



## Weather Front.

### February 2023/1923

#### February 2023

##### Observers Notes.

**Derby:** This was the fourth mildest February since 1952. The colder, final, few days tempered the overall mildness a little, the month being well on target to be the second mildest before then. Only one maximum was below the respective daily mean value, being that for the 27<sup>th</sup>, and even that was merely 0.7 C below normal for the date. The mid-month period (11<sup>th</sup>-20<sup>th</sup>) was some 3.75 C above normal, making that the second mildest mid-February on record, behind 1998. The highest maximum was one of twelve days above the 10 C maximum, while the lowest maximum was a new record for February (7.6 C), beating the one in February 2022 (6.7 C).

**Middleton:** The third February on record since 1977. The lowest maximum temperature (5.1 C) was the highest on record for the month. It was the second driest February on record behind 1993, and the first time since local records began in 1963 that no lying snow was recorded at 0900, or at any time. The air pressure of 1047.9 mb, on the 5<sup>th</sup>, was the highest on record for February.

**Lowdham:** The maximum temperature of 7.1 C, on the 25<sup>th</sup>, was the highest low maximum for February on the station record (1991). February 2023 was the driest since 1998. There were 91.6 hours of sunshine (113%) recorded at Radcliffe-on-Trent (courtesy of T Scholey).

**Bablake:** Each of the past five Februarys has been warmer than the 1991-2020 mean. While this year has been 1.7 C warmer than the average, it was not as warm as February 2022 (7.0 C). Only seven Februarys have been warmer since 1892, five having occurred in the last thirty years (1990, 1997, 1998, 2002, 2022). Despite a trend for wetter Februarys, February 2023 was only 16% of average. It has been the driest February since 1998 (7.1 mm). Only four Februarys have been drier since 1870 (1891, 1921, 1959, 1998). There appears to have been an increase of 60% in sunshine since the end of the 19<sup>th</sup> century; the trend continued in 2023 with 110.5 hours of sunshine, 126% of the thirty-year average. Only three Februarys have recorded more sunshine since 1895, all in the 21<sup>st</sup> century (2008, 2016, 2019).

**Mickleover:** This was the driest February on the station record, and locally since 1959. It was also the third mildest February since 1998. The lowest maximum temperature (8.3 C) was the highest on the February record.

**Desford:** Very dry and mild for February.

**Pitsford:** Continuing dry and generally mild, apart from a cold snap during the second week. Turning more unsettled during the second half and temperatures returning to normal.<sup>i</sup>

**Coton-in-the-Elms:** A very mild February, especially by day, though the overall mean was not quite as high as last year. Daily maxima were frequently into double figures, though high pressure meant that clear nights were often frosty. Rainfall was exceptionally low; only six days of measurable rain! The total of 4.2 mm made this the driest February on record, and the second driest month of any name, behind May 2020, across more than thirty years of records.

### 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 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 station

## **The World**

Heavy rainfall was recorded in New Zealand at the beginning of February. Auckland experienced its wettest January on record with 249 mm being noted in one 24-hour period (27 January) and one month's worth of rain falling in less than an hour. Alberta Park, in the centre of the city, recorded 280 mm in one day. These totals are more than 8.5 times higher than normal for January. The high rainfall is the worst for floods in 200 years. The heavy rain caused landslips, flooding, and general damage to roads and property; four people were killed and 350 needed emergency accommodation.

During the week ending 4 February, the USA experienced the passage of a strong cold front which moved south into Texas. Cold air lingered at the surface in the Southern Plains, but a south-westerly air flow at higher altitude advected warmer air aloft, producing freezing rain and, in some parts of the state, the rain froze into ice pellets, with "thunder sleet" being reported in Dallas.<sup>ii</sup>

Extreme temperatures in Chile, Argentina, and Paraguay caused the deaths of at least 23 people and, across Chile, thirty-nine wildfires were reported. The low humidity of between 20 and 50%, and no sign of any significant rain, had increased the risk of fires, with at least 40,000 hectares of land being damaged.<sup>iii</sup>

New York had a light dusting of snow at the beginning of the month after the longest “snow drought” in its history. New Yorkers therefore missed the traditional “snow days off work and school” which are spent skiing and sledging in Central Park. It is understood that the first snowfall is normally around the middle of December. The previous “late snowfall” was in 1973 when the first flakes fell on 29 January; this year the first flakes were recorded on 1 February.<sup>iv</sup>

Tropical cyclone Gabrielle was developing in intensity off the north-east coast of Australia (11 February) and was expected to pass over Norfolk Island, heading towards New Zealand. The cyclone had reached category 3 with winds gusting to 120 mph. The state of emergency had been extended as further extreme rainfall and high winds were forecast. With soils already waterlogged from January’s rainfall, more flooding, landslides, and damage to property were expected.<sup>v</sup>

Pakistan and Afghanistan were expected to be subjected to extreme temperatures around the middle of the month with maxima reaching 30 C.

