

Snow and low temperatures - December 2009 to January 2010

From Thursday 17 December 2009 to Friday 15 January 2010 the UK experienced a spell of very low temperatures and significant snowfalls which affected almost the whole country.

This was the most widespread and prolonged spell of this type across the UK since December 1981/January 1982. Large areas of England, Wales and Northern Ireland regularly saw night-time temperatures falling well below freezing, and on occasion below -10 °C, while in Scotland night-time temperatures in the Highland glens regularly fell to -15 °C or lower. Daytime temperatures in many areas frequently struggled to rise above freezing, often remaining several degrees below.

The freezing temperatures were accompanied by widespread snowfalls on many days throughout the period. With daytime temperatures often failing to rise above freezing, little thawing occurred so fresh snowfalls added to previous accumulations. Depths of 10 to 20 cm were widespread across England and Wales, whilst across upland areas of northern England and in the Scottish Highlands, depths exceeded 30 cm in many areas.

Impacts

The snowfalls and widespread freezing conditions caused very significant disruption across the UK through this period. Transport was particularly badly affected with snowfalls causing numerous road closures, and train and flight cancellations.

The first snowfalls on Thursday 17 to Saturday 19 December affected mainly eastern parts of the UK, but on Sunday 20th the focus shifted to northern and western parts with Northern Ireland and the Manchester area experiencing heavy snowfalls. On Monday 21st, areas west of London were badly affected, while on Tuesday 22nd and Wednesday 23rd icy conditions caused further problems. On the 23rd, rain falling on freezing surfaces in counties bordering the English Channel formed sheet ice and caused many accidents, and two people died in Cornwall after a bus overturned on sheet ice. Throughout this period the road and rail networks in Scotland were particularly badly affected by heavy snowfalls, with temperatures falling below -15 °C across the Highlands. Many airports were affected including Heathrow, Gatwick, Manchester, Liverpool, Belfast and Inverness. Eurostar trains were also badly disrupted by snow in the run-up to Christmas.

The difficult conditions continued from Christmas to the New Year, although there was a brief spell of milder weather in the south. In Northern Ireland, thousands of households experienced difficulties with freezing water supplies. Heavy snow on Tuesday 29th and Wednesday 30th across Wales and the Peak District closed trunk roads, while in Scotland, 3 climbers died in avalanches on Ben Nevis and in Torridon.

The freezing conditions continued into the New Year with widespread ice causing treacherous conditions on roads and pavements, resulting in a spate of accidents and falls. Minor roads were particularly badly affected as in many parts these were untreated by road grit and salt due to concerns over supplies running low. Heavy snowfalls on Monday January 4th across north-west England saw Manchester and Liverpool airports closed for a time, with further snowfalls on the 5th causing continuing problems. Overnight on 5th/6th January, southern England, north-east Scotland and the Manchester area again all experienced heavy snow. 1,000 motorists were stranded overnight on the A3 in Hampshire, and there were further airport closures. On Thursday 7th, electricity supplies to 25,000 homes were interrupted as trees and ice brought down power lines. The 7th and 8th were bitterly cold across the UK, and on Friday 8th, two people died after falling through ice into a lake in Leicestershire. As a result of the snowfalls and freezing temperatures, thousands of schools remained closed through the week. A slight thaw on Sunday 10th and Monday 11th brought a brief respite. However, there were

further snowfalls in south-west England and south Wales on the 12th, while on the 13th, these became more widespread to bring renewed disruption to roads, rail and air travel. It was only by Friday 15th that the thaw was well under way.

Weather data

From Thursday 17 December the UK was within a predominantly easterly or north-easterly airstream bringing bitterly cold air from the Arctic and northern continental Europe, and accompanied by snowfalls from associated weather systems in the North Sea. From 17th to 19th, the snowfalls mainly affected eastern parts but after this, significant snowfalls occurred across Scotland, Northern Ireland and the Manchester area on Sunday 20th, followed by much of southern England on Monday 21st. Daytime temperatures struggled to rise above freezing in many areas and overnight temperatures were particularly low. In Scotland, Dalwhinnie (Inverness-shire) recorded $-15.7\text{ }^{\circ}\text{C}$ and $-16.1\text{ }^{\circ}\text{C}$ on the nights of 21st/22nd and 22nd/23rd December. England and Wales also experienced hard frosts with temperatures in many areas falling below $-7\text{ }^{\circ}\text{C}$ and as low as $-10.1\text{ }^{\circ}\text{C}$ at Westonbirt (Gloucestershire) on the 22nd/23rd. With little day-time thawing, fresh snowfalls added to previous accumulations and by Christmas many parts of England and Wales had depths of 10 to 20 cm while upland areas of northern England and much of the Scottish Highlands had 30 cm or more.

