

Storms Isha and Jocelyn, 21 to 24 January 2024

Storms Isha and Jocelyn, the ninth and tenth named storms of the 2023-2024 storm season, arrived in quick succession in late January 2024. The storms were influenced by a powerful jet stream which was intensified by a large contrast in temperature across North America caused by a pool of cold air over Canada and the United States sinking south. Storm Isha brought widespread strong winds, particularly across the northern half of the UK, on 21 to 22 January 2024, where winds gusted at 60 to 70Kt (69 to 81mph), including a gust of 86Kt (99mph) in Northumberland. The Met Office issued an extensive amber warning covering over half of the UK's land area, while an overnight red warning for wind was issued for parts of north-east Scotland. In terms of widespread gusts across the UK overall, Isha was the most significant major wind storm to affect the UK since storm Eunice on 18 February 2022.

Storm Jocelyn, named by the Irish meteorological service Met Éireann, was less severe for the UK overall, but wind gusts were still very strong across northern areas. Cairngorm Summit recorded a gust of 122Kt (140mph).

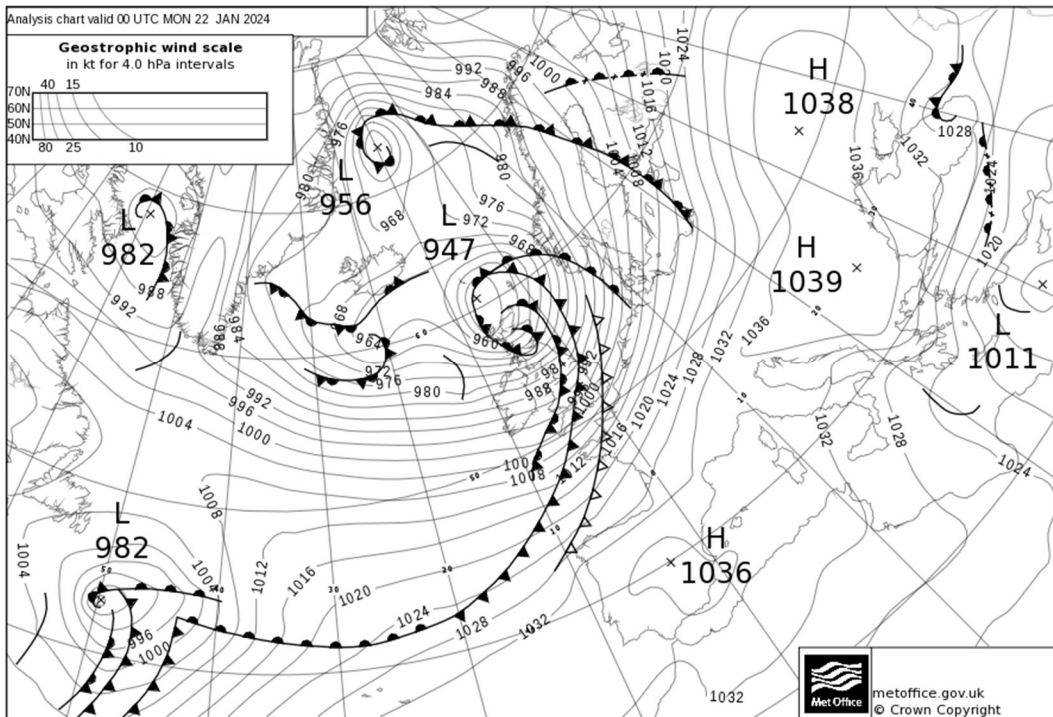
Weather impacts

Storm Isha brought widespread impacts, with numerous reports of fallen trees and damage to buildings. Two people died in Scotland and Northern Ireland when their cars hit fallen trees. Hundreds of thousands of properties in Scotland, Northern Ireland, north-west England and Wales experienced loss of power. There was widespread transport disruption to road, rail and air. All train services across Scotland were suspended. Dozens of flights were re-routed or cancelled with some flights to the UK diverted to France, Germany or the Netherlands. A section of the M6 motorway, and the A66 trans-Pennine link were closed, while a number of high-sided vehicles were overturned by the winds. Many ferry services were also cancelled. Operations at the Sellafield nuclear site were temporarily suspended. Flooding affected parts of Cumbria and North Wales, and in the Lake District two fell walkers were rescued by Mountain Rescue volunteers in a major operation.

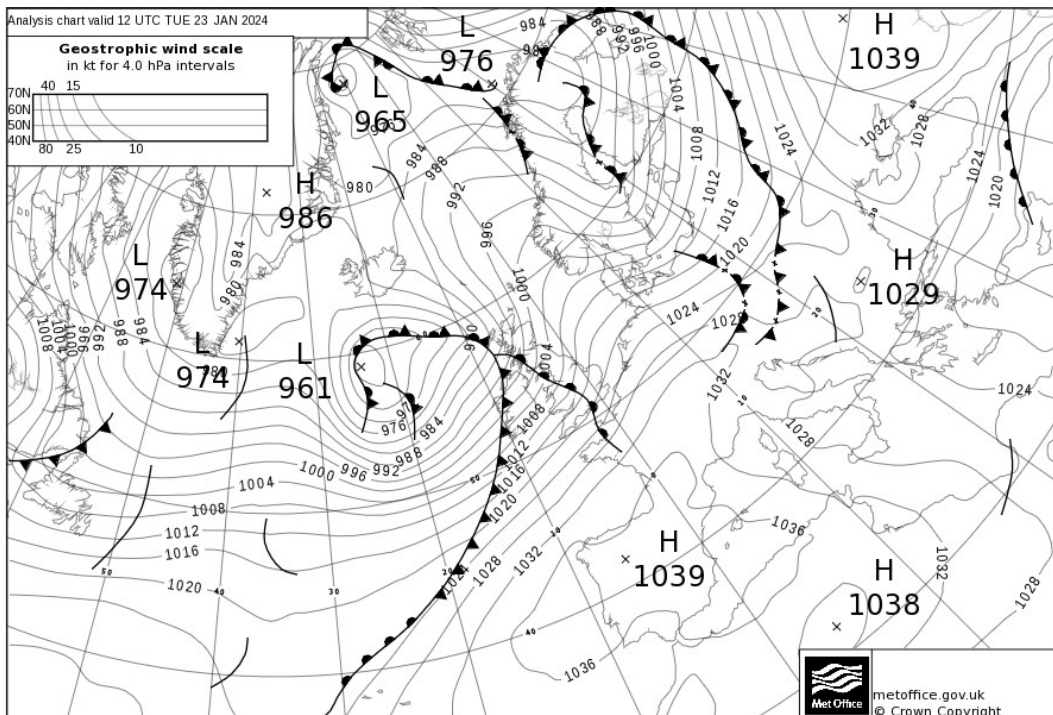
Storm Jocelyn caused further disruption although wind impacts were generally less than for storm Isha. However, this storm hampered clear-up and recovery operations in the aftermath of the earlier storm.

