



Lightning strike location data



The Met Office LEELA (Lightning Electromagnetic Emission Location by Arrival time difference) system is an automatic lightning location network consisting of ten sensors located across Europe. Together they are used to determine the location and time of lightning strokes over a wide geographical area.

Hazardous weather is often associated with thunderstorms and can include intense precipitation, severe icing, wind shear, turbulence and strong wind gusts. LEELA data can be a useful aid in the location of these types of weather, especially in data-sparse areas such as oceans.

The weather associated with thunderstorms can have a high impact on public safety, aviation and other industries. LEELA data can be used to warn of potentially hazardous weather associated with thunderstorms so that mitigation might be made against possible impacts.

The lightning information from LEELA is delivered in Met Office bulletins, 24 hours a day, 365 days a year. LEELA is more sensitive to cloud to ground lightning than in-cloud lightning and does not discriminate between these different forms of lightning in its bulletins.

Resolution:

Although LEELA is optimised for lightning detection within the UK and Europe, it can detect lightning from further afield. However, accuracy and sensitivity tends to diminish significantly at these longer ranges. As an entirely new system, the data gathered so far is insufficient to reliably estimate LEELA's typical accuracy. Comparisons with data from other lightning detection systems suggest that, as well as detecting around twice as much lightning as its predecessor system ATDnet, LEELA does so with comparable accuracy.

LEELA is recommended for:

- Determining the time and location of lightning strokes.
- Inferring the presence of hazardous weather, especially if used in conjunction with other observations such as satellite imagery, radar and ground-based observations.
- Making short-range forecasts by extrapolating the data, which can be aided by the use of NWP (Numerical Weather Prediction) output.
- Giving information on the location and timing of potentially hazardous weather.
- Verifying model output.

LEELA limitations:

- LEELA does not yet discriminate between different types of lightning e.g. in-cloud/inter-cloud or cloud to ground lightning.
- Although providing long range detection, LEELA does not cover the entire globe: Areas including Far East Asia, Russia, South East Asia, Australia, mainland USA and the Pacific are normally out of range.
- LEELA has limited ability to detect the weakest lightning strokes, especially those at longer distances from the network sensors.
- LEELA only reports the time and location of lightning strokes. It does not yet provide information on intensity, polarity, or other attributes.

Further Information:

[LEELA - The new Met Office lightning location system](#)

LEELA bulletins are available for various geographical domains of coverage.

Bulletin	Description	Format	Resolution
ISFX11	All LEELA sensed lightning data	BUFR	1 min
SFUK36	All LEELA sensed lightning data	gzipped csv	5 min
SFUK57	Europe/ Atlantic: 15W-45E, 30N-70N	gzipped csv	5 min
SFUK37	UK area: 12W-49N-65N	csv	5 min

Please speak to your account manager for pricing information, or contact us using the details below.

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