The freezing conditions continued from Christmas through to the New Year, with fresh snowfalls occurring in Wales and the Peak District on the 29th and 30th, and further significant snowfalls from 4 to 6 January. By 7 January, the UK was covered by lying snow, almost without exception, to significant depths in many areas. The map below shows recorded snow depths at 0900 GMT on 7 January. Recorded depths included 57 cm at Westgate (County Durham), 55 cm at Oyne (Aberdeenshire), 33 cm at Malham Tarn (North Yorkshire), 26 cm at Reading (Berkshire) and 22 cm at Wiggonholt (West Sussex).*

*Reliable measurement of snow depths can be problematic, particularly if drifting occurs in strong winds.

The nights of 6/7 and 7/8 January were the coldest during this spell. The night of 6/7 January was particularly cold across England and Wales - the most notable temperatures are listed in the table below. Across England and Wales, temperatures typically ranged from $-5\text{ }^{\circ}\text{C}$ to $-10\text{ }^{\circ}\text{C}$ but were significantly colder than this in a few areas.** It was generally slightly milder around the coasts but nevertheless the south-west in particular still experienced a hard frost with Exeter Airport recording $-13.1\text{ }^{\circ}\text{C}$, Okehampton (Devon) $-9.4\text{ }^{\circ}\text{C}$ and Culdrose (Cornwall) $-5.4\text{ }^{\circ}\text{C}$.

**Recorded minimum temperatures may be influenced by local effects such as topography (e.g. frost hollows). Lying snow will also affect temperatures. These factors are likely to have influenced the particularly cold temperatures recorded at the above sites.

Thursday 7 January was bitterly cold, with daytime temperatures remaining well below freezing in many areas. Notably cold daily maximum temperatures are listed in the table below; in many cases these were the coldest on record.

The following night was again extremely cold across much of the UK. This time it was particularly cold across Scotland, especially the far north, with two sites in Sutherland falling below $-20\text{ }^{\circ}\text{C}$, and many of the Scottish glens also well below $-15\text{ }^{\circ}\text{C}$. The last time temperatures in the UK fell below $-20\text{ }^{\circ}\text{C}$ was 3 March 2001. Across England and Wales temperatures again were extremely low; most areas falling to -5 to $-10\text{ }^{\circ}\text{C}$, while Northern Ireland too was very cold with minimum temperatures approaching $-10\text{ }^{\circ}\text{C}$ in many areas. The most notable temperatures are again listed in the table below.

The maps below show minimum overnight temperatures on 6/7 and 7/8 January 2010.

Minimum night-time temperatures 6/7 January

Station	Minimum temperature	Comment
Benson (Oxfordshire)	-17.7 °C	Coldest since 14 January 1982 (-18.7 °C)
Woodford (Greater Manchester)	-17.6 °C	Coldest on record at this site^
Yeovilton (Somerset)	-16.0 °C	Coldest since 14 January 1982 (-16.1 °C)
Pershore (Worcestershire)	-15.7 °C	Coldest since 24 January 1963 (-16.6 °C)

^Records at Woodford begin in 2003. The previous record at nearby Ringway (Greater Manchester) was -13.9 °C on 25 January 1945.

Maximum temperatures 7 January

Station	Maximum temperature	Comment
Hawarden (Flintshire)	-7.8 °C	Coldest since 28 December 2000 (-8.3 °C)
Preston (Lancashire)	-6.4 °C	Coldest on record (previous record -4.6 °C on 12 January 1987)
Chivenor (Devon)	-5.7 °C	Coldest on record (previous record -3.7 °C on 12 January 1987)
Carlisle (Cumbria)	-5.6 °C	Coldest on record (previous record -4.6 °C on 12 January 1987)
Santon Downham (Norfolk)	-4.5 °C	Coldest on record (previous record -2.8 °C on 7 February 1991)
Pembrey Sands (Carmarthenshire)	-4.0 °C	Coldest since 26 December 1995 (-4.1 °C)

