

Snow and low temperatures February to March 2018

The UK experienced a spell of severe winter weather with very low temperatures and significant snowfalls from late February to early March 2018.

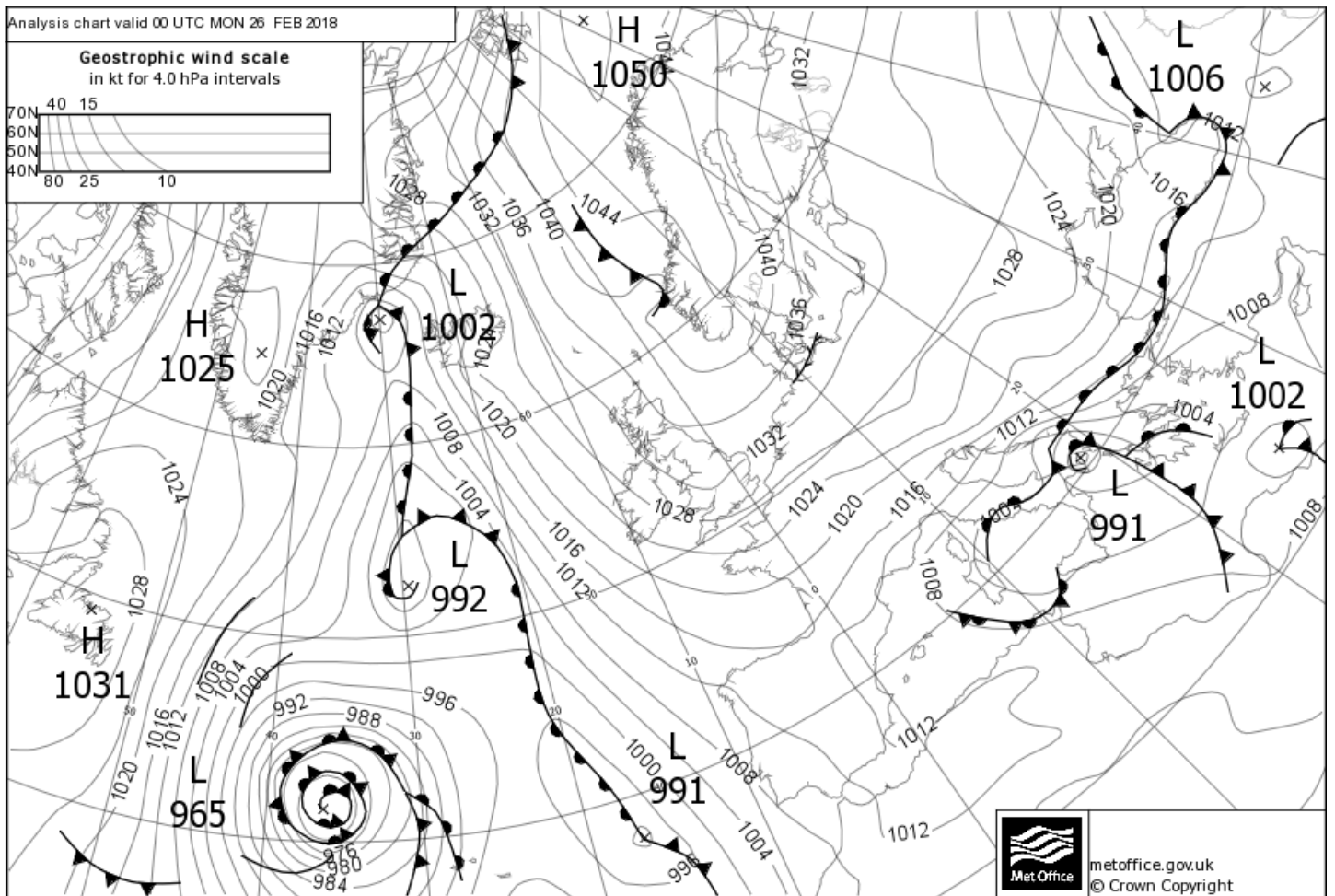
Daytime temperatures remained widely below freezing on 28 February to 1 March with a strong east wind and significant accumulations of snow across much of the country; the Met Office issued two Red Warnings for snow. This was the most significant spell of snow and low temperatures for the UK overall since December 2010.

Impacts

The severe winter weather brought widespread impacts. On 28 February a man died after falling into a frozen lake in a London park. There was severe travel disruption with roads closed, numerous road traffic collisions and cars were stranded overnight on many roads in both Scotland and England, for example the A31 in Hampshire and M80 in Scotland. Rail services were cancelled and air transport was severely disrupted, for example Glasgow airport closed on 28 February. Thousands of schools across England, Wales and Scotland were closed, and many areas suffered power cuts. Isolated communities and farms across the North Pennines received supplies by helicopter.

Weather Data

The analysis charts below from 26 February to 3 March 2018 at 6-hourly intervals show a large area of high pressure dominating Scandinavia and northern Europe. This resulted in an easterly airflow across the UK, drawing bitterly cold air originating from Finland, north-west Russia and the Barents Sea, which covered much of Europe and extended well out into the Atlantic. This situation was associated with a stratospheric warming event over the previous few days, blocking the Jet Stream and milder air associated with Atlantic weather systems. The freezing temperatures combined with a strong east wind, particularly on 28 February and 1 March, resulting in a wind-chill at times widely below -10°C .



The rain-radar animation below from 26 February to 3 March 2018 at 15-minute intervals shows snowfalls during this event. Initially the main areas affected by snow were across eastern England and eastern Scotland. This snow came from persistent snow showers as the easterly airflow picked up moisture from the North Sea. These snow showers tended to form in convergence lines resulting in some locations receiving relatively little snow whereas others nearby receiving very large amounts. Examples of these convergence lines run through the English Channel and other parts of the UK such as eastern Scotland; due to persistent heavy snow a Met Office Red Warning was issued for Scotland's Central Belt for 28 February.

