

Search logo

Search

[Met Office logo](#)

[Home](#) [Media Centre](#) [Toolkits](#) [150th anniversary](#) [Great weather events: UK flooding in 2000](#)

Space

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

Space

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

150th anniversary

[underline](#)

Great weather events: UK flooding in 2000

Trouble brewing

Problems began in the second week of October when a complex area of low pressure developed over Scotland and Northern Ireland, bringing wind and heavy rain. At this time, Kent and Sussex particularly were affected by slow-moving torrential downpours which produced 100-150 mm of rain overnight on 11/12 October.

Over the next fortnight, low pressure became established to the north-west of the UK, and this drove belt after belt of heavy rain and showers across the country. In some parts significant amounts of rain fell every day. By the final week of October many rivers were either greatly swollen or had burst their banks.

It was then that the problems really began.

Three in a row

A deep depression became anchored near south-west Iceland and developed a cold front that trailed way down into the North Atlantic. One after another, three very active depressions formed from waves on the cold front, each tracking across the UK on successive days - 28, 29 and 30 October.

The first brought a period of heavy rain in many places, with up to 8 mm an hour reported across parts of the Home Counties. Sunshine and blue skies greeted the 29th, but the second depression was already on its way. Rain set in around mid-afternoon, spreading across much of the southern part of the country, accompanied by strong winds.

The third depression, on the 30th was the most damaging of the three. Rain had fallen all night, so, by 0900, 24-hour totals of 25-50 mm were commonplace, with locally 75 mm and more. Local flooding occurred and caused major disruption to commuters during the morning rush hour. In a number of areas, the cumulative effect of these heavy storms brought the situation close to breaking point, and the heavy rain on 30 October resulted in much more serious flooding problems in areas as far apart as Kent, Wales and Yorkshire.

Surprise, surprise...more rain

The Met Office again forecast heavy rain in early November, and it arrived as expected on the 5th. It was the last thing people wanted, but more than 50 mm of rain fell in England and Wales, and prolonged heavy rain also affected the northern half of the UK. Flooding was once again a problem across large areas.

Wettest autumn

In late November the autumn of 2000 was declared the wettest since records began in 1766. In all, 503 mm of rain fell during this exceptionally wet and unsettled period. In October, 188 mm of rain was recorded in England and Wales, followed by 182 mm in November. In all, the total for 2000 was 251 mm above the average for this season.

Improving forecasts of future floods

The severity and extent of flooding depends to a large degree on the state of the underlying ground - if the soil moisture content is already high, flooding occurs much more quickly because surface water cannot soak away. During the floods the Met Office worked closely with the Environment Agency, advising on the amount, intensity and duration of rainfall to enable the agency to make accurate updates to its Floodline warning service.

After the floods the Met Office joined forces with the Centre for Ecology and Hydrology to form the Joint Centre for Hydrological Research with the aim of improving flood forecasting in the future.

The centre's work includes the development of a detailed map and model of soil wetness for the whole of the UK. The map is updated every hour with data from weather radars, satellites, rain gauges and other real-time observations. Information about soil wetness has applications in, for example, farming, military operations and, of course, flooding, and the model is used to help the Environmental Agency issue flood warnings to the emergency services and the public.

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