

Hazard Manager user guide

Making use of the weather layers



How will this guide help me?

This guide will help you understand the information that is available within Hazard Manager and how to make use of it to plan and respond to severe weather. Information available from Hazard Manager enables you to monitor the current weather conditions across your area and also check the forecast.

Contents

1 Precipitation Rate	3
2 Gauge Precipitation Accumulation ...	8
3 Precipitation Type	9
4 Lightning	10
5 Wind	11
6 Temperature	15
7 Visible Satellite	16
8 Infrared Satellite	17
9 Pressure	18

1 Precipitation Rate

What is this?

A network of rainfall radar sites around the UK detect precipitation, including rain and snow. This data is displayed in the Precipitation Rate layer enabling the position and fall rate to be displayed in an image that covers the whole country. The radar detects rainfall rates in millimetres per hour, which are colour coded as shown in the scale on the legend. Precipitation rate also provides a forecast of rainfall intensity, displayed in millimetres per hour, and how this varies spatially and with time.

The images are available for:

- the last 24 hours at 15-minute intervals
- the next 7 days in hourly intervals for up to the first 48 hours followed by three hourly timesteps for the remainder of the 7 day period
- the Last/Next 6hrs in 15-minute intervals for the last 6 hours and hourly for the next 6 hours.

Zooming in on the map enables you to identify detail in the rainfall image.

Last 24 hours

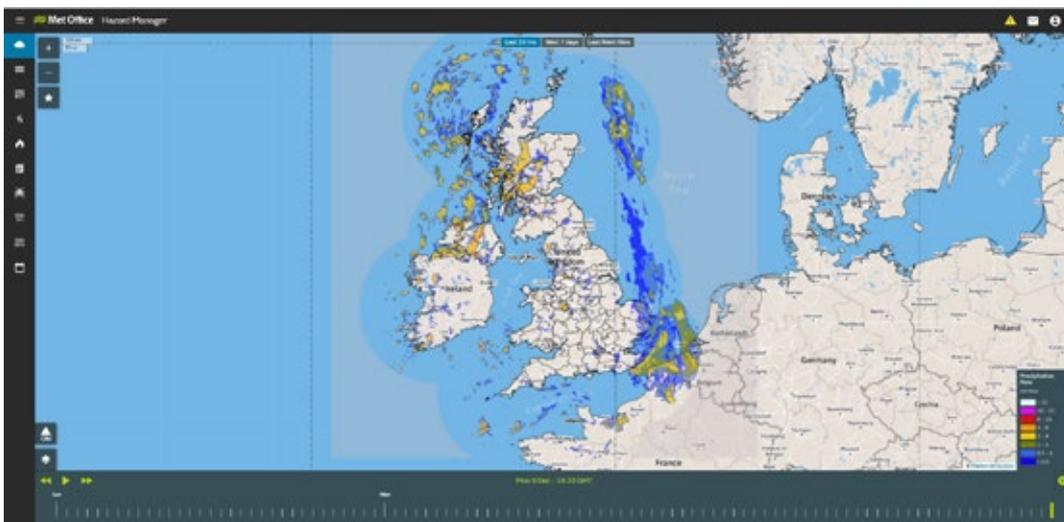


Fig 1: Precipitation rate image displayed for the whole of the UK for the last 24 hours

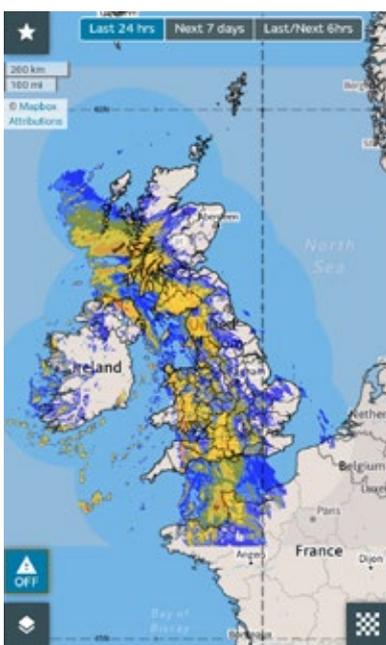


Fig 2: Mobile view of Precipitation rate for last 24 hours

How can I use this information?

The rainfall radar can be used to monitor the position and progress of precipitation, which includes rain, snow, sleet and hail, and is particularly useful when a warning of heavy rain or snow has been issued.

Using the radar, you can see how large an area of rain is and whether it is moving towards your location. By animating the radar sequence, it is possible to check the speed and direction of the rain, and gauge whether any particularly heavy rain is likely to linger in the same place for any length of time.

The radar is also useful when very heavy showers are expected but it is not possible to forecast exactly where they will form. For example, a warning for heavy rain may be in place over a large area. The warning states that “very localised torrential downpours may lead to flooding.” By monitoring the radar, you can see whether any of these downpours are developing in your area, in particular overpopulated areas that may be susceptible to surface water flooding. Animating the radar will enable you to see whether the showers are slow moving, therefore likely to be prolonged, or will pass over fairly quickly.

Rain that falls at a rate of 4 mm per hour or more is termed heavy.

It is not possible to anticipate river response using the rainfall radar, as this is much more complex and requires flood forecasting skills.



Fig 3: Precipitation rate image displayed showing detail of the heavy rain

Next 7 days

This provides a forecast of rainfall intensity displayed in millimetres per hour and how this varies spatially with time. Data is available for the next seven days at hourly time steps for up to the first 48 hours and three-hourly thereafter.

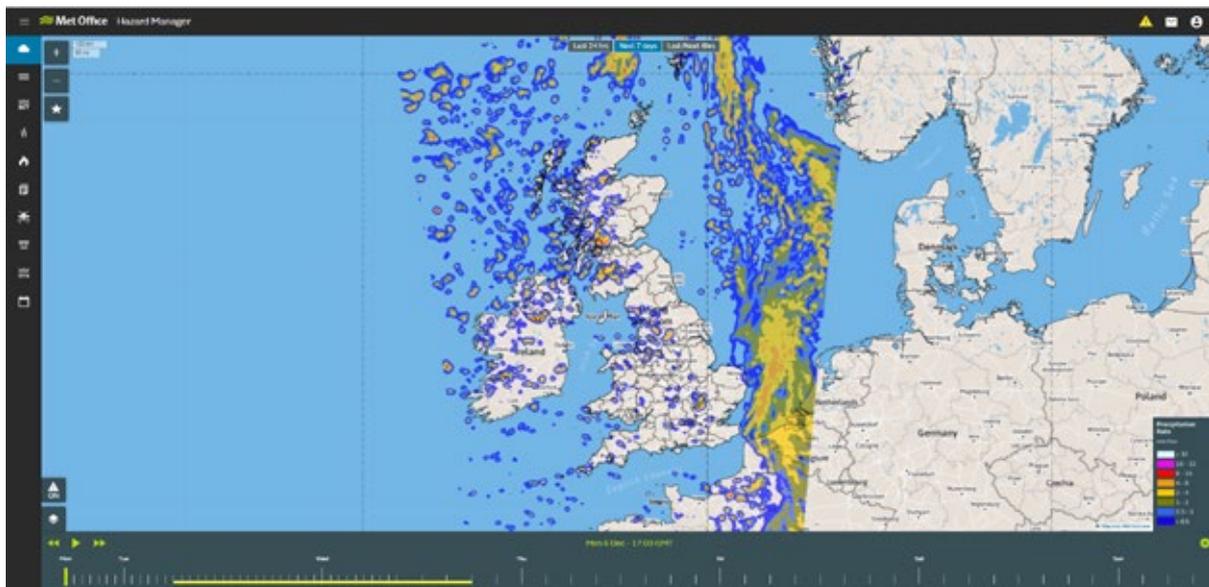


Fig 4: Precipitation rate image showing the rain across the UK for the next 7 days

