

Monthly water situation report

East Anglia

Summary – May 2021

May was wetter than average with East Anglia receiving an average of 80 mm (171% of the Long Term Average (LTA)); the 10th wettest May since 1891. Rainfall accumulations for the past 6 and 12 months are classified notably high for East Anglia as a whole. The Soil Moisture Deficit (SMD) was 55 mm by the end of the month. Flows increased at around half the indicator sites in the area in response to the unsettled weather and flows at all sites were classified normal or higher. Groundwater levels fell or remained level at all sites except the Great Oolite at Fringford where levels rose, and levels at all groundwater sites were classified normal or above.

Rainfall

Following an exceptionally dry April, May was wetter than average, with an average of 80 mm (171% of LTA) across East Anglia as a whole. There were slight variations across the catchments – the wettest were the Upper Bedford Ouse (102 mm; notably high) and North Norfolk (102 mm; exceptionally high) – South Essex received slightly less at 65 mm (classified above normal). For the area as a whole, the accumulated rainfall totals for the last 3 months are classified normal, but the totals for the past 6 and 12 months are classified notably high. The 6 months to May 2021 were the 8th wettest December to May period for East Anglia since 1891 (the 5th wettest in Central Area Fenland).

Soil Moisture Deficit/Recharge

The generally unsettled weather in May caused the SMD to decrease to 34 mm (below normal), although by the end of the month the SMD had risen again to an average of 55 mm across East Anglia as a whole (just into the normal category). By the end of the month, SMD was generally lower in Norfolk and the Upper Bedford Ouse; higher in Essex.

River Flows

River flows were classified as normal or above across East Anglia in May. Half of sites saw an increase in monthly average river flows in comparison with April (predominantly those in the Bedford Ouse, and also the Wissey, Yare, Bure, Wensum, Waveney and Chelmer); flows decreased or remained steady at the rest of the sites. Rivers in the Chalk catchments of the Ely Ouse were generally classified as normal, sustained by a significant recovery in groundwater levels over the winter period. Flows in the Wissey, where groundwater levels are exceptionally high, were classified exceptionally high. Flows in the predominantly clay catchments of the Bedford Ouse were classified above normal in response to the unsettled weather during May. Flows in the Norfolk catchments were classified above normal or notably high.

Groundwater Levels

Groundwater levels were classified as normal or above across East Anglia at the end of May. Levels fell or remained level at all sites except Fringford, where levels rose to exceptionally high. Out of 18 sites for which data were available, 3 were classified normal; 3 above normal; 9 notably high; and 3 exceptionally high (Fringford in the Great Oolite, Bircham Newton in the NW Norfolk Chalk, and Breckland in the Wissey Chalk).

Reservoir Storage/Water Resource Zone Stocks

The reservoir storage level generally increased or remained stable at all sites except Abberton. The majority of sites ended the month above their normal operating curve and recorded a normal or higher storage level, with the exception of Abberton and Grafham which recorded below normal levels by the end of May.

All data are provisional and may be subject to revision. The views expressed in this document are not necessarily those of the Environment Agency. Its officers, servants or agents accept no liability for any loss or damage arising from the interpretation or use of the information, or reliance upon views contained herein.

Environmental Impact

Groundwater support scheme operations remained minimal in May. The Lodes-Granta groundwater support scheme had 1 of the 6 pumps operating, with no pumping taking place in the Rhee, Hiz, and Thet-Little Ouse schemes.

Forward Look

Probabilistic ensemble projections for river flows at key sites

June 2021: There is an increased probability of flows normal or higher in the Ely Ouse, Ouse and Ivel. There is an increased probability of flows below normal or lower in the Bedford Ouse and the Kym. There is a reduced probability of exceptionally low flows at all the key sites with the exception of the Kym.

September 2021: There is a reduced probability of exceptionally low flows at all the key sites except the Gipping. There is an increased probability of flows normal or higher in the Bedford Ouse, Ouse, Ivel and Kym. There is an increased probability of below normal flows in the Ely Ouse.