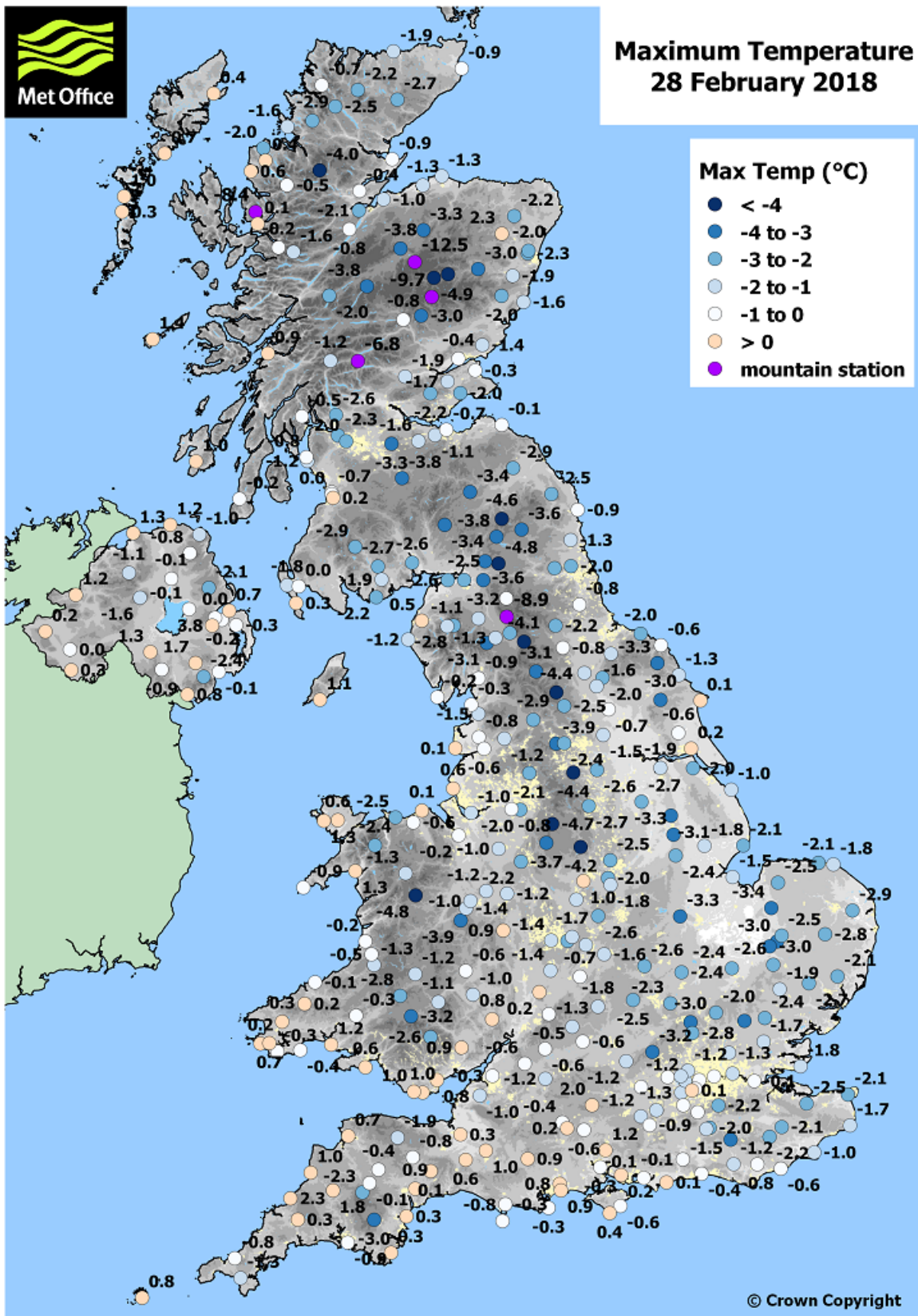
During the afternoon of 1 March, a low pressure system in the Bay of Biscay (named as Storm Emma by the Portuguese Met Service) pushed north, bringing mild, moist air into the colder air resulting in further heavy snow, particularly across southern and south-west England and south Wales; the Met Office issued a second Red Warning for this event. Subsequently as this milder, moist air moved north, much of the UK received further snow. Behind this weather system southern areas also experienced freezing rain (on contact with cold surfaces).

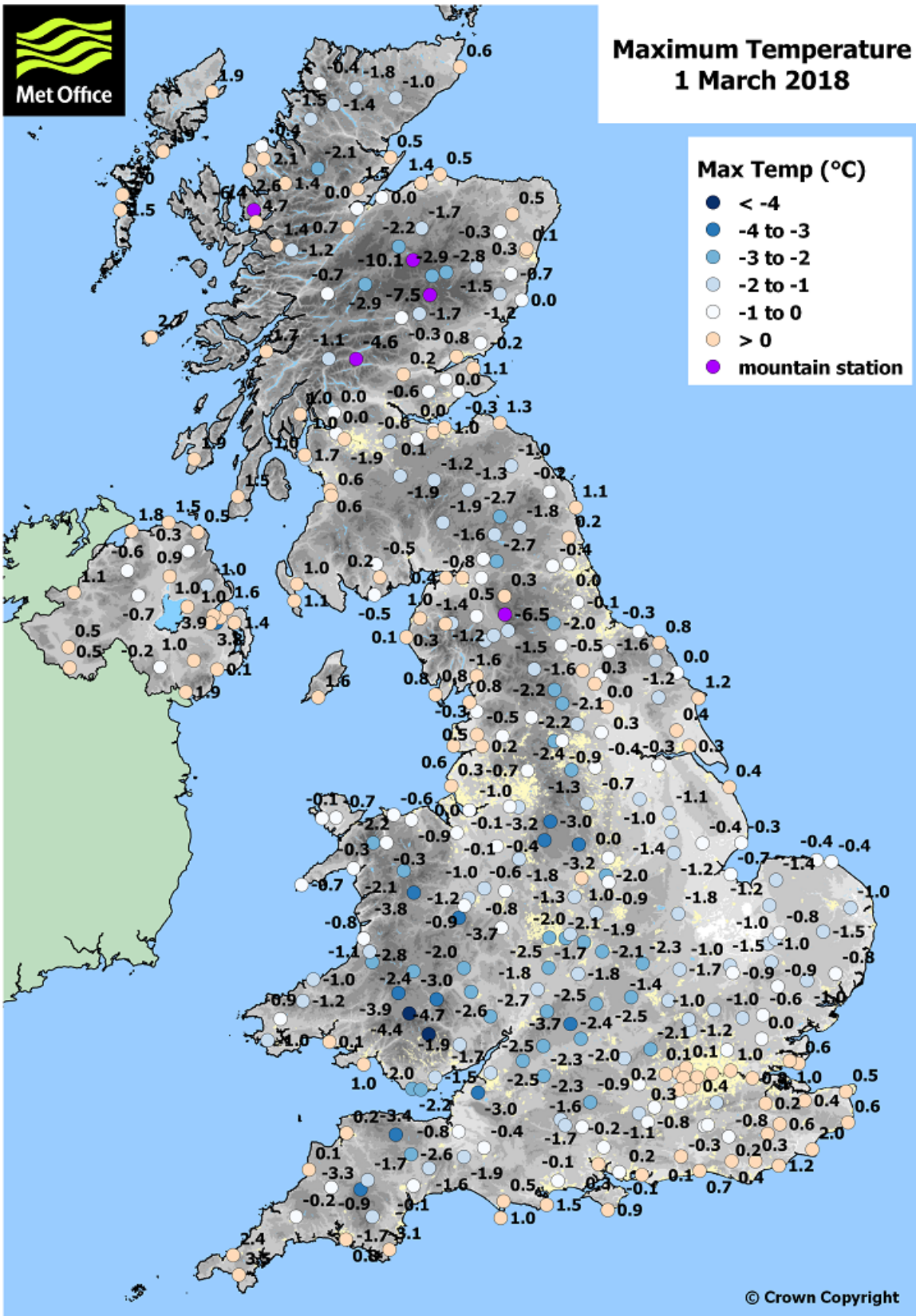
Due to the low temperatures, falling snow readily lay un-melted on the ground, and the strong winds resulted in significant drifting. While the wind stripped snow from some locations, others recorded depths of 50cm or more; in some locations (such as the A39 in North Devon) roads were blocked while surrounding fields remained relatively bare.

