Hydrological Summary

for the United Kingdom

General

July was warm, sometimes hot, but often unsettled with localised heavy rain. High temperatures (on the 1st and from 9th-14th) contributed to the fifth warmest July for the UK (in a series from 1890). Rainfall was below average in south Wales and the south-west and, like each month so far in 2025 except June, for the UK as a whole. River flows remained above average in the north-west, but elsewhere, many were below normal or low. Soils remained very dry in the south with impacts on crop yields, and groundwater levels in most of the UK continued to decline, with the majority within the normal to notably low range. Reservoir stocks fell and, except in Northern Ireland, remained in deficit at the national scale (8%, 19% and 7% below average for Scotland, Wales and England, respectively). Whilst there was modest recovery at a few reservoirs in the north (e.g. Kielder Water), many elsewhere saw deficits increase, and stocks were more than 20% below their July average at some notably widespread locations (e.g. Washburn, Derwent Valley, Elan Valley, Ardingly). Drought status was declared for the East Midlands and West Midlands on the 15th, and remained in place for north-west England and Yorkshire. Whilst north-west Britain continued unsettled into August, the Hydrological Outlook for August-October is that below normal flows are likely to persist in many areas, particularly in south Wales and central and southern England. In these areas, and others that have so far missed much of the summer rainfall or where groundwater levels are low, above average rainfall is needed into the autumn months to ease pressures on water resources.

July 2025

Rainfall

July was warm but variable, with high temperatures interspersed with downpours and surface water flooding. It began hot and dry in the south, before westerly systems combined with thundery showers to bring heavy rain from 2nd-6th. Surface water flooding caused travel disruption in Cheshire, Staffordshire and Kent. High pressure building from 7th intensified into a period of prolonged high temperatures, and wildfires were reported in West Yorkshire, Surrey, Essex and east London between 9th-15th. Turning unsettled, there were heavy showers in the north and west on 14th-15th, and frontal rain across much of the country on the 19th and in Scotland and Northern Ireland on 21st (causing travel disruption on roads and rail in Enniskillen, Northern Ireland and the Scottish Highlands on the 21st/22nd). The high energy mixture of sunshine and intense downpours continued to month-end, causing localised surface water flooding in the south (including inundated properties on the Isle of Wight on the 31st). Total July rainfall was 90% of average, with deficits in Wales and the south-west (30-70% of average) and in parts of Kent, >170% of average. Accordingly, Wales, Wessex and South West regions were the driest (with <60% of average), and Southern the wettest (with 134% of average). The summer months so far (June-July) saw above average rainfall for north-west regions (e.g. >120% of average for Highland and North West England regions), whilst deficits remained across all regions across the spring and summer so far (March-July) making this period, with 73% of average rainfall for the UK, comparable with notable drought years 1976 and 2022 (but not as dry as 1984).

River Flows

River flows in July were often below normal, but with successive peaks above average in response to rainfall in the more responsive catchments. There were widespread increases during the first week (peaking between 3rd and 6th), and in Wales and the south-west the recessions that followed continued to month-end. Flows again rose above average from 14th-16th (except in Northern Ireland), more widely from 19th-22nd, and in western Scotland from 26th-27th. Thereafter, flows receded to month-end except in the south of England, where there were sharp responses to downpours on the 31st (e.g. Mole). In most groundwater-dominated catchments, flows were below average and receded throughout the month. July mean flows were average or above average in the north-west of the UK. Elsewhere, they were average or below average, with many in Wales, the Midlands and southern England notably or exceptionally low (e.g. Colne, Tone) including those dependent on groundwater (e.g Stringside, Coln). In south Wales, river flows were a third or less of their monthly averages, with the Wye the lowest for July in a long series from 1937 (comparable with 1976). River flows in the north-west for the summer so far were normal or above normal (the Cumbrian Derwent and Leven recording more than twice their June-July averages), contrasting with the notably and exceptionally low flows persisting in central and eastern rivers (the Yorkshire Derwent recording its lowest June-July flows in a series from 1974). Similarly low flows, widespread since the spring (March-July), included new minima for large catchments in the north-east and the Midlands (the Scottish Dee in a long series from 1929, and Tweed, English Tyne and Aire, all in series of 60 years or more). Accordingly, outflows for Great Britain across these five months were the lowest on record (in a series from 1961).

Soil Moisture and Groundwater

Soil moisture deficits remained high in central and southern England. Groundwater levels in the Chalk of southern England continued to decrease throughout July. Falling levels entered the notably low range at West Woodyates Manor, Ashton Farm, Tilshead, and Chilgrove House, and reached exceptionally low levels at Compton House. Westdean No.3 was the only index borehole located in the chalk that recorded a rise in groundwater levels in July. In East Yorkshire and Lincolnshire, levels continued to recede, falling from normal into the notably low range at Wetwang and Dalton Holme. At Killyglen, levels remained notably low while continuing to fall. In East Anglia, levels remained relatively stable, with normal to below normal conditions persisting. In the Jurassic Limestone, levels gradually decreased and moved into the notably low range at Ampney Crucis. Levels in the Magnesian Limestone gradually decreased, but with Aycliffe remaining in the normal range. Levels in the Carboniferous Limestone continued to decrease in England and Wales, with Pant y Lladron and Alstonfield seeing record low levels for July (in records of at least 30 years). In the Permo-Triassic Sandstones, levels fell slightly and conditions changed from exceptionally high to notably high at Weir Farm and remained above normal at Llanfair. At Bussels No. 7a and Skirwith, levels continued to decrease but remained in the normal range. In the Fell Sandstone at Royalty Observatory, levels decreased slightly but remained within the normal range. At Easter Lathrisk in the Devonian Sandstone, levels remained in the notably low range despite continued falling levels.

National Hydrological Monitoring Programme | UK Centre for Ecology & Hydrology | BGS British Geological Survey

Rainfall . . . Rainfall . . .

Met Office

Rainfall accumulations and return period estimates

Percentages are from the 1991-2020 average.

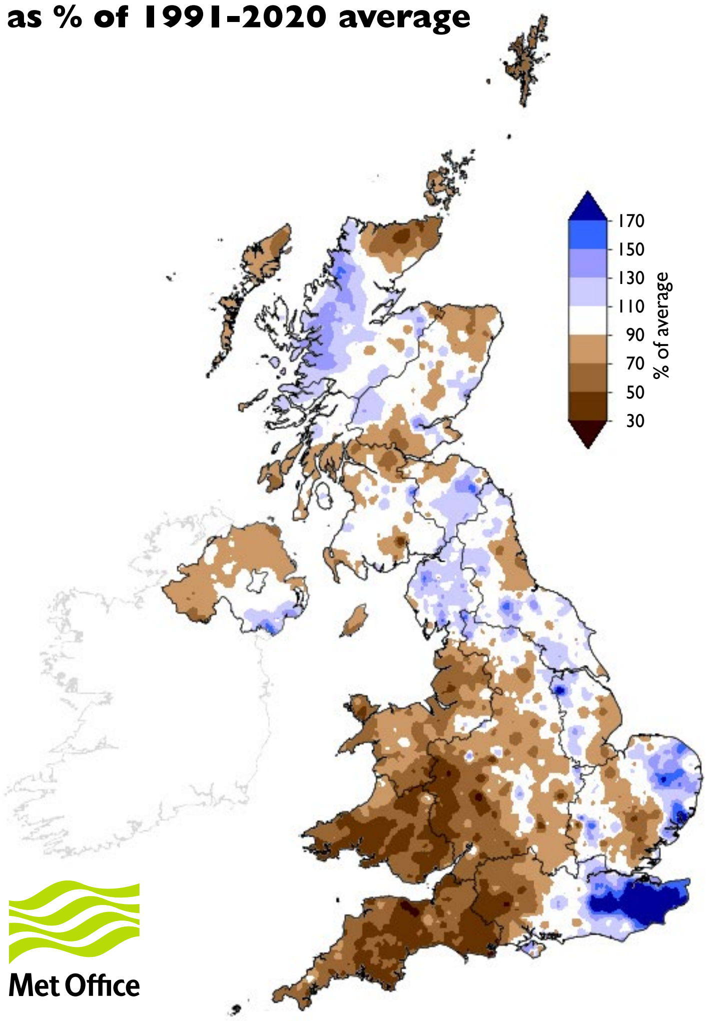
Region	Rainfall	Jul 2025	Jun25 – Jul25	RP	Mar25 – Jul25	RP	Oct24 – Jul25	RP	Aug24 – Jul25	RP
United	mm	**74**	154		282		795		1016	
Kingdom	%	**90**	96	2-5	73	20-30	82	5-10	88	2-5
England	mm	**59**	111		187		584		768	
	%	**89**	84	2-5	62	40-60	81	5-10	89	2-5
Scotland	mm	**103**	215		419		1093		1370	
	%	**99**	109	2-5	83	2-5	82	2-5	87	2-5
Wales	mm	**58**	172		318		1026		1290	
	%	**59**	90	2-5	68	15-25	83	2-5	89	2-5
Northern	mm	**80**	184		352		756		950	
Ireland	%	**89**	108	2-5	87	2-5	78	10-20	82	10-15
England &	mm	**59**	119		205		644		839	
Wales	%	**83**	85	2-5	63	40-60	81	5-10	89	2-5
North West	mm	**95**	238		362		910		1183	
	%	**97**	129	5-10	86	2-5	86	2-5	93	2-5
Northumbria	mm	**74**	132		204		548		687	
	%	**100**	89	2-5	63	30-50	73	15-25	76	15-25
Severn-Trent	mm	**50**	87		156		525		710	
	%	**75**	65	2-5	52	80-120	78	5-10	89	2-5
Yorkshire	mm	**69**	110		182		530		679	
	%	**101**	78	2-5	58	60-90	73	15-25	78	8-12
Anglian	mm	**55**	81		132		391		519	
	%	**99**	73	2-5	55	30-50	76	10-15	83	5-10
Thames	mm	**49**	79		128		482		689	
	%	**91**	75	2-5	50	40-60	79	5-10	95	2-5
Southern	mm	**70**	106		161		580		778	
	%	**134**	100	2-5	62	15-25	84	2-5	95	2-5
Wessex	mm	**31**	75		142		636		865	
	%	**50**	62	5-10	47	80-120	83	2-5	96	2-5
South West	mm	**44**	137		302		972		1175	
	%	**53**	86	2-5	76	5-10	91	2-5	94	2-5
Welsh	mm	**56**	164		304		991		1253	
	%	**59**	89	2-5	67	20-30	84	2-5	90	2-5
Highland	mm	**119**	250		500		1382		1699	
	%	**110**	120	5-10	86	2-5	88	2-5	92	2-5
North East	mm	**77**	135		251		710		863	
	%	**93**	83	2-5	67	30-50	80	10-15	81	15-25
Tay	mm	**99**	181		347		905		1100	
	%	**102**	98	2-5	76	5-10	77	5-10	79	8-12
Forth	mm	**77**	167		325		764		970	
	%	**82**	93	2-5	78	5-10	73	10-15	78	5-10
Tweed	mm	**95**	190		295		681		851	
	%	**111**	116	5-10	79	5-10	75	8-12	78	8-12
Solway	mm	**105**	238		421		1031		1353	
	%	**95**	115	2-5	83	2-5	78	5-10	86	2-5
Clyde	mm	**120**	261		525		1245		1623	
	%	**95**	112	5-10	89	2-5	78	2-5	86	2-5

