

Further rainfall and flooding across north of the UK

A sustained period of exceptionally wet weather from mid-December to New Year resulted in severe and extensive flooding across the north of the UK.

For much of December the UK was in an exceptionally mild humid south-westerly airstream bringing Tropical Maritime air to the UK. A series of Atlantic lows in the run-up to Christmas brought sustained wet weather to the west and north, including storm Eva on Christmas Eve. A further set of fronts on Boxing Day brought prolonged heavy rainfall across northern Britain, resulting in extensive flooding to parts of Lancashire, north Manchester and West Yorkshire, while on 29 to 30 December storm Frank brought further very wet and windy weather to southern and western Scotland and Northern Ireland.

The sustained period of wet weather set new UK rainfall records. December 2015 was the wettest calendar month for the UK in a series from 1910, while November and December combined was the wettest *any* two-month period. Overall, the high ground of Snowdonia, northern England and southern Scotland received between half and three-quarters of a year's rain from November to mid-January, and it was also extremely wet across Northern Ireland and eastern Scotland.

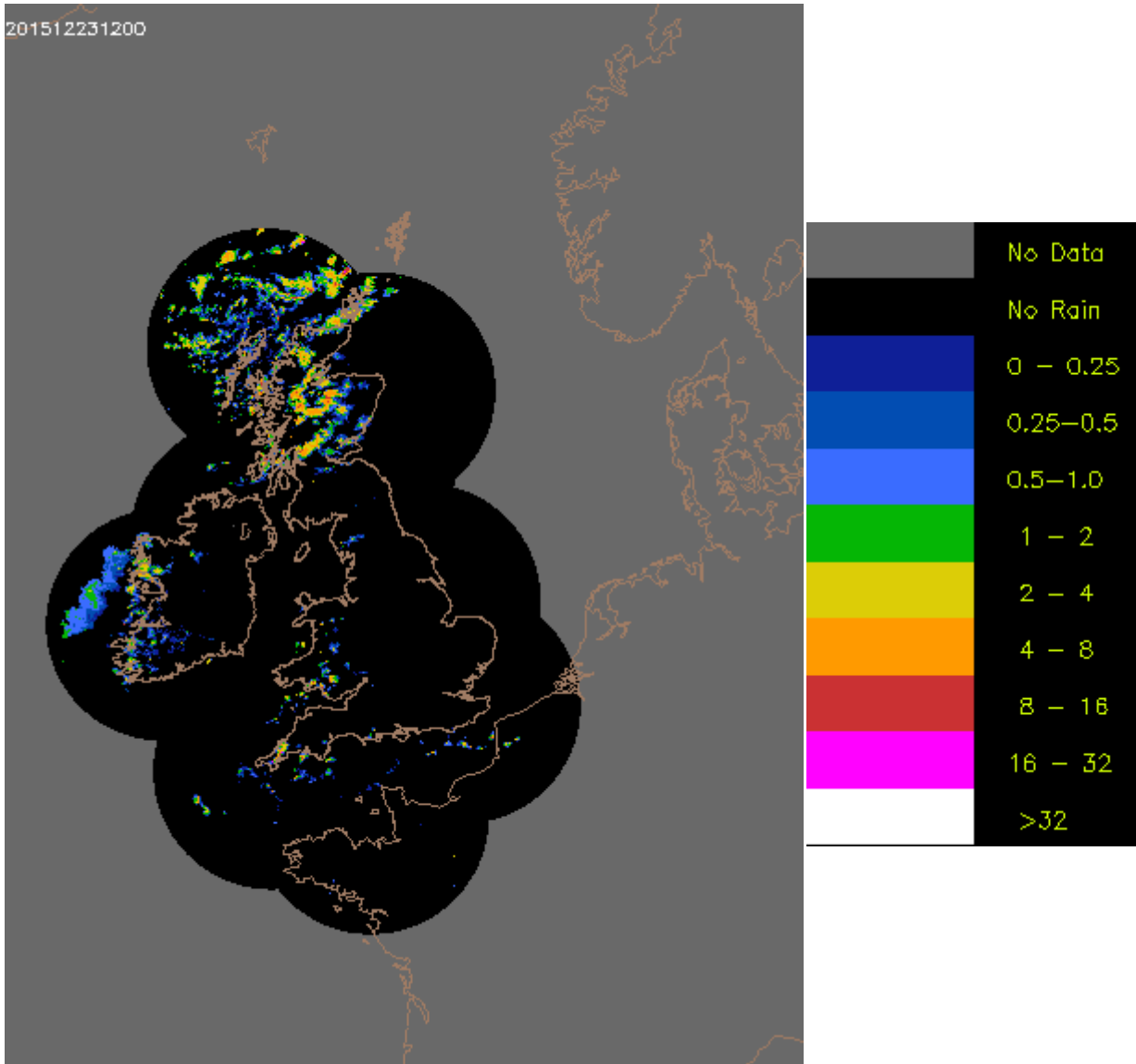
Impacts

While there were some impacts and disruption from storms Eva and Frank associated with strong winds, inevitably the most serious impacts were caused by flooding. This was greatly exacerbated by the wet weather through November and early December, with [Flooding in Cumbria December 2015](#) bringing record-breaking rainfall totals to Cumbria on 4th and 5th; the saturated conditions meaning that the ground had no capacity to store any further moisture.