Temperature

The maps below show daily maximum temperatures at individual weather stations for 28 February and 1 March 2018, the coldest days of the spell. On both days, temperatures remained below freezing all day across much of the UK. On 28 February, maximum temperatures were typically below -2°C across central and eastern England and eastern Scotland, and below -4°C across upland areas in the north. Sheltered locations in the west and south remained nearer or above freezing, but all areas were exposed to the strong east wind,

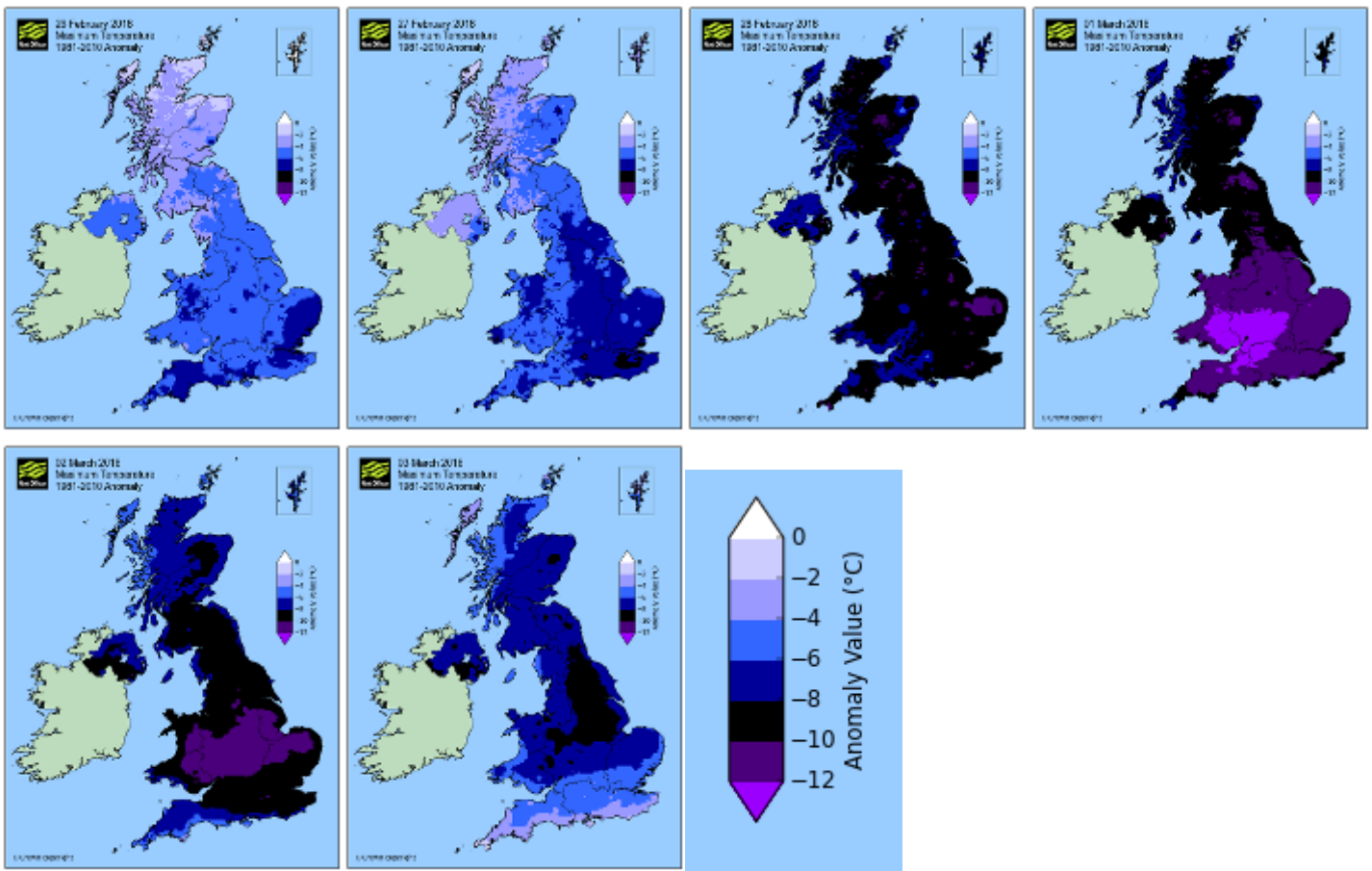
typically gusting at 20 to 30 Kt (23 to 35 mph); such conditions resulting in a 'feels like' temperature of around -10 °C. Even St Mary's Airport, Isles of Scilly, recorded a daily maximum of only 0.8 °C. On 1 March 2018 (the first day of meteorological spring), daily maximum temperatures again remained widely below freezing, with the coldest areas across central England and Wales; many locations here recording maximum temperatures below -2 °C.