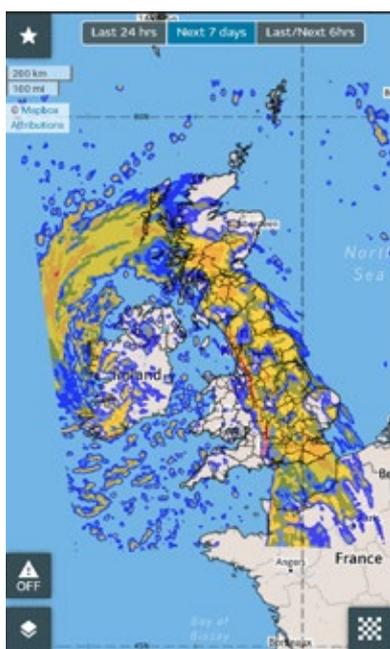


Fig 5: Mobile view of precipitation for the next 7 days

How can I use this information?

The information can be used to obtain extra detail in the event of forecast rain or when a rain warning has been issued. By using the animation tool, you will be able to see when heavy rain is most likely to affect your area, and also which parts of your area are more likely to be affected than others. When showers are forecast, model data will not pinpoint the exact location of where showers will occur. Further information in showery situations can be sought from your Met Office Advisor.

It is not possible to anticipate river response using the rainfall radar, as this is much more complex and requires flood forecasting skills

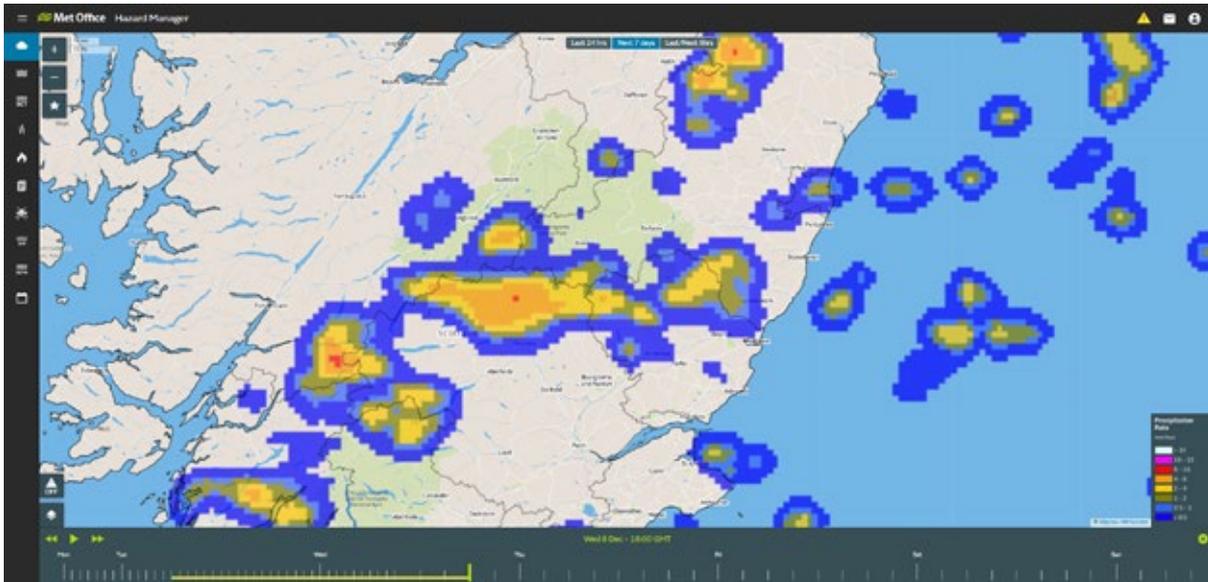


Fig 6: Precipitation Rate image showing the detail of an area of showers across parts of Scotland. Precipitation rate is the instantaneous rate at that point in time. Further detail on actual forecast rainfall amounts can be sought from your Met Office Advisor.

Last/Next 6hrs

Using a blend of real-time and forecast information this enables you to see how the weather has progressed over the previous six hours and how it is expected to develop over the following six hours.

The actual radar imagery is displayed in 15 minute timesteps over the previous six hours and the forecast data is available in hourly time-steps over the following six hours.

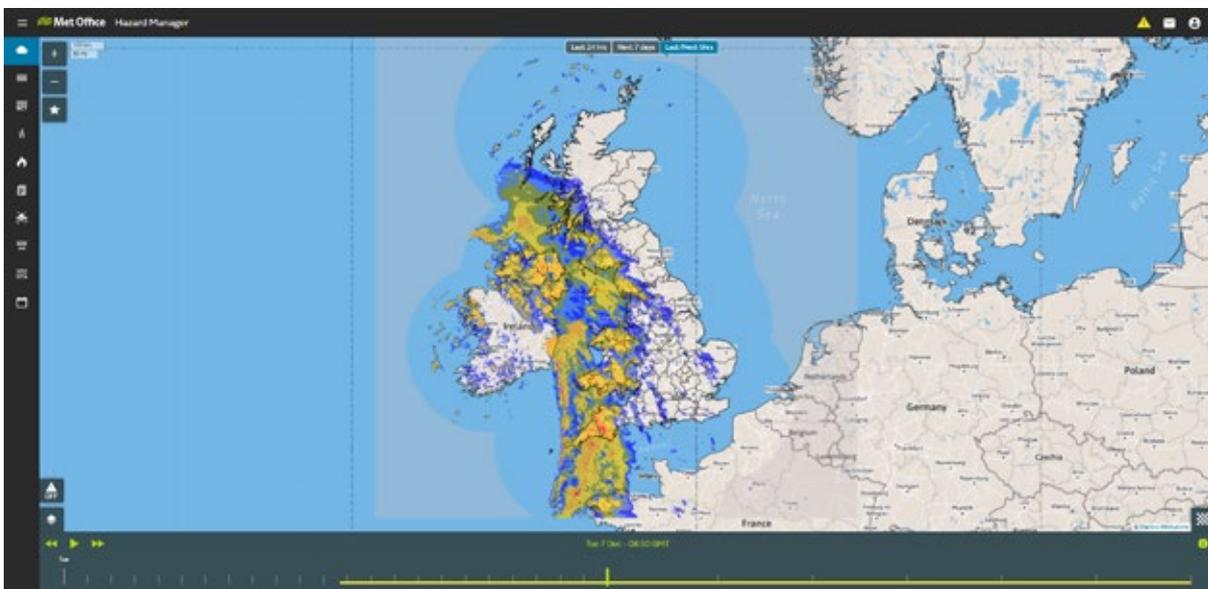


Fig 7: Precipitation Rate image showing a blend of real-time and forecast information

How can I use this information?

This information is useful when heavy rain is causing flooding incidents in your region, and you need to assess how much longer and at what rate the rain might continue.

When using the animation tool, you need to be aware that the real-time information is shown in 15-minute steps and forecast information in hourly steps. This may give the false impression the rainfall is moving more quickly in the forecast period.