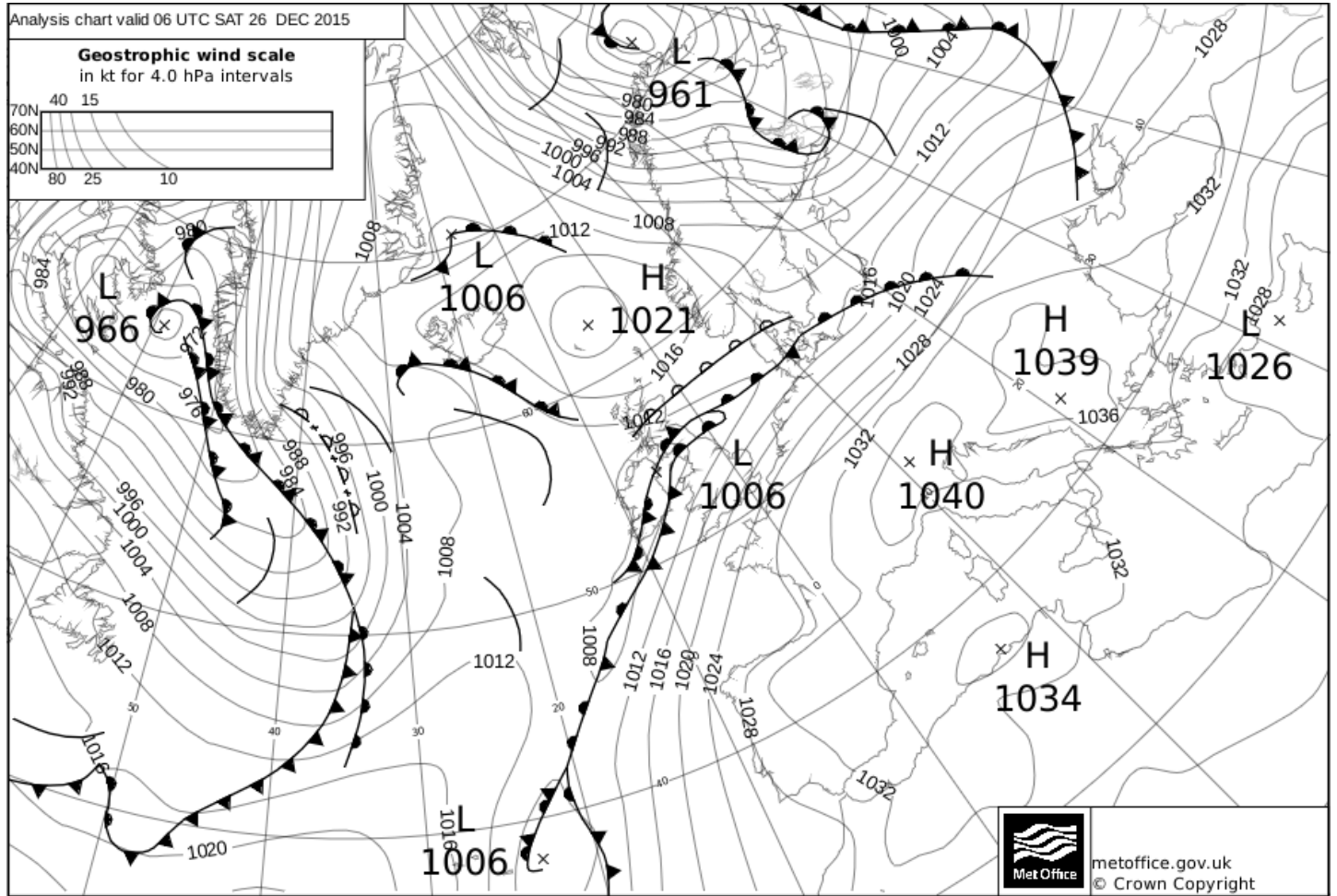
The rain on Boxing day led to serious flooding across parts of Lancashire, North Manchester and West Yorkshire. Power outages affected 20,000 homes and there was severe flooding in the Pennines, for example in Mythamroyd and Hebden Bridge (West Yorkshire). As floodwaters moved downstream, thousands of properties were subsequently flooded in north Manchester, York, Leeds and surrounding areas.

Storm Frank then brought further serious flooding to Scotland, again with thousands of properties evacuated and several border towns badly affected such as Dumfries. Over New Year into January, more heavy rain fell across eastern Scotland with further flooding in Aberdeenshire, for example at Ballater and Braemar. In total early estimates suggest 16,000 properties flooded during December 2015 in England alone.

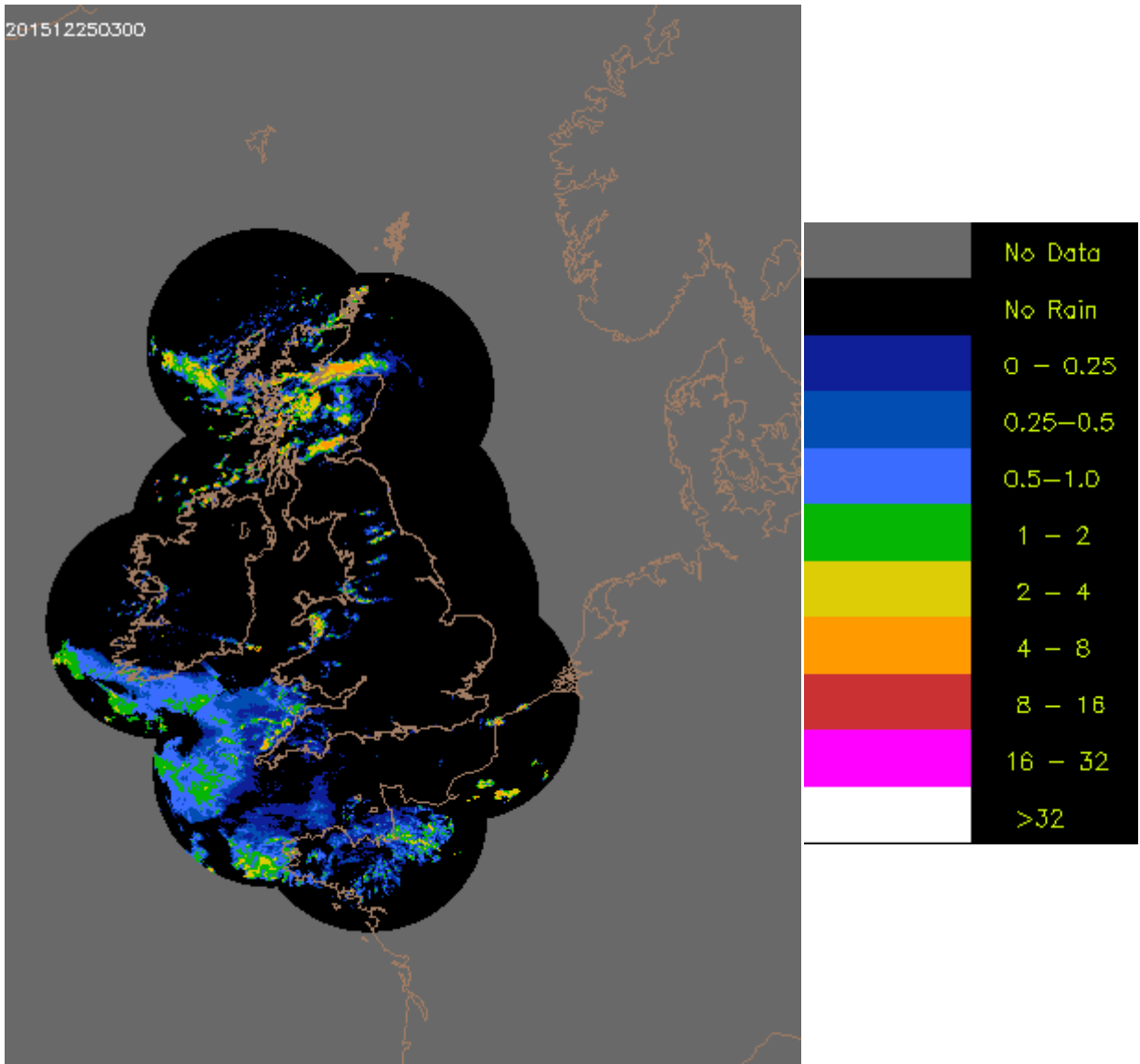
The rain-radar imagery from 1200 GMT 23 to 1400 GMT 24 December shows the fronts associated with storm Eva sweeping across the UK. Eva brought around 30 to 50 mm of rain across the high ground of Snowdonia, the Lake District and West Highlands. These totals were unexceptional but further added to the accumulations here since mid-November.