Weather data

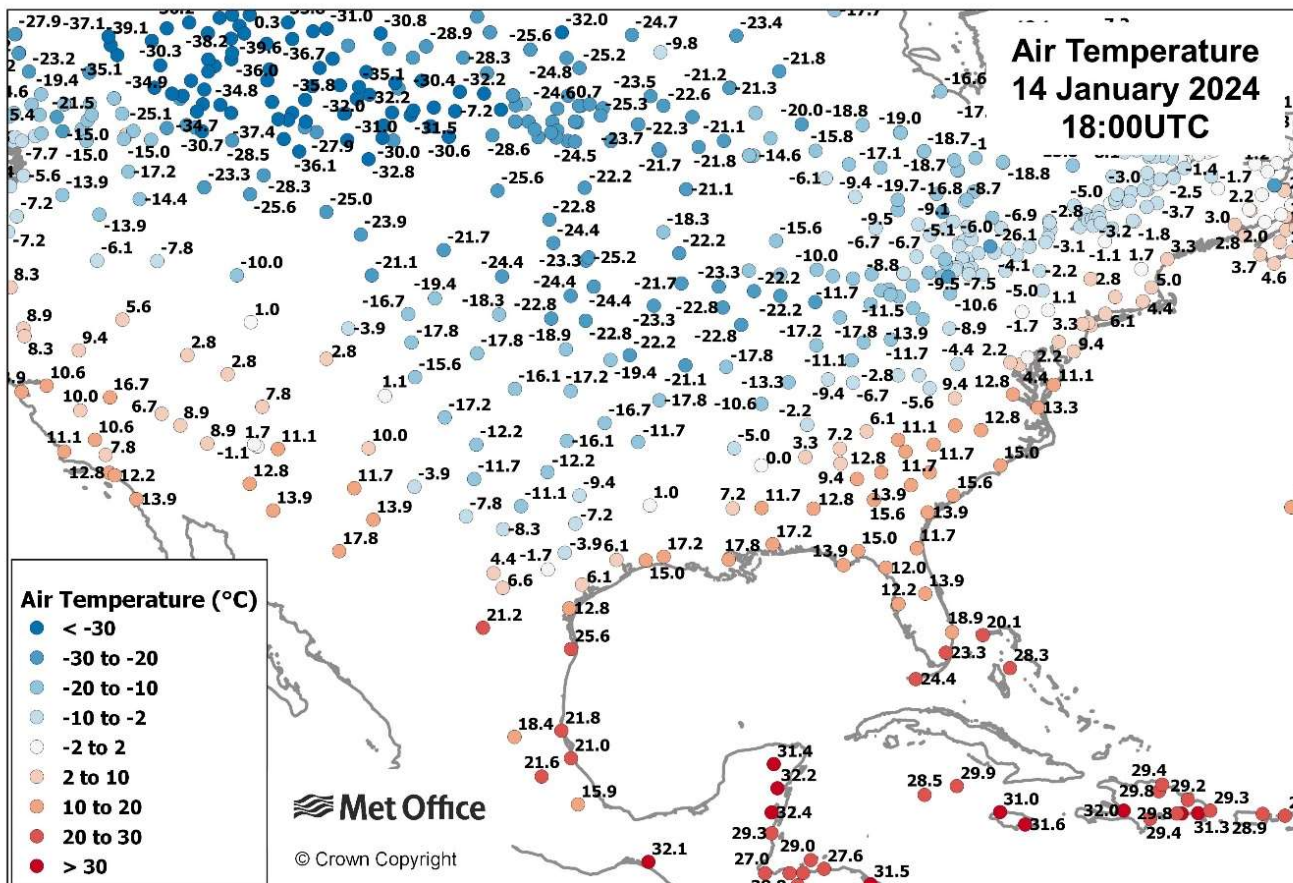
The analysis chart at 0000 UTC 22 January 2024 shows storm Isha to the north of Scotland with associated fronts sweeping across the UK. The tightly packed isobars indicate the strength of the winds, particularly across the northern half of the UK.



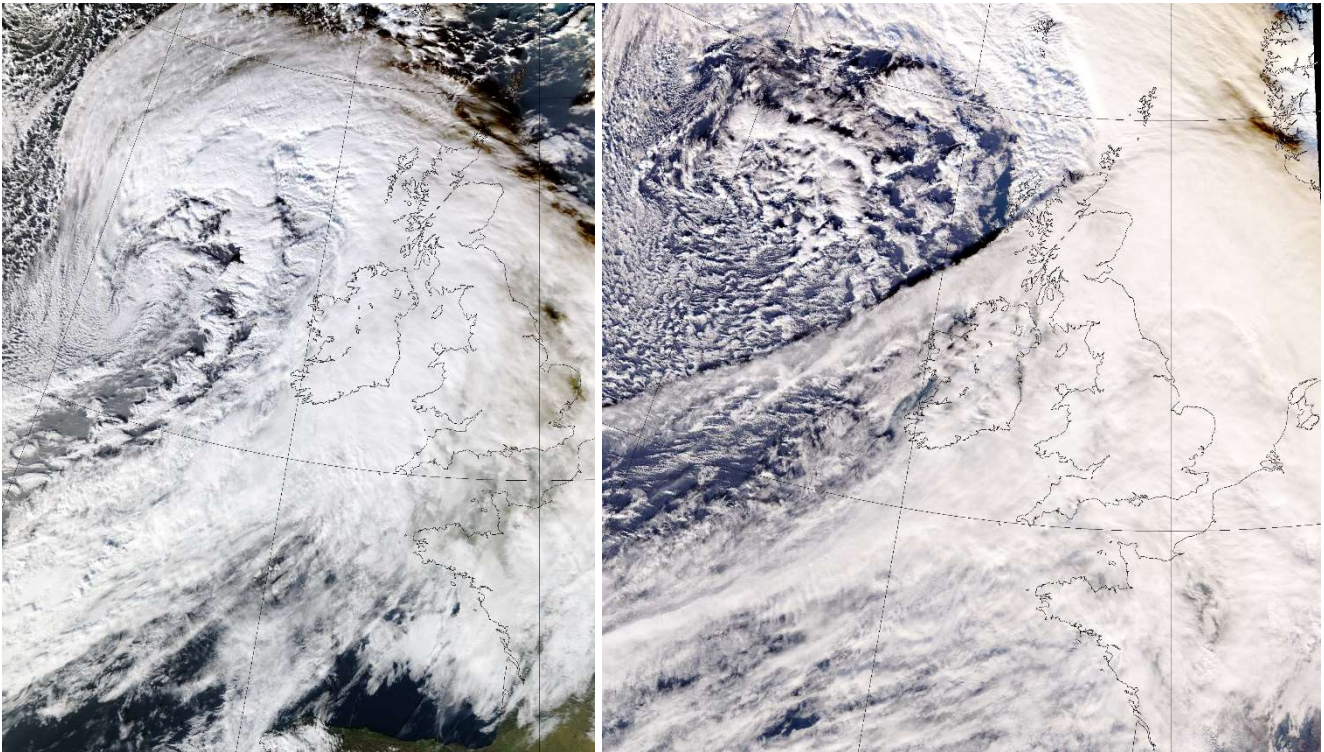
The analysis chart at 1200 UTC 23 January 2024 – 36 hours later - shows the next named storm, Jocelyn, with the low centre again to the north-west of Scotland and associated fronts sweeping across the UK. This storm was slightly less intense than Isha with a central pressure of 961hPa, compared to 947hPa for storm Isha.



