

Heavy rain, strong winds and snow, New Year 2024-2025

The period from late December 2024 to early January 2025 brought some very wet and windy weather, with significant snowfalls across upland areas in the north. On 29 to 31 December, northern Scotland recorded its third-wettest 3-day period on record, while 31 December was the second-wettest day on record for the climate district of North-West England and North Wales. Several long-running stations in eastern England recorded their wettest January day on record on the 5th. The very wet weather was accompanied by some strong winds, coinciding with the New Year, while much of the Pennines experienced significant snowfalls with depths of 10 to 20cm or more in some places and drifting across high ground. Northern Scotland also experienced significant snow.

Impacts

The prolonged wet weather in Scotland led to significant flooding concerns. Three severe flood warnings were issued on 30th for the Aviemore and Carrbridge areas indicating a danger to life. Rail services in Scotland also experienced significant disruption, with several lines reported closed including Crianlarich to Oban and the Highland Main Line at Kingussie; many passengers would normally be expected at this busy time of year. The Hogmanay celebrations in Edinburgh were cancelled; this event was previously cancelled in 2003 and 2006. Firework displays were also cancelled in a number of other locations including Blackpool, Newcastle, Ripon in North Yorkshire and the Isle of Wight. Other events which were cancelled included sea swims and parkruns.

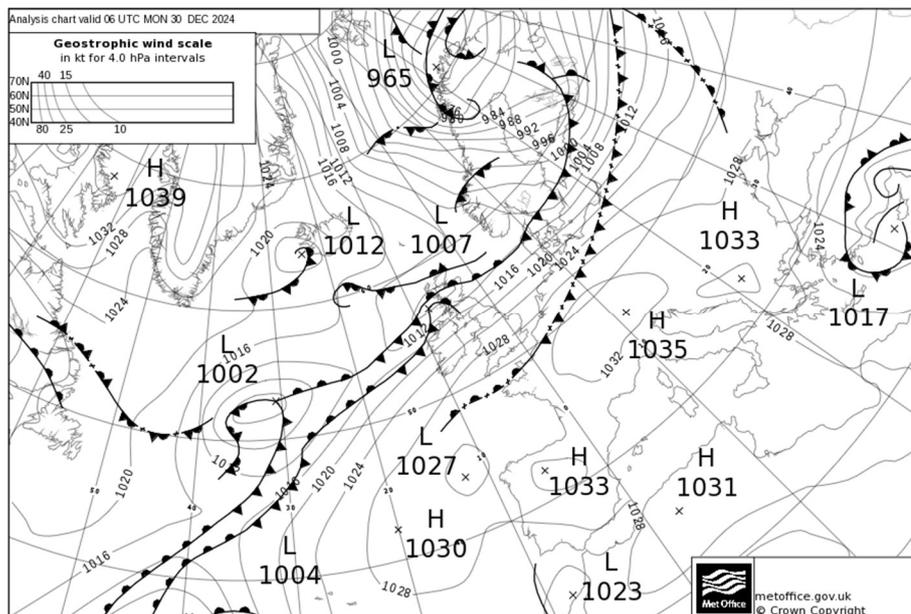
Persistent rain across north-west England also resulted in significant flood related problems including multiple traffic accidents across Lancashire and vehicles stranded. On New Year's day, a major incident was declared in Manchester with cars trapped in floodwater and flooding affecting a number of properties. Areas affected included Bolton, Didsbury, Harpurhey, Stalybridge, Stockport, Wigan and North and South Manchester. In Cheshire, a section of bank of the Bridgewater Canal collapsed, with water pouring into surrounding fields, while a section of the M56 was closed. There was also rail disruption between Manchester Piccadilly and Manchester Airport and to Transpennine Express. River levels on the Mersey reached their highest level on record in Stockport and South Manchester.

The heavy rain on 4 to 5 January led to further significant flooding problems. Worst hit areas included parts of Leicestershire and Lincolnshire with major incidents declared. A severe flood warning was issued for the River Soar at caravan parks near Barrow upon Soar, Leicestershire due to both heavy rain and snowmelt and in Bourne, Lincolnshire, 50 children were taken to safety after their school was cut off by floodwater. The Environment Agency estimated approximately 800 properties were flooded with 35,000 protected, and in all 1000 properties flooded and 70,000 protected since New Year's Eve. Snow also caused significant disruption, with Manchester Airport closed on 5th and the A66 between Cumbria and County Durham closed across the Pennines. Other airports were also affected including Bristol, Leeds and Liverpool. Many motorists had difficult journeys with higher routes in the Pennines affected by lying snow and drifting in some places.

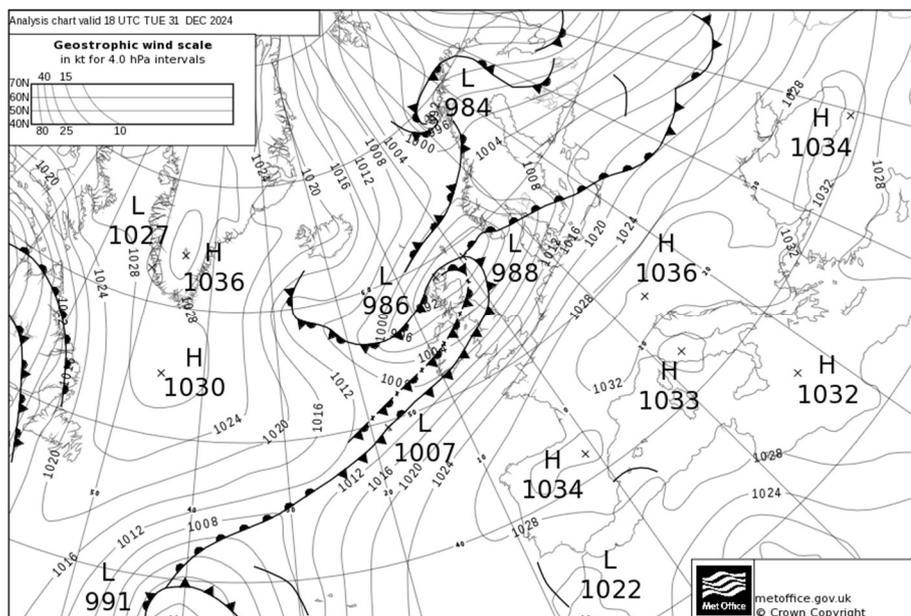
Weather data

The sequence of charts below shows weather patterns across the UK through this period.

