

# Hydrological Outlook UK

Period: From December 2018

Issued on 11.12.2018 using data to the end of November 2018

## SUMMARY

Following a wetter end to November and a wet start to December, the one month outlook for large parts of the UK is for normal to above normal flows. As a result of longer-term rainfall deficits, in north-east Scotland flows are likely to be below normal and, for a large area of central and eastern England, below normal river flows are likely to persist through the winter. December groundwater levels are likely to be in the normal range or below across the main aquifers, with below normal levels likely over the next three months in parts of the southern and eastern Chalk.

### Rainfall:

The UK rainfall for November was near-average but there were marked variations – northern Scotland was dry, as was a large swathe from East Anglia through central England to Lancashire, continuing a long run of dry months in this area. Some other areas were notably wet, e.g. southern Scotland and the far south of England.

For December and December-January-February as a whole, the chances of above or below average precipitation are approximately similar. The probability that UK-average precipitation for December-January-February will fall into the driest of five equal categories is between 20% and 25% and the probability that it will fall into the wettest of these categories is between 20% and 25% (the 1981-2010 probability for each of these categories is 20%).

### River flows:

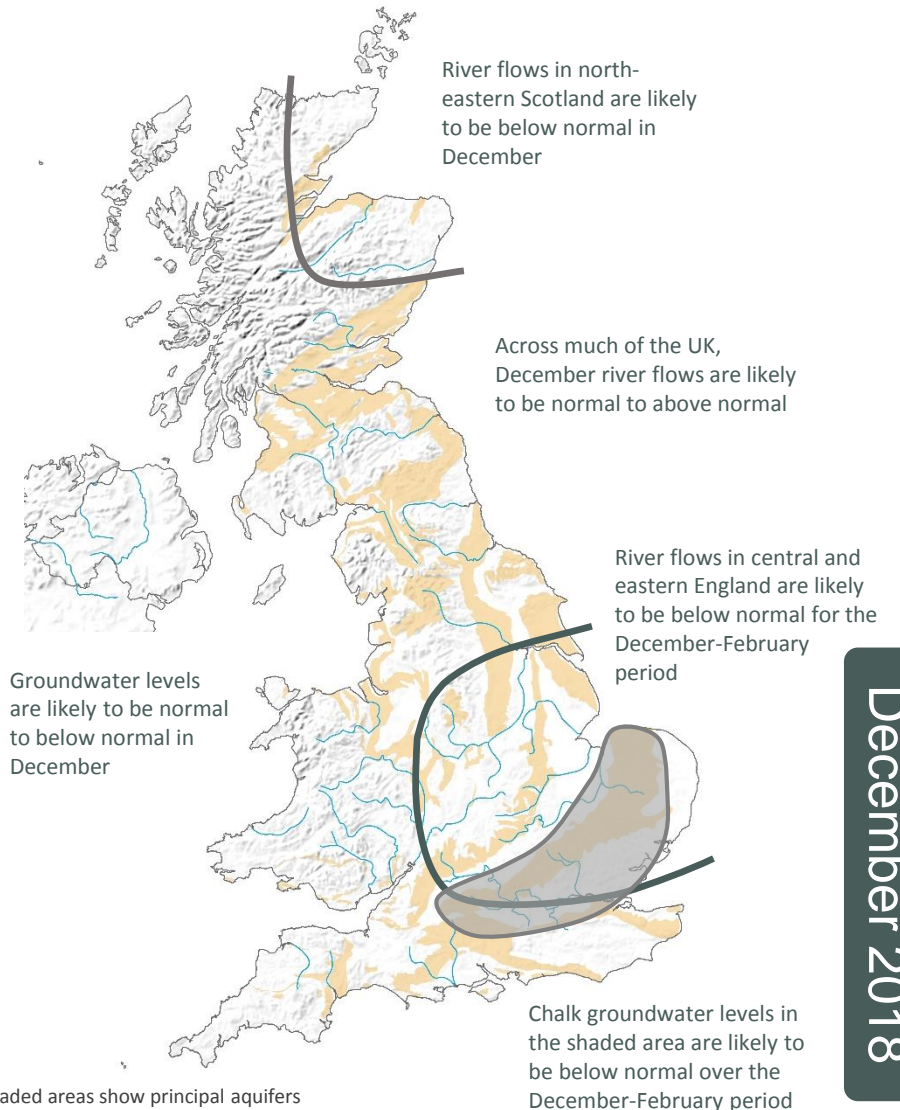
November river flows were below normal across eastern and central England and in northern Scotland, and were notably or exceptionally low in some catchments. Elsewhere flows were in the normal range or moderately below, and were above normal in parts of southern and eastern Scotland.

River flows for December are expected to be in the normal range or above normal for large parts of the UK, with above normal flows most likely in northern and western areas which are sensitive to further rainfall following the wet end to November and start of December. In northeast Scotland below normal flows are likely to persist in December. In eastern and central England, below normal flows are likely for the winter as a whole (December – February). While there is no strong signal in meteorological forecasts, there is more confidence in the river flow projections for this area where water storage in soil and groundwater has been depleted as a result of low rainfall since late spring.

### Groundwater:

Groundwater levels for November were normal to below normal across the main aquifers. Below normal levels were primarily seen in the Chalk aquifers of southern England and East Anglia, with notably low levels in several boreholes. Low levels were also seen in parts of the Carboniferous limestone.

Normal to below normal groundwater levels are likely to continue across most aquifers through December, with below normal levels likely across much of the southern Chalk. In parts of the Chilterns and eastern Chalk, it is likely that below normal levels will continue for the next three months. As with the river flows, there is reasonable confidence in these projections given the current below normal levels.



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.hydoutuk.net](http://www.hydoutuk.net)

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## 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 for Northern Ireland, the Department for Infrastructure – Rivers (DfIR).

## 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 DfIR. 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, 2018, December, 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: <https://nrfa.ceh.ac.uk/monthly-hydrological-summary-uk>

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](http://www.metoffice.gov.uk/public/weather/forecast/#?tab=regionalForecast)