You will also notice a difference in the appearance of the imagery as it moves from real-time data to forecast data. That the forecast information appears more smoothed and less detailed than the real-time information is due to differing resolutions.

Remember that when showers are forecast, the forecast model data does not pinpoint the exact location of showers. There may, therefore, be a 'jump' between the location of showers in the rainfall radar images and the forecast rain rate images.



Fig 8: Precipitation Rate layer available from the 'Last/Next 6hrs' toggle

2 Gauge Precipitation Accumulation

What is this?

A network of rainfall gauges around the UK can measure rainfall on an hourly basis. These record the amount of rainfall, in millimetres, in the hour before the time of the reading.

The information is available at hourly intervals over the previous 24 hours.

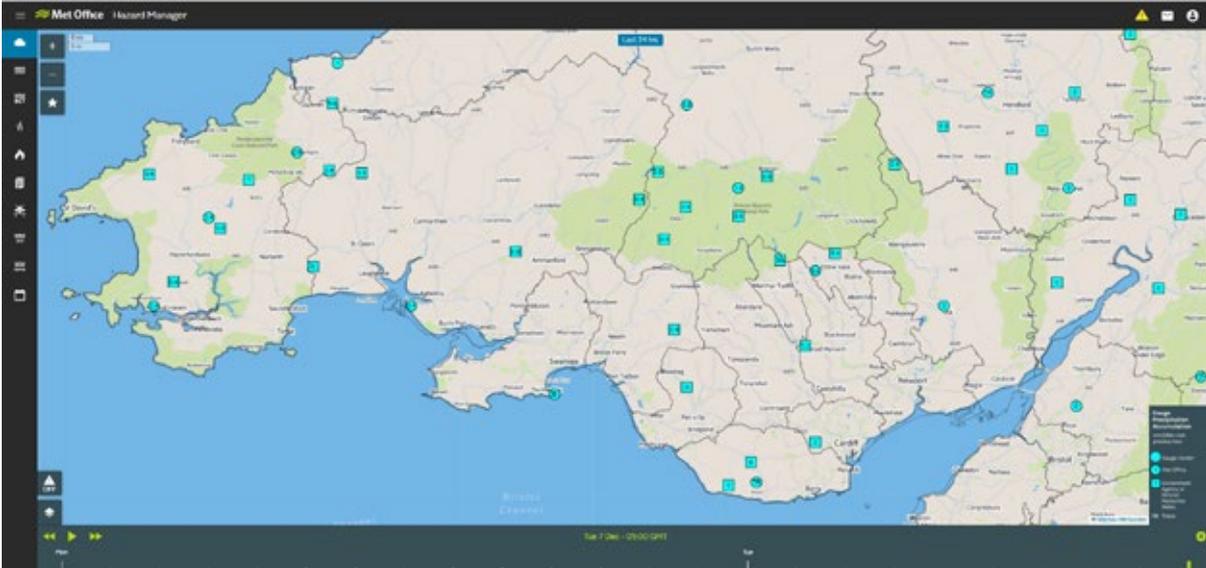


Fig 9: Gauge Precipitation accumulation image showing hourly rainfall accumulation across parts of Wales and the west Midlands. Totals vary between 0 and 3.4mm.

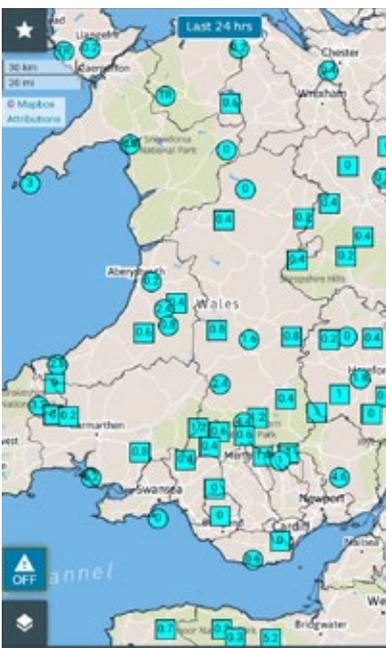


Fig 10: Mobile view of Gauge Precipitation Accumulation

How can I use this information?

Hourly rainfall data can be used to check recent rainfall amounts in your area, and to gain an idea of how much rain has fallen over the past hour or several hours. Rainfall amounts often vary markedly from place to place, so the data from one rainfall gauge may not be representative of the whole of your area.

It is not possible to anticipate river response using the rainfall radar, as this is much more complex and requires flood forecasting skills.

3 Precipitation Type

What is this?

This layer shows the type of precipitation forecast over the next seven days, including rain, snow, sleet, hail and freezing rain. Freezing rain is rain that freezes when it comes into contact with surfaces that are below 0C which can result in very icy conditions.

Data is available for the next seven days – at hourly steps for up to the first 48 hours and three-hourly thereafter.

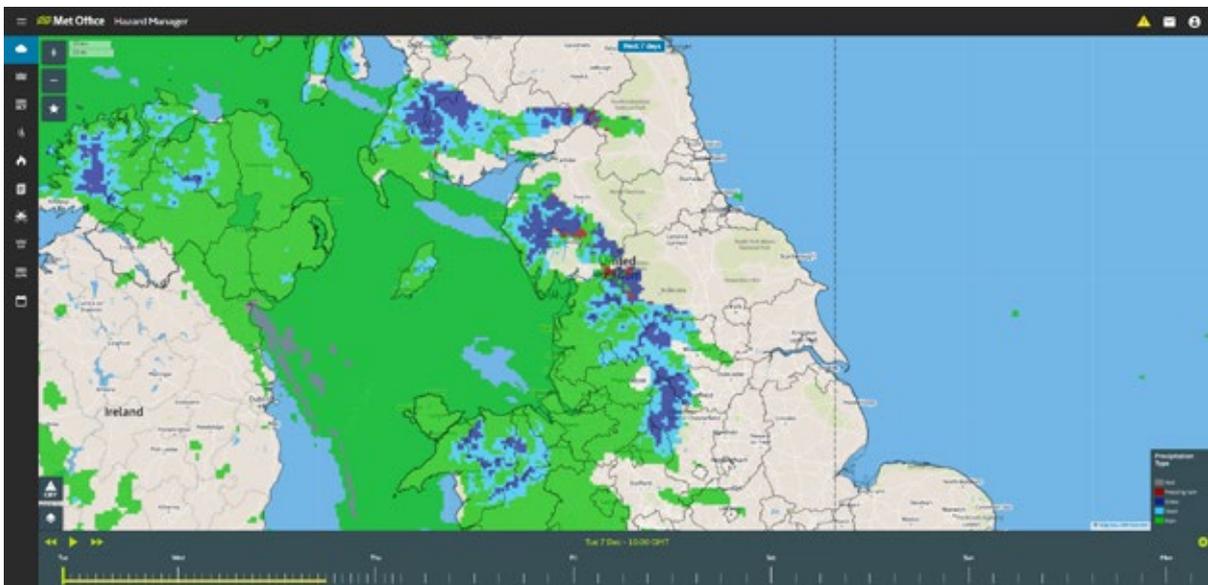


Fig 11: Image showing rain across northern England and Wales and southern Scotland.