Probabilistic ensemble projections for groundwater levels in key aquifers

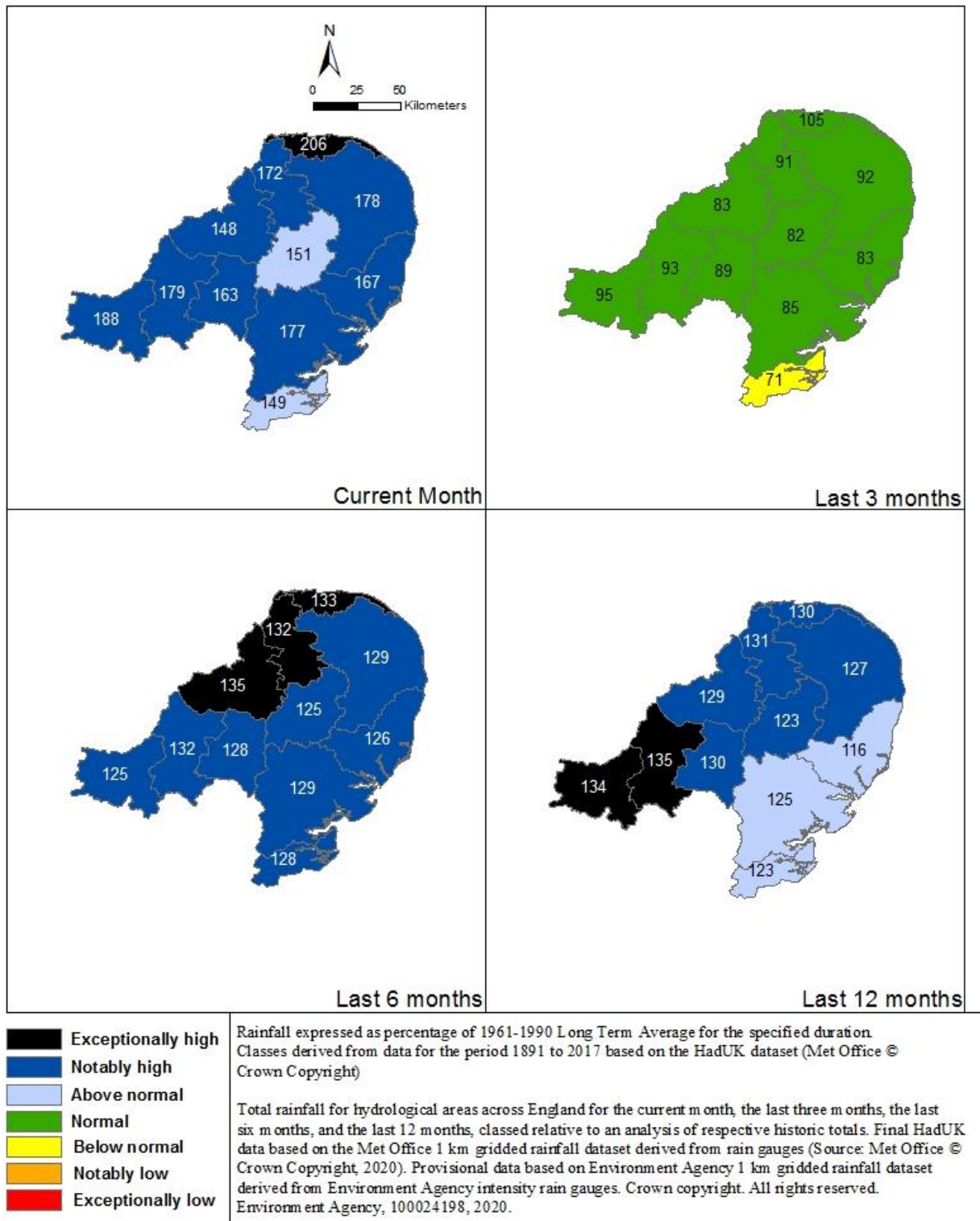
September 2021: It is highly likely that groundwater levels will be normal or higher at all key sites in September. At Kenninghall in the Little Ouse Chalk, it is highly likely that groundwater levels will be notably high in September.

March 2022: There is an increased probability of groundwater levels being normal or higher at Washpit Farm (NW Norfolk Chalk) and Therfield Rectory (North Herts Chalk) in March 2022. There is a reduced probability of exceptionally low groundwater levels at the majority of the key sites with the exception of Redlands Hall (Cam Chalk) and Smeetham (Essex Chalk).