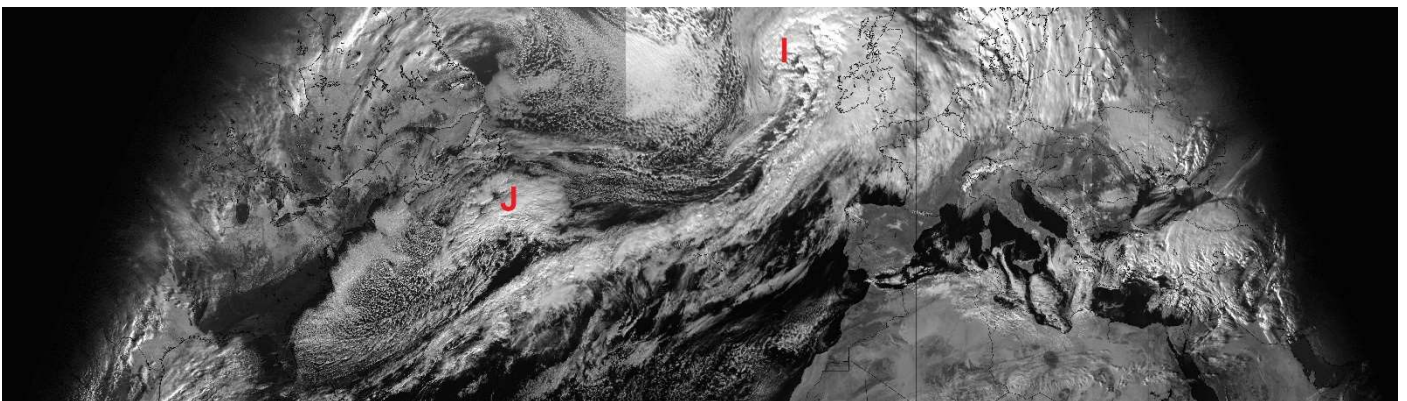
Storms Isha and Jocelyn were both driven by a powerful jet stream. This jet stream was intensified by a dramatic temperature contrast across the North American continent due to a pool of very cold air sinking southwards. This caused a very large temperature gradient with temperature ranges of 40°C in 1000 miles and 60°C in 2000 miles. The chart below shows hourly air temperatures at 18:00UTC on 14 January 2024 (around the middle of the day local time). Air temperatures were -15 to -20°C widely across the central United States, reaching below -35°C in parts of southern Canada. In contrast, temperatures were around +15°C on the Gulf Coast of the United States, the mid 20s °C in southern Florida and +30°C in parts of Mexico and the Caribbean. The extremes of temperature on this map clearly illustrate the fundamental difference between a continental climate such as this, and the mild, temperate climate of the UK.



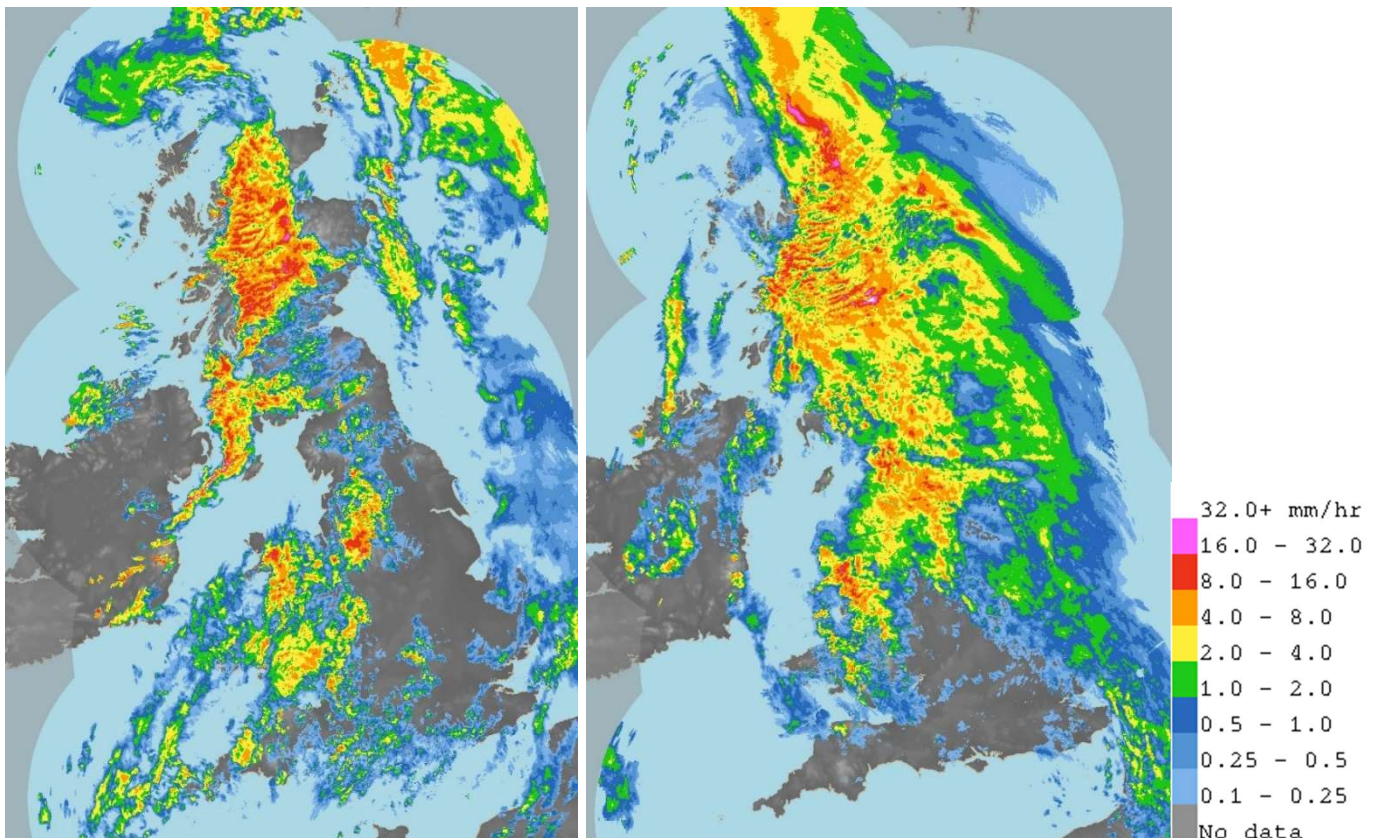
The visible satellite images below show the UK almost entirely swathed by cloud from weather fronts from storm Isha (left, 21 January 2024) and storm Jocelyn (right, 23 January 2024). Images copyright Met Office / NOAA / NASA.



