

Severe winter weather and storm Darcy, February 2021

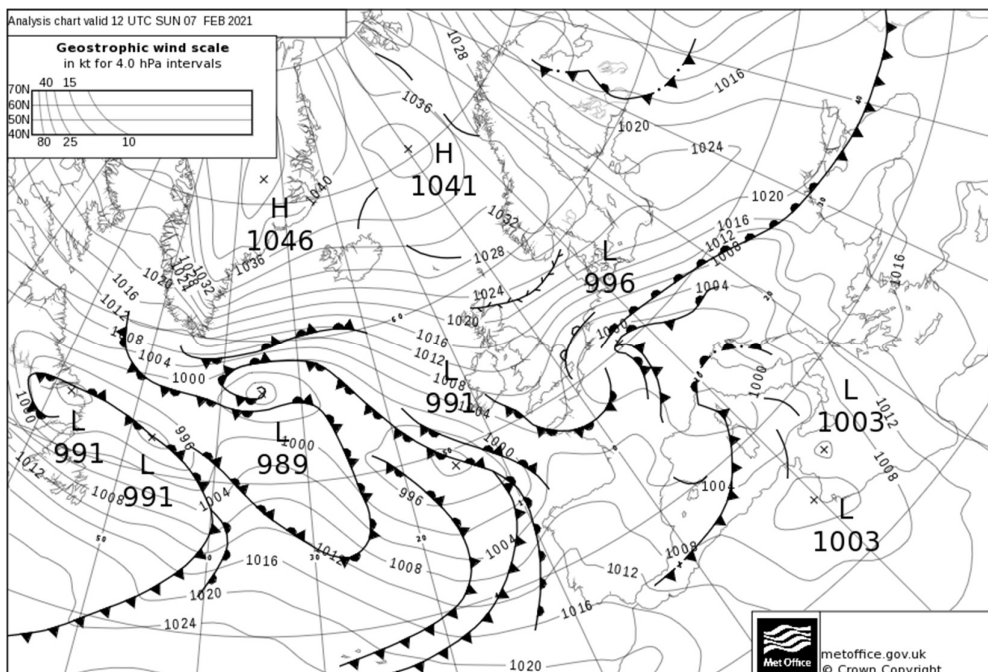
The UK experienced a week of severe winter weather from 7 to 13 February, with easterly winds drawing a bitterly cold airflow from eastern Europe. Storm Darcy brought some strong winds and heavy snow to parts of south-east England on 7th, while persistent snow showers resulted in significant accumulations across eastern England and Scotland. Daytime temperatures struggled to rise above freezing, and, combined with the wind, resulted in severe wind-chill, particularly on the exposed east coast. Much of eastern Scotland experienced deep lying snow with depths in some places of 20 to 30cm or more. 11th/12th February was a bitterly cold night with temperatures of -10 to -15°C across eastern Scotland, and three stations falling below -20°C. At Braemar, -23.0°C made this the UK's lowest temperature since December 1995.

Impacts

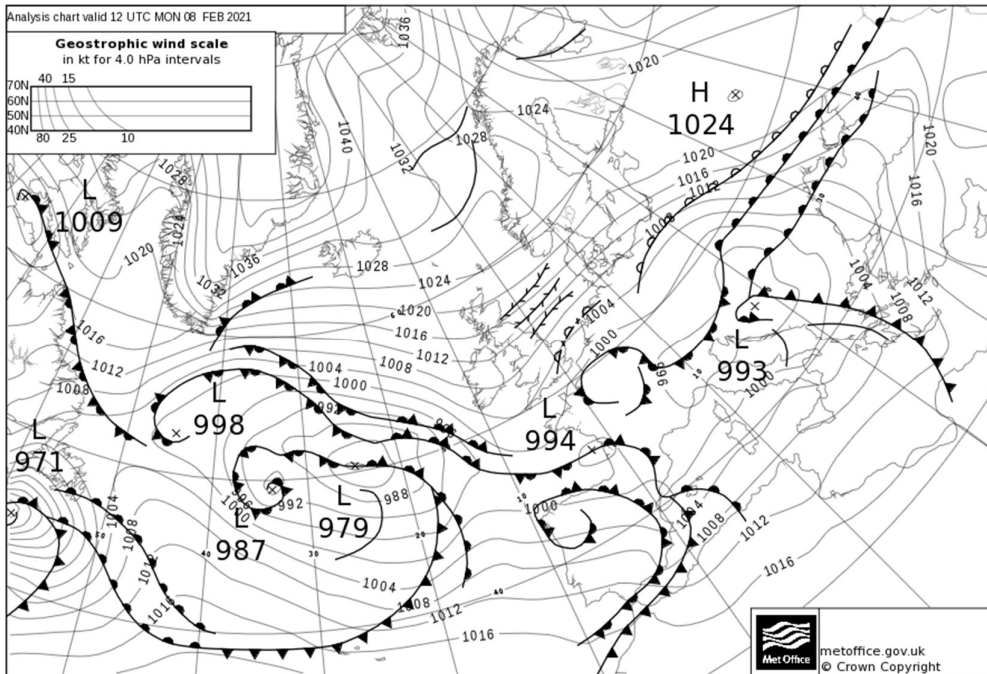
Snow and ice caused widespread travel disruption, with roads closed across many eastern coastal counties; Kent and Essex were particularly affected by deep snow. Hazardous conditions made driving conditions difficult with several accidents. There were also train cancellations. A number of schools had to close across the south-east and Lincolnshire and several Covid vaccination centres were also shut. A kitesurfer died on a beach in Suffolk. Scotland was also affected by deep lying snow, with transport disruption and school closures, and the harbour at Nairn was frozen over. There was deep lying snow across Scotland's mountains, with large accumulations and severe drifting. The Stevenson screen at the weather station at Cairngorm Chairlift (663masl) was buried in snow, and an extreme avalanche risk was reported in the Pentland Hills south of Edinburgh. Several impressive igloos were built by members of the public.

