# Hydrological Summary

## *for the United Kingdom*

*September 2009*

### General

Substantial rainfall early in the month triggered a damaging flood episode in eastern Scotland but, for southern Britain, September was a warm and generally dry month. In the English Lowlands, where Indian Summer conditions were accompanied by sustained rainless periods, significant short and medium term rainfall deficiencies now extend over wide areas. The dominance of high pressure during the late summer and early autumn is reflected in a considerable decline in reservoir stocks (for England & Wales); nonetheless, overall stocks are still appreciably above the early autumn average. Of the index reservoirs, only Bewl is >5% below average for the time of year. Sustained and steep September recessions resulted in depressed river flows in some eastern catchments, mostly in East Anglia. Contrary to the normal seasonal pattern, soil moisture deficits increased markedly in September and were well above average at month-end across most major aquifer outcrop areas. Correspondingly, early autumn recharge was minimal but, a few southern Chalk wells aside, groundwater levels in most index wells remained within the normal September range. Importantly for the water resources outlook, the seasonal upturn in runoff and recharge rates may well be substantially delayed by the exceptionally dry soil conditions across much of the English Lowlands.

### Rainfall

Synoptic patterns through most of September were dominated by high pressure; most rain-bearing Atlantic frontal systems were deflected well away from southern Britain. However, on the 3rd a vigorous low pressure system produced exceptional rainfall totals across much of north-east Scotland; parts of Moray were particularly wet – at Dipple, a 33-hr storm total of 139mm was registered. To the west Skye had, by the 2nd week of the month, reported 50 successive days with rainfall (the longest sequence in a series from 1861) and a landslip was reported near to Loch Lomond on the 8th. Some locally sharp showers occurred in central and southern England (60mm was recorded at South Farnborough, Hants on the 15th) but, more typically, many areas recorded lengthy periods with no more than a trace of rainfall. At Wallingford, less than 0.5 mm was recorded over a 32-day period (beginning on the 3rd September); the driest sequence for such a timespan since the extreme drought of 1976. September rainfall totals varied very widely across the UK: parts of eastern Scotland reported >150% of average whereas much of central southern England recorded <30%. Northern Ireland was also very dry – registering its lowest September rainfall since 1986. In a few parts of the English lowlands only July has reported above average rainfall in the last 10 months. Correspondingly accumulated rainfall totals are relatively depressed: Southern Region registered its 2nd driest Aug-Sept since 1978 and post-March deficiencies are considerable across much of England. In the same timeframe, much of western Scotland reported its 2nd highest rainfall in 60 years.

### River flows

The very wet beginning to September triggered high spate conditions across much of northern Britain with extensive flooding in eastern Scotland. Peak flows in the Deveron and Isla exceeded previous maxima (in records of 50- and 40-years respectively). Flooding on the Lossie (e.g. at Elgin) necessitated the evacuation of many homes, and added to a cluster of notable flood events in the post-1996 period. By contrast, river flows in many rivers across southern Britain (and in Northern Ireland) declined sharply though September – leaving end-of-month flows exceptionally low in a number of, mostly responsive, eastern catchments. Rivers with particularly depressed flows included the Waveney, Tas (Norfolk), Little Ouse (which registered its 2nd lowest September runoff in a series from 1968) and the Rother and Gt. Stour in Kent. Characteristically, runoff rates held up more effectively in many spring-fed streams but flows in the Lud fell to their lowest since the 2003 drought and the upper reaches of many winterbournes are now dry. Seasonally high evaporative demands contributed to local wetland stress (e.g. at Orford Ness, Suffolk). Considering the UK as a whole, most September runoff totals were in the normal range, and notably high across much of Scotland: the Ness, Tay, Deveron and Whiteadder each registered their 3rd or 4th highest September runoff in records of 40 years or more. Accumulated runoff totals, which are of more water resources significance, are notably high in the six-month timeframe across most of northern Britain but markedly below average in a number of central, southern and eastern areas.

### Groundwater

In contrast to the normal September trend, soil moisture deficits (smds) increased through the month across much of southern Britain and, by month-end, were well above average across most aquifer outcrop areas. The notably dry early autumn soils triggered an early autumn leaf fall and caused problems for gardeners, farmers and growers; it also ensured that there was no appreciable recharge to the major aquifers. Groundwater level recessions continued and were particularly steep (for the early autumn) in some southern Chalk outcrops; natural base levels were approached in, for example, the Chilgrove and Rockley wells which reported their lowest levels since the 2005-06 drought. 2009 recharge to the limestone aquifers has been spatially very variable but September levels were typical of the early autumn. Groundwater levels generally also remain within the normal seasonal range in most outcrops of the Permo-Triassic sandstones aquifers. Notably high levels were, however, reported for Newbridge and Bussels (in part a consequence of the July infiltration). Early-October smds were the equivalent of 10-12 weeks of effective rainfall across most eastern, central and southern aquifer outcrop areas; given normal late autumn rainfall patterns, the seasonal onset of recharge may not become established before December.

Centre for Ecology & Hydrology
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# *Rainfall . . . Rainfall . . .*

