

# February 2023 Monthly Weather Report

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

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## UK overview

February overall was milder and drier than average, with high pressure influencing the weather for much of the time. It was unsettled initially, and again for a time from mid-month, but the month was remarkable for its dryness, this being provisionally the UK's driest February since 1993. It was also a mild month, especially further north, despite colder spells from 5th to 9th and from 23rd onwards.

Mean temperatures for this month were well above average, with a provisional UK mean temperature of 5.8 °C, some 1.7 °C above the 1991-2020 average. Scotland and Northern Ireland were mildest relative to average. Rainfall was well below average generally, with less than 20% of average over most of central and southern England as well as eastern parts of Wales, though much of north-west Scotland was near or slightly wetter than average. The UK had 45% of average rainfall for the month. It was a sunnier than average month for central and eastern England, but rather dull for most of Scotland and Northern Ireland, with the UK as a whole having 98% of average.

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

## Weather impacts

- **A predominantly anticyclonic month across the UK, with parts of England and Wales receiving less than 20% of the long-term average rainfall**
- **Largely settled pattern temporarily interrupted around the middle of the month, with the passage of Storm 'Otto' across the far north of Scotland giving disruptive winds to Scotland and north-east England**

The start of the month saw strong westerly winds and spells of heavy rain affecting the north of Scotland. On the 2nd, train services between Inverness and Kyle of Lochalsh and also between Glasgow and Oban were subject to cancellations and speed restrictions, whilst ferry services between the Western Isles and the mainland were severely reduced due to the adverse conditions.

The following twelve days were dominated by high pressure, and several low-impact fog warnings were issued, mainly across the south and east of England, though few if any impacts were reported.

On the 16th an approaching low-pressure system, forecast to deliver strong winds over Scotland and northern England, was named 'Otto' by the Danish Met Institute, as Denmark was expected to be impacted after the UK. The peak of Otto's winds occurred during the first half of the 17th, with northern and eastern Scotland along with north-east England as far south as Yorkshire seeing the majority of the impacts as gusts exceeded 80 mph in a few places. Power outages were widely reported across the warning areas, with around 12,000 properties affected across Highland, Aberdeenshire and Moray. In north-east England and Yorkshire around 14,000 properties lost power supplies, and the East Coast Main Line saw services severely disrupted between York and Edinburgh as a result of damage to overhead wires, with similar issues in Yorkshire along the Doncaster to Selby stretch of line. Within Highland and Grampian numerous trees were brought down, causing significant disruption to the rural road and rail networks, and over 100 school closures were also reported from these areas. In Aberdeen city centre the roof of a campus building was damaged by the winds, with staff and students being evacuated. A school roof in Carnoustie also suffered severe wind damage on the morning of the 17th. Also there were numerous reports of vehicles being blown over, with one incident on the A1(M) in county Durham involving three separate vehicles which closed the southbound carriageway for a considerable time.

By the 18th more benign weather returned, with no further notable impacts during the remainder of the month.

## Monthly extremes

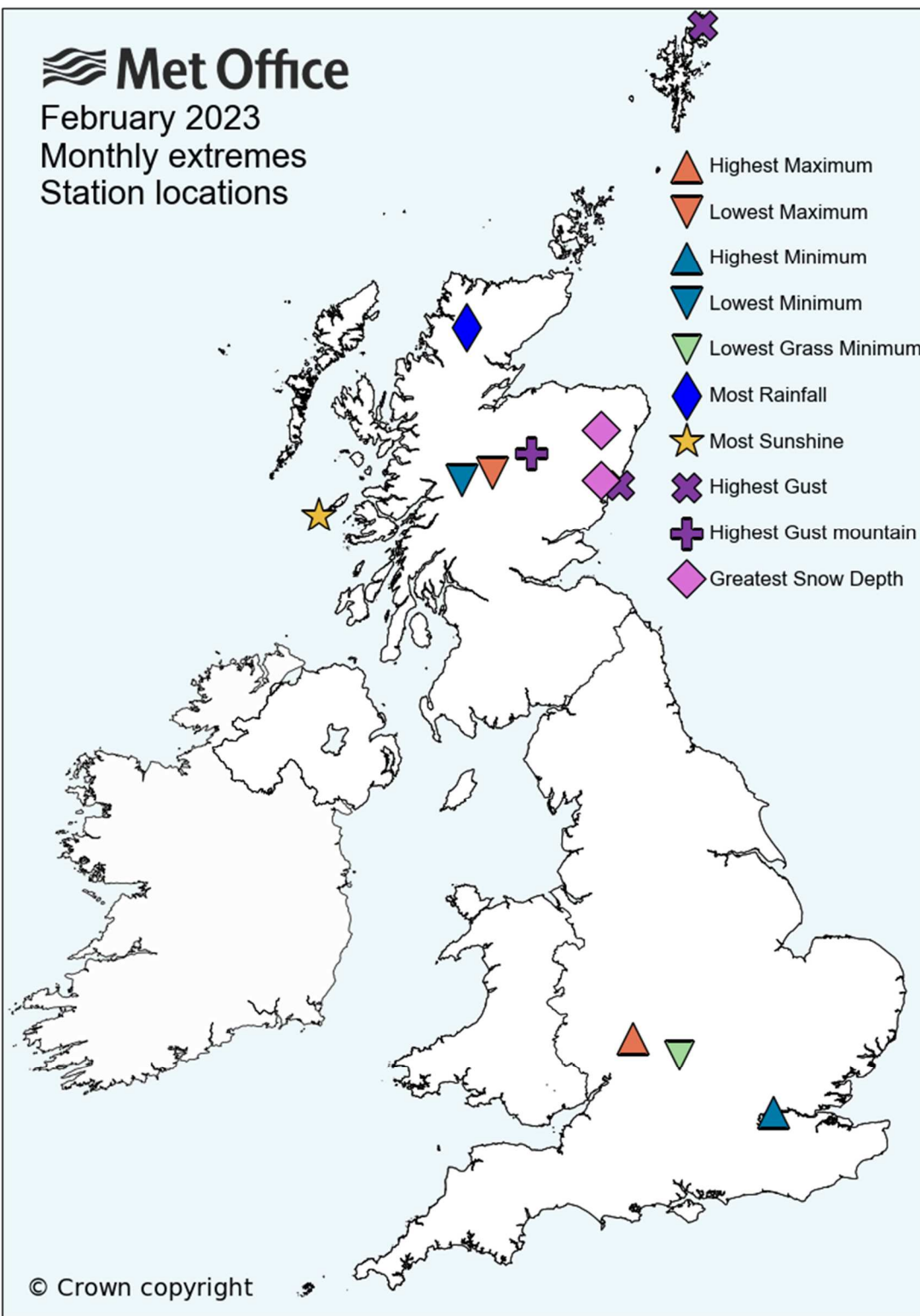
The table below lists UK monthly weather extremes recorded at individual weather stations during February 2023 from data available on 03/03/2023. The map shows the location of these stations.