Weather data

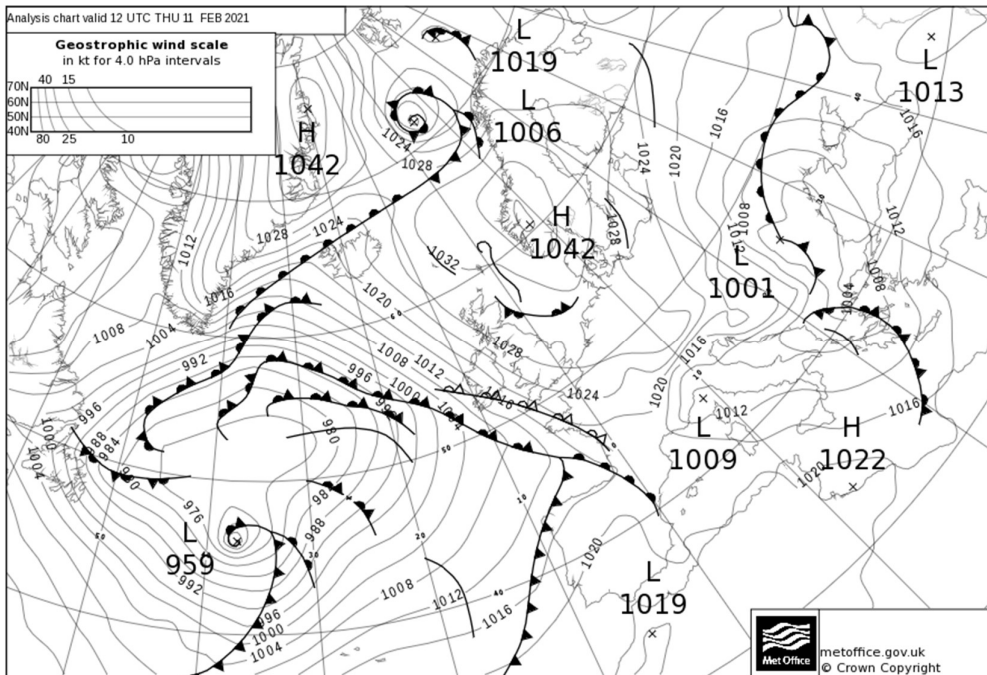
The analysis chart at 1200 UTC 7 February 2021 shows an area of low pressure (storm Darcy) located across the Netherlands bringing heavy snow and strong winds to south-east England.



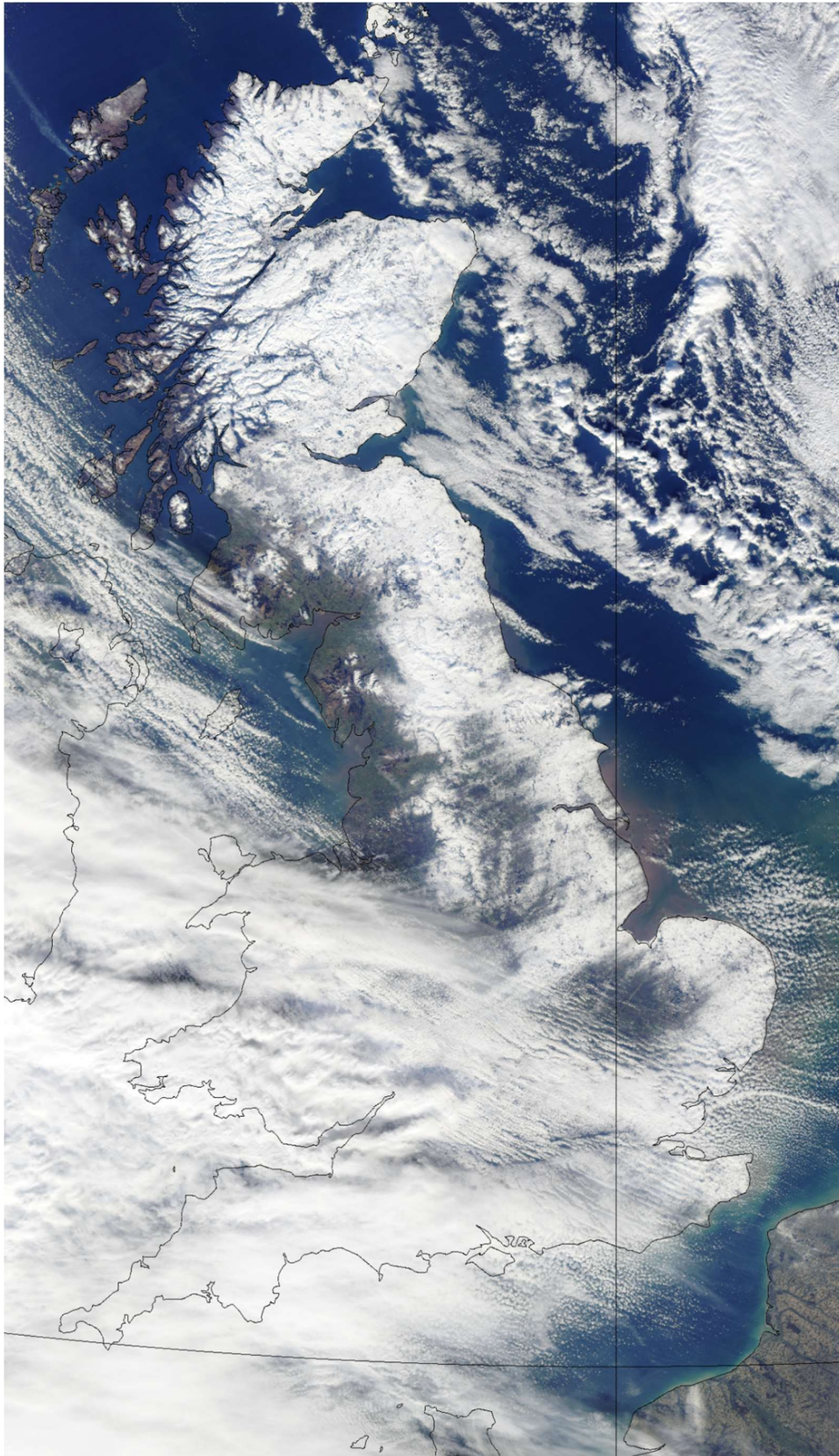
The analysis chart at 1200 UTC 8 February 2021 shows the UK in a bitterly cold easterly airstream with a persistent feed of snow showers off the North Sea affecting the east coast.