## Rainfall accumulations and return period estimates

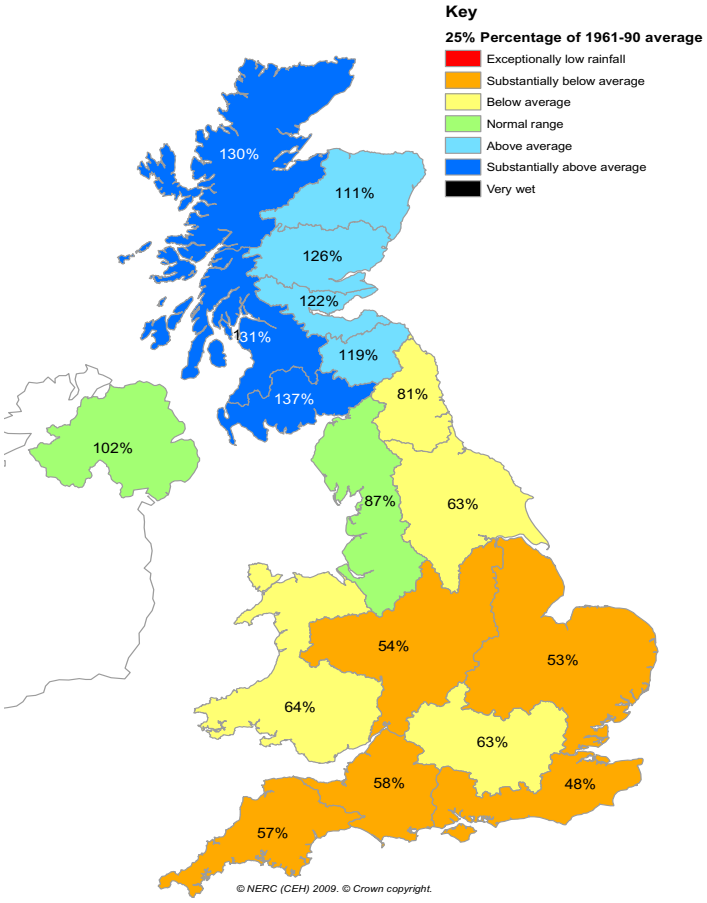
| Area | Rainfall | Sep 2009 | Aug 09 - Sep 09 | | Apr 09 - Sep 09 | | Jan 09 - Sep 09 | | Oct 08 - Sep 09 | |
|---|---|---|---|---|---|---|---|---|---|---|
| **England & Wales** | **mm** | **34** | **99** | | **405** | | **593** | | **858** | |
| | **%** | **43** | **64** | **5-10** | **100** | **<2** | **94** | **2-5** | **95** | **2-5** |
| North West | mm | **59** | 199 | | 619 | | 850 | | 1269 | |
| | % | **51** | 87 | 2-5 | 114 | 5-10 | 101 | 2-5 | 104 | 2-5 |
| Northumbrian | mm | **47** | 127 | | 466 | | 626 | | 856 | |
| | % | **63** | 81 | 2-5 | 115 | 2-5 | 101 | 2-5 | 99 | 2-5 |
| Severn Trent | mm | **23** | 72 | | 375 | | 512 | | 725 | |
| | % | **36** | 54 | 5-15 | 103 | 2-5 | 93 | 2-5 | 94 | 2-5 |
| Yorkshire | mm | **32** | 92 | | 390 | | 535 | | 754 | |
| | % | **45** | 63 | 5-10 | 100 | <2 | 90 | 2-5 | 90 | 2-5 |
| Anglian | mm | **17** | 56 | | 242 | | 375 | | 545 | |
| | % | **33** | 53 | 10-20 | 80 | 5-10 | 86 | 5-10 | 90 | 2-5 |
| Thames | mm | **27** | 75 | | 281 | | 443 | | 620 | |
| | % | **44** | 63 | 5-10 | 85 | 2-5 | 89 | 2-5 | 88 | 2-5 |
| Southern | mm | **31** | 61 | | 244 | | 452 | | 672 | |
| | % | **44** | 48 | 10-20 | 72 | 5-15 | 84 | 5-10 | 86 | 5-10 |
| Wessex | mm | **26** | 81 | | 345 | | 555 | | 790 | |
| | % | **36** | 58 | 5-10 | 94 | 2-5 | 94 | 2-5 | 93 | 2-5 |
| South West | mm | **43** | 103 | | 522 | | 829 | | 1163 | |
| | % | **46** | 57 | 5-15 | 112 | 2-5 | 103 | 2-5 | 98 | 2-5 |
| Welsh | mm | **47** | 142 | | 603 | | 861 | | 1292 | |
| | % | **40** | 64 | 5-10 | 109 | 2-5 | 95 | 2-5 | 96 | 2-5 |
| **Scotland** | **mm** | **125** | **329** | | **756** | | **1156** | | **1676** | |
| | **%** | **87** | **126** | **10-20** | **124** | **20-35** | **116** | **10-20** | **114** | **25-40** |
| Highland | mm | **173** | 387 | | 839 | | 1373 | | 2057 | |
| | % | **103** | 130 | 10-20 | 121 | 15-25 | 119 | 10-20 | 118 | 30-40 |
| North East | mm | **102** | 203 | | 555 | | 805 | | 1112 | |
| | % | **111** | 111 | 2-5 | 118 | 5-10 | 111 | 5-10 | 108 | 5-10 |
| Tay | mm | **109** | 279 | | 697 | | 1015 | | 1393 | |
| | % | **90** | 126 | 5-10 | 130 | 10-20 | 114 | 5-10 | 108 | 2-5 |
| Forth | mm | **98** | 256 | | 614 | | 864 | | 1206 | |
| | % | **87** | 122 | 5-10 | 123 | 5-15 | 108 | 2-5 | 105 | 2-5 |
| Tweed | mm | **73** | 217 | | 564 | | 782 | | 1080 | |
| | % | **79** | 119 | 2-5 | 123 | 5-15 | 110 | 5-10 | 108 | 2-5 |
| Solway | mm | **72** | 364 | | 815 | | 1174 | | 1713 | |
| | % | **50** | 137 | 10-20 | 134 | 50-80 | 119 | 20-30 | 119 | 35-50 |
| Clyde | mm | **132** | 425 | | 943 | | 1391 | | 2000 | |
| | % | **72** | 131 | 10-20 | 131 | 35-50 | 117 | 10-20 | 114 | 10-20 |
| **Northern Ireland** | **mm** | **37** | **199** | | **591** | | **829** | | **1137** | |
| | **%** | **37** | **102** | **2-5** | **123** | **5-10** | **108** | **2-5** | **104** | **2-5** |

*% = percentage of 1961-90 average* *RP = Return period*

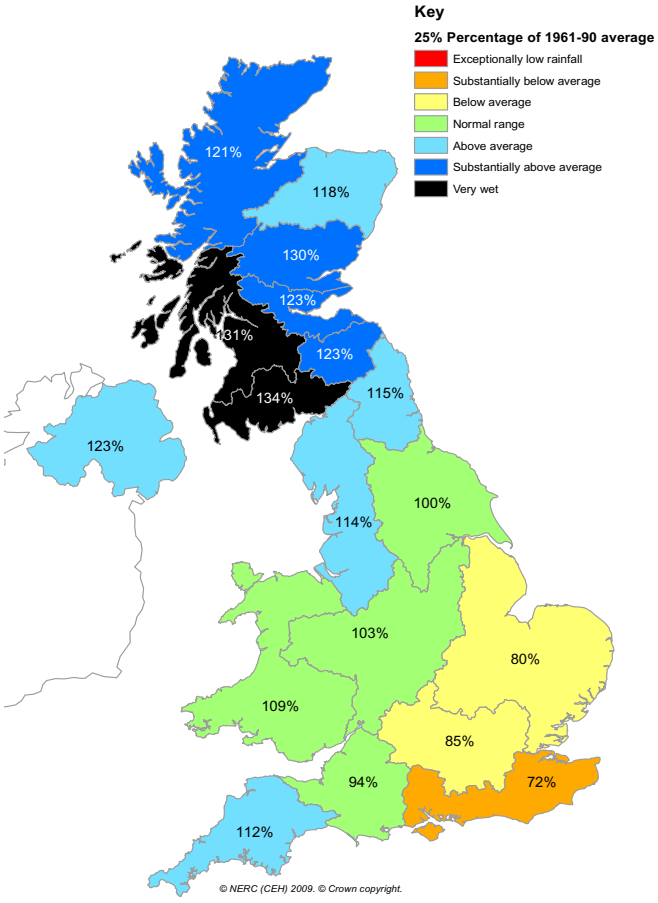
**Important note:** Figures in the above table may be quoted provided their source is acknowledged (see page 12). Where appropriate, specific mention must be made of the uncertainties associated with the return period estimates. The RP estimates are based on data provided by the Met Office and derived following the method described in: Tabony, R. C. 1977, *The variability of long duration rainfall over Great Britain*. Met Office Scientific Paper no. 37. The estimates reflect climatic variability since 1913 and assume a stable climate. The timespans featured do not purport to represent the critical periods for any particular water resource management zone. For hydrological or water resources assessments of drought severity, river flows and/or groundwater levels normally provide a better guide than return periods based on regional rainfall totals.
All monthly rainfall totals since March 2009 are provisional.

# Rainfall . . . Rainfall . . .

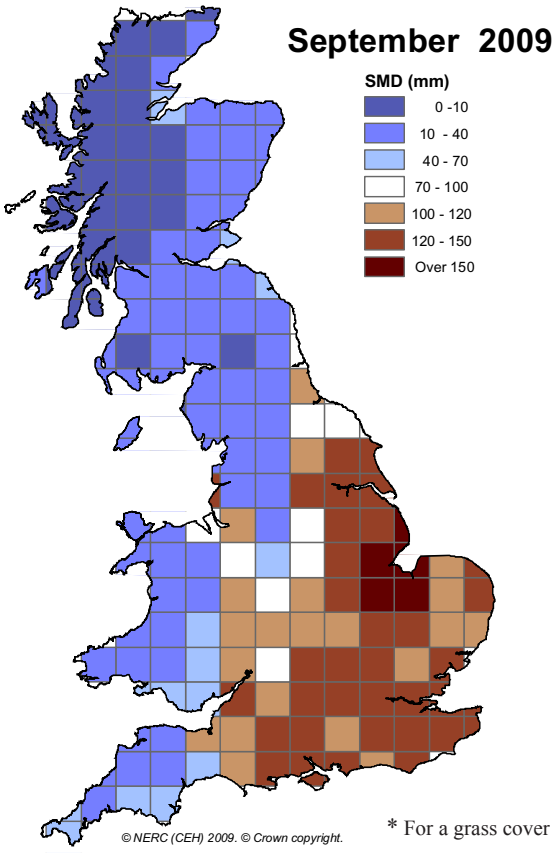
## August- September 2009




## April - September 2009




## MORECS Soil Moisture Deficits *




* For a grass cover

## Met Office Autumn 2009 forecast

**Forecast for the Autumn 2009:**
**Updated 30 September 2009**

**Temperature**
For the rest of autumn, temperatures are likely to be average or above average over most of Europe, including the UK.

