UK Hydrological Outlook

Delivered in partnership by: UK Centre for Ecology & Hydrology

Period: From April 2021

Issued on 09.04.2021 using data to the end of March 2021

HYDROLOGICAL OUTLOOK UK

April 2021

SUMMARY

The outlook for April, and for the next three months is for river flows and groundwater levels in the south-east of England to be normal to above normal, with above normal flows being most likely in the groundwater fed catchments in this region. Elsewhere, river flows are likely to be within the normal range over the next three months. Groundwater levels across the UK are likely to show local variability over the April-May-June period.

Rainfall:

Rainfall in March was below normal across the majority of the UK, with less than 50% of average rainfall in parts of the south-west, and across eastern parts of the UK. North-west England, and north-western Scotland received above average rainfall, with parts of Cumbria seeing over 170% of average.

The rainfall outlook for April (issued by the Met Office on 25.03.2021) is that the chances of average and below-average precipitation are higher than the chance of above-average precipitation. For April-May-June as a whole, above-average precipitation is more likely than below-average precipitation. The probability that UK-average precipitation for April-May-June will fall into the driest of five categories is around 10% and the probability that it will fall into the wettest of five categories is around 20% (the 1981-2010 probability for each of these categories is 20%).

River flows:

March river flows mostly fell from their February levels and were normal to above normal across the majority of the UK. Above normal to notably high flows were seen in north-west England, north Wales and Norfolk. Some localised catchments recorded below normal flows.*

River flows in April, and April-May-June, are likely to be within the normal range across northern and western parts of the UK. Flows in groundwater fed catchments of the south-east of England are likely to remain above normal as they continue to be influenced by the wet winter. River flows in Devon and Cornwall are likely be normal to below normal for April, but will respond quickly to rainfall events. Similarly, river flows in north-western Scotland are likely to be normal to above normal for April, but will depend on April's rainfall patterns.

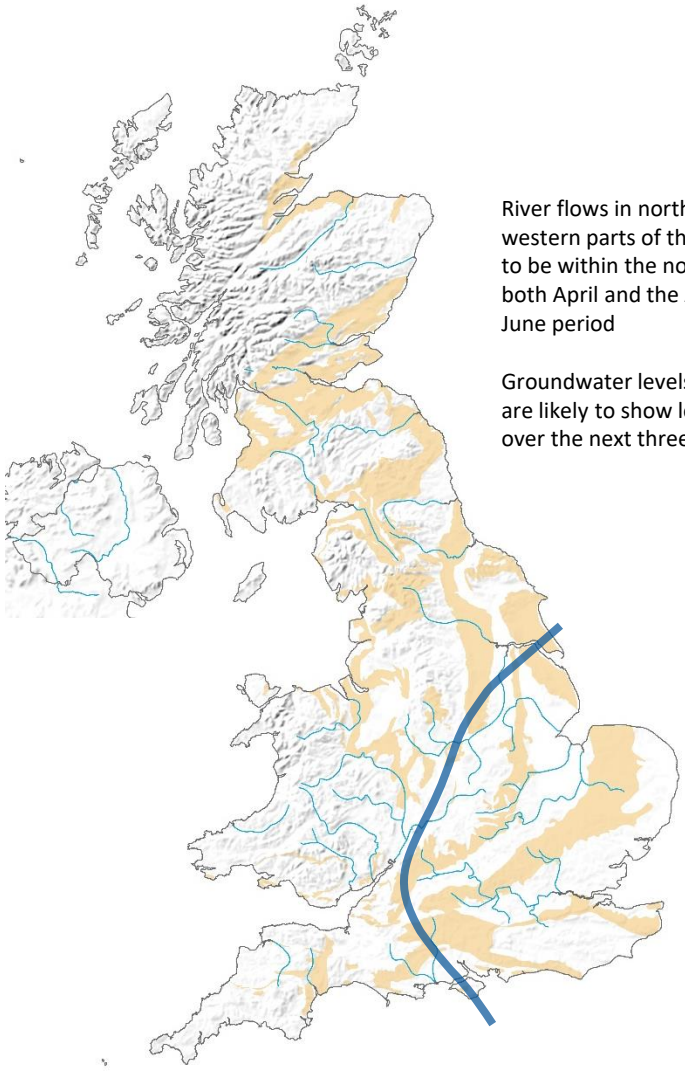
Groundwater:

Groundwater levels in March were normal to exceptionally high, with a diverse spatial pattern. Normal levels were seen in most of the boreholes of central southern England, whilst exceptionally high levels were recorded in the Magnesian limestone and Permo-Triassic sandstones of northern England, as well as in the chalk aquifers in Norfolk.*

Due to the onset of groundwater recession, groundwater levels for the April-May-June period are likely to be spatially varied. Boreholes in the chalk of the south-east of England are likely to show normal to above normal levels, particularly in April, though normal to below normal levels may be seen in parts of the South Downs over the three-month period. Groundwater levels in northern England and north Wales are likely to remain above normal for the next three months.

* Note: Due to unforeseen circumstances no data are available for Scotland

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



River flows in northern and western parts of the UK are likely to be within the normal range for both April and the April-May-June period

Groundwater levels in this area are likely to show local variation over the next three months

River flows and groundwater levels in south-east England are likely to be normal to above normal in April and the April-May-June period

Shaded areas show principal aquifers

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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 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

Disclaimer and liability:

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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.

Contact:

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Reference for the Hydrological Outlook:

Hydrological Outlook UK, 2021, April, 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://nrfa.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/

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