January 2023 Monthly Weather Report

This document provides a summary of the UK's weather and climate statistics for January 2023.

Table of Contents

UK overview

The first half of January continued with the mild, unsettled and wet theme of the last two weeks of December, with some areas having roughly their average rainfall for the whole of January within the first two weeks. Again, though, this proved to be a month of two halves, with much drier and colder weather from mid-month, although temperatures gradually edged upwards in the final week to somewhere near or slightly above average. This was also a particularly sunny January, for the second year in a row.

Mean temperatures for this month ended up slightly above average, with a provisional UK mean temperature of 4.4 °C, this being 0.4 °C above the 1991-2020 average. Northern parts of England and Wales were furthest above average, but anomalies were nowhere more than +1 °C. Some very low temperatures were recorded around mid-month at certain Scottish locations. Rainfall was broadly close to average, with 103% for the UK overall, but again this conceals the 'two halves' nature of the month; wettest areas relative to normal were Wales and western parts of England (around 150% of average in a few places), while a strip from the Grampians to Lincolnshire was the driest (only 50% in a few places). Sunshine was well above average in most areas, with north-west Scotland the notable exception, giving England its second sunniest January on record (just behind 2022), and the UK as a whole having 133% of average, the third sunniest in a series from 1919.

The UK monthly extremes were as follows: A maximum temperature of 15.8 °C was recorded at Dyce (Aberdeenshire) on the 24th. A minimum temperature of -10.4 °C was recorded at Drumnadrochit (Inverness-shire) on the 19th. In the 24 hours ending at 0900 UTC on the 12th, 100.2 mm of rain fell at Maerdy Water Works (Mid-Glamorgan). A wind gust of 72 knots (83 mph) was recorded at Needles (Isle of Wight) on the 12th. A snow-depth of 34 cm was measured at Loch Glascarnoch (Ross & Cromarty) on the 18th and 19th.

Reference climatology used for calculating anomalies is the period 1991-2020 unless otherwise stated.

Weather impacts

- **Unsettled first half of month; particularly heavy rain 10th-15th causing flooding**
- **Impacts from heavy snow showers around 16th-20th, then a quieter spell**

The unsettled weather of the first two weeks, especially the 10th to the 13th, saw numerous warnings issued, and numerous impacts resulting. Prolonged heavy rain early on the 12th caused widespread impacts to travel across South Wales, especially in the Valleys, with road closures and flooded rail lines, and power outages in the Newport area, possibly linked to strong winds. Reports of localised property flooding were received from Rhondda Cynon Taff borough. The River Severn in the south-west Midlands overtopped in several places on the 12th, with parts of Tewkesbury impacted by floodwater, and more than 40 properties were impacted by flood water adjacent to the River Exe. Further widespread rain on the 13th caused flooding across the Somerset Levels, whilst road and rail travel were impacted in Shropshire and Herefordshire, as well as across south-west and central southern England. The night of the 15th/16th brought a spell of heavy rain across southernmost counties, resulting in numerous road closures and rail disruption from flooding, notably across Hampshire and in particular Sussex with the A21, A28 and A29 all affected. In Hastings up to 24 homes were evacuated and 130 properties lost power due to flood water.

Further north, an influx of much colder air arrived, with accumulating snow affecting Scotland and Northern Ireland. The Grampian and Highland regions of Scotland bore the brunt of the snow between the 16th and the 20th, but even further south into England and Wales snow showers developed at times giving localised accumulations. Impacts to road travel in particular were reported across much of the UK. On the morning of the 17th heavy snow showers and rapid accumulations across Cornwall resulted in blocked roads, most notably the A30 near Newquay and the A39 near Truro. On Shetland schools were reportedly closed on successive days as snow hampered access across the mainland. Hazardous road conditions and school closures were also reported from North Wales on the 17th as heavy snow showers drifted in off the Irish Sea. Treacherous road conditions in County Londonderry on that same day resulted in school closures and disrupted council services. Much of the Highland and Grampian regions of Scotland, with frequent heavy snow showers, suffered from airport runway closures, disrupted rail services, road closures and school closures. Manchester Airport was closed for around two hours on the morning of the 19th as heavy snow showers necessitated urgent runway clearance. Meanwhile in South Wales, as many as 48 higher-lying schools were closed in Rhondda Cynon Taff borough. As the cold spell began to wane, Grampian NHS reported a four-fold increase in the number of ice-related casualties in A&E departments in the seven days up to the 20th compared to the week before.

The remainder of the month was relatively benign with high pressure dominating, especially across southern areas of the UK where several fog warnings were issued. Despite the drier weather, several sections of A-roads in southern England remained closed due to excess water from earlier in the month running off fields, with one report of high-volume pumps being employed to resolve the problem.

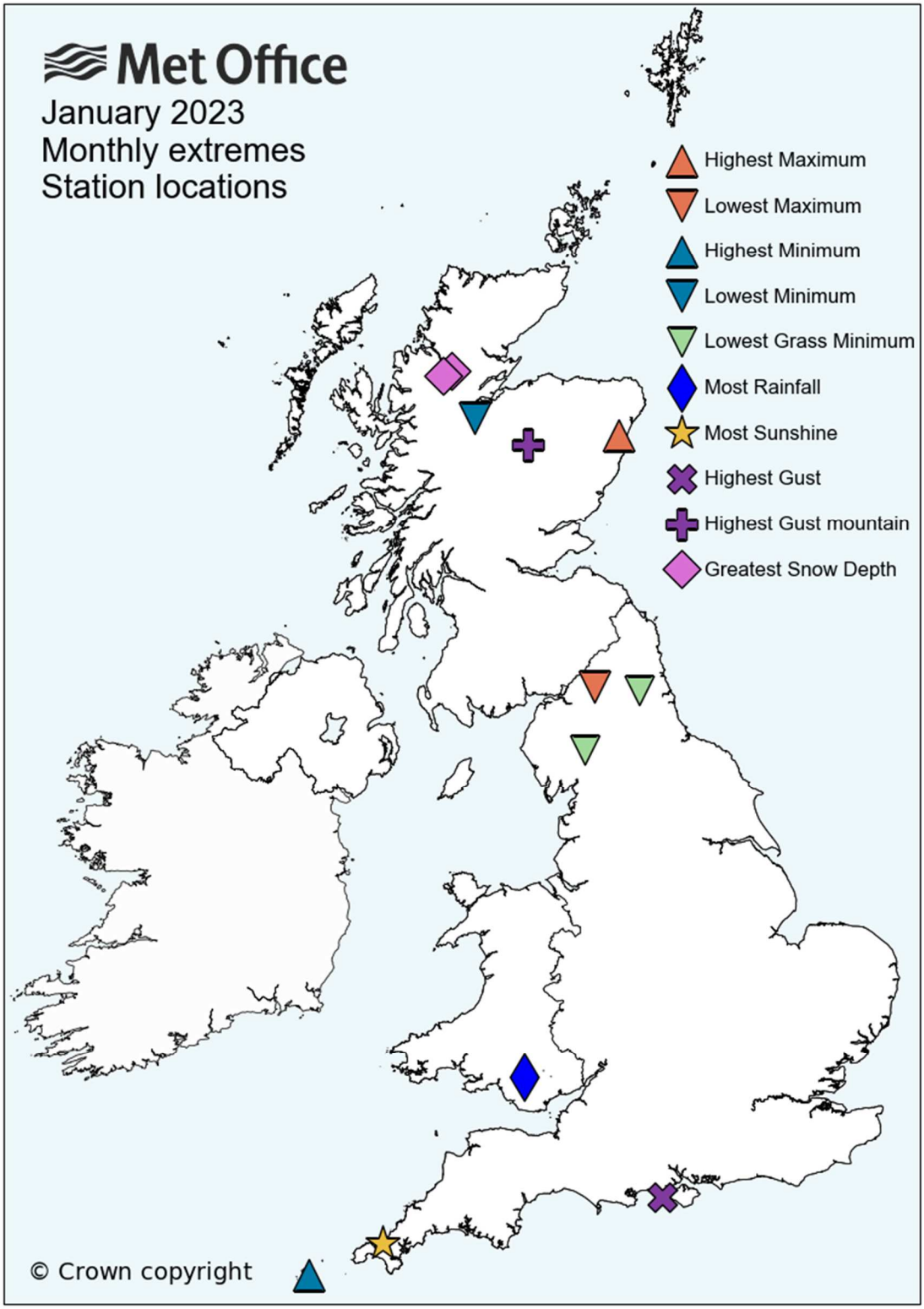
Monthly extremes

The table below lists UK monthly weather extremes recorded at individual weather stations during January 2023 from data available on 03/02/2023. The map shows the location of these stations.