**Rainfall**
For Europe, including the UK, there is no clear signal for the amounts of rainfall.

**Early indications for Winter 2009/10:**
**Updated 29 September 2009**

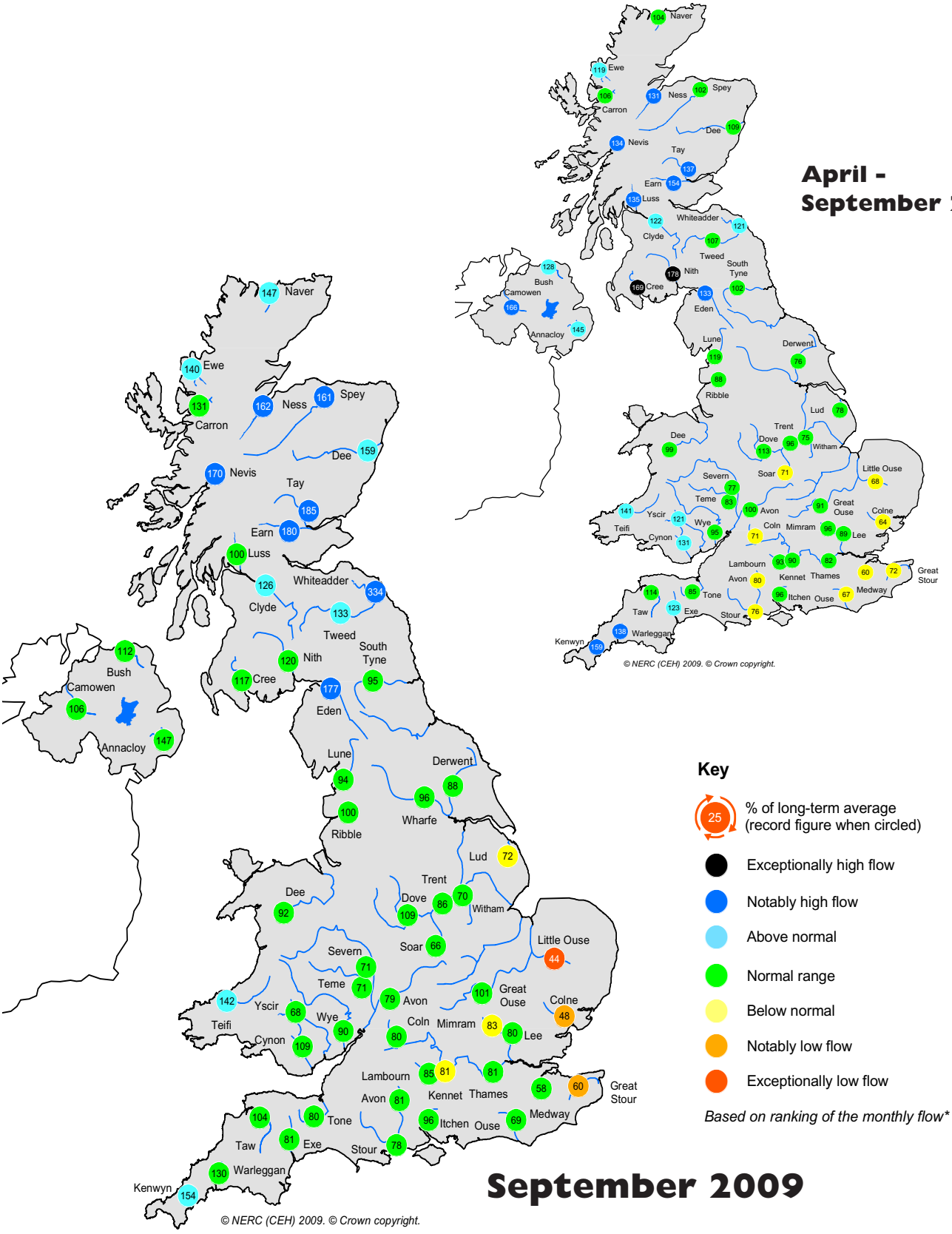
**Temperature**
Preliminary indications continue to suggest that winter temperatures are likely to be near or above average over much of Europe including the UK. Winter 2009/10 is likely to be milder than last year for the UK, but there is still a 1 in 7 chance of a cold winter.

**Rainfall**
Signals for precipitation slightly favour near or above average rainfall over much of northern Europe, including the UK.

**Updates and reviews of the forecast**
The winter forecast will be issued in November.
For further details please visit:

http://www.metoffice.gov.uk/science/creating/monthsahead/seasonal/2009/winter.html

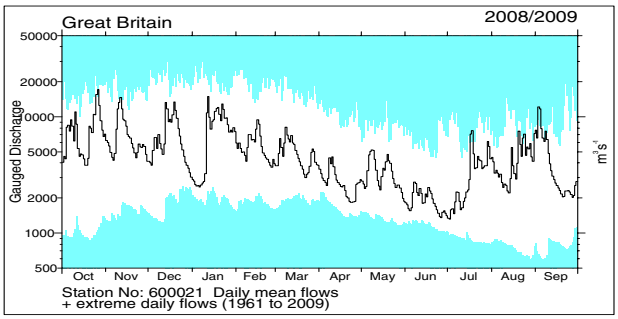
# *River flow . . . River flow . . .*

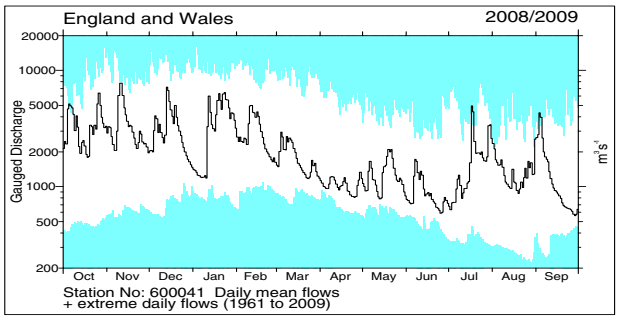


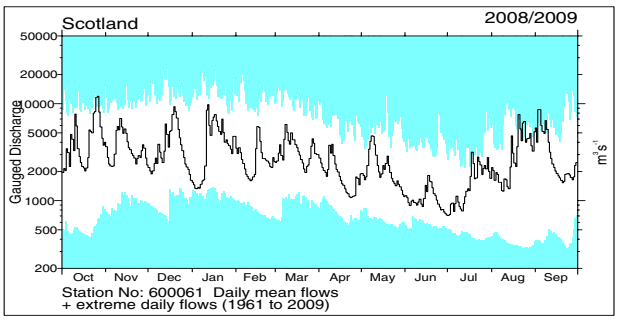

## River flows

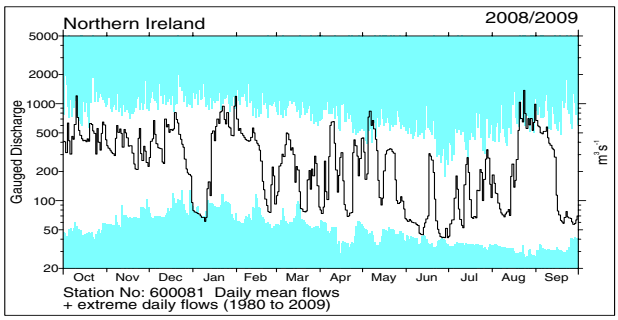
*Comparisons based on percentage flows alone can be misleading. A given percentage flow can represent extreme drought conditions in permeable catchments where flow patterns are relatively stable but be well within the normal range in impermeable catchments where the natural variation in flows is much greater. Note: the period of record on which these percentages are based varies from station to station. Percentages may be omitted where flows are under review.

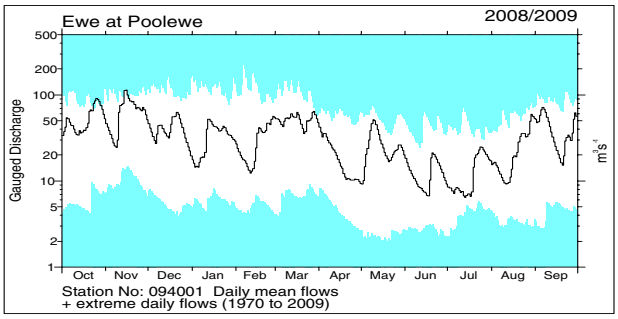
# River flow . . . River flow . . .

