

SUMMARY

The outlook for April and for the April–June period is for normal to above normal river flows in southern England and southern Wales, and normal for the rest of the country. Groundwater levels are expected to be mostly normal, except in the eastern South Downs Chalk and the Devonian and Northern Fell Sandstone of Scotland and NE England where they are likely to be above normal.

Rainfall:

Most of the UK received above average rainfall amounts in March, with exceptionally high precipitation in southern and central England. However, rainfall was below average in northwestern Scotland.

The precipitation outlook (issued by the Met Office on 27.03.2023) for April shows a slight shift towards an increased likelihood of drier than usual conditions for the April–June period.

River flows:

River flows in March were above normal in most of England and Northern Ireland, whereas they were mostly normal to below normal in Scotland (no data for Wales).

River flows in April are likely to be normal to above normal in southern England and southern Wales. In the rest of the country, they are likely to be mostly normal. This pattern is expected to persist over the Apr–June period, albeit with a higher likelihood of having normal flows across the UK.

Groundwater:

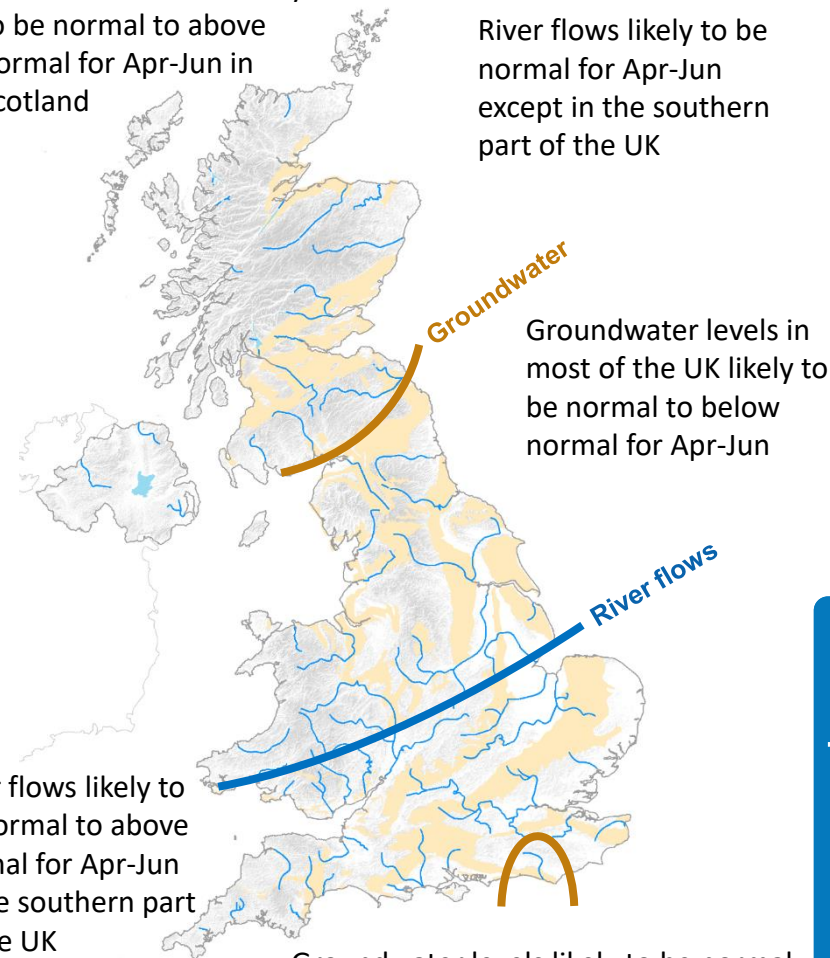
Groundwater levels in March were mostly normal with a few exceptions, including some boreholes in southern Wales, Northern Ireland and Gloucestershire (Jurassic limestone) showing exceptionally high levels, whereas levels in some boreholes in the Chalk in southeastern and eastern England remained below normal.

Over the next month and three-month period, normal to below normal groundwater levels are expected at most sites, with the exception of the eastern South Downs Chalk and the Devonian and Northern Fell Sandstone of Scotland and northeastern England where the levels are likely to be above normal. However, groundwater levels are still responding to high March rainfall over much of the UK meaning that there is more uncertainty in the forecasts than usual.

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

Groundwater levels likely to be normal to above normal for Apr–Jun in Scotland

River flows likely to be normal for Apr–Jun except in the southern part of the UK



Shaded areas show principal aquifers

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:

<https://www.hydoutuk.net/about/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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From April 2018 the Hydrological Outlook is supported by the Natural Environment Research Council funded [UK-SCAPE](#) and [Hydro-JULES](#) Programmes.

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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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t: 01491 692371 e: enquiries@hydoutuk.net

Reference for the Hydrological Outlook:

Hydrological Outlook UK, 2023, April, UK Centre for Ecology and Hydrology, Oxfordshire UK, Online, <https://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>

Natural Resources Wales: <https://flood-warning.naturalresources.wales/>

Scottish Environment Protection Agency: <https://www.sepa.org.uk/flooding.asp>

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: <https://www.metoffice.gov.uk/#?tab=regionalForecast>

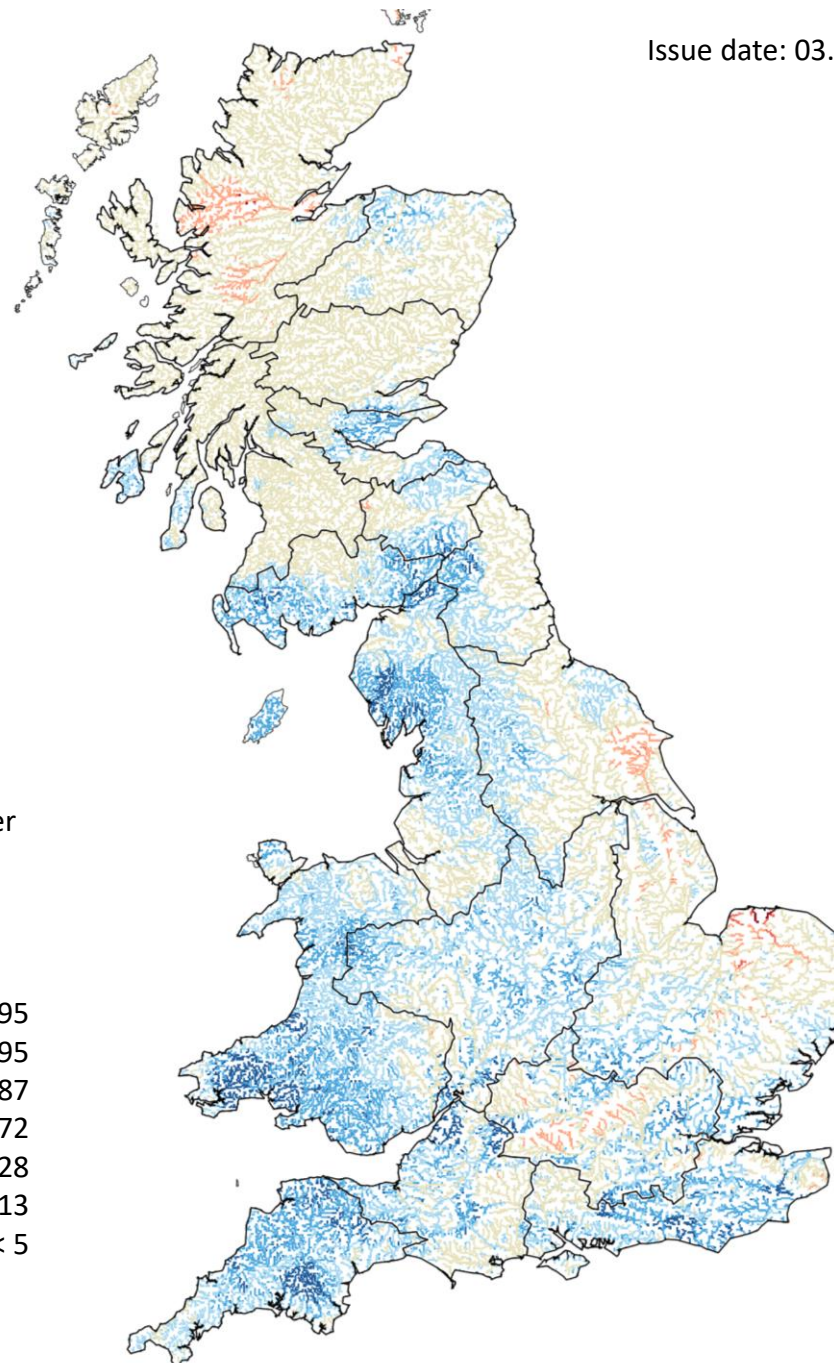
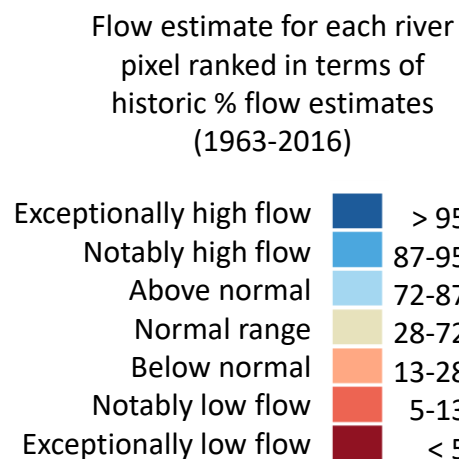
UK Water Resources Portal: monitor the UK hydrological situation in near real-time including rainfall, river flow, groundwater and soil moisture from COSMOS-UK:

<https://eip.ceh.ac.uk/hydrology/water-resources/>

This map shows the simulated monthly mean flow across Great Britain for last month, ranked in terms of 54 years of historical flow estimates (1963 – 2016).

These flows are produced by the 1km resolution Grid-to-Grid (G2G) hydrological model, which is run up to the end of each calendar month using observed rainfall and MORECS potential evaporation as input.

Note that the G2G model provides estimates of natural flows.



Current Daily Simulated Subsurface Water Storage Conditions

Based on subsurface water storage estimated for 31st March 2023

Issue date: 03.04.2023

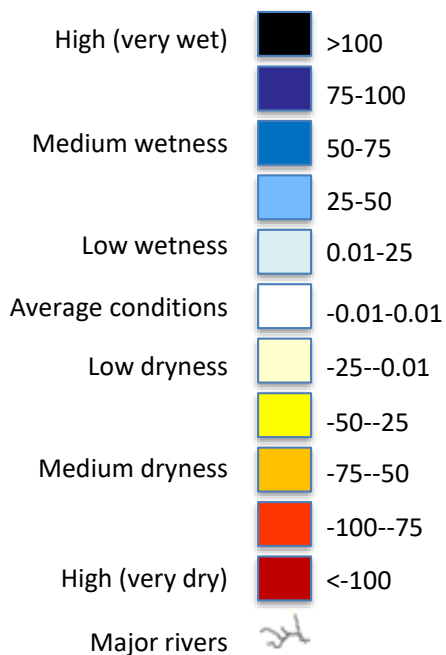
These maps are based on Grid-to-Grid (G2G) hydrological model simulated subsurface water storage, expressed as an anomaly from the historical monthly mean. To highlight areas that are particularly wet or dry, the storage anomaly is presented here using a colour scale highlighting water storage relative to historical extremes. The maps below show the “relative wetness” which combines maps previously shown separately as the “relative wetness” and “relative dryness”.