% = percentage of 1991-2020 average *RP = Return period*

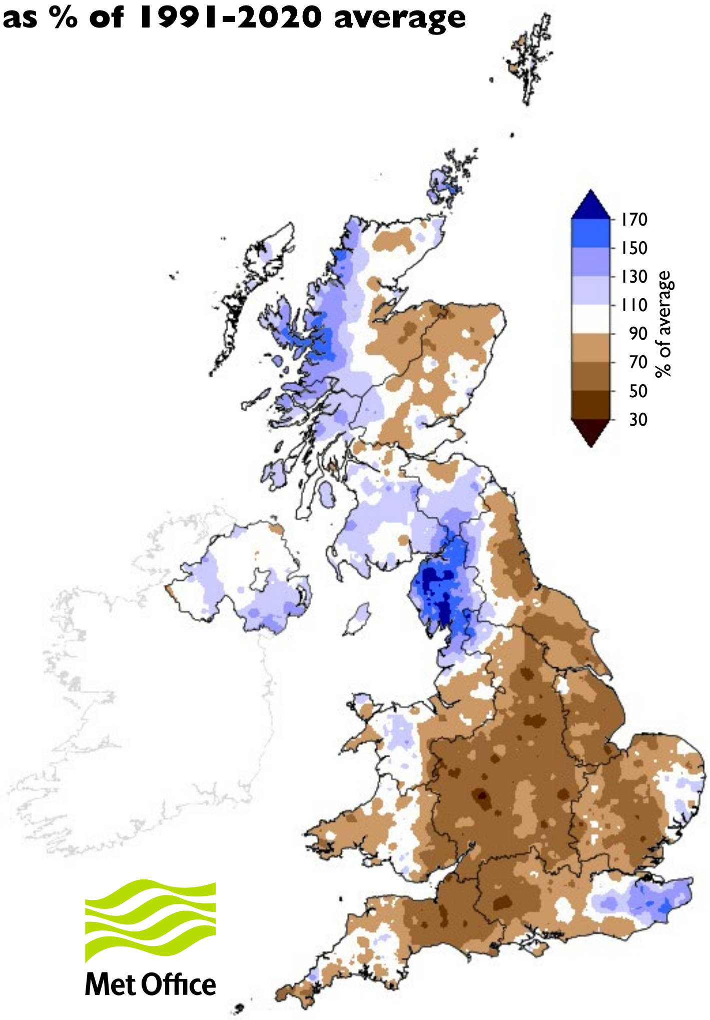
Important note: Figures in the above table may be quoted provided their source is acknowledged. Where appropriate, specific mention must be made of the uncertainties associated with the return period estimates. The RP estimates are based on data provided by the Met Office and reflect climatic variability since 1890; they also assume a stable climate. The quoted RPs relate to the specific timespans only; for the same timespans, but beginning in any month the RPs would be substantially shorter. 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. Note that precipitation totals in winter months may be underestimated due to snowfall undercatch. All monthly rainfall totals since January 2025 are provisional. Source: Data from HadUK-Grid dataset at 1km resolution v1.3.1.0.

Rainfall . . . Rainfall . . .

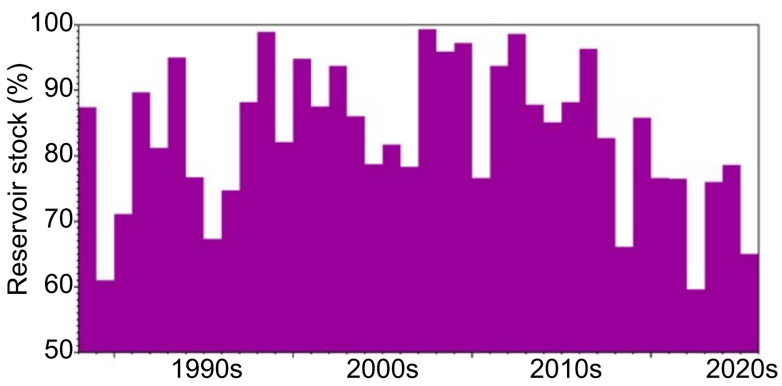
July 2025 rainfall as % of 1991-2020 average



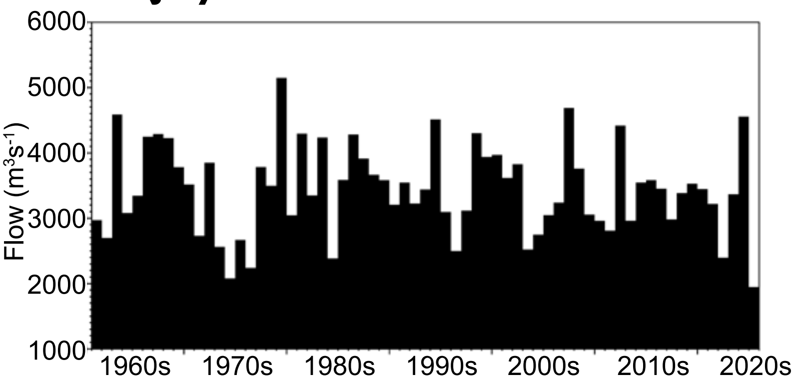
June 2025 - July 2025 rainfall as % of 1991-2020 average