The analysis chart at 1200 UTC 11 February 2021 shows high pressure over Scandinavia extending to cover much of the UK, while frontal systems start pushing into the far south-west.



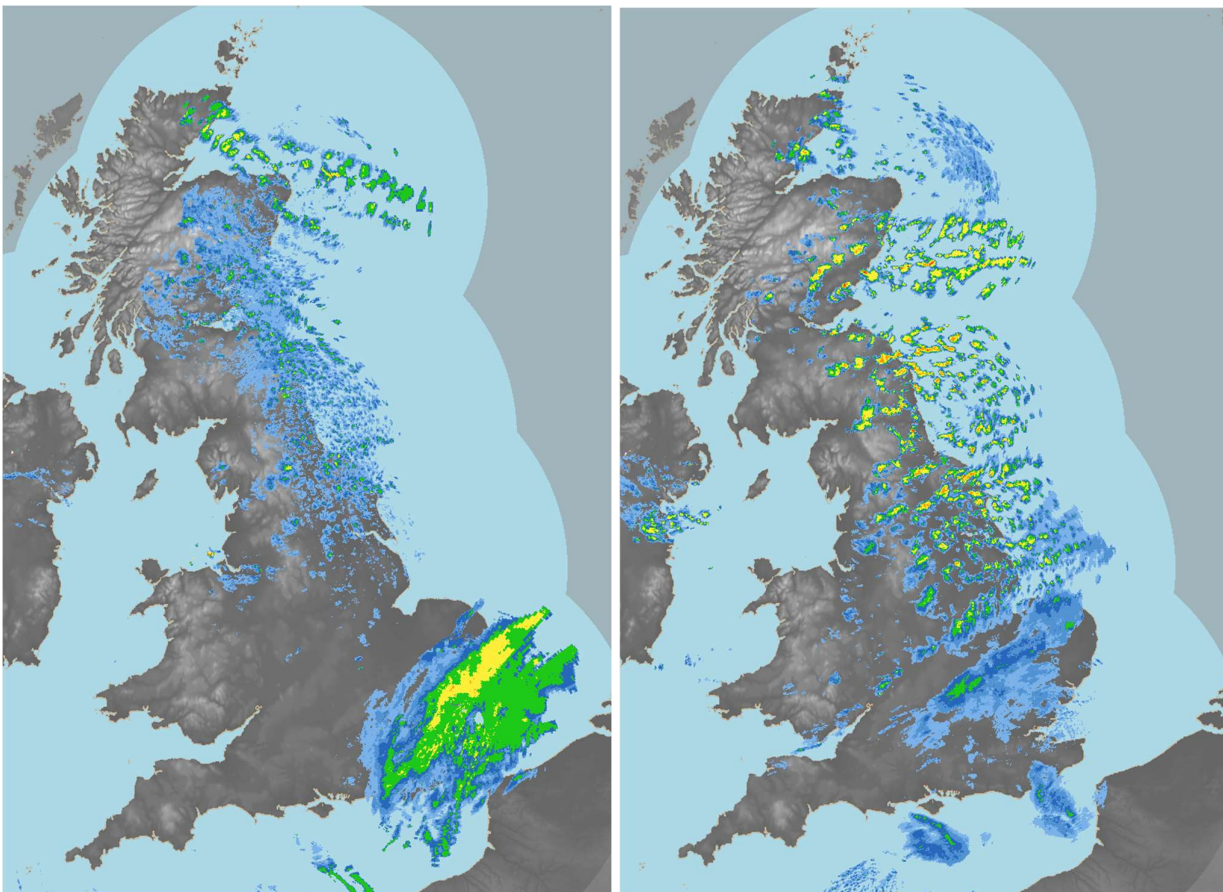
The satellite image on 11 February 2021 shows lying snow from Kent to Caithness, extending from the coast and inland across the east Midlands, Pennines and much of Scotland. Bands of snow from lines of showers in the easterly airflow can clearly be seen across Lincolnshire and Yorkshire. 11th/12th was the coldest night of the spell, with temperatures falling below -20°C in Scotland – this occurred due to a combination of clear skies, lying snow and light winds. Image copyright Met Office / NOAA / NASA.



