

August 2023 Monthly Weather Report

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

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UK overview

August was a rather mixed and unsettled month, continuing the theme of July, although to a slightly lesser extent. Low pressure systems mostly dominated the weather, with any brief spells of high pressure bringing settled weather generally short-lived in nature. Summer warmth was mostly confined to southern and eastern areas, with only one really hot day on 10th when temperatures reached the mid to high 20s quite widely. There were some notably cool spells; on 5th August maximum temperatures struggled to reach even 15°C across many eastern areas. Any periods of dry weather were also fairly brief. Two named storms, Antoni on 5th and Betty on 18th to 19th brought unseasonably wet and windy weather to many parts of the UK.

Maximum temperatures for the month overall were near average, with minimum temperatures slightly above average across the north and west. The UK monthly mean temperature was 0.2°C above average. The rainfall pattern was variable but generally near average with the UK recording 95%. Sunshine was slightly below average with 92% and it was dull across some western areas, with only 79% of average sunshine hours for Wales and south-west England, and 85% for Northern Ireland.

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

Weather impacts

- **Impacts from thunderstorms and wet and windy weather, including two named storms.**

The often unseasonably unsettled weather brought various impacts through the month. Storm Antoni brought strong winds and heavy rain on 5th August, with the Met Office issuing an amber wind warning for parts of Wales and south-west England – and many people on holiday at this time of year. A number of events were cancelled including the Cardigan County Show and Big Welsh Bite food and drink festival at Pontypridd. In the south-west, train services between Exeter and Penzance were disrupted and around 1500 properties experienced power cuts in Cornwall. Trains were cancelled in the Brighton area and an event was also cancelled on the Isle of Wight. Some flooding occurred in parts of north-east Scotland and in northeast England around Whitby, Scarborough, Redcar and Cleveland.

After a thundery breakdown, storm Betty on 18th to 19th brought strong winds and heavy rain although with no significant weather impacts reported.

Another low-pressure system brought some heavy rain on the 25th to 27th August affecting parts of northwest, northeast and southeast England and southeast Scotland. Parts of Merseyside and north Cheshire were affected by surface water flooding and there were two fatalities when a car was submerged at a rail underpass in Liverpool. The M57 was closed and the M53 was also affected by flooding.

Monthly extremes

The table below lists UK monthly weather extremes recorded at individual weather stations during August 2023 from data available on 04/09/2023. The map shows the location of these stations.

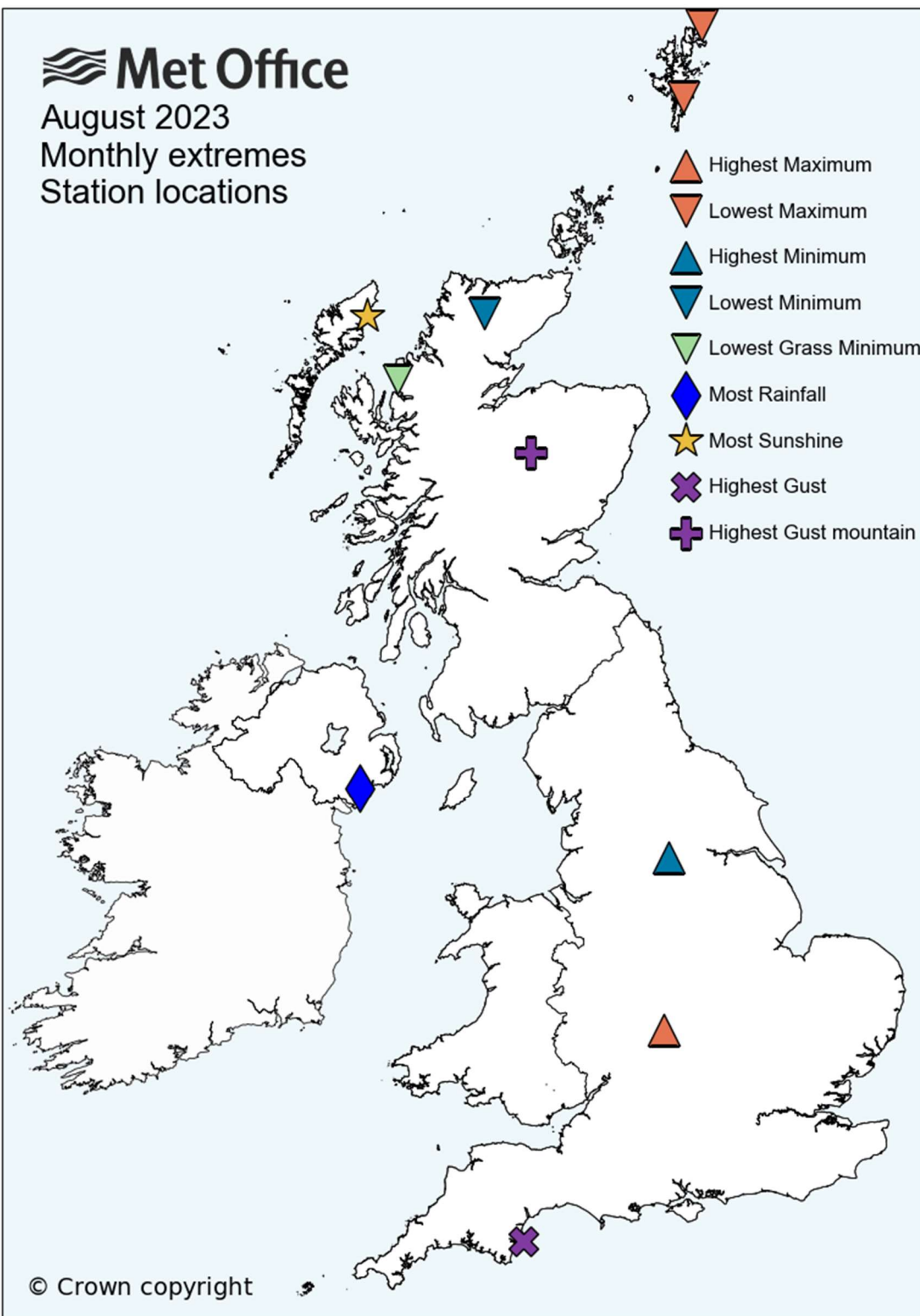
Highest Maximum	28.4°C on 10th at Wellesbourne (Warwickshire, 47mAMSL)
Lowest Maximum	12.3°C on 8th at Lerwick (Shetland, 82mAMSL) and Baltasound No 2 (Shetland, 15mAMSL)
Highest Minimum	18.9°C on 11th at Thornes Park (West Yorkshire, 35mAMSL)
Lowest Minimum	1.4°C on 6th at Altnaharra No 2 (Sutherland, 81mAMSL)
Lowest Grass Minimum	-2.2°C on 31st at Port Henderson (Ross & Cromarty, 18mAMSL)
Most Rainfall	83.0mm on 18th at Trassey Slievenaman (Down, 220mAMSL)
Most Sunshine	14.7hr on 1st at Stornoway Airport (Western Isles, 15mAMSL)
Highest Gust	68Kt 78mph on 5th at Berry Head (Devon, 58mAMSL)
Highest Gust (mountain*)	85Kt 98mph on 18th at Cairngorm Summit (Inverness-shire, 1237mAMSL)
Greatest Snow Depth at 0900 UTC	No non-zero values.