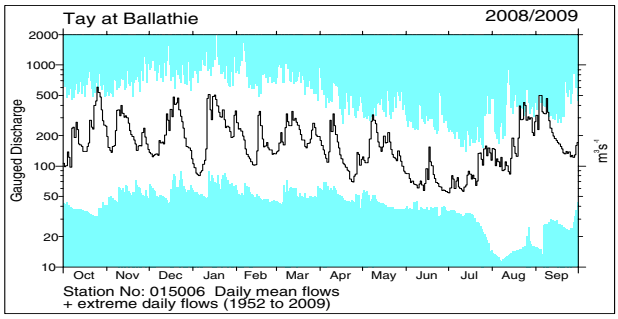


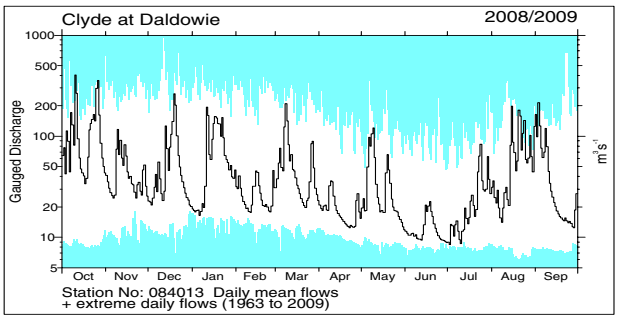



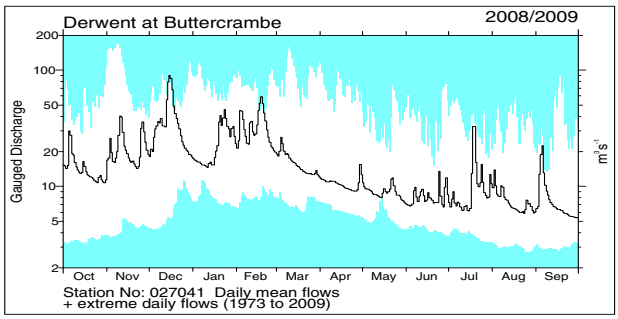



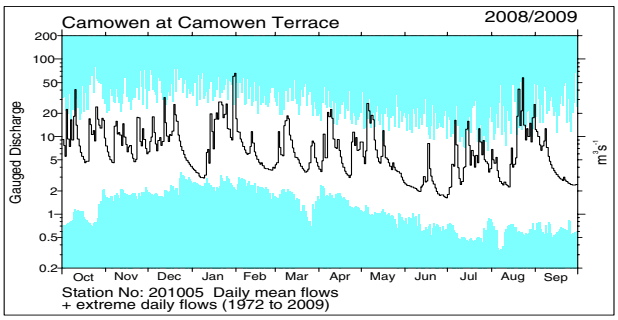



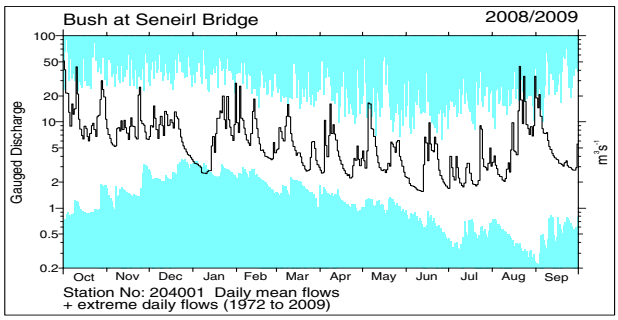



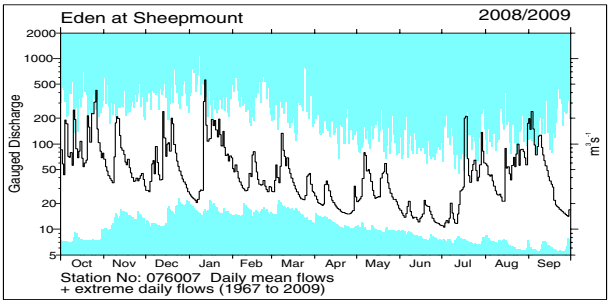



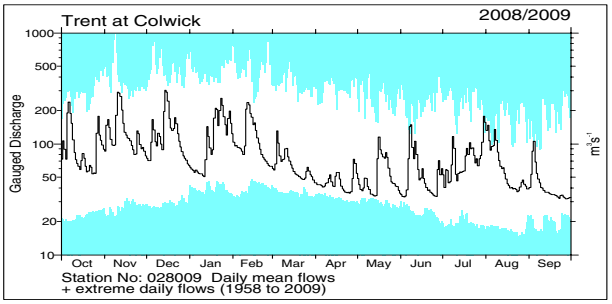



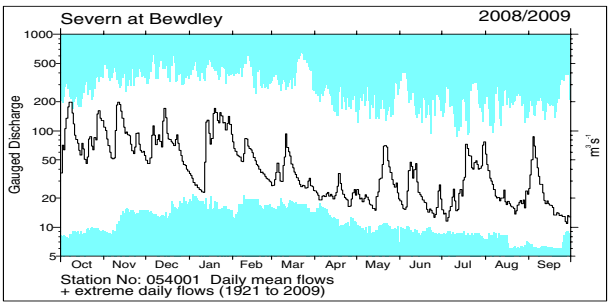

## River flow hydrographs

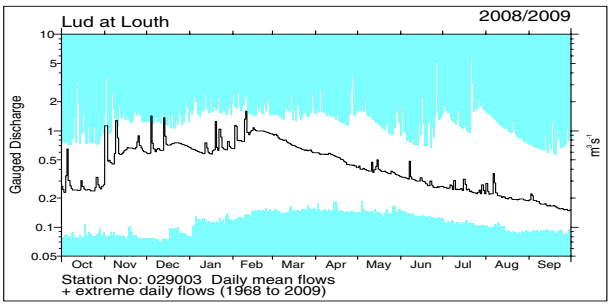
The river flow hydrographs show the daily mean flows together with the maximum and minimum daily flows prior to October 2008 (shown by the shaded areas). Daily flows falling outside the maximum/minimum range are indicated where the bold trace enters the shaded areas.

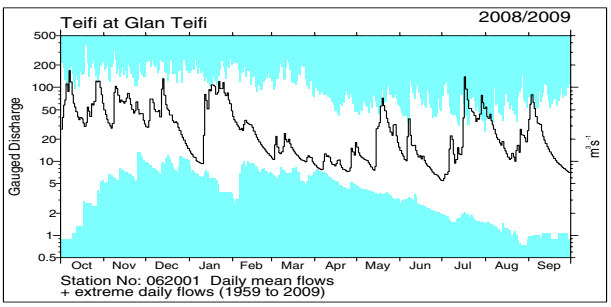
# River flow . . . River flow . . .

