

Hydrological Outlook UK

Period: From January 2017

Issued on 13.01.2017 using data to the end of December 2016

SUMMARY

River flows across the majority of the UK are likely to be normal to below normal in January and over the first three months of the year. This signal is particularly strong in most of southern and eastern England, where below normal flows are more likely than those in the normal range for both timeframes. The groundwater outlook for the Chalk of southern England for both January and January-March is for below normal levels. In January, for other aquifers and regions of the UK the outlook shows substantial regional variability. The three-month outlook is for above normal groundwater levels in southern Scotland and normal to below normal levels further south.

Rainfall:

With the exception of the Scottish Highlands, all regions of the UK registered below average rainfall in December. Rainfall deficiencies were particularly extreme in England and Wales, most of which received less than half of the average, with less than a third of average for the counties of southern England.

The rainfall outlook for January and for January-February-March (released by the Met Office on 15th December 2016) suggests that there is only a slight shift from the normal range of expected conditions, with above-average and below-average precipitation considered nearly equally probable. The probability that UK-average precipitation for January-February-March will fall into the driest of five equal categories is between 15 and 20% and the probability that it will fall into the wettest of five equal categories is between 15 and 20% (the 1981-2010 probability for each of these categories is 20%).

River flows:

December river flows were substantially below average for the majority of the country, notably so in Northern Ireland and south Wales, and exceptionally so in southern England and parts of the Midlands. Many rivers in southern England recorded less than a third of average flows for the time of year and were the lowest December mean flows on record.

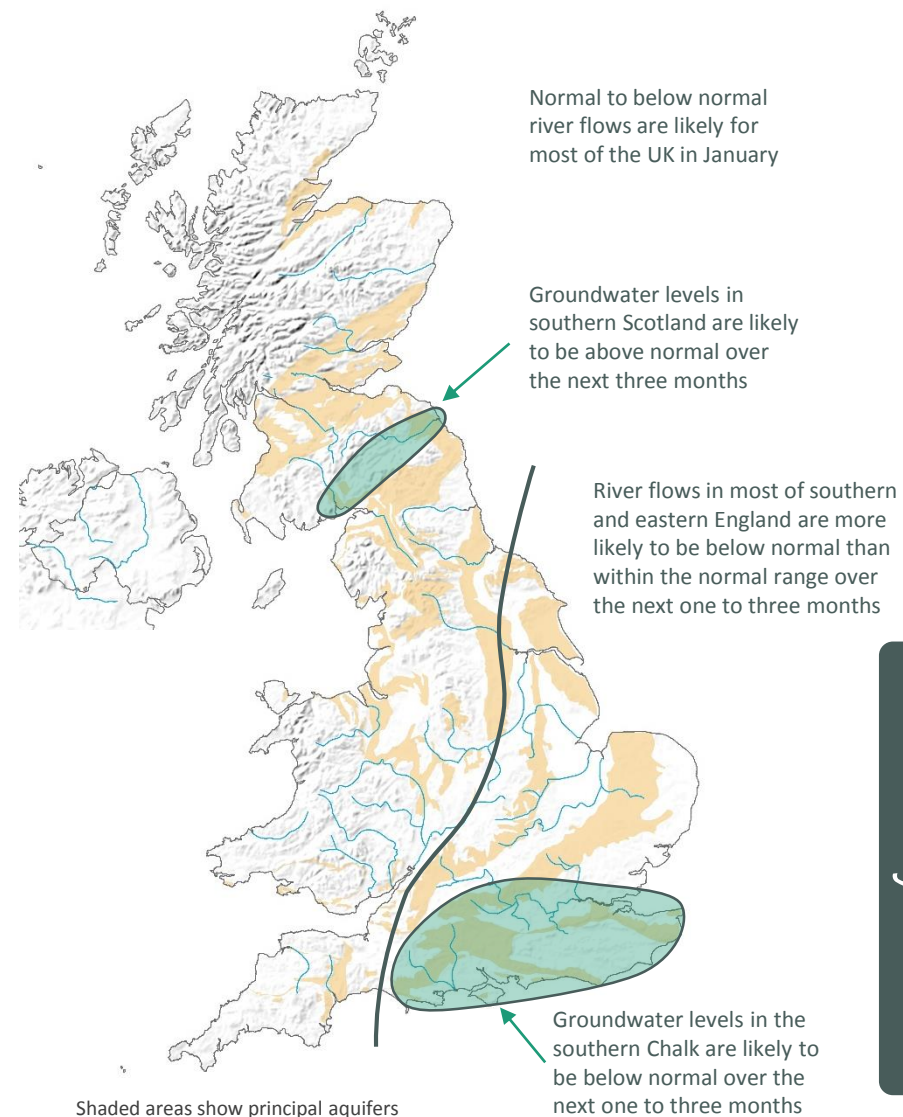
The outlook for January is for a continuation of below normal flows across the majority of southern and eastern England. For some catchments in East Anglia and the far south-east of England, there is an increased likelihood of notably low flows. Normal to below normal flows are likely for most of the rest of the UK, though the signal for continued below normal flows in the generally wetter and more responsive northern and western areas is less strong. The outlook over the first three months of the year is very similar to that for January, with below normal flows most likely in the south-east and normal to below normal flows elsewhere. There is also the suggestion that average flows over the next six months in parts of East Anglia and the far south of England may be below normal and in some cases notably low.