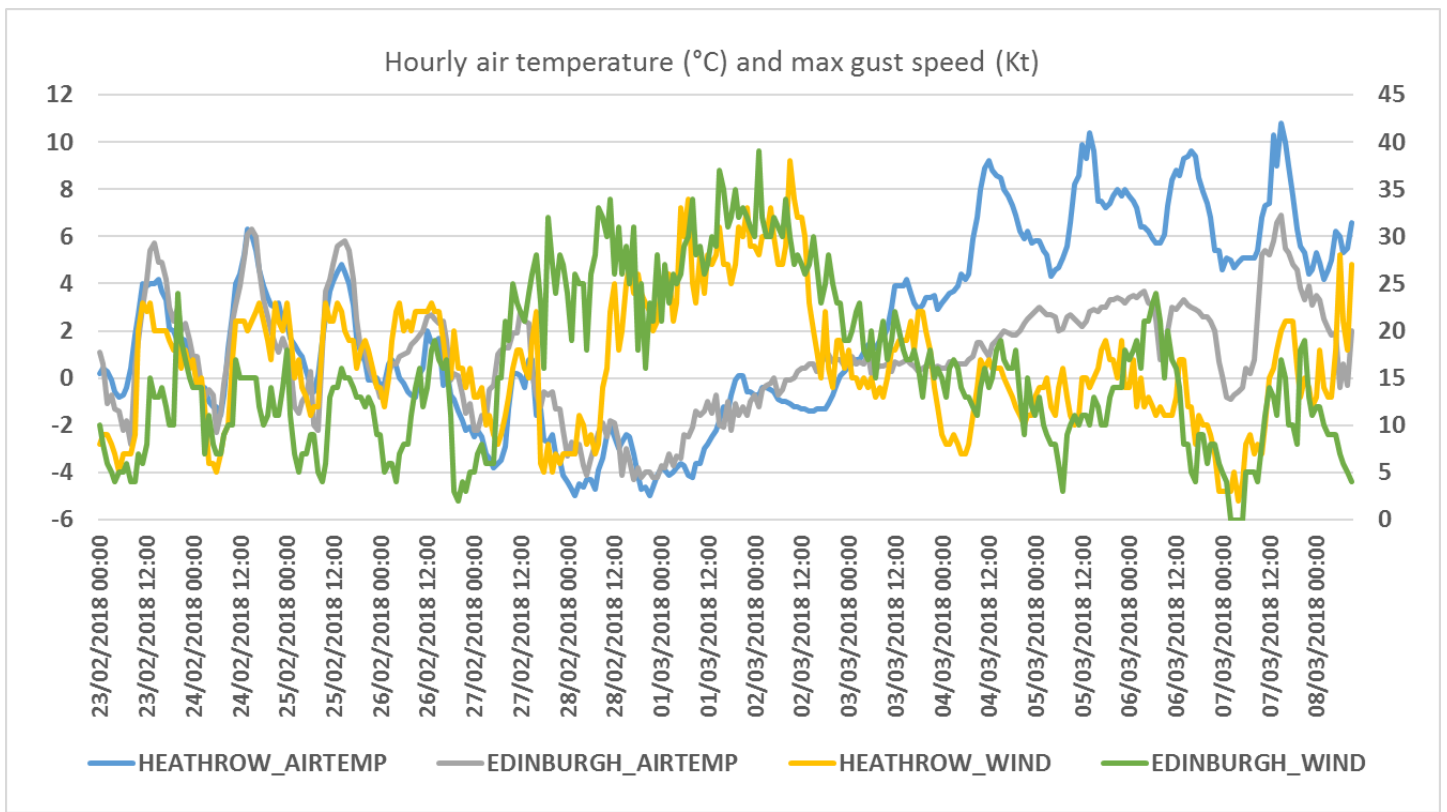


The sequence of maps below show daily maximum temperatures from 26 February to 3 March 2018 (as difference from 1981-2010 average for February (26 to 28) and March (1 to 3)). These indicate the duration and spatial extent of the cold. On 28 February maximum temperatures were widely between 8 and 10 °C below the February average, while on 1 March parts of the west Midlands and south Wales recorded daily maximum temperatures more than 12 °C below the March average (around -2 °C compared to a March average of around 10 °C). In these areas, some **new records were set** -4.7 °C at Tredegar, Blaenau Gwent was the lowest March daily maximum temperature for the UK and Wales, exceeding -4.6 °C at Cassley, Sutherland on 2 March 2001, and -4.4 °C at Bwlchgwyn, Denbighshire on 2 March 1965. -3.7 °C at Pennerley,

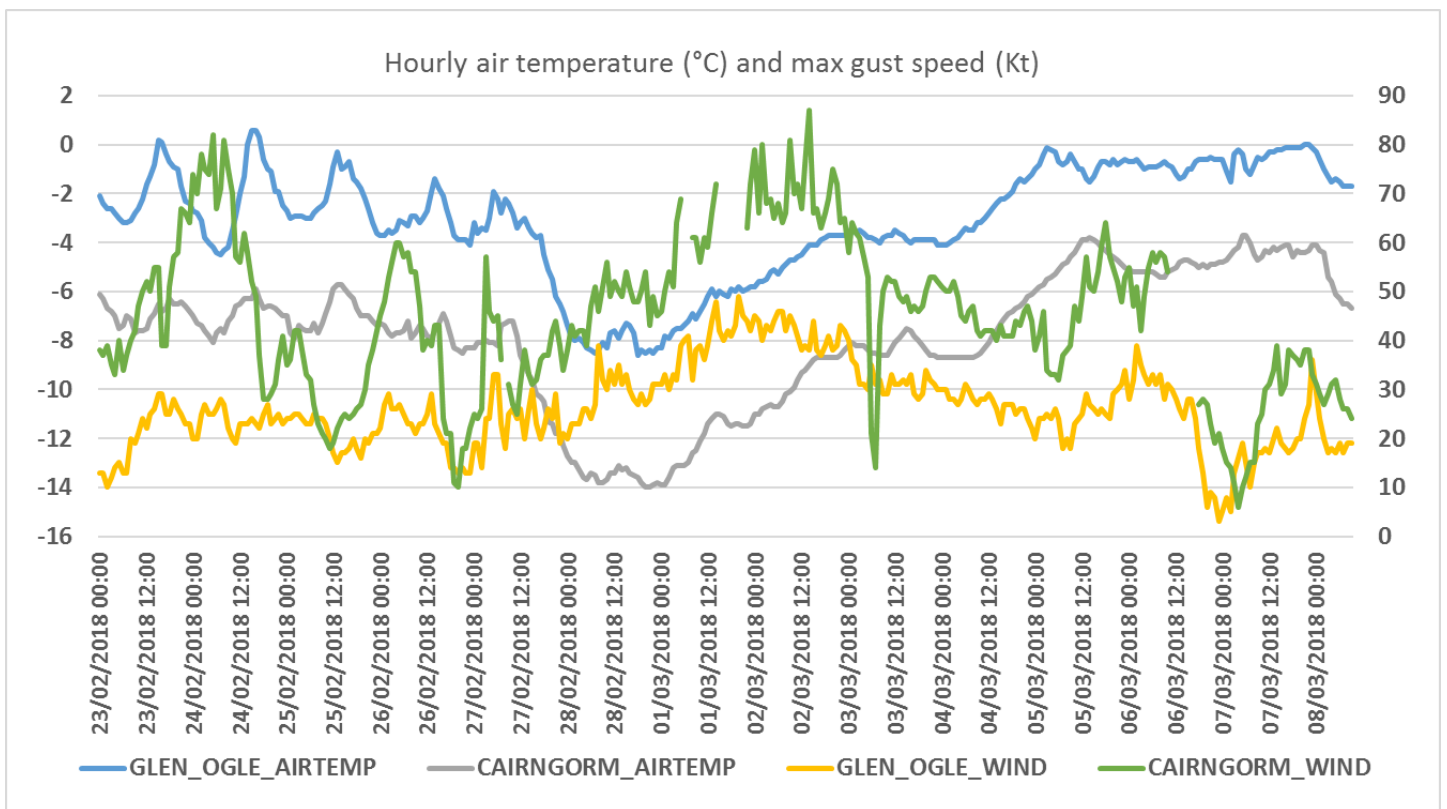
Shropshire and Little Rissington, Gloucestershire was also the lowest March daily maximum temperature for England, beating $-3.3\text{ }^{\circ}\text{C}$ at Buxton, Derbyshire on 5 March 1942, and at Spadeadam, Cumbria on 2 March 1965. A very large number of long-running weather stations recorded their lowest March daily maximum temperature on record, examples including $-0.1\text{ }^{\circ}\text{C}$ at Valley, Anglesey (87 years), $0.8\text{ }^{\circ}\text{C}$ at Plymouth, Devon (82 years), $-2.7\text{ }^{\circ}\text{C}$ at Ross-on-Wye, Herefordshire (77 years). Others recorded their lowest March maximum temperature since [March 1942](#) or [March 1965](#).



The figure below shows hourly air temperature and hourly maximum gust speed Heathrow, Greater London, and Edinburgh, Gogarbank from 23 February to 8 March showing temperatures hovering around freezing or falling to around $-5\text{ }^{\circ}\text{C}$ from 26 February to 3 March. The wind speeds picked up notably during this period, particularly on 1 and 2 March, contributing to the significant wind-chill. For example, on the morning of 1 March 2018 the air temperature at Heathrow was around $-4\text{ }^{\circ}\text{C}$ with wind gusting at around 25 Kt, and by the morning of 2 March 2018 the temperature was around $-1\text{ }^{\circ}\text{C}$ with wind gusting at around 40Kt.