<b>Highest Maximum</b>	<b>17.2°C</b> on <b>17th</b> at Pershore (Hereford & Worcester, 35mAMSL)
<b>Lowest Maximum</b>	<b>2.0°C</b> on <b>27th</b> at Dalwhinnie No 2 (Inverness-shire, 351mAMSL)
<b>Highest Minimum</b>	<b>11.0°C</b> on <b>18th</b> at London, St James's Park (Greater London, 5mAMSL)
<b>Lowest Minimum</b>	<b>-8.5°C</b> on <b>27th</b> at Tulloch Bridge (Inverness-shire, 249mAMSL)
<b>Lowest Grass Minimum</b>	<b>-12.9°C</b> on <b>8th</b> at South Newington (Oxfordshire, 105mAMSL)
<b>Most Rainfall</b>	<b>45.6mm</b> on <b>2nd</b> at Cassley (Sutherland, 99mAMSL)
<b>Most Sunshine</b>	<b>9.9hr</b> on <b>25th</b> at Tiree (Argyll (in Strathclyde Region), 9mAMSL)
<b>Highest Gust</b>	<b>72Kt 83mph</b> on <b>3rd</b> at Baltasound No 2 (Shetland, 15mAMSL) also on <b>17th</b> at Inverbervie No 2 (Kincardineshire, 134mAMSL)
<b>Highest Gust (mountain*)</b>	<b>106Kt 122mph</b> on <b>17th</b> at Cairngorm Summit (Inverness-shire, 1237mAMSL)
<b>Greatest Snow Depth at 0900 UTC</b>	<b>1cm</b> on <b>18th</b> at Fettercairn, Glensaugh No 2 (Kincardineshire, 171mAMSL) and Oyne No 2 (Aberdeenshire, 116mAMSL)

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

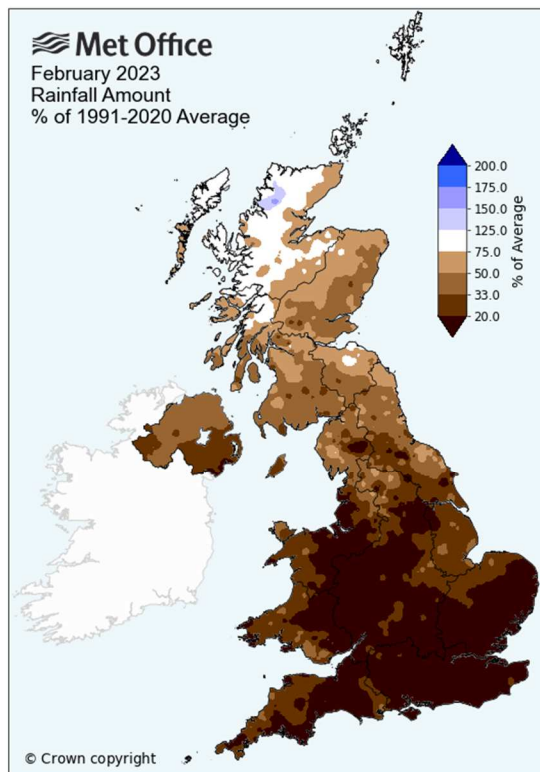
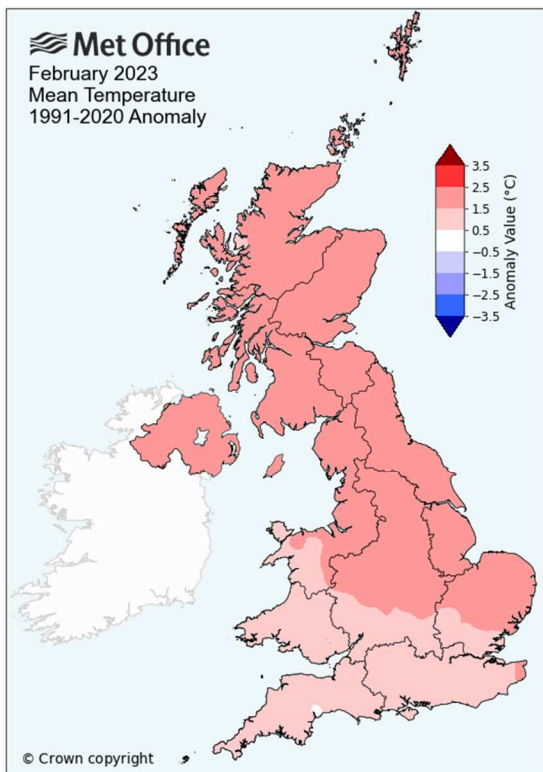
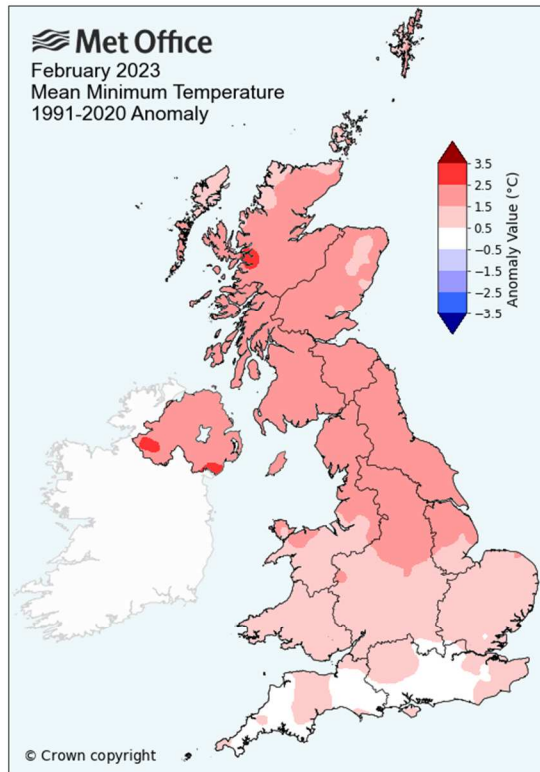
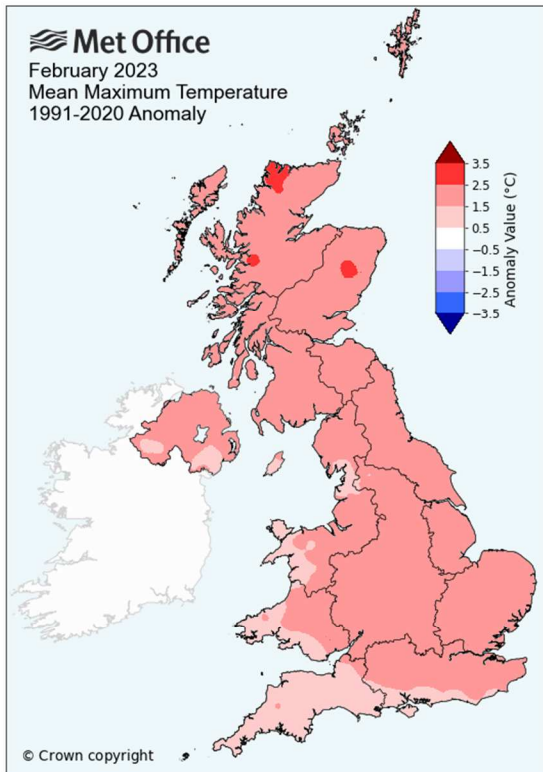
\*Mountain stations are above 500mAMSL.