Highest Maximum	**15.8°C** on **24th** at Dyce (Aberdeenshire, 65mAMSL)
Lowest Maximum	**-1.9°C** on **16th** at Spadeadam No 2 (Cumbria, 285mAMSL)
Highest Minimum	**11.7°C** on **5th** at Scilly: St Marys Airport (Isles Of Scilly, 31mAMSL)
Lowest Minimum	**-10.4°C** on **19th** at Drumnadrochit (Inverness-shire, 53mAMSL)
Lowest Grass Minimum	**-15.7°C** on **17th** at Shap (Cumbria, 263mAMSL) and Albemarle (Northumberland, 142mAMSL)
Most Rainfall	**100.2mm** on **11th** at Maerdy W Wks (Mid Glamorgan, 295mAMSL)
Most Sunshine	**8.2hr** on **24th** at Camborne (Cornwall, 87mAMSL)
Highest Gust	**72Kt 83mph** on **12th** at Wight: Needles Old Battery (Isle Of Wight, 80mAMSL)
Highest Gust (mountain*)	**97Kt 112mph** on **30th** at Cairngorm Summit (Inverness-shire, 1237mAMSL)
Greatest Snow Depth at 0900 UTC	**34cm** on **18th** at Loch Glascarnoch (Ross & Cromarty, 269mAMSL) also on **19th** at Loch Glascarnoch (Ross & Cromarty, 269mAMSL)

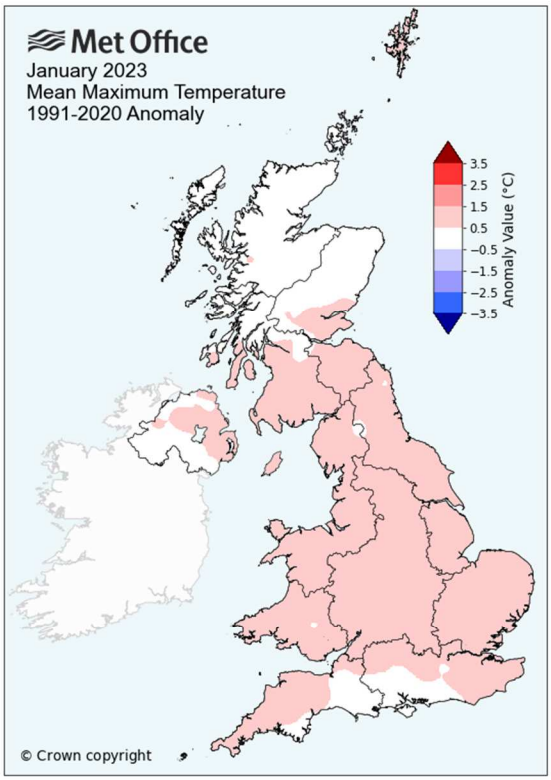
mAMSL refers to station elevation in metres above mean sea level.

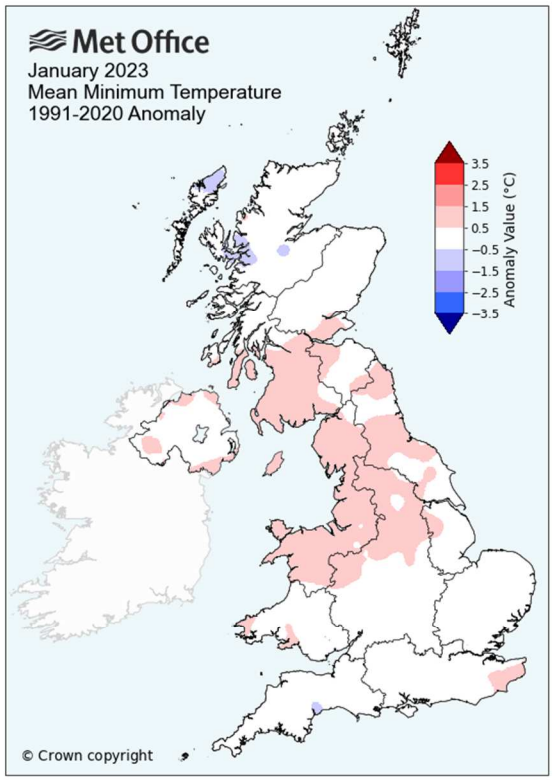
*Mountain stations are above 500mAMSL.

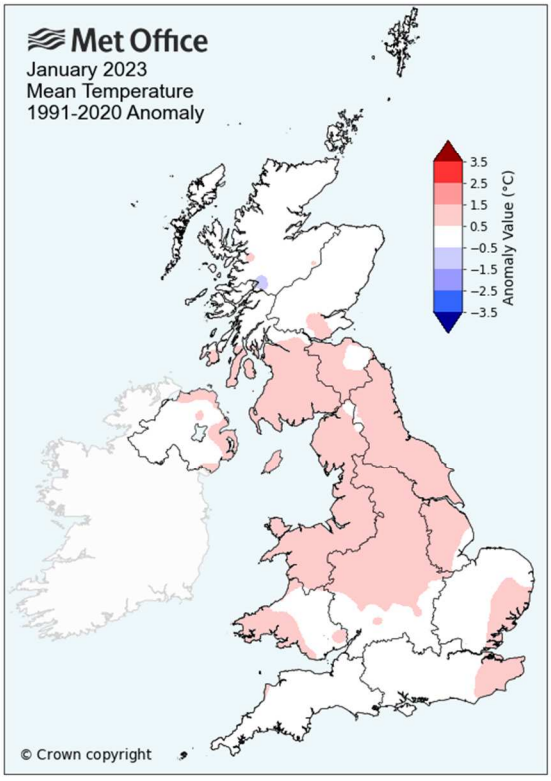

Met Office
January 2023
Monthly extremes
Station locations
Highest Maximum
Lowest Maximum
Highest Minimum
Lowest Minimum
Lowest Grass Minimum
Most Rainfall
Most Sunshine
Highest Gust
Highest Gust mountain
Greatest Snow Depth
© Crown copyright

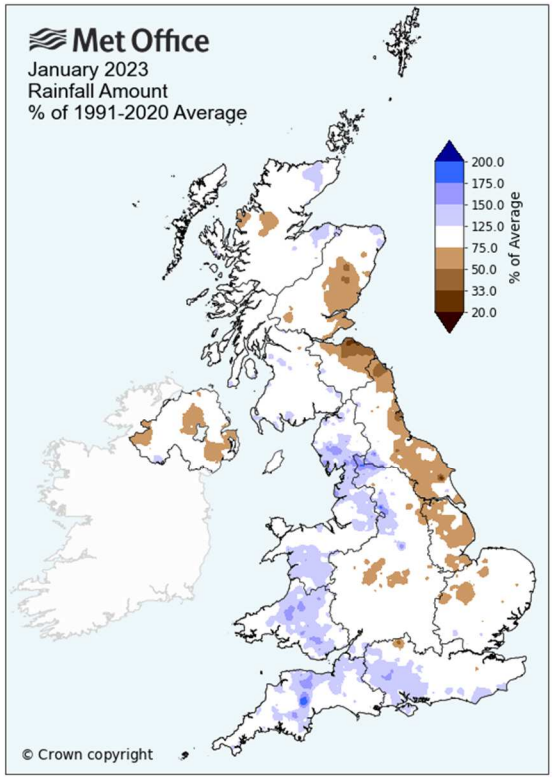
Monthly maps

These maps show monthly average daily maximum, monthly average daily minimum and monthly mean temperature and monthly rainfall for January 2023 as anomalies relative to the January 1991-2020 long term average.