Author: [ANG-Hydrology](#) Contact details: 03708506506

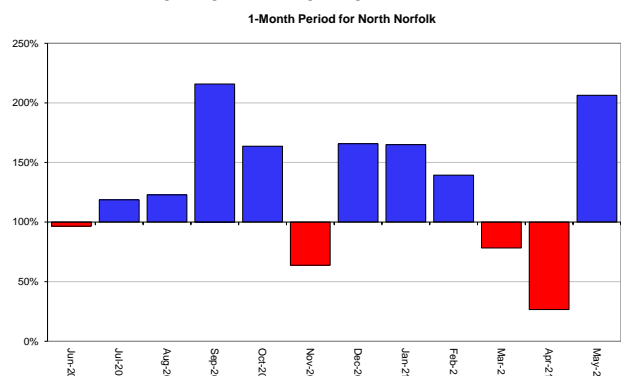
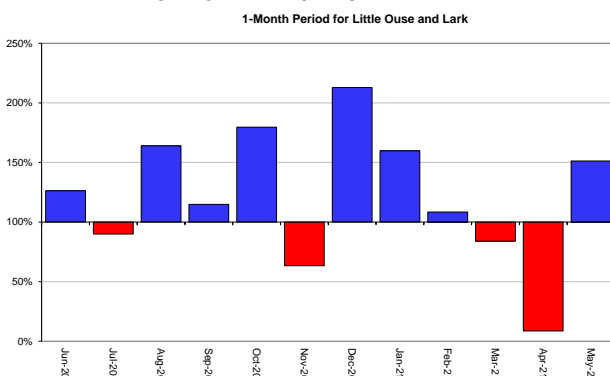
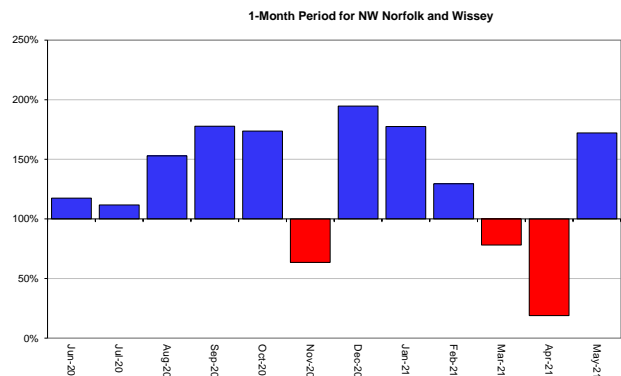