To give an indication of the severity of the winter weather across upland areas of the UK, the figure below shows hourly air temperature and hourly maximum gust speed at Glen Ogle, Perthshire (564 masl) and Cairngorm Summit (1237 masl), representative of conditions at approximately mid-height and summit level of the Scottish mountains. During the evening of 28 February, at Glen Ogle the temperature was around -8 °C with the wind gusting at around 30 Kt, and at Cairngorm Summit the wind temperature was around -14 °C with the wind gusting at around 50 Kt; the latter corresponding to a ‘feels like’ temperature of around -30 °C.

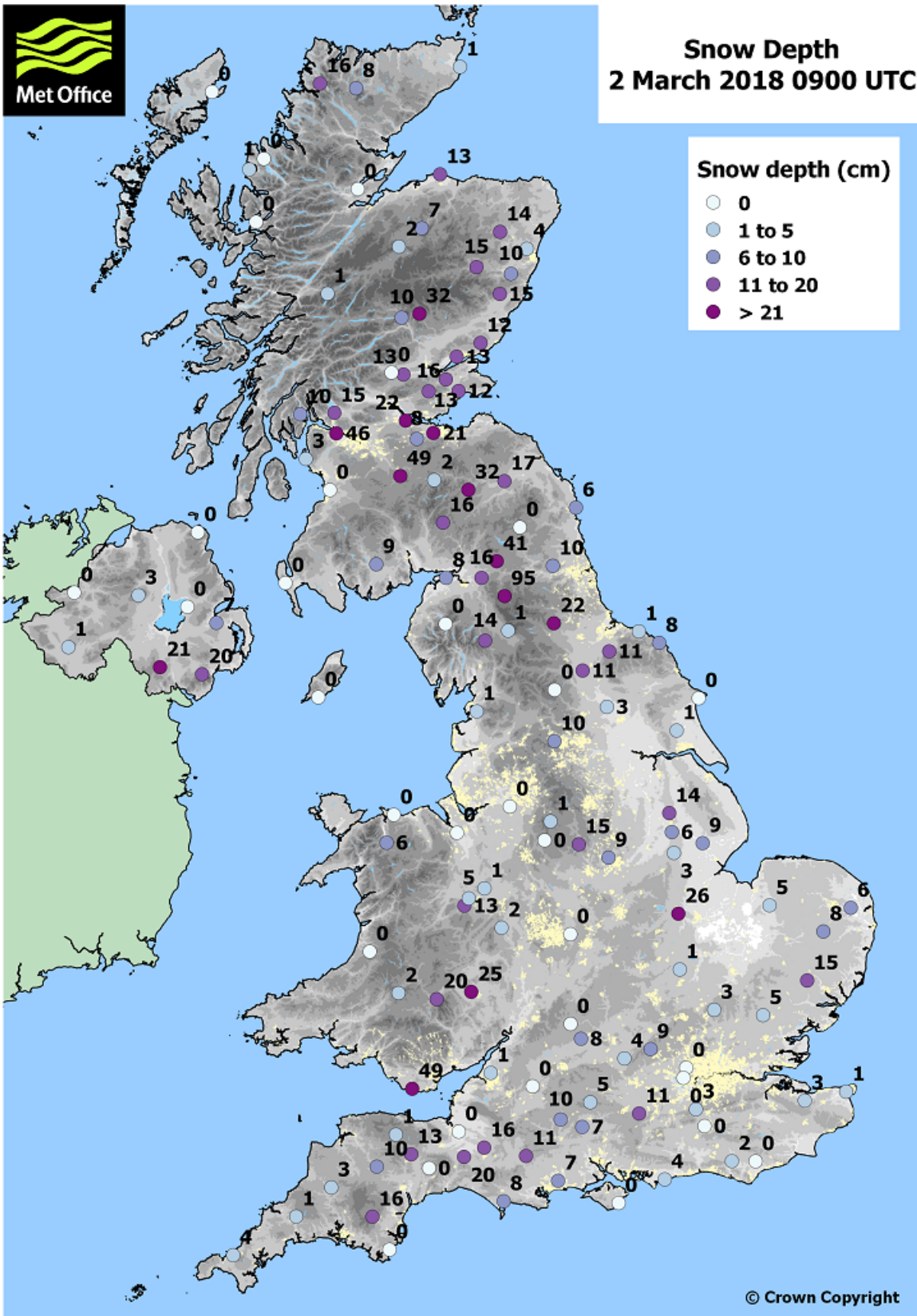


Minimum temperatures fell to -14.2 °C at Faversham, Kent on 28 February and several other locations across southern and eastern England recorded temperatures below -10 °C. However, although overnight temperatures were well below freezing, the strong easterly wind substantially reduced the normal diurnal

temperature variation, with the relatively mild influence of the North Sea preventing overnight temperatures falling further. Very low temperatures of -15 to -20 °C in the UK tend to be associated with periods of light winds, clear skies and lying snow cover.