End of July reservoir stocks for Wales



March - July mean outflows for Great Britain



UK Hydrological Outlook

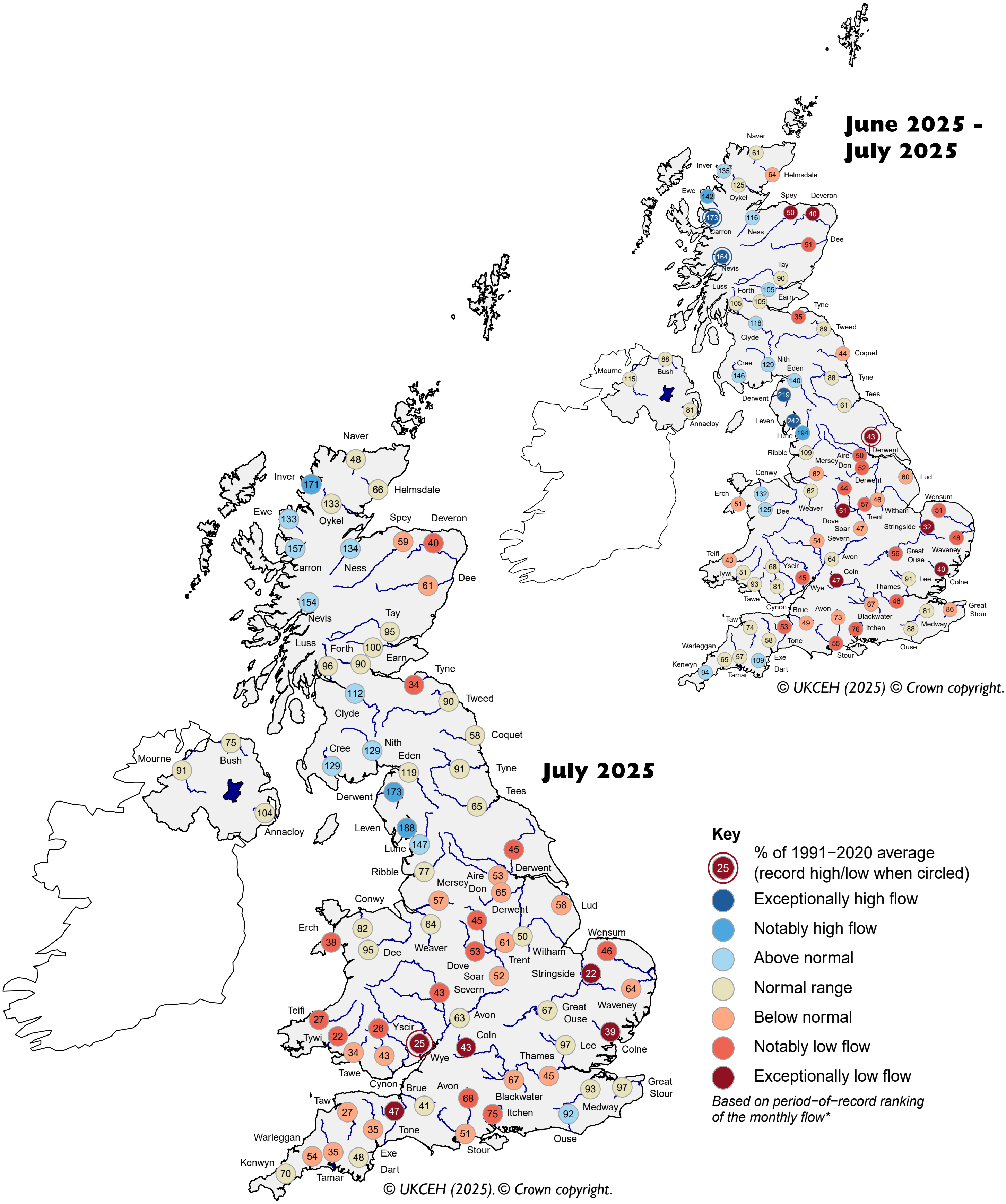
The Hydrological Outlook provides an insight into future hydrological conditions across the UK. Specifically it describes likely trajectories for river flows and groundwater levels on a monthly basis, with particular focus on the next three months.

The complete version of the Hydrological Outlook UK can be found at: www.hydoutuk.net/latest-outlook/

Period: **from August 2025**
Issued: **11.08.2025**
using data to the end of July 2025

The outlook for August indicates normal to below normal flows across eastern Scotland and north-east England, and below normal to low flows for south Wales and central and southern England. In northwestern areas, flows are likely to be normal to above normal. The August-October outlook suggests a similar geographical pattern with the continuation of below normal to low flows in central and southern England, and normal to above normal flows elsewhere. Normal to below normal groundwater levels are likely to persist through both August and the August-October period.

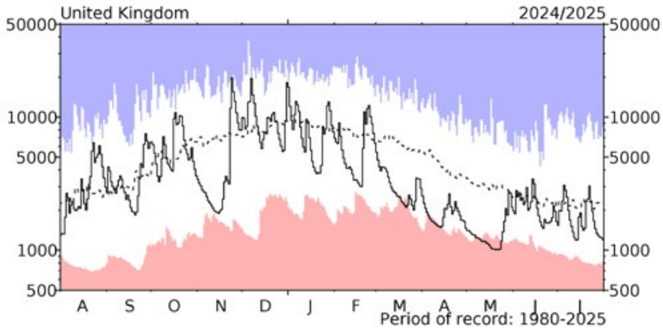
River flow . . . River flow . . .

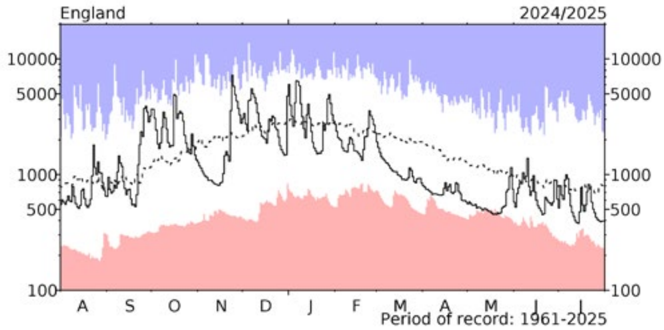


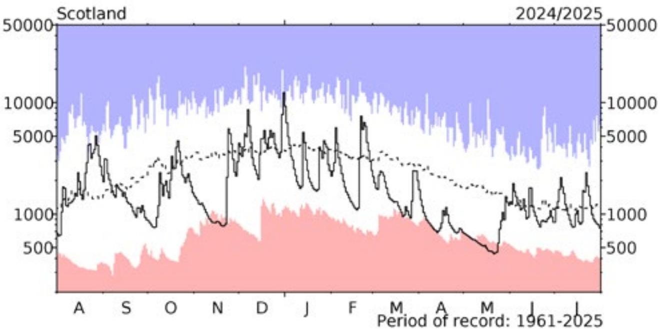
River flows

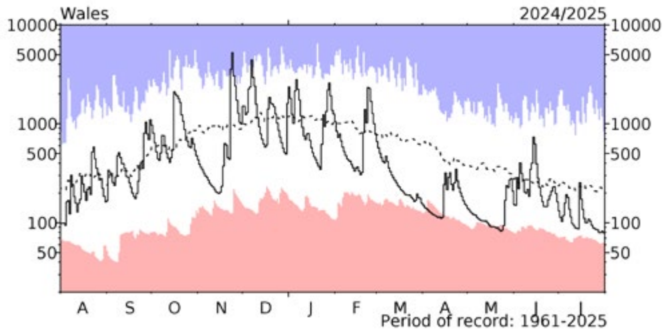
*Comparisons based on percentage flows alone can be misleading. A given percentage flow can represent extreme drought conditions in permeable catchments where flow patterns are relatively stable but be well within the normal range in impermeable catchments where the natural variation in flows is much greater. The categories of the spots are based on the full period-of-record data whereas the percentages are based on the 1991-2020 averaging period for consistency between rainfall and river flows. Percentages may be omitted where flows are under review.

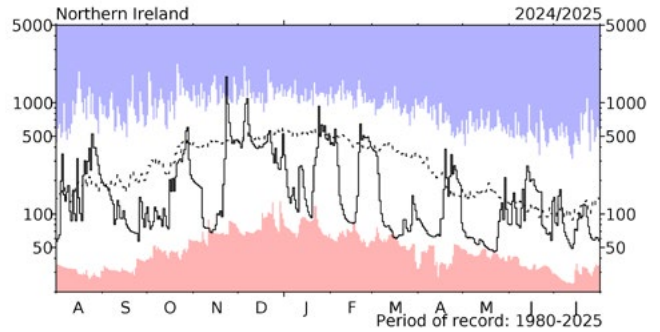
River flow . . . River flow . . .

