UK Flooding April to July 2012

Prepared by
JBA Risk Management Limited
and
Met Office
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Met Office

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UK flooding: April to July 2012

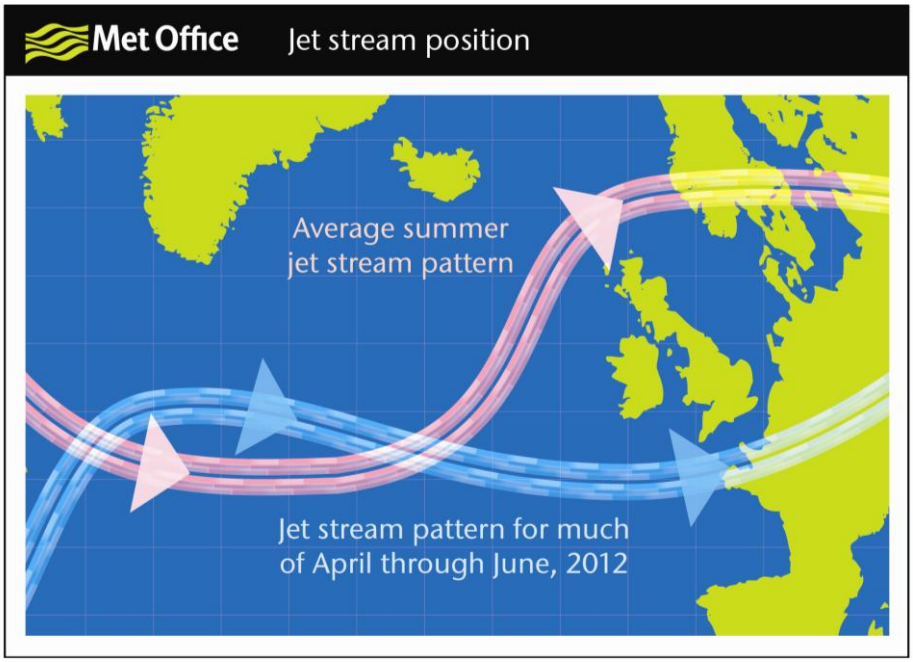
Overview

After a very dry start to the year across the UK, 2012 has seen record breaking amounts of rainfall. The months of April and June were both individually the wettest since records began in 1910, with the period from April through June also seeing unprecedented accumulations of rainfall for the UK. The England and Wales precipitation series shows the wettest April to June since 1766. The result has been numerous small flood events across both countries.

So what happened to produce so much rainfall over the last few months?

Soon after the start of April, the whole blocked jet-stream pattern moved westwards, so that the UK found itself under a southerly meander, with the jet stream passing to the south of the UK over France and Spain.

In both March and April there was a 'blocking pattern' in the jet stream's path so that it deviated to the north and south of its more usual eastward progress. The positioning of this blocking pattern is the key to prolonged spells of similar weather for any one location. This atmospheric set-up brought low surface pressure, cloud and rain. The blocked pattern removed the west-to-east jet stream needed to blow the weather system through. This encouraged low pressure to get stuck over the UK resulting in high rainfall totals overall. This pattern persisted for much of the last few months. It is not yet possible to determine why the jet stream remained in this southern position for so long this year but climate scientists are conducting research to see if there are other factors at play, such as changes in sea surface temperatures, low levels of arctic sea ice or variations in solar radiation.



Climate perspective

Many factors can impact the notoriously changeable weather in the UK but the position of the jet stream appears to have been the major contributory force.

The jet stream is a narrow band of fast moving air blowing from the west to the east around the globe in the high atmosphere. As this band moves around, it also changes its track, from a fairly straight line to something more closely resembling a meandering river. Its position significantly impacts weather in the UK.