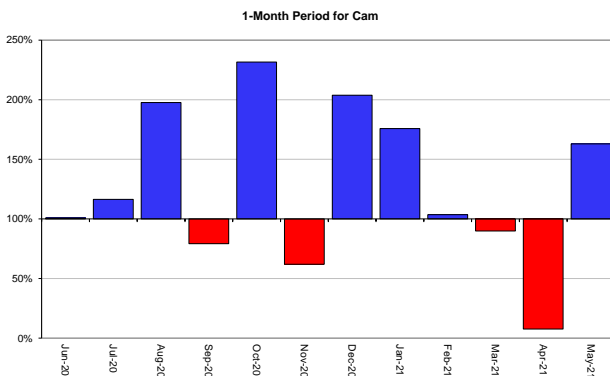
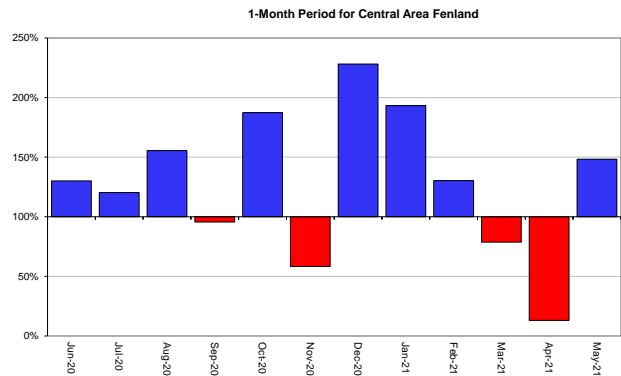
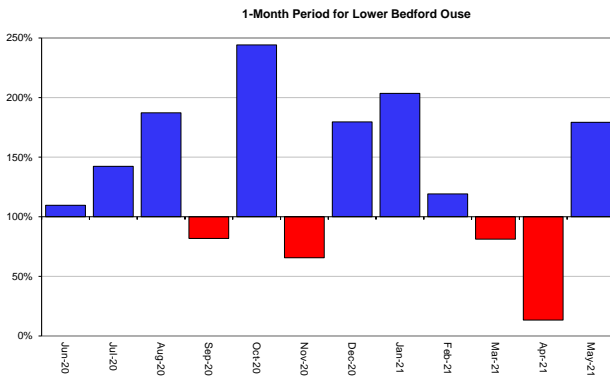
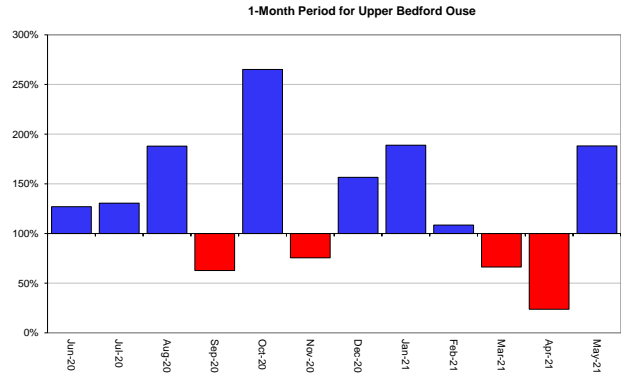
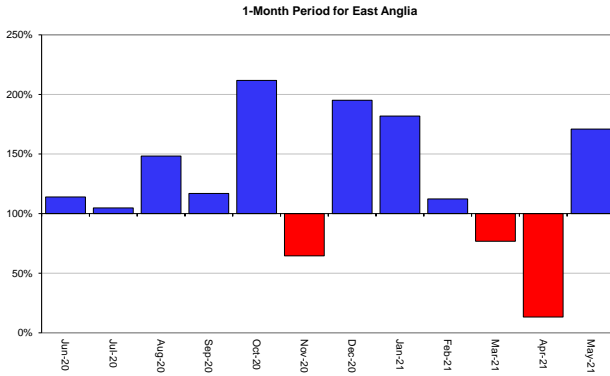
Rainfall