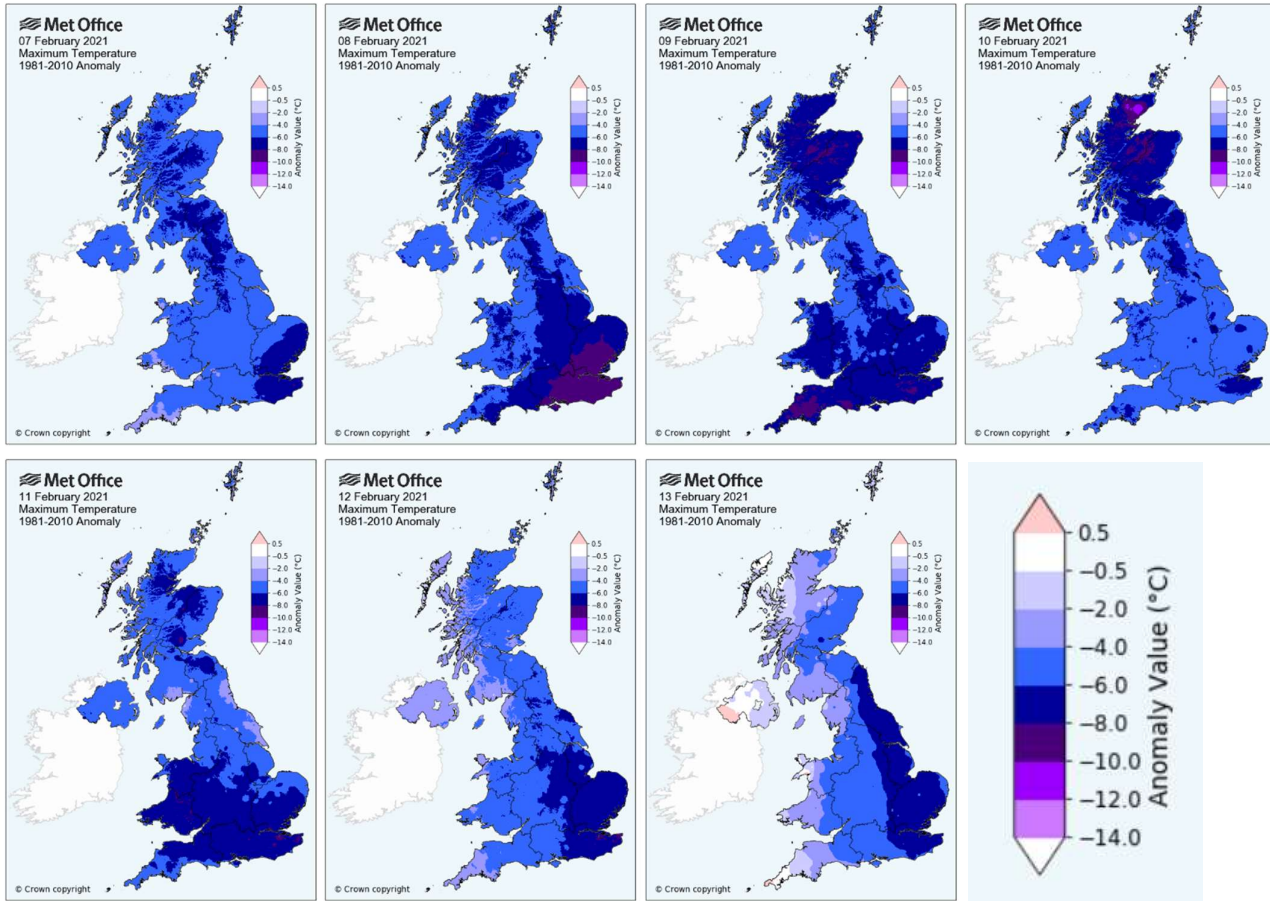
The satellite image on 11 February 2021 shows lying snow around the coastlines of the southern North Sea. Image copyright Met Office / NOAA / NASA.



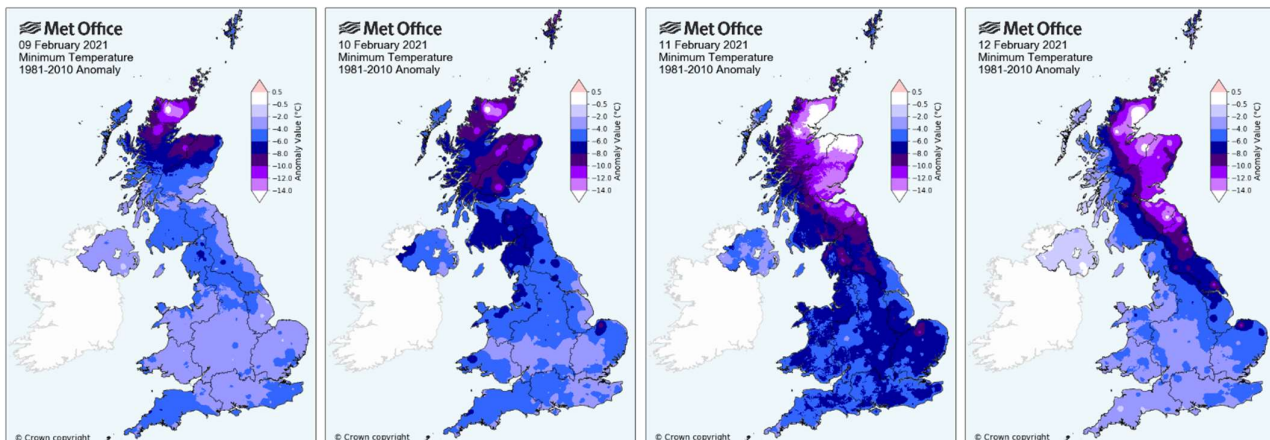
The rain-radar images at 1200 UTC 7th and 1200 UTC 8th February show heavy snow affecting south-east England, with a feed of snow showers running in off the North Sea.