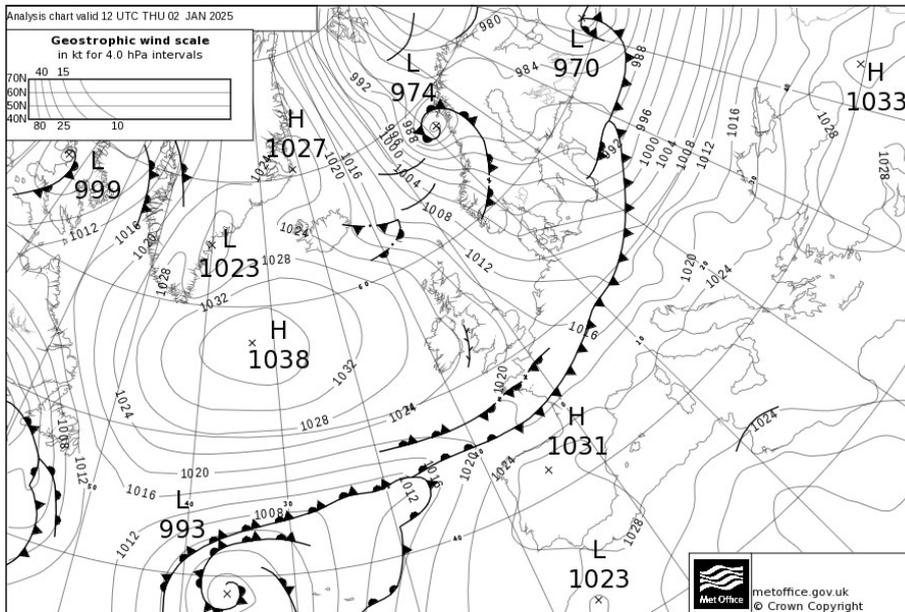
The analysis chart at 0600 UTC 30 December 2024 shows weather fronts across northern Scotland marking the boundary between cold air to the north and much milder air to the south. Daily maximum temperatures on 30th reached 11.8°C at Leuchars, Fife, but only 2.0°C at Lerwick, Shetland. These fronts brought persistent heavy rain to northern, western and central Scotland during the last three days of 2024.



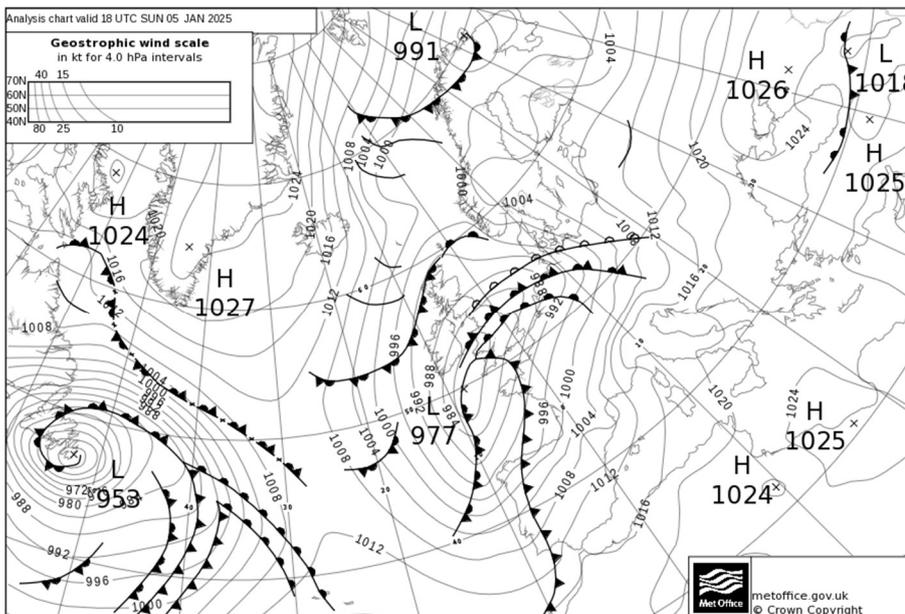
The analysis chart at 1800 UTC 31 December 2024 shows an area of low pressure centred across Scotland with a developing northerly flow of Arctic Maritime air to the north, and mild Tropical Maritime air to the south. This system brought strong winds and very heavy rain across Scotland, with weather fronts then moving south into north-west England and north Wales.



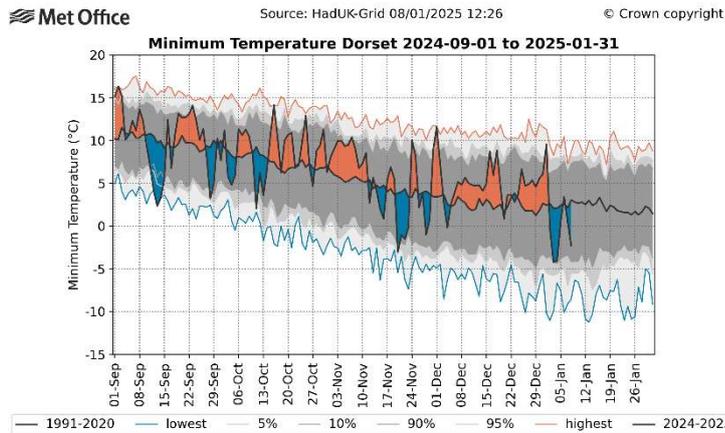
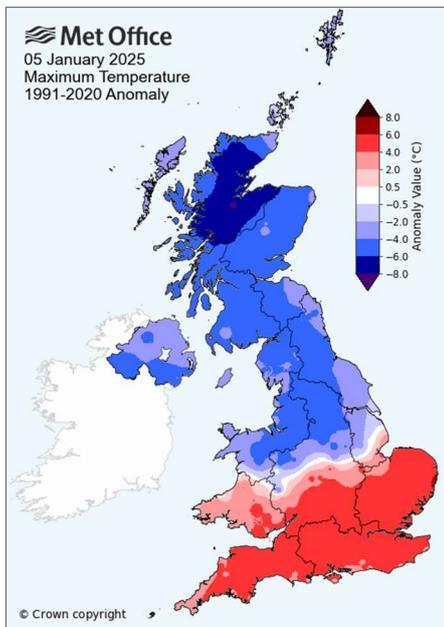
The analysis chart at 1200 UTC 2 January 2025 shows the UK in a cold northerly airflow with a large area of high pressure centred in the middle of the North Atlantic.