February 2023  
Monthly extremes  
Station locations



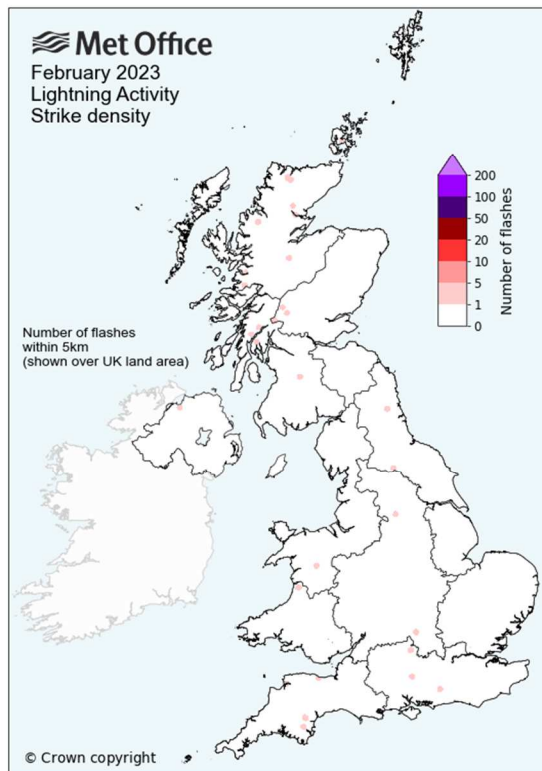
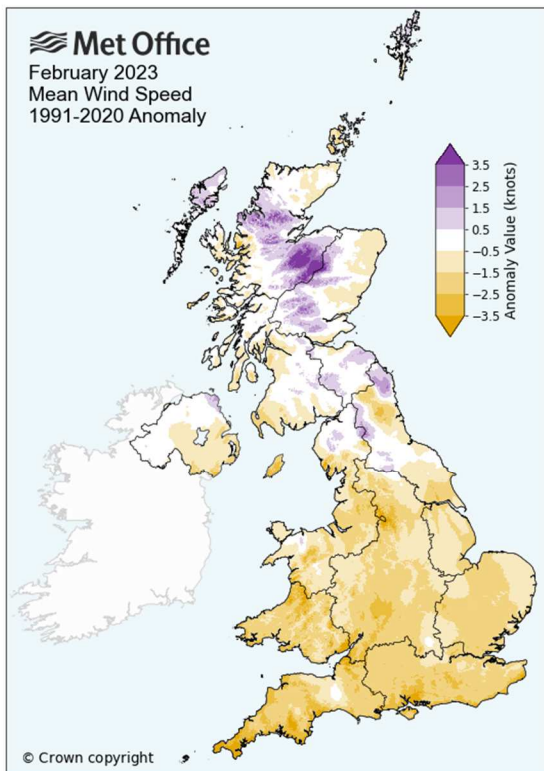
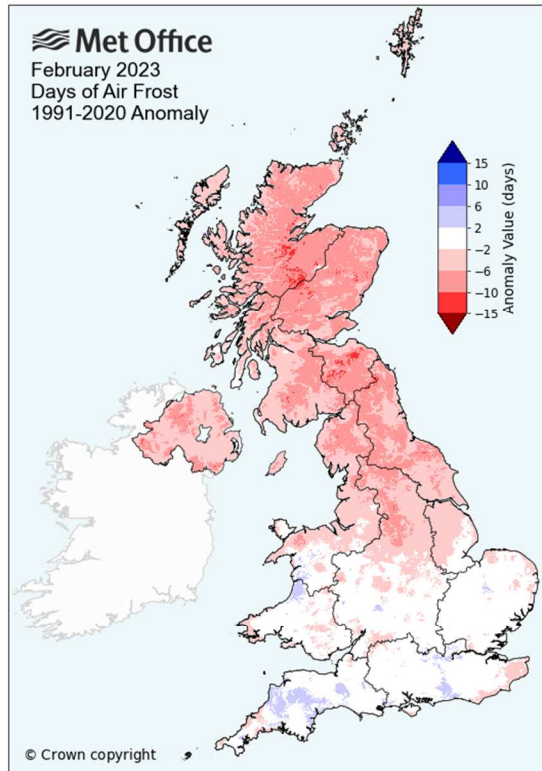
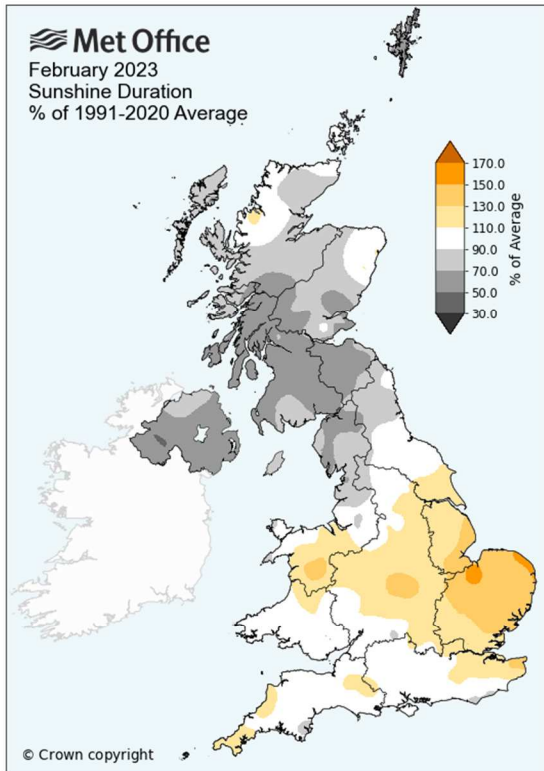
## Monthly maps

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





These maps show monthly sunshine, monthly air frost and monthly windspeed for February 2023 as anomalies relative to the February 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 February 2023 for max, min and mean temperature, rainfall, sunshine and windspeed as actual values and anomalies relative to the February 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	9.0	1.9	3	138	140
England	9.7	1.9	7	134	140
Wales	8.9	1.5	9	132	140
Scotland	7.9	2.0	4	137	140
Northern Ireland	9.4	1.6	6	135	140
Central England	10.1	2.0	7	140	146

### Mean minimum temperature

Region	Mintemp (°C)	1991-2020 Anomaly (°C)	Rank - warmest	Rank - coldest	Series length (yrs)
UK	2.6	1.5	8	133	140
England	2.7	1.2	19	122	140
Wales	2.7	1.1	28	113	140
Scotland	2.2	1.9	4	137	140
Northern Ireland	3.8	2.3	2	139	140
Central England	2.9	1.1	28	119	146



## Mean temperature

Region	Meantemp (°C)	1991-2020 Anomaly (°C)	Rank - warmest	Rank - coldest	Series length (yrs)
UK	5.8	1.7	5	136	140
England	6.2	1.5	11	130	140
Wales	5.8	1.3	16	125	140
Scotland	5.1	2.0	3	138	140
Northern Ireland	6.6	2.0	4	137	140
Central England	6.5	1.5	24	342	365

## Rainfall

Region	Rainfall (mm)	% of 1991-2020 Average	Rank - wettest	Rank - driest	Series length (yrs)
UK	43.4	45	162	27	188
England	15.3	23	181	8	188
Wales	26.2	22	176	13	188
Scotland	97.0	69	113	76	188
Northern Ireland	31.3	34	175	14	188
EWP (England and Wales)	16.5	23	247	12	258

## Sunshine

Region	Sunshine (hours)	% of 1991-2020 Average	Rank - sunniest	Rank - dullest	Series length (yrs)
UK	70.2	98	37	69	105
England	85.9	110	18	88	105
Wales	74.2	107	29	77	105
Scotland	48.4	76	89	17	105
Northern Ireland	39.1	58	98	8	105

## Windspeed

Region	Windspeed (knots)	1991-2020 Anomaly (knots)	Rank - windiest	Rank - calmest	Series length (yrs)
UK	9.8	-1.0	40	16	55
England	7.9	-1.6	48	8	55
Wales	9.6	-1.7	42	14	55
Scotland	12.9	0.1	22	34	55
Northern Ireland	9.5	-0.5	36	20	55