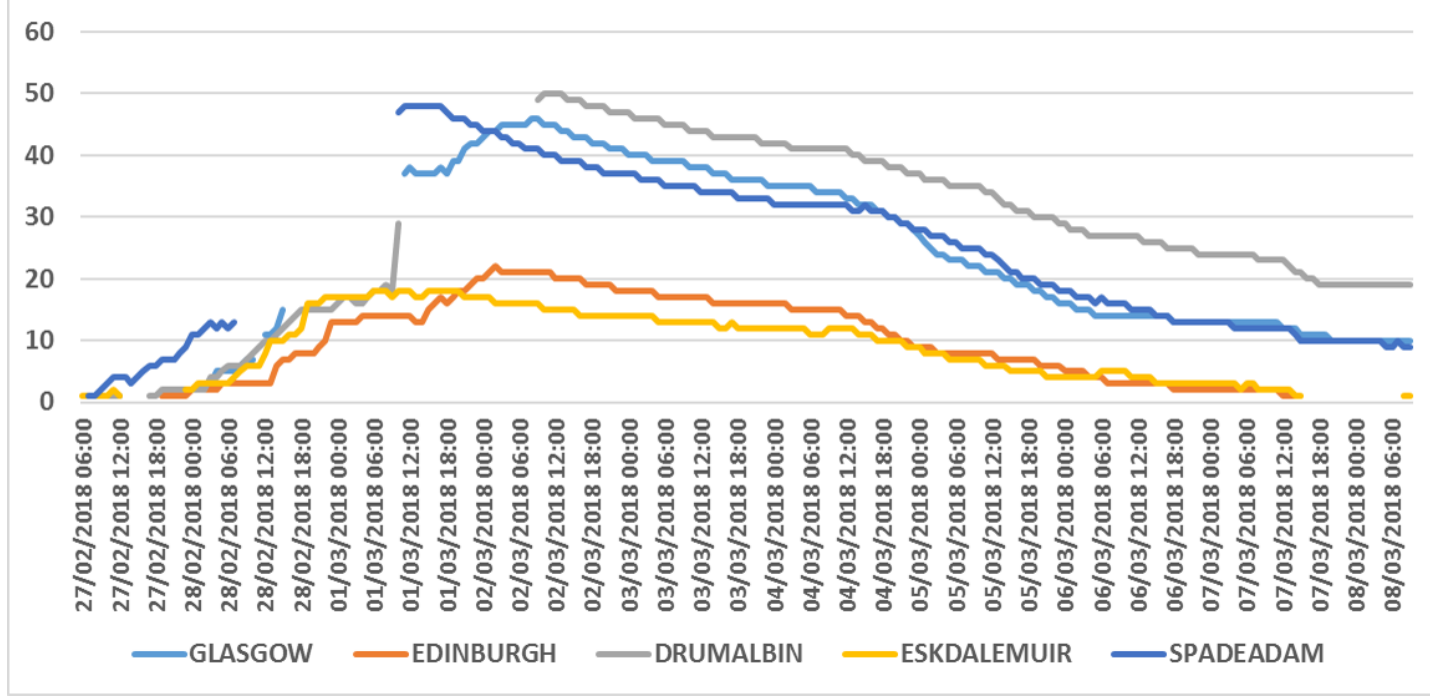
Snow

The map below shows snow depths at 09UTC on 2 March 2018, with peak snow depths for this event. While almost all areas of the UK experienced some lying snow, the greatest depths were across upland areas of northern and eastern England and eastern Scotland, and subsequently to parts of south-west England and south Wales. (The large variation in depths may reflect both variations in where the snow fell and the influence of drifting; some suspect data may also be present). Across northern England and southern Scotland depths were recorded of over 40cm (49cm at Drumalbin, Lanarkshire, 46cm at Glasgow, Bishopton and 41cm at Spadeadam, Cumbria), but depths were more typically 10 to 20cm. Southern England and south Wales also received significant snow with 49cm at St Athan, South Glamorgan, 25cm at Hereford, 20cm at Seavington and 16cm at Yeovilton (both Somerset).

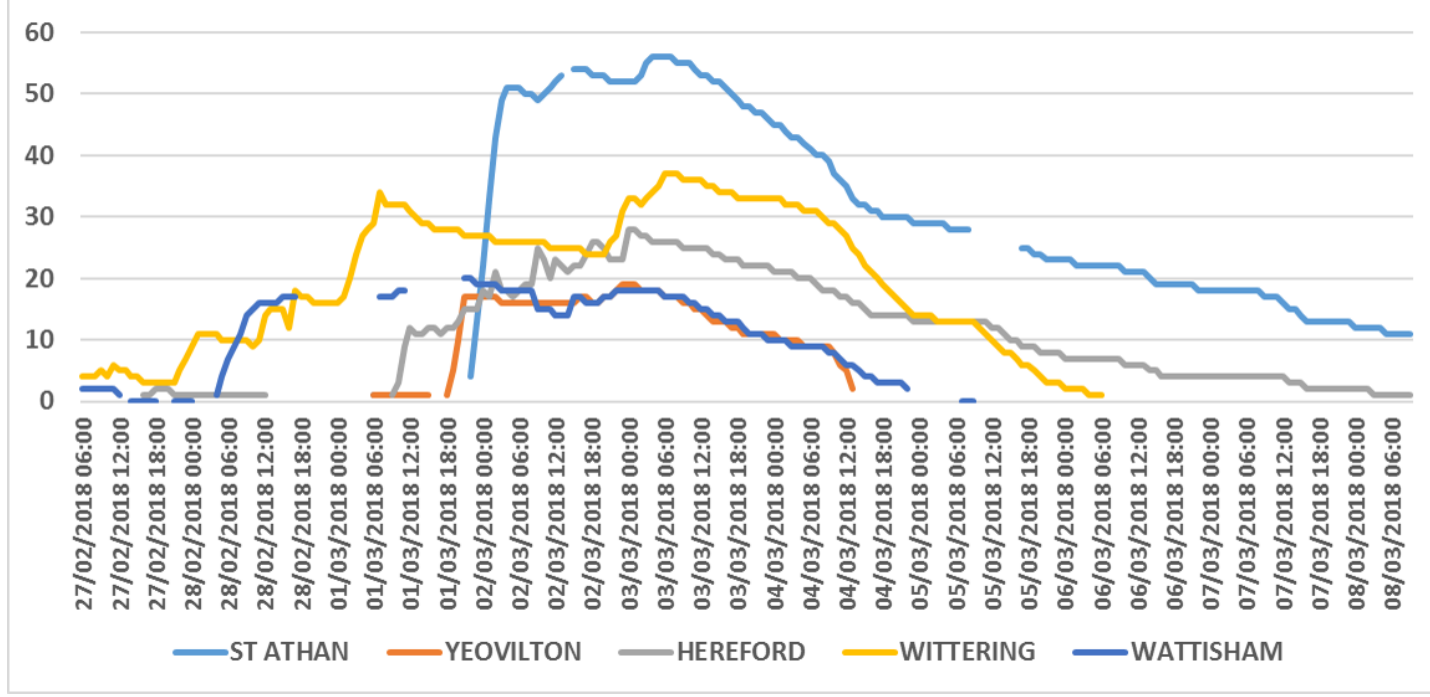


The time-series below show hourly snow depths across selected stations across northern England and southern Scotland, and southern England and Wales. Across northern areas snow accumulated steadily from 27 February to 2 March with depths subsequently reducing steadily but by 7 March (a week after the event) significant lying snow was still present in many locations. Across southern England and Wales locations in the east such as Wittering, Cambridshire and Wattisham, Suffolk also received snow during 27 to 28 February, whereas locations further west such as Yeovilton and St Athan experienced their heavy snow on the afternoon of 1 March.

Snow Depth (cm)



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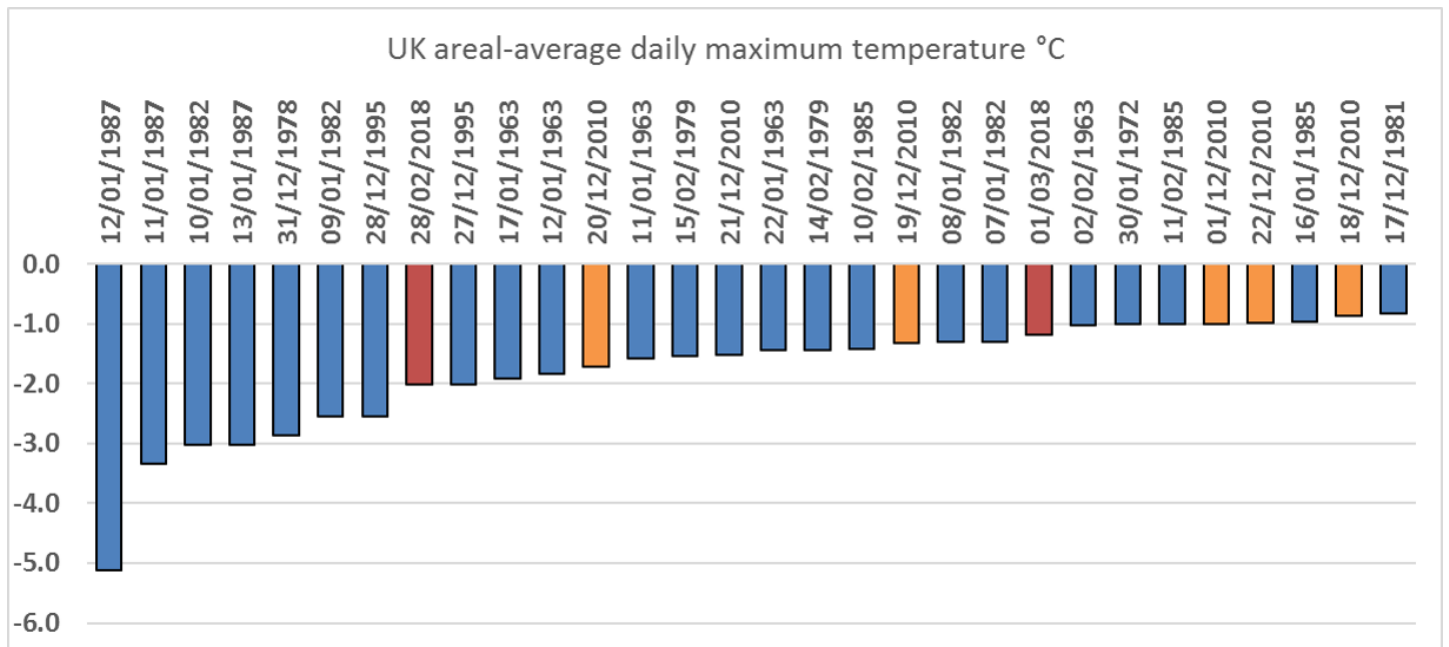
Historical context