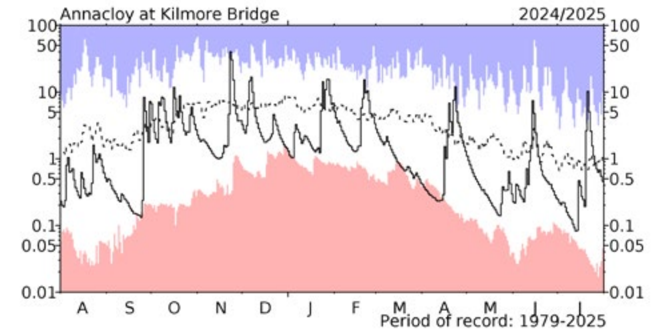


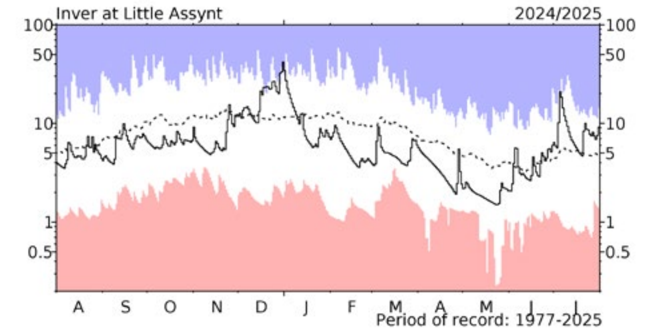


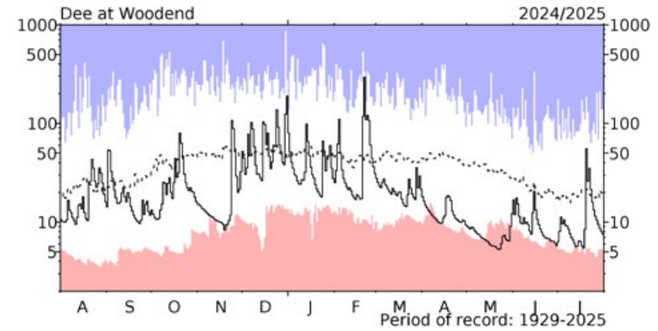


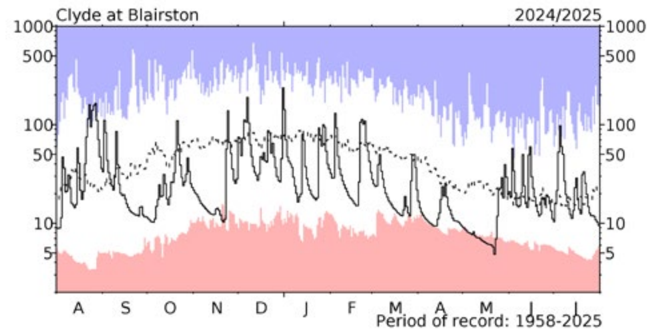


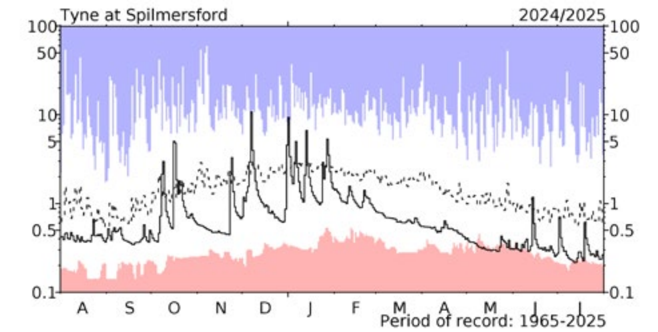








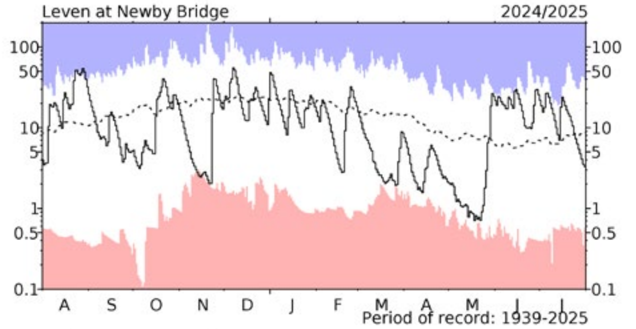


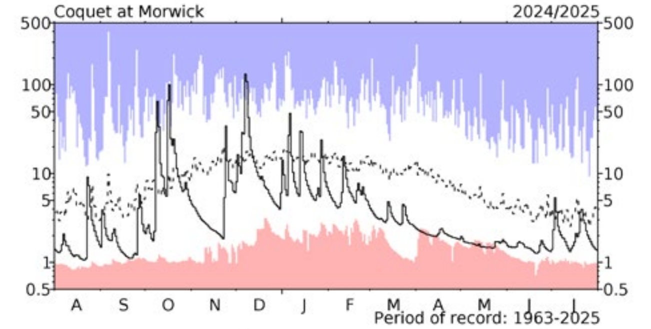


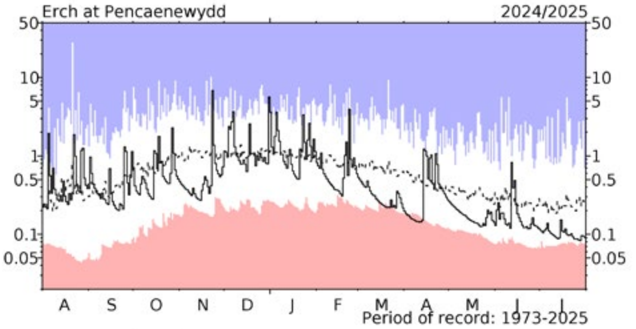
River flow hydrographs

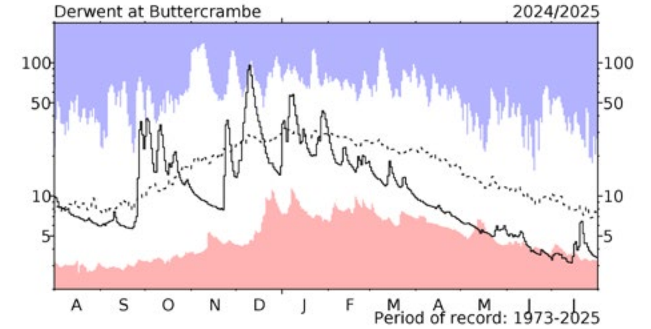
*The river flow hydrographs show the daily mean flows (measured in m^3s^{-1}) together with the maximum and minimum daily flows prior to January 2024 (shown by the shaded areas). Daily flows falling outside the maximum/minimum range are indicated where the bold trace enters the shaded areas. The dashed line represents the period-of-record average daily flow.

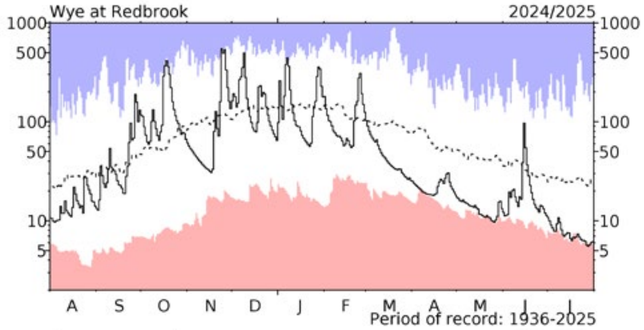
River flow . . . River flow . . .