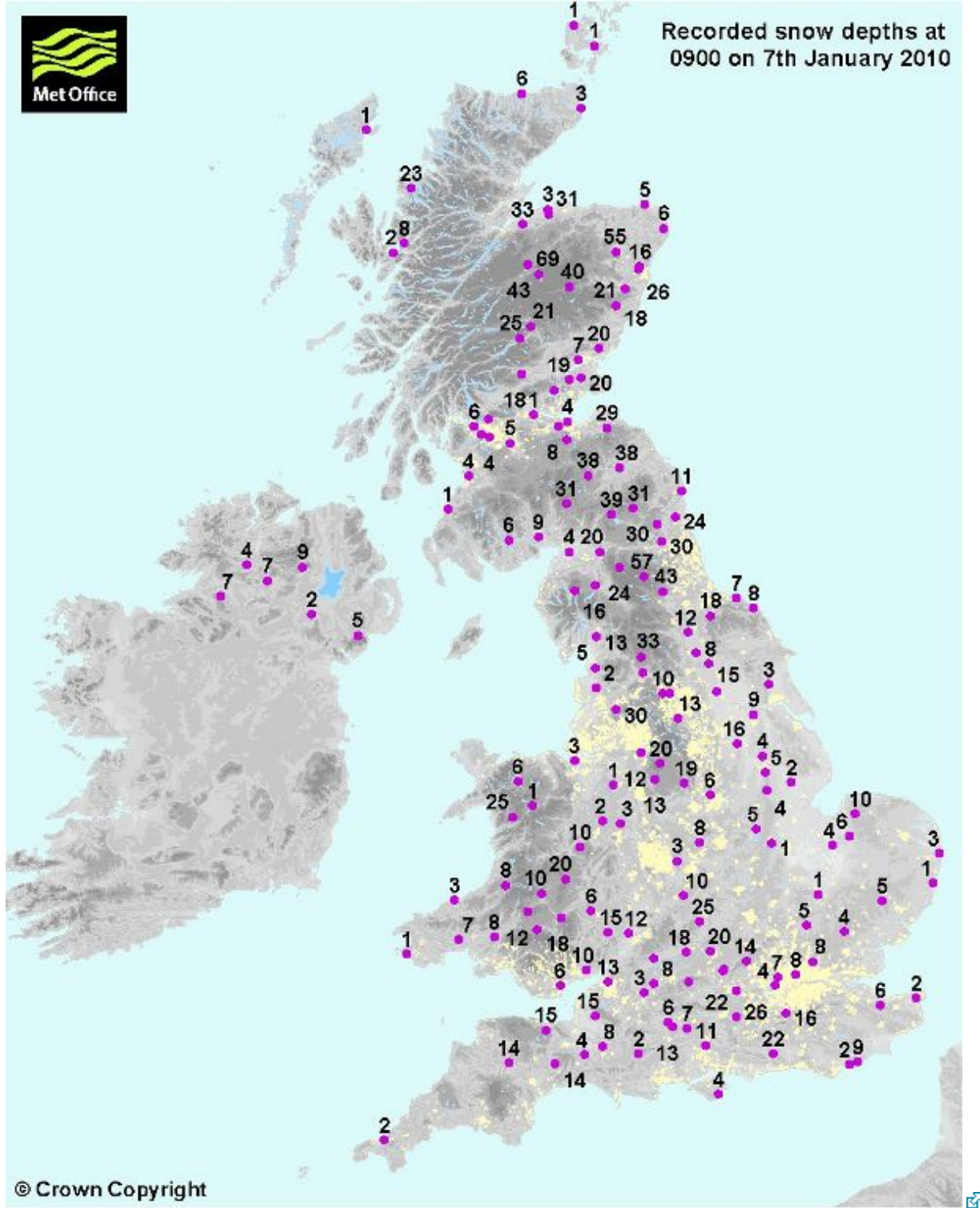
Minimum night-time temperatures 7/8 January

Station	Minimum temperature	Comment
Altnaharra (Sutherland)	-22.3 °C	Coldest recorded temperature in the UK since 30 December 1995 (-27.2 °C - also at Altnaharra^)
Kinbrace (Sutherland)	-20.9 °C	Coldest since 3 March 2001 (-21.7 °C)
Woodford (Greater Manchester)	-17.0 °C	Almost as cold as the previous night
Shap (Cumbria)	-16.1 °C	Coldest on record since 1982 (previous record -14.1 °C on 2 March 2001)
Yeovilton (Somerset)	-14.6 °C	Almost as cold as the previous night
Exeter (Devon)	-13.6 °C	Coldest on record (previous record -13.1 °C on 2 January 1979)
Chivenor (Devon)	-10.4 °C	Coldest since 26 January 1945 (-12.8 °C)

^-27.2 °C is the lowest temperature on record in the UK, shared with Braemar on 10 January 1982