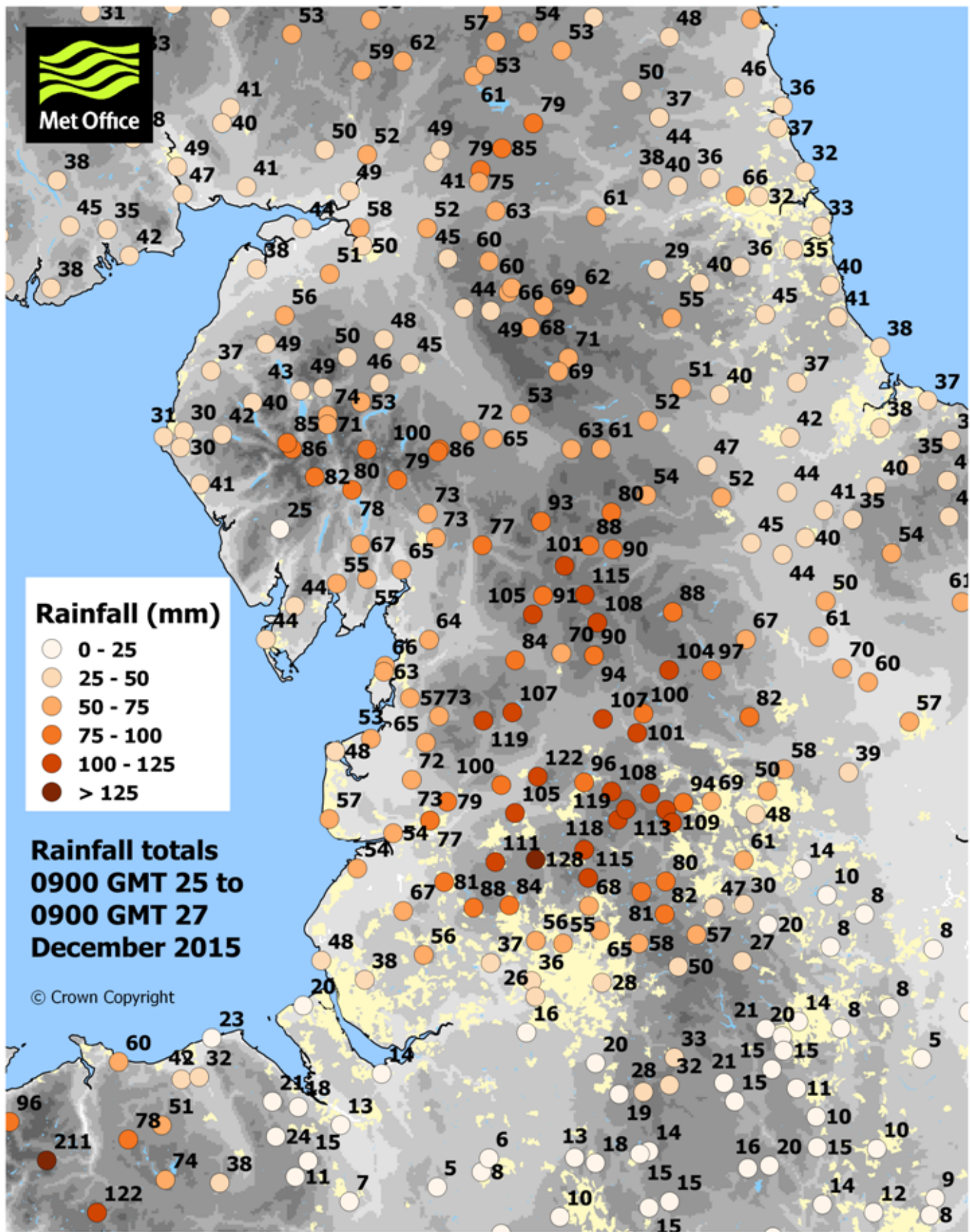
The analysis chart for 0600 GMT on 26 December shows fronts across northern England and southern Scotland, bringing prolonged rainfall throughout Boxing Day.



The rain-radar imagery from 0300 GMT 25 to 0600 GMT 27 December shows the fronts bringing heavy rain across northern England, from around mid-day on Christmas Day and lasting for most of Boxing Day.



The figure below shows 48-hour totals for the two 'rain-days' of 25 and 26 December (0900 GMT 25th to 0900 GMT 27th). The wettest areas were across north Manchester, Lancashire and West Yorkshire where 100 to 120mm of rain fell widely across the high ground (approximately 50 to 75% of the December whole-month average); this rain falling on already saturated catchments. Elsewhere the high ground northern England and southern Scotland also received 50 to 100mm, and it was particularly wet across Snowdonia with 211mm recorded at Capel Curig.