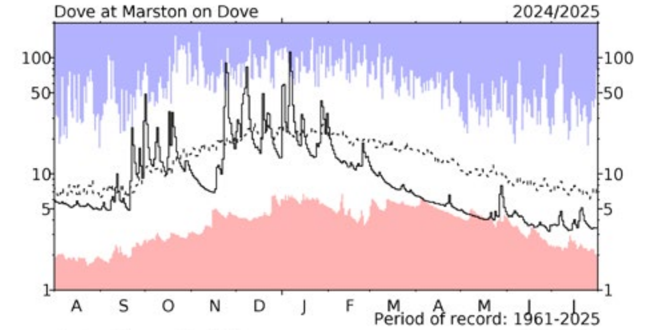


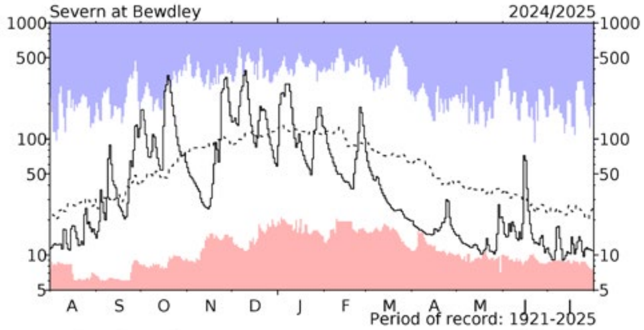


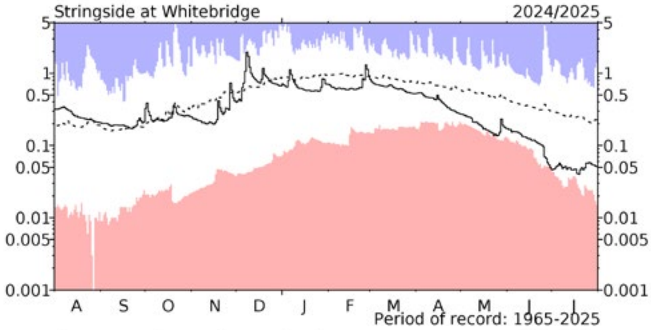


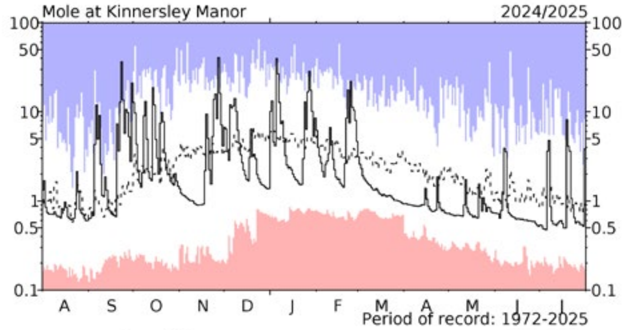


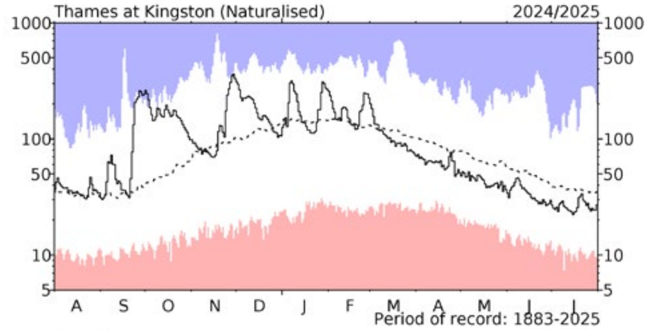


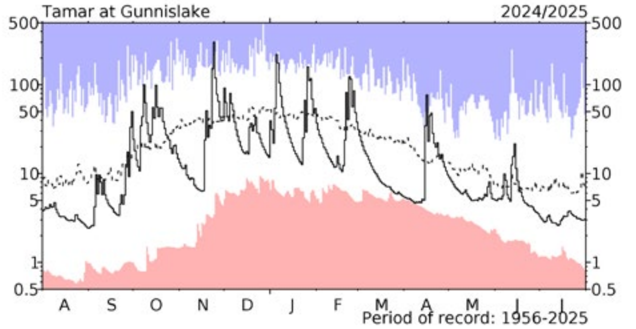


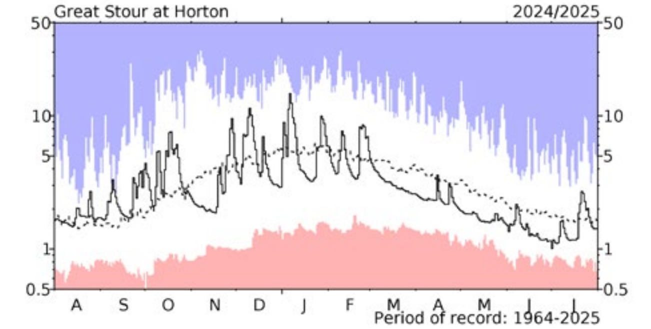




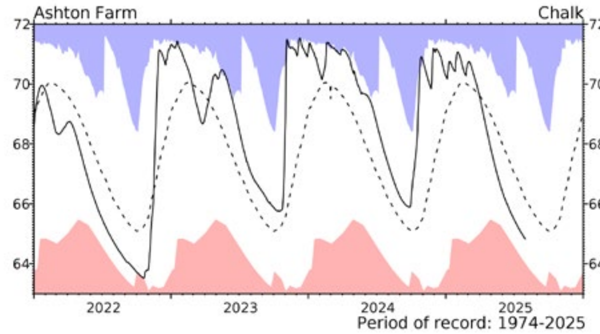


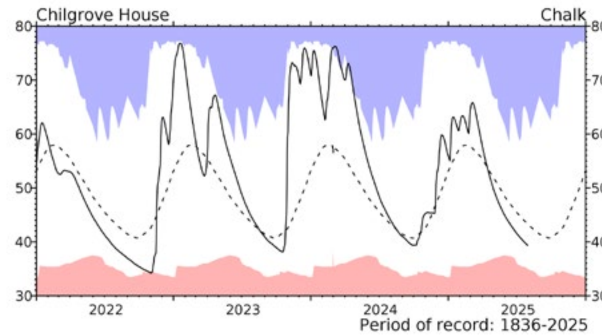


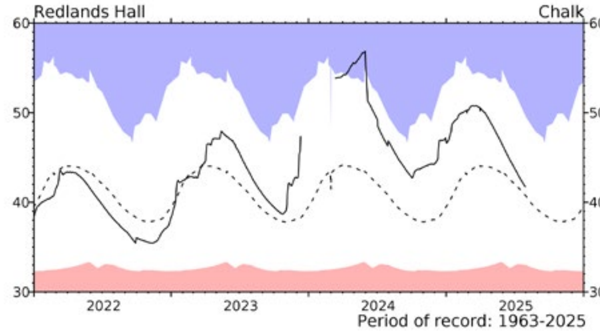


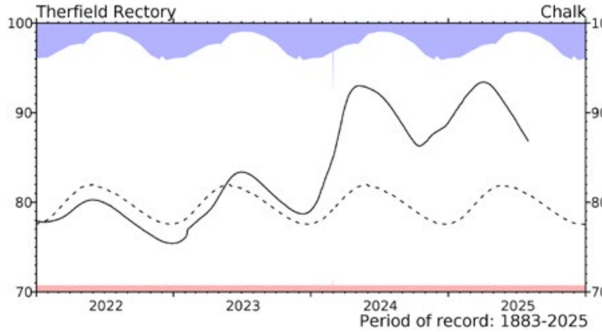


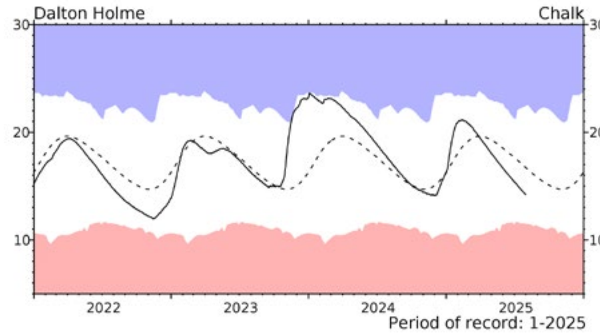
Groundwater . . . Groundwater

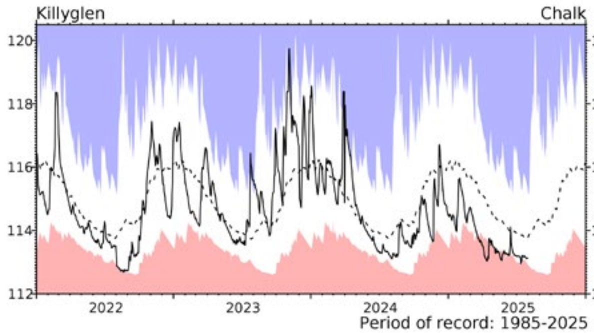


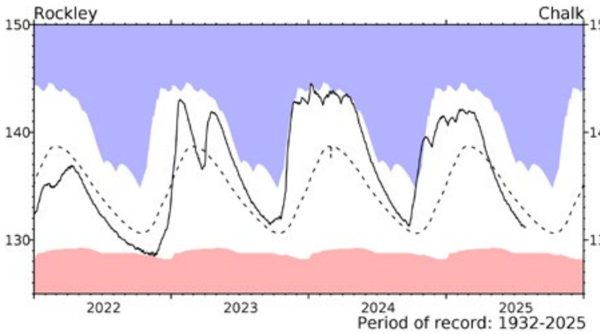


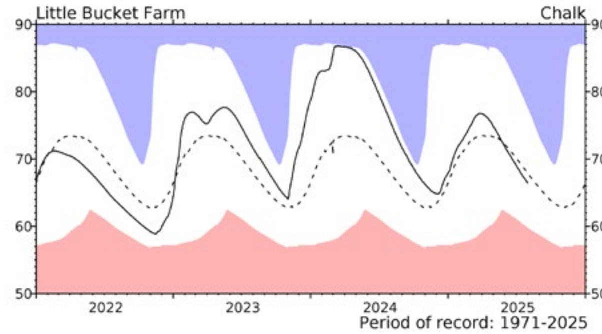


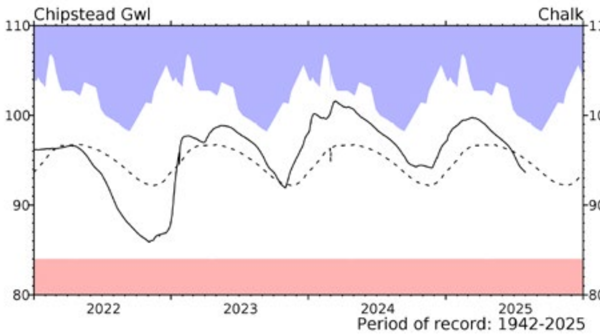


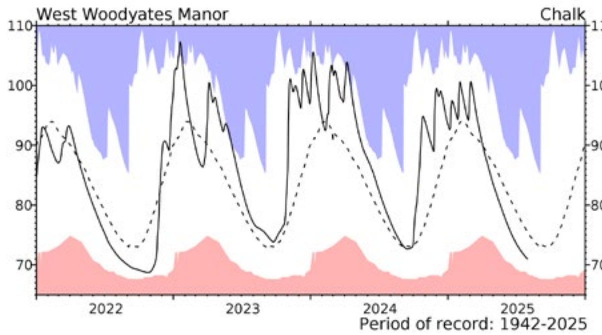




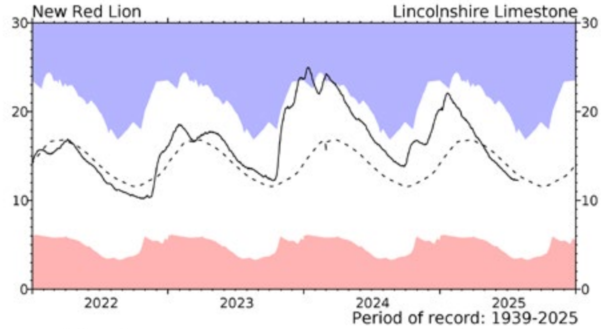


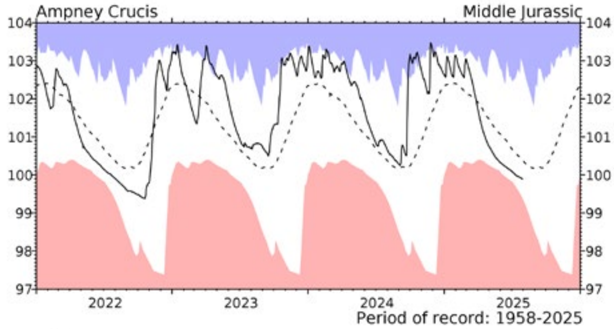


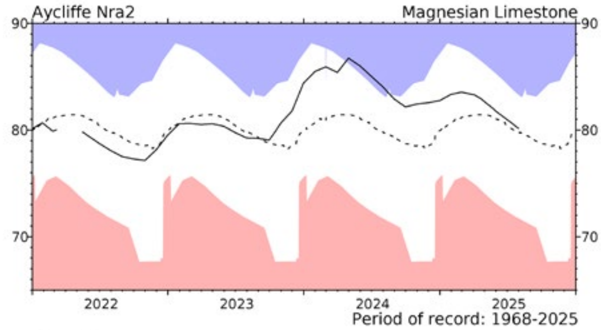


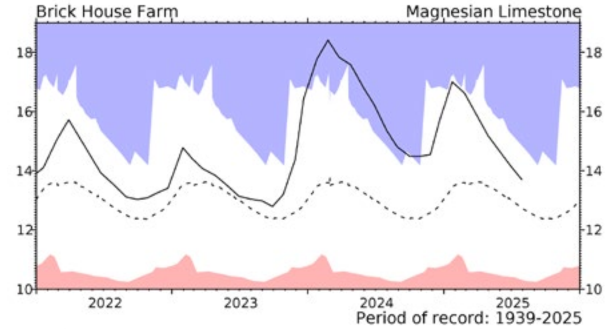


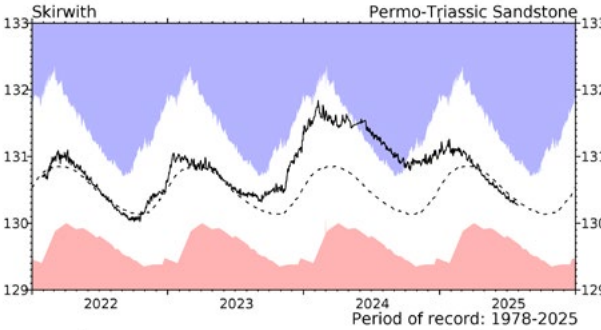
Groundwater levels (measured in metres above ordnance datum) normally rise and fall with the seasons, reaching a peak in the spring following replenishment through the winter (when evaporation losses are low and soil moist). They decline through the summer and early autumn. This seasonal variation is 