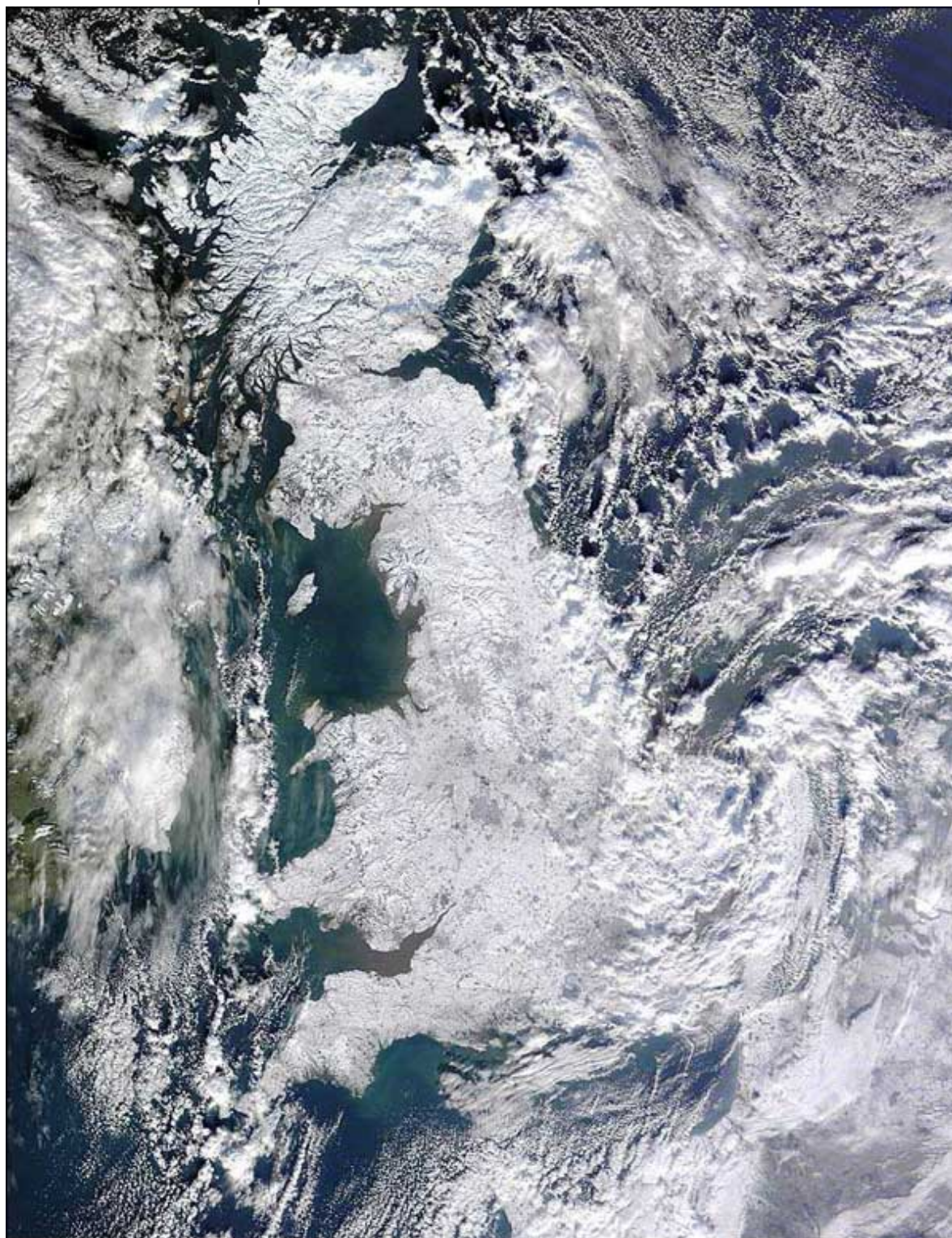
The freezing conditions continued from 9 to 11 January. In Scotland, temperatures at Altnaharra (Sutherland) again fell below -20 °C and it was particularly cold in Northern Ireland with -12.7 °C recorded at Castlederg (County Tyrone) overnight 8th/9th, the coldest temperature recorded in Northern Ireland since 2001 (-13.2 °C at Katesbridge, County Down on 4 March 2001). However, with increased cloud cover it was not as cold as previous nights across England and Wales. On Tuesday 12 January, snow fell over the high ground of south-west England and south Wales, spreading to other parts of England and Wales on 13, with depths recorded of up to 24 cm at Odiham (Hampshire). In Scotland, the snow remained very deep with 36 cm at Aviemore (Inverness-shire), and a high avalanche risk in the Scottish mountains.