These maps do not provide a forecast and are not maps of soil moisture. Instead they indicate areas which are particularly wet or dry. Rainfall in areas with high positive relative wetness could result in flooding in the coming days/weeks. Areas of negative relative wetness provide an indication of locations which are particularly dry, and little or no rain in these areas could potentially lead to (or prolong) a drought.

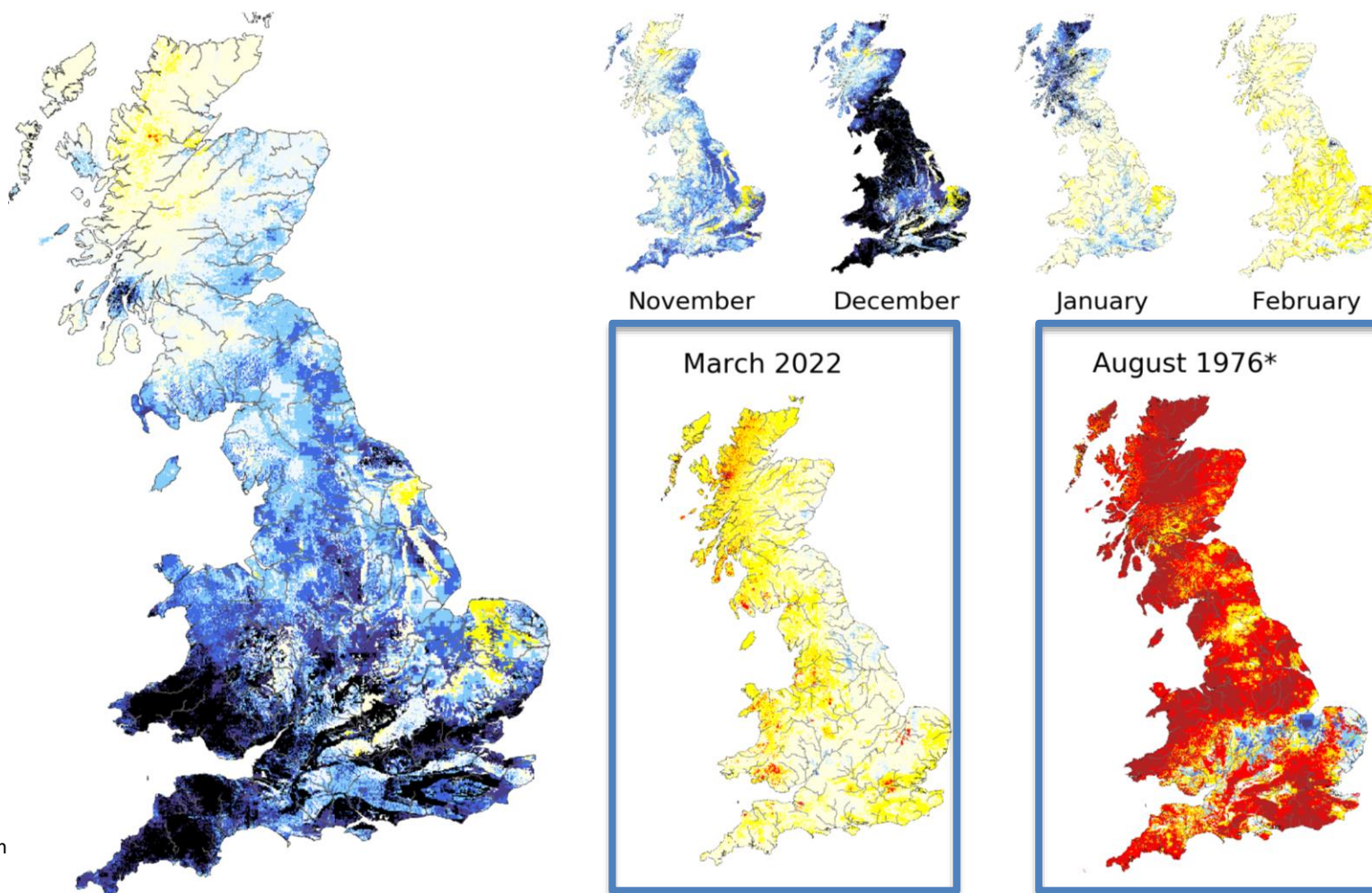
SUMMARY: Subsurface water stores have replenished in most of England, and are now higher (wetter) than is typical for this time of year. The north and west of Scotland continue to have low stores.

Relative wetness

Water storage anomaly as a % of maximum (positive wetness) or minimum (negative wetness) storage anomaly (zero indicates average value)



Labels refer to estimated storage on final day of named month



*Example month displaying extreme negative wetness

April 2023

Based on soil moisture estimated for 31st March 2023

Issue date: 03.04.2023

These maps are based on Grid-to-Grid (G2G) hydrological model simulated soil moisture, expressed as an anomaly from the historical monthly mean. To highlight areas that are particularly wet or dry, the soil moisture anomaly is presented here using a colour scale highlighting soil moisture relative to historical extremes. The maps below show the “relative wetness” which combines maps previously shown separately as the “relative wetness” and “relative dryness”.

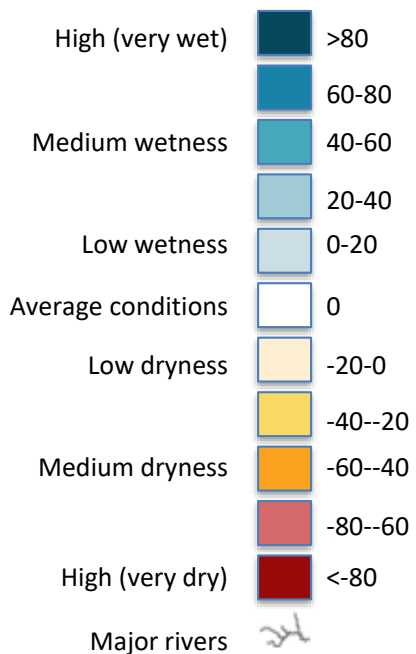
These maps do not provide a forecast. These maps are prototype representations of model estimates of soil moisture, which are currently under development.

Soil moisture will often look similar to total storage (shown on the previous slide), since total storage comprises both soil moisture and storage in the saturated zone.

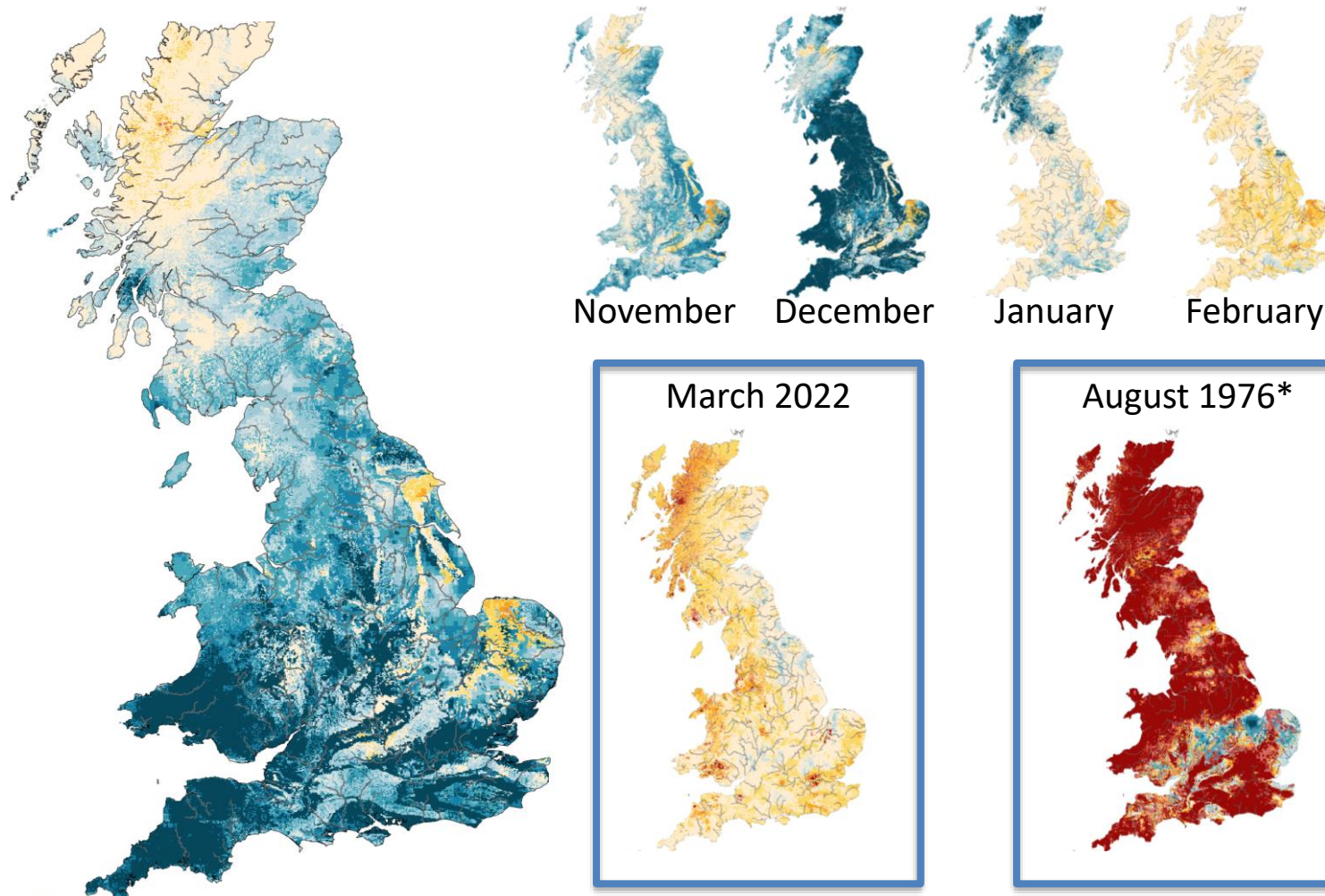
SUMMARY: Soil moisture stores have largely replenished over the past month, and are now higher (wetter) than is typical for the time of year. The north and west of Scotland still have depleted stores.