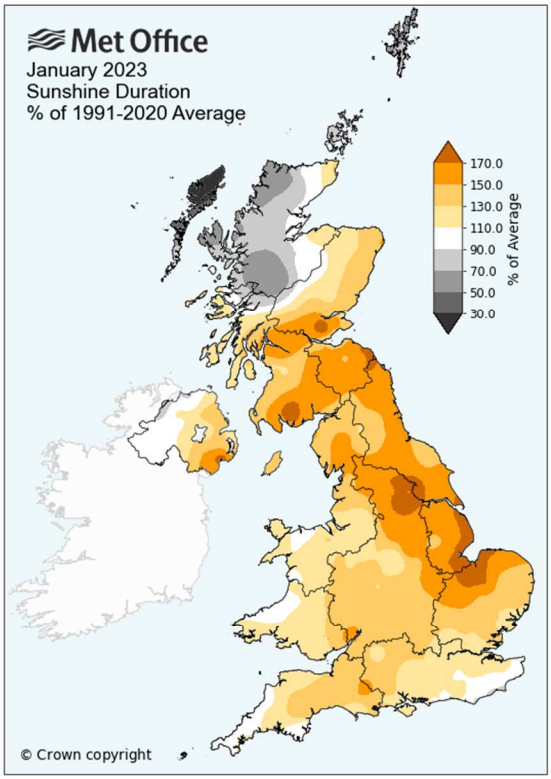


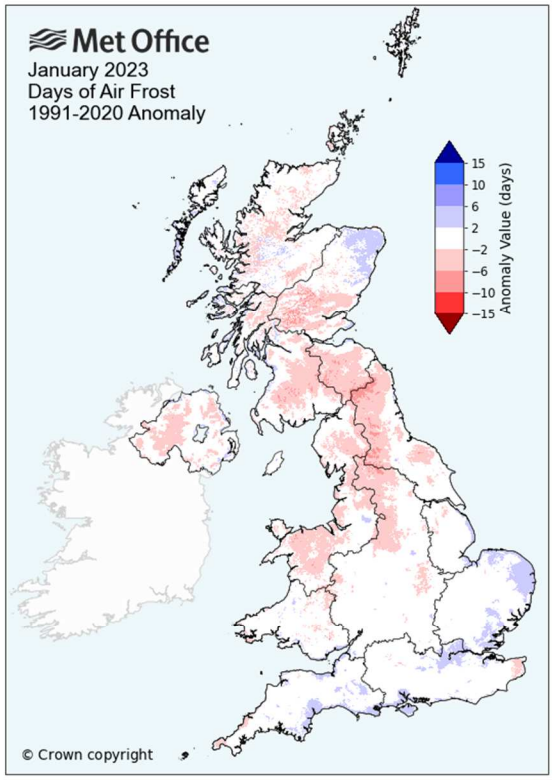


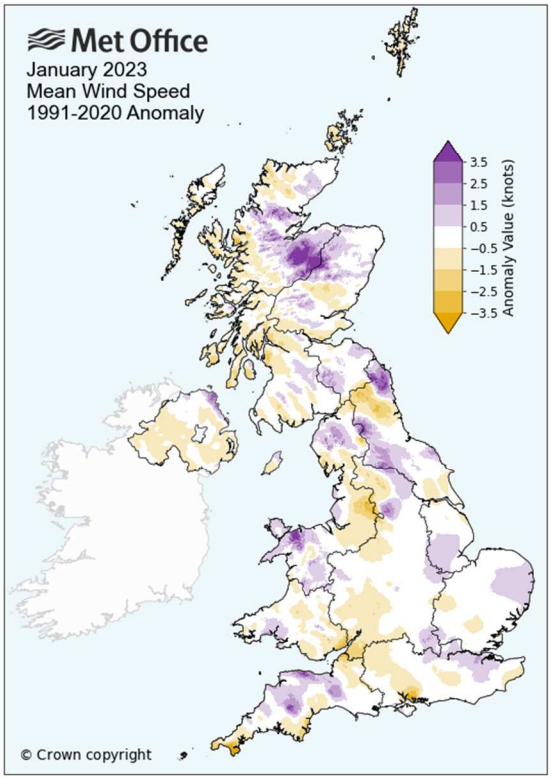


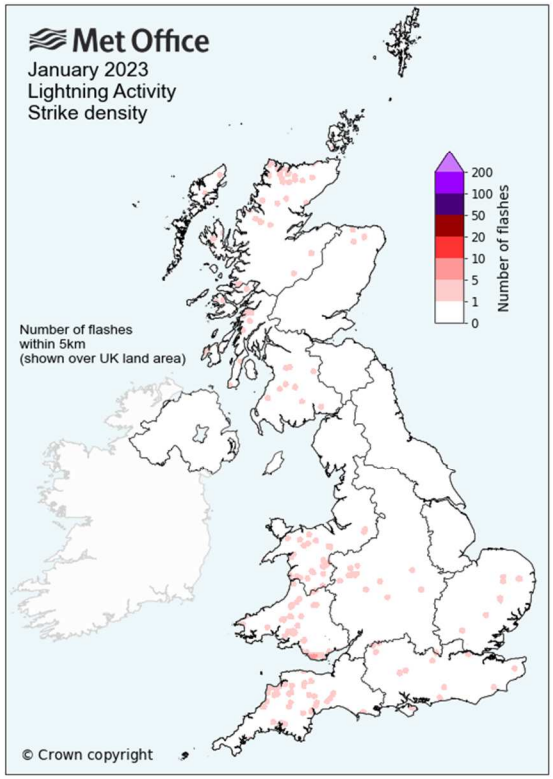


These maps show monthly sunshine, monthly air frost and monthly windspeed for January 2023 as anomalies relative to the January 1991-2020 long term average, plus a map showing lightning activity as the number of strikes within a 5km radius of any land location.









Monthly climate statistics - actuals and anomalies

These tables show the UK and national climate statistics for January 2023 for max, min and mean temperature, rainfall, sunshine and windspeed as actual values and anomalies relative to the January 1991-2020 long term average. The position of the value within the full series (in both ascending and descending order) is shown in the two 'Rank' columns. Central England Temperature (CET) and England & Wales Precipitation (EWP) are also included.

Mean maximum temperature

Region	Maxtemp (°C)	1991-2020 Anomaly (°C)	Rank - warmest	Rank - coldest	Series length (yrs)
UK	7.3	0.6	26	115	140
England	8.0	0.8	25	116	140
Wales	7.7	0.7	25	116	140
Scotland	5.9	0.4	33	108	140
Northern Ireland	7.7	0.5	31	110	140
Central England	8.4	0.9	23	124	146

Mean minimum temperature

Region	Mintemp (°C)	1991-2020 Anomaly (°C)	Rank - warmest	Rank - coldest	Series length (yrs)
UK	1.5	0.3	39	102	140
England	1.8	0.2	40	101	140
Wales	2.3	0.5	37	104	140
Scotland	0.5	0.2	52	89	140
Northern Ireland	2.1	0.4	40	101	140
Central England	1.9	0.1	62	85	146

Mean temperature

Region	Meantemp (°C)	1991-2020 Anomaly (°C)	Rank - warmest	Rank - coldest	Series length (yrs)
UK	4.4	0.4	31	110	140
England	4.9	0.5	33	108	140
Wales	5.0	0.6	29	112	140
Scotland	3.2	0.3	43	98	140
Northern Ireland	4.9	0.4	34	107	140
Central England	5.2	0.5	62	304	365

Rainfall

Region	Rainfall (mm)	% of 1991-2020 Average	Rank - wettest	Rank - driest	Series length (yrs)
UK	125.7	103	54	135	188
England	90.5	109	61	128	188
Wales	194.7	125	37	152	188
Scotland	171.5	96	60	129	188
Northern Ireland	95.2	83	116	73	188
EWP (England and Wales)	97.9	104	91	168	258

Sunshine

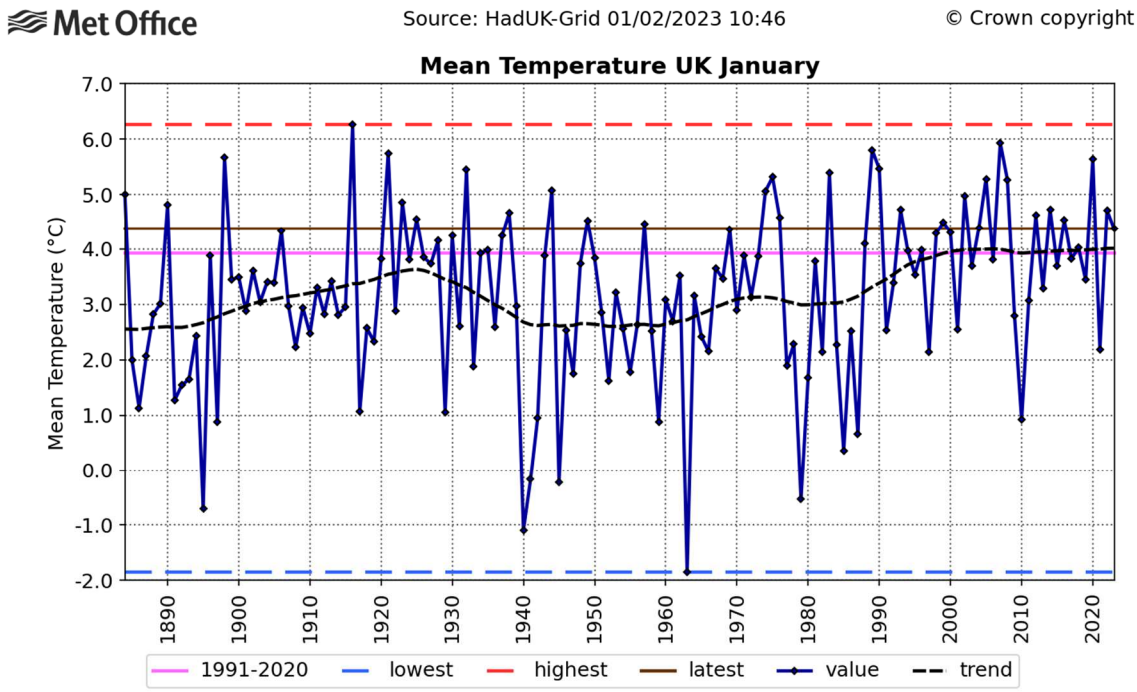
Region	Sunshine (hours)	% of 1991-2020 Average	Rank - sunniest	Rank - dullest	Series length (yrs)
UK	63.1	133	3	103	105
England	77.6	140	2	104	105
Wales	55.7	118	19	87	105
Scotland	42.9	122	13	93	105
Northern Ireland	51.1	120	30	76	105