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

*Mountain stations are above 500mAMSL.

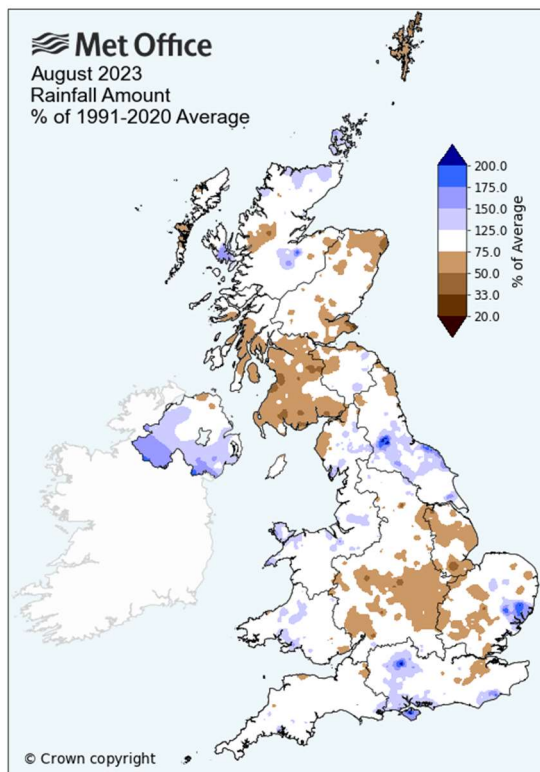
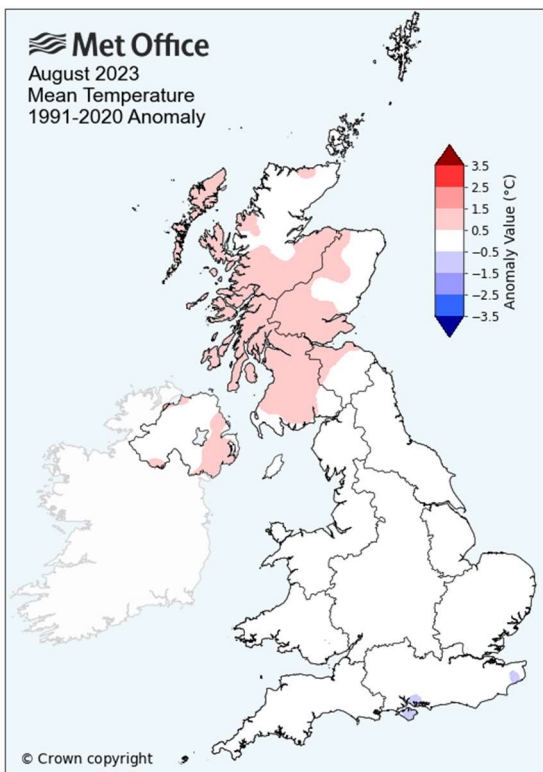
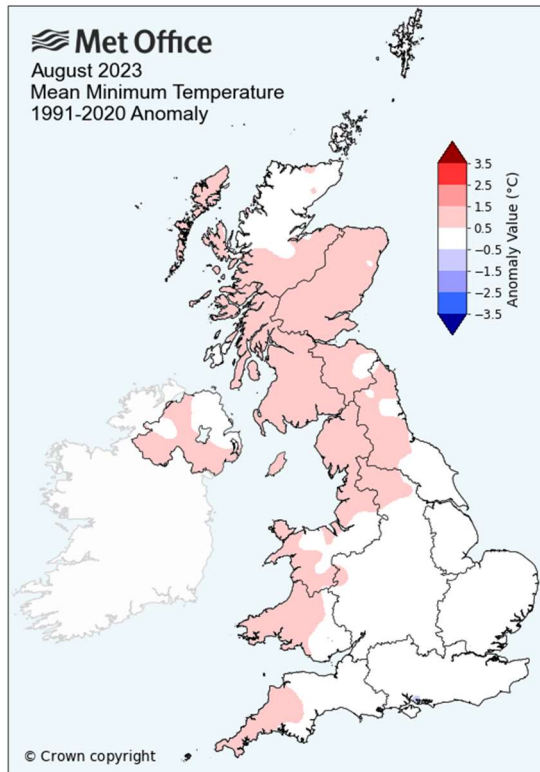
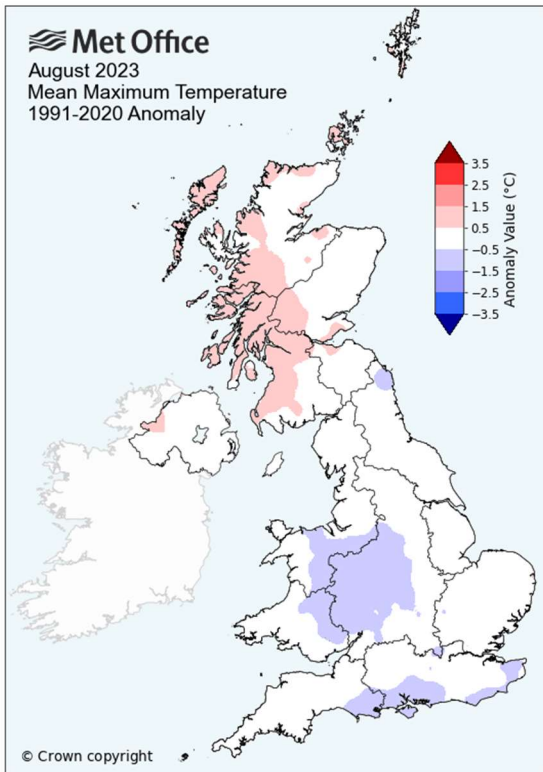