Relative soil wetness

Soil moisture anomaly as a % of maximum (positive wetness) or minimum (negative wetness) moisture anomaly (zero indicates average value)



Labels refer to estimated soil moisture on final day of named month



*Example month displaying extreme negative wetness

Return Period of Rainfall Required to Overcome Dry Conditions

Period: April 2023 - September 2023

Issue date: 03.04.2023

These maps show the return period of the rainfall required to overcome dry conditions simulated using the Grid-to-Grid (G2G) hydrological model. The maps are coloured according to the return period of accumulated rainfall required to overcome the estimated current subsurface water storage deficit over the next few months.

These maps do not provide a drought forecast. Instead they indicate the return period of rainfall required to overcome the dry conditions for the following 6 months based on current conditions.

SUMMARY: Most regions do not have depleted subsurface stores, and no region currently requires particularly unusual rainfall (>5 year return period) over the next six months to return to average conditions for the time of year.

SCOTLAND

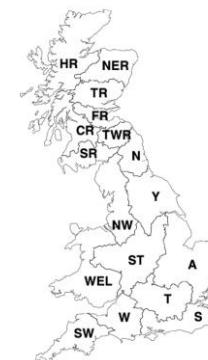
- HR Highlands Region
- NER North East Region
- TR Tay Region
- FR Forth Region
- CR Clyde Region
- TWR Tweed Region
- SR Solway Region

ENGLAND

- N Northumbria
- NW North West
- Y Yorkshire
- ST Severn Trent
- A Anglian
- T Thames
- S Southern
- W Wessex
- SW South West

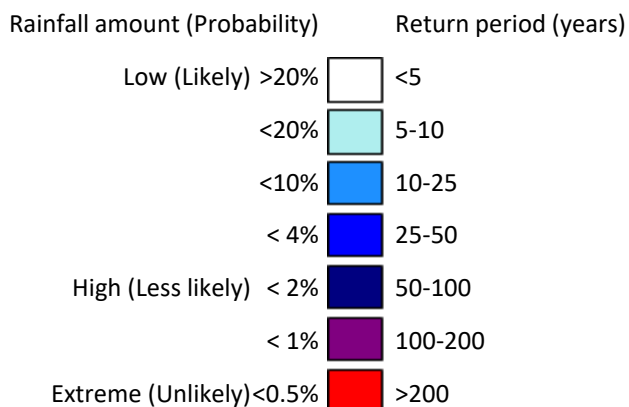
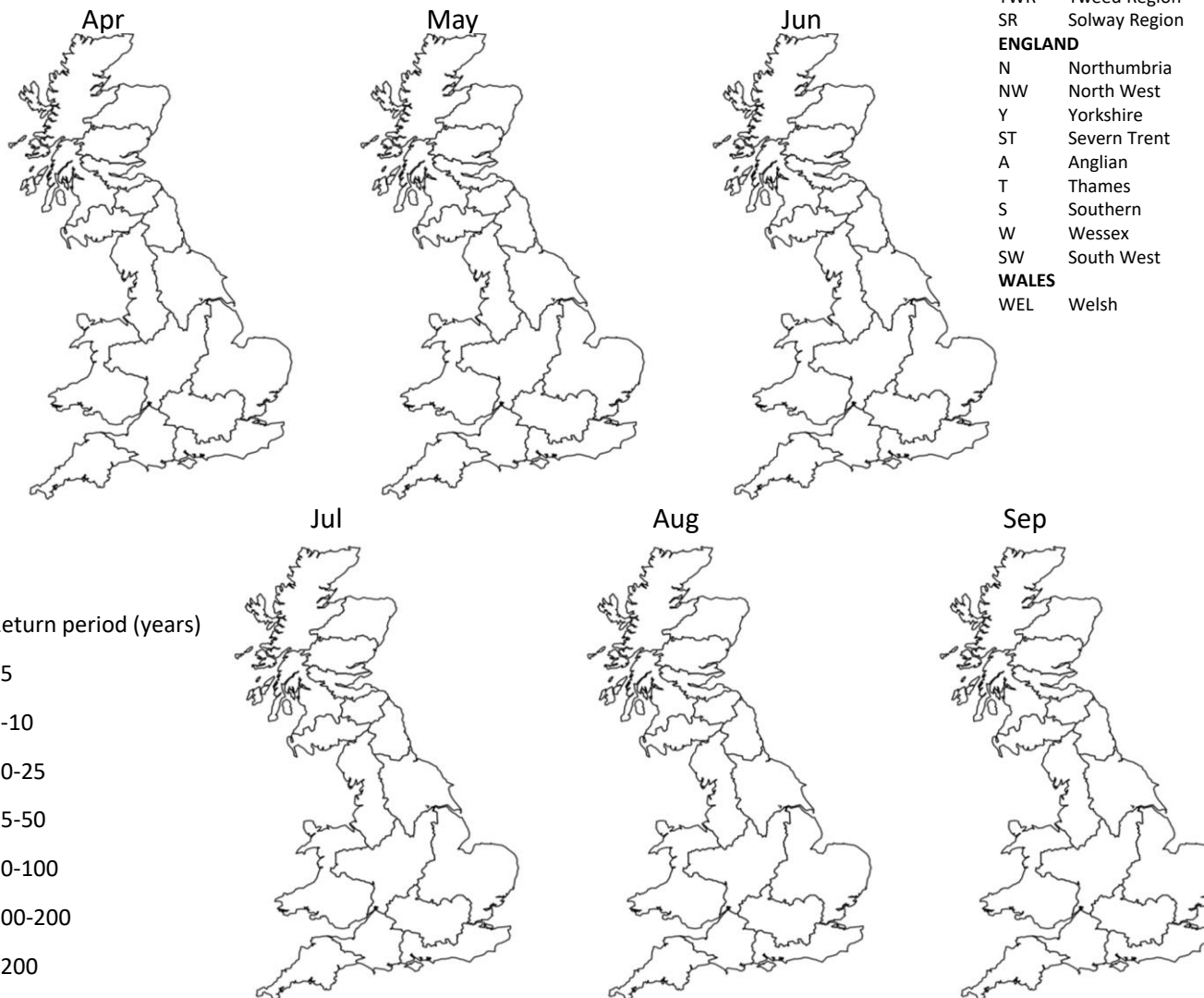
WALES

- WEL Welsh



NORTHERN IRELAND

This method cannot currently be used in Northern Ireland



Estimate of Additional Rainfall Required to Overcome Dry Conditions

Based on subsurface water storage estimated for 31st March 2023

Issue date: 03.04.2023

These maps show the Grid-to-Grid (G2G) hydrological model simulated subsurface water storage, expressed as an anomaly from the historical monthly mean (1981-2010), presented on a 1km grid and as regional means.

Subsurface storage deficits, i.e. where the subsurface water storage anomaly is less than zero, are highlighted by the red/pink colours.

The subsurface storage deficit (mm) can be interpreted as an estimate of additional rainfall that would be required in future months to overcome dry conditions (i.e. rainfall in addition to what is expected on average). Regional mean values of additional rainfall required are provided in the table below.

Regional estimate of additional rainfall required (mm)

SCOTLAND

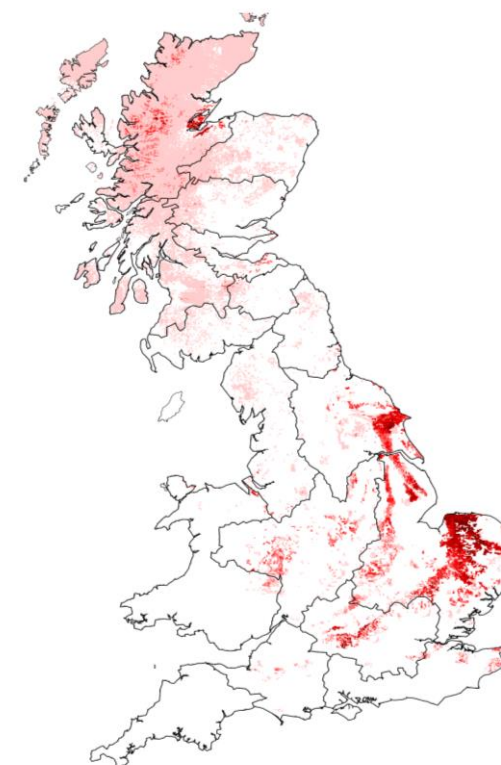
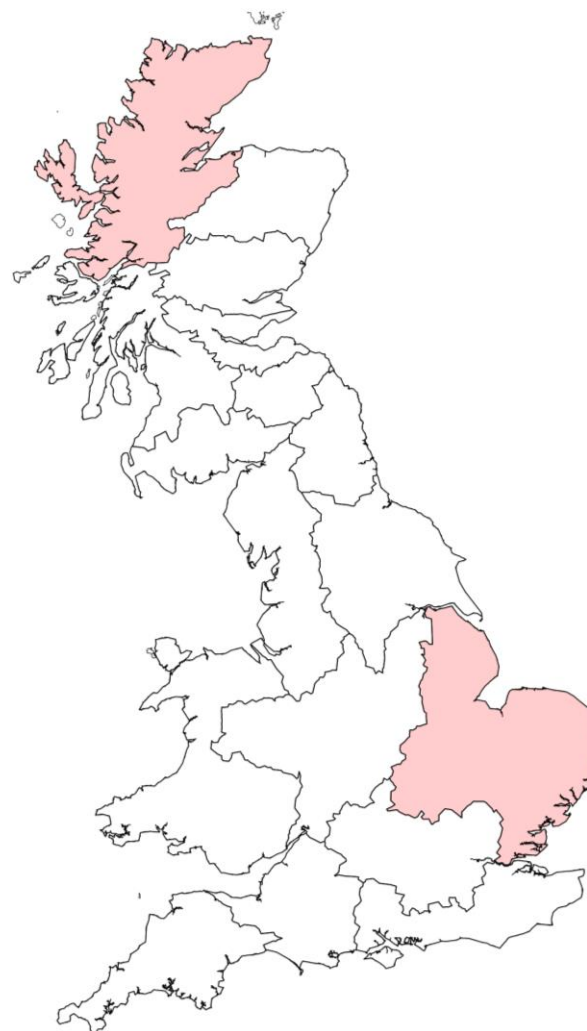
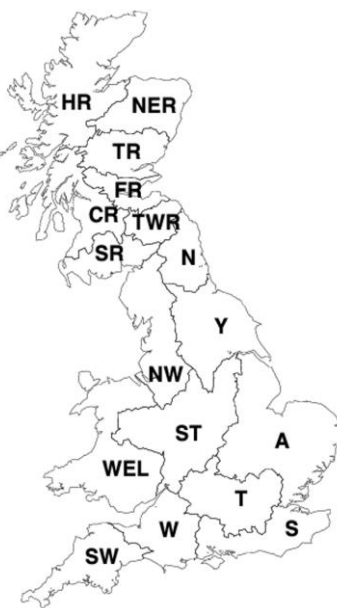
9	HR	Highlands Region
0	NER	North East Region
0	TR	Tay Region
0	FR	Forth Region
0	CR	Clyde Region
0	TWR	Tweed Region
0	SR	Solway Region