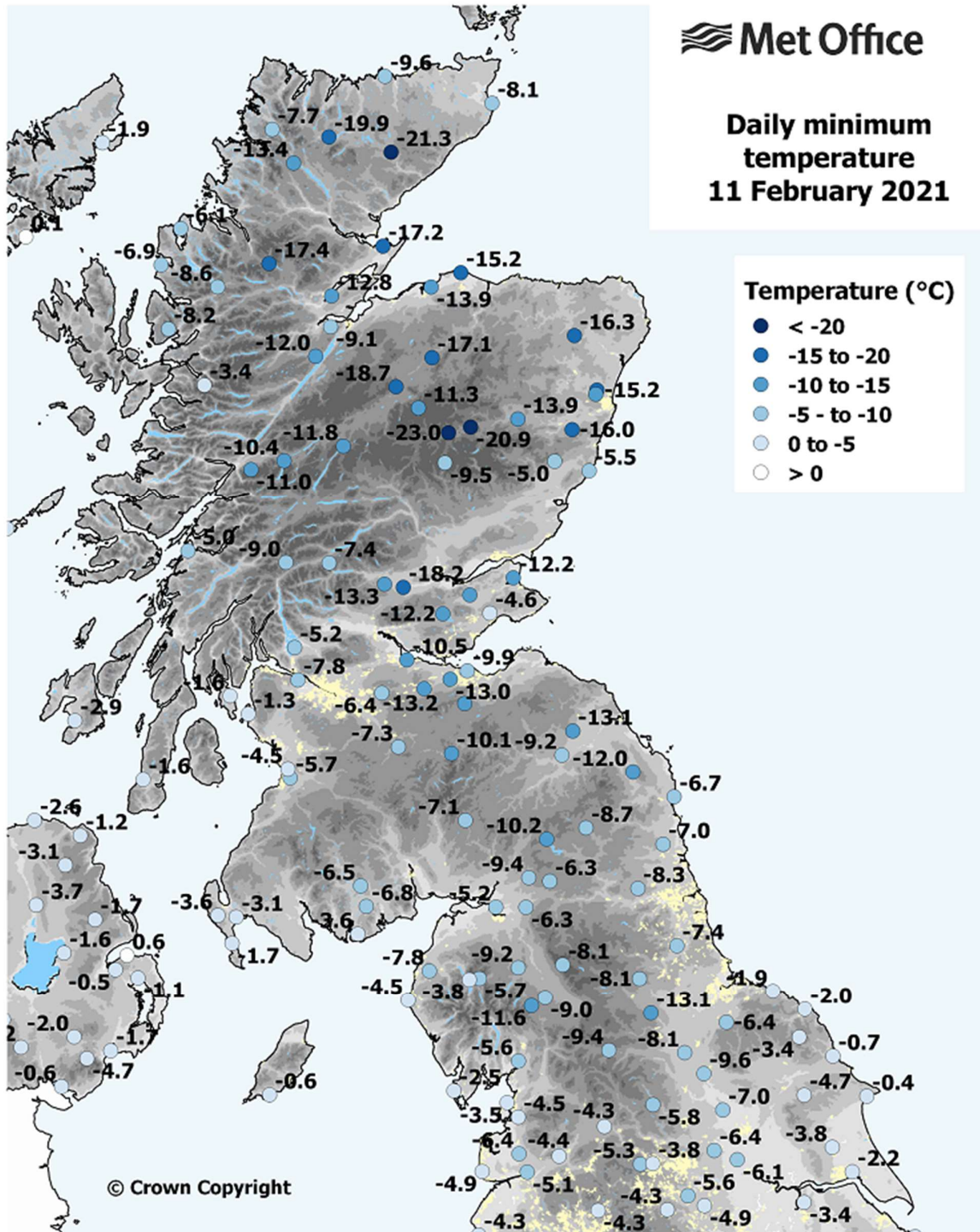
The maps below show daily maximum temperature anomalies from 7 to 13 February 2021. Temperatures were well below average throughout the UK for the week, reaching only 1 or 2°C widely. With lying snow and a strong easterly wind, 8th February was particularly cold across the south-east where temperatures remained below freezing all day – with daily maximum temperatures of -1.5°C at Rothamsted, Hertfordshire and -2.4°C at Wych Cross, East Sussex – 8 to 10°C below average for the time of year. Even central London remained below freezing with a daily maximum of -0.1°C at St James’s Park.



The maps below show daily minimum temperatures from 9 to 12 February 2021. The coldest night was 11th/12th February. Temperatures fell below -5°C across most of the UK and -10 to -15°C or lower across north-east Scotland – around 14°C below average for the time of year. Only a few coastal fringes in the west and south escaped a frost. Daily minimum temperatures are observed from 0900 to 0900 UTC and since the lowest temperatures occurred around 0900 UTC, this accounted for the very low temperatures on both 11th and 12th.



The map below shows daily minimum temperatures across Scotland and north-east England on 11 February 2021. Minima were widely -5 to 10°C across northern England, while it was an exceptionally cold night across eastern Scotland. The provisional daily area-average minimum temperature for eastern Scotland was -12.3°C making this the coldest night here since 3rd December 2010 (-13.5°C). Three stations fell below -20°C : -20.9°C at Balmoral and -23.0°C at Braemar (both Aberdeenshire) and -21.3°C at Kinbrace, Sutherland. Temperatures fell well below -10°C even on the coast, with -17.2°C at Tain Range, Cromarty, -15.2°C at Lossiemouth, Moray, -15.2°C at Dyce, Aberdeen, -12.2°C at Leuchars, Fife and -13.0°C at Edinburgh, Gogarbank. Several stations in this area recorded their coldest February night since 1978 and at Lossiemouth it was the coldest February night in a 69-year record.