The visible satellite image below on 21 January 2024 shows storm Isha approaching the UK (top centre), with Jocelyn developing in the western Atlantic. The image shows Earth's 'terminator' lines of sunset (far right) and sunrise (far left). Image copyright Met Office / NOAA / NASA.



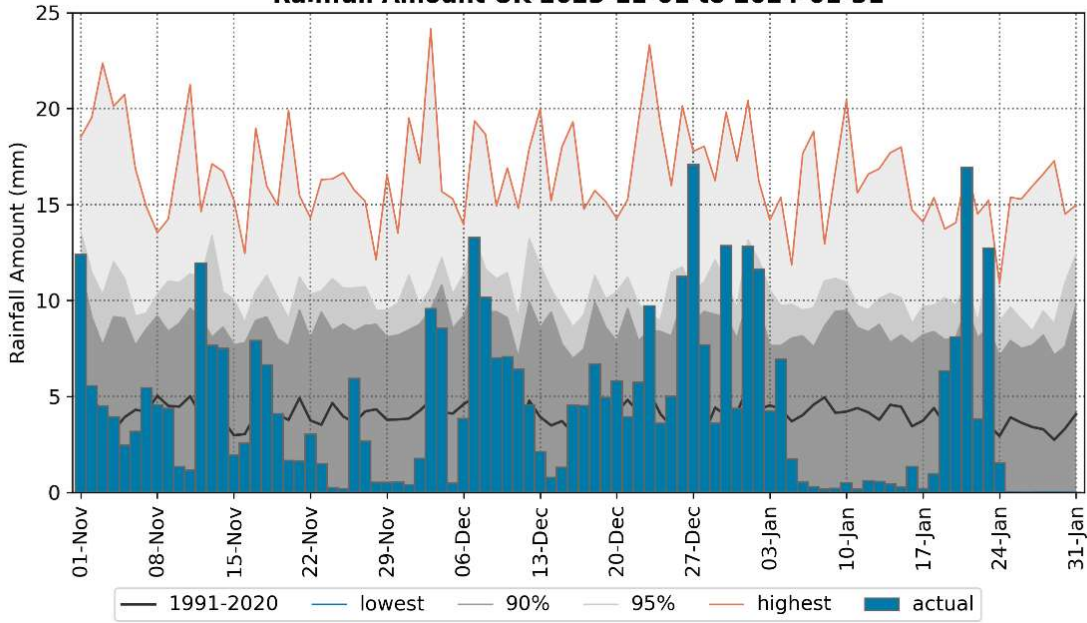
The rain-radar images show heavy rain across north-western parts of the UK from these two named storms: left – storm Isha 1900UTC 21 January 2024, right – storm Jocelyn, 1200UTC 23 January 2024.



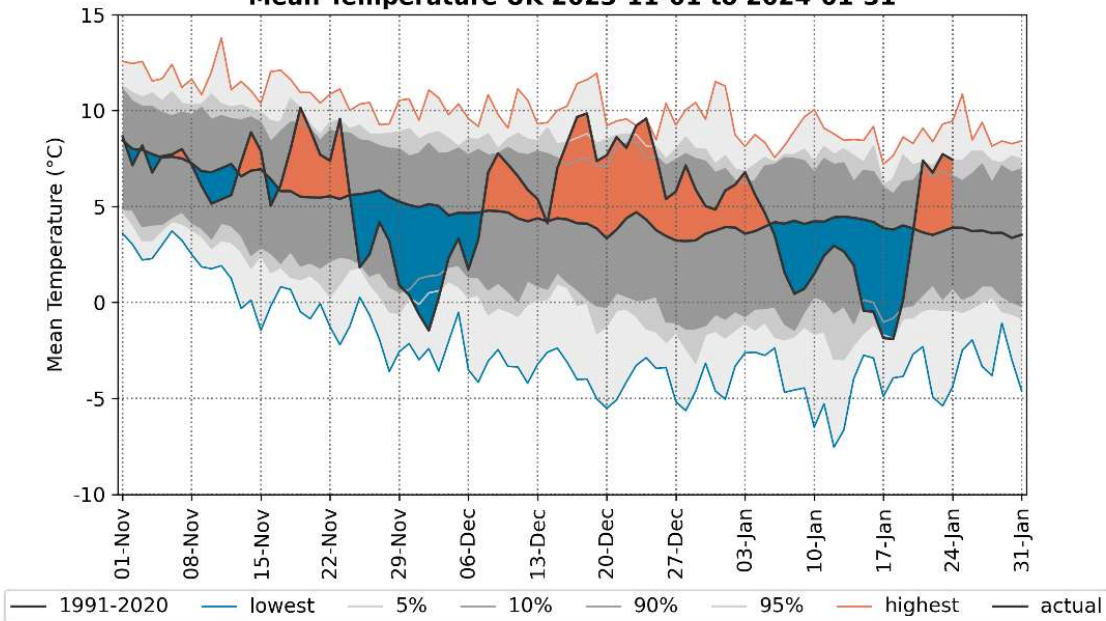
Both storms brought some very wet weather to the UK, particularly across western upland areas which received over 50mm widely, and in places over 100mm. However, flood risk was diminished due to the previous fortnight of cold, dry weather from early January following storm Henk – this dry spell providing some respite. The chart below shows average UK rainfall for each day from 1 November 2023 to 24 January 2024 compared to the same metric from a baseline period 1991-2020. The dry period can be seen through much of January (5th to 18th) separating storms Henk and Isha.