Recorded snow depths at 0900 GMT on Thursday 7 January 2010

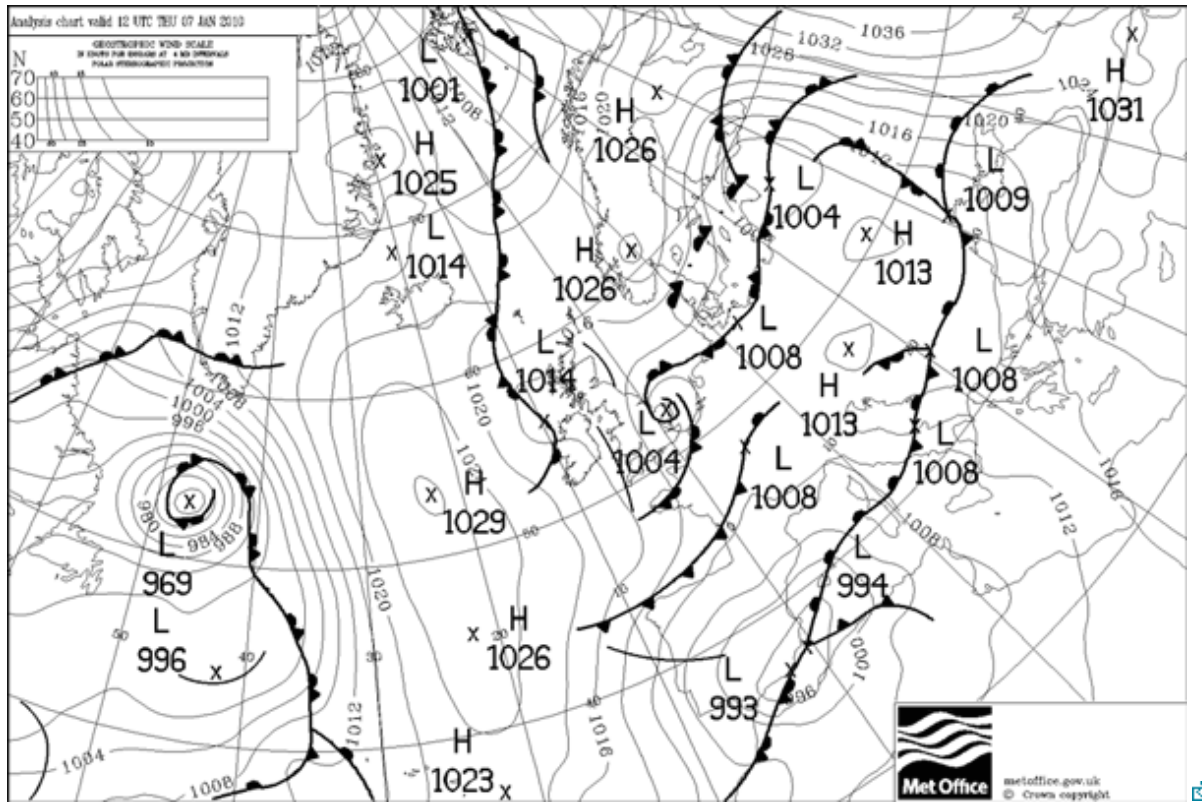


A satellite image at 1150 GMT on Thursday 7 January 2010 shows the UK almost entirely covered in a blanket of snow. Photo: NASA/GSFC, MODIS Rapid Response. For more information see [MODIS Rapid Response website](#)