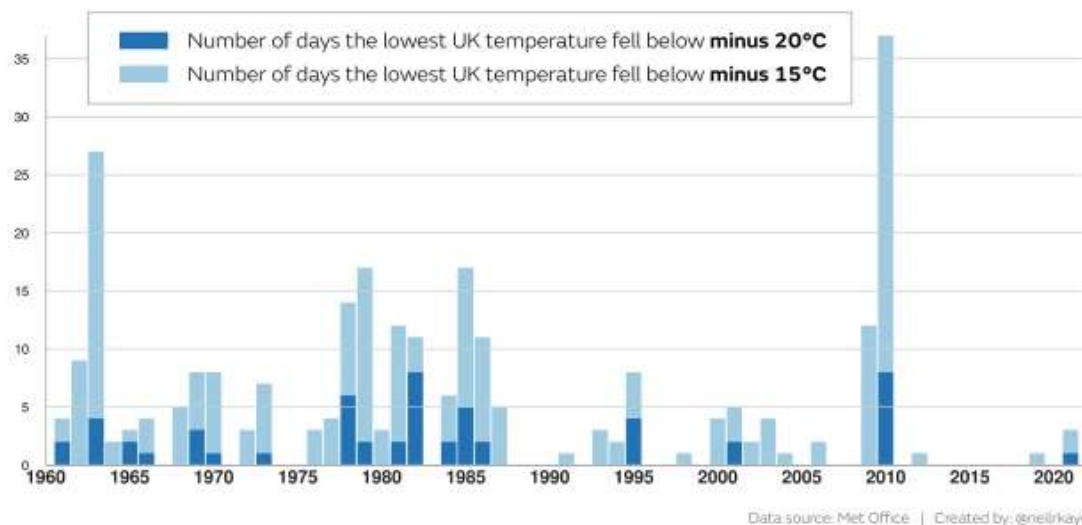


The lowest temperature of the spell, -23.0°C at Braemar, was the UK's lowest temperature since -27.2°C at Altnaharra, Sutherland on 30 December 1995 (the UK's equal-lowest temperature on record). Ravensworth (North Yorkshire) recorded a minimum of -15.3°C on 12th (this occurring after 0900 UTC on 11th) – making this England's lowest temperature since 11 February 2012.

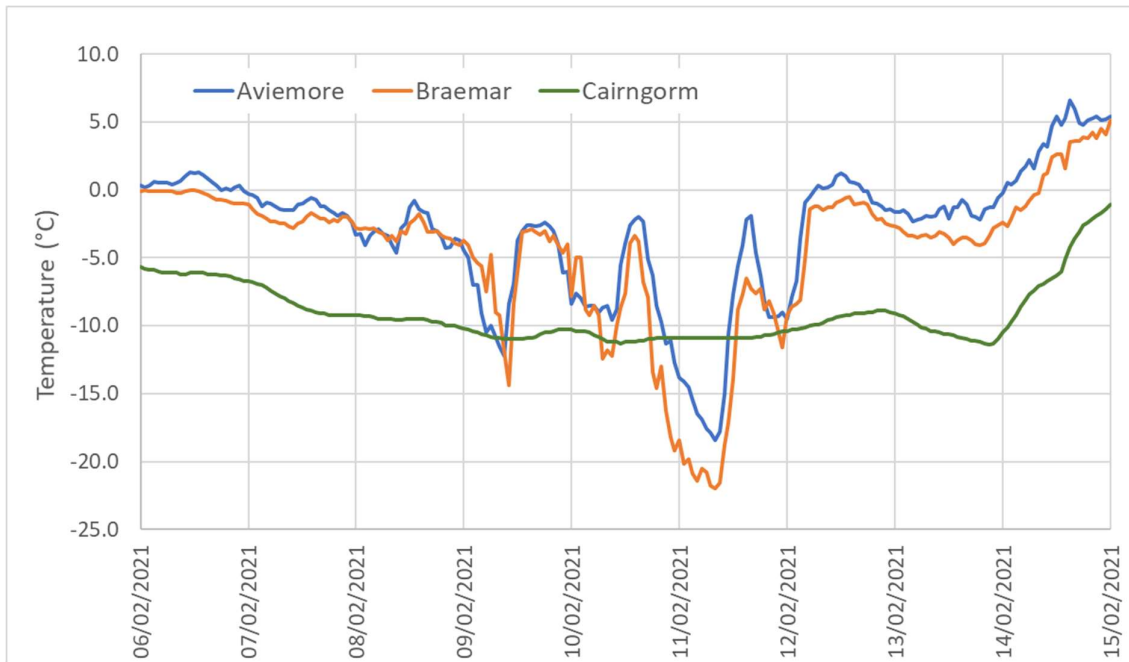
Temperatures below -20°C are comparatively unusual in the UK, having last occurred in 2010, 2001 and 1995, while in recent years -15°C has also been unusual. The figure below counts the number of days by year from 1961 with at least one station recording -15°C and -20°C or lower. In both cases there were generally more days in the years from 1961 to the mid-1980s compared to the second half of the series. In 1982 there were over 50 observations of -20°C across England and Scotland in a bitterly cold spell between 7th and 15th January, while in 1995 there were over 30 observations of -20°C across Scotland from 28th to 30th December. In 2010 there were several spells of severe winter weather with -20°C recorded in both January and December and -15°C recorded on 37 separate days in January, February, March, November and December.

More than 30 stations across the UK recorded minimum temperatures below -10°C on 11 February 2021, making this the most widespread severe frost since February 2012.