The last time the UK experienced a flow of bitterly cold air from Siberia, with significant snowfalls, was in [March 2013](#); this was the coldest March for the UK since [March 1962](#). Southern coastal counties of England and the Channel Islands were affected by severe winter weather from 10 to 12 March; north-east England and eastern Scotland were affected by snow and low temperatures around mid-month; and there were prolonged, heavy snowfalls across north Wales, northern England, south-west Scotland and the east of Northern Ireland from 22 to 24 March. This snow lay un-melted across high ground until early April.

However, in terms of low temperatures and significant widespread snow across the UK, this was the most significant spell of severe winter weather since [December 2010](#). This event saw two spells of snow and freezing temperatures from late-November to early December, and from mid-December to Christmas.

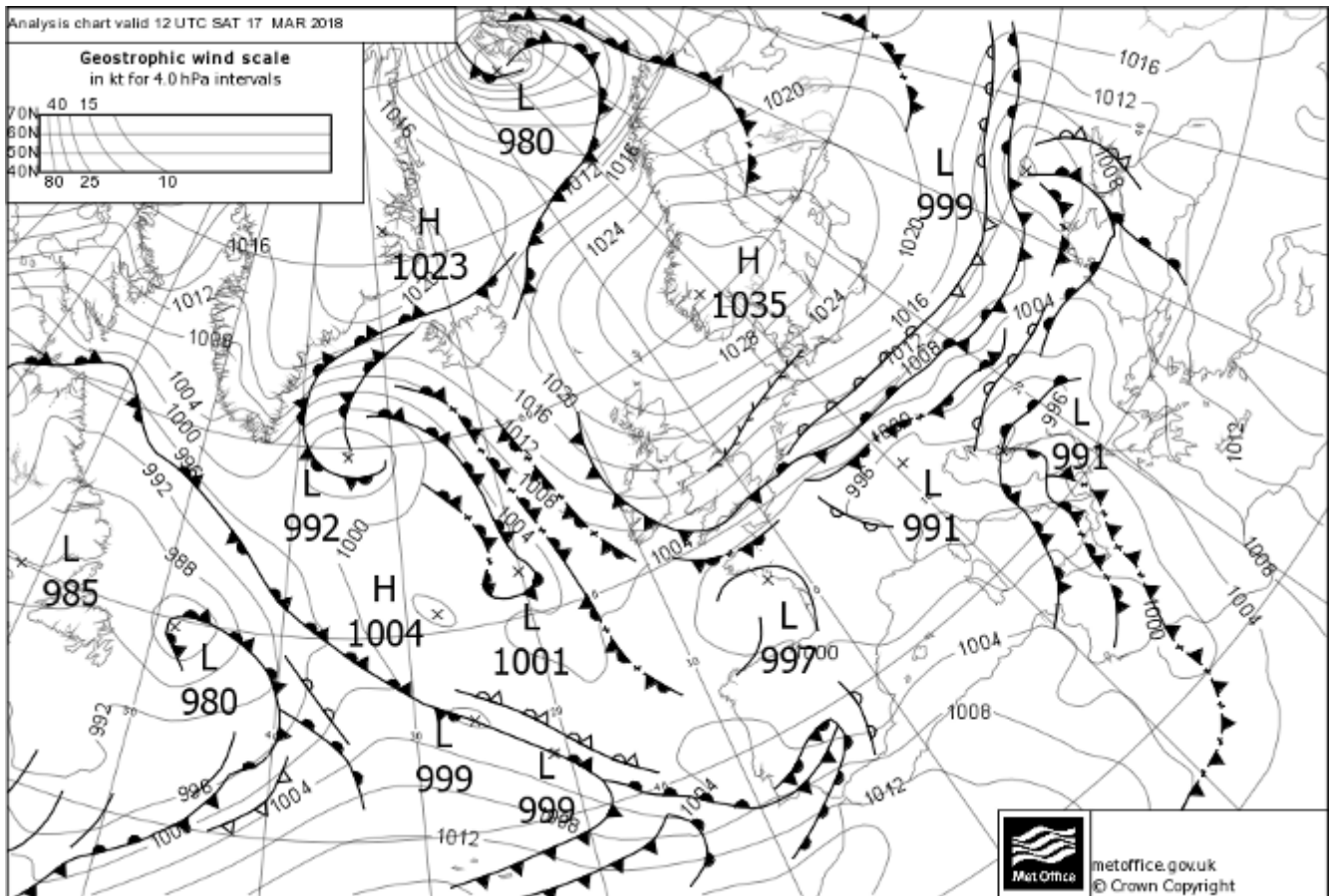
December 2010 was the coldest December for the UK in a series from 1910. Snow depths accumulated to 50cm or more across upland areas of northern and eastern England and eastern Scotland. The UK also experienced a spell of very low temperatures from [mid-December 2009 to mid-January 2010](#) – the most widespread and prolonged spell of this type across the UK since December 1981 / January 1982. Winter 2009/2010 was particularly severe across northern Scotland. Heavy snow also affected southern and eastern parts of the UK in [February 2009](#), while the south-west and south Wales experienced significant blizzards in mid-February 1978.

The chart below shows UK areal-average daily maximum temperatures for the UK's coldest days in a series from 1960. Individually, 28 February 2018 was marginally colder than any day in the December 2010 spell (in terms of daily maximum temperatures) and the coldest UK day since December 1995. In terms of daily maximum temperatures, 1 March 2018 was the coldest spring day in the series. The figure identifies previous spells of very low temperatures, including January 1987, January 1982 and January 1963. However, while these two consecutive days may be comparable to these previous events in terms of very low temperatures, the severity of the event overall cannot be compared in terms of duration; for example in December 2010 such freezing temperatures lasted for at least a week, while the severe winter of 1962-63 saw conditions such as this from late December through much of January and February.