August 2023
Monthly extremes
Station locations

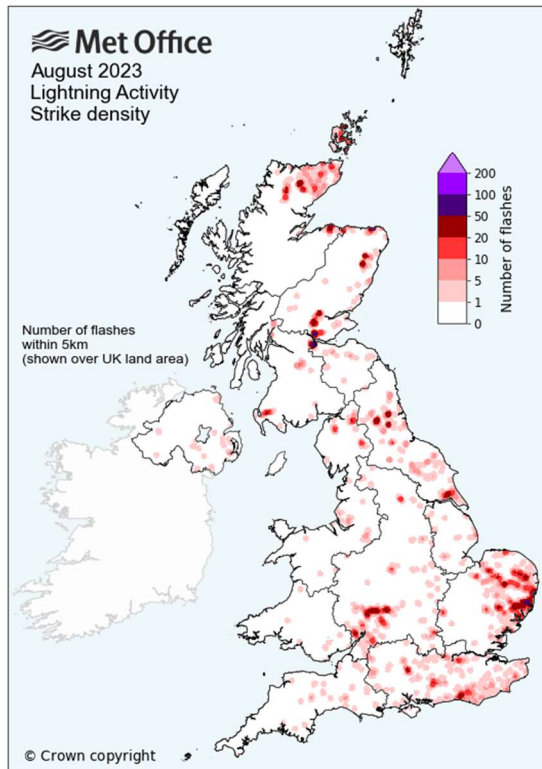
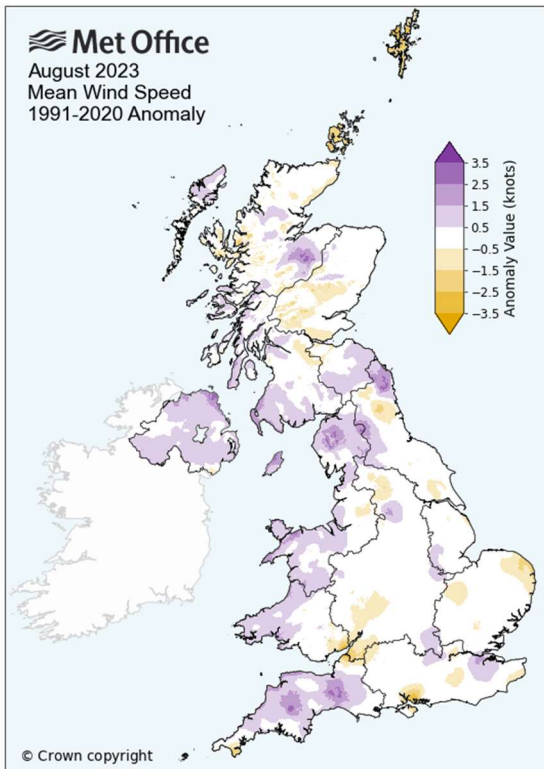
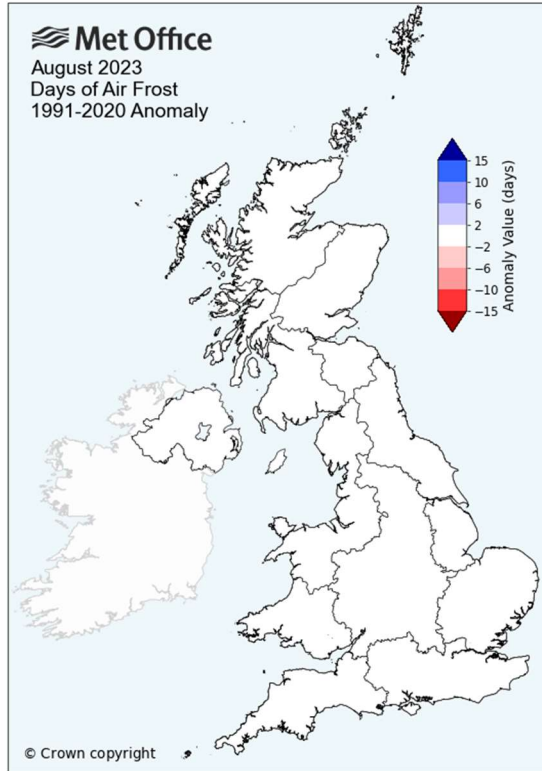
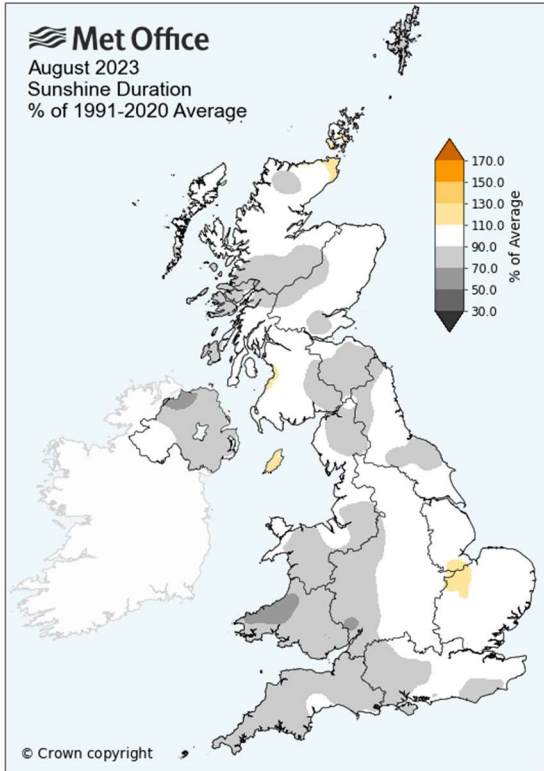


Monthly maps

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



These maps show monthly sunshine, monthly air frost and monthly windspeed for August 2023 as anomalies relative to the August 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 August 2023 for max, min and mean temperature, rainfall, sunshine and windspeed as actual values and anomalies relative to the August 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	19.3	-0.0	41	100	140
England	20.5	-0.3	49	92	140
Wales	18.6	-0.4	55	86	140
Scotland	17.4	0.5	21	120	140
Northern Ireland	18.6	0.3	31	110	140
Central England	20.5	-0.5	49	98	146

Mean minimum temperature

Region	Mintemp (°C)	1991-2020 Anomaly (°C)	Rank - warmest	Rank - coldest	Series length (yrs)
UK	11.4	0.4	16	125	140
England	12.0	0.2	22	119	140
Wales	11.8	0.6	18	123	140
Scotland	10.3	0.7	8	133	140
Northern Ireland	11.2	0.5	16	125	140
Central England	12.3	0.1	30	117	146

Mean temperature

Region	Meantemp (°C)	1991-2020 Anomaly (°C)	Rank - warmest	Rank - coldest	Series length (yrs)
UK	15.3	0.2	29	112	140
England	16.2	-0.1	36	105	140
Wales	15.2	0.1	32	109	140
Scotland	13.8	0.6	18	123	140
Northern Ireland	14.9	0.5	23	118	140
Central England	16.4	-0.2	90	276	365

Rainfall

Region	Rainfall (mm)	% of 1991-2020 Average	Rank - wettest	Rank - driest	Series length (yrs)
UK	89.1	95	103	86	188
England	71.9	96	102	87	188
Wales	120.0	107	91	98	188
Scotland	103.1	86	113	76	188
Northern Ireland	126.4	127	43	146	188
EWP (England and Wales)	77.0	94	145	114	258

Sunshine

Region	Sunshine (hours)	% of 1991-2020 Average	Rank - sunniest	Rank - dullest	Series length (yrs)
UK	148.1	92	67	48	114
England	167.3	93	58	57	114
Wales	126.0	79	100	15	114
Scotland	127.1	94	57	58	114
Northern Ireland	115.7	85	80	35	114

Windspeed

Region	Windspeed (knots)	1991-2020 Anomaly (knots)	Rank - windiest	Rank - calmest	Series length (yrs)
UK	8.1	0.2	23	33	55
England	7.3	0.1	27	29	55
Wales	8.8	0.5	17	39	55
Scotland	9.1	0.1	23	33	55
Northern Ireland	8.0	0.8	17	39	55