ENGLAND

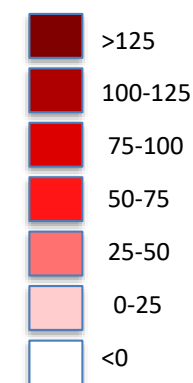
0	N	Northumbria
0	NW	North West
0	Y	Yorkshire
0	ST	Severn Trent
3	A	Anglian
0	T	Thames
0	W	Wessex
0	S	Southern
0	SW	South West

WALES

0	WEL	Welsh
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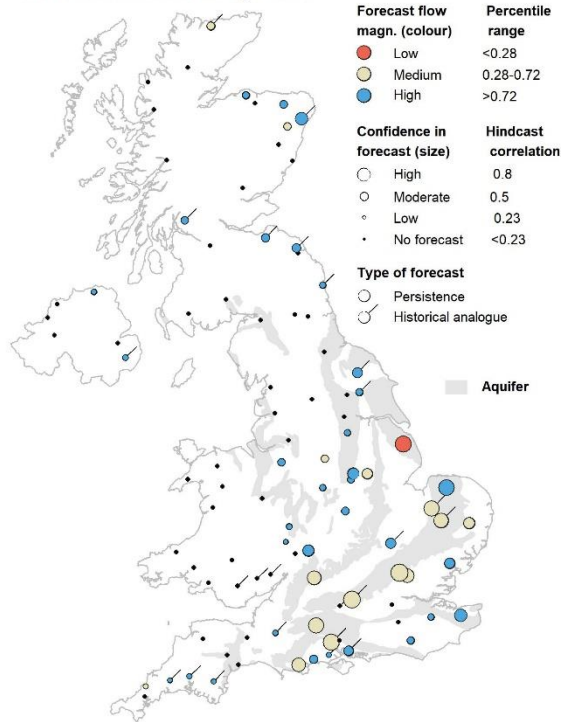
Water storage deficit
(anomaly; mm)



SUMMARY:

The outlook for April and April to June is for mainly normal to above normal flows in southern, central and eastern Britain. Please note there are few forecasts for the north and west of the country.

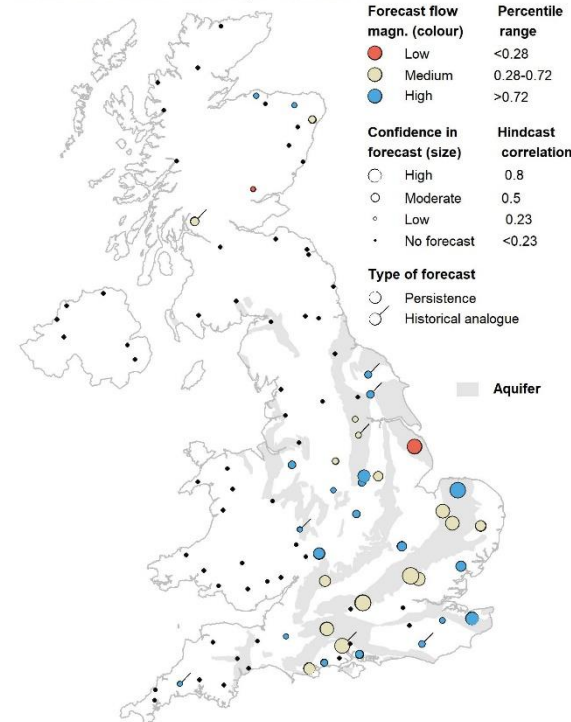
River flow outlook for Apr 2023



1-month flow outlook

Outlooks from hydrological analogues are based on a comparison of river flow during recent months with flows during the same months in previous years at a set of approximately 90 sites from across the UK. These sites are depicted on the two maps. Years with observed flows that most closely resemble current conditions are identified as the best analogues and the outlook is based on extrapolating from current conditions based on these analogues.

River flow outlook for Apr - Jun 2023



3-month flow outlook

It is, however, often the case that a simpler forecast based on the persistence of river flow provides a better forecast than provided by analogy. This is particularly true for slowly responding catchments associated with aquifer outcrops.

Both methods are considered at each site and the forecast from the method with the higher confidence is presented. A simple classification of flows is used (high, medium and low) as indicated by the colours of the dots, with the confidence

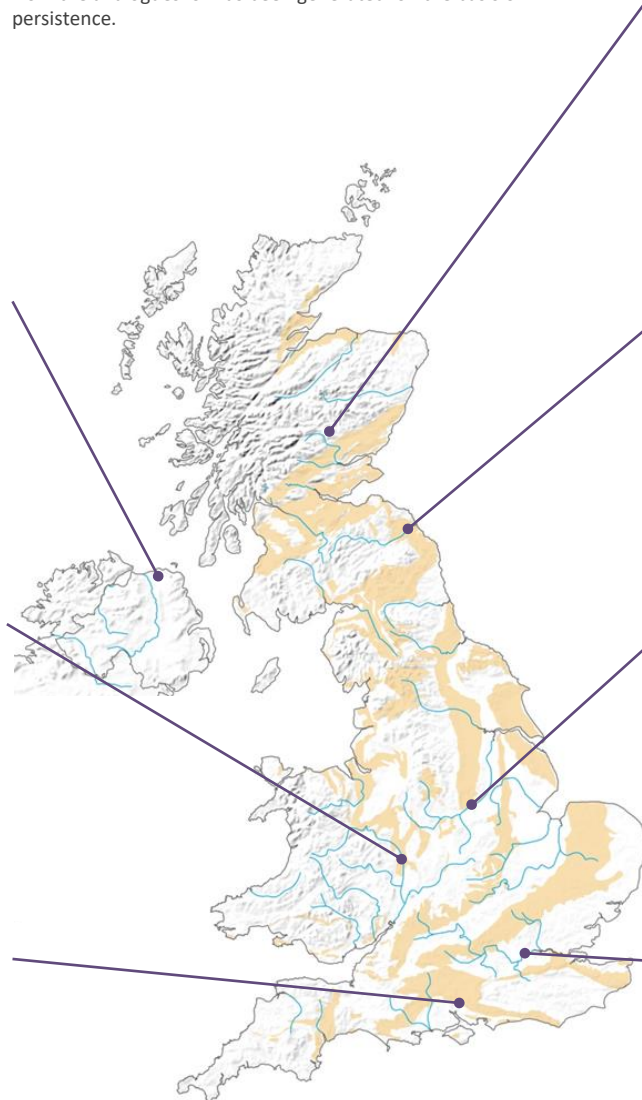
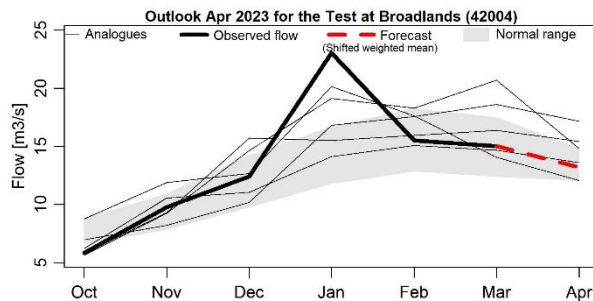
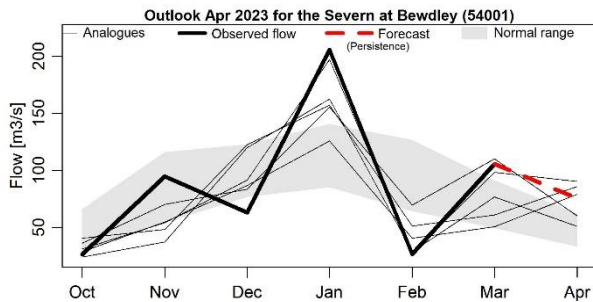
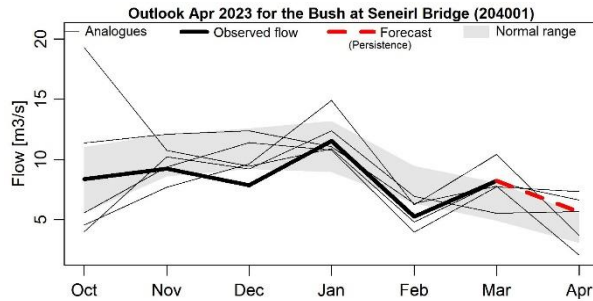
of the forecast being represented by the size of the dot. A tag on the dot indicates which method has been used in each instance.

Period: April 2023

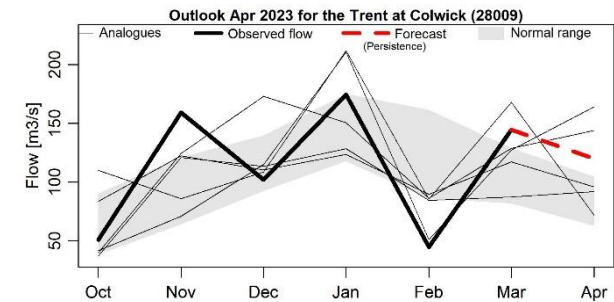
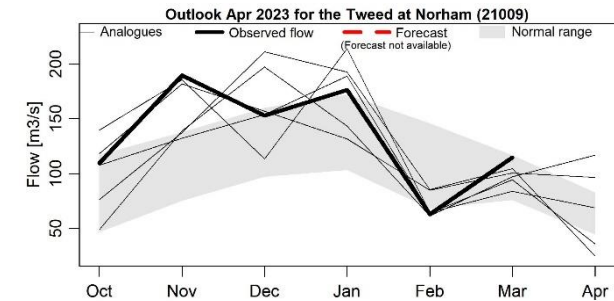
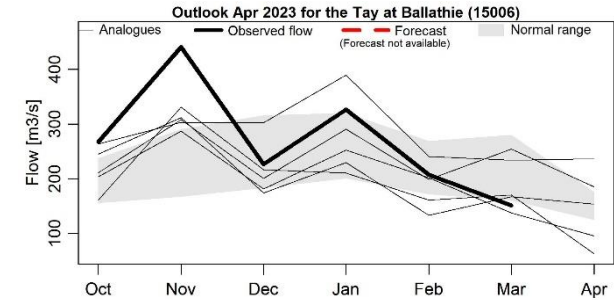
These figures provide insight into the hydrological analogue methodology for a set of sites from across the UK.

In each of the time series graphs the bold black line represents the observed flow during the past six months. The grey band indicates the normal flow range (the normal band includes 44%

of observed flows in each month). The selected analogues are shown as thin lines and the trajectories that flows took in the following month are also shown. The forecast is shown as the dashed red line, and in each plot it states whether this has come from the analogues or has been generated on the basis of persistence.



