to simply take the latest version of each timestep and parameter available at the moment you refresh. Some elements may update frequently while others won't change as regularly, and that’s expected.

License/terms and conditions

Documentation

Link to documentation doc

Managed by

Met Office

See all datasets managed by Met Office.

Contact

Please email our Service Desk at: servicedesk@metoffice.gov.uk and let them know which dataset you are using and that it's from the Registry of Open Data on AWS.

Service desk is only available Mon – Fri, 09:00 until 17:00 UTC (-1 hour during BST). As a non-operational service we aim to respond to any service support enquiries within 3-5 business days.

How to cite

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Usage examples

Tutorials

- Numerical weather prediction models by Met Office
- The Met Office Unified Model by Met Office
- Introduction — IMPROVER documentation

Tools & Applications

- Iris by Iris Contributors

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