Windspeed

Region	Windspeed (knots)	1991-2020 Anomaly (knots)	Rank - windiest	Rank - calmest	Series length (yrs)
UK	10.7	-0.1	30	26	55
England	9.5	-0.1	29	27	55
Wales	11.6	0.1	29	27	55
Scotland	12.6	-0.0	26	30	55
Northern Ireland	9.7	-0.4	33	23	55

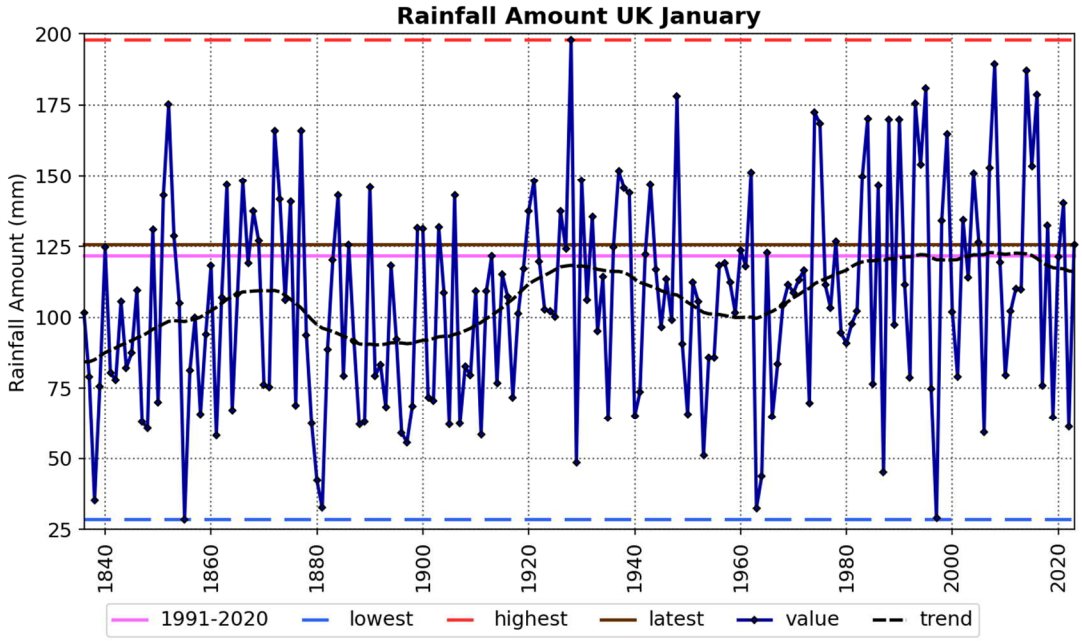
Monthly time-series

These charts show time-series for the UK for January for monthly mean temperature (from 1884), monthly rainfall (from 1836) and monthly sunshine (from 1919). The brown line shows the latest (2023) value. The hatched black line is a smoothing filter which shows the long-term trend. The tables below show statistics for the latest year, latest 10 years 2014-2023, the most recent 30-year climate reference period 1991-2020 and the 30-year baseline climate reference period 1961-1990.



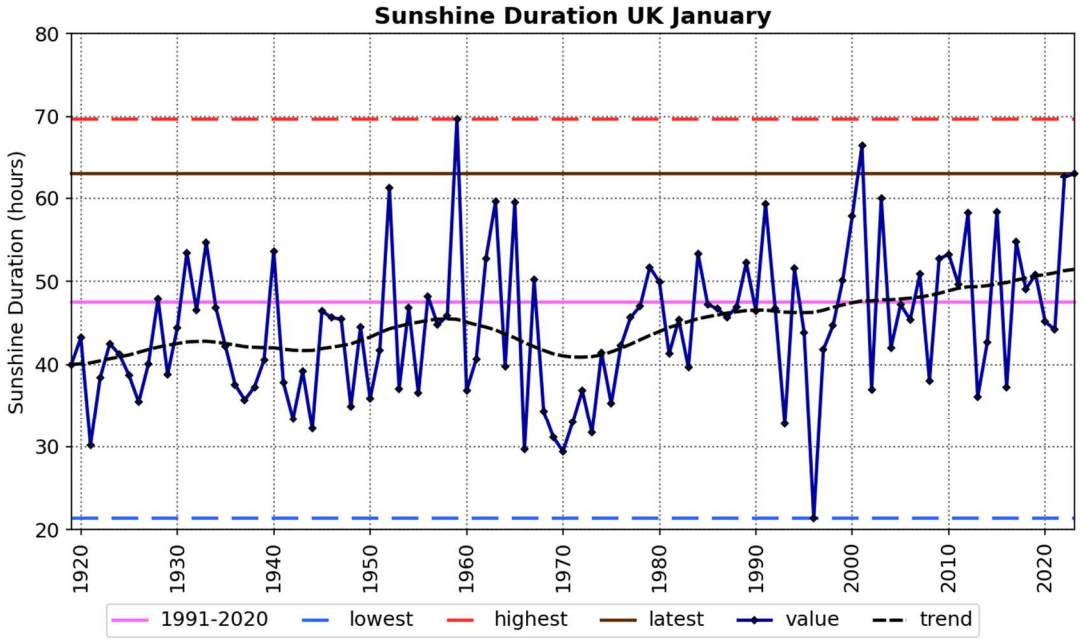
Period	1961-1990	1991-2020	2014-2023	2023
Meantemp (°C)	3.0	3.9	4.1	4.4

