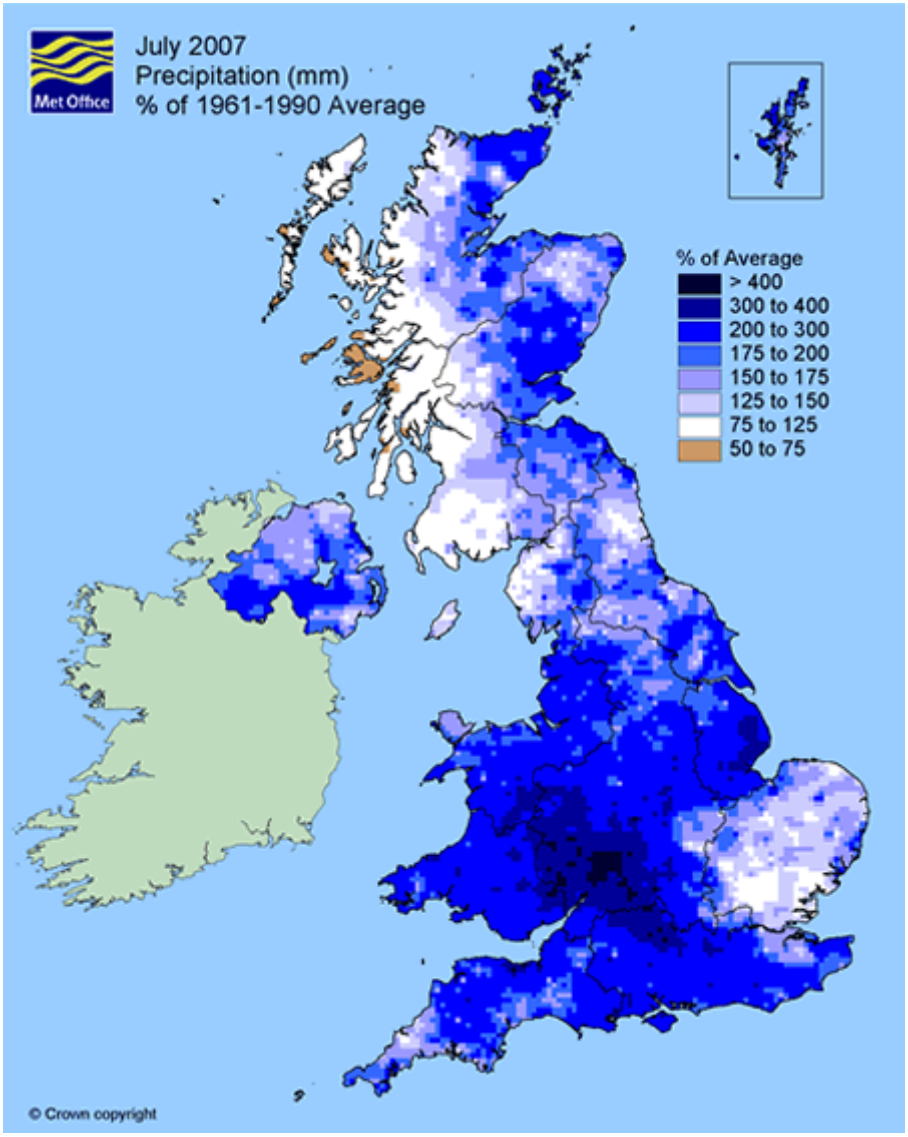
Heavy rainfall/flooding - July 2007

Record July totals and heavy rainfall on 19/20 July, resulted in widespread flooding and transport disruption over the south Midlands...

In excess of 150 mm of rain fell over most of Wales, the western half of England and parts of the Scottish Highlands, with over 200 mm in places. This represents over twice the average July rainfall over large areas of England and Wales, over three times in most of the south Midlands and south-east Wales and over four times the July average locally in the south Midlands, as can be seen in the July 2007 per cent of average map below. The estimated average frequency of occurrence (return period) of these high totals is over 200 years (July 2007 - return period map).