Groundwater:

Whilst groundwater levels in the Permo-Triassic sandstones of the Midlands were above normal, levels in the majority of boreholes in southern parts of England and Wales were below normal, notably so along the south coast. Below average rainfall for most of England and Wales through the autumn and early winter has prevented substantial groundwater recharge.

Below normal groundwater levels in the southern Chalk are likely to continue in January, with notably low levels in some localised areas; levels are unlikely to be above normal even under extremely high rainfall scenarios. In the Carboniferous Limestone of the Midlands the January outlook is also for below normal levels, though this signal is not as strong as that for the southern Chalk. The three-month outlook for the southern Chalk is similar to that for January, although there is slightly less confidence that below normal levels will characterise such wide areas of the aquifer. Over the three-month timeframe, above normal groundwater levels are likely for southern Scotland with normal to below normal levels elsewhere.

The Hydrological Outlook UK provides an outlook for the water situation for the UK over the next three months and beyond. For guidance on how to interpret the outlook, a wider range of information, and a full description of underpinning methods, please visit the website: www.hyoutuk.net



Hydrological Outlook UK

About the Hydrological Outlook:

This document presents an outlook for the UK water situation for the next 1 – 3 months and beyond, using observational datasets, meteorological forecasts and a suite of hydrological modelling tools. The outlook is produced in a collaboration between the Centre for Ecology and Hydrology (CEH), British Geological Survey (BGS), the Met Office, the Environment Agency (EA), Natural Resources Wales (NRW), the Scottish Environment Protection Agency (SEPA), and the Northern Ireland Rivers Agency (RA).

Data and Models:

The Hydrological Outlook depends on the active cooperation of many data suppliers. This cooperation is gratefully acknowledged. Historic river flow and groundwater data are sourced from the UK National River Flow Archive and the National Groundwater Level Archive. Contemporary data are provided by the EA, SEPA, NRW and RA. These data are used to initialise hydrological models, and to provide outlook information based on statistical analysis of historical analogues.

Climate forecasts are produced by the Met Office. Hydrological modelling is undertaken by CEH using the Grid-to-Grid, PDM and CLASSIC hydrological models and by the EA using CATCHMOD. Hydrogeological modelling uses the R-groundwater model run by BGS and CATCHMOD run by the EA. Supporting documentation is available from the Outlooks website: <http://www.hydoutuk.net/methods>

Presentation:

The language used in the summary presented overleaf generally places flows and groundwater levels into just three classes, i.e. below normal, normal, and above normal. However, the underpinning methods use as many as seven classes as defined in the graphic to the right, i.e. the summary uses a simpler classification than some of the methods. On those occasions when it is appropriate to provide greater discrimination at the extremes the terminology and definitions of the seven class scheme will be adopted.

	Percentile range of historic values for relevant month
Exceptionally high flow	> 95
Notably high flow	87-95
Above normal	72-87
Normal range	28-72
Below normal	13-28
Notably low flow	5-13
Exceptionally low flow	< 5

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Further information:

For more detailed information about the Hydrological Outlook, and the derivation of the maps, plots and interpretation provided in this outlook, please visit the Hydrological Outlook UK website.

The website features a host of other background information, including a wider range of sources of information which are used in the preparation of this Outlook.

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Reference for the Hydrological Outlook:

Hydrological Outlook UK, 2016, July, Centre for Ecology and Hydrology, Oxfordshire UK, Online, <http://www.hydoutuk.net/latest-outlook/>

Other Sources of Information:

The Hydrological Outlook should be used alongside other sources of up-to-date information on the current water resources status and flood risk.

Hydrological Summary for the UK: provides summary of current water resources status for the UK: http://www.ceh.ac.uk/data/nrfa/nhmp/monthly_hs.html

Environment Agency Water Situation Reports: provides summary of water resources status on a monthly and weekly basis for England: <https://www.gov.uk/government/collections/water-situation-reports-for-england>

Flood warnings are continually updated, and should be consulted for an up-to-date and localised assessment of flood risk:

Environment Agency: <https://flood-warning-information.service.gov.uk/map>
Scottish Environment Protection Agency: <http://www.sepa.org.uk/flooding.aspx>

UK Met Office forecasts for the UK:
www.metoffice.gov.uk/public/weather/forecast/#?tab=regionalForecast