The second chart below shows average daily mean temperature for the UK for the same period, 1 November 2023 to 24 January 2024, again compared to the average for 1991-2020. This shows the periods of cold weather in late-November to early-December (between storms Debi and Elin) and in January (between storm Henk and storm Isha). Isha and the preceding weather system swept aside the cold air across the UK, with a return to much milder, wetter conditions and a temperature rise approaching 10°C. For example, the daily minimum temperature at Shoreham Airport, West Sussex (on the south coast) increased from -7.1°C on 19 January to +8.6°C on 22 January – over 15°C in just three days.

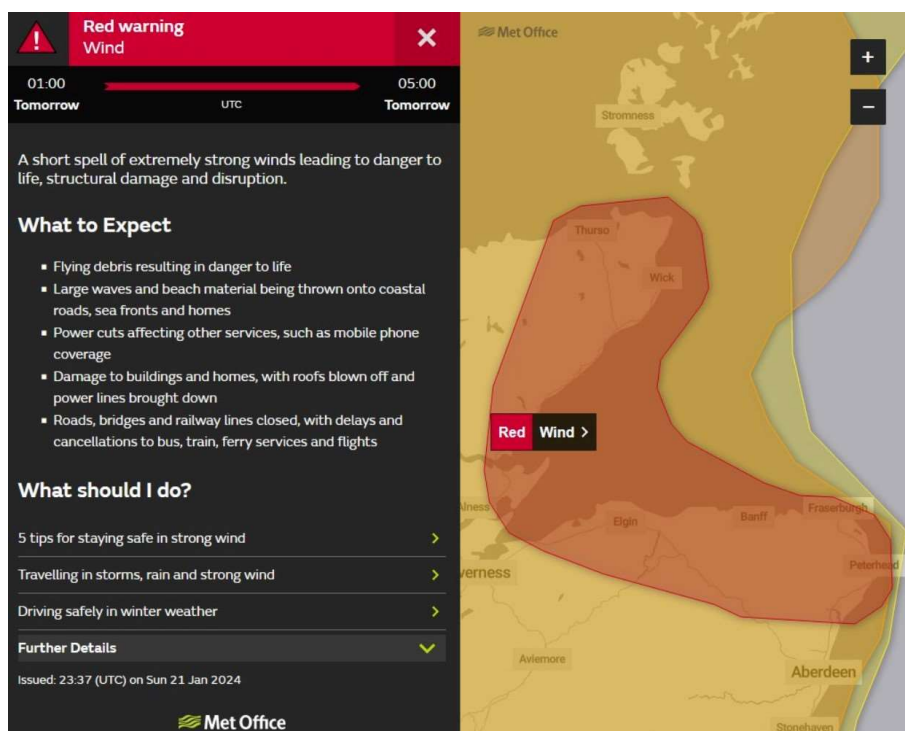
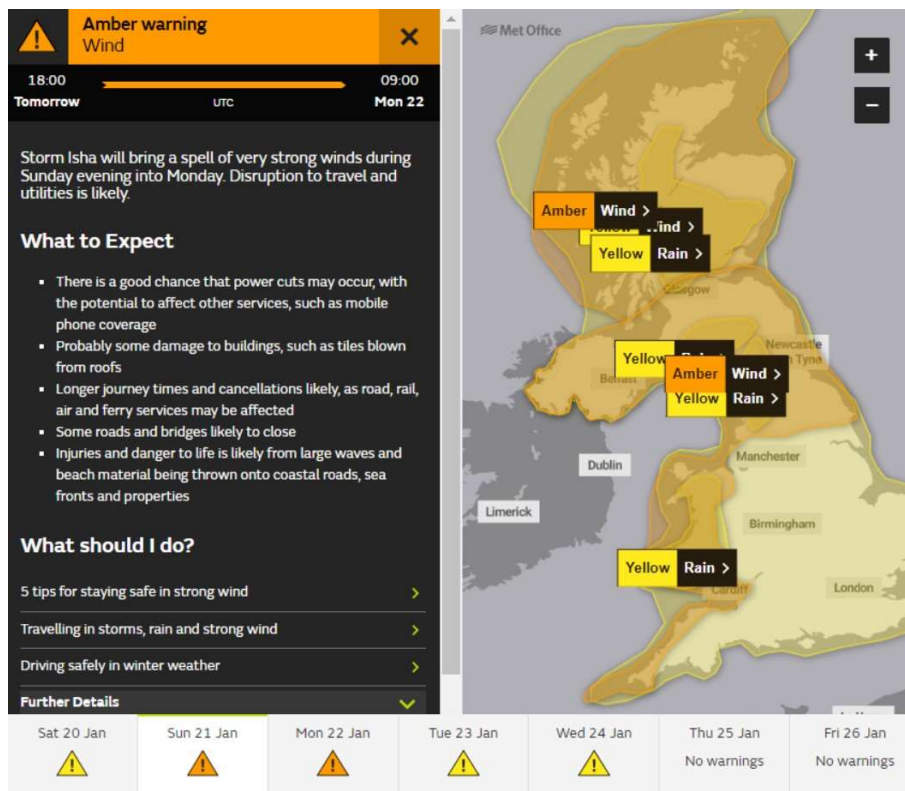
Rainfall Amount UK 2023-11-01 to 2024-01-31