Some weather stations had their wettest July on record, in particular stations in Gloucestershire, Worcestershire and Herefordshire, and examples are provided in the following table. Pershore College (Worcestershire) also had its wettest ever month on record.

July 2007 - station precipitation values

Station	July 2007 precipitation (mm)	% of 1961-1990 average	Series length
Tewkesbury (Gloucestershire)	240.7	531	47 years
Pershore College (Worcestershire)	252.4	513	51 years
Hampton Park (Herefordshire)	245.0	507	47 years
Buckland (Oxfordshire)	203.5	477	44 years
Newbury (Berkshire)	200.8	476	37 years
Shobdon (Herefordshire)	194.7	475	37 years
Staunton (Gloucestershire)	216.2	472	31 years
Malvern (Worcestershire)	194.6	410	94 years

Areal values for July 2007 for the UK, countries and regions that have experienced high precipitation are shown in the table below. These values are final and are based on the full network of stations. These areal series begin in 1914.

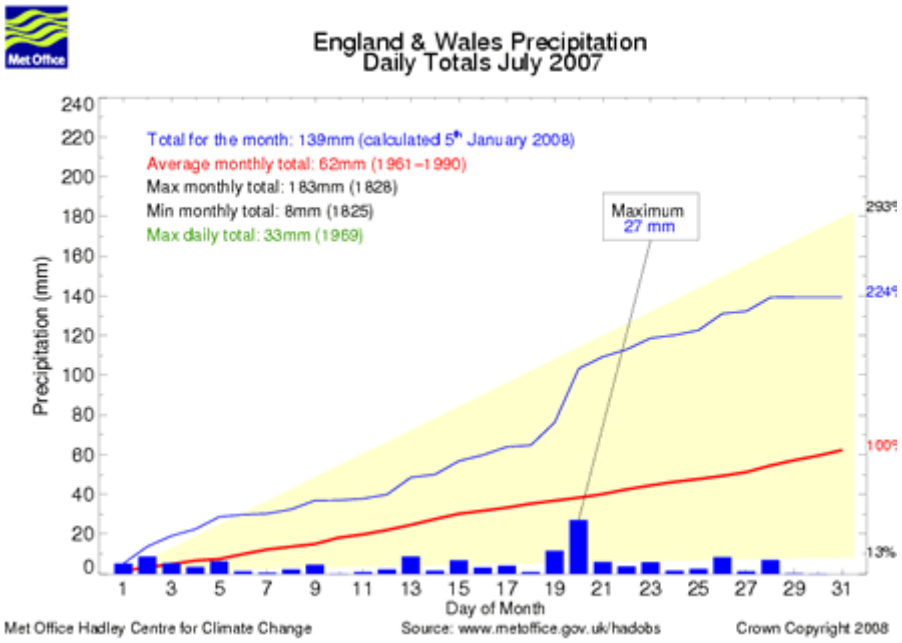
A number of counties, including Gloucestershire and Worcestershire, also set records for July in the areal series back to 1914, and the value for Worcestershire, was also the highest for any calendar month.

July 2007 - areal precipitation values

Area (Regions map | Districts map)	July 2007 precipitation (mm)	% of 1961-1990 average	Ranking in July series from 1914	Highest or previous high since 1914
UK	134.9	183	4	145.1 mm - 1988
England	125.1	212	2	126.5 mm - 1936
Wales	204.8	246	2	241.4 mm - 1939
Scotland	133.9	140	Not significant	184.8 mm - 1940
N Ireland	130.8	184	Not significant	186.0 mm - 1936
England & Wales (*)	136.0	218	1	135.4 mm - 1936
England N	131.5	189	6	149.5 mm - 1988
England S	121.7	228	2	134.1 mm - 1936
England E & NE	113.8	194	6	156.6 mm - 1940
England NW & Wales N	175.3	203	3	196.1 mm - 1939
Midlands	144.8	256	1	135.6 mm - 1915
East Anglia	74.3	147	Not significant	115.6 mm - 1936
England SW & Wales S	164.5	230	3	204.9 mm - 1939
England SE & central S	119.9	245	3	127.6 mm - 1920

(*) There is also an historic monthly rainfall series for England and Wales, from 1766, which is an homogenous series based on selected station data. In this series, the total for July 2007 of 139.4 mm is ranked 14th wettest for July. All the wetter Julys in this series were between 1767 and 1888 with the wettest July being 1828 with 182.6 mm.