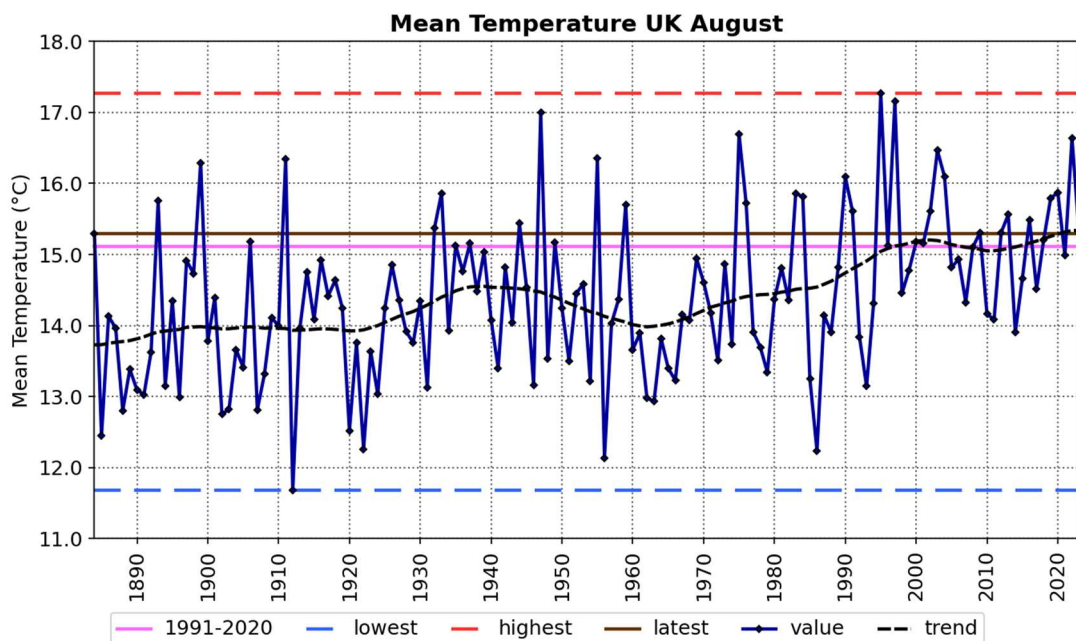
Monthly time-series

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

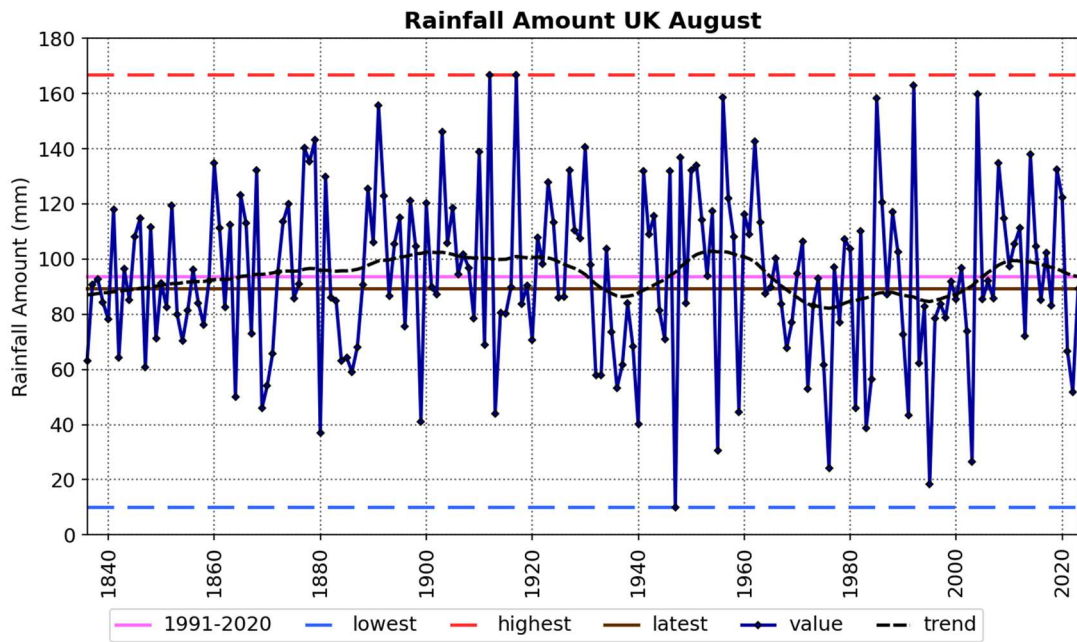


Source: HadUK-Grid 01/09/2023 13:59

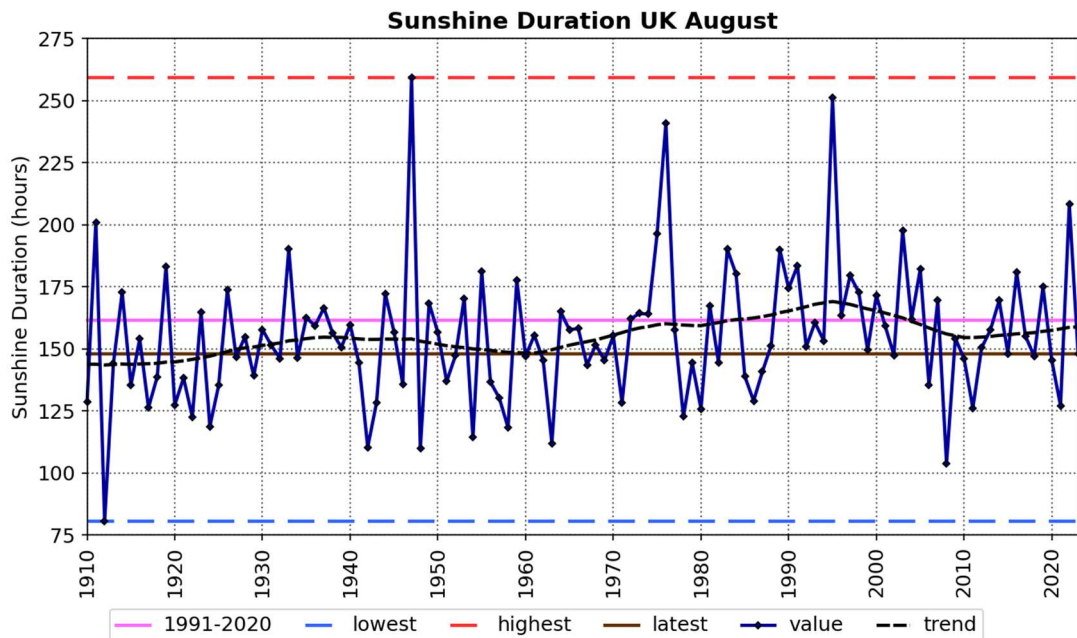
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Period	1961-1990	1991-2020	2014-2023	2023
Meantemp (°C)	14.2	15.1	15.2	15.3



Period	1961-1990	1991-2020	2014-2023	2023
Rainfall (mm)	89.4	93.7	97.6	89.1



Period	1961-1990	1991-2020	2014-2023	2023
Sunshine (hours)	156.8	161.6	160.5	148.1