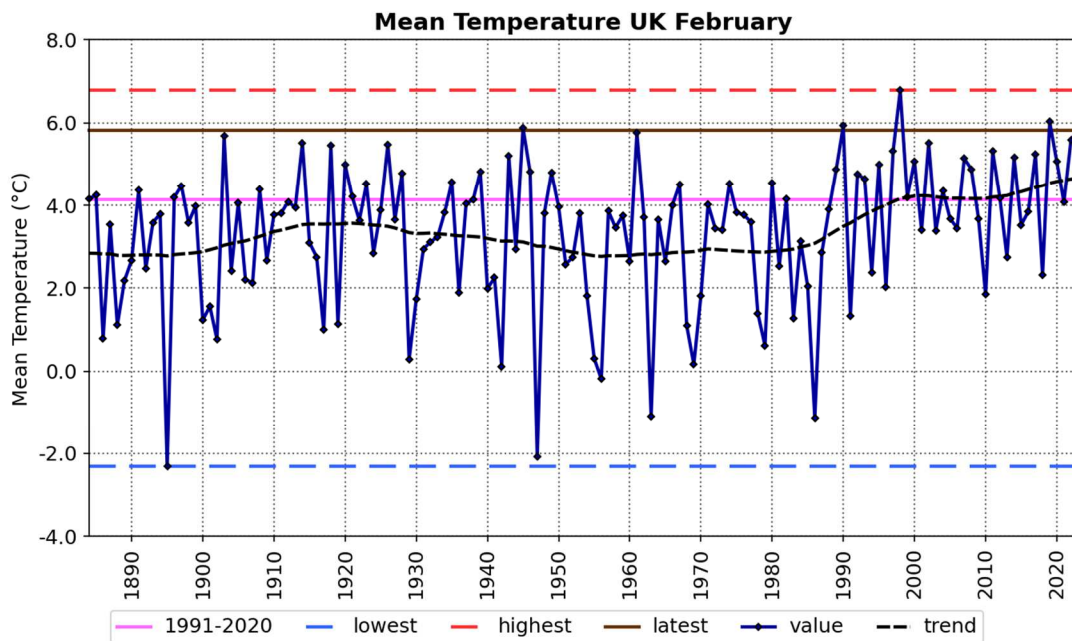
## Monthly time-series

These charts show time-series for the UK for February 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.

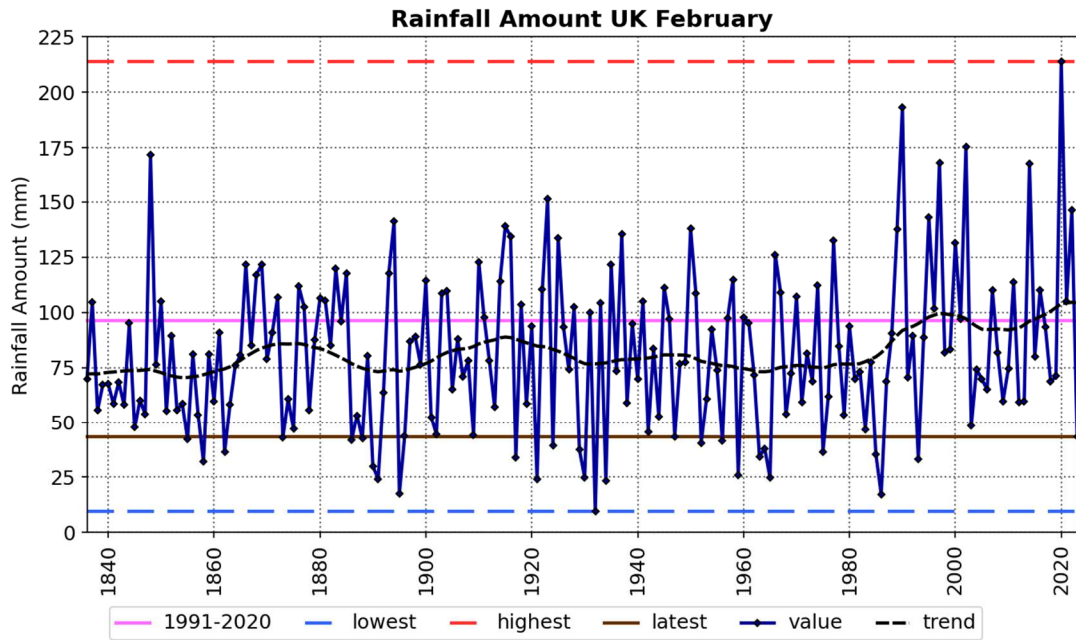


Source: HadUK-Grid 01/03/2023 13:38

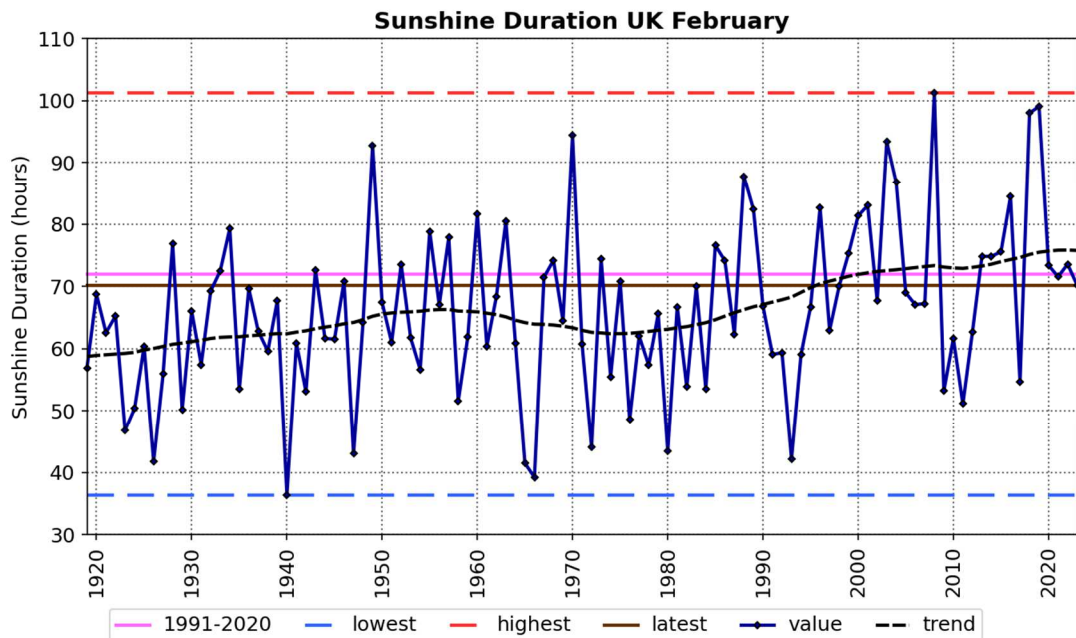
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Period	1961-1990	1991-2020	2014-2023	2023
Meantemp (°C)	3.0	4.1	4.7	5.8