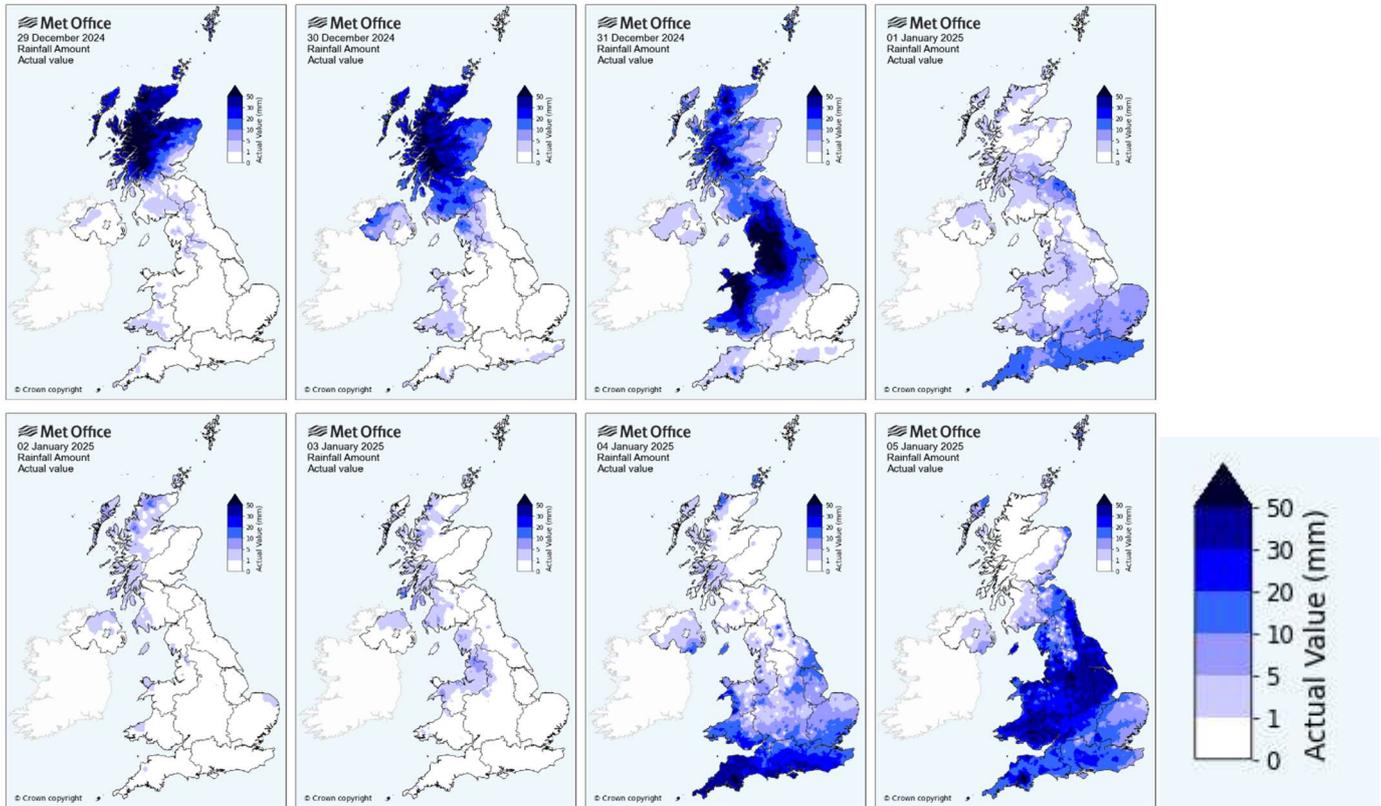
The analysis chart at 1800 UTC 5 January 2025 shows a low pressure system centred to the south-west of the UK, bringing mild, moist Atlantic air pushing into the cold air mass further north. This is a fairly typical example of an event where significant snow would be expected on the northern flank of the low, for example across the high ground of the Pennines. Further south, this system brought very wet weather to much of Wales, southern, central and eastern England.



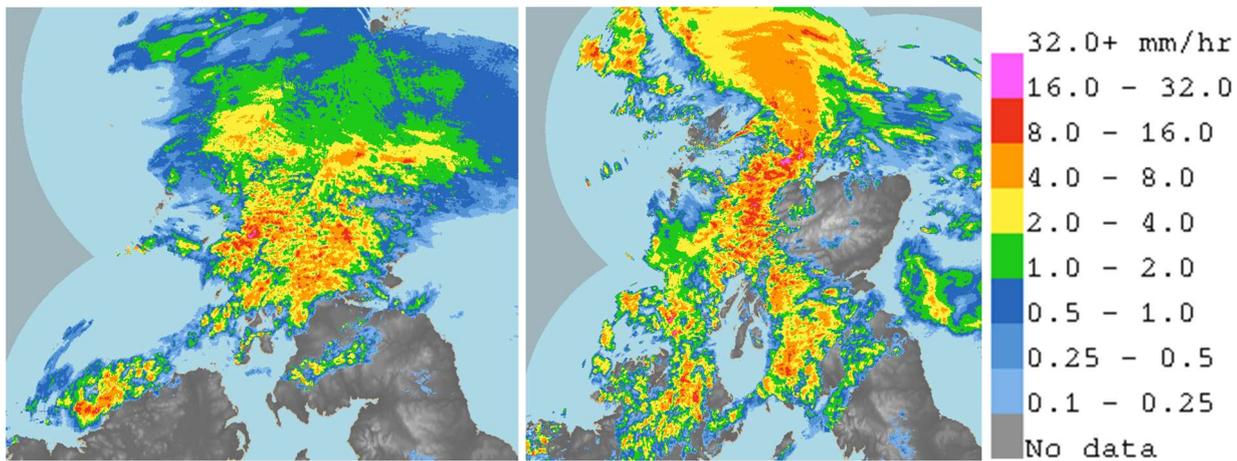
In addition to heavy rain, snow and strong winds, these weather systems were also responsible for some very large temperature contrasts across the UK and fluctuations in temperature from one day to the next. The map below left shows daily maximum temperatures on 5 January 2025 as anomalies relative to the January 1991-2020 monthly average. Temperatures remained below freezing across northern Scotland on 5th, with, for example, a maximum of -2.3°C at Aviemore, Inverness-shire, but a high of 13.4°C at Benson, Oxfordshire and Heathrow, Greater London. The chart below right shows daily minimum temperatures for the county of Dorset from September to January 2025, illustrating some of these very large fluctuations. Hurn, Dorset, recorded a daily minimum temperature of 10.2°C on 1st January 2025, followed by -6.7°C on 3rd – a difference of 16.9°C .