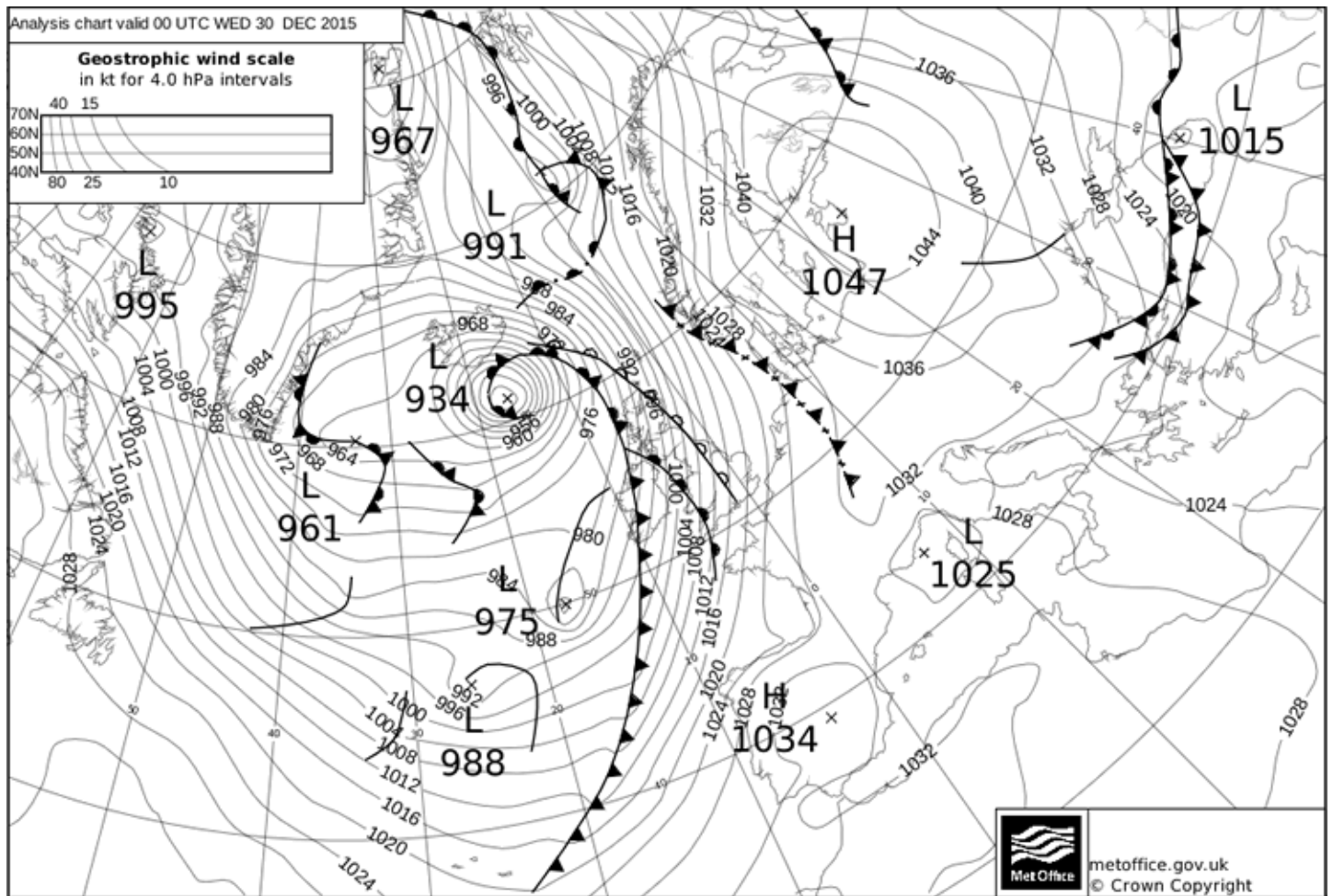
Rainfall (mm)

- 0 - 25
- 25 - 50
- 50 - 75
- 75 - 100
- 100 - 125
- > 125

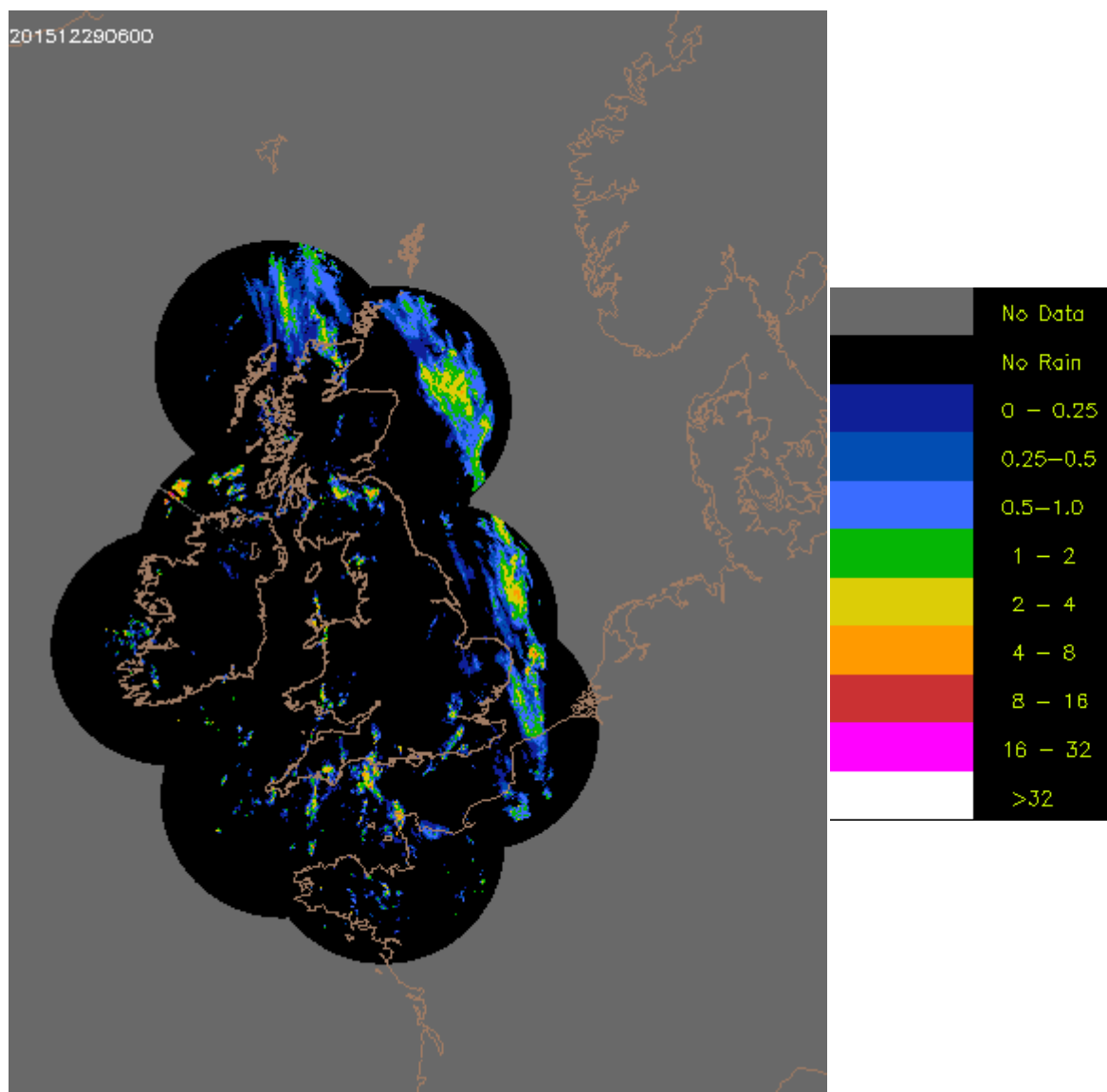
**Rainfall totals
0900 GMT 25 to
0900 GMT 27
December 2015**