Met Office Source: HadUK-Grid 01/02/2023 10:46 © Crown copyright



Period	1961-1990	1991-2020	2014-2023	2023
Rainfall (mm)	111.1	121.5	124.1	125.7

Met Office Source: HadUK-Grid 01/02/2023 10:46 © Crown copyright

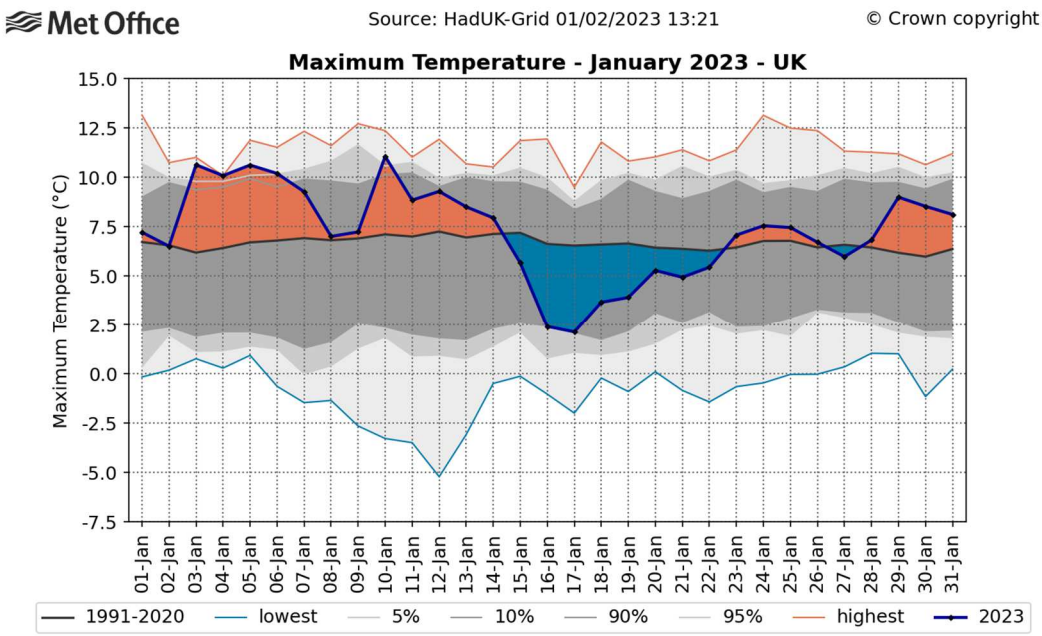


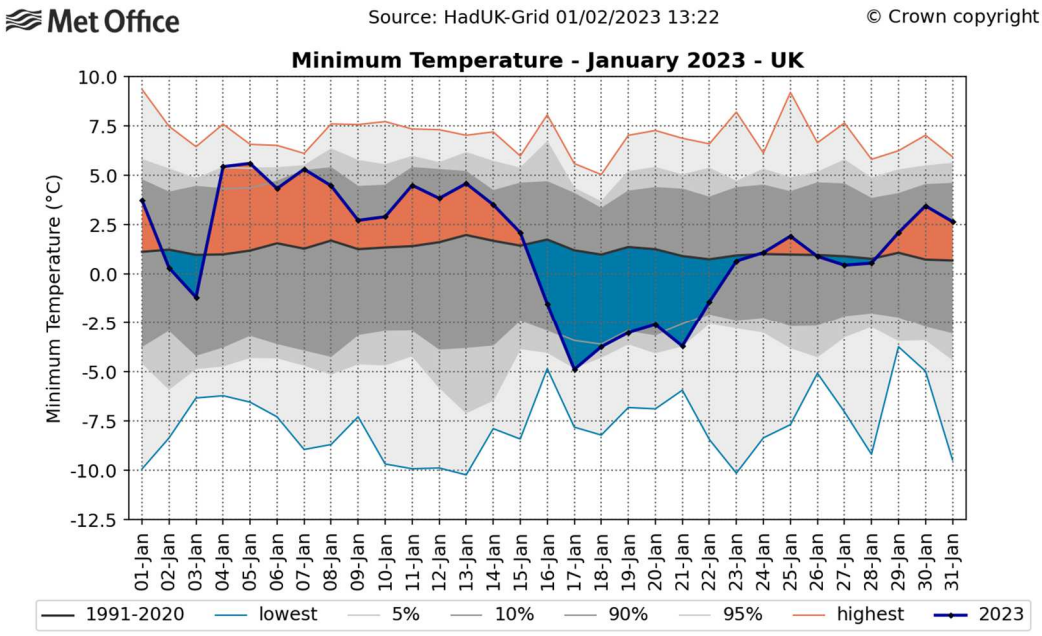
Period	1961-1990	1991-2020	2014-2023	2023
Sunshine (hours)	43.6	47.5	50.8	63.1

Daily time-series

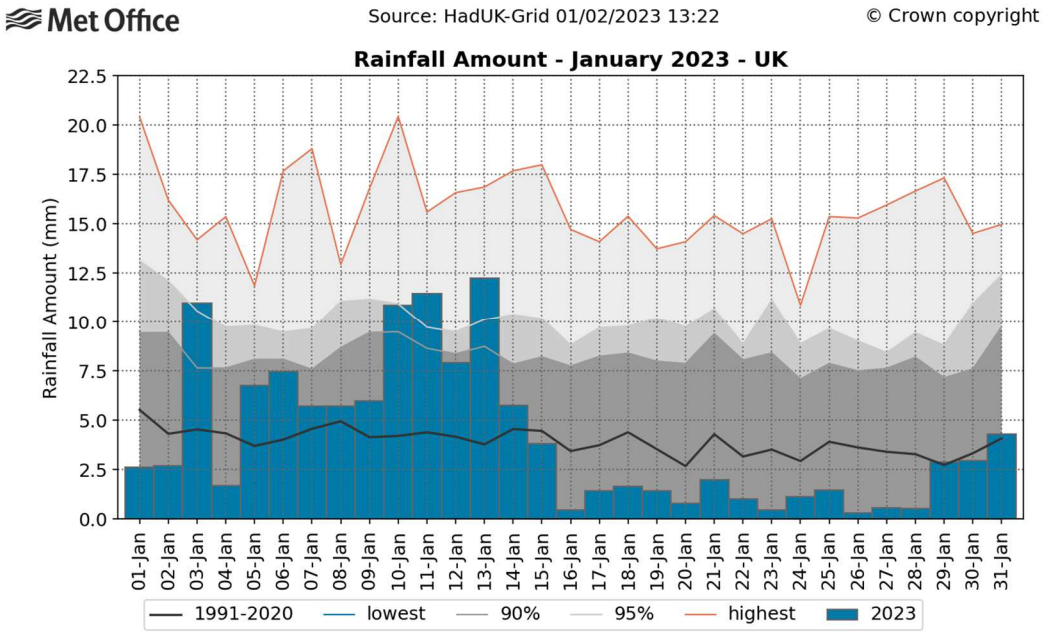
These charts show time-series of UK area-average daily maximum and daily minimum temperature and daily rainfall for each day of January 2023. The areas shaded in grey show the highest and lowest values in the daily temperature series (from 1960) and daily rainfall series (from 1891) together with percentiles and the 1991-2020 long term averages for each day. The rainfall accumulation chart shows the daily rainfall series as an accumulation through the month.

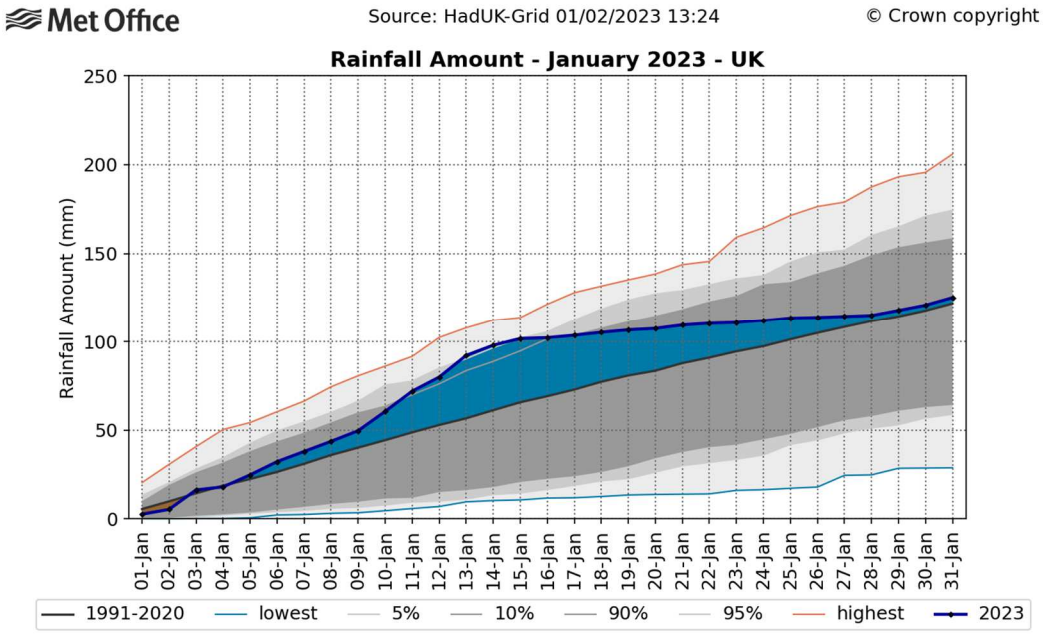
Daily maximum and daily minimum temperature