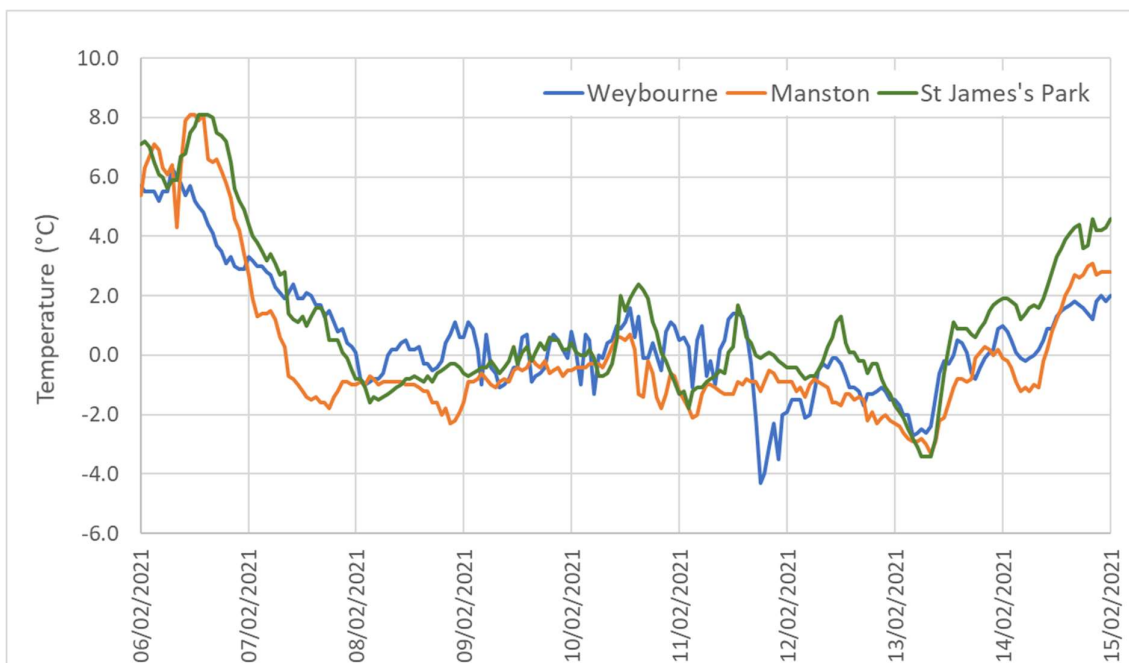
 Frequency of very cold nights in the UK from 1960 to 2021



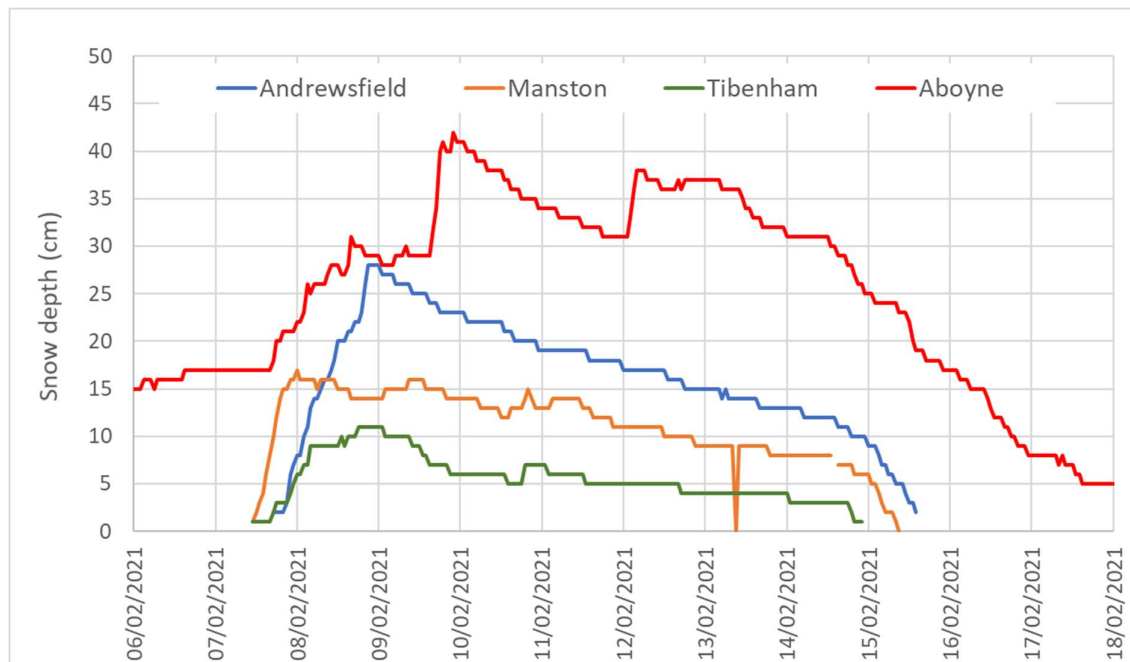
The figure below shows hourly air temperature at Aviemore (Inverness-shire), Braemar (Aberdeenshire) and Cairngorm summit (1237masl) through the spell. Temperatures at Braemar fell below -10°C for four consecutive nights, with the coldest night 11th/12th falling below -20°C , and daytime temperatures remaining well below freezing. By contrast the air temperature at Cairngorm summit remained relatively steady at around -10°C .



The figure below shows hourly air temperature at Weybourne (Norfolk), Manston (Kent) and St James's Park (London). Note the different y-axis scale. In contrast to Scotland, temperatures across south-east England remained generally close to 0°C , with the easterly wind tending to mostly suppress the diurnal temperature variation. There were particularly strong easterly winds at the start of the spell, especially on exposed eastern coasts, with Weybourne recording a maximum gust of 48Kt (55mph) on the 7th. Winds inland gusted widely at around 20 to 30Kt (23 to 35mph) resulting in severe wind-chill and drifting of lying snow.