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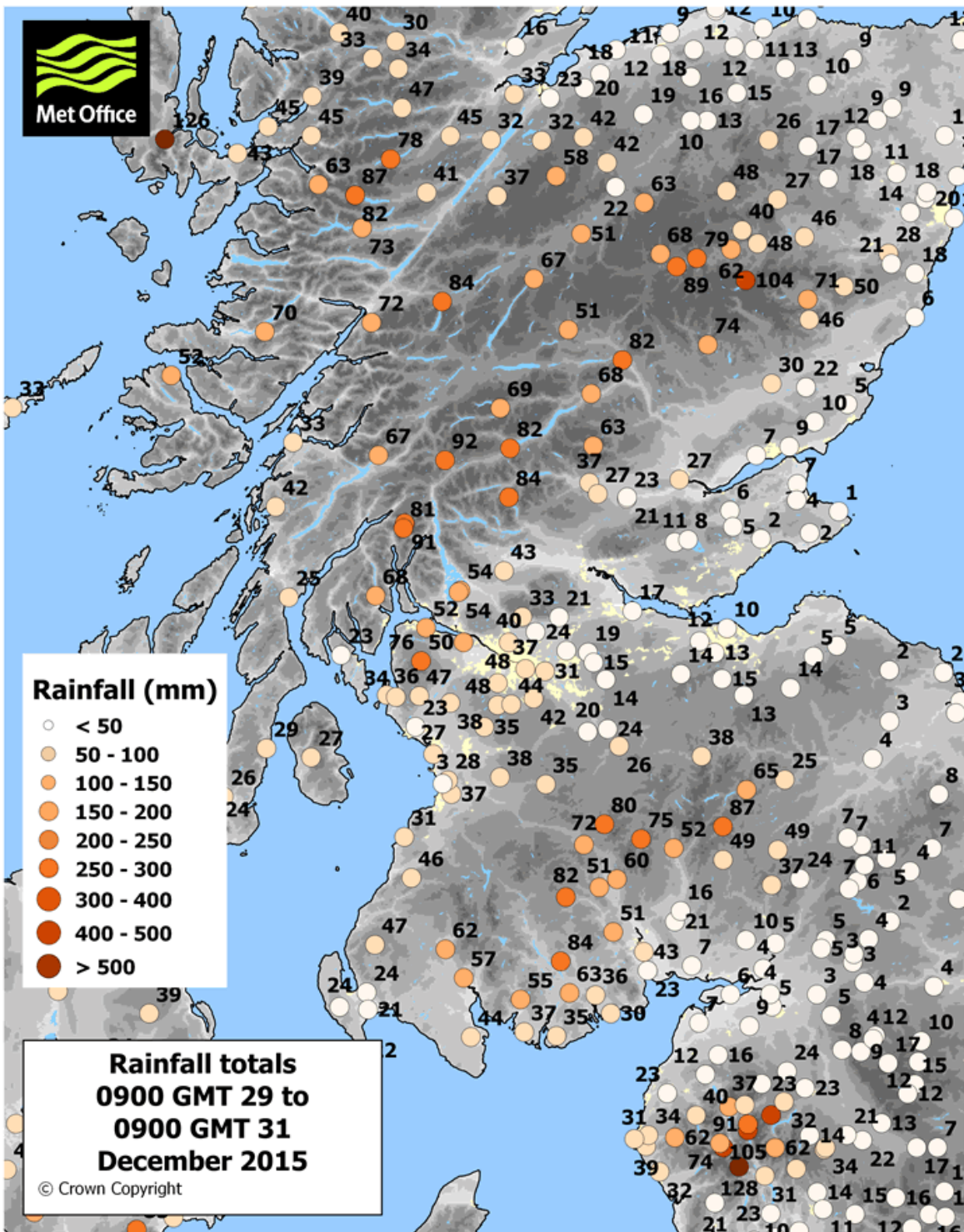
The analysis chart for 0000 GMT on 30 December shows storm Frank, an unusually deep area of low pressure bringing further fronts sweeping across the UK. Winds gusted at 50 to 60 Kt around the coast of the UK. Loftus (North Yorkshire) recorded 67 Kt (77 mph) and Needles Old Battery (Isle of Wight) 85 Kt (98 mph).



The rain-radar imagery from 0600 GMT 29 to 0300 GMT 31 December shows the fronts associated with storm Frank bringing further heavy rain from the evening of the 29th and through the 30th, with the focus mainly on western Scotland and Northern Ireland.