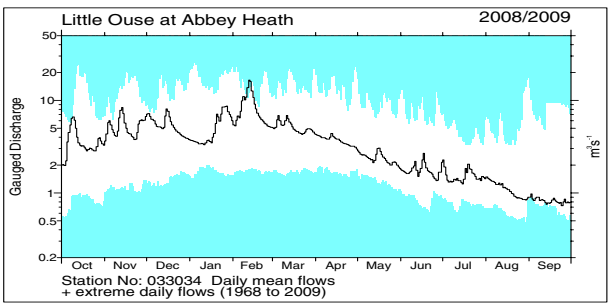


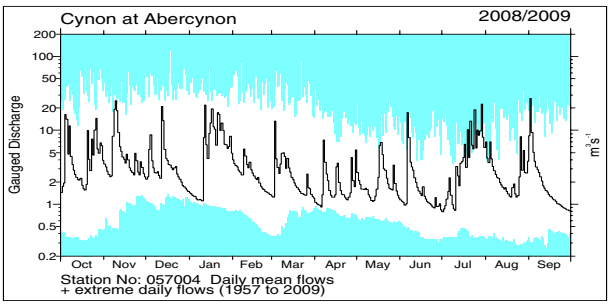



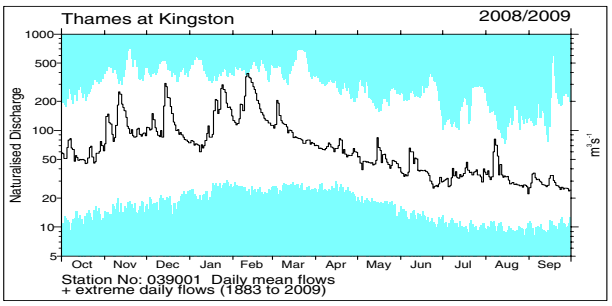



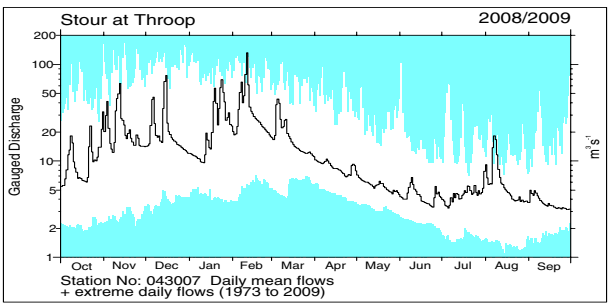



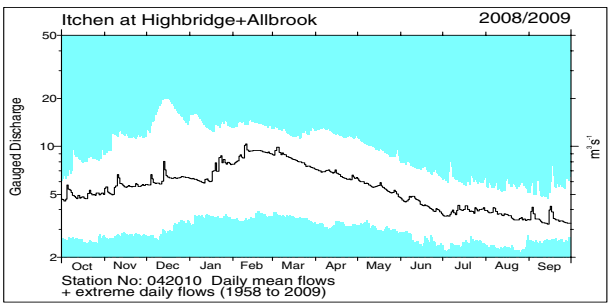




**Notable runoff accumulations (a) August - September 2009, (b) April - September 2009**

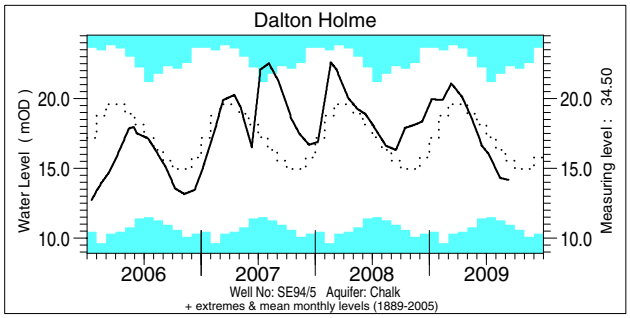
| | River | %lta | Rank |
|---|---|---|---|
| a) | Ness | 169 | 35/37 |
| | Tay | 197 | 55/57 |
| | Earn | 223 | 59/62 |
| | Whiteadder | 235 | 37/40 |
| | Dover Beck | 168 | 32/34 |
| | Little Ouse | 52 | 3/40 |
| | Colne | 54 | 5/50 |
| | Gt Stour | 65 | 5/45 |

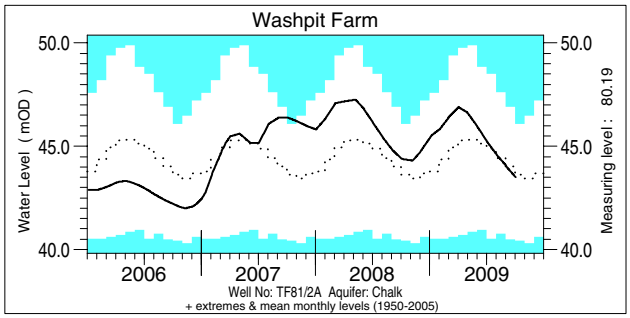
| | River | %lta | Rank |
|---|---|---|---|
| a) | Eden | 184 | 39/42 |
| | Nith | 228 | 51/52 |
| | Clyde (Blairston) | 190 | 47/50 |
| | Luss Water | 168 | 30/31 |
| | Nevis | 174 | 26/27 |
| | L Bann | 195 | 28/30 |
| | Annacloy | 189 | 27/30 |

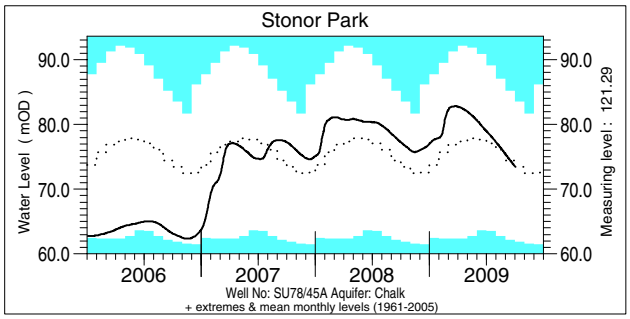
| | River | %lta | Rank |
|---|---|---|---|
| b) | Forth | 156 | 27/28 |
| | Warleggan | 138 | 37/50 |
| | Kenwyn | 159 | 39/41 |
| | Tawe | 158 | 48/51 |
| | Cree | 169 | 45/46 |
| | Camowen | 166 | 36/37 |
| | Mourne | 163 | 26/27 |

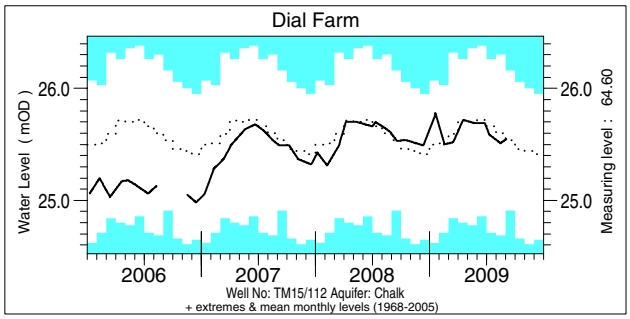
*lta = long term average*
*Rank 1 = lowest on record*