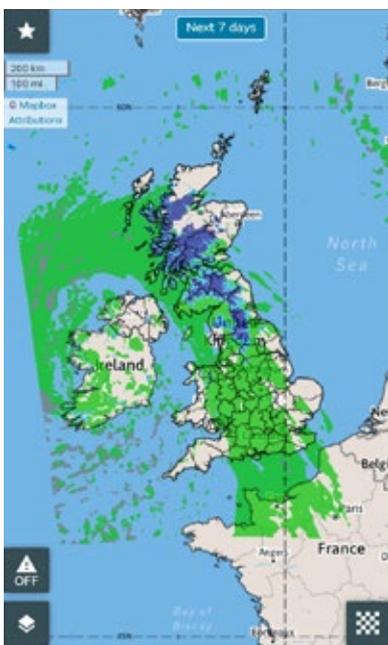


Fig 12: Mobile view of precipitation type showing rainfall across the UK

How can I use this information?

In winter months, this weather layer may prove useful when a warning indicates that rain will turn to snow. The information can help users anticipate when and where the transition may take place. Similarly, it can be used to see whether snow will be limited mostly to higher ground or will occur at lower levels. Note that the forecast cannot be used to assess whether snow will accumulate on the roads and pavements, as this depends on other factors such as the road temperature.

4 Lightning

What is this?

Lightning, which is caused by an electrical discharge in the atmosphere, is detected by a network of sensors around Europe. These sensors make it possible to pinpoint the location of the lightning. A lightning discharge may be a lightning strike, in which lightning passes between a cloud and the ground, or the passage of lightning between clouds but not to the ground.

The map shows the location and the frequency of the lightning discharges over the previous 55 minutes. The scale uses graduated colours to show the length of time from the strike. A yellow circle with a red border indicates the most recent strike whilst a deep maroon circle indicates a strike 55 minutes ago. The weather layer does not show the exact location of where lightning strikes the ground.

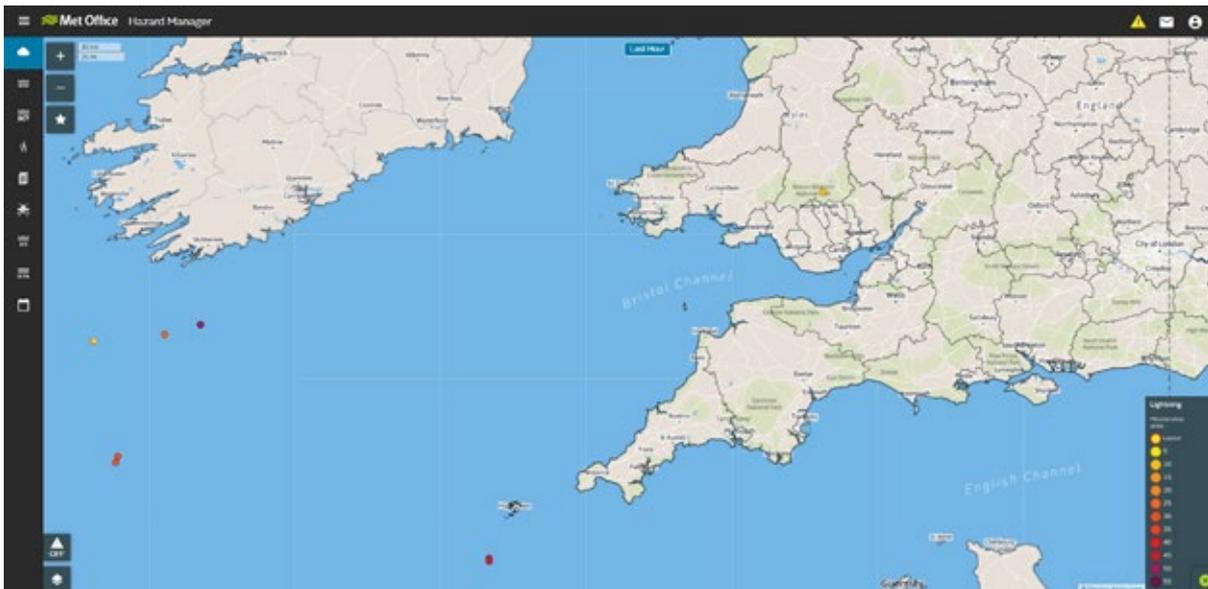


Fig 13: Image showing lightning discharges over the previous 55 minutes.

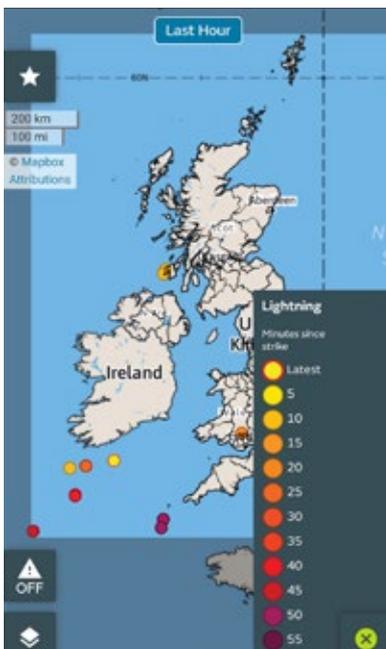


Fig 14: Mobile view of lightning over the last 55 minutes

How can I use this information?

The lightning information is very useful when monitoring the potential for lightning strikes to damage power lines, railway signals, communication masts, and buildings. Lightning can also trigger alarm systems.

5 Wind

Last 24 hours

What is this?

A network of weather stations around the UK record various weather elements, including average wind speed, wind gust speed, and wind direction. Wind data from these stations is added to Hazard Manager every hour. Wind speed is the average wind speed over the ten minutes before the time step you are examining; gust speed is the highest gust speed that has occurred during the previous hour; and wind direction is shown by an arrow at each weather station. Wind and gust speeds are displayed in miles per hour (mph), with the gust speed appearing in red above the wind speed circle. The arrow points in the direction the wind is coming from.

The images are available over the previous 24 hours at hourly intervals.

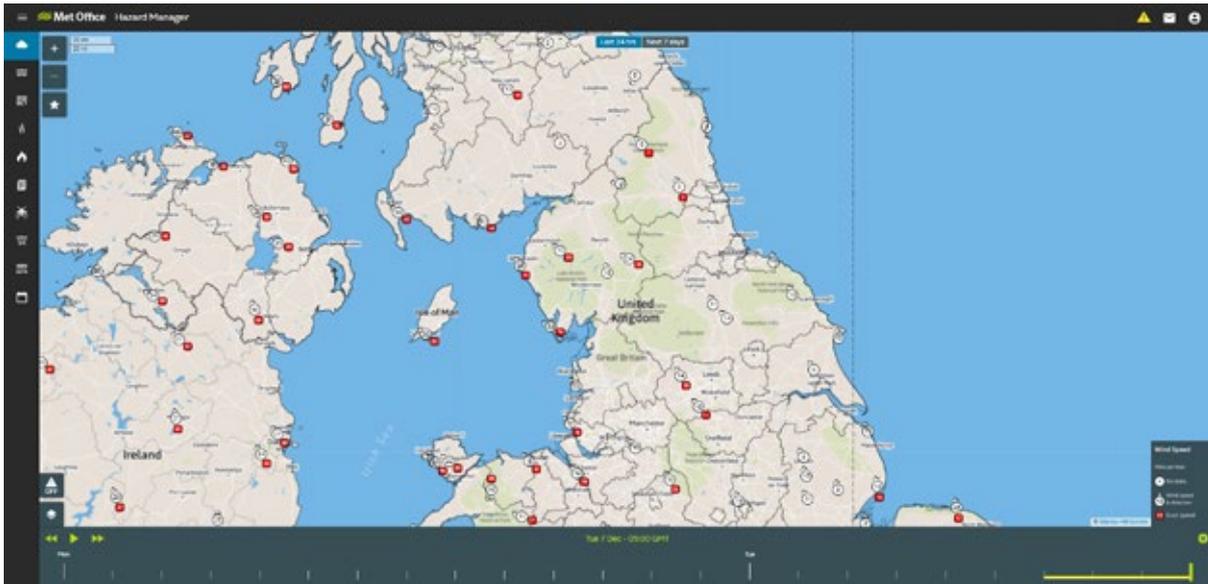


Fig 15: Observed mean wind and gusts



Fig 16: Mobile view of observed wind speed and gusts

How can I use this information?