In New Zealand cyclone Gabrielle had made landfall by the 14<sup>th</sup>. Most of North Island was under an orange warning, the Coromandel peninsula, and the Auckland region under a red warning.<sup>vi</sup>

A report on the 15<sup>th</sup> noted that the New Zealand Government had declared a state of emergency as cyclone Gabrielle battered the country with floods trapping people on roofs, thousands displaced, and landslides destroying homes. The Prime Minister declared that the cyclone was the most significant event seen in the country this century, and that the severity of the damage had not been experienced in a generation. The full impact was still unfolding but it is understood to have had significant, and widespread, impact.<sup>vii</sup>

Cyclone Freddy was expected to make landfall in Madagascar on the 21<sup>st</sup>. The previous cyclone, Cheneso, struck during January causing dozens of deaths. While forecasts suggested a slight modification of cyclone Feddy in intensity, gusts of 100mph were likely making it a category 2 cyclone. The cyclone had originated just south of Indonesia, as a category 1, on the 6<sup>th</sup>. Only two other cyclones are known to have crossed the Indian Ocean, both in 2000. The furthest travelled, and longest lasting, is understood to be Hurricane John in 1994, which travelled more than 7,000 miles in 31 days.<sup>viii</sup>

Dozens of people were understood to be missing after heavy rain hit the south-eastern state of Sao Paulo on Brazil’s coast. The state had been hit by more than 600 mm of rain, which is the highest cumulative figure ever recorded in the country. The state government noted that over 1700 people had been displaced and over 1800 homeless. The city of Sao Sebastiao reported 47 deaths and nearby towns were also heavily affected.<sup>ix</sup>

Southern Australia experienced significant heat, with temperatures widely in excess of 35 C. Many stations across Western and Southern Australia recording temperatures in excess of

40 C, Eucla and Red Rock recorded their highest February maxima of 46.8 C. Two large, blocking, anticyclones, both south and west of Australia, allowed heat to stall across the west and south of the country.

Brazil recorded its highest 24-hour rainfall accumulation of 682 mm in Bertioga, while the city of Sao Sebastiao saw accumulations of 626 mm in the same period. By comparison the highest 24-hour total in the UK was 341 mm in Cumbria in 2015. This had significant impact, and damage to over 50,000 was recorded.<sup>x</sup>

Cyclone Freddy continued to wreak havoc in parts of south-east Africa. The system formed within a monsoon trough on the 5<sup>th</sup>, but was no longer classed as a tropical cyclone as windspeeds were well below 74 mph. However, the torrential rain became the main problem in southern parts of Mozambique and eastern parts of Zimbabwe. The heavy rain caused devastating floods.<sup>xi</sup>

## February 1923

### Observers Notes.

**Alfriston (Sussex).** The wettest February for years. The mildest winter I remember either in Sussex or on Dartmoor.

**Belper (Derbyshire):** The third heaviest February rainfall in the forty-seven years 1877-1923.

**Blundellsands (Lancashire):** With the exception of 1904 there has been no wetter February in forty-seven years.

**Cheltenham:** The heaviest February rainfall [140.5 mm] since 1900 [150.1 mm] and the second heaviest since 1867.

**Hodsock Priory (Nottingham):** The wettest February in my record of forty-eight years [103.9 mm].

**Ipswich:** The wettest February during the last twenty-two years. Sunshine less than two-thirds of the average; the actual duration less than that of the previous January for the first time during this period.

**Isleworth:** A mild February with the largest number of wet days since 1881 but not including one day of heavy rainfall.

**Meltham (Yorkshire):** The lowest mean pressure of any month for forty-three years except December 1914.

**Newquay:** There has been only one lower mean monthly pressure in nineteen years, March 1909. The third wettest February of this period.

**Sidmouth:** Very high winds and gales; heavy showers and long bright intervals.

**Skegness:** A remarkably temperate February and the wettest [85.6 mm] since 1916; the fall of 23 mm on the 18<sup>th</sup> was the record for a single day in February since 1907.