The panel of maps shows daily rainfall totals from 29 December 2024 to 5 January 2024 to illustrate the rainfall events occurring over this period. Northern, western and central Scotland experienced persistent heavy rainfall from 29th to 31st. North-west England and Wales experienced very wet weather on the 31st, this then pushing into southern England on 1st. Finally, further wet weather from the next system brought wet weather back into south-west England on the 4th, moving into Wales, central and northern England on the 5th, falling as snow over higher ground. Maps are provisional and may contain suspect data, for example they may not include precipitation fallen as snow e.g. across much of the Pennines on 5th.

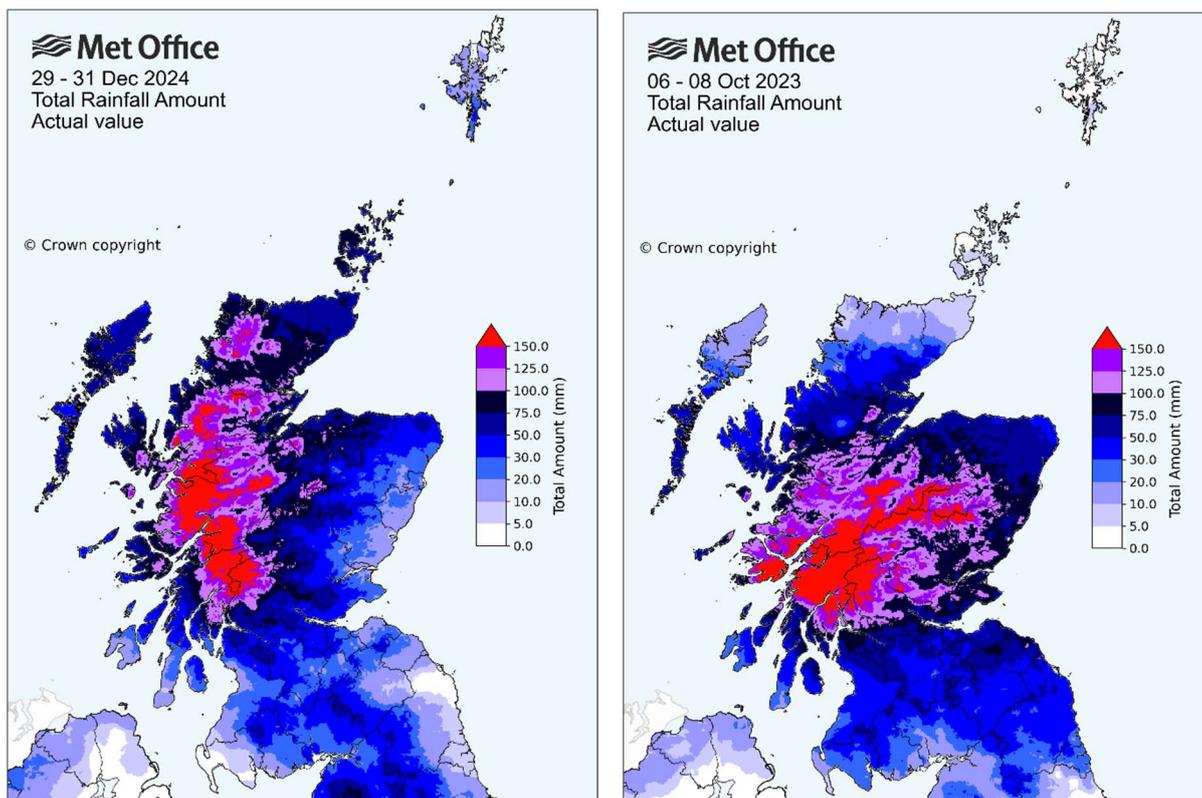


The rain-radar images show rainfall across Scotland at 0600 UTC 30 December and 0600 UTC 31 December 2024 – this rain persisting over a period of around 3 days before moving south into England and Wales.

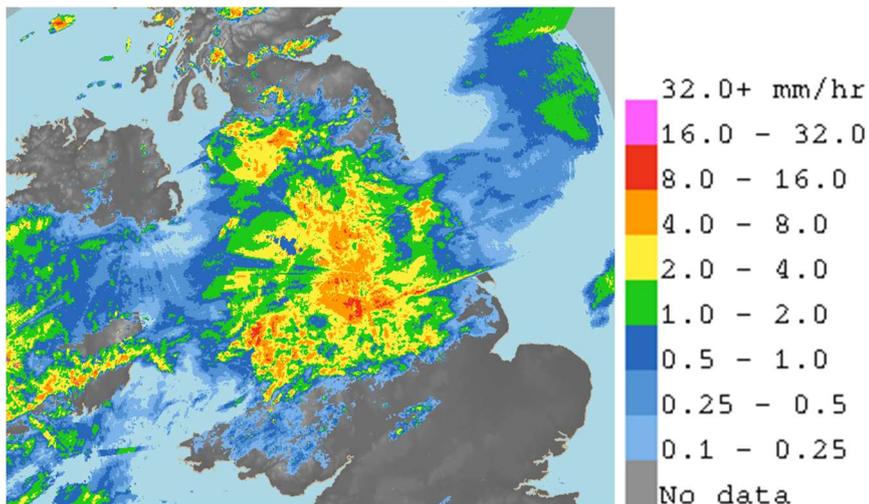


The map below shows rainfall accumulations from 29 to 31 December 2024 across Scotland. Over 100mm fell widely in the west, with 150mm or more across the wettest areas of the West Highlands. The highest totals included 208.6mm at Achnagart and 204.6mm at Cluanie Inn, both Highland and 165.8mm at Tyndrum, Perthshire, around half the December 1991-2020 average rainfall. While totals were less further east, because this is a climatologically much drier part of Scotland, anomalies were much higher, with 75.6mm at Lossiemouth and 77.2mm at Kinloss, both Moray, around 140% of the December 1991-2020 average rainfall. For the climate district of Northern Scotland, the 3-day period 29 to 31 December 2024 saw 97.1mm of rain as an area-average, 50% of the December average, making this provisionally the third-wettest 3-day period for this region in a series from 1891*. Scotland provisionally had 67.5mm, 39%, making this its ninth-wettest 3-day period on record in a series from 1891* (although not as wet as 6 to 8 October 2023 with 74.5mm, ranked wettest), see right hand map for comparison.