This information is useful for monitoring wind speeds in your area, particularly when a strong wind warning has been issued. You will be able to check the latest speeds and see whether the winds are increasing or decreasing. Generally, it is the gust speeds that are of most interest, as it is gusts that usually cause most damage. High wind speeds differ in their impact across the UK, with factors such as the time of year, the ground conditions, and the resilience of an area to strong winds also being important. If you would like to know more about wind speeds and associated impacts, please contact your Met Office Advisor.

Next 7 days

What is this?

This layer shows a forecast for wind speed, gust and wind direction as an animation. By hovering your mouse over the map, a pop-up box will show giving you the wind speed and direction for that location. To show the gusts, pick the appropriate toggle at the top of the map.

Each step on the timeline is animated so in order to scroll through the steps you will need to use your mouse or arrow keys to move through each step on your desktop or scrub through the timeline on the mobile view.

Data is available over the next seven days – at hourly steps for up to the first 48 hours and three-hourly thereafter.

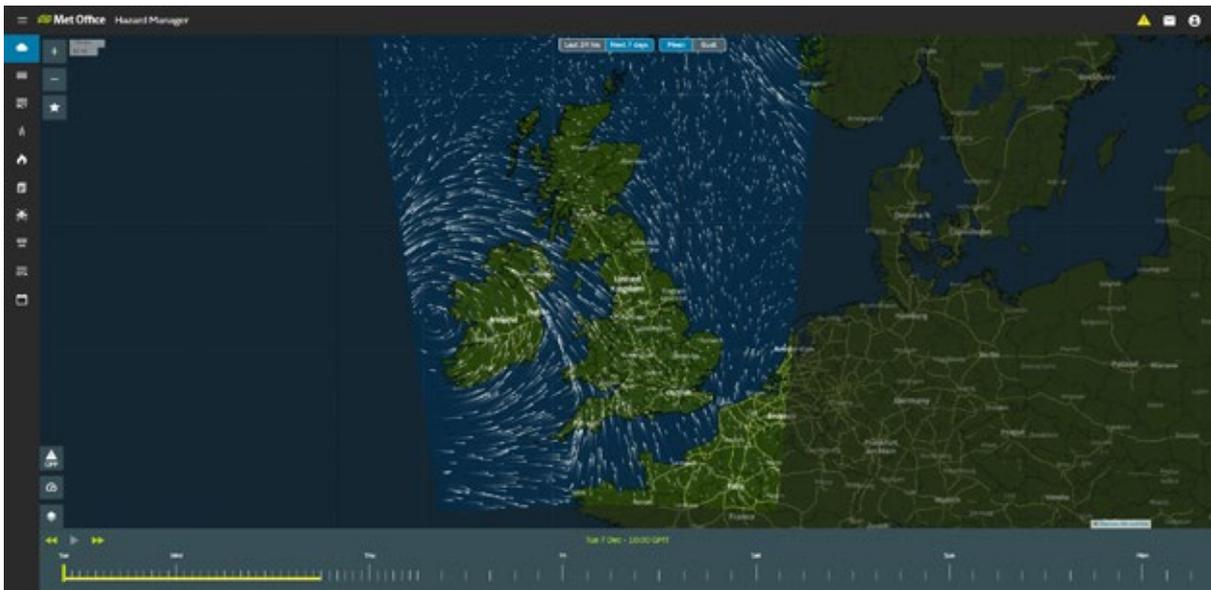


Fig 17: Mean wind speed for the next 7 days



Fig 18: mobile view of wind speeds for the next 7 days.