**Southport:** Mild generally, with very little frost, very wet, with high relative humidity and an unusual prevalence of south-easterly winds.

**Torquay:** It is doubtful if such a wet and mild February has been experienced during the last thirty years, but on the other hand temperature has been unusually high and many were spring-like in character.

**Totland Bay:** The warmest February for thirty-seven years and the wettest [119.4 mm] since 1900.

**Dublin City:** Rainfall more than three times the average. A “record” February for precipitation [146.8 mm] and the number of rain-days [24].

#### **Some additional rainfall totals.**

Cranwell (Lincolnshire): 88.6 mm.

Cambridge: 54.1 mm.

Buxton: 179.1 mm.

Belvoir Castle: 85.6 mm.

Raunds: 84.1 mm.

Coventry: 101.6 mm.<sup>xii</sup>

**Derby/Burton-on-Trent:** A very wet month in the area, with a little over twice the average amount of rainfall. All gauges exceeded 80 mm totals, with some passing the 90 mm mark; Byrkley Gardens, at 425 feet AMSL, received 107 mm, [Belper Quarry Bank 132.6 mm]. The month appears to have been milder than average but, in the local area, overall means were in the 4 to 5 C range. Byrkley Gardens marked the lower end of this range. The 1<sup>st</sup> was the mildest day of the month, with maxima around 14 to 14.5 C, while the lowest minima occurred on the 22<sup>nd</sup> when Buxton recorded -4 C. The period 18<sup>th</sup> to 22<sup>nd</sup> was quite cold, with little variation in temperature levels, such that maxima only achieved a couple of degrees above freezing at best. There were ten air frosts at Burton-on-Trent.<sup>xiii</sup>

### **Overview of February 1923**

February was a mild and wet month, which continued the January trend. The temperature at South Kensington did not fall below the January mean of [5.9 C] between 0500 on the 29<sup>th</sup> of January and 220 on the 4<sup>th</sup> of February, a period of six and a half days. This warm

period was associated with a ridge of high pressure which originated in North Africa. While pressure was not unusually high over Britain, upper air temperatures were very high. On the 1st of February the temperature at 5000 ft [850 mb] at Utrecht and Den Helder were higher than summer anticyclonic temperatures for that height. This had its origins in West Africa. After the 4<sup>th</sup> low pressure dominated to the west of the British Isles.

Rainfall was exceptionally heavy and, in places, the highest ever recorded in February. The ground was saturated for more than half the month and, at London, Benson, and Valentia, it was reported to be “wet” or “muddy” on every day. Snow was reported in Scotland, and in northern and central England during the latter part of the month, especially on the 21<sup>st</sup>. Thunderstorms were noted in the London area also on the 21<sup>st</sup>, and in various places on other days. Strong gales, mainly southerly, were prevalent, especially in north-east Scotland, notably on the 6<sup>th</sup> and 7<sup>th</sup>, and on the 26<sup>th</sup> and 27<sup>th</sup>.

Rainfall was well above average, except for north-east Scotland where the average was just 65%. Elsewhere, particularly in much of England and Wales, totals were more than twice the average and, from northern Cornwall to Staffordshire and part of eastern Scotland, 300% of average was noted. In many places rainfall totals were the highest ever known during February; Ross-on-Wye 105 years, Cirencester 80 years, Bristol 70 years, and Wolstaston (Shropshire) 59 years. The month as a whole was a record both for precipitation and the number of rainy days. The MWR noted that conditions were similar to those of February 1915, but February 1923 was the wetter of the two.

Snowfall, in some cases in the form of blizzards, occurred after the middle of the month, mainly between the 18<sup>th</sup> and 24<sup>th</sup>, and lay in parts of Yorkshire and Derbyshire to a depth of 8 to 12 inches, the ground being covered for at least six days. Severe hailstorms occurred in south-east England on the afternoon of the 21<sup>st</sup>.

Generally, a mild but extremely wet month.<sup>xiv</sup>

### **The Rest of the World.**

Throughout Central Europe abnormally warm weather was noted. There were heavy falls of snow in the Alps during January and continued until 3 February. The warmer weather set lying snow in motion and caused avalanches which resulted in loss of life. On the 6<sup>th</sup> there was a great landslide into the Davoser See [Switzerland]. The melted snow produced flooding in the Danube; parts of Linz being flooded on the 3<sup>rd</sup>, reaching Vienna on the 5<sup>th</sup> and Budapest by the 14<sup>th</sup>. The waterworks at Budapest being flooded. In southern France however, the month began with a drought, and prayers were said for rain, at Montpellier, on the 4<sup>th</sup>.