Mean Temperature UK 2023-11-01 to 2024-01-31

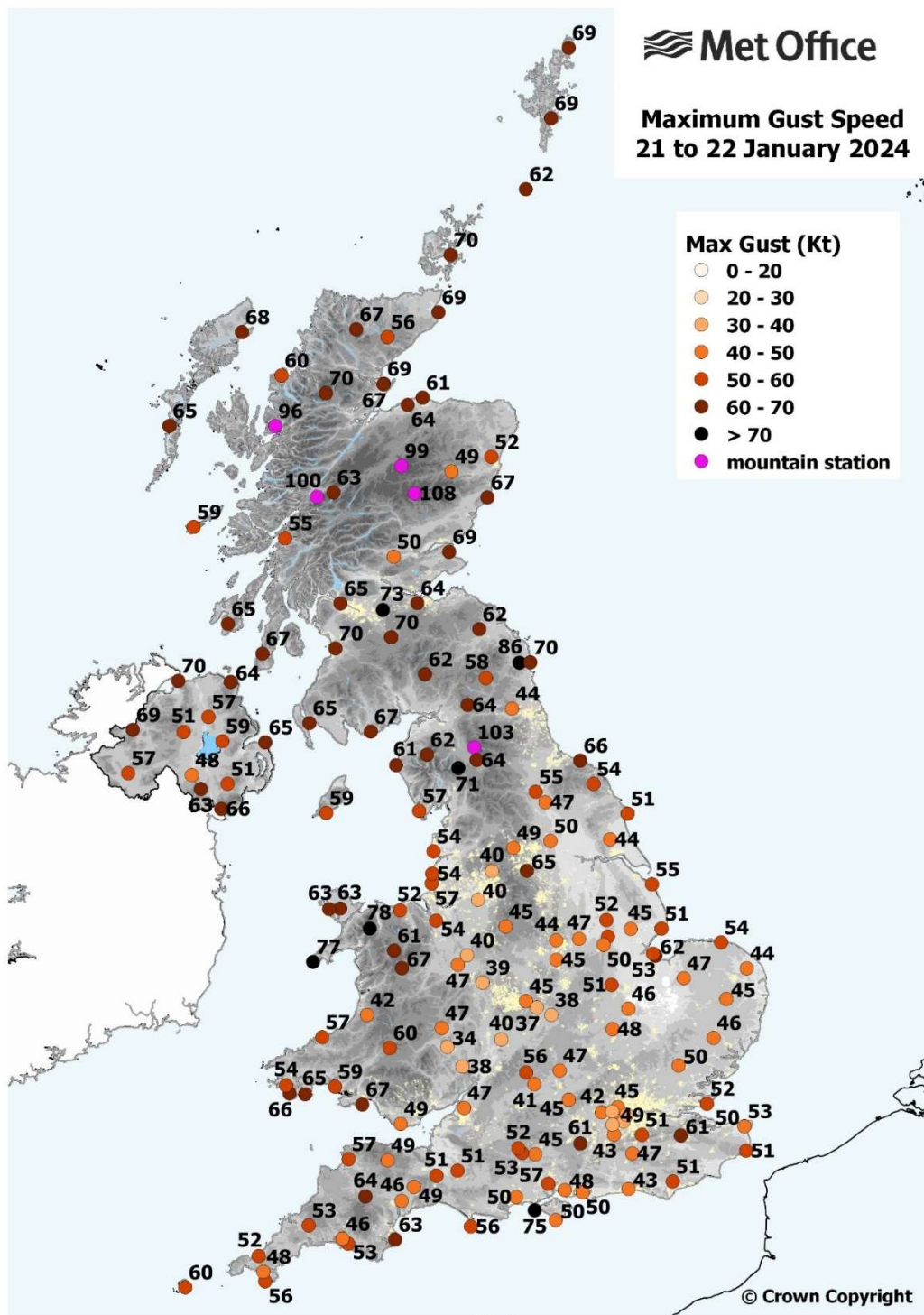


The Met Office issued amber warnings for wind for storm Isha covering much of Scotland, Northern Ireland, Wales northern and parts of south-west England. The extent of this warning area is shown below. It is unusual for such an extensive area to be covered by an amber warning; the wide extent being a key reason for the significant wind impacts from this storm. A red warning for wind was also issued for parts of north-east Scotland as shown in the second image below. Previously, the most recent red warning for wind was from storm Eunice on 18 February 2022.