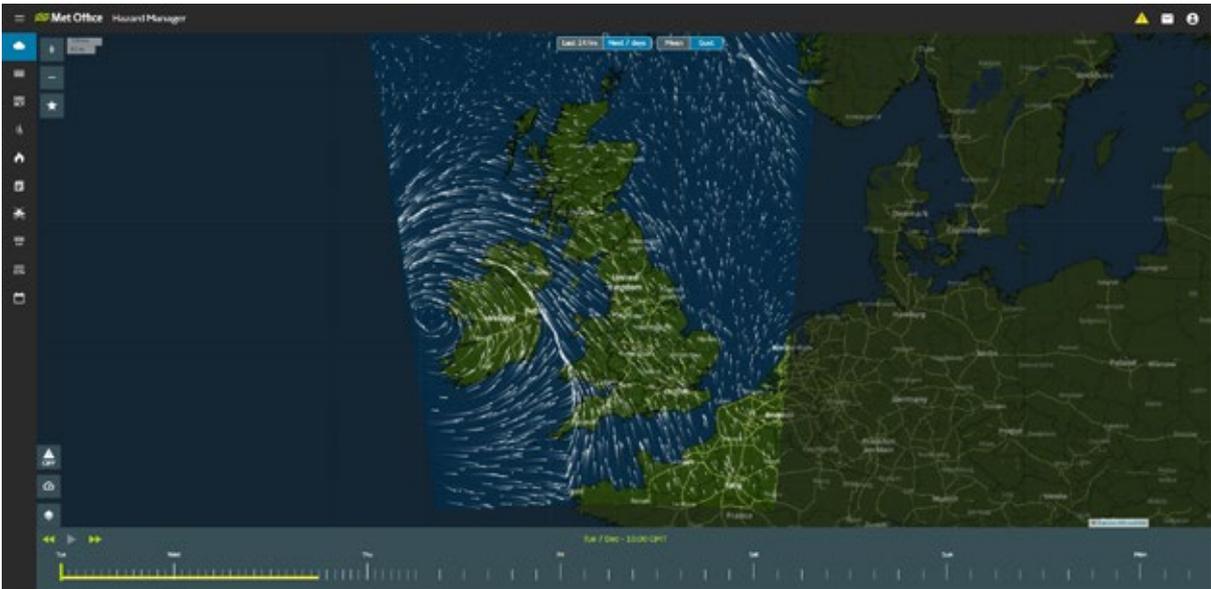


Fig 19: Gusts for the next 7 days

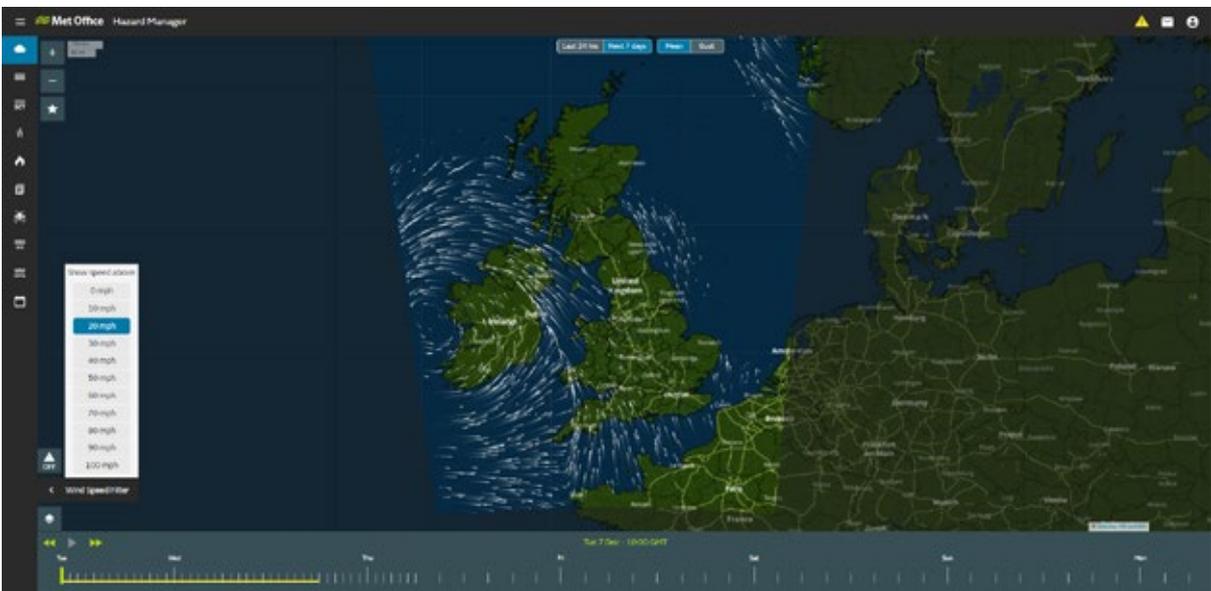


Fig 20: Filtering the mean wind speed to show areas above 20mph

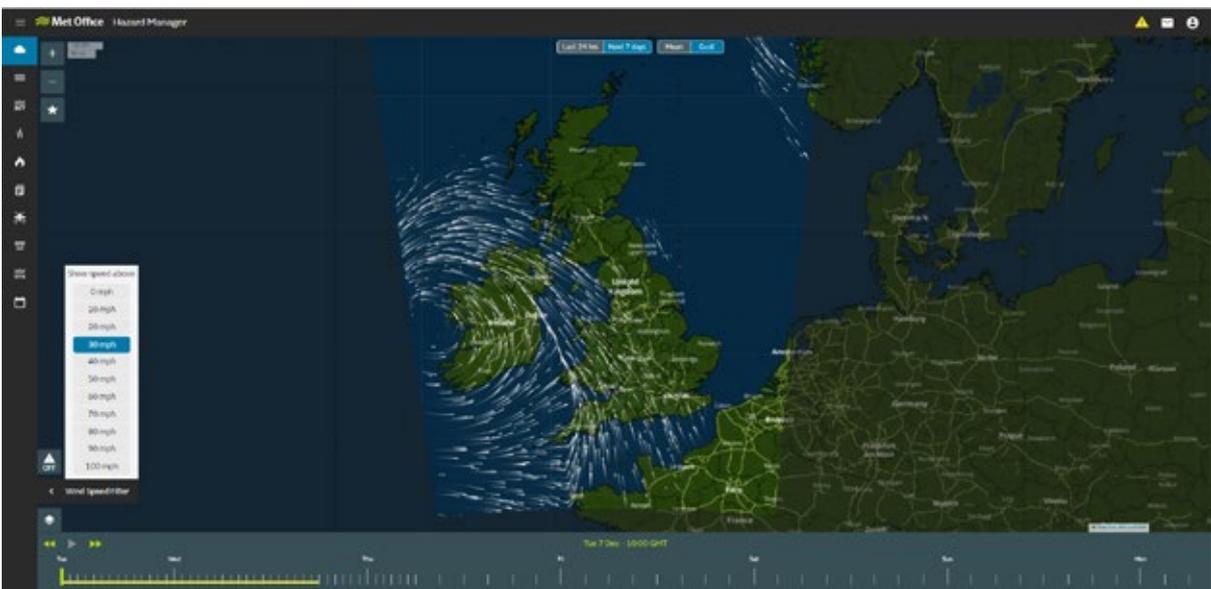


Fig 21: Filtering the gusts to show gusts above 30 mph

How can I use this information?

This information is useful when a wind warning is in force and more information is needed regarding the timing of the strongest gusts and the wind direction. You can then see whether some parts of your area may be more exposed than others, and therefore anticipate possible impacts, such as road or bridge closures.

You are also able to filter the wind layer by wind speed. If there is a wind speed or gust at which you would start to see more impacts, you can add a filter to the wind layer to only show you the mean wind speed or gusts above these levels.

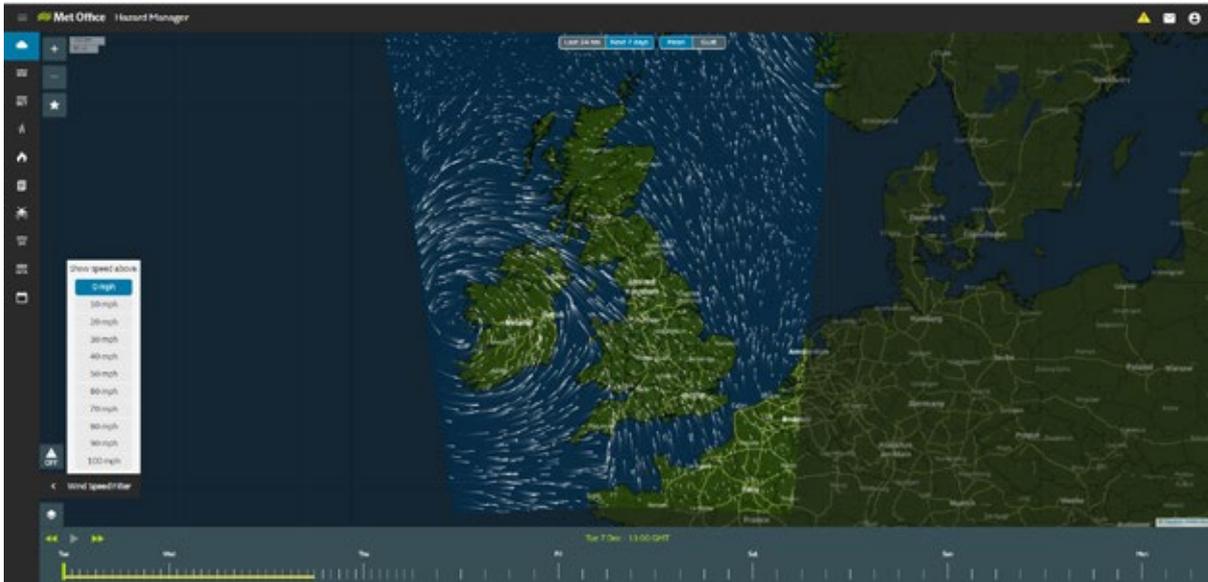


Fig 22: Image showing the mean wind speed for the next 7 days and the Wind speed filter menu.

6 Temperature

What is this?