Daily time-series

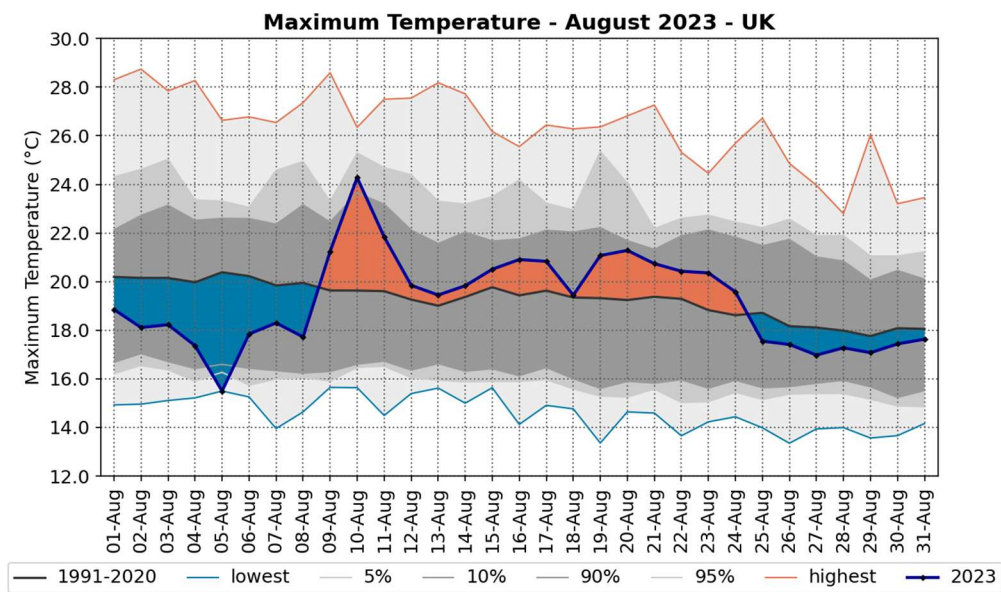
These charts show time-series of UK area-average daily maximum and daily minimum temperature and daily rainfall for each day of August 2023. The areas shaded in grey show the highest and lowest values in the daily temperature series (from 1960) and daily rainfall series (from 1891) together with percentiles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



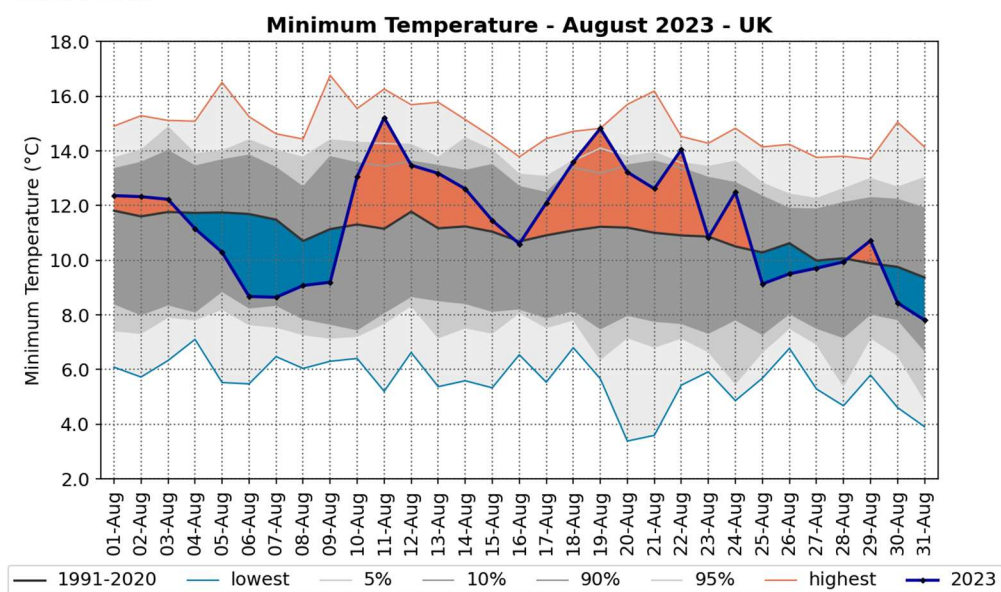
Source: HadUK-Grid 01/09/2023 16:40

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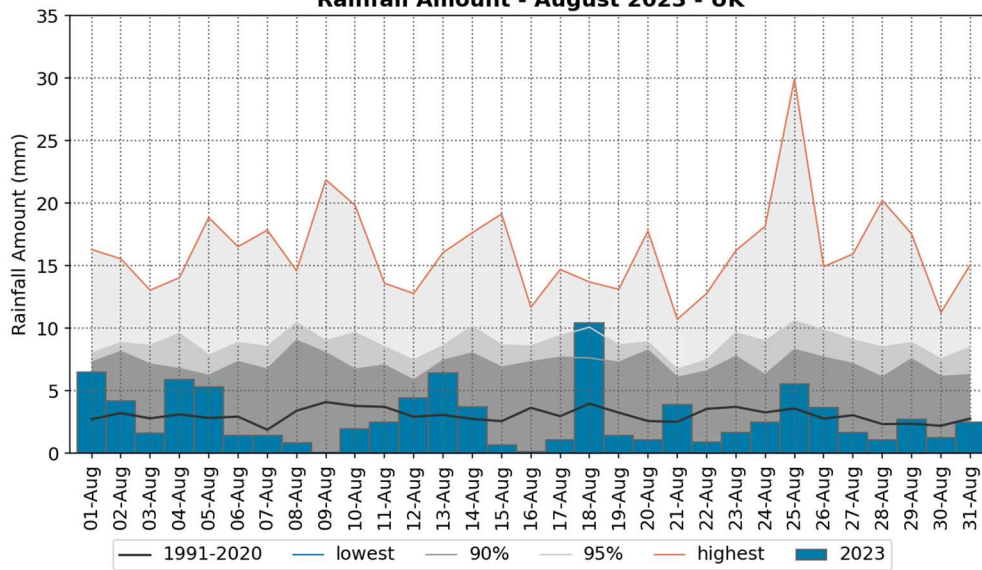
Daily rainfall and rainfall accumulation

Met Office

Source: HadUK-Grid 01/09/2023 16:41

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Rainfall Amount - August 2023 - UK