*Statistics are based on a smaller number of stations prior to 1961.

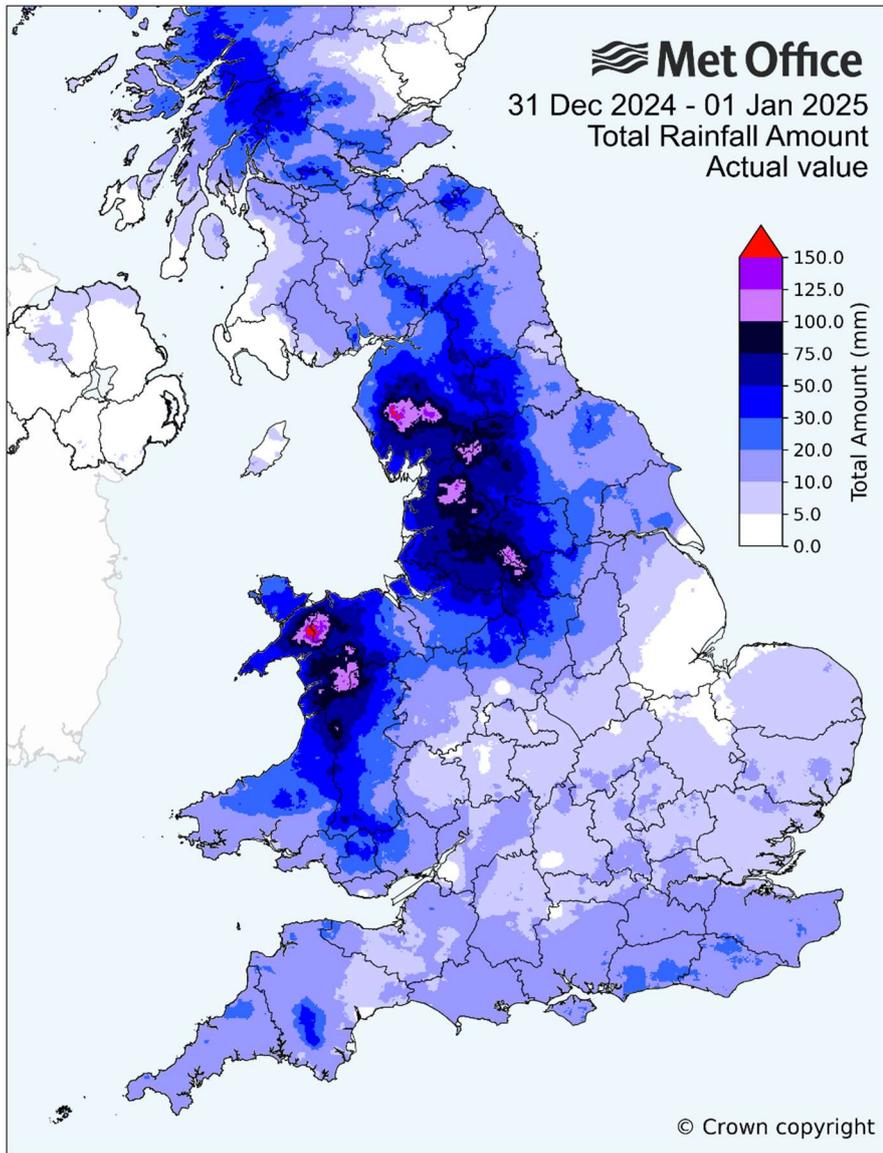


The rain-radar image shows rainfall across northern England and Wales at 0000 UTC 1 January 2025 – i.e. coinciding exactly with the start of the new year.