This layer gives forecast air temperature across the UK, measured on the Celsius scale. The temperatures are displayed according to a colour-coded scale. Data is available over the next seven days – at hourly steps for up to the first 48 hours and three-hourly thereafter.

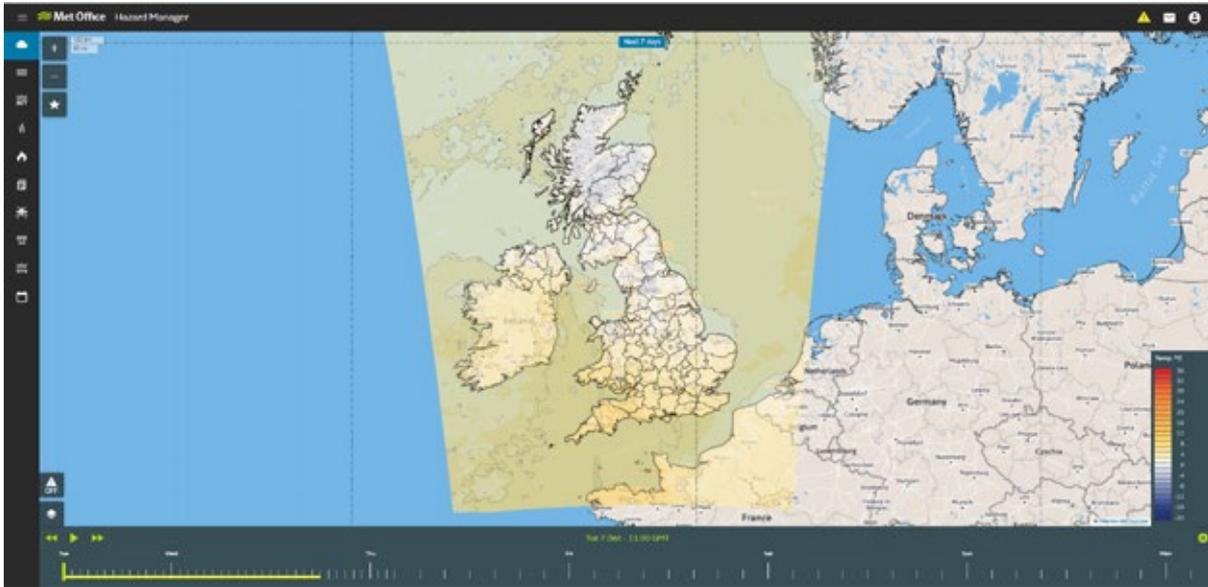


Fig 23: Forecast temperature displayed for the UK.

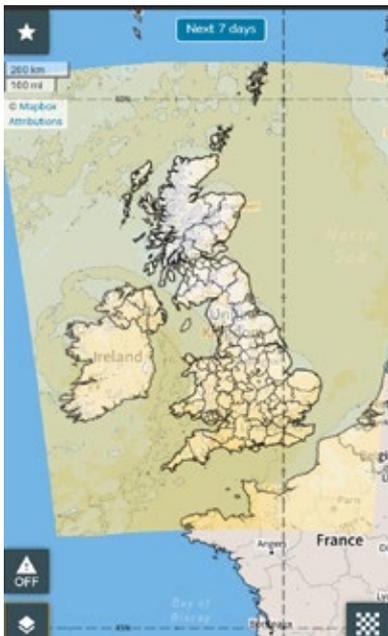


Fig 24: Mobile view of forecast temperatures

How can I use this information?

This information is useful for general temperature forecasts, but also in times of extreme temperatures, such as cold snaps in winter and heatwave conditions in summer. The information can help identify whether there are likely to be any regional differences, such as the variation in temperature between coastal and inland areas. The data may also be useful in assessing how persistent a period of hot or cold weather is likely to be. It is important to note that the forecast relates to outside air temperature, which means that it cannot be used to determine road temperatures and temperatures inside buildings.

7 Visible Satellite

What is this?

Visible satellite images are essentially a black and white photograph of the Earth's atmosphere and surface. Objects that reflect most light, such as cloud, appear whiter than objects that reflect less light, such as land. Thicker clouds appear whiter than thinner clouds. The scale on the legend indicates albedo (or reflectivity) on a scale from 0 to 1.

Visible satellite images are available only during daylight hours – at 15-minute intervals.

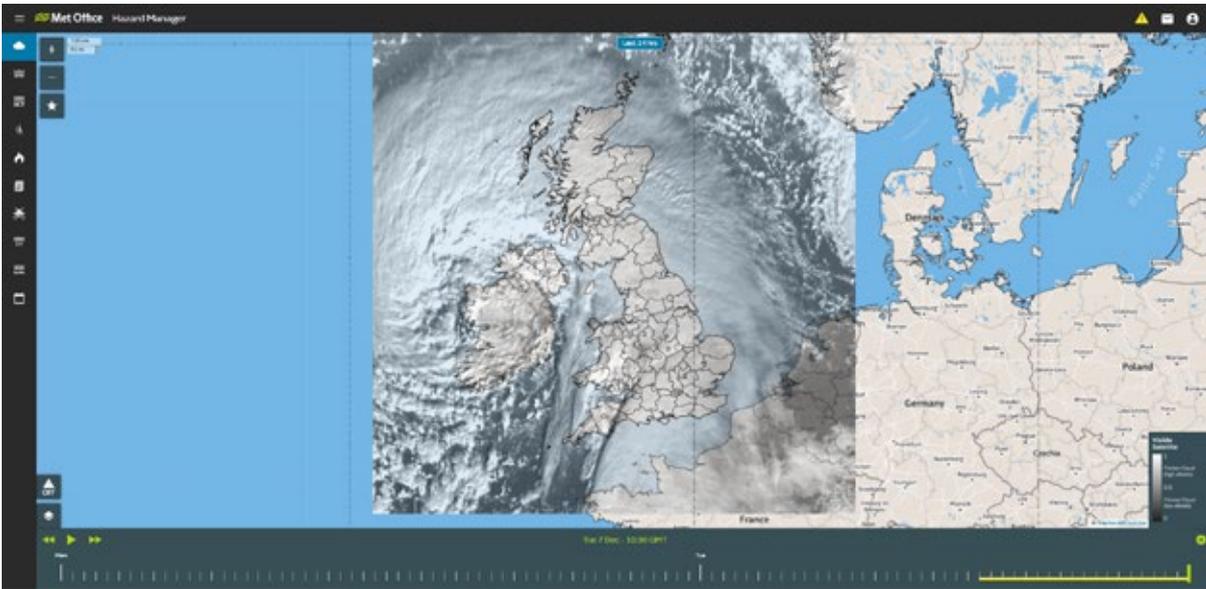


Fig 25: Visible Satellite image displayed across the UK.

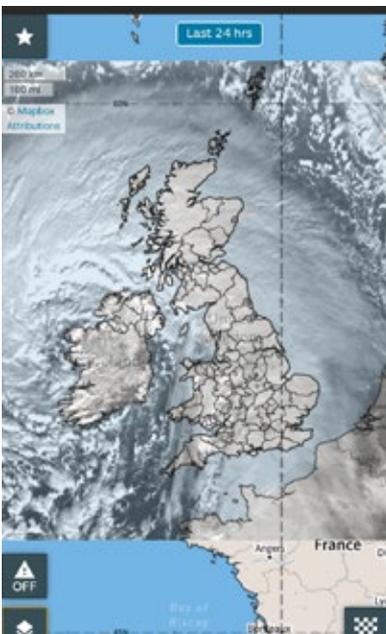


Fig 26: Mobile view of visible satellite image

How can I use this information?