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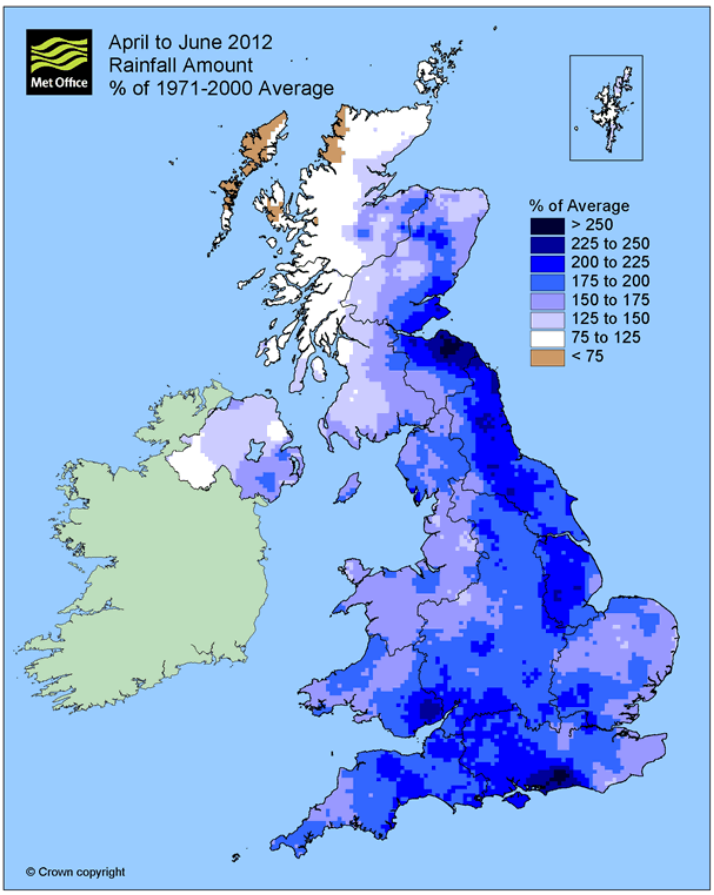
Weather perspective

During the April to June 2012 period, multiple weather systems passed across the UK. The Met Office Operations Centre in Exeter issues rainfall warnings when the weather is likely to be disruptive. In total, there were an extraordinary 52 warnings issued from 1 April to 20 July, with nine in April, six in May, 20 in June and 17 in the beginning of July.



April

- Low pressure over or near to the UK for most of the month leading to generally unsettled conditions.
- A stormy end to the month with widespread heavy and prolonged spells of rain.
- Twice or in some places three times the normal amount of rain for April for much of the east and the south.

May

- Cool and generally unsettled conditions.
- Sunshine and warm temperatures during the last third.
- No great departure from the climatological averages.

June

- Prolonged periods of rain affecting rivers and ground water.
- Exceptionally heavy showers giving short but torrential downpours.
- The total UK rainfall was 145.3mm – exactly twice the 1971–2000 average.
- This beats the previous record of 136.2 mm set in 2007.

July

- Continued to be very unsettled in most areas.
- 6 and 7 July was a particularly stormy period.
- By mid-July, many parts of the UK had already received more than their average monthly rainfall.
- Some southern counties had two to four times their normal July rainfall.
- Some stations broke their rainfall records for July in the first two weeks.

The total UK rainfall in June was exactly twice the 1971–2000 average

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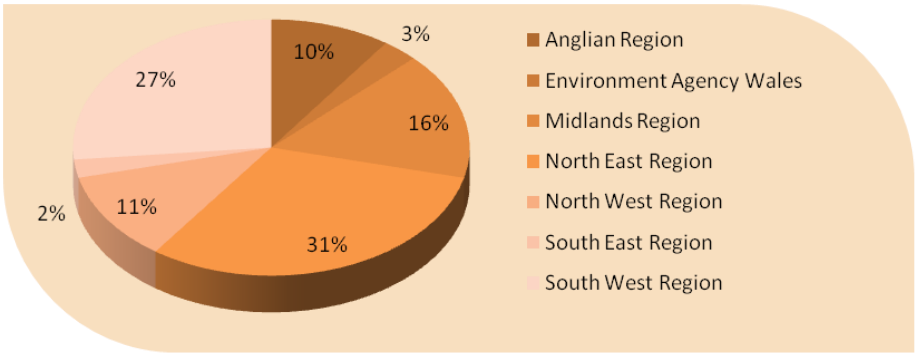
Hydrology

The lengthy period of poor weather conditions in the UK has given rise to a series of relatively small, scattered flood events. These have typically been of limited extent and caused by heavy rainfall on already saturated ground, giving rise to a mix of surface water and river flooding in smaller catchments. The areas affected, whilst limited in any single event, have been a wide range of locations across the UK, including, for example, the floods on 9 June in Wales, near Aberystwyth, and Worthing and Littlehampton, in Sussex. North Yorkshire and Cumbria were hit by floods later in June with places such as Hebden Bridge, Carlisle and Threlkeld particularly affected around 23 June. With the intense thunderstorms that developed across a large swathe of the UK further flooding occurred on 28 June in places around Newcastle upon Tyne as well as Northern Ireland. On 7 July a severe flood warning was issued in the South West Region on the rivers Yealm, Bride and Axe. With 102 flood alerts and 69 flood warnings in place on 6 July, an additional 51 alerts and 75 warnings were issued on that day.