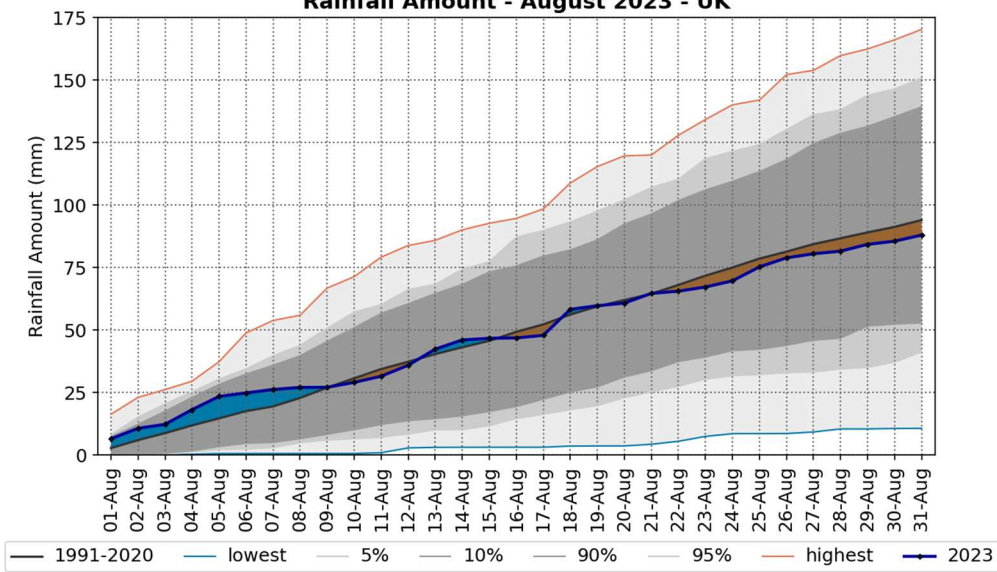


Met Office

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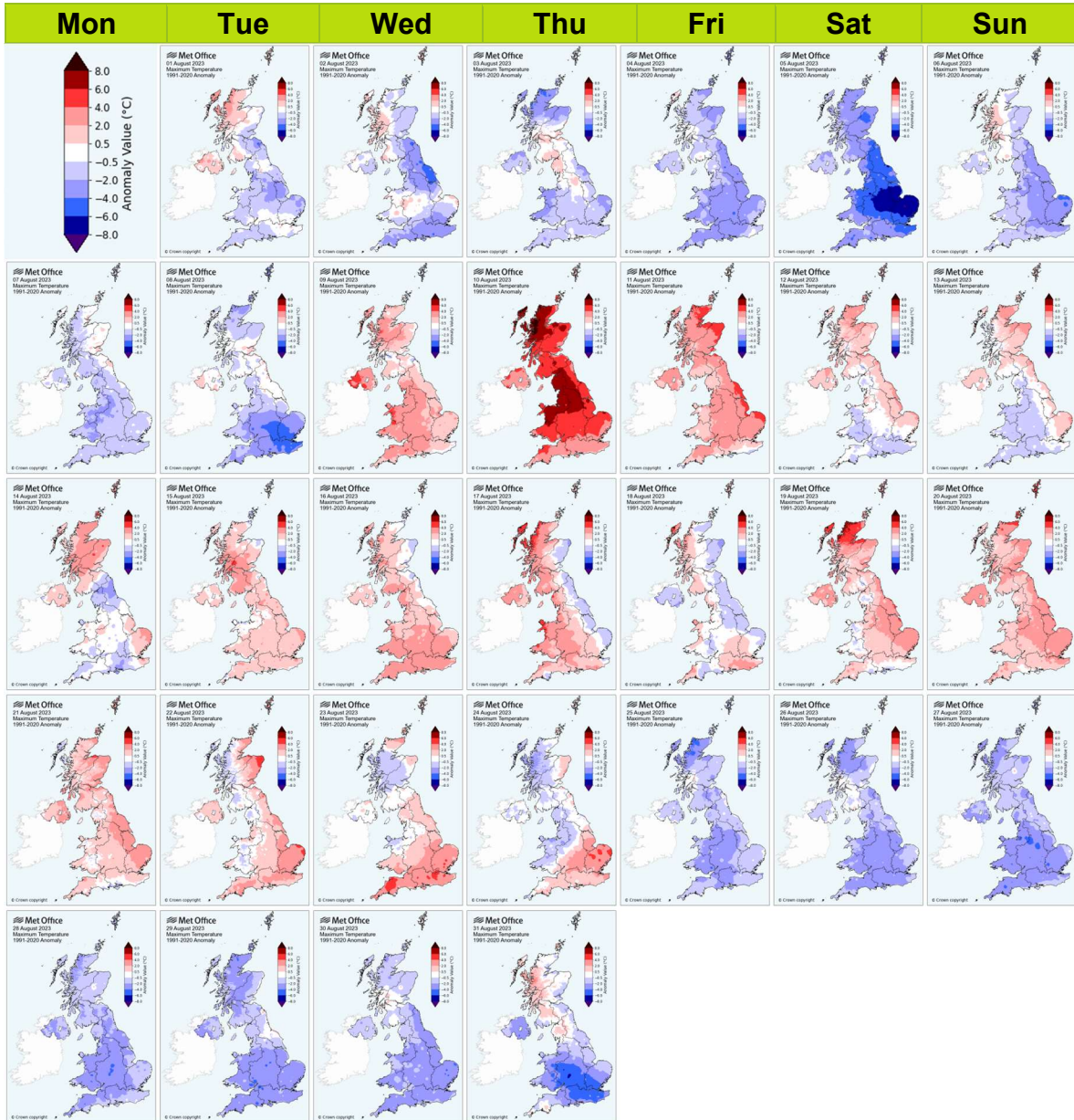
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Rainfall Amount - August 2023 - UK



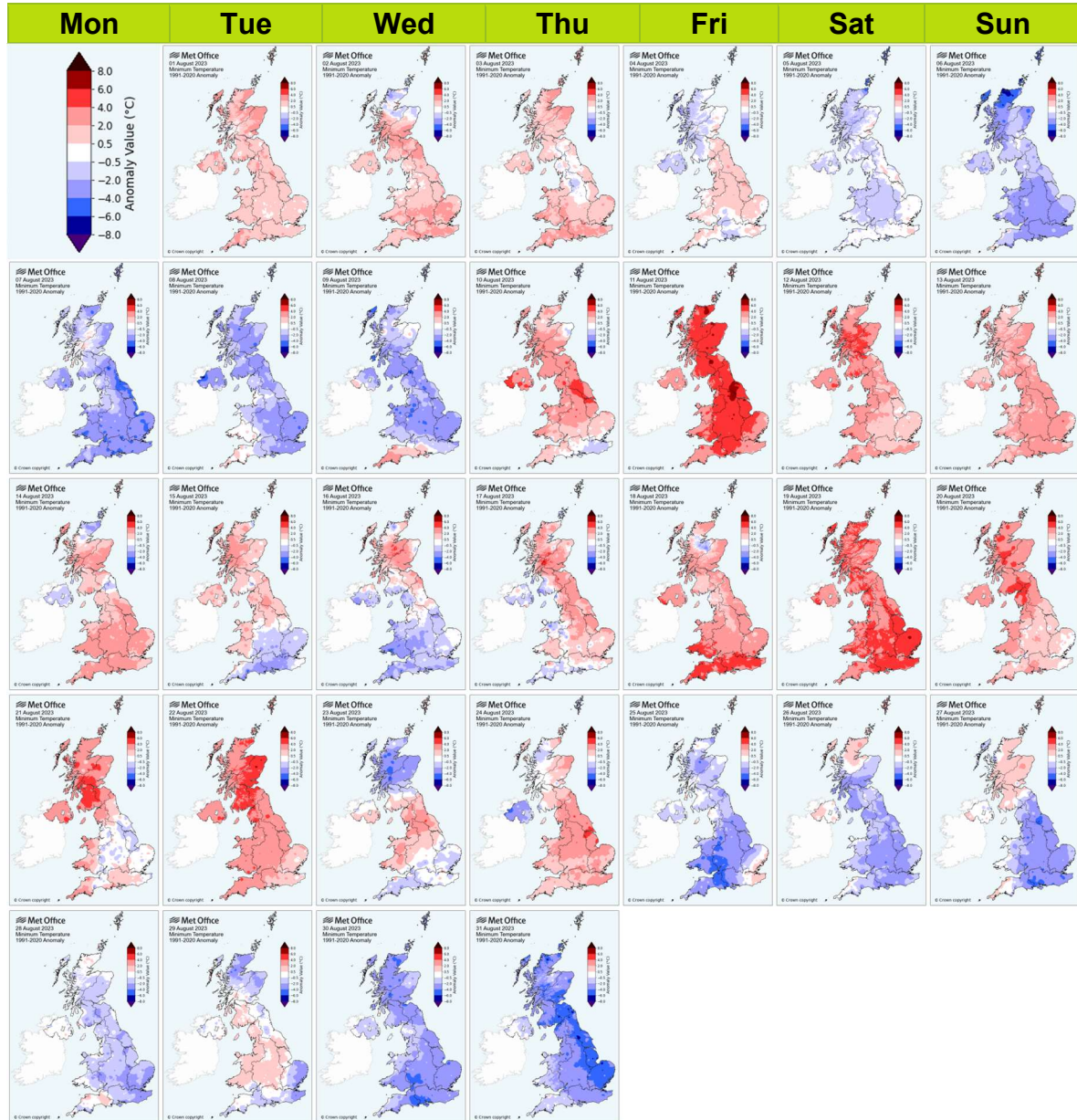
Daily maximum temperature maps - calendar view