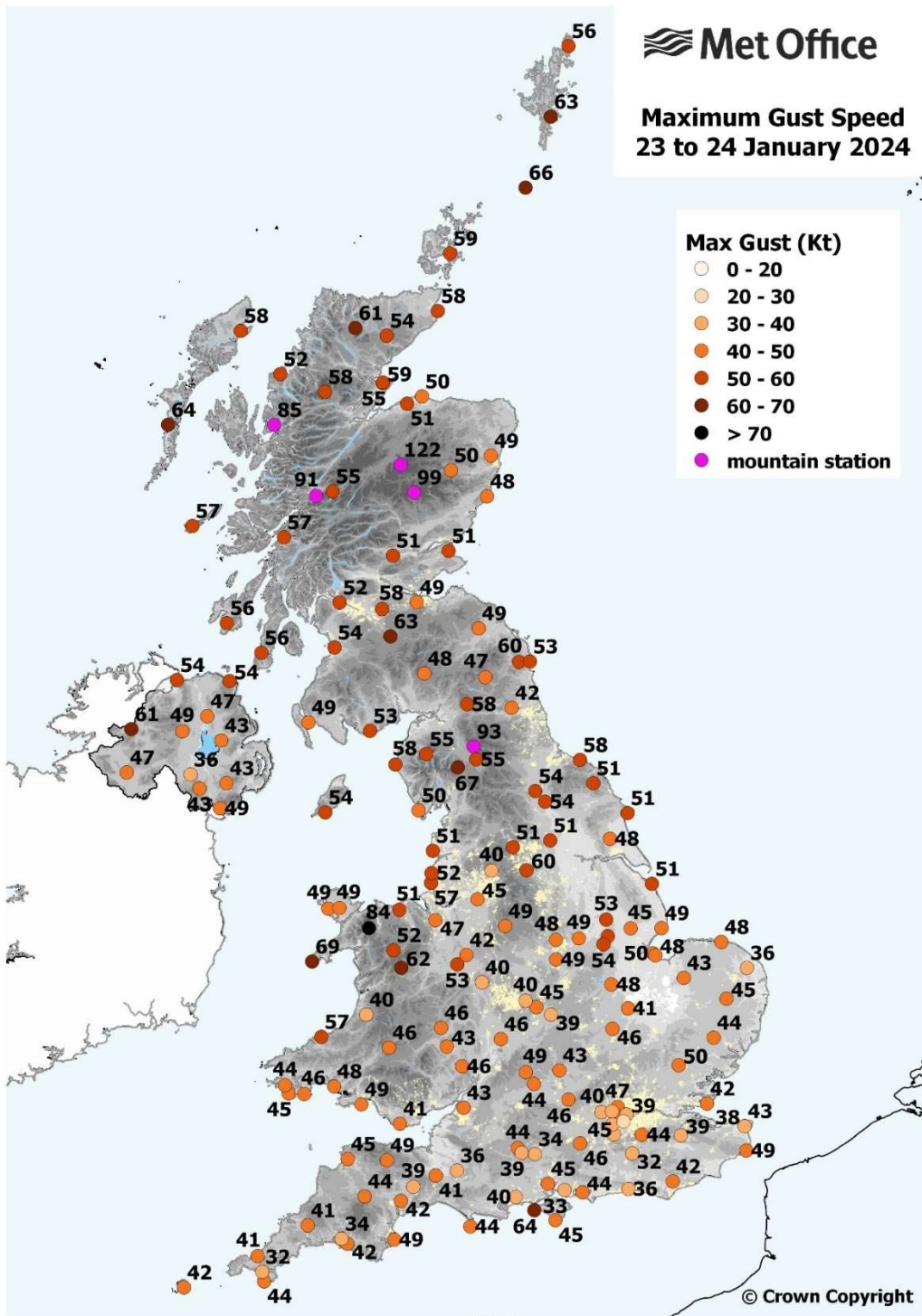


The chart below shows maximum gust speeds across the UK from storm Isha on 21 to 22 January 2024. These gust speeds are indicative of a major Atlantic winter storm system affecting the UK. The highest gusts were 86Kt (99mph) at Brizlee Wood, Northumberland, 78Kt (90mph) at Capel Curig, Conwy, 77Kt (89mph) at Aberdaron, Gwynedd, 75Kt (86mph) at Needles Old Battery (Isle of Wight), 73Kt (84mph) at Salsburgh, Lanarkshire, 71Kt (82mph) at Shap, Cumbria and 70Kt

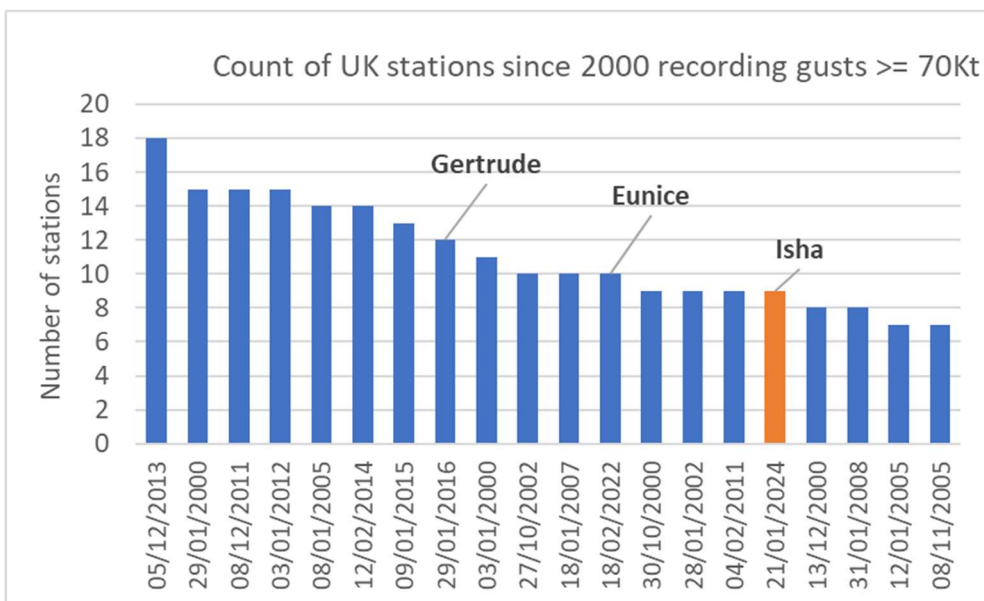
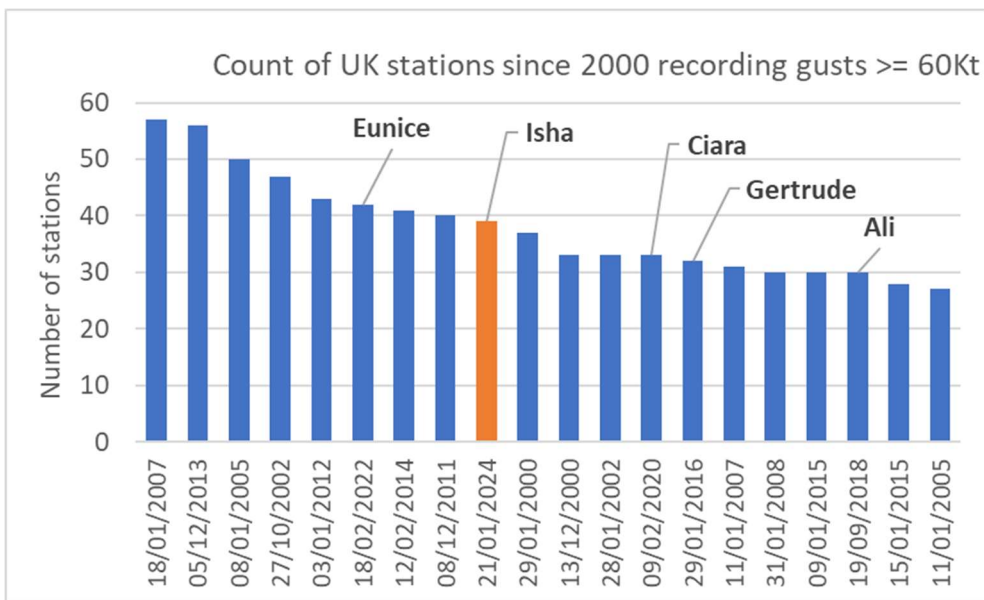
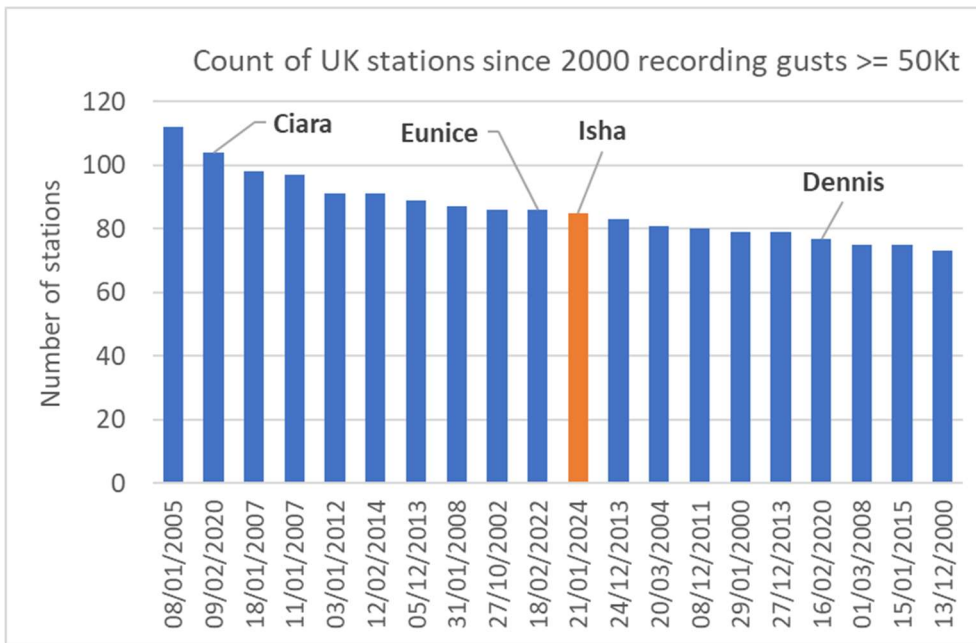
(81mph) at a further six stations. Winds gusted widely at 60 to 70Kt (69 to 81mph) across the northern half of the UK and over 50Kt (58mph) across the southern half. Scotland's mountain summits saw wind gusts of over 100Kt (115mph), with 108Kt (124mph) at Cairnwell Aberdeenshire (928 masl).