Period	1961-1990	1991-2020	2014-2023	2023
Rainfall (mm)	77.5	96.2	109.9	43.4



Period	1961-1990	1991-2020	2014-2023	2023
Sunshine (hours)	64.4	71.9	77.5	70.2

# Daily time-series

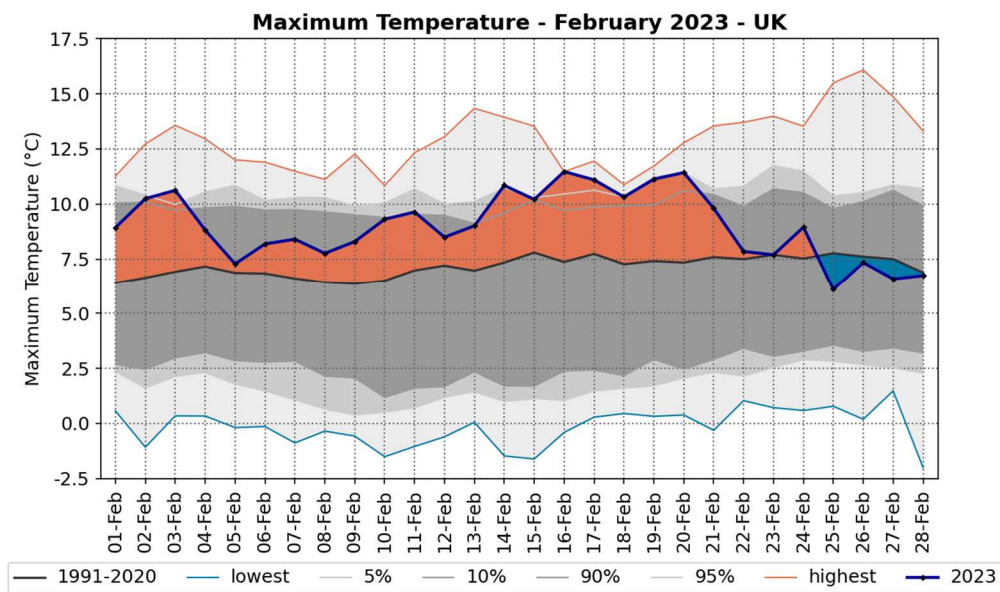
These charts show time-series of UK area-average daily maximum and daily minimum temperature and daily rainfall for each day of February 2023. The areas shaded in grey show the highest and lowest values in the daily temperature series (from 1960) and daily rainfall series (from 1891) together with percentiles 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



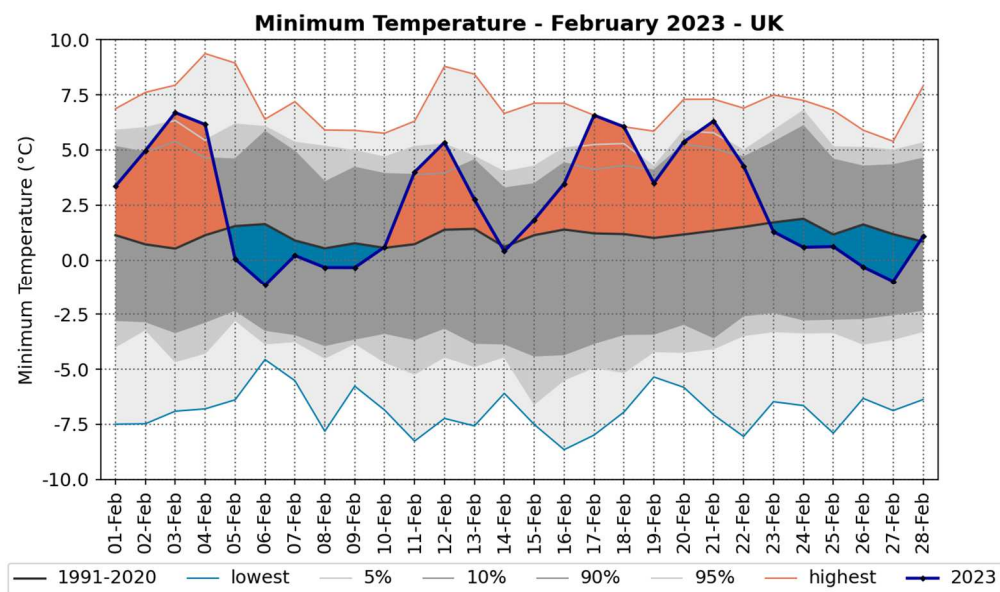
Source: HadUK-Grid 01/03/2023 13:49

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Source: HadUK-Grid 01/03/2023 13:50

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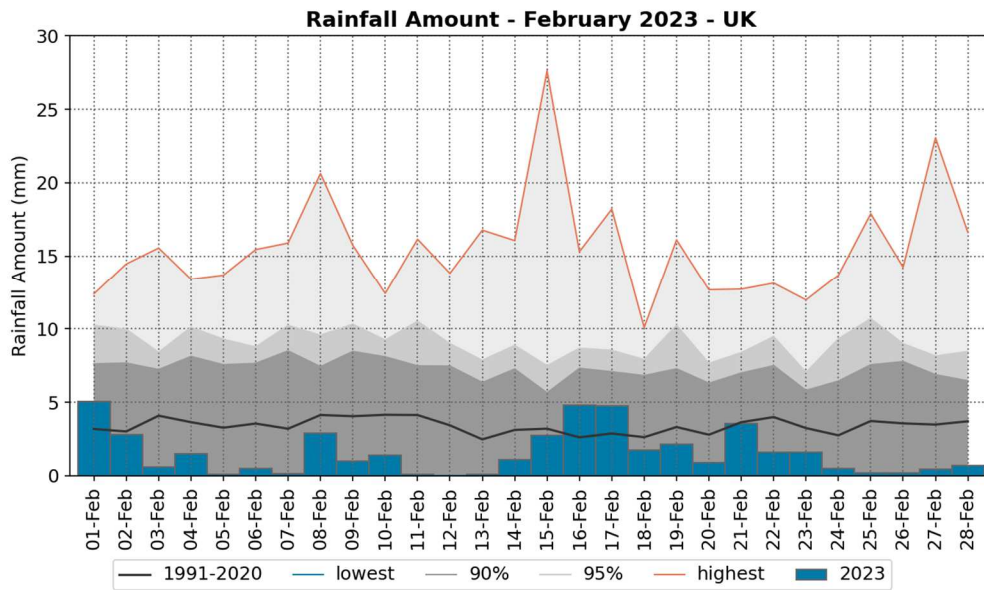


# Daily rainfall and rainfall accumulation

Met Office

Source: HadUK-Grid 01/03/2023 13:50

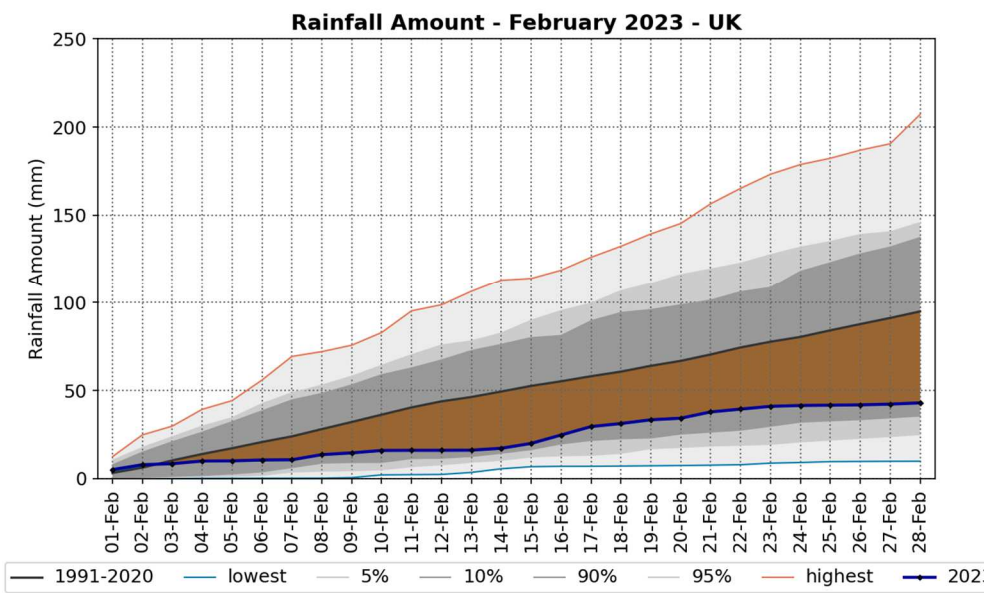
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Source: HadUK-Grid 01/03/2023 13:53