Issued on 11.04.2023 using data to the end of March 2023



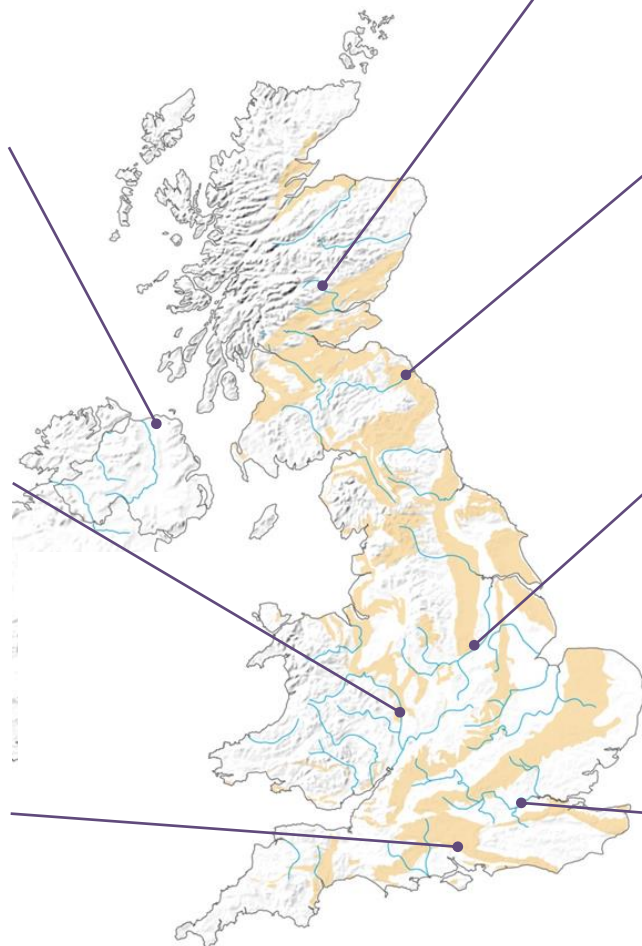
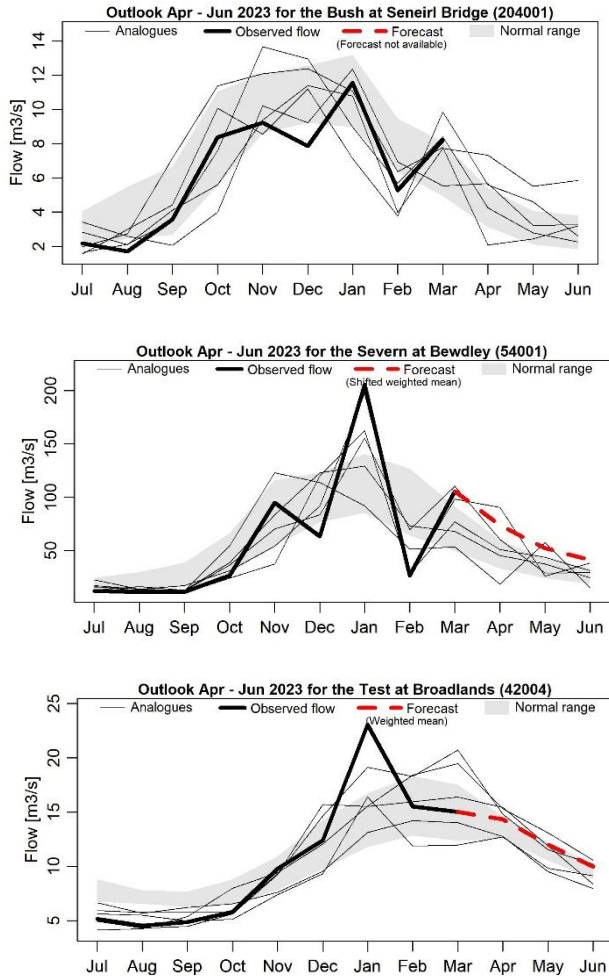
No forecast available

Period: April 2023 – June 2023

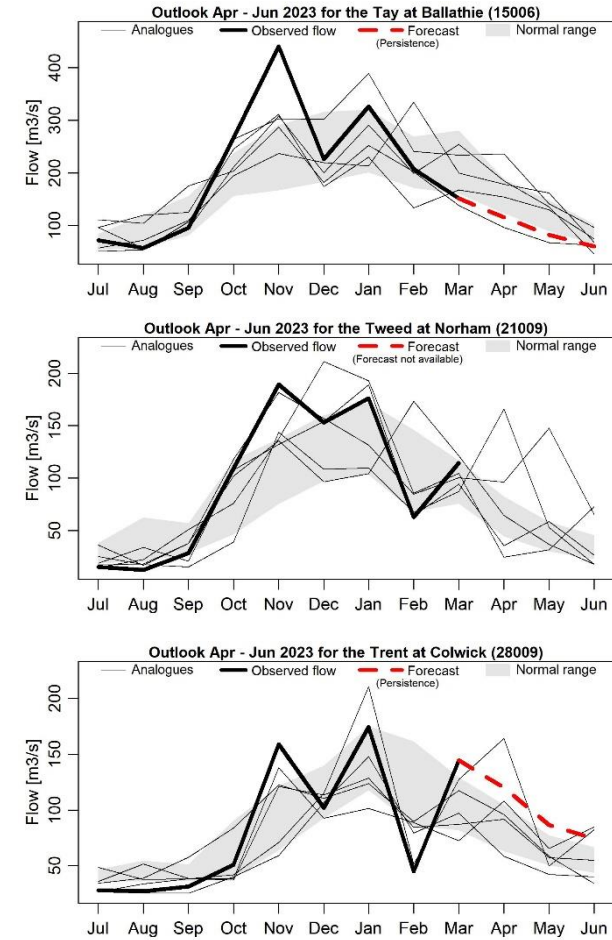
These figures provide insight into the hydrological analogue methodology for a set of sites from across the UK.

In each of the time series graphs the bold black line represents the observed flow during the past nine months. The grey band indicates the normal flow range (the normal band includes 44%

of observed flows in each month). The selected analogues are shown as thin lines and the trajectories that flows took in the following three months are also shown. The forecast is shown as the dashed red line, and in each plot it states whether this has come from the analogues or has been generated on the basis of persistence.



Issued on 11.04.2023 using data to the end of March 2023



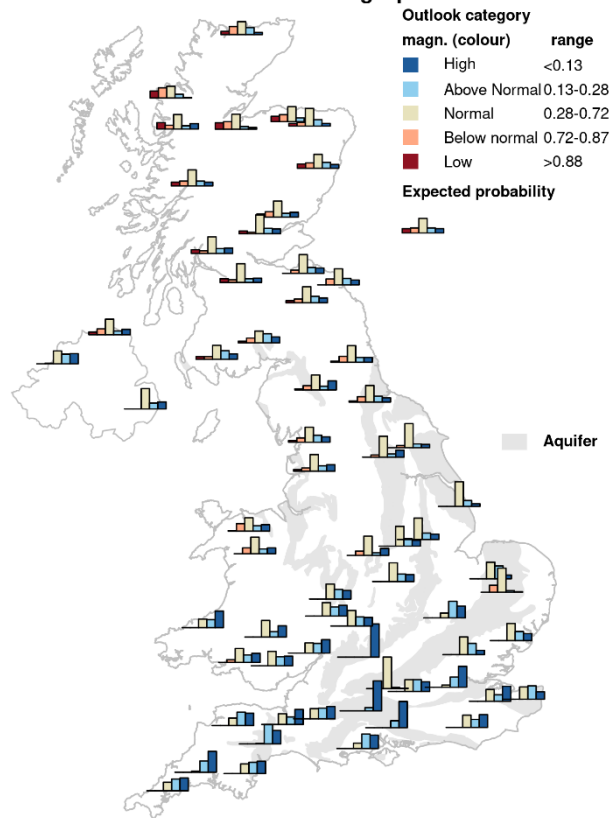
No forecast available

Period: April 2023 – September 2023

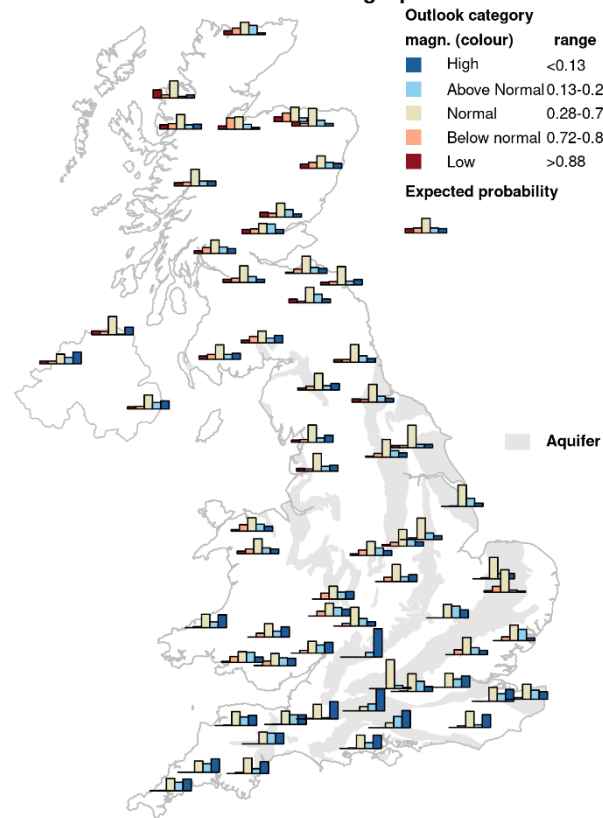
Issued on 03.04.2023 using data to the end of March 2022

The outlook for April indicates that flows are most likely to be normal to above normal in most of the south of England and Wales, and normal for the rest of the UK. The April-May-June outlook indicates the same pattern is expected to persist over the coming three months.