The chart below shows maximum gust speeds from storm Jocelyn on 23 to 24 January 2024. Overall, this storm was less severe than Isha, and in most locations maximum gust speeds were lower. However, Capel Curig (Conwy) recorded a gust of 84Kt (97mph) and Cairngorm Summit 122Kt (140mph) – indicating the ferocity of the wind across the mountain summits.

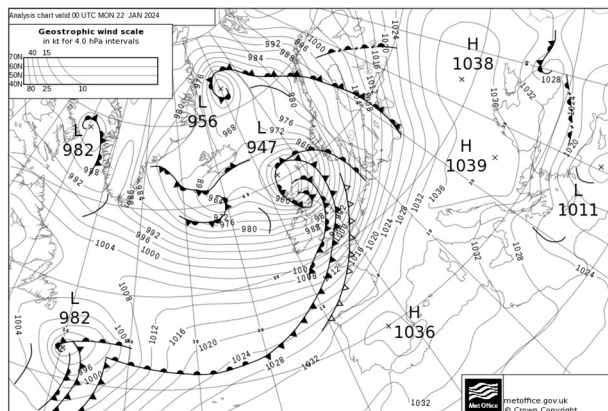


The charts below provide a count of the number of stations across the UK which have recorded gusts exceeding 50Kt (58mph), 60Kt (69mph) and 70Kt (81mph), since the year 2000. While all storms are different, this provides a broad comparison of the severity and spatial extent of major winter storms. This indicates that storm Isha was one of the 20 most powerful winter storms to affect the UK since 2000, and the most significant overall since storm Eunice on 18 February 2022 (when two red warnings for wind were issued). Other named storms since the storm naming scheme was introduced in autumn 2015 are labelled. These charts also show that there have been many other comparable storms since 2000, including many prior to the introduction of the storm naming scheme, some much more severe. The observational records also include a number of very much more severe wind storms to affect the UK prior to 2000. Although storm Isha was notable, it was therefore not exceptional and storms of this severity are to be expected in the UK's climate during the autumn and winter months.

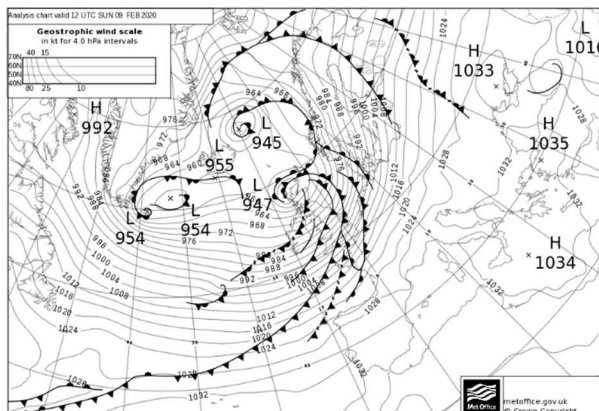


Examples of several other comparatively recent major Atlantic winter storms are shown below.

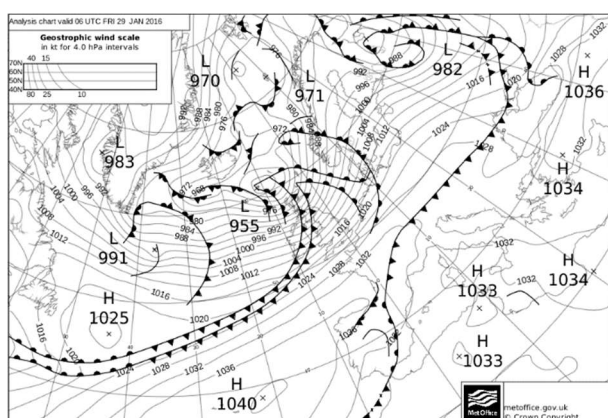
Isha 22 January 2024



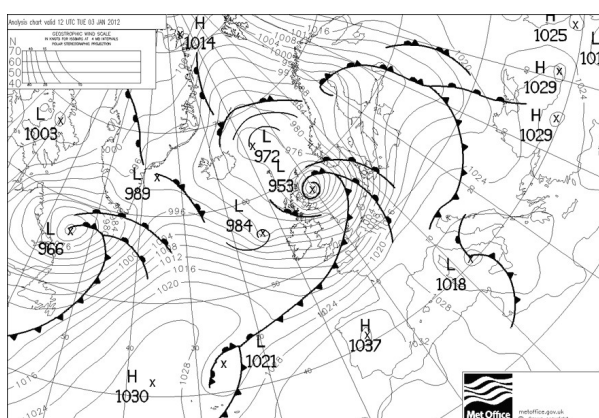
Ciara 9 February 2020



Gertrude 29 January 2016



3 January 2012 (un-named)



Author: Mike Kendon, Met Office National Climate Information Centre

Last updated 26/01/2024