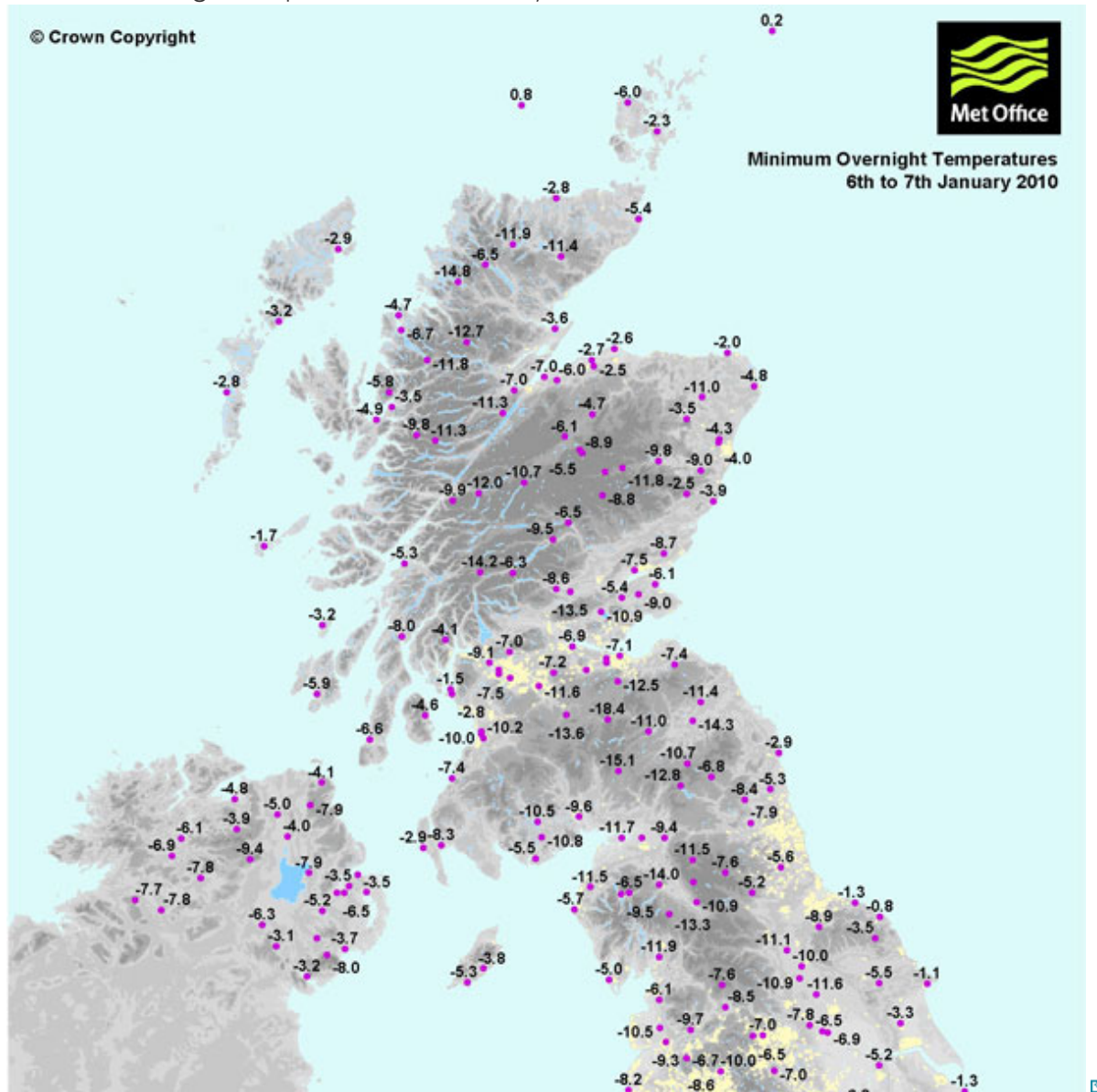
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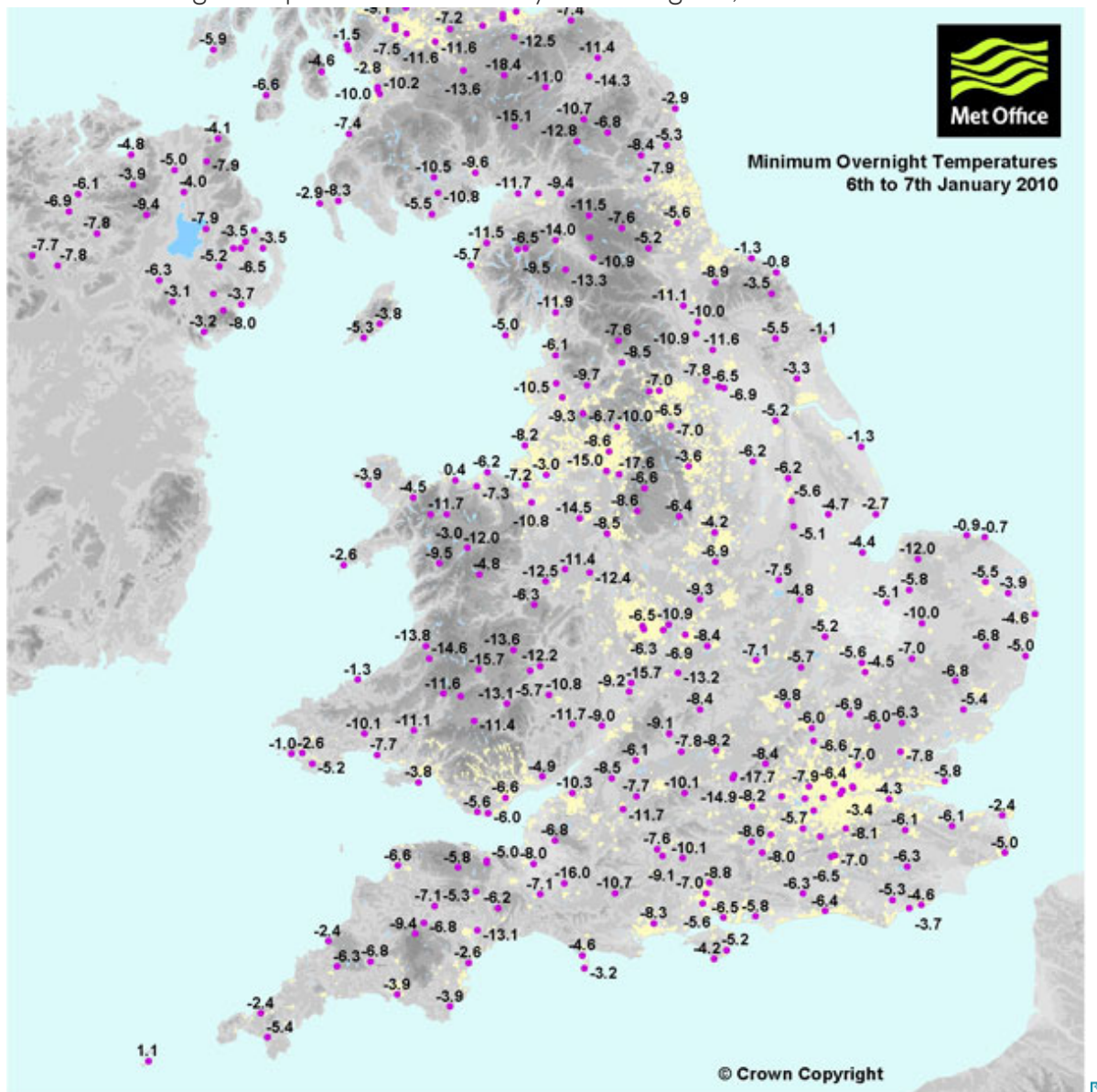
The synoptic situation at 1200 GMT on Thursday 7 January 2010 corresponding to the time of the satellite image above. The UK is within a bitterly cold airmass originating from Siberia. Cloud and snowfall in eastern England are associated with an area of low pressure in the southern North Sea. Elsewhere, the UK is largely cloud-free.