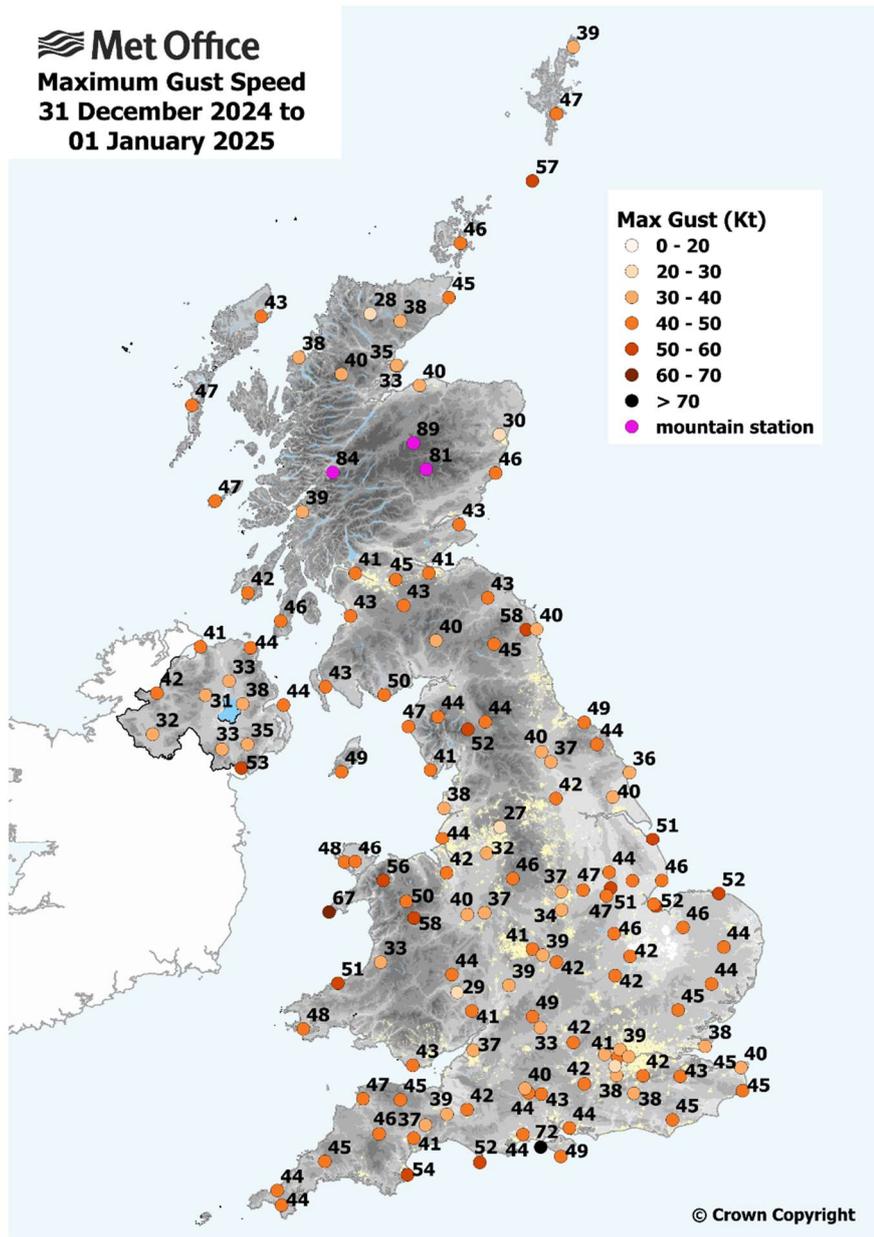
The map shows rainfall totals for 31 December 2024 to 1 January 2025 across England. Over 50mm of rain fell widely across North Wales and North-West England, with over 100mm in the wettest upland areas. 31 December was an exceptionally wet day for the climate district of North Wales and North-West England (encompassing an area from mid-Wales to Cumbria). Provisionally 52.6mm of rain fell making this the second-wettest day on record for this area in a daily series from 1891, behind only 3 November 1931 with 53.4mm*. A number of locations recorded over 100mm of rain including 144.2mm at Honister Pass and 115.4mm at Seathwaite, both Cumbria, 116.8mm at Capel Curig and 102.8mm at Llanymawddwy Plasau, both Gwynedd.

*Statistics are based on a smaller number of stations prior to 1961.

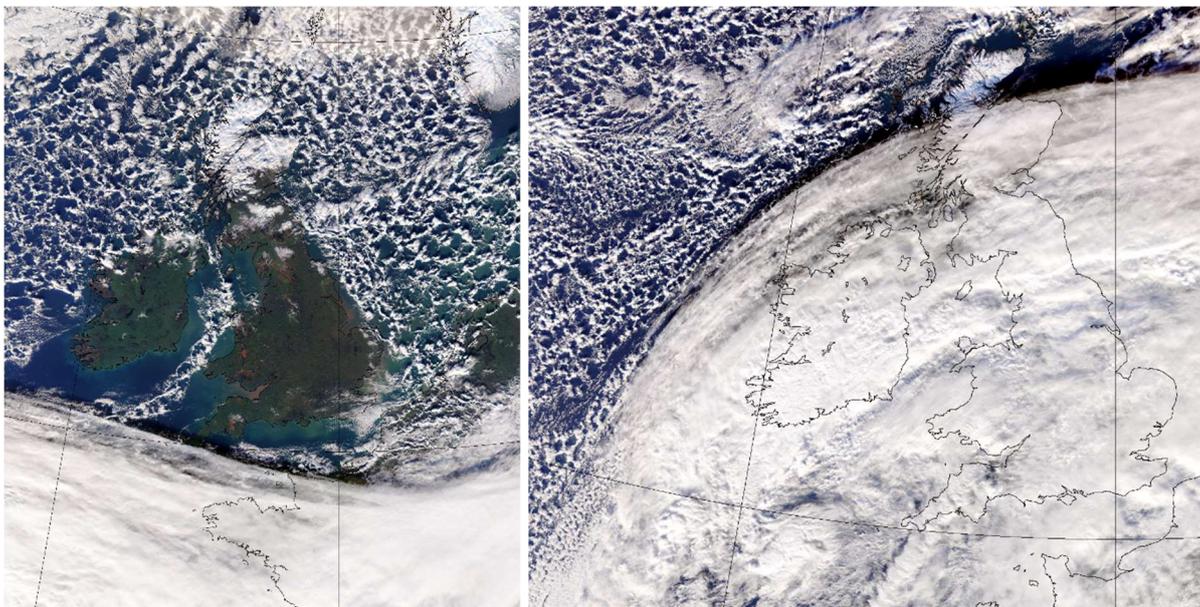


Not only was the weather extremely wet, it was also very windy. The map below shows maximum gust speeds from 31 December 2024 to 1 January 2025, with gusts of 40 to 50Kt (46 to 58mph) very widely and over 50Kt in some exposed locations. The highest gusts were 72Kt (83mph) at Needles Old Battery, Isle of Wight, 67Kt (77mph) at Aberdaron, Gwynedd and 58Kt (67mph) at Lake Vyrnwy, Powys and Brizlee Wood, Northumberland. While not exceptional, combined with driving rain, these strong winds resulted in some extremely unpleasant, stormy weather at the end of 2024 and start of 2025.