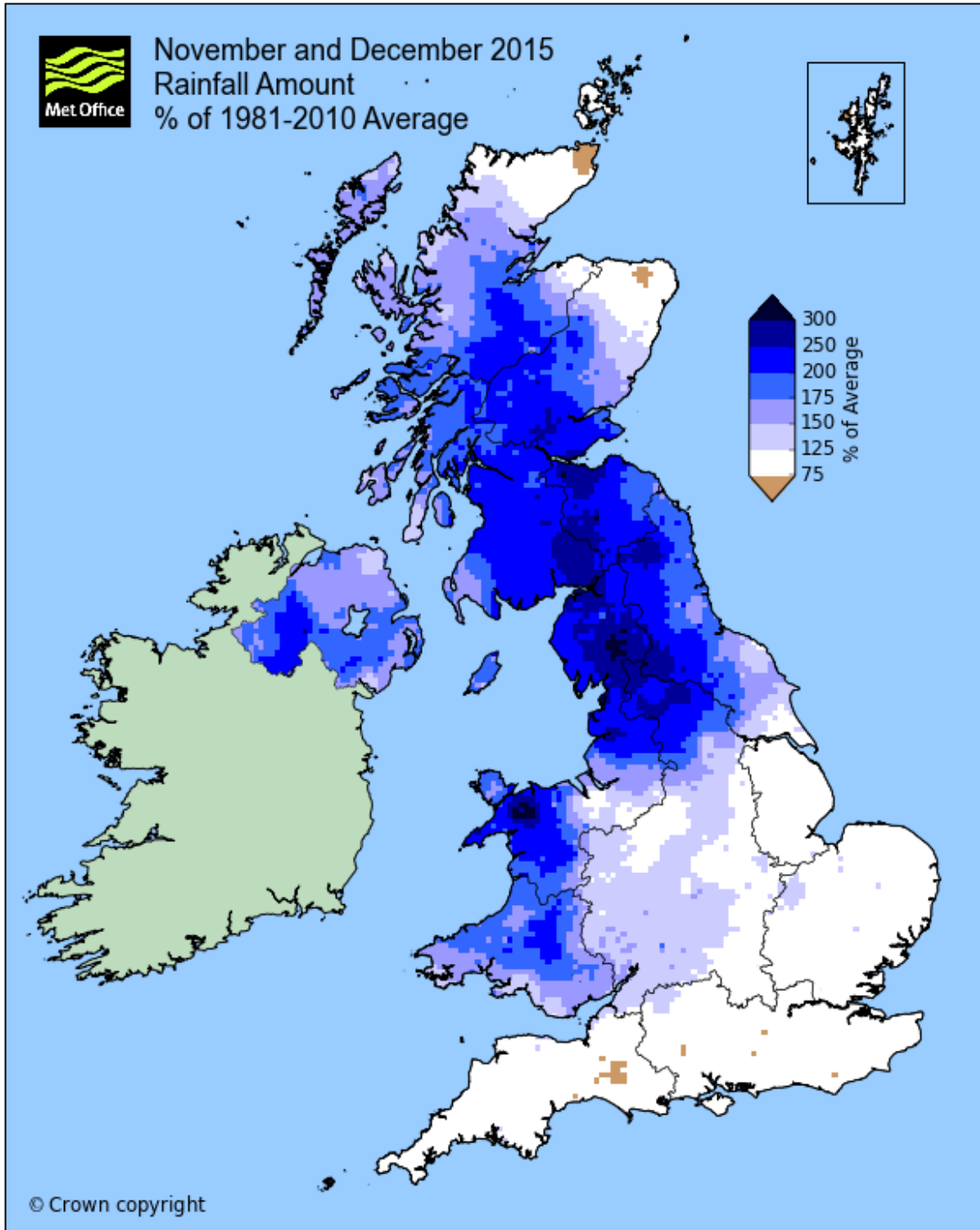


The figure below shows 48-hour totals for the two 'rain-days' of 29 and 30 December (0900 GMT 29th to 0900 GMT 31st). A further 50 to 100mm of rain fell across the Lake District fells, Southern Uplands and much of Highland Scotland.