May 2021



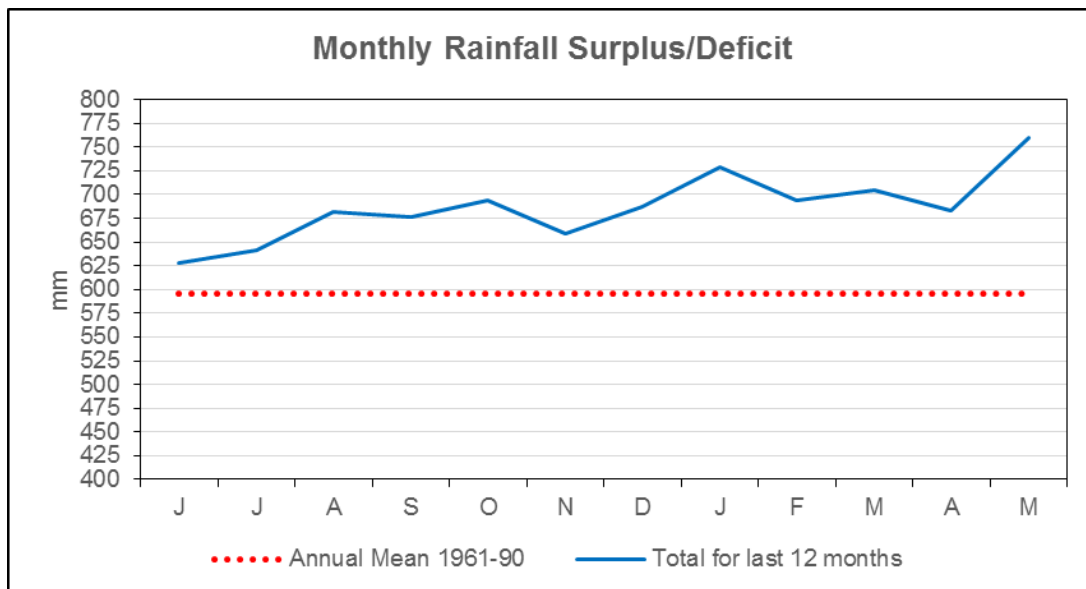
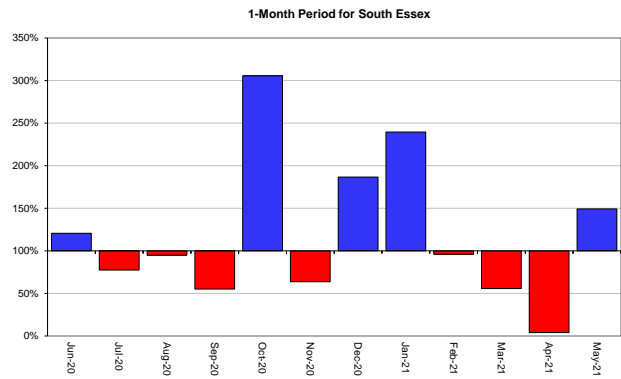
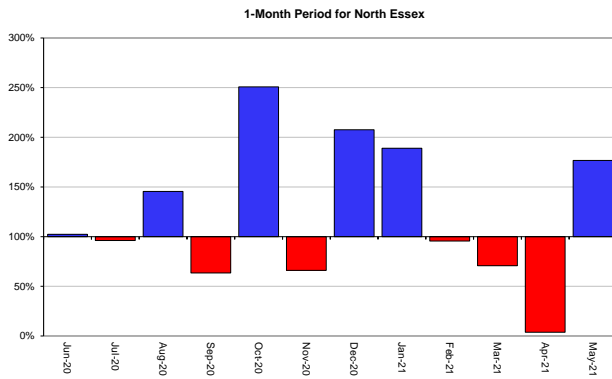
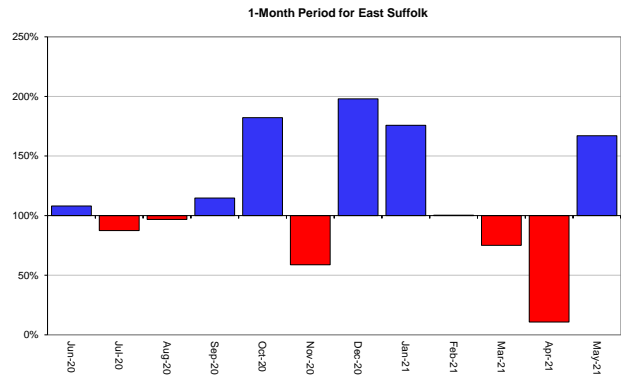
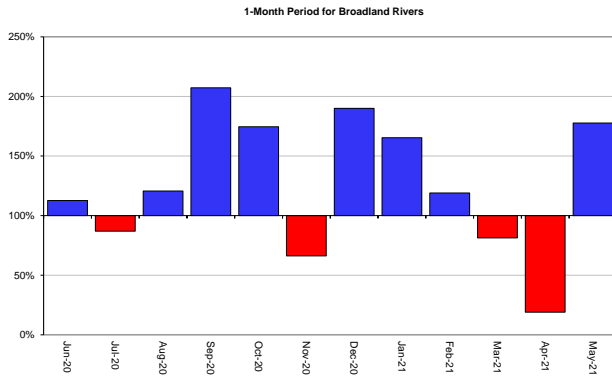
Above average rainfall