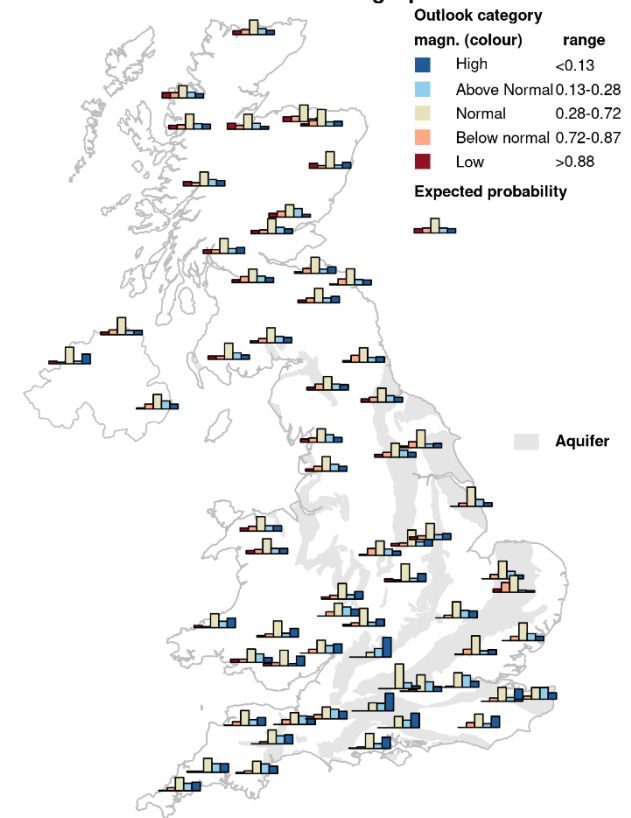
1-month river flow outlook starting Apr 2023



3-month river flow outlook starting Apr 2023



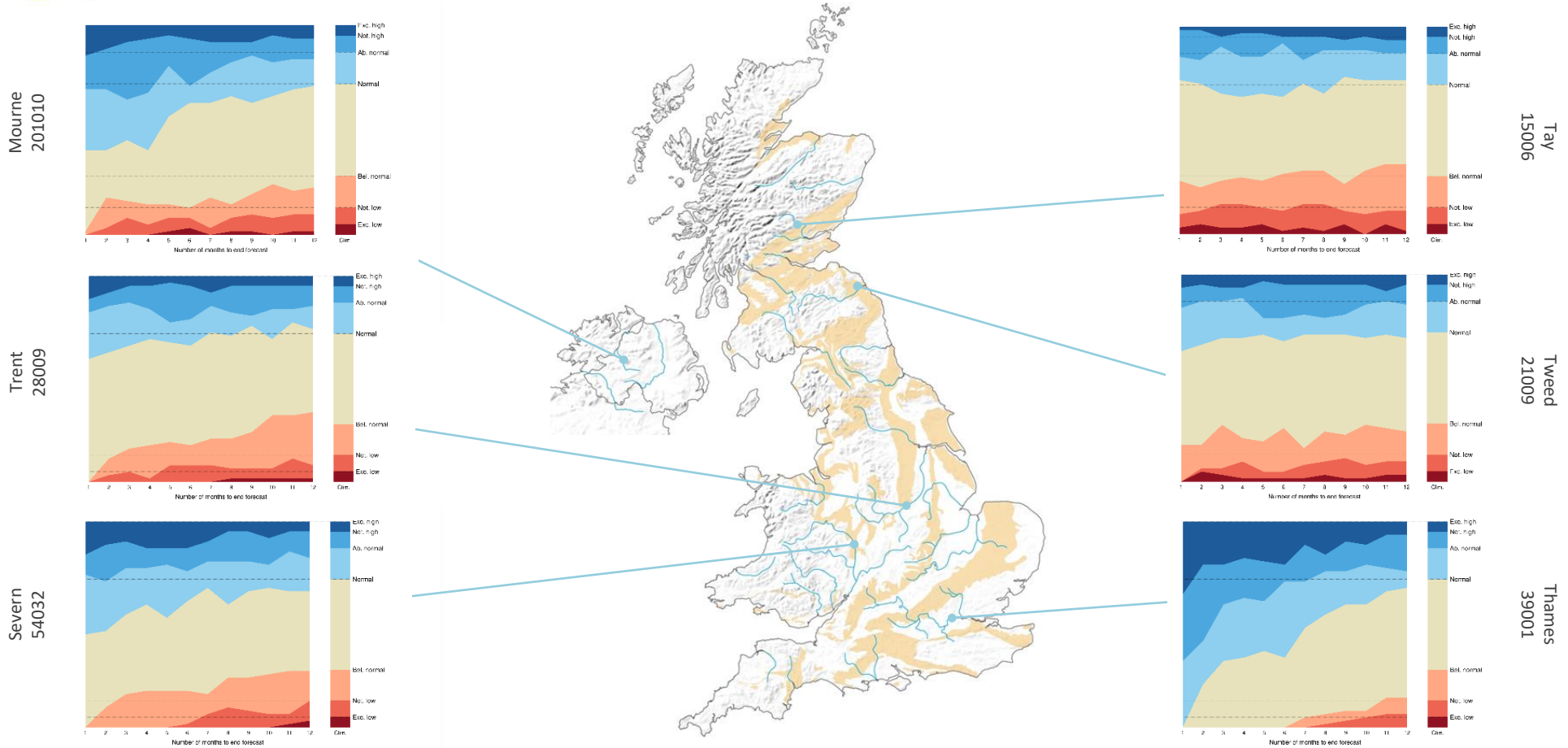
6-month river flow outlook starting Apr 2023



This outlook is based on monthly ensembles of historical sequences of observed climate (rainfall and potential evapotranspiration) that form input to a hydrological model. The outputs are probabilistic simulations of the average river flow over the forecast period (1 to 12 months ahead), at each location. The simulations are generated by the GR4J conceptual rainfall-runoff model from IRSTEA (France) calibrated on observed or naturalised flows.

The bar plot maps show the outlook distribution for 1, 3 and 6-month period for 64 catchments across England and Wales. Each bar plot represents the probabilistic distribution of the simulated river flow compared to the historical river flow, for the same n-month period. The probabilities fall within five categories, classified as: low, below normal, normal, above normal and high.

This outlook is based entirely on historical sequences and therefore does not contain any knowledge of the state of the atmosphere and ocean. It is hence possible that some of the historical sequences used might be inconsistent with current large-scale atmospheric conditions and would therefore be unlikely to occur in the next few months.



This outlook is based on monthly ensembles of historical sequences of observed climate (rainfall and potential evapotranspiration) that form input to a hydrological model. The outputs are probabilistic simulations of the average river flow over the forecast period (1 to 12 months ahead), at each location. The simulations are generated by the GR4J conceptual rainfall-runoff model from IRSTEA (France) calibrated on observed or naturalised flows.

The stack diagrams show the variation over time of the outlook distribution for a number of individual catchments. Each graph represents variation over time of the number of simulated river flows, in each month ensemble, that fall within each of seven categories: exceptionally low, notably low, below normal, normal, above normal, notably high and exceptionally high. The categories represent cumulative flow conditions, e.g. For 3-month, the simulated total 3-month flow compared to the historical 3-month flow distribution. The monthly variations can be compared to the long-term average distribution of river flows (shown as columns

on the right of each timeline graph).

This outlook is based entirely on historical sequences and therefore does not contain any knowledge of the state of the atmosphere and ocean. It is hence possible that some of the historical sequences used might be inconsistent with current large-scale atmospheric conditions and would therefore be unlikely to occur in the next few months.

SUMMARY: During April, river flows are likely to be in the *Normal range* or *Above normal* in all parts of Great Britain, while the south of England, and the Welsh, Severn and Solway regions may experience *Notably high flows*.

Over the next 3 months river flows will likely be in the *Normal range* in much of the country, while the south-west of England, the Midlands and the Anglian region are likely to experience flows in the *Normal range* or *Above Normal*.

These forecasts are produced by using five members of the Met Office rainfall forecast ensemble as input to a water balance hydrological model to provide the five estimates of river flows shown on the left for one month and three months ahead.

Regional forecast monthly-mean river flows are derived from the average of 1km river flow estimates within each region and ranked in terms of 54 years of historical flow estimates (1963 – 2016).

The five maps illustrate the wide range of possible flows and while there is a 50% chance of flows between the 1st and 3rd quartiles, actual flows may be more extreme than the flows derived using the highest or lowest rainfall forecasts.

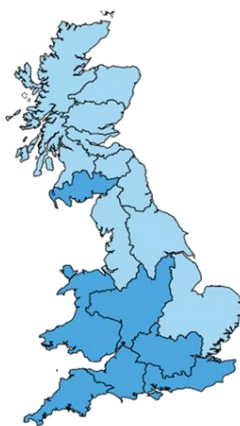
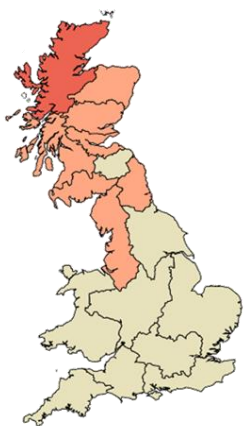
Lowest rainfall forecast

1st quartile

Median

3rd quartile

Highest rainfall forecast



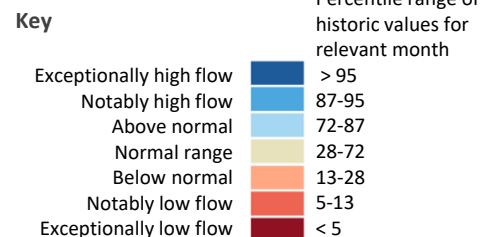
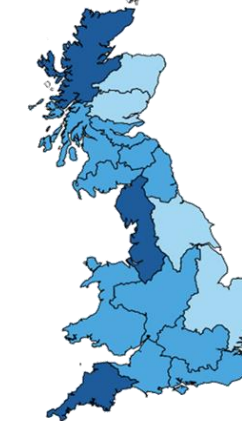
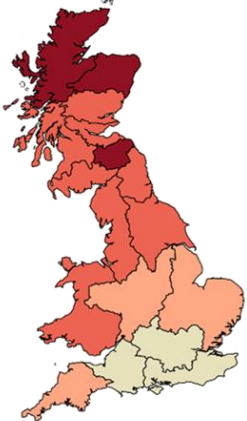
Lowest rainfall forecast

1st quartile

Median

3rd quartile

Highest rainfall forecast

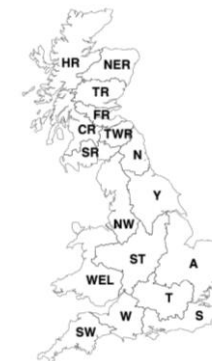


SCOTLAND

- HR Highlands Region
- NER North East Region
- TR Tay Region
- FR Forth Region
- CR Clyde Region
- TWR Tweed Region
- SR Solway Region

ENGLAND

- N Northumbria
- NW North West
- Y Yorkshire
- ST Severn Trent
- A Anglian
- T Thames
- S Southern
- W Wessex
- SW South West
- WALES**
- WEL Welsh



NORTHERN IRELAND
This method cannot currently be used in Northern Ireland

The regional maps illustrating the regional river flows for five members of the Met Office ensemble of rainfall forecasts give some indication of the range of possible river flows in the coming months. As noted previously, the actual flows could be more extreme than the flows generated by either the lowest or highest members of the rainfall ensemble.

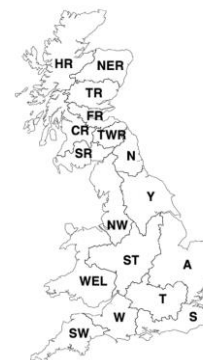
The bar charts (below) give further insight into the range of river flow forecasts by considering all members of the forecast rainfall ensemble. The regional bar charts show the percentage of ensemble forecasts falling in each of the flow categories as generated by the monthly-resolution water-balance model. As before results are averaged by region then ranked in terms of 54 years of historical regional flow estimates (1963 – 2016).

SUMMARY: During April, river flows are likely to be in the *Normal range or Above normal* in all parts of Great Britain, while the south of England, and the Welsh, Severn and Solway regions may experience *Notably high flows*.