Daily rainfall and rainfall accumulation

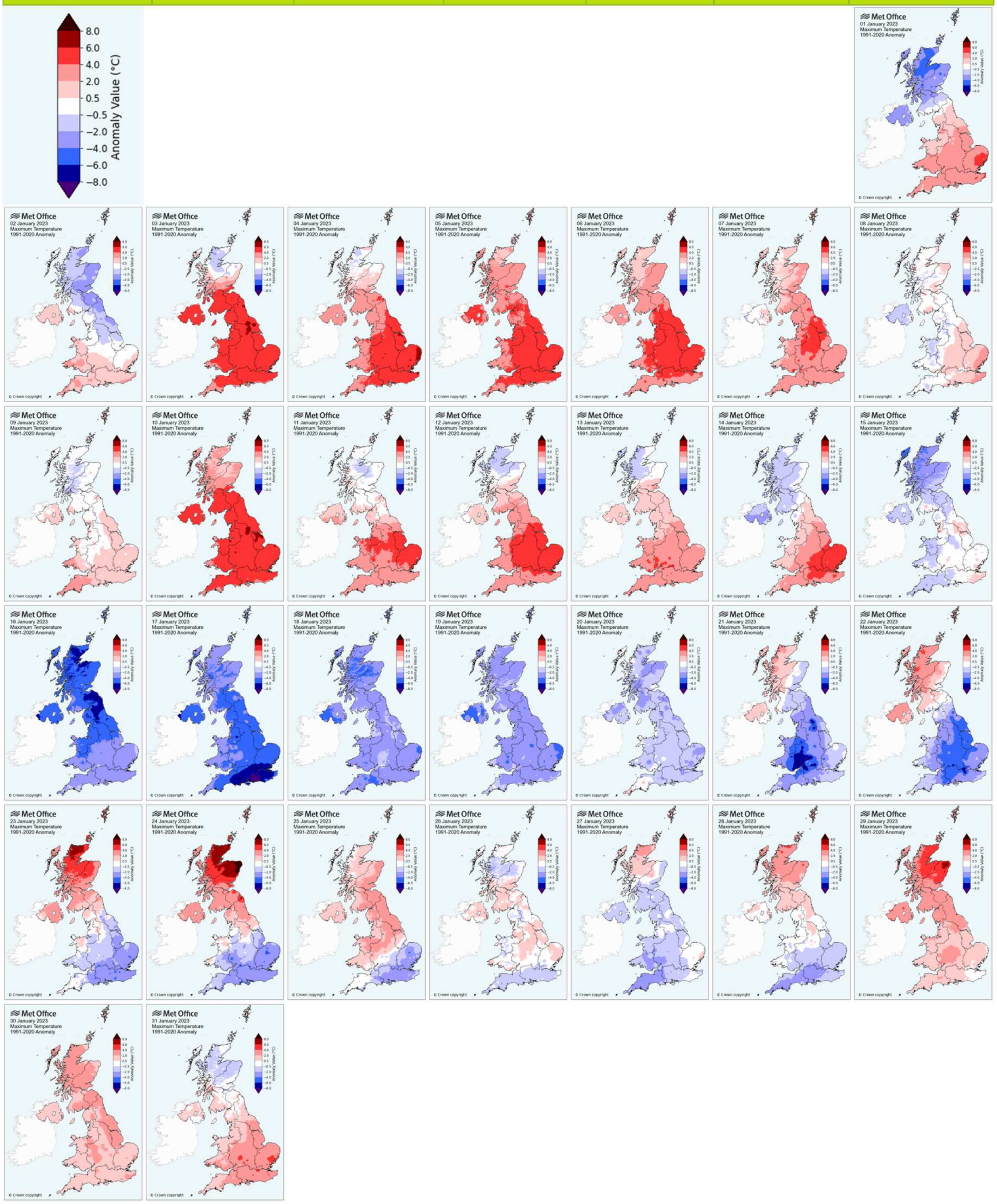




Daily maximum temperature maps - calendar view

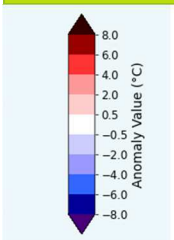
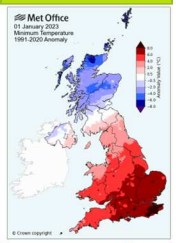
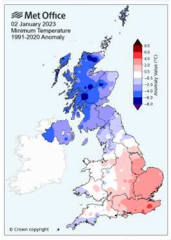
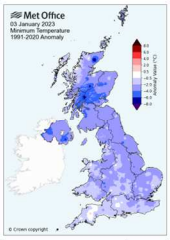
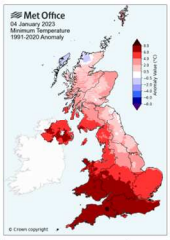
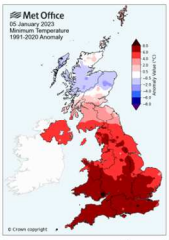
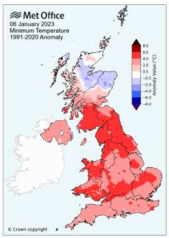
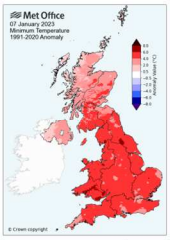
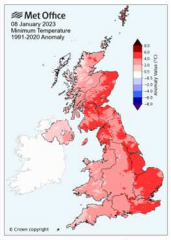
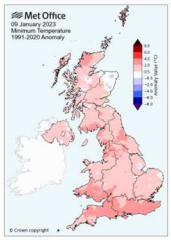
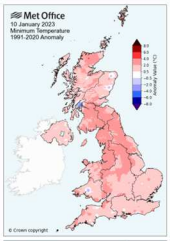
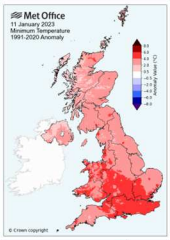
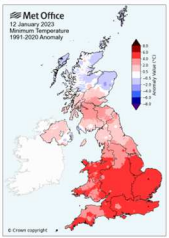
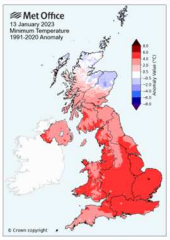
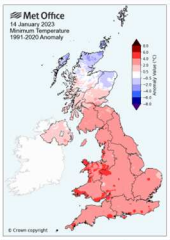
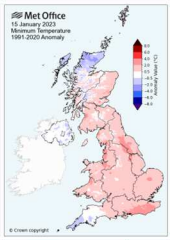
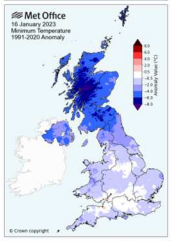
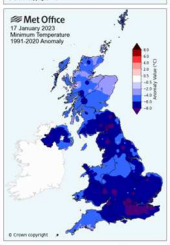
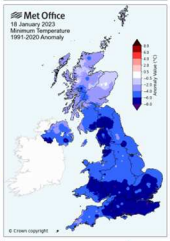
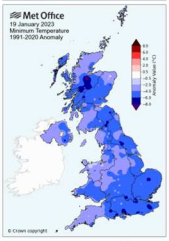
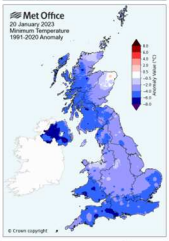
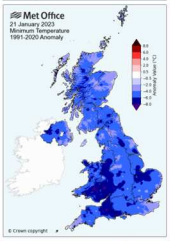
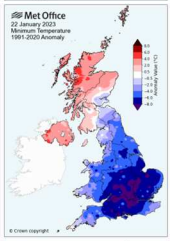
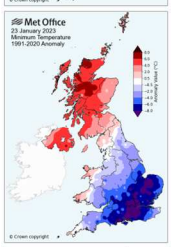
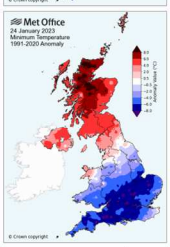
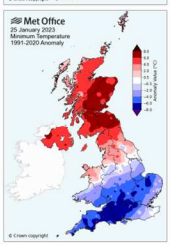
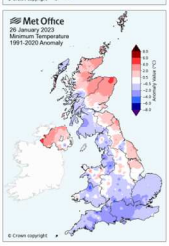
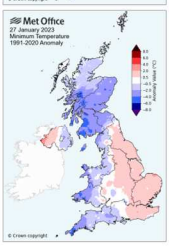
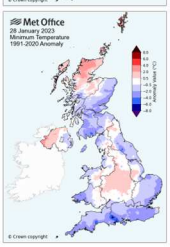
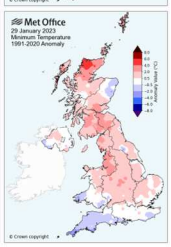
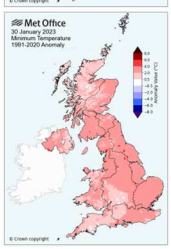
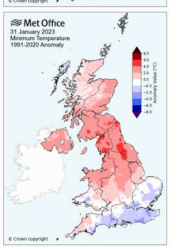
These maps show daily maximum temperatures for each day of January 2023 as anomalies relative to the January 1991-2020 long term average. The daily maximum temperature is the maximum from 0900UTC on the day in question to 0900UTC the following day. Normally, the maximum occurs in the early afternoon.