Below average rainfall

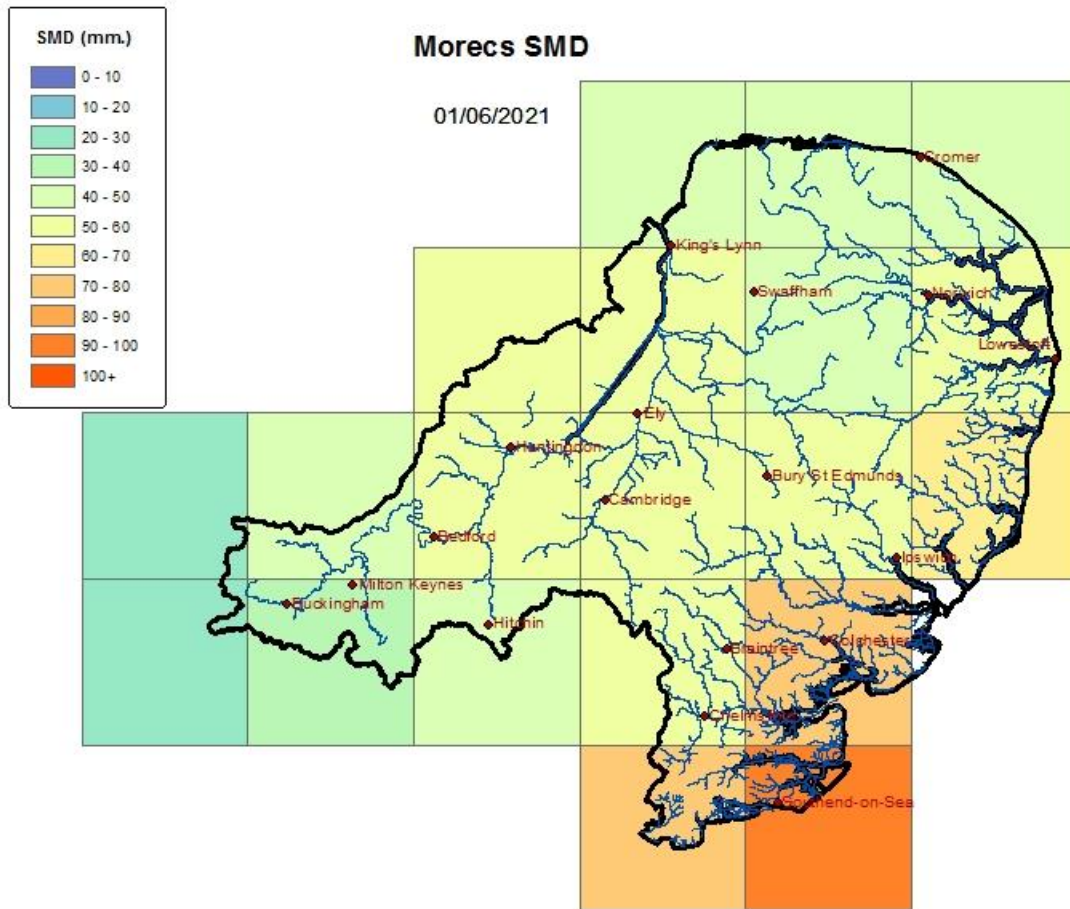


Above average rainfall

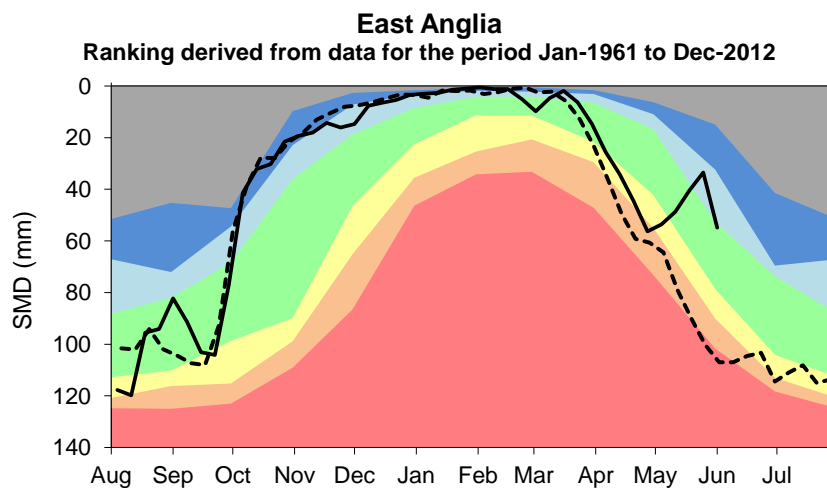
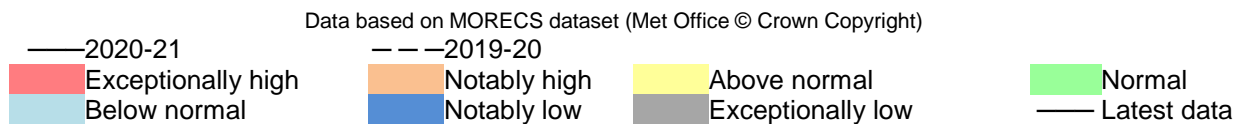
Below average rainfall



