

Hydrological Outlook UK

Period: From December 2019

Issued on 10.12.2019 using data to the end of November 2019

SUMMARY

The outlook for December is for river flows and groundwater levels to be normal to above normal across the majority of the UK. River flows and groundwater levels may continue to be notably high in parts of the East Midlands. River flows in the Chalk fed catchments of East Anglia and the Chilterns, as well as the groundwater levels of this region, are likely to be normal to below normal over December-January-February as a whole.

Rainfall:

The rainfall for November followed a similar pattern to that of recent months, with exceptionally high rainfall over the East Midlands and central England. Significant volumes of rain also fell on the north-east of England, and Eastern Scotland. Western Scotland and the north-west however saw below average rainfall.

The rainfall outlook (issued by the Met Office on 22nd November) is that for December and December-January-February as a whole, above-average precipitation is more likely than below-average precipitation. The probability that UK-average precipitation for December-January-February will fall into the driest of five equal categories is between 10% and 15%, and the probability that it will fall into the wettest of the five categories is around 30% (the 1981-2010 probability for each of the categories is 20%).

River flows:

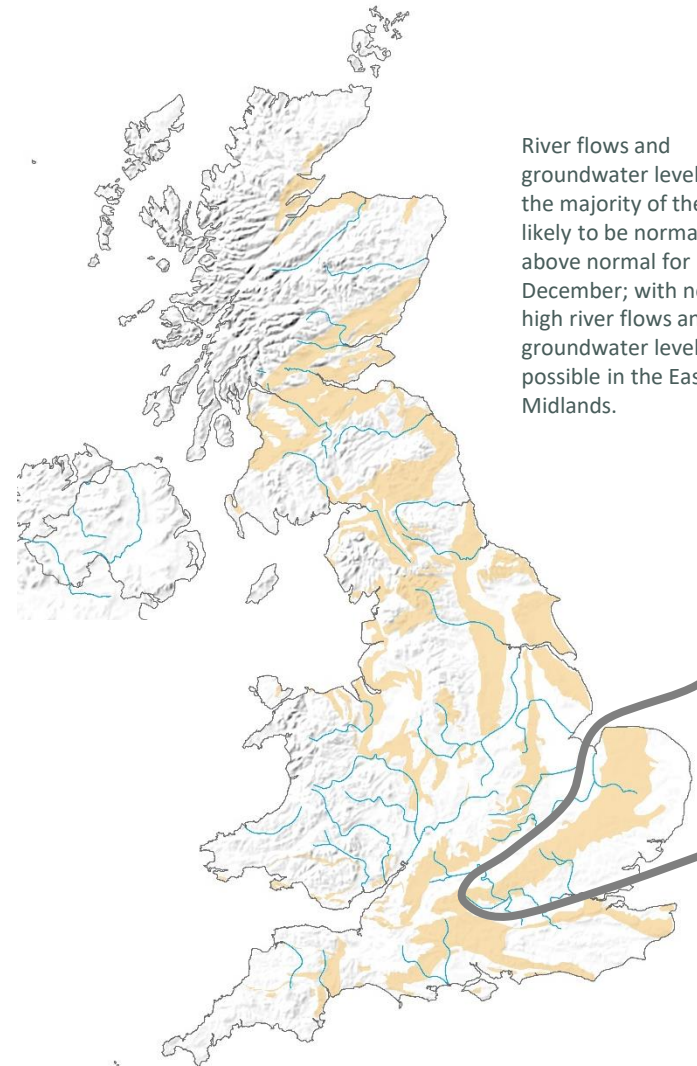
River flows in November were very spatially variable. Exceptionally high and record breaking high flows were seen in catchments of the East Midlands, north-eastern, and south-western parts of England. Exceptionally low flows were seen across north-west UK, with record breaking low flows in north-western Scotland. Elsewhere, flows were generally above normal.

The outlook for December is for normal to above normal flows across the majority of the UK. With rainfall being expected to follow its more typical north-west to south-east gradient, the low flows recently seen in the north-west are likely to return to within their normal range. There is potential for above normal to notably high river flows to persist in the East Midlands region. River flows across the Chalk catchments of East Anglia to the Chilterns are likely to be normal to below normal for December, and December-January-February as a whole.

Groundwater:

Groundwater levels were normal to above normal across the majority of the UK. Exceptionally high levels were seen on the south coast, across the Jurassic Limestones of the East Midlands and the Cotswolds, and in the Permo-Triassic Sandstones and Magnesian Limestones of north-eastern England. Below normal to notably low groundwater levels were recorded in the Chalk aquifer from the Chilterns to the East Midlands.

The outlook is for this spatial pattern to persist over the next three months, with levels across the majority of the UK being expected to be normal to above normal. Groundwater levels in the Chilterns to Cambridgeshire are expected to be below normal for the three month period December to January.



River flows and groundwater levels across the majority of the UK are likely to be normal to above normal for December; with notably high river flows and groundwater levels being possible in the East Midlands.

For the next three months river flows and groundwater levels are likely to be normal to below normal across the Chalk of East Anglia and the Chilterns.

Shaded areas show principal aquifers

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

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 UK Centre for Ecology and Hydrology (UKCEH), 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 UKCEH 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, 2019, December, UK 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.

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>

Hydrological Summary for the UK: provides summary of current water resources status for the UK: <https://nfa.ceh.ac.uk/monthly-hydrological-summary-uk>

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

UK Water Resources Portal: monitor the UK hydrological situation in near real-time including rainfall, river flow, groundwater and soil moisture from COSMOS-UK: <https://eip.ceh.ac.uk/hydrology/water-resources/>