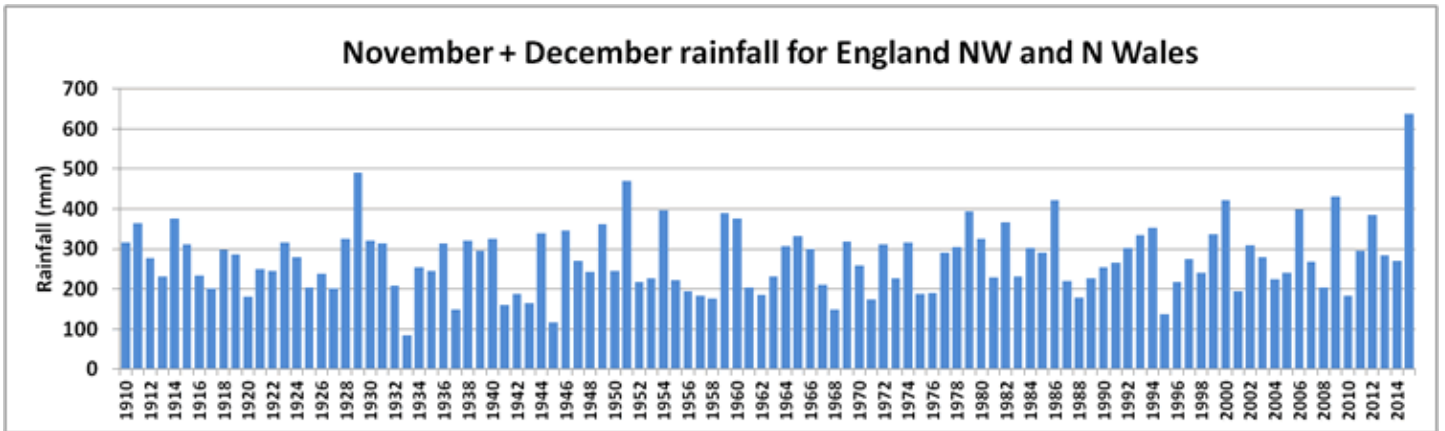


November and December rainfall combined

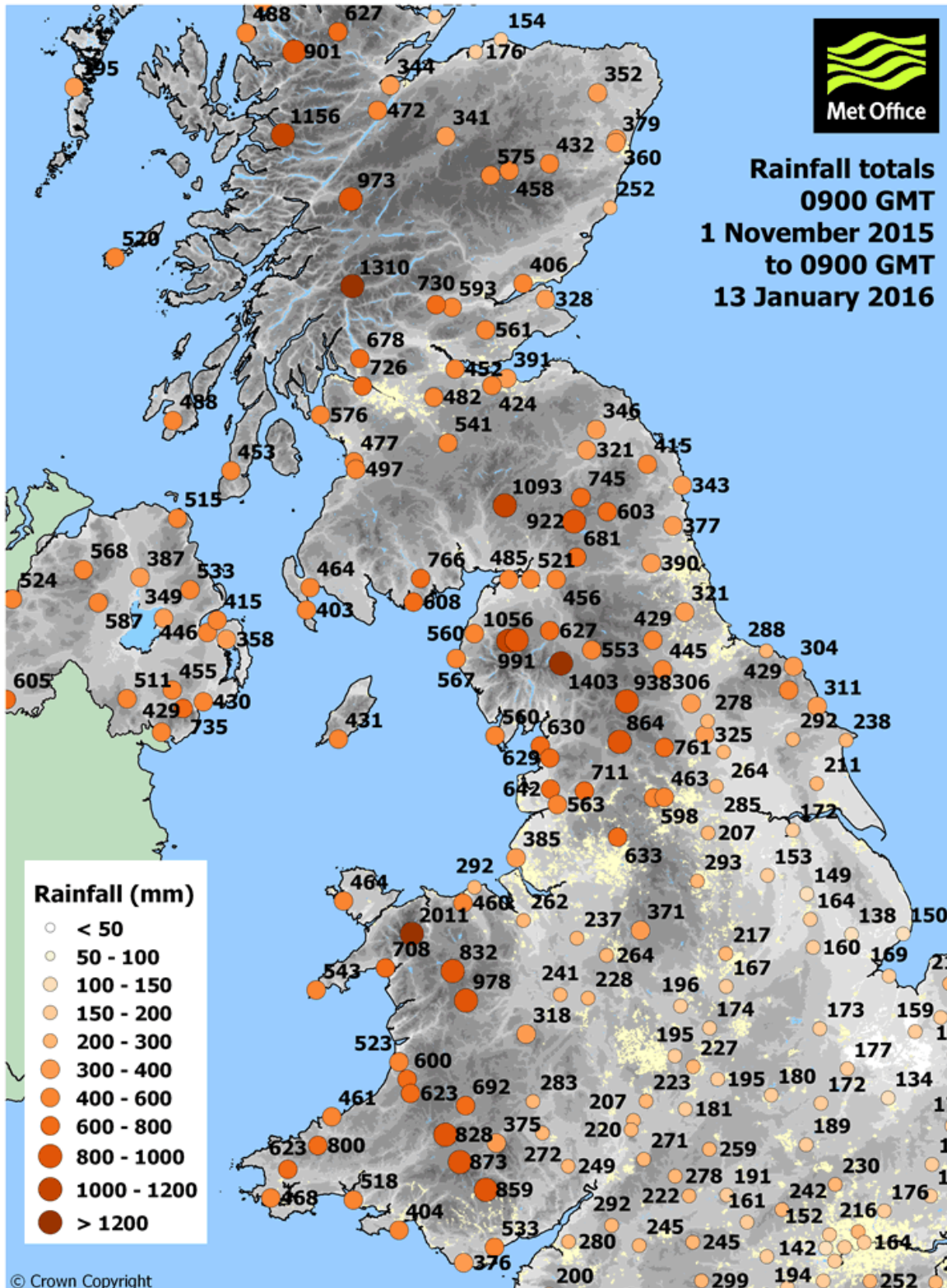
The figure below shows rainfall anomalies for November and December 2015 combined. During this two-month period, double the long-term average rainfall fell across Snowdonia, much of northern England, southern Scotland and parts of the west of Northern Ireland, and three times across parts of the high ground. December 2015 was the wettest calendar month for the UK in a series from 1910, while November 2015 was the second-wettest November (only November 2009 was wetter).



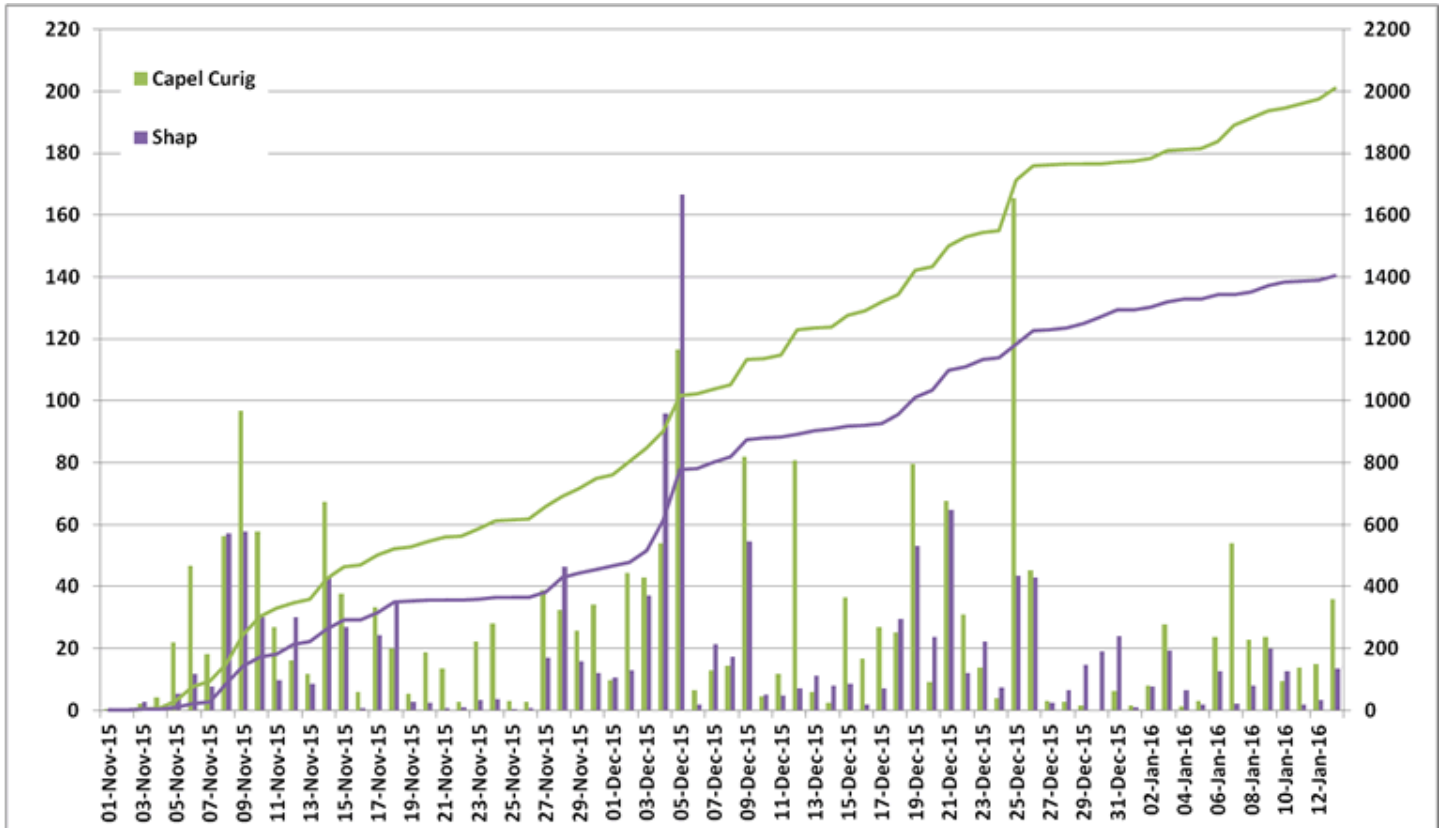
This was the wettest *any* two-month period in a series from 1910 for the UK, Scotland and Northern Ireland and for North Wales and northern England - see these [Download regional values](#). The climate district of north-west England and North Wales received 637mm of rain during November and December, 223% of average and the wettest *any* two-month period in the series from 1910 by a margin of 135mm - almost a whole-month's average rainfall. The figure below shows November + December rainfall totals for this climate district in a series from 1910.