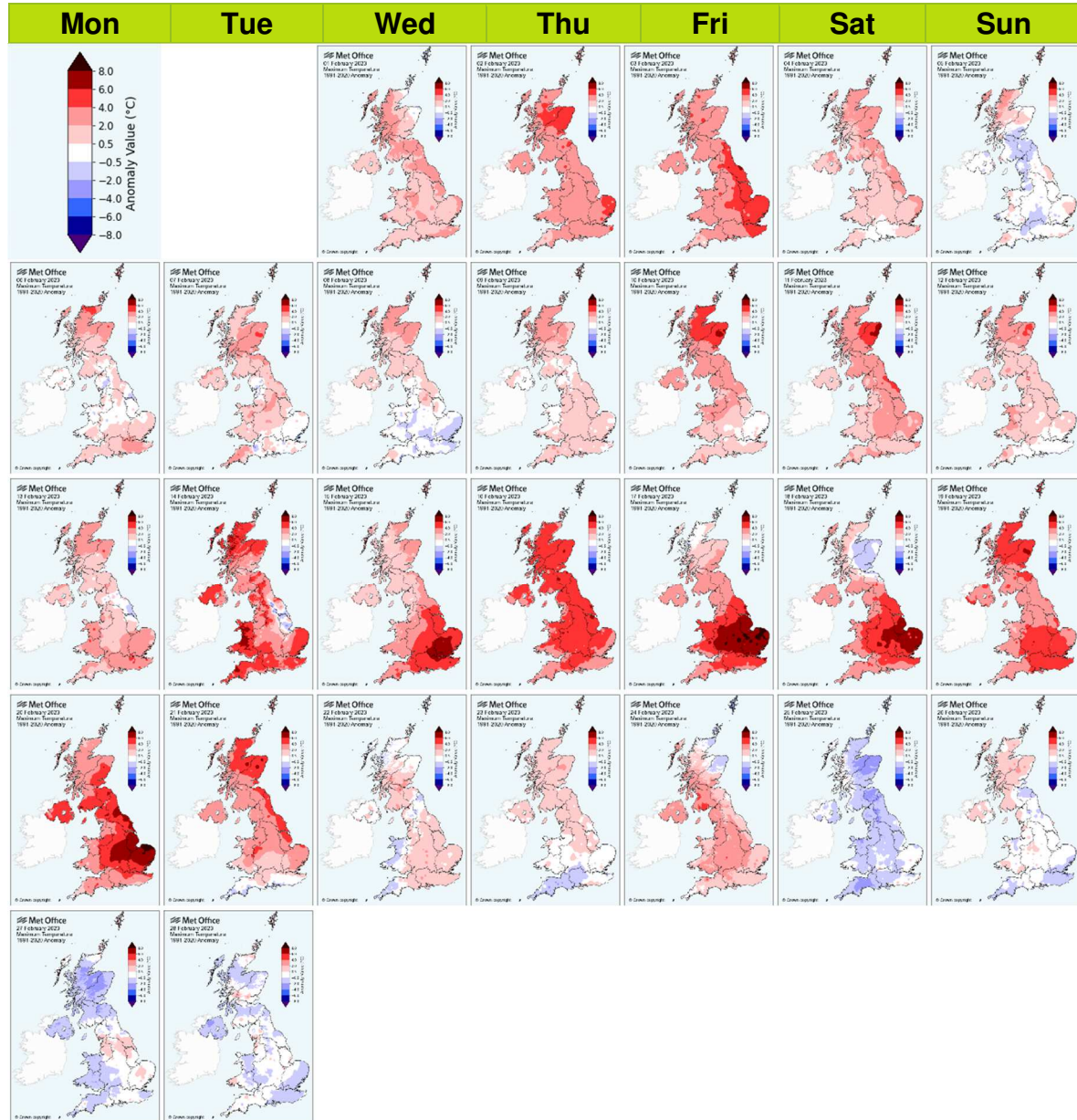
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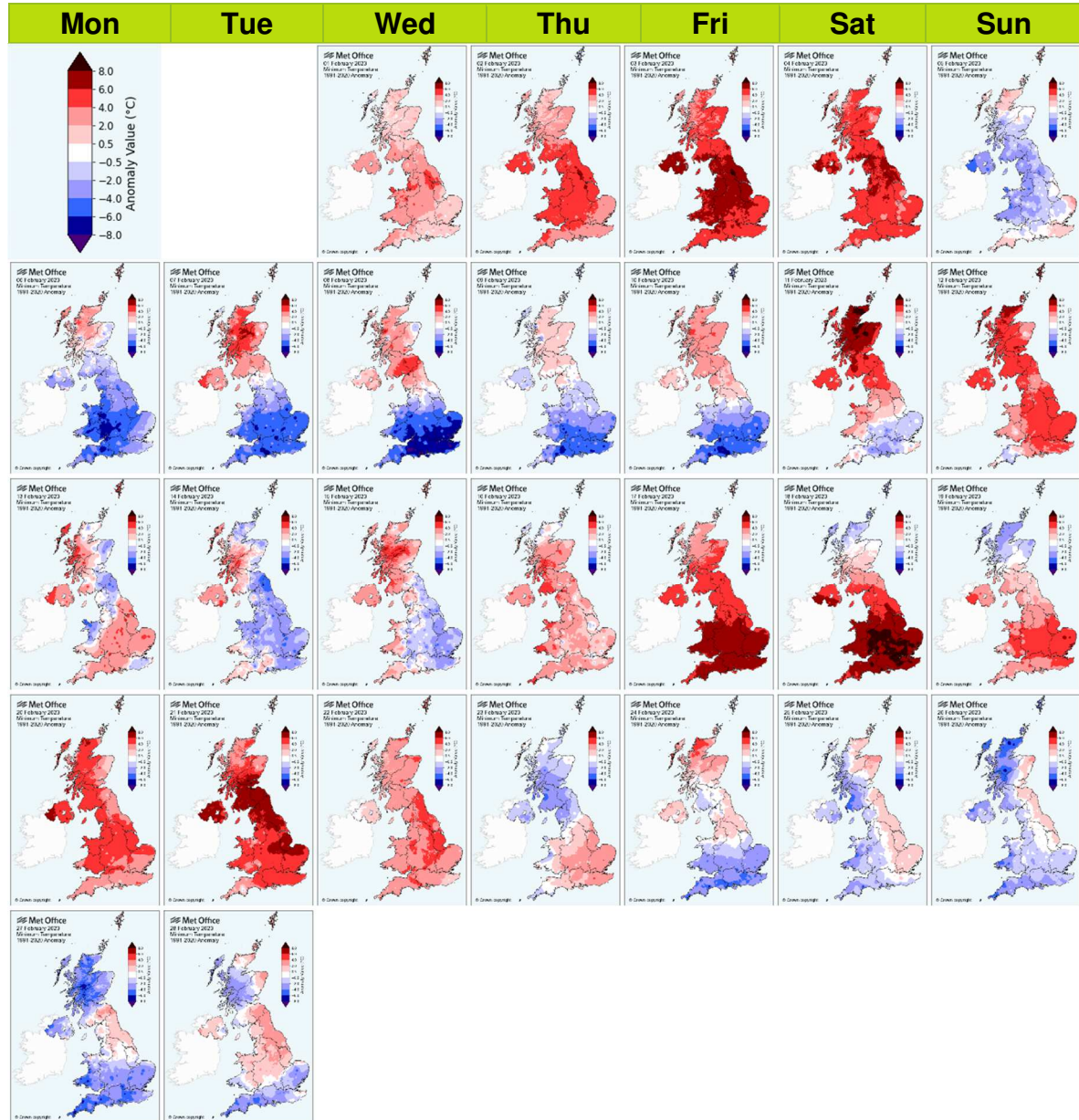
# Daily maximum temperature maps - calendar view

These maps show daily maximum temperatures for each day of February 2023 as anomalies relative to the February 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.