Mon	Tue	Wed	Thu	Fri	Sat	Sun



Daily minimum temperature maps - calendar view

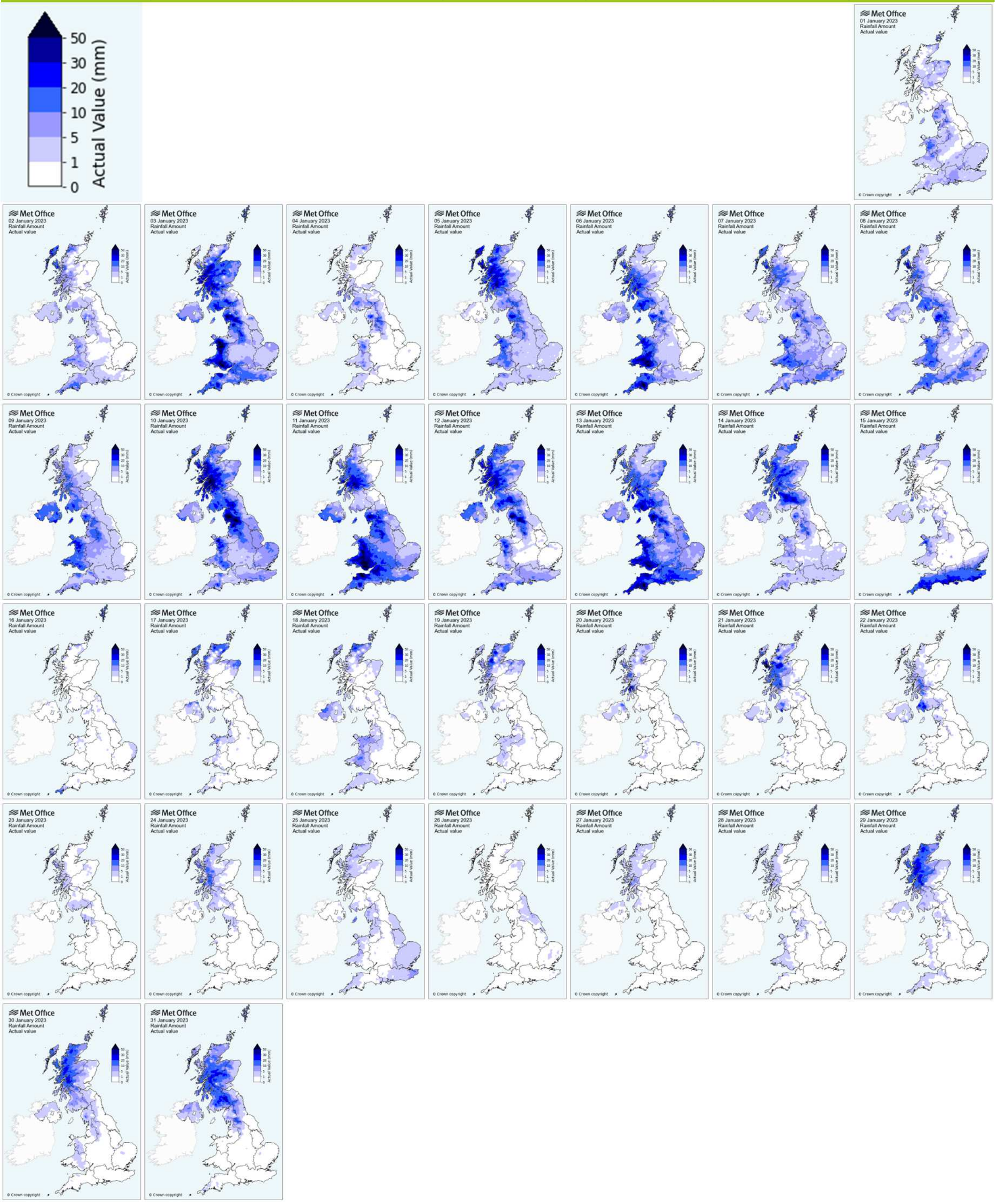
These maps show daily minimum temperatures for each day of January 2023 as anomalies relative to the January 1991-2020 long term average. The daily minimum temperature is the minimum from 0900UTC the previous day to 0900UTC on the day in question. Normally, the minimum occurs in the early morning.

Mon	Tue	Wed	Thu	Fri	Sat	Sun
						
						
						
						
						
						

Daily rainfall maps - calendar view

These maps show daily rainfall for each day of January 2023 as daily totals. The daily rainfall is the total from 0900UTC on the day in question to 0900UTC the following day.

Mon	Tue	Wed	Thu	Fri	Sat	Sun

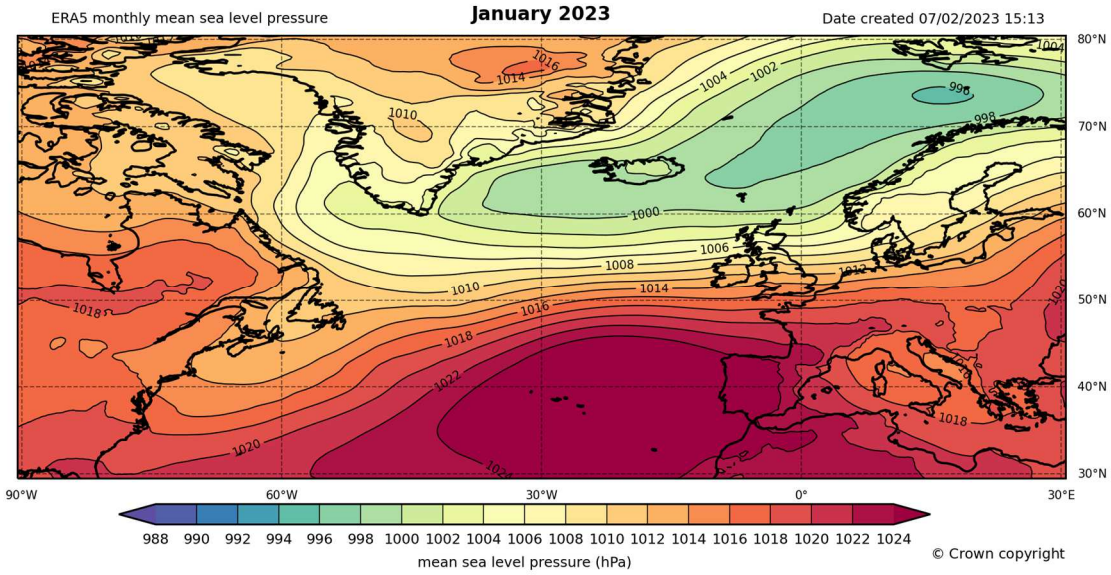


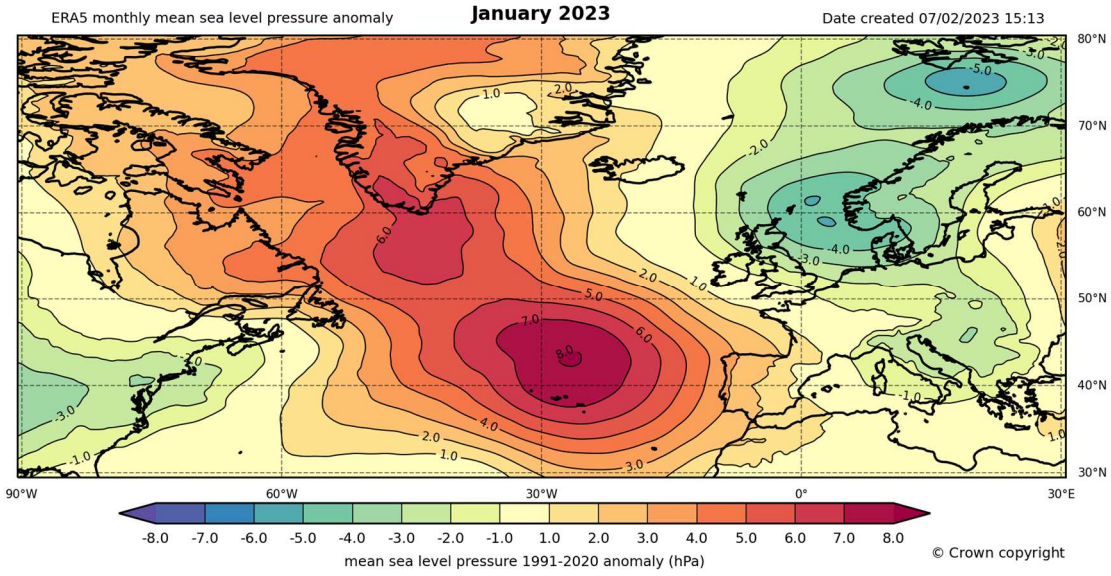
Monthly atmospheric circulation

Mean sea level pressure

These charts show the monthly mean sea level pressure for January 2023 for the UK and north Atlantic, based on the ERA5 reanalysis (Hersbach et al, 2019), both as actual values and as an anomaly relative to the January long term average. These charts provide an indication of the weather characteristics of the month overall i.e. whether the weather type has been generally settled (high pressure) or unsettled (low pressure) during the month.

The mean monthly pressure pattern shows high pressure to the south of the UK, and low pressure to the north, with pressure in the mid-North Atlantic higher than normal and pressure around Scandinavia and eastern Europe lower than average. This meant that over the UK the flow in anomaly terms had an enhanced north-westerly gradient.