Soil Moisture Deficit

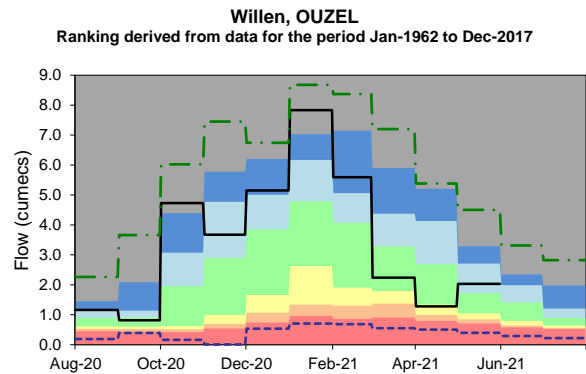
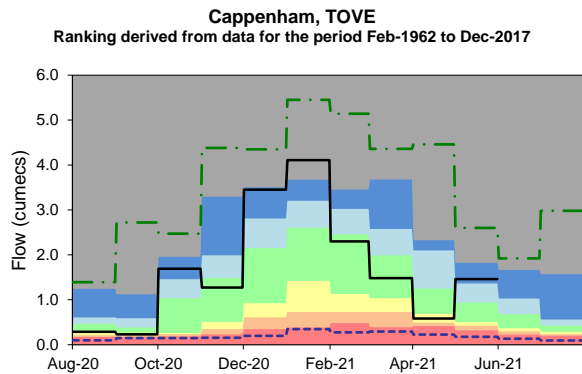
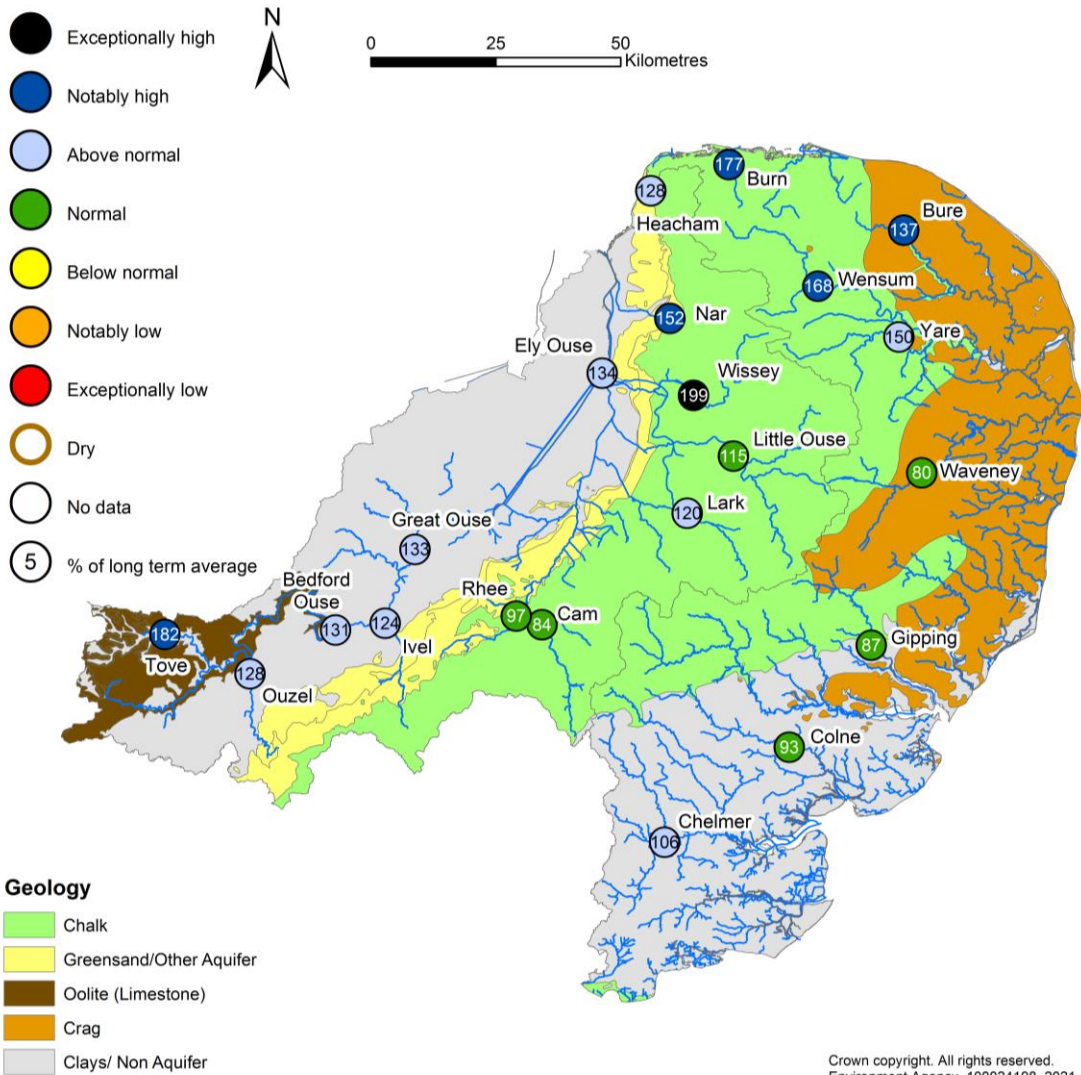