# Daily minimum temperature maps - calendar view

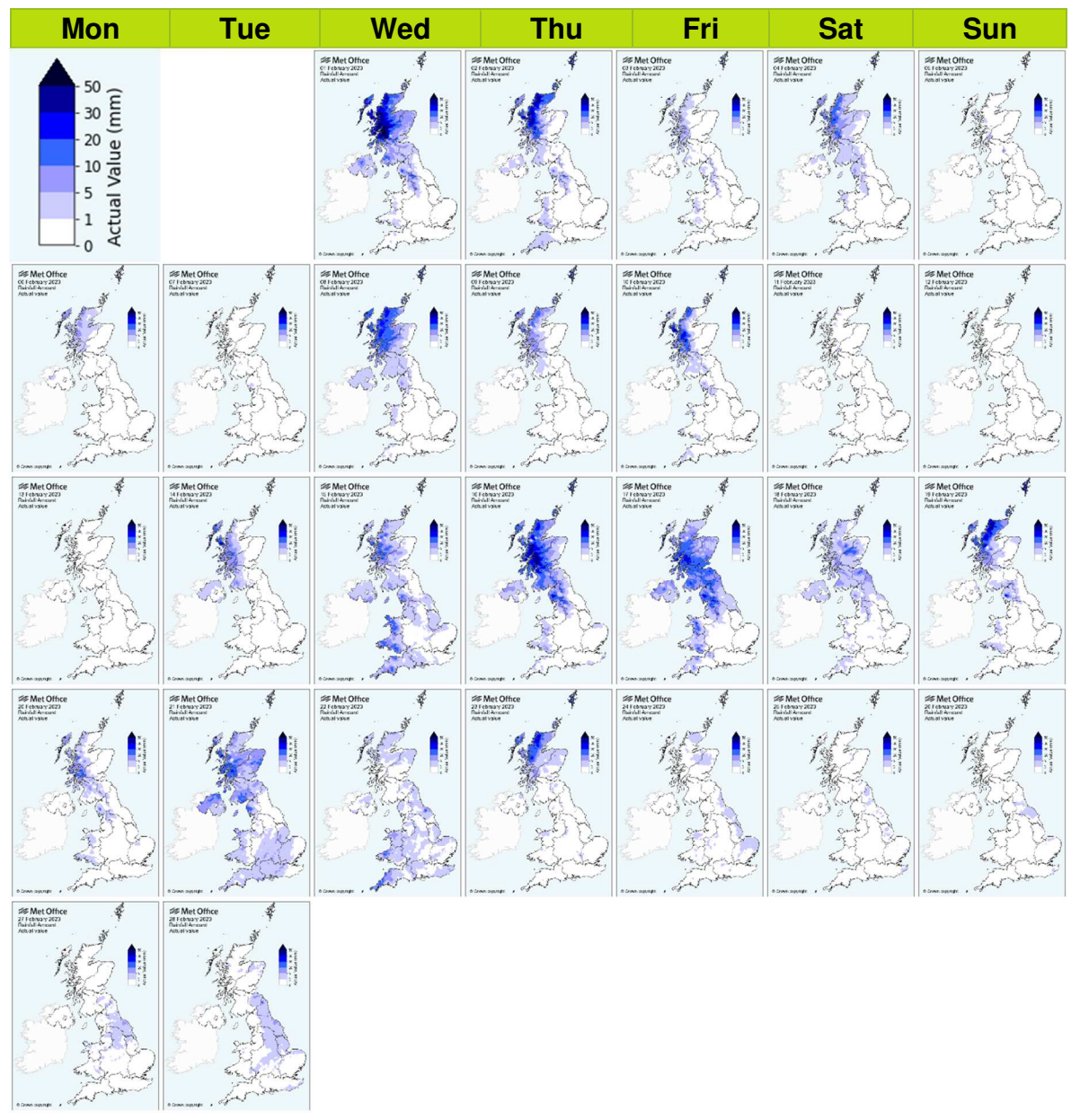
These maps show daily minimum temperatures for each day of February 2023 as anomalies relative to the February 1991-2020 long term average. The daily minimum temperature is the minimum from 0900UTC the previous day to 0900UTC on the day in question. Normally, the minimum occurs in the early morning.





# Daily rainfall maps - calendar view

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

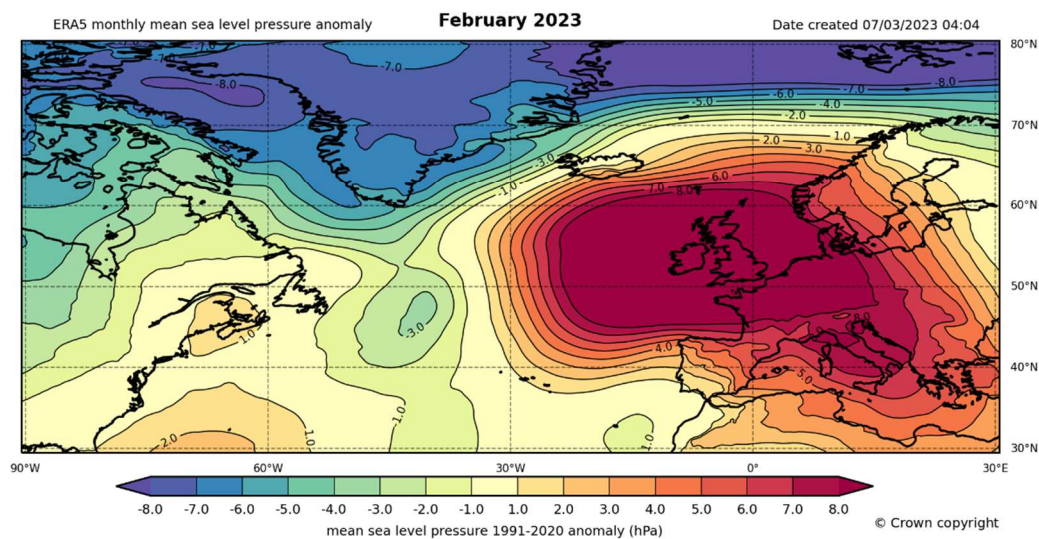
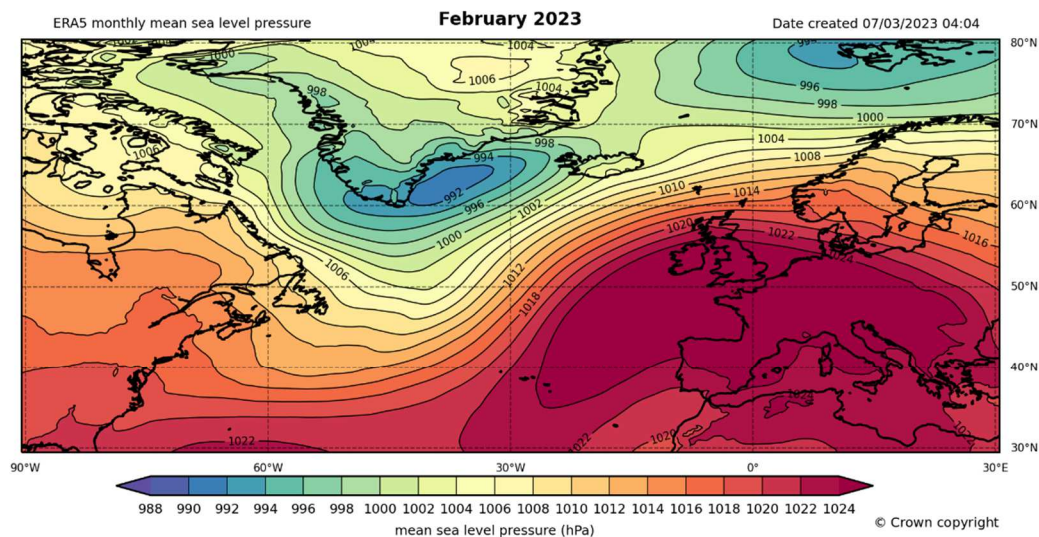