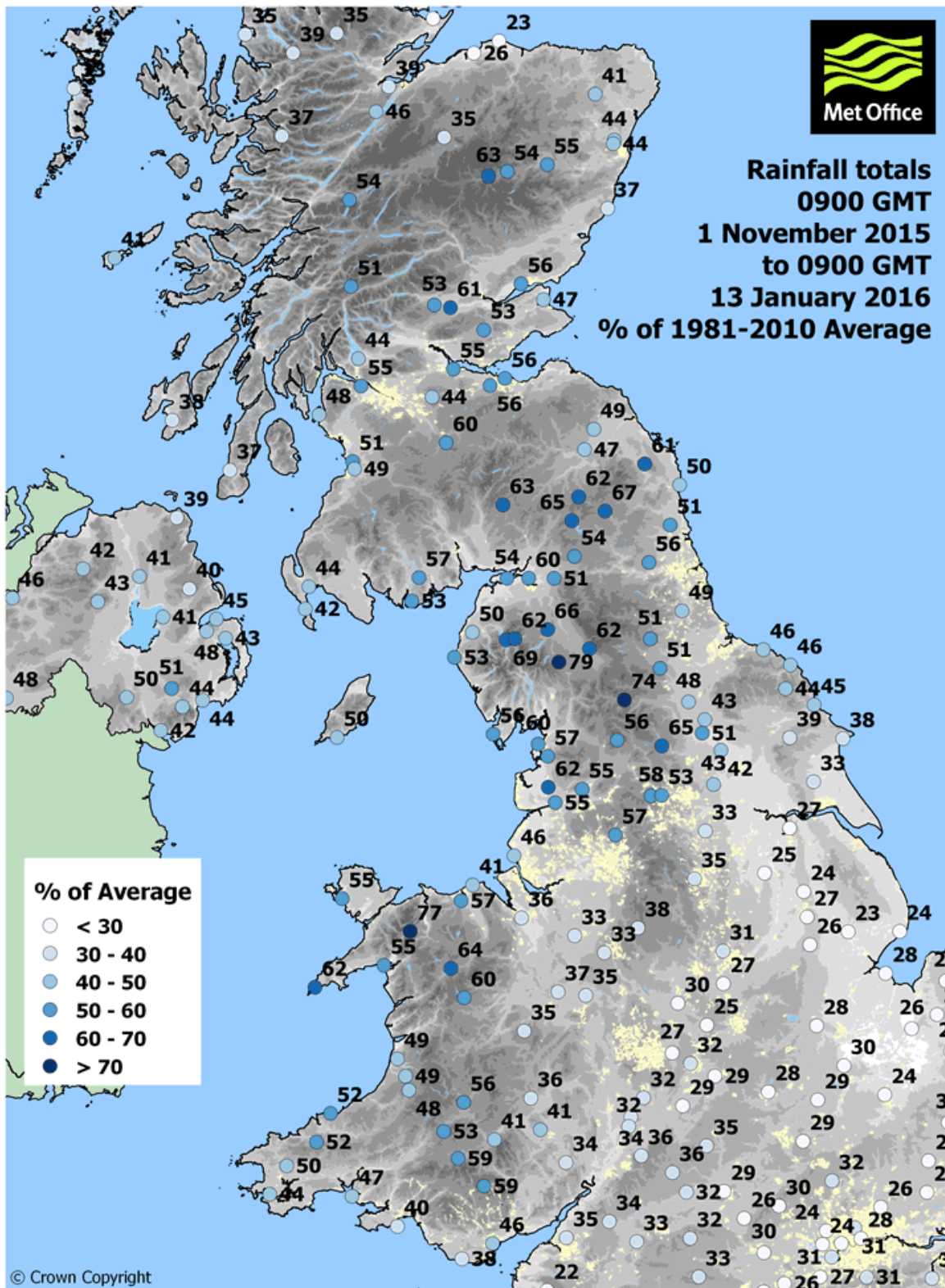
The weather continued exceptionally wet across eastern Scotland into early January 2016. The map below shows rainfall totals in mm for the period from 1 November 2015 to 13 January 2016 inclusive. Across lowland England, rainfall totals were near average but most of Wales, northern England, Northern Ireland and Scotland received at least 500mm, with several rain-gauges including Achnagart and Tyndrum (Highlands), Eskdalemuir (Dumfries & Galloway) and Shap (Cumbria) recording 1000 to 1400mm, with Capel Curig (Gwynedd) recording over 2000mm of rain (on average 27mm per day for 74 days). Remarkably, a [rain-gauge on Snowdon](#) located at 713 masl was reported to have recorded 1128mm in November and 1396mm in December; the latter being among the highest monthly totals on record.



The figure below shows daily totals (left-axis) and accumulations (right-axis) from 1 November to 13 January for Capel Curig (Gwynedd) and Shap (Cumbria). On 5 December, Shap recorded 166.6mm associated with storm Desmond, while on 26 December, Capel Curig recorded 165.4mm. The graph shows how the daily totals at these stations led to accumulations of over 2100mm and 1400mm respectively, with Capel Curig recording 24 days ≥ 30 mm of which half were ≥ 50 mm and half again of these around 80mm or more.



The map below shows rainfall totals from 1 November 2015 to 13 January 2016 as a percentage of annual average rainfall. We might normally expect somewhere between a quarter and a third of average over this period, as is seen across lowland England. However, most of Wales, northern England, much of Scotland and parts of Northern Ireland received half a year's worth, with some locations in upland areas such as Snowdonia, the Lakes and North Pennines receiving around three-quarters of a year's rain.



Last updated: 27 January 2016