The figure below shows hourly snow depths at three stations across the south-east: Manston (Kent), Andrewsfield (Essex) and Tibenham (Norfolk), and also Aboyne (Aberdeenshire). 10 to 20cm fell at these locations in the south-east on 7th and 8th, with this lying largely un-melted until the 15th. At Aboyne, persistent snow showers led to a much greater depth of snow, exceeding 30cm from 8th to 15th, with a maximum depth of 42cm.



The figure below shows snow depths on 10 February 2021. Parts of Kent and East Anglia recorded depths of 15 to 20cm or more from the heavy snow of 7 February, but snow depths up the east coast were more typically 5 to 10cm. The deepest lying snow was across Scotland around Edinburgh, Fife, Angus, Kincardineshire and Aberdeenshire with depths of 20 to 30cm or more, including 38cm at Aboyne, Aberdeenshire, 35cm at Fettercairn, Kincardineshire, 26cm at Mylnefield, Angus and 23cm at Penicuik, Mid-Lothian. There was also deep lying snow parts of across the north Pennines with 21cm at Copley, County Durham. However, most central and western parts of the UK sheltered from the east remained snow free.

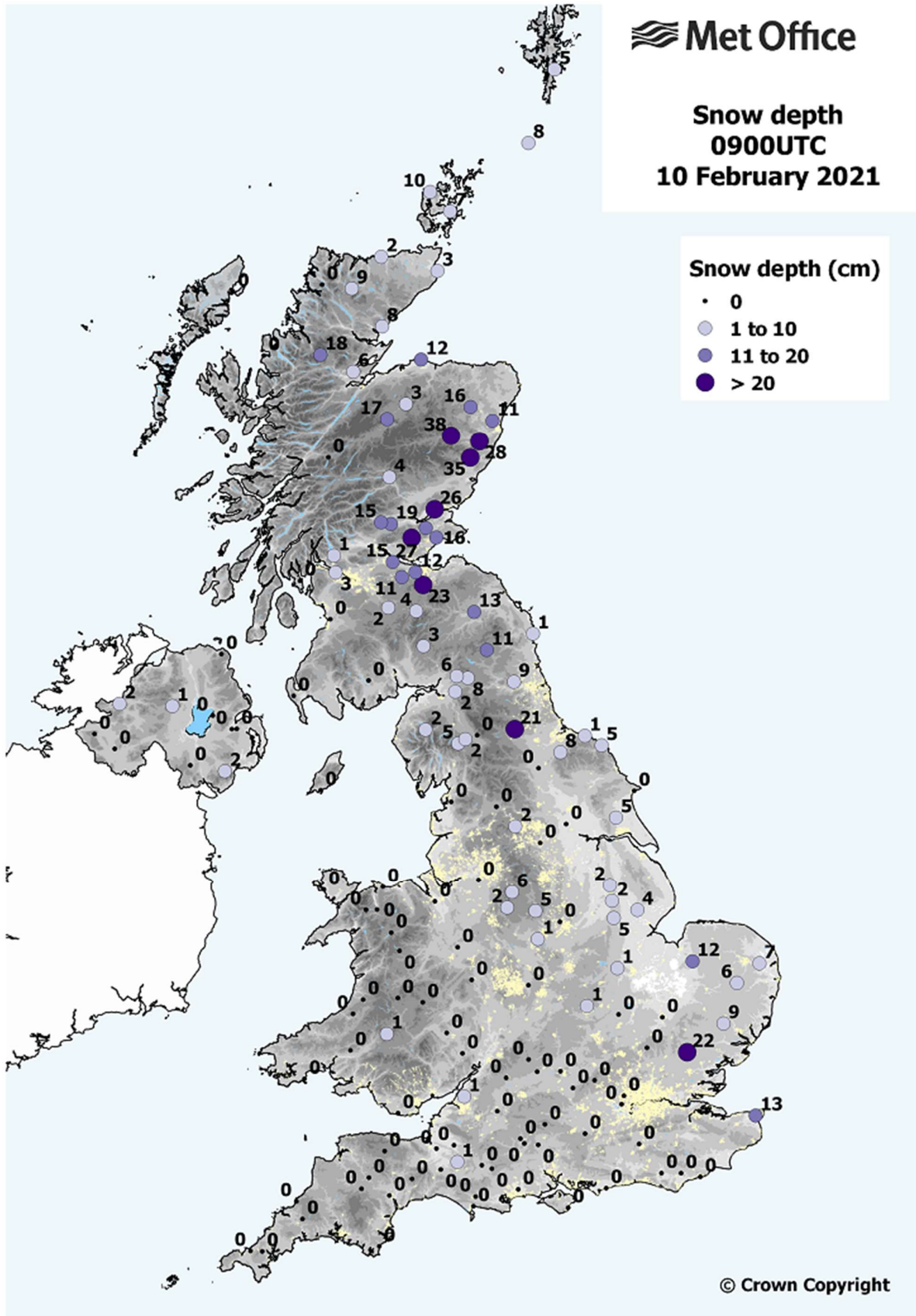
This was the UK's most severe spell of wintry weather since the 'Beast from the East' event of late February to early March 2018. Although minimum temperatures fell lower during February 2021, daily maximum temperatures were generally lower during the 2018 event with 'ice-days' (the temperature remaining below 0°C all day) more widespread – particularly on 28 February and 1 March 2018. In 2018 the snow was also generally much more widespread and deeper, with significant depths across Wales, central southern and south-west England. There was also a brief spell of widespread snow and low temperatures which caused disruption in late January / early February 2019.

7th to 13th February 2021 was a notable spell of severe wintry weather – particularly in comparison to several very mild winters in the last few decades, but would not be considered exceptional compared to long-term climate records, less severe than 2018 and very much less severe than the exceptional freezing weather of December 2010.

**Snow depth
0900UTC
10 February 2021**

Snow depth (cm)

- 0
- 1 to 10
- 11 to 20
- > 20



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