# Monthly atmospheric circulation

## Mean sea level pressure

These charts show the monthly mean sea level pressure for February 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 February 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 sea-level pressure pattern for February shows high pressure over western Europe, and the usual Icelandic low displaced towards southern Greenland. Mild maritime air was thus blowing around the high across the UK for much of the time. A strong positive pressure anomaly was centred firmly over the UK.

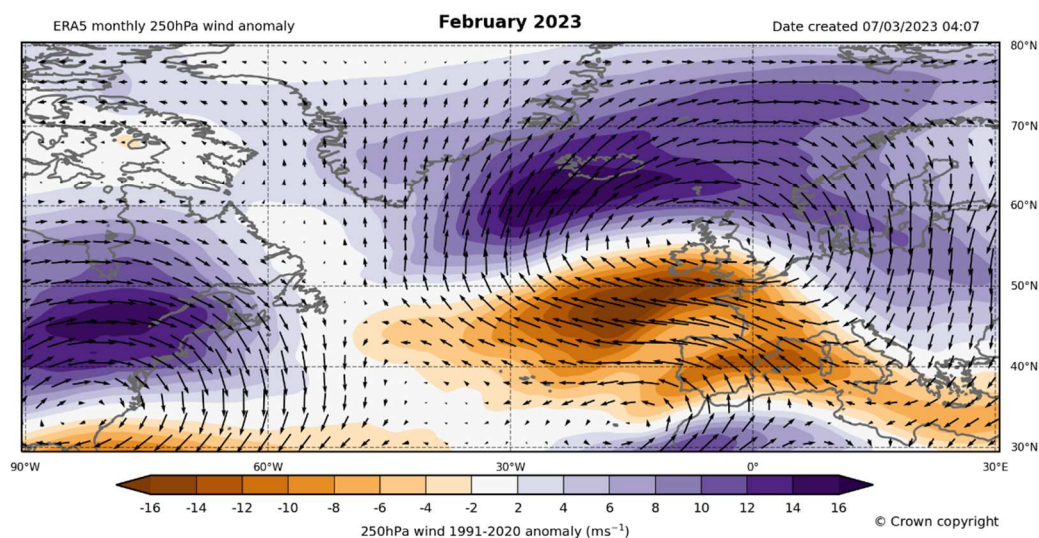
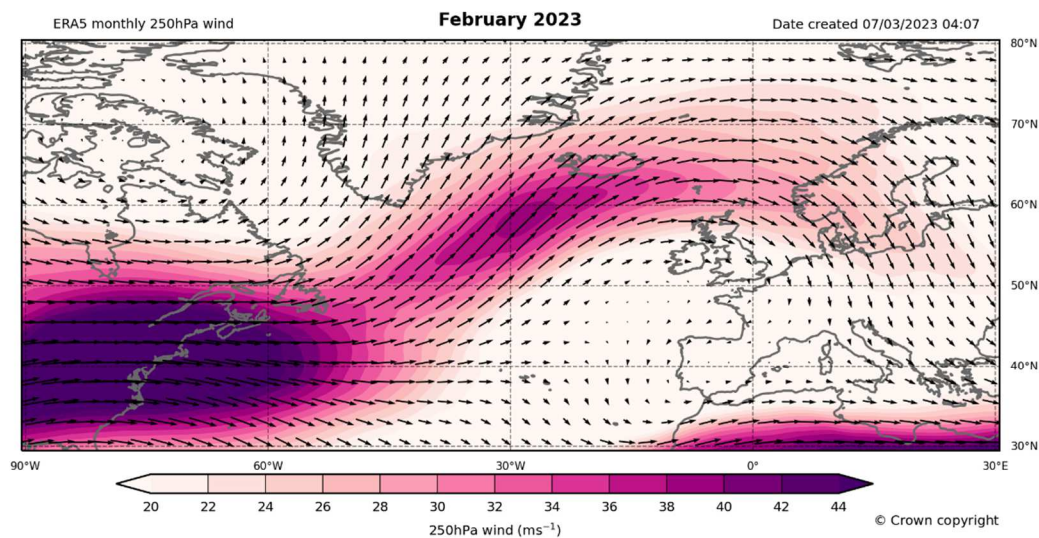




## 250hPa wind speed and direction

These charts show the monthly 250hPa wind speed and direction for February 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 February 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 jetstream was present in the western North Atlantic, and was very strong near the eastern seaboard of the USA, but further east it was much weaker and was diverted towards Iceland, with a very slack flow over and to the south of the UK. There was an anomalous south-westerly flow around Iceland, and an anomalous easterly component across much of western Europe.



## Weather diary

- **Generally dry and mild, colder towards the end of the month**

High pressure was very much the dominant feature of the month, being firmly situated either to the south or east of the UK, the resulting winds being from a mild southerly or westerly direction, and most fronts coming in off the Atlantic decaying as they came up against the high pressure. Snowfall, other than on the highest hills in Scotland, was almost completely absent through the month.

This was not the case early in the month as deep depressions passing to the north of the UK brought in strong westerly winds and rain across Scotland. The 2nd and the 3rd saw some notable events, with many places over north-west Scotland recording over an inch of rain, Cassley in Sutherland wettest with 45.6 mm, and on the 3rd, winds really picked up particularly over the Northern Isles with Baltasound in Shetland recording gusts to 83 mph.

From the 5th to the 11th, with high pressure centred over southern England, a marked temperature contrast developed between northern parts of the UK and central and southern England. While Scotland retained the mild westerly airstream, a colder easterly and clear skies over England allowed temperatures to fall sharply with most places reporting moderate frosts. South Newington in Oxfordshire recorded a minimum of -8.4 °C on the 8th.

A series of depressions and their attendant fronts crossed the UK from the 14th to the 22nd, bringing with them rain, strong winds and very mild air. Maximums across all nations hit the mid-teens Celsius, with Pershore in Worcestershire reaching 17.2 °C on the 17th, and winds gusted generally in excess of 60 mph across parts of England and Wales, and as high as 83 mph at Inverbervie in Kincardineshire also on the 17th.

High pressure was firmly re-established from the 22nd but, with winds now from a north-westerly or northerly direction, temperatures were generally suppressed with widespread night-time frosts.



## 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 data from these stations are used to provide long term context.

This summary was produced on 07/03/2023 09:24. 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>*

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