A daily precipitation plot is shown for England & Wales in the following image, with the wettest day being the 20th.



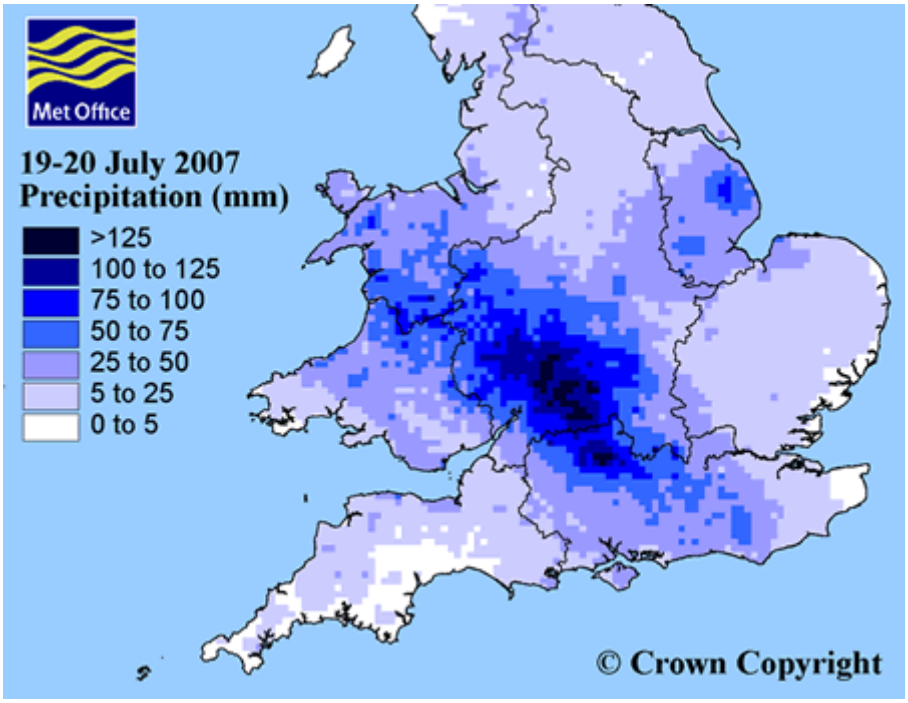
Hydrological information for July 2007 can be found from the following link, Water Watch - UK Hydrological Summaries (published jointly by the Centre for Ecology and Hydrology, Wallingford and the British Geological Survey).

Information on Summer 2007 floods can also be found on the following Environment Agency web link, Summer 2007 Floods (EA).

19-20 July 2007 - Heavy rainfall/flooding

The most significant rainfall event of the month was on 20 July 2007 over the south Midlands, with many stations recording their highest daily rainfall on record. The heavy and prolonged rainfall was caused by a slow moving area of low pressure and associated frontal system (6-hourly surface animation between 0000 UTC on 20 July 2007 to 1200 UTC on 21 July 2007). This resulted in the flooding of thousands of homes and businesses and severe road and rail transport disruption across a wide area of the south Midlands. Many rivers burst their banks, including the lower Severn, upper Thames and their tributaries. Flooding of a water treatment plant in Gloucestershire left thousands of people without drinking water.