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 calculated with data from the start of the record to the end of 2021. Note that most groundwater levels are not measured continuously and, for some index wells, the greater frequency of contemporary measurements may, in itself, contribute to an increased range of variation.

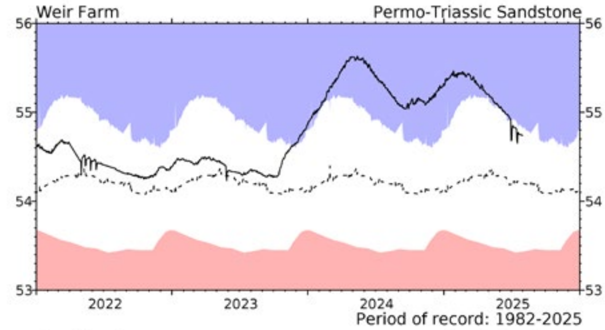

New Red Lion
Lincolnshire Limestone
2022
2023
2024
2025
Period of record: 1939-2025

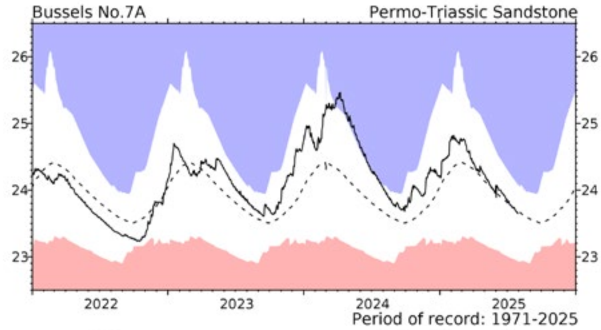

Ampney Crucis
Middle Jurassic
2022
2023
2024
2025
Period of record: 1958-2025

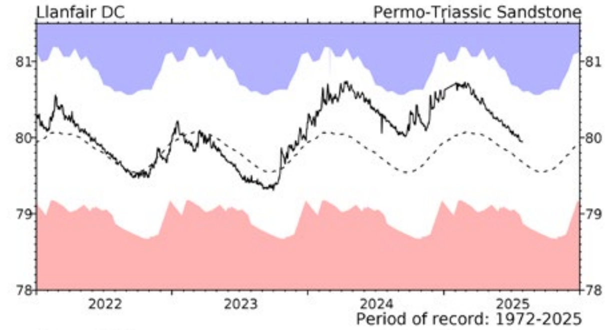

Aycliffe Nra2
Magnesian Limestone
2022
2023
2024
2025
Period of record: 1968-2025

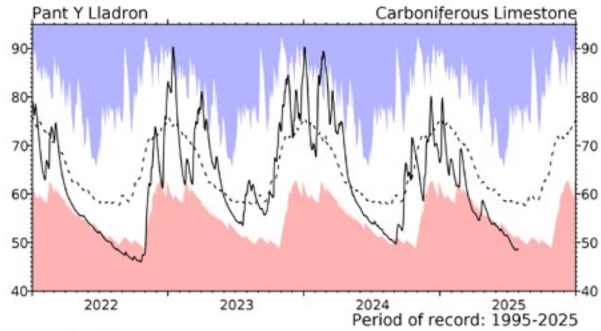

Brick House Farm
Magnesian Limestone
2022
2023
2024
2025
Period of record: 1939-2025

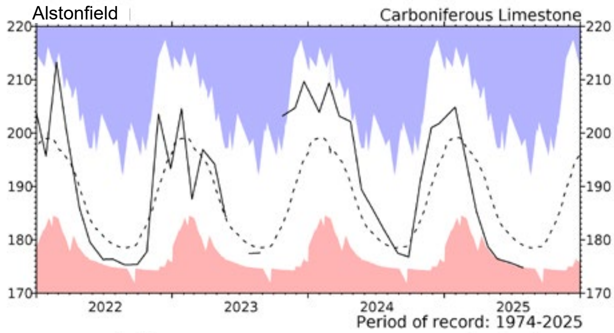

Skirwith
Permo-Triassic Sandstone
2022
2023
2024
2025
Period of record: 1978-2025

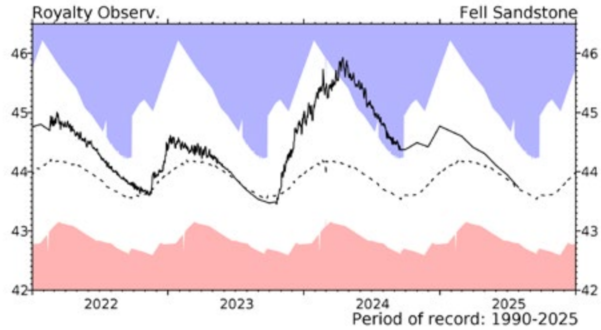

Weir Farm
Permo-Triassic Sandstone
2022
2023
2024
2025
Period of record: 1982-2025

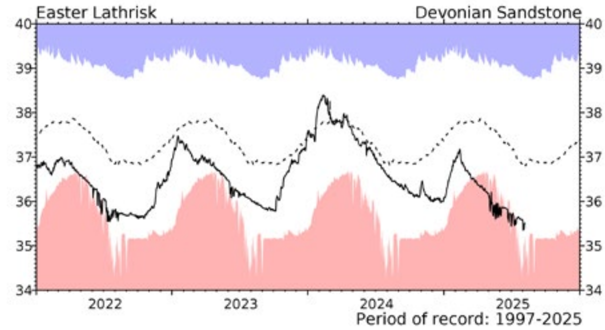

Bussels No.7A
Permo-Triassic Sandstone
2022
2023
2024
2025
Period of record: 1971-2025


Llanfair DC
Permo-Triassic Sandstone
2022
2023
2024
2025
Period of record: 1972-2025