Over the next 3 months river flows will likely be in the *Normal range* in much of the country, while the south-west of England, the Midlands and the Anglian region are likely to experience flows in the *Normal range or Above Normal*.

SCOTLAND

- HR Highlands Region
- NER North East Region
- TR Tay Region
- FR Forth Region
- CR Clyde Region
- TWR Tweed Region
- SR Solway Region



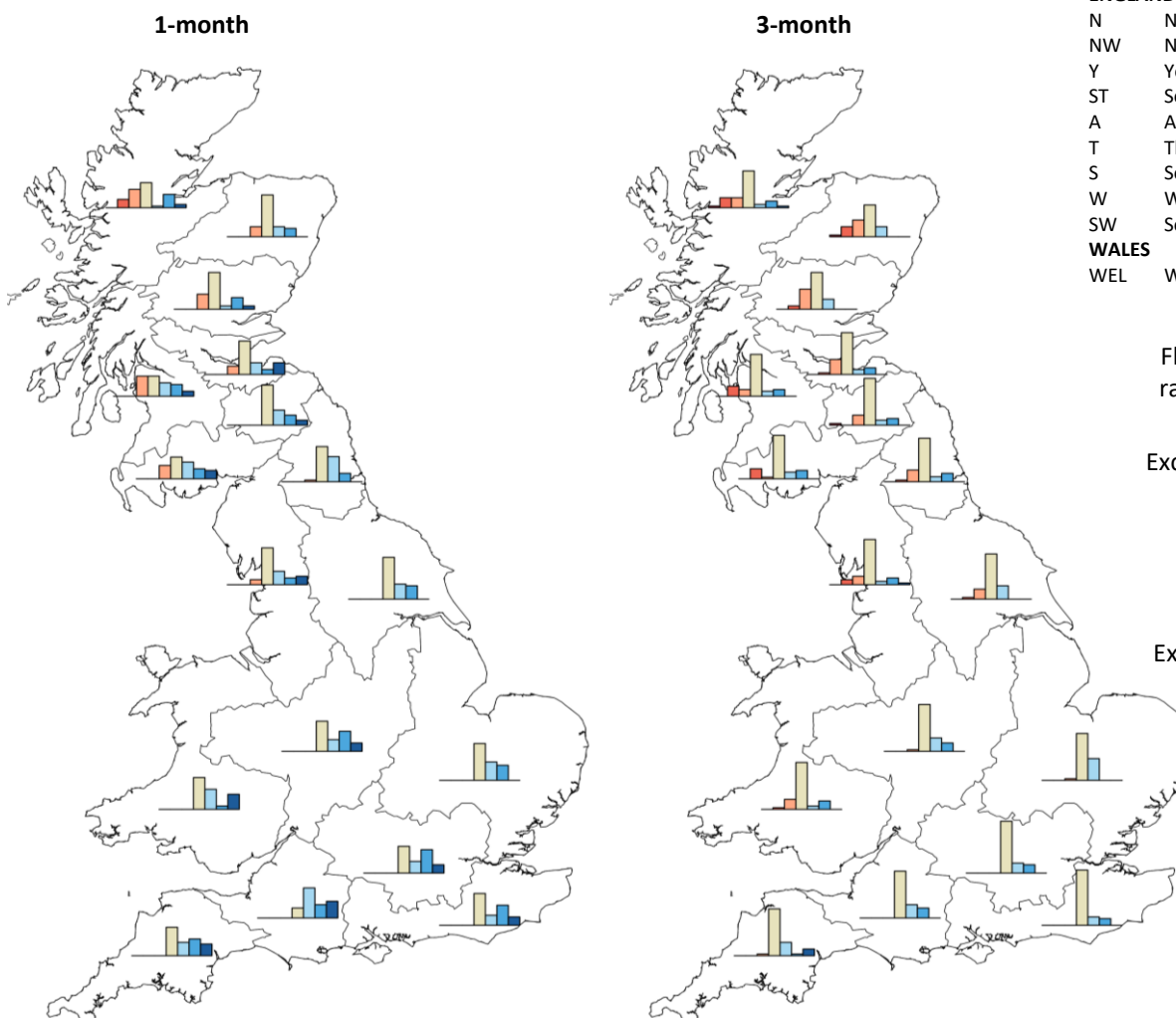
ENGLAND

- N Northumbria
- NW North West
- Y Yorkshire
- ST Severn Trent
- A Anglian
- T Thames
- S Southern
- W Wessex
- SW South West

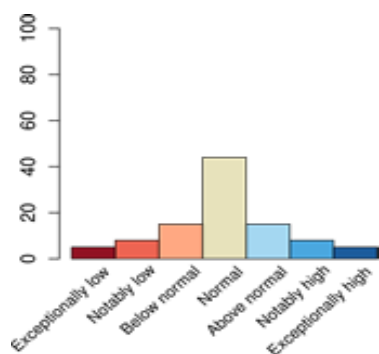
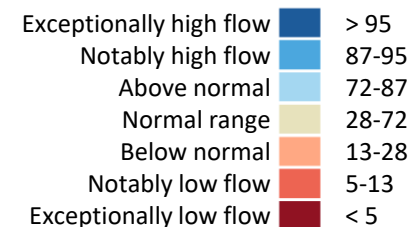
WALES

- WEL Welsh

NORTHERN IRELAND
This method cannot currently be used in Northern Ireland



Flow estimate for each river pixel ranked in terms of historic % flow estimates (1963-2016)



Outlook based on Modelled Flow from Rainfall Forecasts

Period: April 2023 - June 2023

Issue date: 03.04.2023

The maps illustrating the regional river flows for five members of the Met Office ensemble of rainfall forecasts give some indication of the range of possible river flows in the coming months. As noted previously, the actual flows could be more extreme than the flows generated by either the lowest or highest members of the rainfall ensemble.

The tables below give further insight into the range of river flow forecasts by considering all members of the forecast rainfall ensemble. The numbers in the tables are the percentage of ensemble forecasts falling in each of the flow categories as generated by the monthly-resolution water-balance model. As before results are averaged by region then ranked in terms of 54 years of historical regional flow estimates (1963 – 2016).

SUMMARY: During April, river flows are likely to be in the *Normal range* or *Above normal* in all parts of Great Britain, while the south of England, and the Welsh, Severn and Solway regions may experience *Notably high flows*.

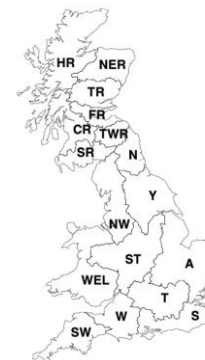
Over the next 3 months river flows will likely be in the *Normal range* in much of the country, while the south-west of England, the Midlands and the Anglian region are likely to experience flows in the *Normal range* or *Above Normal*.

SCOTLAND

- HR Highlands Region
- NER North East Region
- TR Tay Region
- FR Forth Region
- CR Clyde Region
- TWR Tweed Region
- SR Solway Region

ENGLAND

- N Northumbria
- NW North West
- Y Yorkshire
- ST Severn Trent
- A Anglian
- T Thames
- S Southern
- W Wessex
- SW South West
- WALES**
- WEL Welsh



NORTHERN IRELAND

This method cannot currently be used in Northern Ireland

1-month ahead	A	NW	N	ST	SW	S	T	WEL	W	Y	CR	FR	HR	NER	SR	TR	TWR
Exceptionally high flow	0	12	0	12	17	12	12	21	24	0	7	17	5	0	12	5	7
Notably high	21	10	12	29	24	29	33	5	19	19	17	7	19	12	14	17	14
Above normal	26	19	36	17	19	14	17	29	43	21	19	17	2	14	24	5	21
Normal range	52	52	50	43	40	45	38	45	14	60	29	48	36	60	31	52	57
Below normal	0	7	2	0	0	0	0	0	0	0	29	12	26	14	19	21	0
Notably low	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0
Exceptionally low flow	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

3-month ahead	A	NW	N	ST	SW	S	T	WEL	W	Y	CR	FR	HR	NER	SR	TR	TWR
Exceptionally high flow	0	2	0	0	10	0	0	0	0	0	0	0	2	0	0	0	0
Notably high	0	10	12	12	2	10	12	12	14	0	10	10	10	0	12	0	10
Above normal	31	5	7	19	19	12	14	5	19	19	7	7	5	14	10	14	7
Normal range	67	64	62	67	67	79	74	67	67	64	60	60	52	45	62	52	67
Below normal	2	12	17	2	2	0	0	14	0	14	10	21	14	24	2	29	14
Notably low	0	7	2	0	0	0	0	2	0	2	14	2	14	14	14	5	0
Exceptionally low flow	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	2