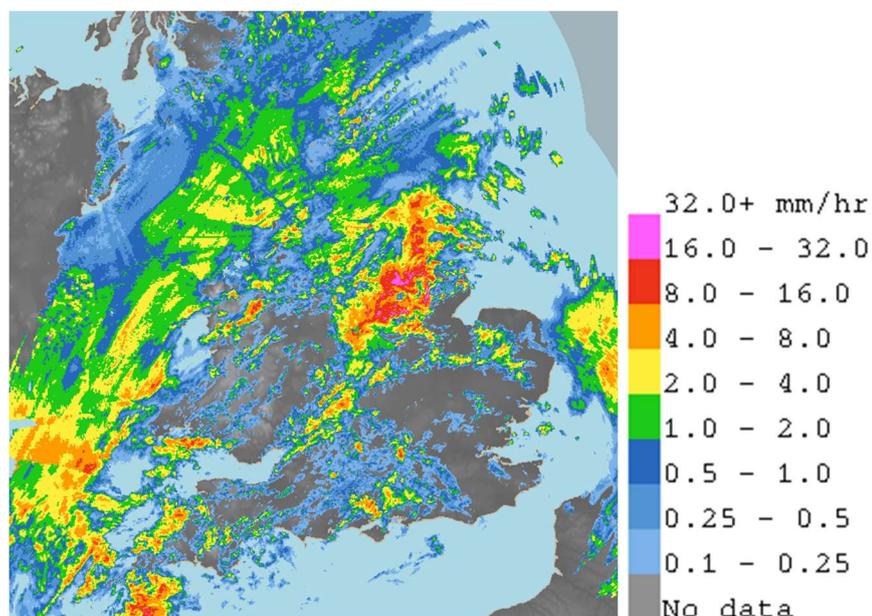
Met Office
Maximum Gust Speed
31 December 2024 to
01 January 2025



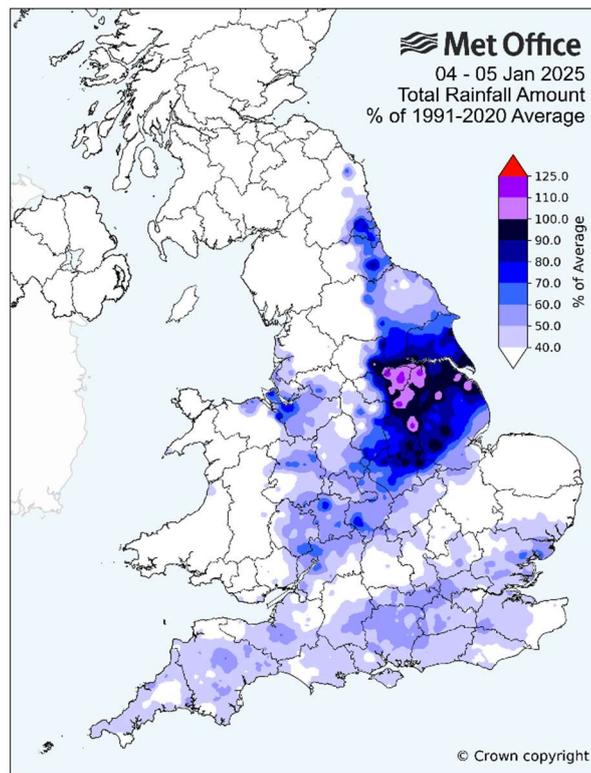
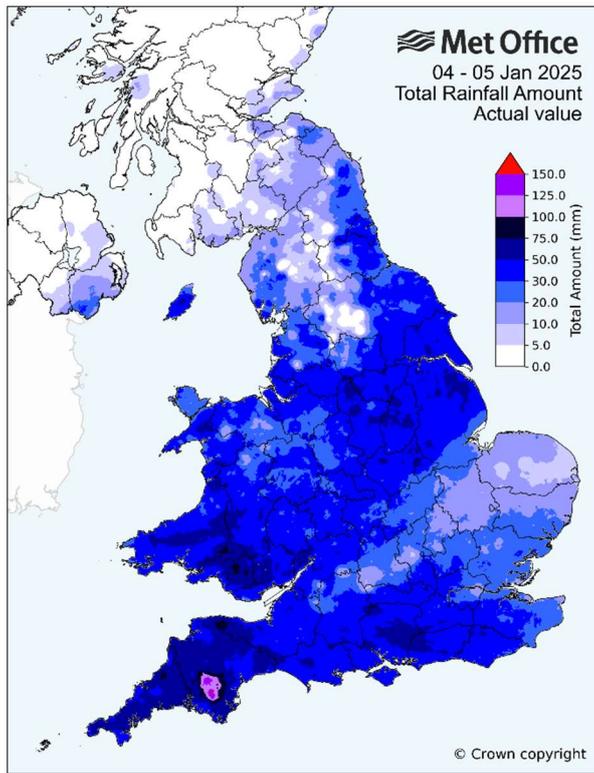
The satellite image on 2 January 2025 (below left) shows most of the UK under clear skies in a cold northerly Arctic Maritime airflow, with snow showers affecting North Sea coasts and Scotland and a line of convergence running through the Irish Sea – with lying snow across most of northern Scotland. The second image on 5 January 2025 (below right) shows most of the UK swathed in cloud associated with an area of low pressure pushing into this colder airmass – with clear skies and lying snow cover in the far north of Scotland. Both images copyright Met Office / NOAA / NASA.



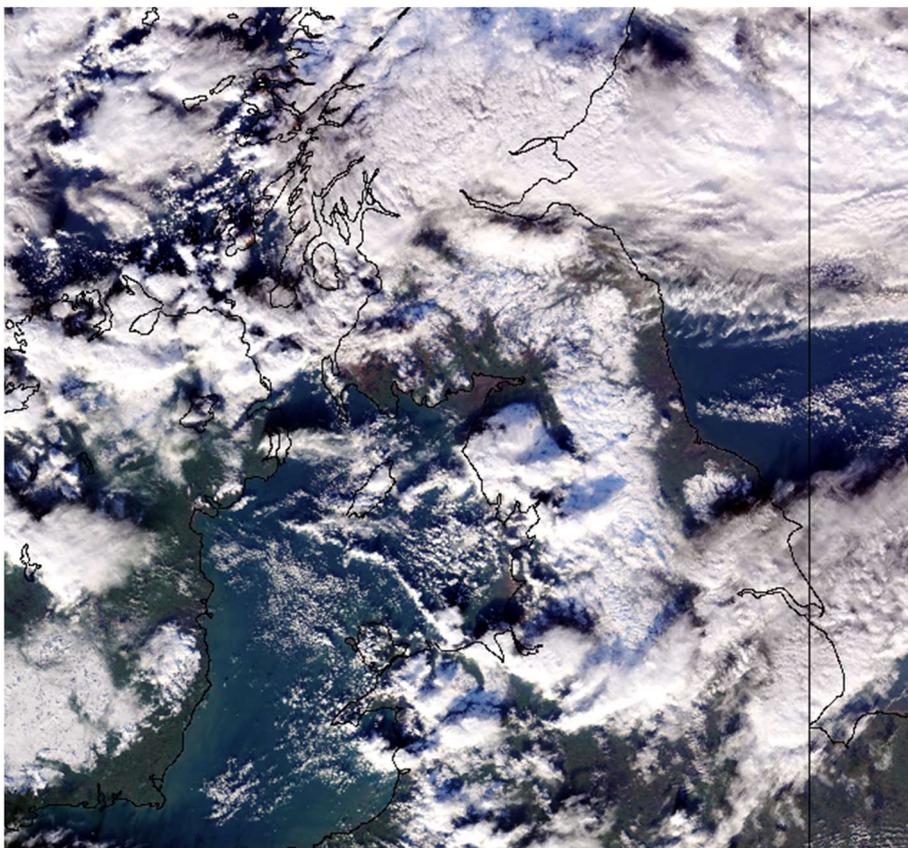
The rain-radar image at 2230 UTC 5 January 2025 shows heavy rain from the area of low pressure across parts of the East Midlands and Lincolnshire, falling as snow across the high ground of the Pennines.