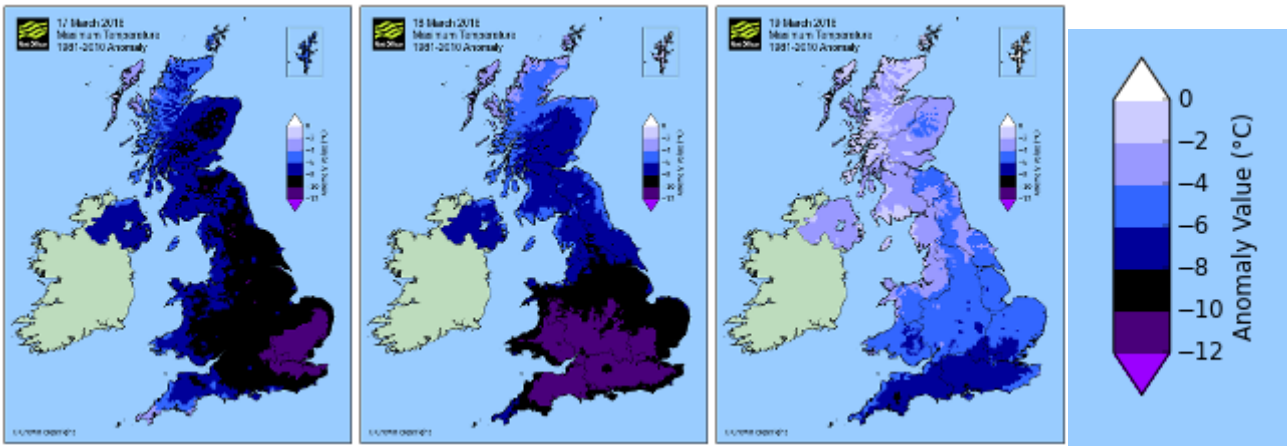


Further snow and low temperatures mid-March

From 17 to 19 March the UK experienced a further spell of snow and low temperatures. This was not as severe as the earlier spell but nevertheless still represented unusually cold and snowy conditions for the time of year. The chart below at 0900 UTC 17 March 2018 shows a bitterly cold easterly airstream picking up moisture across the North Sea and bringing snow showers to the UK.



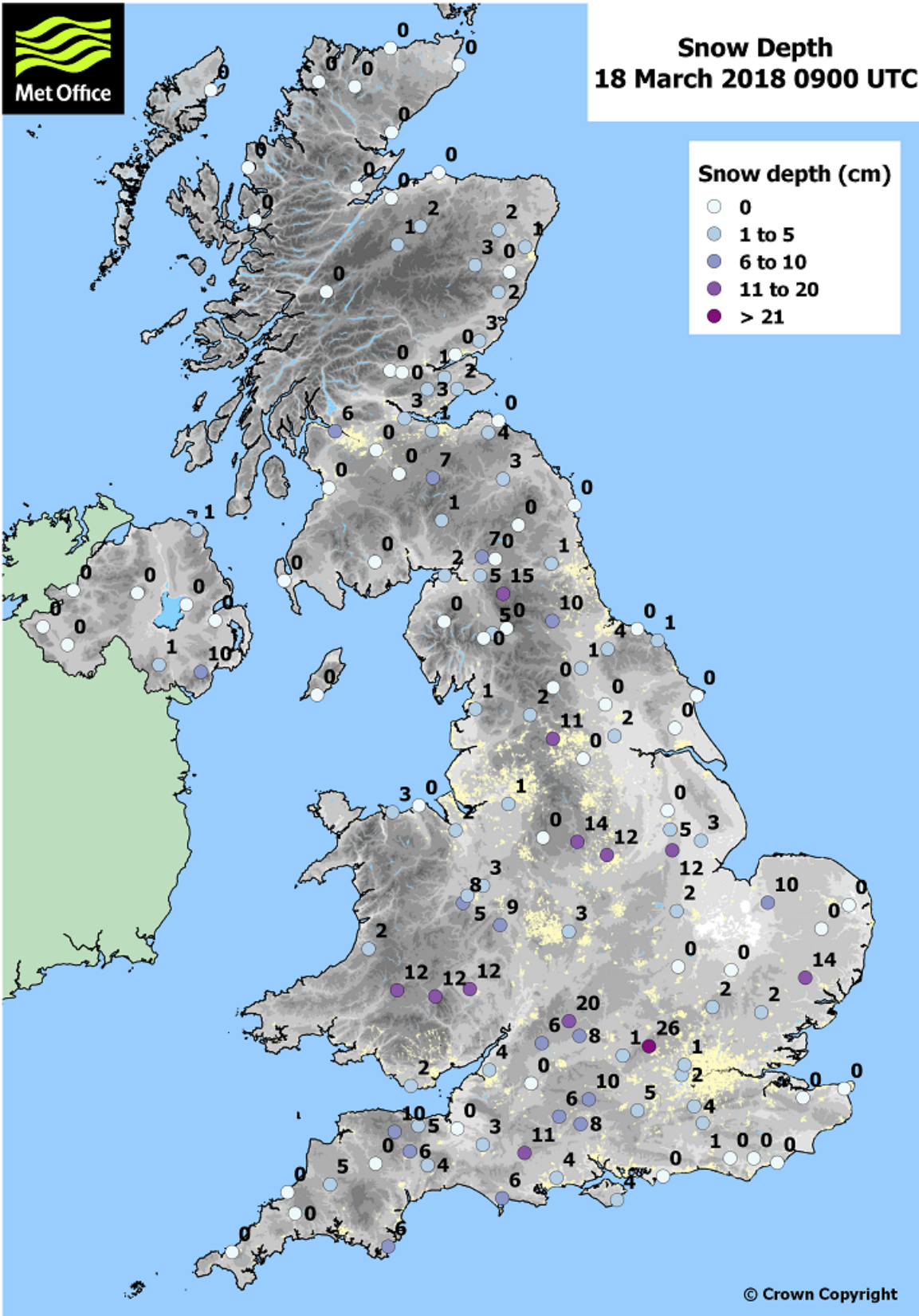
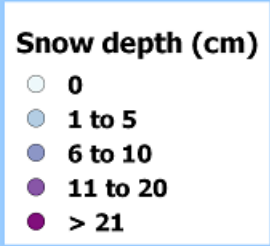
The maps below show daily maximum temperatures from 17 to 19 March. On 17 March, the temperature struggled to rise above freezing across upland areas of northern England and also parts of the south-east England most exposed to the easterly airflow - for example Essex. By 18 March, temperatures across much of central, southern and south-west England and Wales failed to rise above freezing. Daily maximum temperatures were typically around 10 °C below the March long term average in these areas.



The map below shows snow depths at 0900 UTC on 18 March. Much of the UK once again experienced lying snow with depths in some locations exceeding 10cm. During Sunday 18 March frontal systems brought a spell of more persistent snow to southern coastal counties, with south-west England in particular once again receiving significant lying snow.



Snow Depth 18 March 2018 0900 UTC



Last updated: 13 March 2018