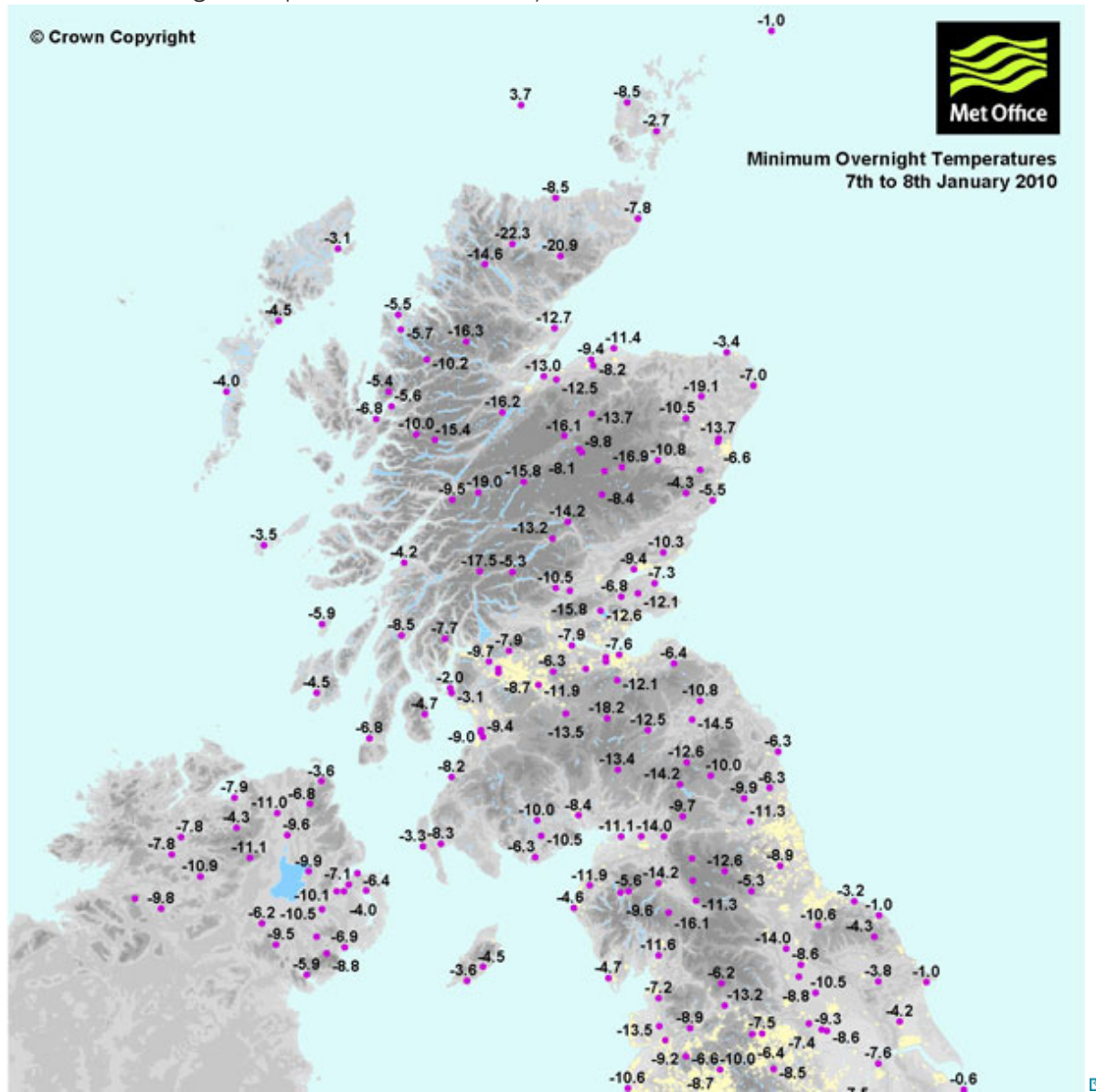
Minimum overnight temperatures 6/7 January 2010 - Northern Ireland and Scotland