The maps below show rainfall totals for 4 to 5 January 2025 across England and Wales as actual totals (left) and percentage of January 1991-2020 average (right). 30 to 50mm of rain fell very widely but it was especially wet across parts of Leicestershire, Nottinghamshire and Lincolnshire with over 50mm in some locations and the whole-month average in just two days (this area being one of the climatologically drier parts of the country). In the Pennines, this precipitation fell as snow. On 5th, several stations recorded their wettest January day on record including Durham (33.4mm, 144 years), Cranwell, Lincolnshire (30.8mm, 111 years), Nottingham, Watnall (35.4mm, 82 years) and Coningsby, Lincolnshire (33.2mm, 60 years); several others in central England recorded their wettest January day since 8 January 1992.

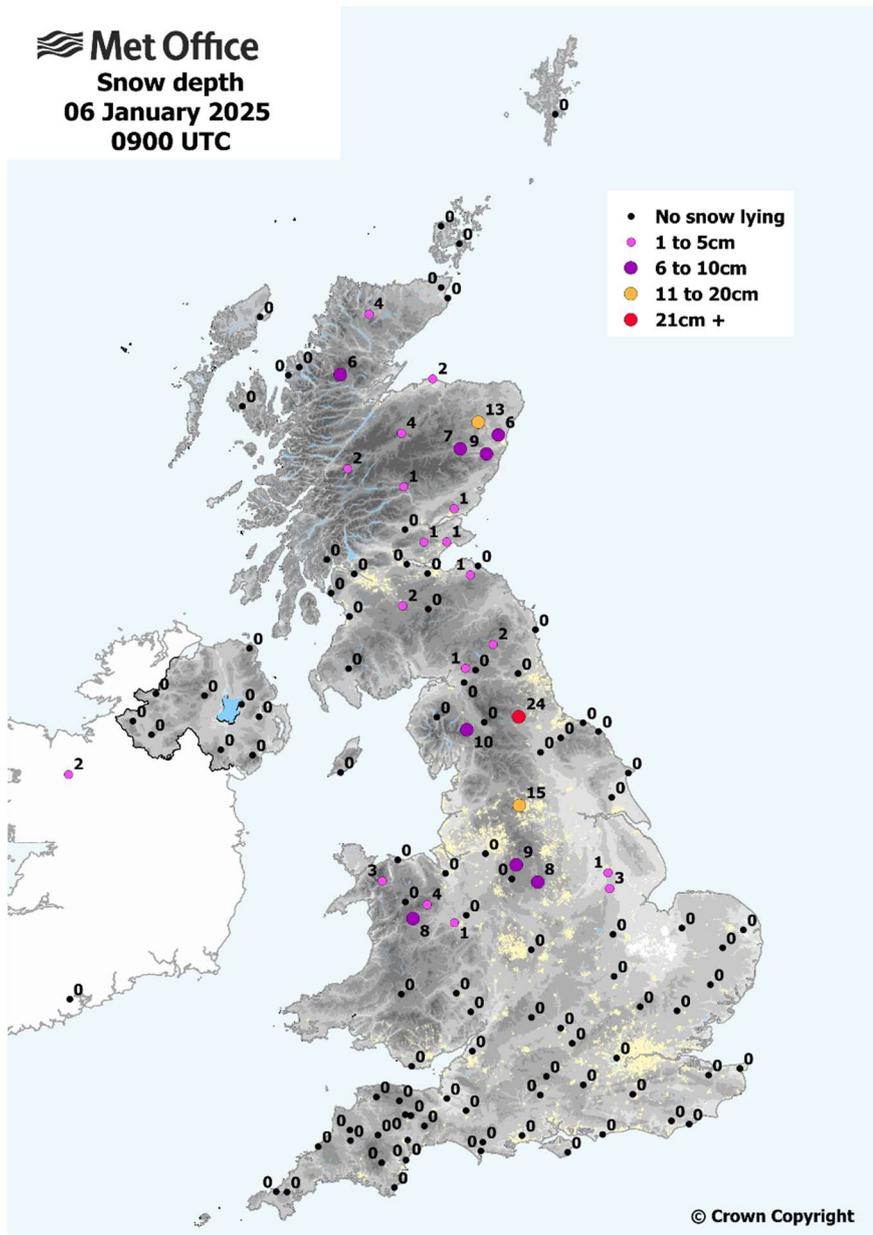


The image below shows lying snow cover on 7 January 2025 across northern England and southern Scotland. Lying snow is present across upland areas of Wales, the North York Moors, much of the Pennines and Lake District, the Southern Uplands and much of central Scotland (although partially concealed by cloud). The prominent snow-free valley in the centre of the image is the Vale of Eden, with Cross Fell, the highest point of the Pennines, lying to the east. Ireland's Wicklow Mountains are at bottom left. Image copyright Met Office / NOAA / NASA.



The map below shows snow depths at 0900 UTC on 6 January 2025. Recorded depths included 24cm at Copley, County Durham, 15cm at Bingley, West Yorkshire, 13cm at Oyne,

Aberdeenshire, 10cm at Shap, Cumbria, 9cm at Buxton, Derbyshire – notable but not especially unusual for the time of year.



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