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



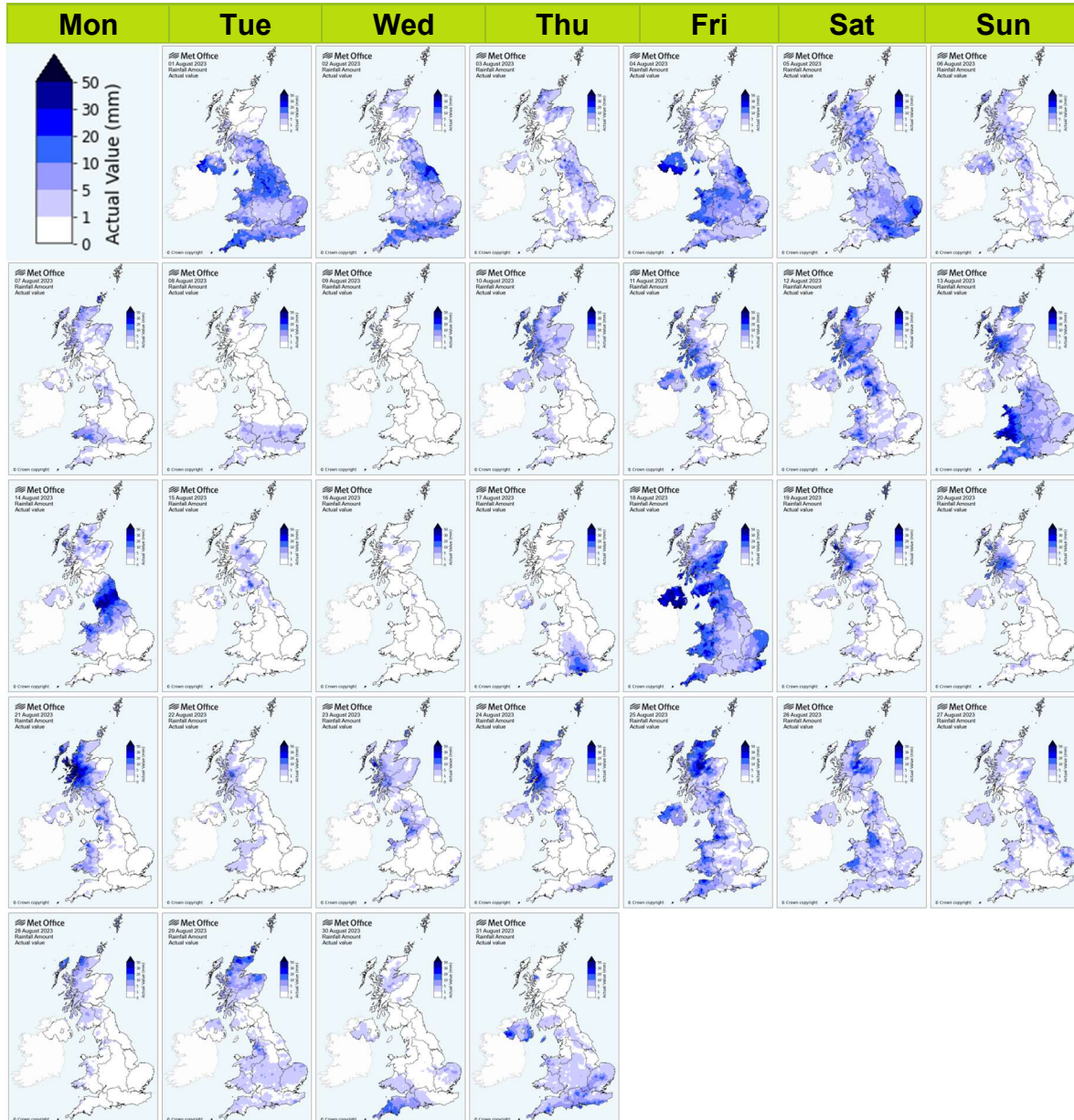
Daily minimum temperature maps - calendar view

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

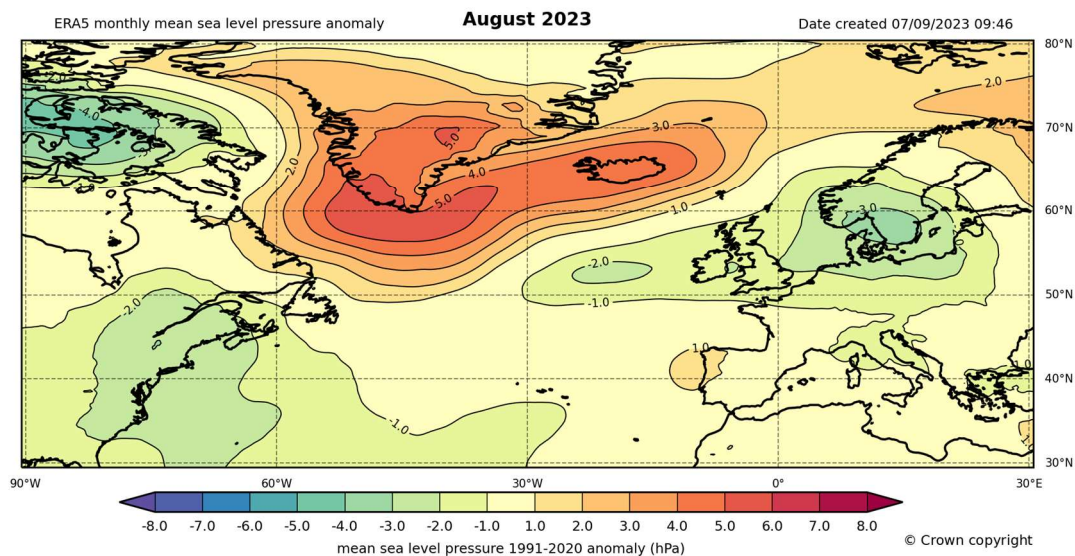
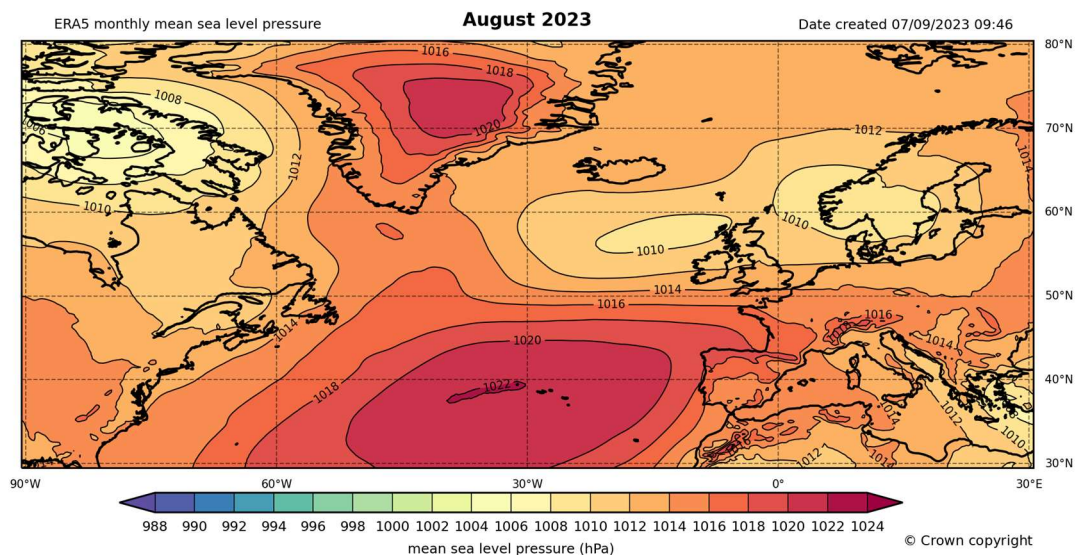