In North America the month was extremely cold and stormy. On the 6<sup>th</sup> the temperature fell to -46 C in north-west Ontario, the lowest, at that time, on record for the region. There was an ice-jam on the St Lawrence and, from the 4<sup>th</sup> to the 9<sup>th</sup>, a cold air stream spread over

much of the USA, with the passage of a deep depression. From the 14<sup>th</sup> to 16<sup>th</sup> a severe storm crossed northern states, inflicting considerable damage and causing many wrecks on both the Pacific and Atlantic coasts. Very low temperatures were recorded.

At Aden, on the 14<sup>th</sup>, an unusually heavy rainstorm provided a, much needed, supply of fresh water.

Around the same time heavy rain was recorded in the Orange Free State. By the 14<sup>th</sup> the total rainfall for 1923 had already passed the total for the whole of 1922. There was much damage to the roads and railways, but this damage was more than compensated for by the benefits to agriculture. On the 24<sup>th</sup> heavy rain was reported in south-west Africa which produced flooding along the Fish and Orange Rivers. Similarly, on the 25<sup>th</sup>, flooding was reported along the Zambezi which interrupted rail traffic.

In Brazil heavy rain was reported in the north, including the dry north-eastern area, and was noted to be 85 mm above average. In Central Brazil rainfall was 36 mm above average, and in the south 26 mm above. However, in the Rio Grande region, the rainfall was noted to be 42 mm below average. It was reported that the only unusual feature of the "circulation" was the continued absence of intense high pressure systems. It was also noted that the coffee crop was "in excellent condition"!<sup>xv</sup>

#### **Central England Data.<sup>xvi</sup> (Averaging period is 1891 to 1920.)**

Mean Maximum Temperature: 8.0 C. Average: 7.2 C.

Mean Minimum Temperature: 3.2 C. Average: 1.2 C.

Mean Temperature: 5.6 C. Average: 4.1 C.

England and Wales Rainfall: 152.7 mm. Average: 64.3 mm. (237%).

#### **Midlands Data. (Averaging period is 1911 to 1920).**

Midlands Mean Maximum Temperature: 7.4 C. Average: 6.9 C.

Midlands Mean Minimum Temperature: 2.3 C. Average: 0.6 C.

Midlands Mean Temperature: 4.8 C. Average: 3.7 C.

Midlands Rainfall: 135.1 mm. Average: 59.6 mm. (227%).

#### **2023 (Provisional)**

#### **Central England (Averaging period is 1991-2020).**

Mean Maximum Temperature: 10.1 C. Average: 7.9 C.

Mean Minimum Temperature: 2.9 C. Average: 1.8 C.



Mean Temperature: 6.5 C. Average: 4.9 C.

England and Wales Rainfall: 16.5 mm. Average: 72.4 mm. (22.8%, 12<sup>th</sup> driest since 1765.)<sup>xvii</sup>

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<sup>i</sup> Pitsford Monthly Weather Report, February 2023, Pitsford School, March 2023, pp. 5-6.

<sup>ii</sup> The Guardian, 4 February 2023.

<sup>iii</sup> The Guardian, 7 February 2023.

<sup>iv</sup> The Guardian, 9 February 2023.

<sup>v</sup> The Guardian, 11 February 2023.

<sup>vi</sup> The Guardian, 14 February 2023.

<sup>vii</sup> The Guardian, 15 February 2023.

<sup>viii</sup> The Guardian 21 February 2023.

<sup>ix</sup> The Guardian, 24 February 2023.

<sup>x</sup> The Guardian, 25 February 2023.

<sup>xi</sup> The Guardian, 28 February 2023.

<sup>xii</sup> Monthly Weather Report, February 1923, Meteorological Office, HMSO, 1923, p. 15 and pp. 20-23.

<sup>xiii</sup> D J Stanier, by email, 1 March 2023.

<sup>xiv</sup> Monthly Weather Report February 1923, Meteorological Office, HMSO, 1923, p.15.

<sup>xv</sup> Meteorological Magazine, March 1923, Meteorological Office, HMSO, 1923, p. 45.

<sup>xvi</sup> Hadley Centre, Central England and Midlands, Meteorological Office.

<sup>xvii</sup> Monthly Summary, February 2023, Meteorological Office, March 2023.