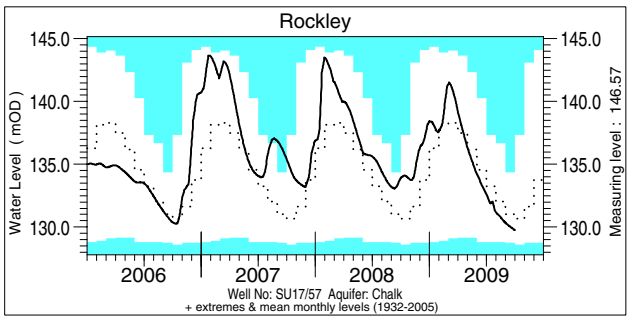
# Groundwater . . . Groundwater

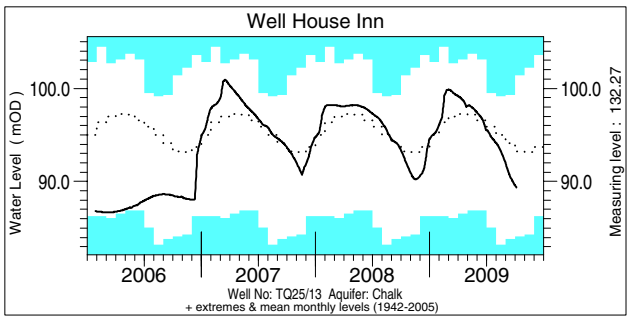


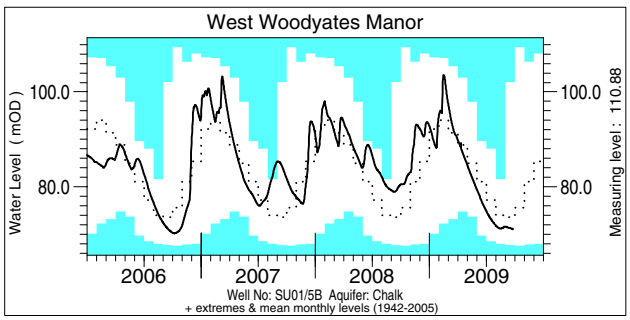



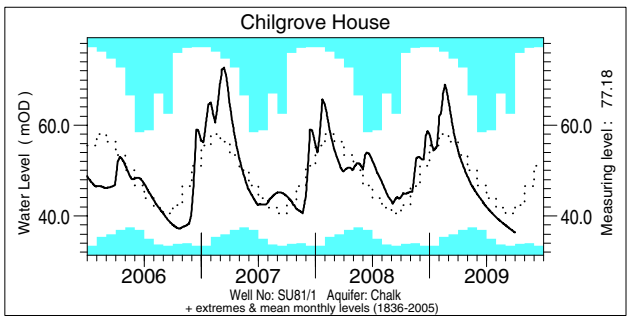



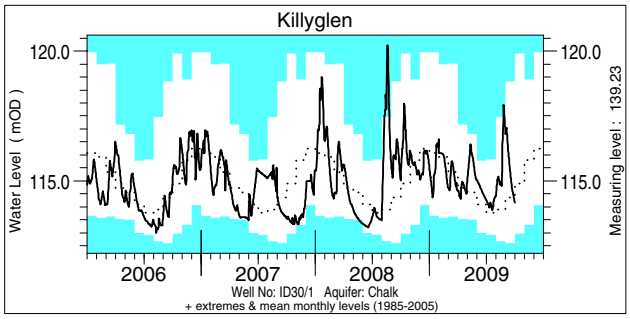



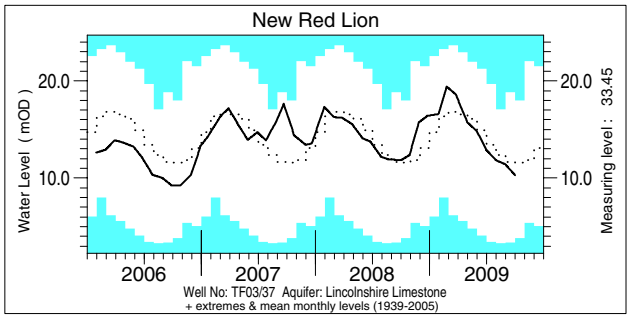



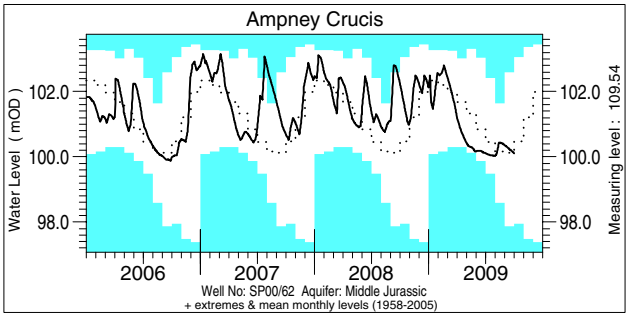



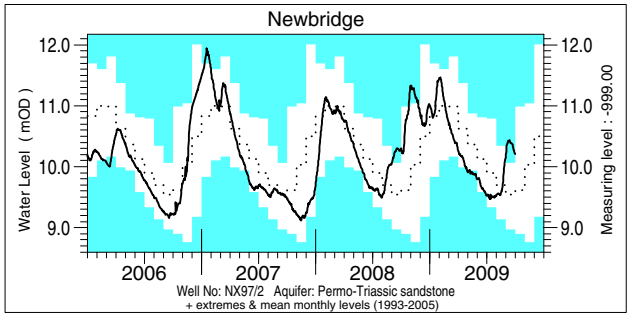



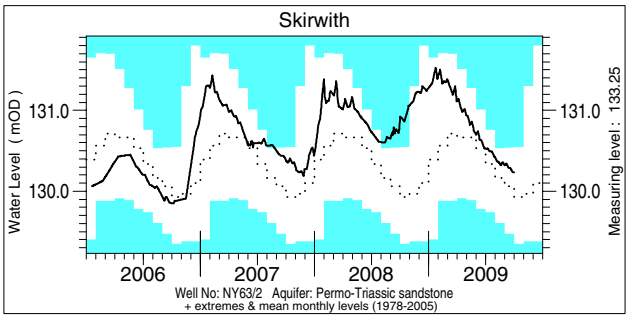



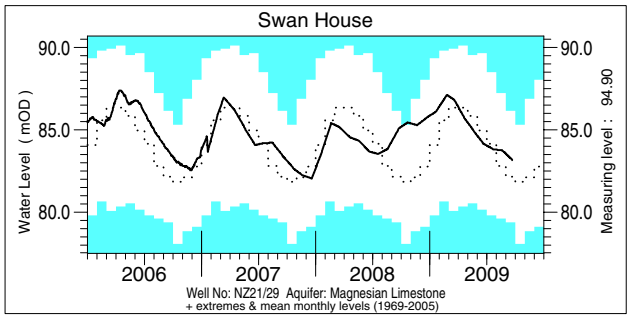

Groundwater levels normally rise and fall with the seasons, reaching a peak in the spring following replenishment through the winter (when evaporation losses are low and soil moist). They decline through the summer and early autumn. This seasonal variation is much reduced when the aquifer is confined below overlying impermeable strata. The monthly mean and the highest and lowest levels recorded for each month are displayed in a similar style to the river flow hydrographs. Note that most groundwater levels are not measured continuously – the latest recorded levels are listed overleaf.