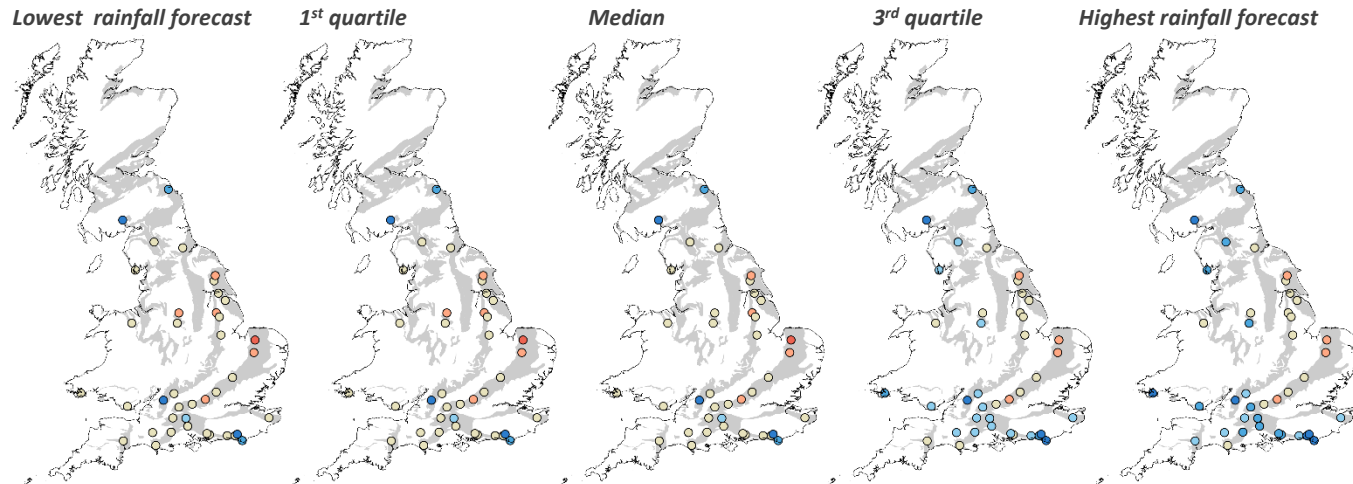
Period: April 2023 – June 2023

Issued on 11.04.2023 using data to the end of March

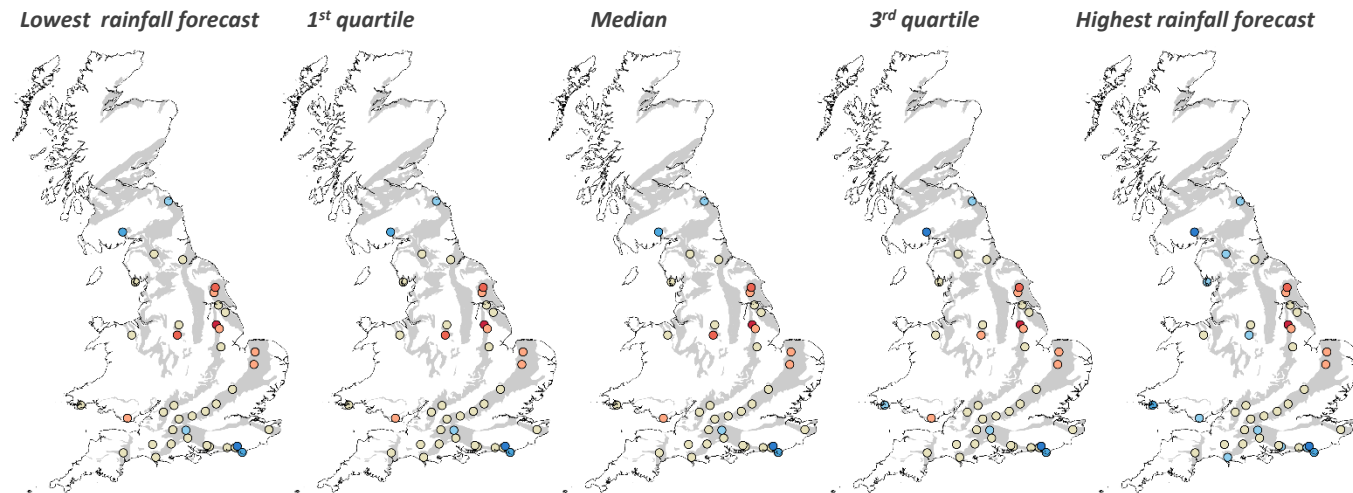
Groundwater levels are still responding to exceptionally high March rainfall over much of the UK meaning that there is more uncertainty in the groundwater level forecasts than usual. Under median rainfall conditions, normal to below normal groundwater levels are expected at most sites in the next month. Above normal levels continue to be forecast in the eastern South Downs Chalk and the Devonian and northern Fell Sandstone of Scotland and NE England. The 3 month forecasts are similar to the 1 month forecast, and have a similar regional distributions for all rainfall scenarios, with levels expected to be predominantly normal.

These forecasts are produced by running five members of the Met Office ensemble climate forecast through groundwater models of observation borehole hydrographs at 42 sites across the country. The sites are distributed across the principal aquifers.

Based on the distribution of observed historical groundwater levels in a given month, seven categories have been derived for each site: very low, low, below normal, normal, above normal, high, and very high. The forecast groundwater level is assigned to one of these seven categories depending on where it falls within the distribution of the historically observed values.

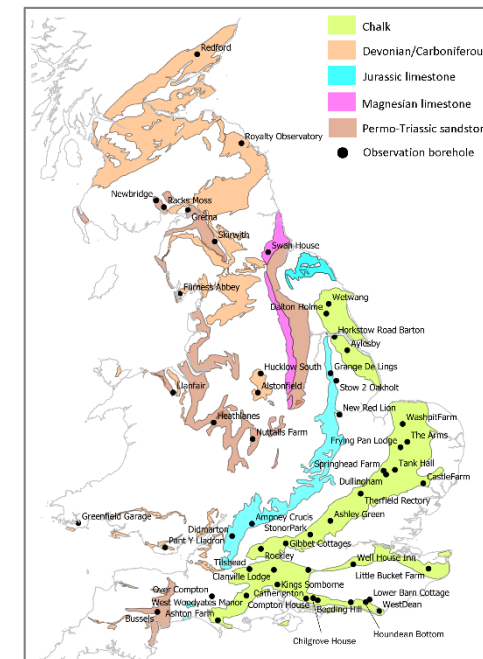


1-month outlook



3-month outlook

Key	Percentile range of historic observed values for relevant month
Exceptionally high levels	> 95
Notably high levels	87-95
Above normal	72-87
Normal	28-72
Below normal	12-28
Notably low levels	5-13
Exceptionally low levels	< 5



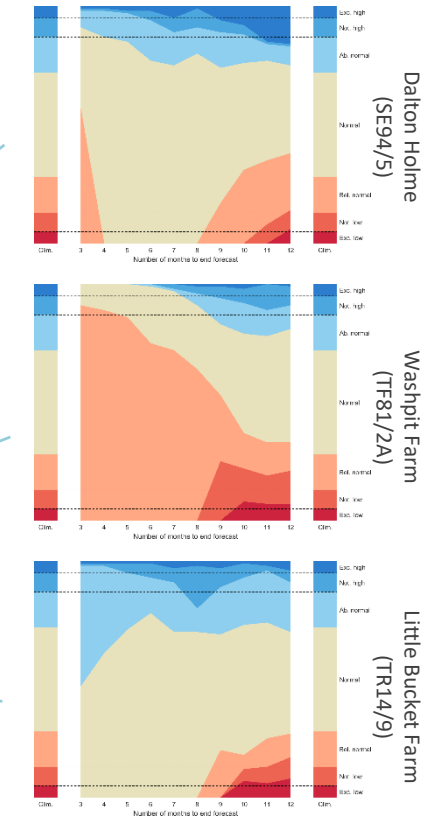
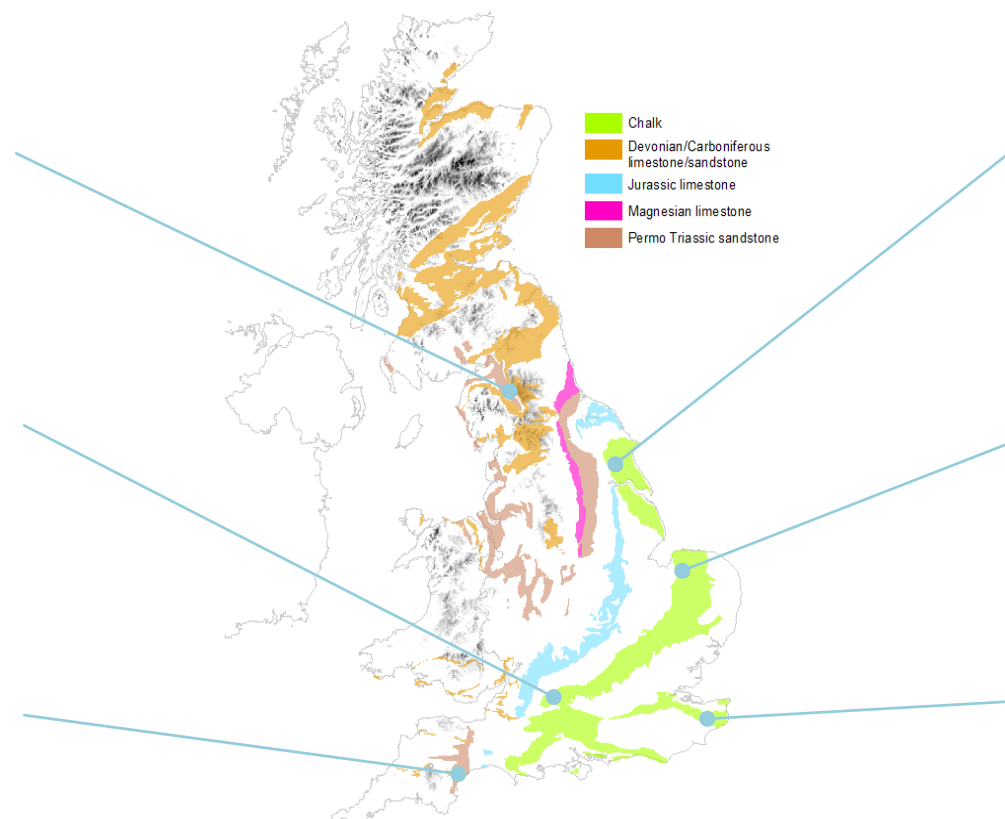
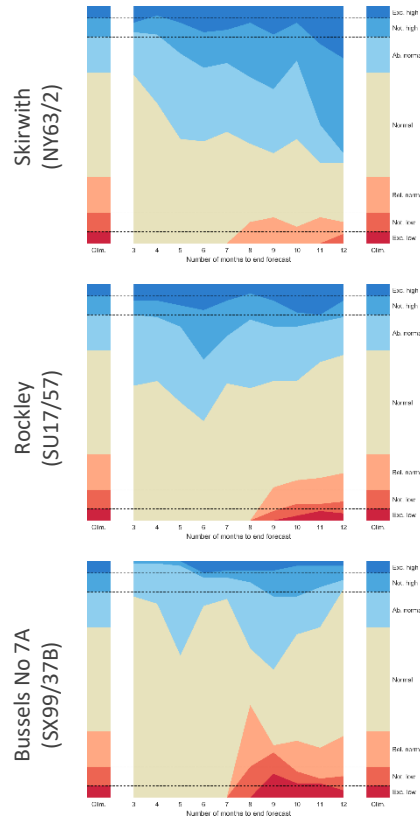
The Hydrological Outlook UK provides an outlook for the water situation for the UK over the next three months and beyond. For guidance on how to interpret the outlook, a wider range of information, and a full description of underpinning methods, please visit the website: www.hydoutuk.net

Outlook based on modelled groundwater from historical climate

Period: April 2023 – March 2024

Issued on 11.04.2023 using data to the end of March

Groundwater levels at Washpit Farm are expected to be below normal to notably low for much of the next year. Predominantly normal levels are forecast for Rockley, Bussels No 7A, and Little Bucket Farm over the next 3 to 12 months. Skirwith levels are likely to be normal over the next 6 months and Dalton Holme levels are expected to return to normal 3 to 5 months from now, beyond 6 months ahead the levels at both of these sites will depend on rainfall.



This outlook is based on monthly ensembles of historical sequences of observed climate (rainfall and potential evapotranspiration) that form input to hydrological models. The outputs are probabilistic simulations of the average groundwater level over the forecast horizon (3 to 12 months ahead), at each location.

that fall within each the seven categories: exceptionally low, notably low, below normal, normal, above normal, notably high and exceptionally high. The monthly variations can be compared to the long-term average distribution of levels, which are shown as columns on the left and right of each graph.

the atmosphere and ocean. It is hence possible that some of the historical sequences used might be inconsistent with current large-scale atmospheric conditions and would therefore be unlikely to occur in the next few months.

The graphs show variation over time of the number of simulated groundwater levels in each monthly ensemble,

This outlook is based entirely on historical sequences and therefore does not contain any knowledge of the state of

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