Consideration of the areas in which the Environment Agency issued flood warnings on its website during the April to June period illustrates the large area over which these relatively small events have occurred.

Figure 1 shows a regional breakdown of the flood warnings issued in the period April to June 2012.

Figure 1: Regions with flood warnings between April and July 2012



Flood Warnings

The Environment Agency provides a flood warning service throughout England and Wales. Flood alerts and warnings are issued according to the severity of the situation.

Figure 2: Image of the recent floods in North Yorkshire, 23 June 2012

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Insurance perspective: how many events?

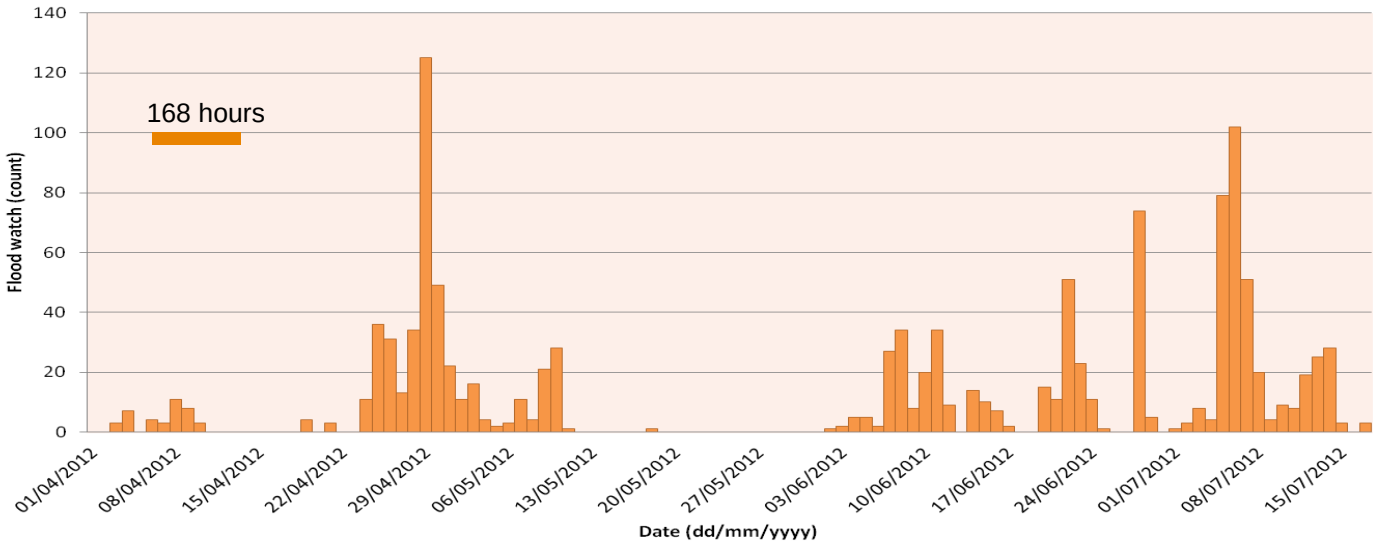
Insurers and reinsurers must clearly define what constitutes an event to be able to accurately quantify insured loss occurrences. "Event-based" covers require an event occurrence definition in the contract wording of a policy. The hours clause facilitates this wording by defining the duration of an event in terms of number of consecutive hours.

For floods, the wording of this clause can be particularly important in a situation in which a persistent climatic phenomenon has given rise to multiple small floods occurring sequentially. The hours clause definition used will vary between contracts, but in the UK is typically defined at 168 hours for freshwater flood (river and surface water flooding are not typically distinguished in UK contracts).

Consideration of the timing of flooding and the hours clause together is required to answer the "how many events" question for UK flood over the past few months.

The exact number of events deemed to have occurred will vary according to the wording of individual contracts and timing of individual claims, but it can be concluded that for contracts with a 168-hour hours clause in relation to flooding, this period can be viewed as having suffered multiple small flood events.

Figure 3: Number of flood alerts and warnings issued per day between April and July 2012. A 168 hour bar is shown for comparison.



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