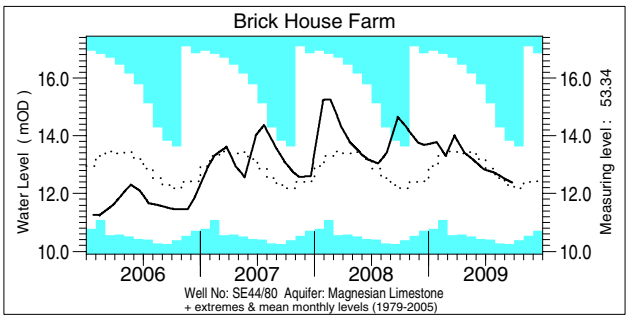
# Groundwater . . . Groundwater

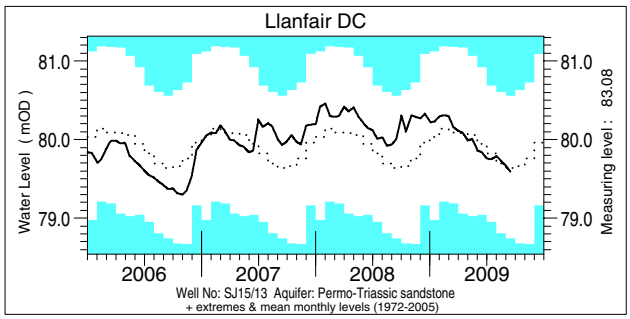


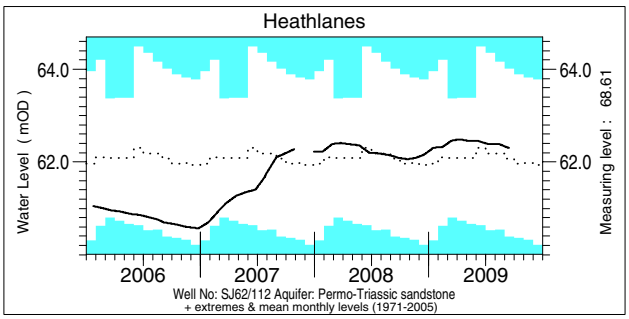



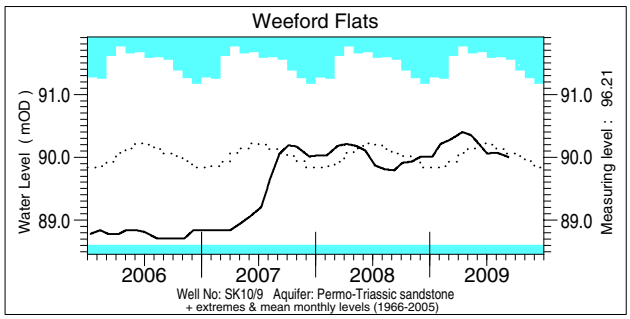



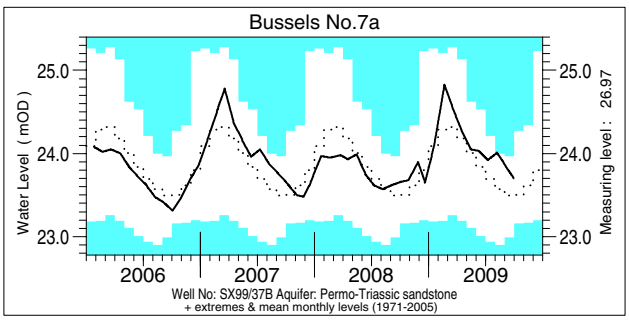



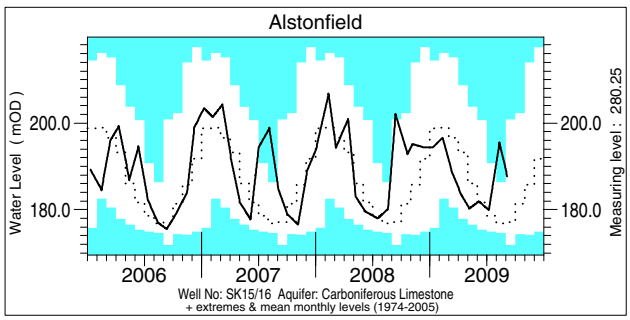



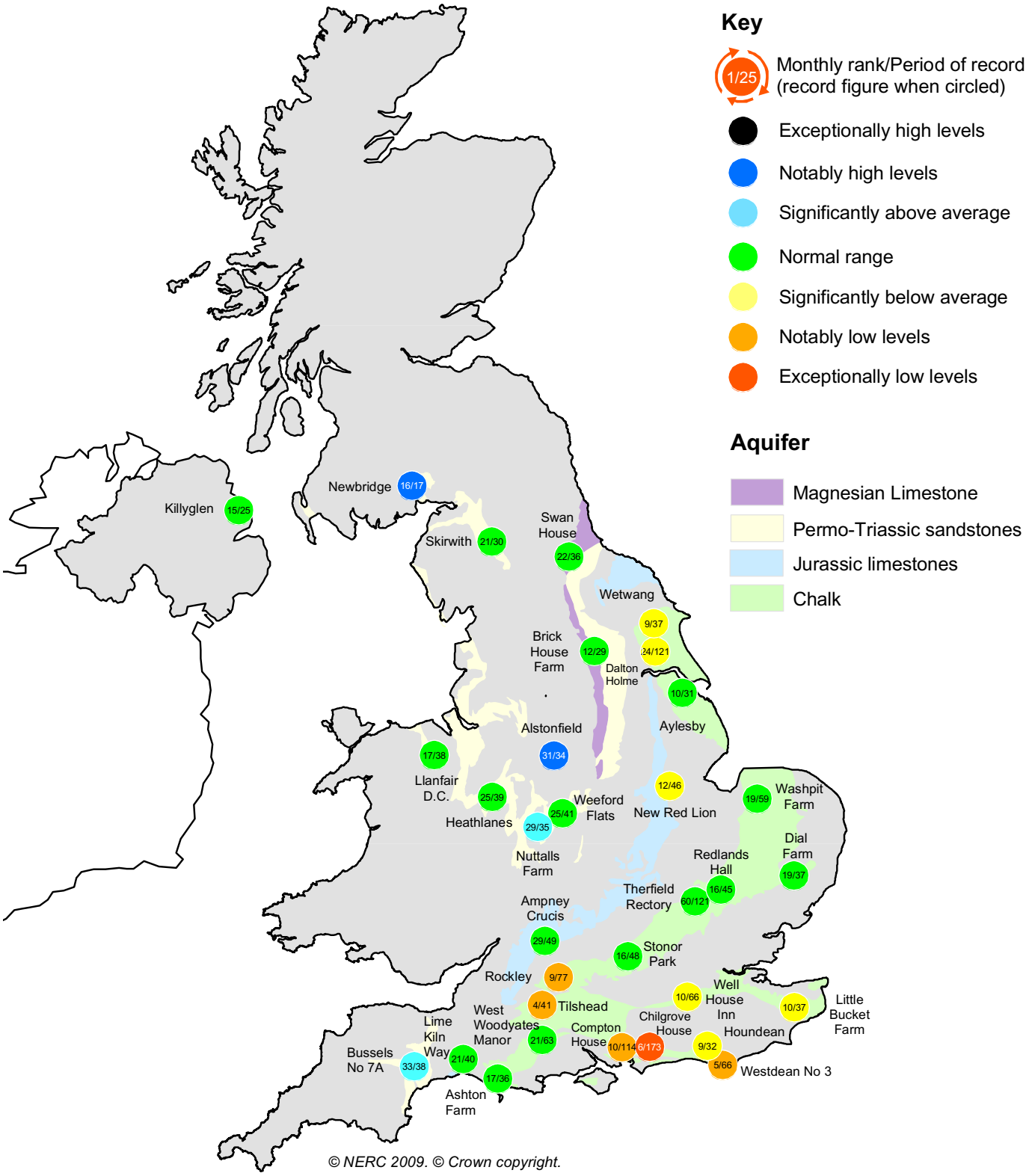

## Groundwater levels September / October 2009

| Borehole | Level | Date | Sep. av. |
|---|---|---|---|
| Dalton Holme | 14.17 | 11/09 | 15.47 |
| Washpit Farm | 43.49 | 02/10 | 44.03 |
| Stonor Park | 73.52 | 30/09 | 74.51 |
| Dial Farm | 25.55 | 03/09 | 25.55 |
| Rockley | 129.75 | 30/09 | 131.10 |
| Well House Inn | 89.35 | 05/10 | 94.00 |
| West Woodyates | 71.04 | 25/09 | 73.17 |

| Borehole | Level | Date | Sep. av. |
|---|---|---|---|
| Chilgrove House | 36.34 | 30/09 | 40.77 |
| Killyglen (NI) | 114.16 | 30/09 | 114.37 |
| New Red Lion | 10.28 | 30/09 | 11.74 |
| Ampney Crucis | 100.11 | 30/09 | 100.14 |
| Newbridge | 10.21 | 30/09 | 9.56 |
| Skirwith | 130.23 | 30/09 | 130.10 |
| Swan House | 83.15 | 21/09 | 82.48 |

| Borehole | Level | Date | Sep. av. |
|---|---|---|---|
| Brick House Farm | 12.38 | 24/09 | 12.35 |
| Llanfair DC | 79.59 | 15/09 | 79.57 |
| Heathlanes | 62.30 | 14/09 | 62.01 |
| Weeford Flats | 90.00 | 09/09 | 89.79 |
| Bussels No.7a | 23.70 | 29/09 | 23.51 |
| Alstonfield | 187.65 | 04/09 | 178.40 |

*Levels in metres above Ordnance Datum*






## Groundwater levels - September 2009

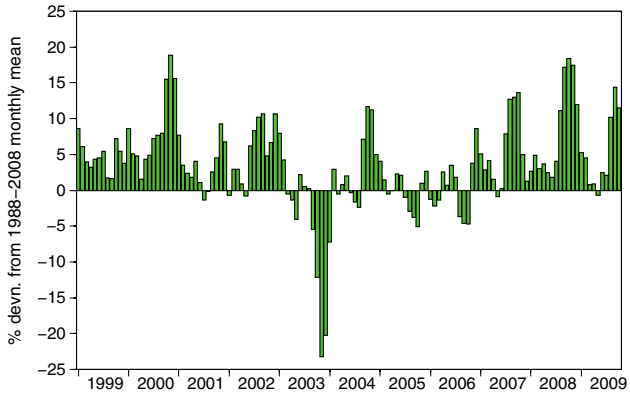
The rankings are based on a comparison between the average level in the featured month (but often only single readings are available) and the average level in each corresponding month on record. They need to be interpreted with caution especially when groundwater levels are changing rapidly or when comparing wells with very different periods of record. Rankings may be omitted where they are considered misleading.

Notes: i. The outcrop areas are coloured according to British Geological Survey conventions.

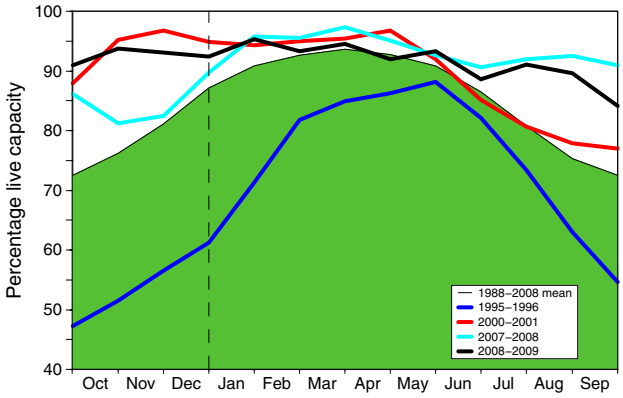
ii. Yew Tree Farm levels are now received quarterly.