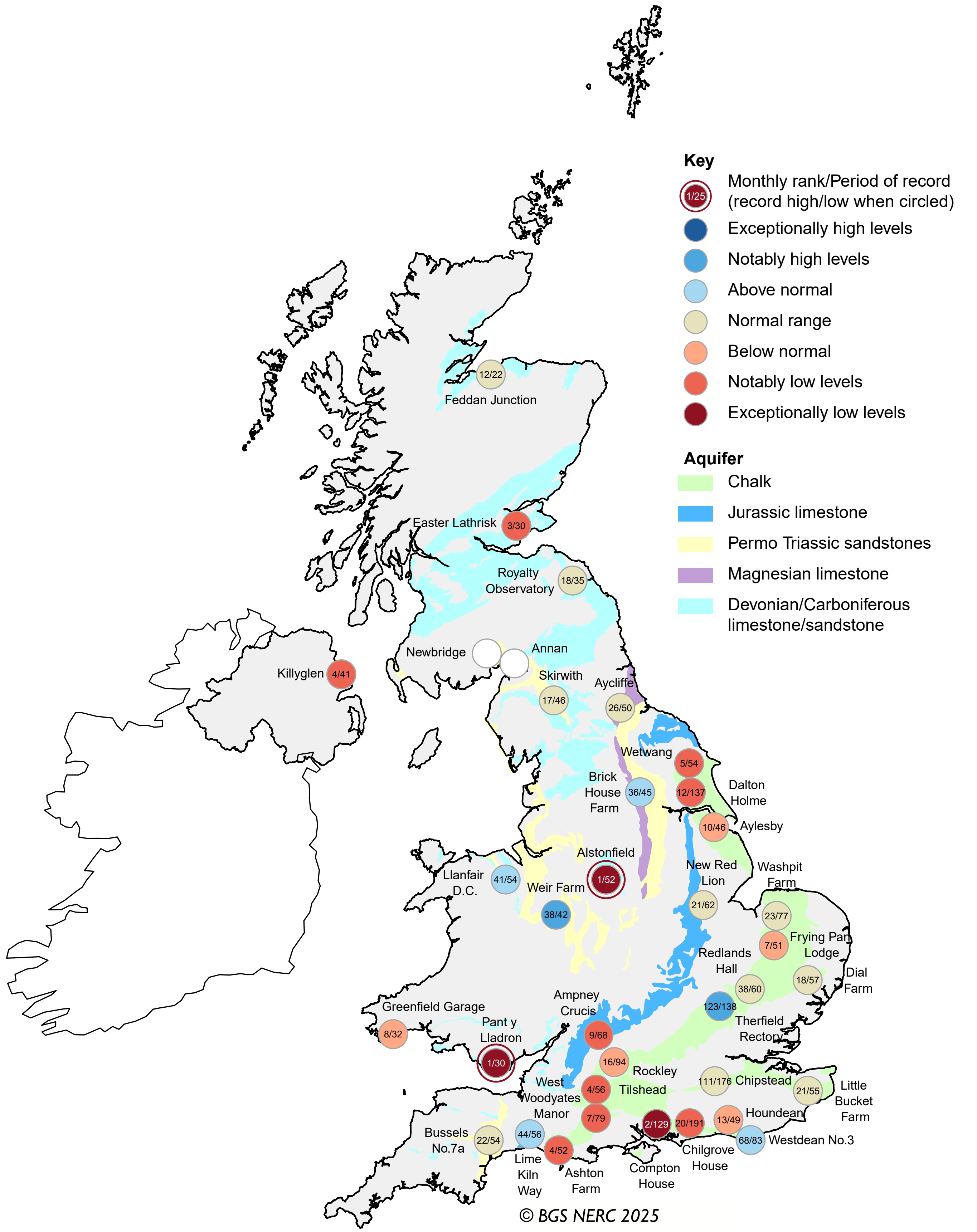

Pant Y Lladron
Carboniferous Limestone
2022
2023
2024
2025
Period of record: 1995-2025


Alstonfield
Carboniferous Limestone
2022
2023
2024
2025
Period of record: 1974-2025


Royalty Observ.
Fell Sandstone
2022
2023
2024
2025
Period of record: 1990-2025


Easter Lathrisk
Devonian Sandstone
2022
2023
2024
2025
Period of record: 1997-2025

Groundwater . . . Groundwater

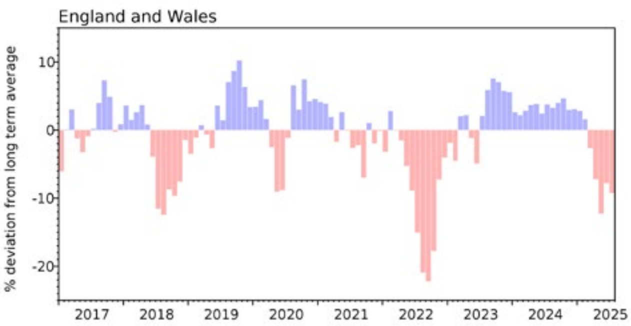


Groundwater levels - July 2025

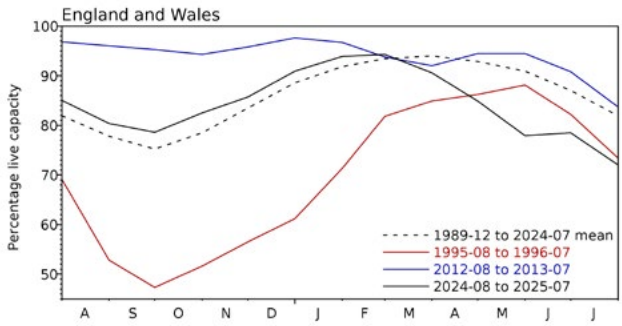
The calculation of ranking has been modified from that used in summaries published prior to October 2012. It is now based on a comparison between the most recent level and levels for the same date during previous years of record. Where appropriate, levels for earlier years may have been interpolated. The rankings are designed as a qualitative indicator, and ranks at extreme levels, and when levels are changing rapidly, need to be interpreted with caution.

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



Percentage live capacity of selected reservoirs at end of month

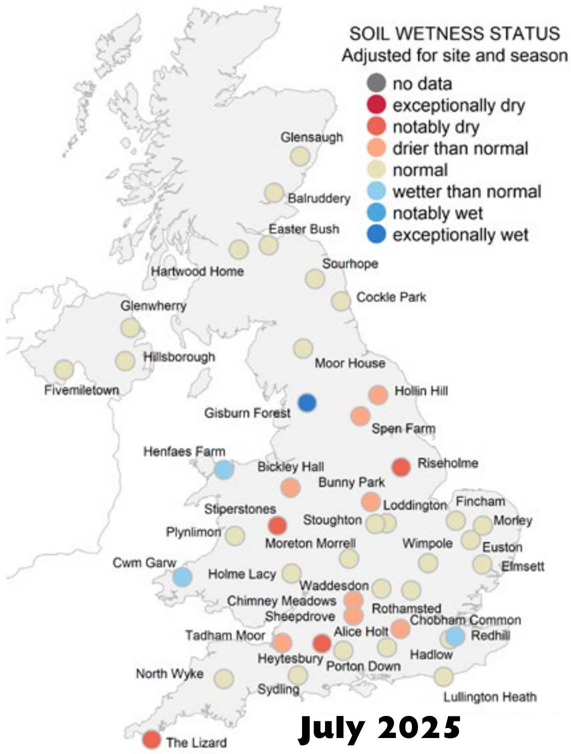
Area	Reservoir		Capacity (Ml)	2025 May	2025 Jun	2025 Jul	Jul Anom.	Min Jul	Year* of min	2024 Jul	Diff 25-24
North West	N Command Zone	•	124929	47	61	58	-5	23	1984	77	-19
	Vyrnwy		55146	83	94	87	10	45	1984	88	-1
Northumbrian	Teesdale	•	87936	69	71	68	-6	45	1989	95	-26
	Kielder		(199175)	81	86	90	1	66	1989	86	4
Severn-Trent	Clywedog		49936	93	99	86	0	50	1976	99	-14
	Derwent Valley	•	46692	65	57	49	-23	43	1996	77	-27
Yorkshire	Washburn	•	23373	67	58	51	-23	50	2022	83	-33
	Bradford Supply	•	40942	56	55	48	-23	38	1995	80	-33
Anglian	Grafham		(55490)	91	85	80	-10	66	1997	95	-15
	Rutland		(116580)	89	86	80	-7	74	1995	90	-11
Thames	London	•	202828	93	91	82	-5	73	1990	93	-11
	Farmoor	•	13822	99	95	90	-7	84	1990	99	-9
Southern	Bewl		31000	82	74	65	-12	45	1990	82	-17
	Ardingly		4685	89	74	56	-28	56	2025	85	-30
Wessex	Clatworthy		5662	76	65	51	-22	43	1992	70	-19
	Bristol	•	(38666)	78	66	51	-24	51	2025	74	-23
South West	Colliford		28540	79	73	62	-13	43	2022	83	-20
	Roadford		34500	90	87	80	4	46	1996	90	-10
	Wimbleball		21320	83	72	58	-19	49	2022	75	-17
	Stithians		4967	94	86	73	3	39	1990	69	4
Welsh	Celyn & Brenig	•	131155	72	75	72	-15	65	1989	79	-7
	Brianne		62140	81	83	72	-17	64	2022	92	-20
	Big Five	•	69762	75	74	60	-16	41	1989	73	-13
	Elan Valley	•	99106	70	70	55	-25	53	2022	74	-19
Scotland(E)	Edinburgh/Mid-Lothian	•	97223	80	80	78	-5	51	1998	89	-11
	East Lothian	•	9317	79	74	72	-18	72	2025	99	-27
Scotland(W)	Loch Katrine	•	110326	72	70	65	-11	53	2000	72	-7
	Daer		22494	73	80	77	-3	54	2021	74	3
	Loch Thom		10721	79	89	82	-1	55	2021	83	-1
Northern Ireland	Total+	•	56800	82	80	77	-1	54	1995	79	-2
	Silent Valley	•	20634	87	84	80	5	42	2000	82	-2

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

+ excludes Lough Neagh

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 1988-2012 period except for West of Scotland and Northern Ireland where data commence in the mid-1990s. In some gravity-fed reservoirs (e.g. Clywedog) stocks are kept below capacity during the winter to provide scope for flood attenuation purposes. Monthly figures may be artificially low due to routine maintenance or turbidity effects in feeder rivers.