Satellite imagery can be used to monitor the progress of a storm approaching the UK that has been highlighted in the weather forecast or mentioned in information from your Met Office Advisor.

The satellite images available in Hazard Manager cannot be used to monitor plumes such as volcanic ash or pollution from an industrial incident.

8 Infrared Satellite

What is this?

Infrared satellite images detect infrared radiation to measure the temperature of the Earth's surface and atmosphere. The images show land, sea and cloud temperatures. Whiter shading indicates lower temperatures and blacker shading indicates higher temperatures. Clouds in the higher and colder part of the atmosphere will appear white, whereas lower clouds, the land and the sea, which are warmer, will appear blacker. The legend uses the Celsius temperature scale. Infrared satellite images are available both day and night.

The images are available over the previous 24 hours – at 15-minute intervals.

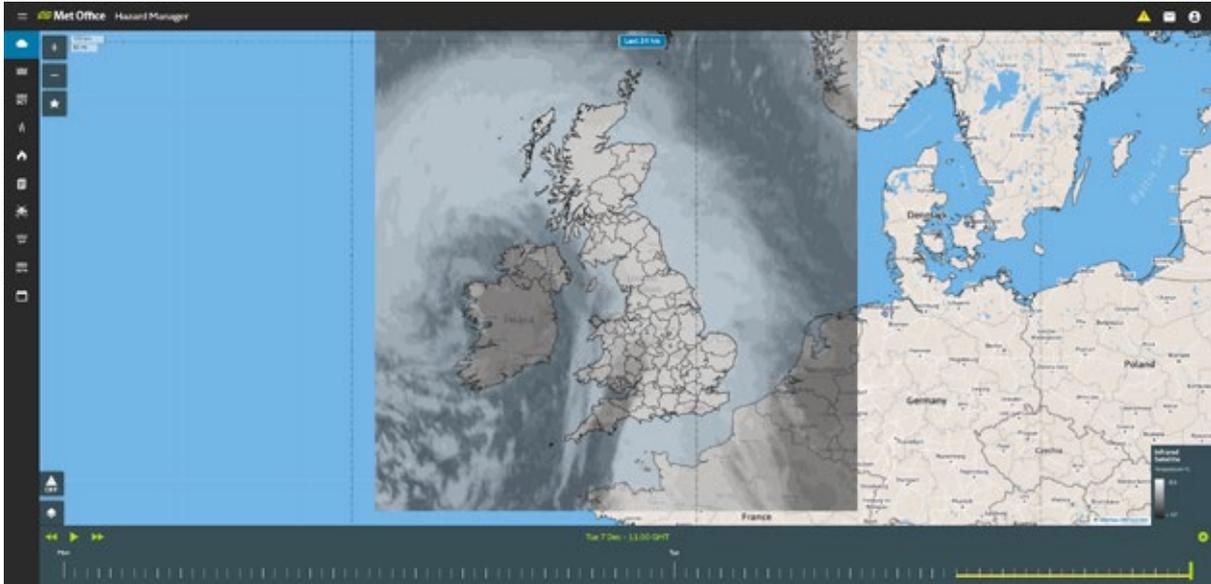


Fig 27: Infrared satellite image displayed for the UK

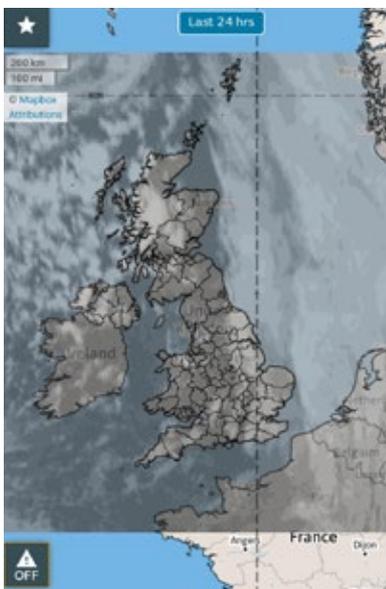


Fig 28: Mobile view of infrared satellite image.

How can I use this information?

Satellite imagery can be used to monitor the progress of a storm approaching the UK that has been highlighted in the weather forecast or mentioned in information from your Met Office Advisor.

The satellite images available in Hazard Manager cannot be used to monitor plumes such as volcanic ash or pollution from an industrial incident.

9 Pressure

What is this?

This layer shows a forecast of air pressure. Air pressure is displayed using isobars (lines of equal air pressure). The units of measurement are hectopascals (hPa), which are also known as millibars (mb). The isobars are spaced at 4 mb intervals. This information is best viewed when zoomed out on the map.

Data is available over the next seven days – at hourly steps for up to the first 48 hours and three-hourly thereafter.

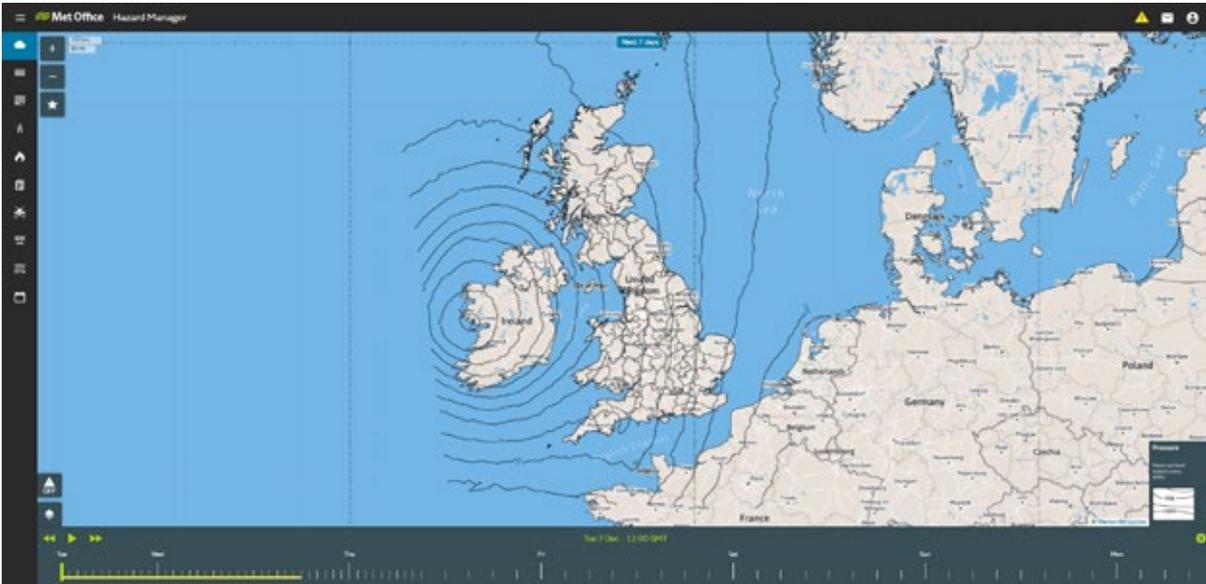


Fig 29: Forecast air pressure displayed using isobars.



Fig 30: Mobile view of pressure displayed as isobars

How can I use this information?

This information can be useful when forecasts indicate that a deep area of low pressure is expected to affect the UK.