# Reservoirs . . . Reservoirs . . .

## Guide to the variation in overall reservoir stocks for England and Wales




## Comparison between overall reservoir stocks for England and Wales in recent years




These plots are based on the England and Wales figures listed below.

## Percentage live capacity of selected reservoirs at start of month

| Area | Reservoir | | Capacity (Ml) | 2009 Aug | Sep | Oct | Oct Anom. | Min Oct | Year* of min | 2008 Oct | Diff 09-08 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| North West | N Command Zone | • | 124929 | 82 | 92 | **87** | 32 | 13 | 1995 | 82 | 5 |
| | Vyrnwy | | 55146 | 78 | 77 | **75** | 7 | 26 | 1995 | 91 | -16 |
| Northumbrian | Teesdale | • | 87936 | 96 | 95 | **81** | 16 | 31 | 1995 | 87 | -6 |
| | Kielder | | (199175) | (94) | (97) | **(87)** | 3 | (59) | 1989 | (89) | -2 |
| Severn Trent | Clywedog | | 44922 | 100 | 93 | **87** | 18 | 24 | 1989 | 89 | -2 |
| | Derwent Valley | • | 39525 | 84 | 79 | **76** | 12 | 24 | 1989 | 94 | -18 |
| Yorkshire | Washburn | • | 22035 | 86 | 81 | **78** | 14 | 24 | 1995 | 91 | -13 |
| | Bradford supply | • | 41407 | 84 | 79 | **76** | 11 | 15 | 1995 | 95 | -19 |
| Anglian | Grafham | | (55490) | (90) | (89) | **(84)** | 2 | (46) | 1997 | (95) | -11 |
| | Rutland | | (116580) | (81) | (78) | **(73)** | -5 | (61) | 1995 | (79) | -6 |
| Thames | London | • | 202828 | 95 | 91 | **84** | 9 | 53 | 1997 | 94 | -10 |
| | Farmoor | • | 13822 | 96 | 98 | **84** | -5 | 54 | 2003 | 94 | -10 |
| Southern | Bewl | | 28170 | 66 | 57 | **51** | -13 | 32 | 1990 | 74 | -23 |
| | Ardingly | | 4685 | 83 | 75 | **64** | -2 | 32 | 2003 | 91 | -27 |
| Wessex | Clatworthy | | 5364 | 92 | 93 | **83** | 27 | 25 | 2003 | 100 | -17 |
| | Bristol WW | • | (38666) | (86) | (74) | **(65)** | 3 | (31) | 1990 | (90) | -25 |
| South West | Colliford | | 28540 | 95 | 95 | **94** | 27 | 38 | 2006 | 100 | -6 |
| | Roadford | | 34500 | 92 | 89 | **89** | 19 | 26 | 1995 | 98 | -9 |
| | Wimbleball | | 21320 | 94 | 93 | **87** | 23 | 30 | 1995 | 100 | -13 |
| | Stithians | | 5205 | 83 | 82 | **78** | 24 | 22 | 1990 | 79 | -1 |
| Welsh | Celyn and Brenig | • | 131155 | 95 | 89 | **88** | 9 | 39 | 1989 | 97 | -9 |
| | Brianne | | 62140 | 100 | 100 | **96** | 12 | 48 | 1995 | 97 | -1 |
| | Big Five | • | 69762 | 95 | 96 | **91** | 26 | 19 | 1995 | 95 | -4 |
| | Elan Valley | • | 99106 | 100 | 98 | **96** | 21 | 34 | 1995 | 96 | 0 |
| Scotland(E) | Edinburgh/Mid Lothian | • | 97639 | 89 | 94 | **88** | 12 | 43 | 1998 | 94 | -6 |
| | East Lothian | • | 10206 | 100 | 100 | **100** | 21 | 52 | 1989 | 99 | 1 |
| Scotland(W) | Loch Katrine | • | 111363 | 82 | 100 | **94** | 22 | 43 | 1995 | 80 | 14 |
| | Daer | | 22412 | 90 | 98 | **97** | 23 | 32 | 1995 | 98 | -1 |
| | Loch Thom | • | 11840 | 95 | 96 | **95** | 16 | 56 | 1995 | 96 | -1 |
| Northern Ireland | Total⁺ | • | 56920 | 93 | 96 | **91** | 20 | 29 | 1995 | 90 | 1 |
| | Silent Valley | • | 20634 | 93 | 97 | **92** | 28 | 27 | 1995 | 96 | -4 |

() figures in parentheses relate to gross storage • denotes reservoir groups ⁺excludes Lough Neagh *last occurrence

Details of the individual reservoirs in each of the groupings listed above are available on request. The percentages given in the Average and Minimum storage columns relate to the 1988-2008 period except for West of Scotland and Northern Ireland where data commence in the mid-1990's. In some gravity-fed reservoirs (e.g. Clywedog) stocks are kept below capacity during the winter to provide scope for flood attenuation purposes.
The Northern Ireland total⁺ has been revised to 56920 Ml as of September 2009.

# Location map . . . Location map

## National Hydrological Monitoring Programme

The National Hydrological Monitoring Programme (NHMP) was instigated in 1988 and is undertaken jointly by the Centre for Ecology and Hydrology Wallingford (formerly the Institute of Hydrology - IH) and the British Geological Survey (BGS). Financial support for the production of the monthly Hydrological Summaries is provided by the Department for Environment, Food and Rural Affairs (Defra), the Environment Agency (EA), the Scottish Environment Protection Agency (SEPA), the Rivers Agency (RA) in Northern Ireland, and the Office of Water Services (OFWAT).

## Data Sources

River flow and groundwater level data are provided by the Environment Agency, the Environment Agency Wales, the Scottish Environment Protection Agency and, for Northern Ireland, the Rivers Agency and the Northern Ireland Environment Agency. In all cases the data are subject to revision following validation (flood and drought data in particular may be subject to significant revision). Reservoir level information is provided by the Water Service Companies, the EA, Scottish Water and Northern Ireland Water.

The National River Flow Archive (maintained by CEH Wallingford) and the National Groundwater Level Archive (maintained by BGS) provide the historical perspective within which to examine contemporary hydrological conditions.

## Rainfall

Most rainfall data are provided by the Met Office (see opposite). To allow better spatial differentiation the rainfall data for Britain are presented for the regional divisions of the precursor organisations of the EA and SEPA. Following the discontinuation of the Met Office's CARP system in July 1998, the areal rainfall figures have been derived using several procedures, including initial estimates based on MORECS*. Recent figures have been produced by the Met Office, National Climate Information Centre (NCIC), using a technique similar to CARP. A significant number of additional monthly raingauge totals are provided by the EA and SEPA to help derive the contemporary regional rainfalls. Revised monthly national and regional rainfall totals for the post-1960 period (together with revised 1961-90 averages) were made available by the Met Office in 2004; these have been adopted by the NHMP. As with all regional figures based on limited raingauge networks the monthly tables and accumulations (and the return periods associated with them) should be regarded as a guide only.

The monthly rainfall figures are provided by the Met Office (National Climate Information Centre) and are Crown Copyright and may not be passed on to, or published by, any unauthorised person or organisation.

*MORECS is the generic name for the Met Office services involving the routine calculation of evaporation and soil moisture throughout Great Britain.

For further details please contact:

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EX1 3PB

Tel.: 0870 900 0100 Fax: 0870 900 5050
E-mail: enquiries@metoffice.com

*The National Hydrological Monitoring Programme depends on the active cooperation of many data suppliers. This cooperation is gratefully acknowledged.*

## Subscription

Subscription to the Hydrological Summaries costs £48 per year. Orders should be addressed to:

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Maclean Building
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OX10 8BB

Tel.: 01491 838800
Fax: 01491 692424
E-mail: nrfa@ceh.ac.uk

Selected text and maps are available on the WWW at
http://www.nerc-wallingford.ac.uk/ih/nrfa/index.htm
Navigate via Water Watch



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