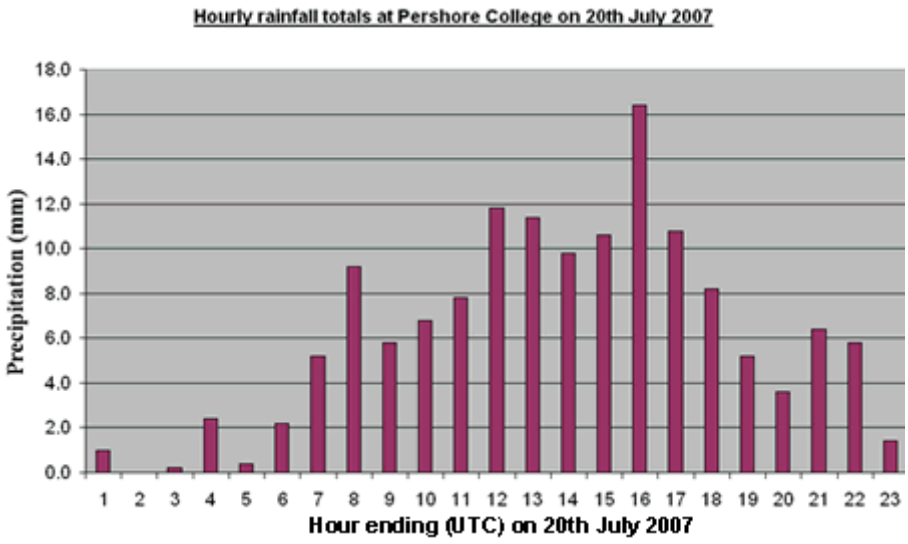
The precipitation values for 19-20 July can be seen in the map below.



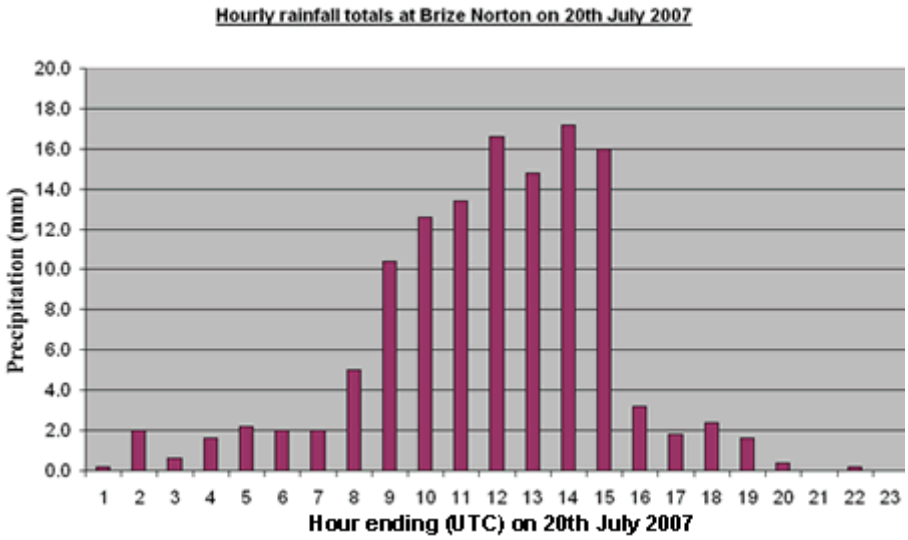
A selection of the wettest stations and associated return periods can be found in the table below.

	19-20 July 2007 - station precipitation values			
Station	July 19 2007 precipitation (mm)	July 20 2007 precipitation (mm)	July 19-20 2007 precipitation (mm)	Return period (years)
Sudeley Lodge (Gloucestershire)	16.1	147.0	163.1	>200
Pershore College (Gloucestershire)	36.6	120.8	157.4	>200
Chastleton (Warwickshire)	24.7	115.4	140.1	>200
Langley (Gloucestershire)	24.4	115.2	139.6	>200
Winchcombe (Gloucestershire)	30.4	107.7	138.1	>200
East Shefford (Berkshire)	25.9	110.6	136.5	>200
Tewkesbury (Gloucestershire)	13.7	119.0	132.7	>200

Graphs below show the hourly rainfall breakdown for Pershore College (Worcestershire) and Brize Norton (Oxfordshire) on 20 July 2007.



Last updated: 30 October 2012


Hourly rainfall totals at Brize Norton on 20th July 2007
Precipitation (mm)
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Hour ending (UTC) on 20th July 2007

Met Office