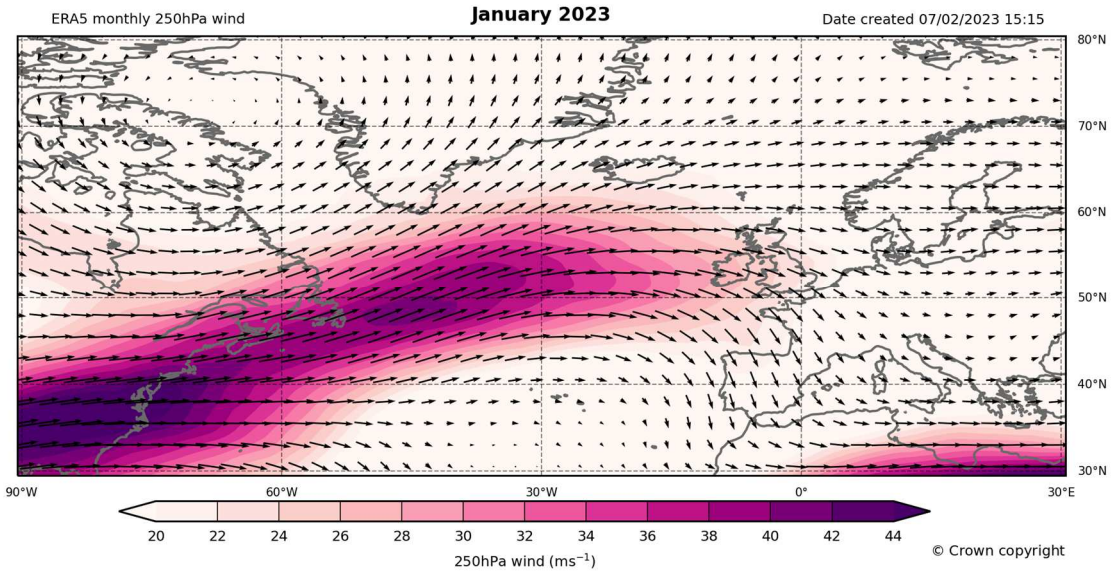


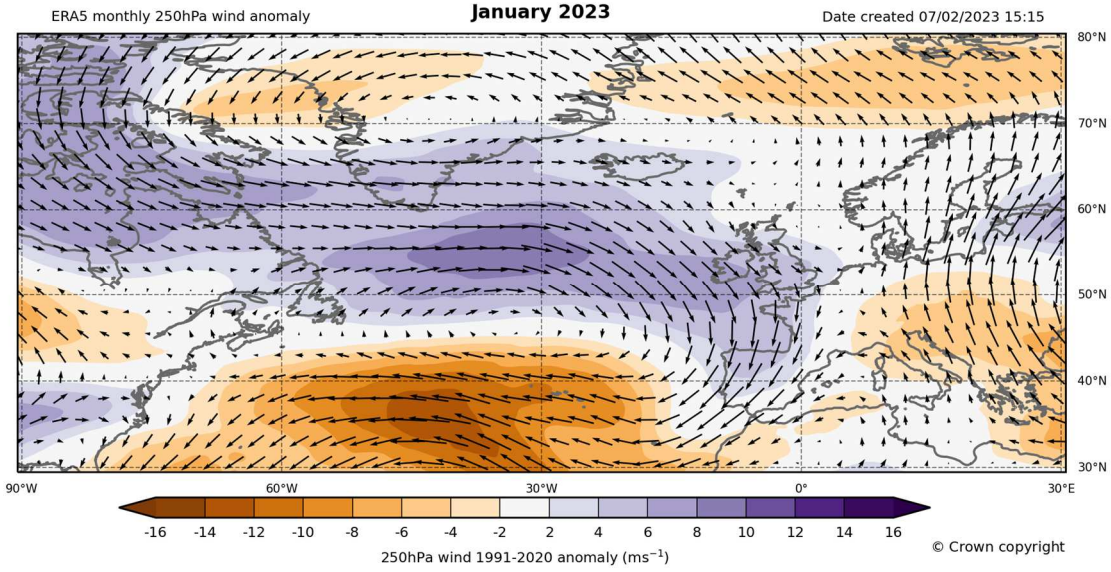


250hPa wind speed and direction

These charts show the monthly 250hPa wind speed and direction for January 2023 for the UK and north Atlantic, based on the ERA5 reanalysis (Hersbach et al, 2019), both as actual values and as an anomaly relative to the January long term average. This provides an indication of the mean strength and position of the jet stream compared to normal. The wind anomaly map shows shaded (scalar) wind speed anomalies with arrows as (vector) wind anomalies.

The normal west-south-westerly jetstream was present in the far west of the North Atlantic, but became weaker than usual further east, as well as being located further north than usual to the south of Greenland and Iceland. The mean upper-tropospheric flow over the UK had an anomalous northerly component.





Weather diary

- **Predominantly wet and windy, but with a cold spell mid-month**

A series of deep Atlantic depressions and transient ridges of high pressure was the feature of the weather over the UK for the first half of the month. With the winds coming mostly from a southwesterly direction, temperatures were held up in the mild category, the 5th seeing minimums well above average for January, and into double figures across the south, and the 10th seeing maximums well into the mid-teens Celsius.

Unfortunately, with these active depressions comes significant rainfall too, with many western counties receiving in excess of 50mm of rain in 24 hours on the 10th and 11th, most notably Honister Pass in Cumbria which recorded 94.4mm on the 10th and Maerdy Water Works in Mid-Glamorgan totalling 100.2mm on the 11th. There was no respite through the 11th and into the 12th when a deep low pressure system crossed the north of Scotland, producing gusts widely over 50mph, and as high as 83mph at the Needles on the Isle of Wight.

The UK as a whole entered a cold spell mid-month from the 15th to the 23rd as winds turned northerly, with maximums generally restricted to low single figures Celsius and minimums falling well below zero, Drumnadrochit in Inverness-shire reporting -10.4 °C on the 19th. This period also saw the most significant snowfall of the month in all regions. Loch Glascarnoch in Ross & Cromarty recorded 34cm of lying snow on the 18th and 19th.

By the 23rd, high pressure had established itself over the south of the UK, in effect producing a north/south split with the colder continental air well entrenched over the south but significantly milder Atlantic air crossing the north. Dyce in Aberdeenshire recorded the highest maximum of the month on the 24th with 15.8 °C. From the 25th onwards, following the passage of a cold front, temperatures evened out across the UK, with maximum temperatures around average and most places experiencing slight night-time frosts, before turning milder, windier and wetter again in northern areas from the 29th.

Notes

The Met Office National Meteorological Library and Archive holds a near-continuous record of monthly weather reports from 1884, and this report forms a continuation of that series. The purpose of each report is to provide an overview of the weather conditions across the UK for that month. The emphasis is mainly based on observations from the surface network of weather stations. Climate series based on from data from these stations are used to provide long term context.

This summary was produced on 07/02/2023 17:54. The statistics are a provisional assessment of the observational data available at the time of production. Ongoing data receipt and quality assurance processes may result in subsequent updates to the statistics presented.

If you have any questions or feedback about this product, spot any data errors or omissions, or wish to obtain further data, please contact the Met Office.

For historical monthly weather reports please visit the Library and Archive.

- The land-surface observations presented in this report are from the Met Office official weather station network which includes both automatic weather stations and manual climate stations operated by volunteer observers. Rainfall data are from the official registered rain-gauge network which includes rain-gauges operated by a number of key partners including the Environment Agency, Scottish Environmental Protection Agency and Northern Ireland Water.
- The observations are carefully managed such that they conform to current best-practice observational standards as defined by the World Meteorological Organization (WMO). The observations also pass through a range of quality assurance procedures at the Met Office before application for climate monitoring.
- Daily and monthly maps, monthly statistics and monthly time-series are primarily based on the HadUK-Grid dataset of 1km resolution UK gridded climate data (Hollis et al, 2019). Monthly statistics from the monthly Central England temperature series 1659 (Manley, 1974) and England and Wales precipitation series from 1766 (Wigley et al, 1984) provide long term context.
- The monthly lightning activity map is based on data from the Met Office ATDnet (Arrival Time Difference Network) system. This is an automatic lightning location network comprising around ten lightning outstation sensors located across Europe.
- The monthly maps of mean sea level pressure and 250hPa wind speed and direction are based on the ERA5 reanalysis (Hersbach et al, 2019). ERA5 is the fifth generation ECMWF reanalysis for the global climate and weather for the past 4 to 7

decades. Reanalysis combines model data with observations from across the world into a globally complete and consistent dataset using the laws of physics.

Hersbach, H., Bell, B., Berrisford, P., Biavati, G., Horányi, A., Muñoz Sabater, J., Nicolas, J., Peubey, C., Radu, R., Rozum, I., Schepers, D., Simmons, A., Soci, C., Dee, D., Thépaut, J-N. (2019): ERA5 monthly averaged data on single levels from 1959 to present. Copernicus Climate Change Service (C3S) Climate Data Store (CDS). https://doi.org/10.24381/cds.f17050d7

Hollis, D, McCarthy, MP, Kendon, M, Legg, T, Simpson, I. HadUK-Grid - A new UK dataset of gridded climate observations. Geosci Data J. 2019; 6: 151-159. https://doi.org/10.1002/gdj3.78

Manley, G. (1974), Central England temperatures: Monthly means 1659 to 1973. Q.J.R. Meteorol. Soc., 100: 389-405. https://doi.org/10.1002/qj.49710042511

Wigley, T.M.L., Lough, J.M. and Jones, P.D. (1984), Spatial patterns of precipitation in England and Wales and a revised, homogeneous England and Wales precipitation series. J. Climatol., 4: 1-25. https://doi.org/10.1002/joc.3370040102