

Search logo

Search

[Met Office logo](#)

[Home](#) [Media Centre](#) [Toolkits](#) [150th anniversary](#) [Great weather events: the 'Burns' Day' storm of 1990](#) [Space](#)

[Weather and climate](#) | [Aviation](#) | [Leisure](#) | [Research](#) | [Education](#) | [Product catalogue](#) | [Services for business](#) [Space](#)

[Page Top](#)[Spacer](#)

150th anniversary

[underline](#)

Great weather events: the 'Burns' Day' storm of 1990

The depression which brought severe weather to north-west Europe during 25 and 26 January began on the 23rd as an innocuous-looking wave on a cold front in the North Atlantic about 400 miles south-east of Nova Scotia.

By midday on the 24th the central pressure of the low had dropped to 992 mb, and conditions were favourable for it to deepen explosively.

The storm arrives

As the low approached Ireland during the early hours of the 25th the most rapid strengthening phase of the storm was taking place with the central pressure now down to 968 mb and the whole system showing a 'hook' shape in satellite imagery - this shape normally indicating the development of a severe storm. The storm centre tracked across Northern Ireland on the morning of the 25th (with falls in pressure in the order of 16 mb in three hours) and by midday was centred over Ayrshire. The lowest central pressure of 949 mb was estimated at around 1600 to the east of Edinburgh as the storm continued its rapid movement towards Denmark.

The strongest winds occurred on the western and south-western flanks of the storm with average speeds of 40-50 knots over large areas of England and Wales. In exposed areas on the south coast of England and west Wales, the mean speeds reached 60-65 knots. But it was the gusts that did most of the damage. The highest gust was 93 knots (104 m.p.h., recorded at Aberporth) but several gusts of 90 knots occurred over large areas of southern England.

Met Office warnings

The Met Office gave excellent warning of this storm. Forecasters are expert at handling an ensemble of solutions from different forecast centres and on this occasion the signal for marked strengthening of the depression was clear.

Emphatic guidance of severe gales was issued in a routine TV broadcast four days before the storm arrived, but with uncertainties about the track. As the event drew closer, more precise forecasts were issued on 24 January based on the forecast from the 'fine-mesh' model then in use. A press release was issued about the possibility of structural damage, and the Ministry of Defence was notified that military assistance to the civilian population might be required owing to the severity of the winds.

This storm produced winds of comparable strength to the storm of 1987 but they covered a much wider area. Despite timely warnings from the Met Office, the casualties were higher than in 1987 because of the daytime arrival of the storm (compared with overnight in 1987) and the greater area affected.

Storm damage

In its wake the storm left a trail of death and destruction both on land and at sea. It was reported that 97 people died in northern Europe, with half this number being in the UK. Road, rail and ferry services were disrupted and great damage was inflicted on the countryside - an estimated three million trees were blown down in the UK alone. Power lines were also brought down in this country and parts of mainland Europe.

Parts of Hereford and Worcester were flooded when the River Severn rose by 3.5 m, while in West Germany a coastal village was evacuated when threatened by floods from a breached dyke. The port area of Hamburg was also flooded.

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