Monthly atmospheric circulation

Mean sea level pressure

These charts show the monthly mean sea level pressure for August 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 August 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.

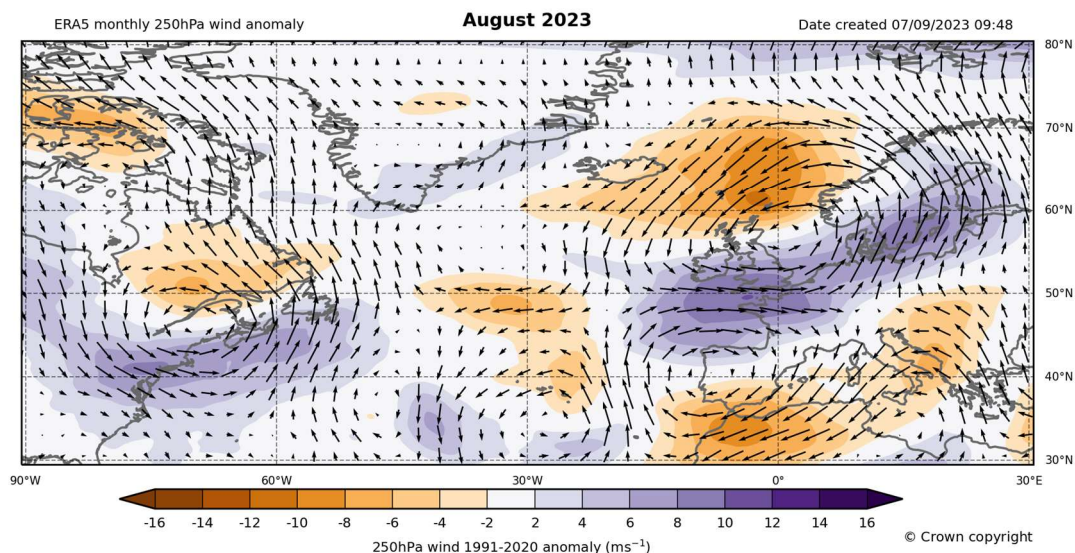
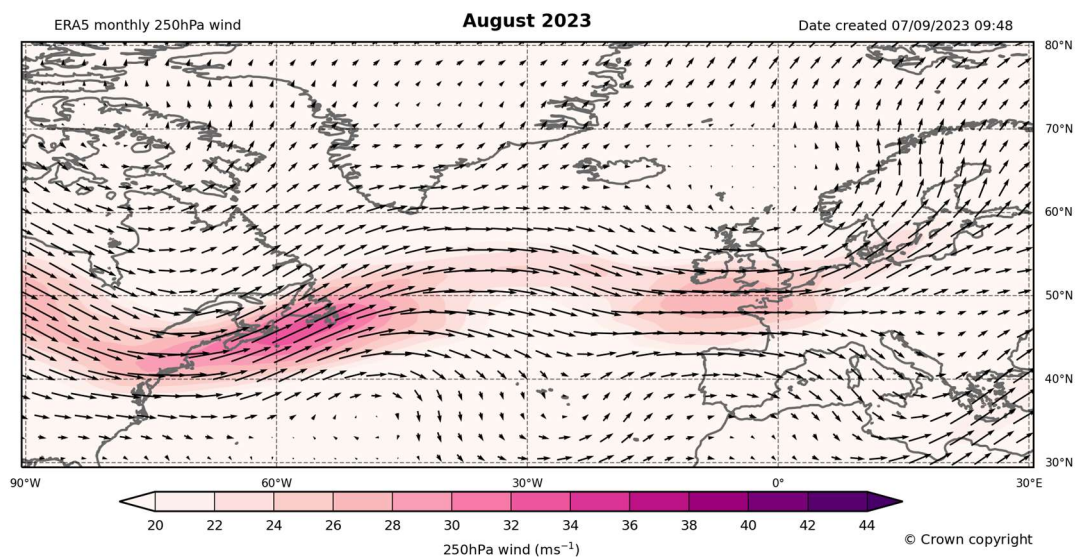
The Azores high dominated the surface pressure pattern in the North Atlantic, which is typical for this time of year. However its influence struggled to extend north-east to the UK. Consequently, across much of the UK, Denmark and southern Scandinavia the August mean surface pressure was slightly below average.



250hPa wind speed and direction

These charts show the monthly 250hPa wind speed and direction for August 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 August 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 strongest across the southern half of the UK and northern France, and was shifted further south than would typically be expected.



Weather diary

- **Summer storms, cool, wet and windy**

August continued in the same vane as July with a series of Atlantic depressions crossing the UK, resulting in a generally cool, wet and windy month, with just a couple of brief periods of settled and warmer conditions.

The 1st to the 8th was notable for some unseasonably deep areas of low pressure and just transient ridges. Storm Antoni tracked east from Wales, through the Midlands and into the southeast on the 5th, producing strong winds particularly along the south coast of England. Winds here gusted in excess of 70mph at times.

There was a brief respite on the 8th and 9th when high pressure allowed for a continental southeasterly airstream to establish, raising temperatures across all regions into the mid to high 20s Celsius. After another period of unsettled weather across the UK, high pressure re-established itself from 15th to 18th. This was only a prelude to the arrival of Storm Betty which brought not only strong winds but also some significant rainfall overnight from the 18th into the 19th particularly to Northern Ireland with some places recording over 80mm of rain in 24 hours.

The remainder of the month reverted to type with low pressure firmly in charge, meaning wet and windy conditions and temperatures restricted to the mid to high teens Celsius at times, and even the low teens in Northern Ireland on the 31st.

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 07/09/2023 14:54. 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>

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