Soil Moisture . . . Soil Moisture

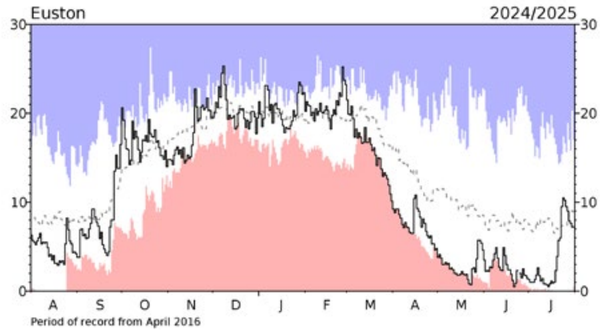


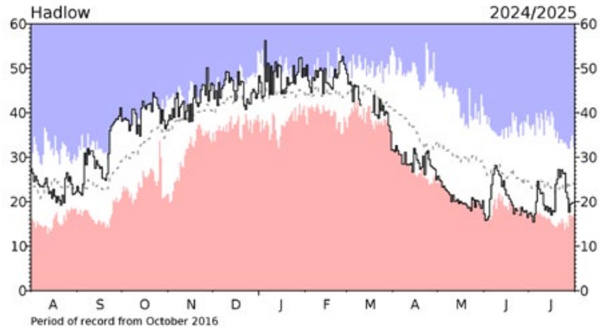
Daily mean soil moisture status at COSMOS-UK sites on the last day of the month 30 June 2025. Soil wetness categories are adjusted for site specific characteristics, i.e. taking account of the possible range of soil wetness at each site, determined through period-of-record data and hindcast modelling. Where no data are available on the last day of the month, these are shown by grey dots.

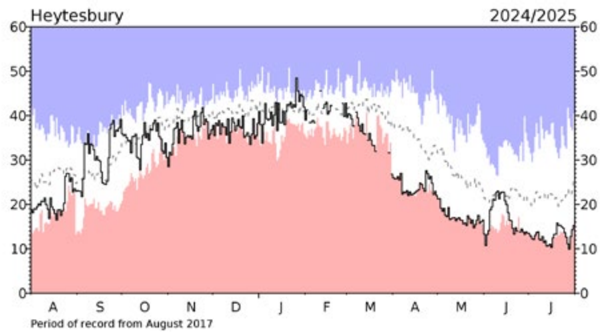
Soil moisture levels across the COSMOS-UK network have experienced a partial recovery after a very dry period, but some sites, particularly in the South, remain drier than usual.

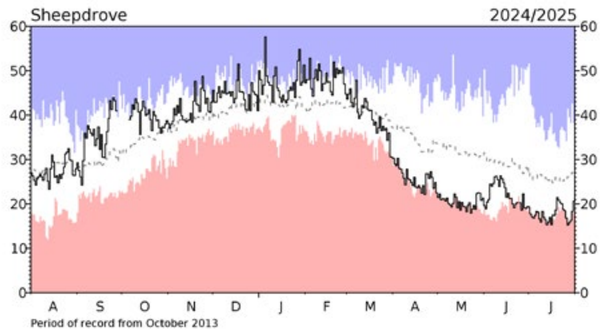
In contrast to May and June, just five COSMOS-UK sites experienced their driest soil moisture levels for July on record. By the end of the month, soil moisture levels remained below field capacity for most of the UK, except in some western regions. Several sites returned within their normal range for the time of year (e.g. Euston, Hadlow), indicating a partial recovery. However, other sites, particularly in the South, remained drier than usual (e.g. Heytesbury, Sheepdrove, The Lizard).

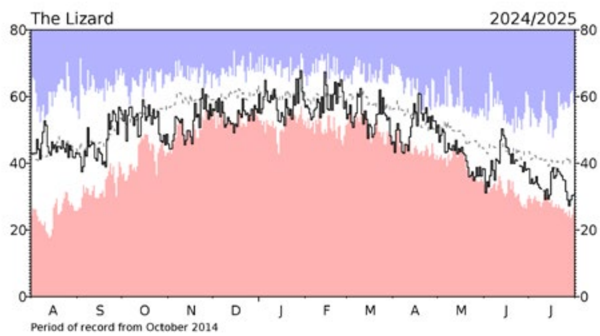
Overall, the unsettled weather brought rain to many regions during July. Whilst this resulted in a partial recovery in soil moisture levels in some areas, other areas – particularly in the South – remain persistently dry. These contrasts underscore the importance of ongoing monitoring as we move into late summer, when rainfall deficits may have lasting impacts on vegetation, agriculture, and water resources.











Soil moisture data

These data are from UKCEH's COSMOS-UK network. The time series graphs show volumetric water content as a percentage in black together with the maximum and minimum daily values for the period-of-record of the sites. The dashed line represents the period-of-record mean VWC. For more information visit cosmos.ceh.ac.uk.

NHMP

The National Hydrological Monitoring Programme (NHMP) was started in 1988 and is undertaken jointly by the UK Centre for Ecology & Hydrology (UKCEH) and the British Geological Survey (BGS). The NHMP aims to provide an authoritative voice on hydrological conditions throughout the UK, to place them in a historical context and, over time, identify and interpret any emerging hydrological trends. Hydrological analysis and interpretation within the Programme is based on the data holdings of the National River Flow Archive (NRFA; maintained by UKCEH) and National Groundwater Level Archive (NGLA; maintained by BGS), including rainfall, river flows, borehole levels, and reservoir stocks.

The Hydrological Summary is supported by the Natural Environment Research Council award number NE/Y006208/1 as part of the NC-UK programme delivering National Capability.

Data Sources

The NHMP depends on the active cooperation of many data suppliers. This cooperation is gratefully acknowledged. A location map of all sites used in the Hydrological Summary can be found on the NHMP website. River flow and groundwater level data are provided by the Environment Agency (EA), Natural Resources Wales - Cyfoeth Naturiol Cymru (NRW), the Scottish Environment Protection Agency (SEPA) and, for Northern Ireland, the Department for Infrastructure - Rivers and the Northern Ireland Environment Agency. In all cases the data are subject to revision following validation (high flow and low flow data in particular may be subject to significant revision).

Details of reservoir stocks are provided by the Water Service Companies, the EA, Scottish Water and Northern Ireland Water.

The Hydrological Summary and other NHMP outputs may also refer to and/or map soil moisture data for the UK. These data are provided by the Meteorological Office Rainfall and Evaporation Calculation System (MORECS). MORECS provides estimates of monthly soil moisture deficit in the form of averages over 40 x 40 km grid squares over Great Britain and Northern Ireland. The monthly time series of data extends back to 1961.

Rainfall data are provided by the Met Office. To allow better spatial differentiation the rainfall data for Britain are presented for the regional divisions of the precursor organisations of the EA, NRW and SEPA. The areal rainfall figures have been produced by the Met Office National Climate Information Centre (NCIC), and are based on the HadUK-Grid 1km resolution gridded data from rain gauges. The majority of the full rain gauge network across the UK is operated by the EA, NRW, SEPA and Northern Ireland Water; supplementary rain gauges are operated by the Met Office. The Met Office NCIC monthly rainfall series extend back to 1836 and form the official source of UK areal rainfall statistics which have been adopted by the NHMP. The gridding technique used is described in Hollis, 2019 available at https://doi.org/10.1002/gdj3.78

Long-term averages are based on the period 1991-2020 and are derived from the monthly areal series.

The regional figures for the current month in the hydrological summaries are based on a limited rain gauge network so these (and the associated return periods) should be regarded as a guide only.

The monthly rainfall figures are provided by the Met Office NCIC and are Crown Copyright and may not be passed on to, or published by, any unauthorised person or organisation. These are provisional totals calculated from a sub set of Met Office registered gauges and will be subject to change once data from the complete network of Met Office registered gauges has been quality assured and gridded within the annual process of updating the HadUK-Grid dataset.

For further details on rainfall or MORECS data, please contact the Met Office:

Tel: 0370 900 0100
Email: enquiries@metoffice.gov.uk

Enquiries

Enquiries should be directed to the NHMP:

Tel: 01491 692599
Email: nhmp@ceh.ac.uk

A full catalogue of past Hydrological Summaries can be accessed and downloaded at:

http://nrfa.ceh.ac.uk/monthly-hydrological-summary-uk