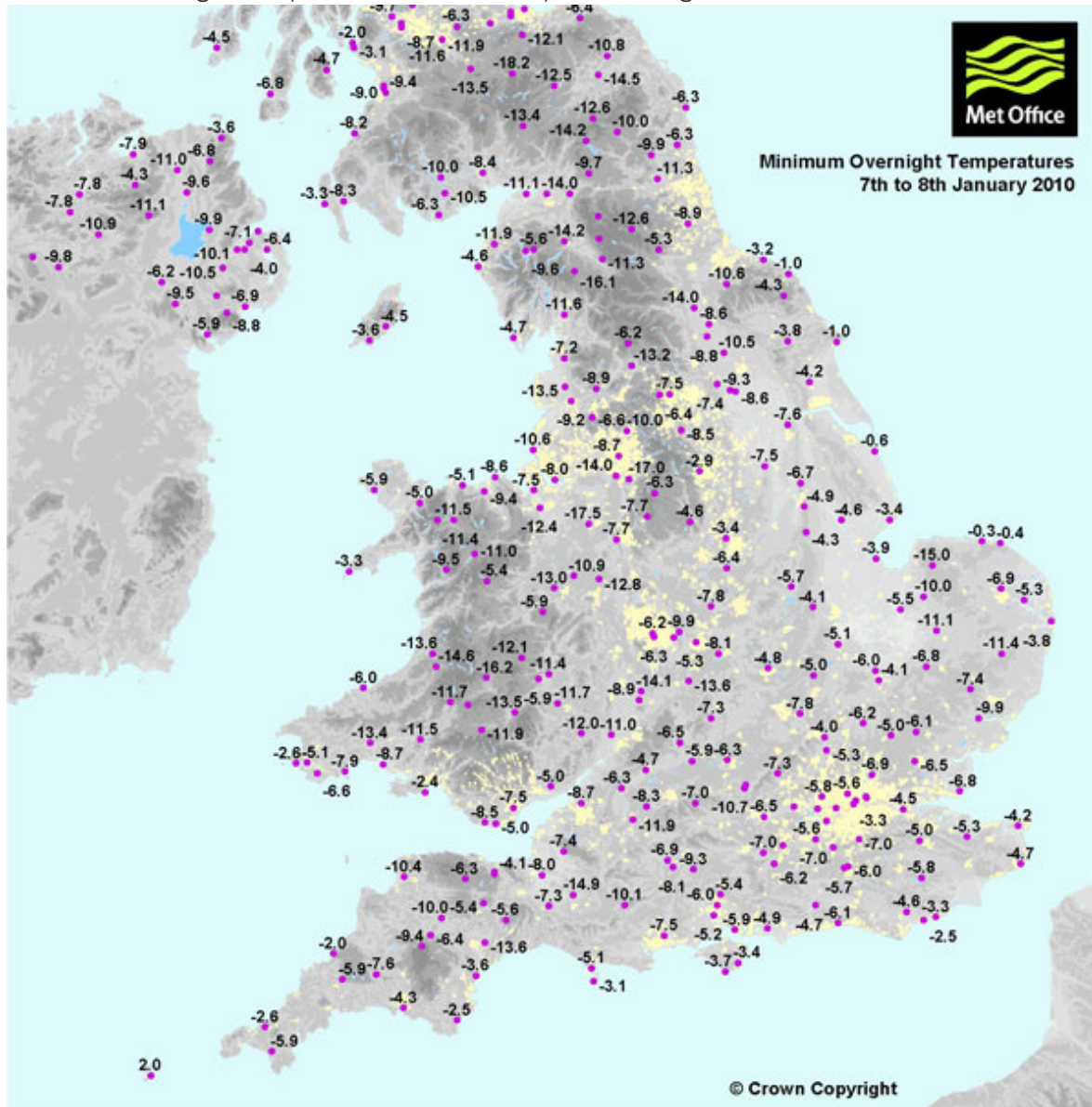
Minimum overnight temperatures 6/7 January 2010 - England, Wales and Northern Ireland



Minimum overnight temperatures 7/8 January 2010 - Northern Ireland and Scotland



Minimum overnight temperatures 7/8 January 2010 - England, Wales and Northern Ireland



For a detailed summary of this event, refer to the following publication:

Prior J, Kendon M. 2011. The UK winter of 2009/2010 compared with severe winters of the last 100 years. *Weather*, 66: 4-10

Last updated: 25 July 2013