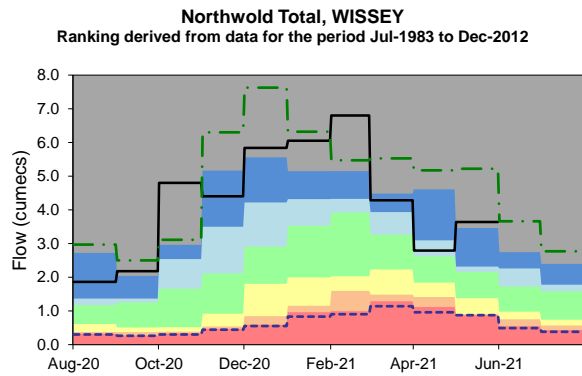
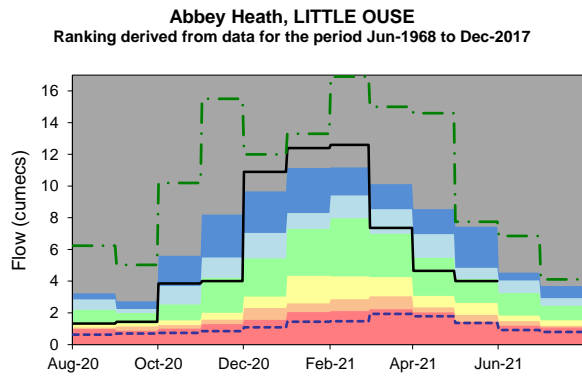
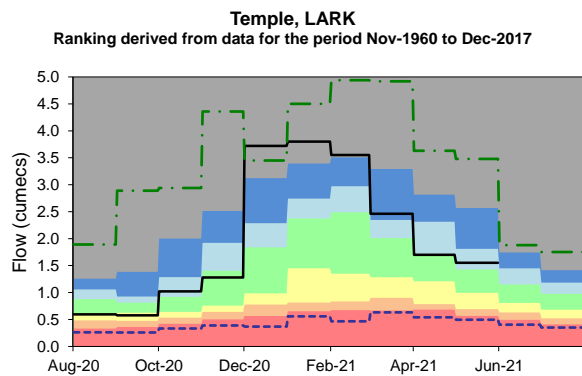
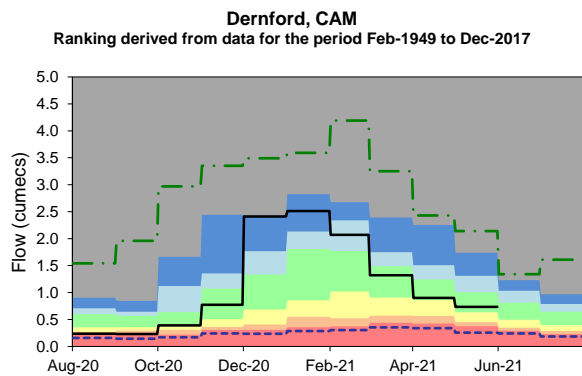
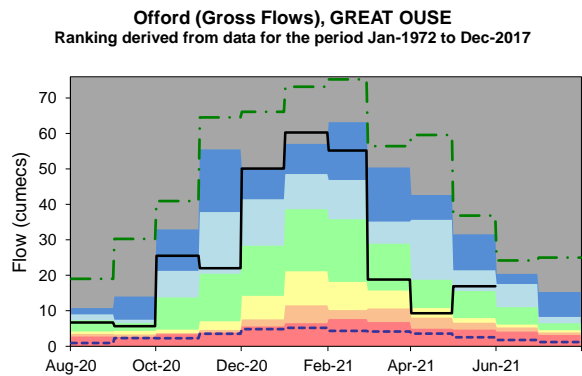
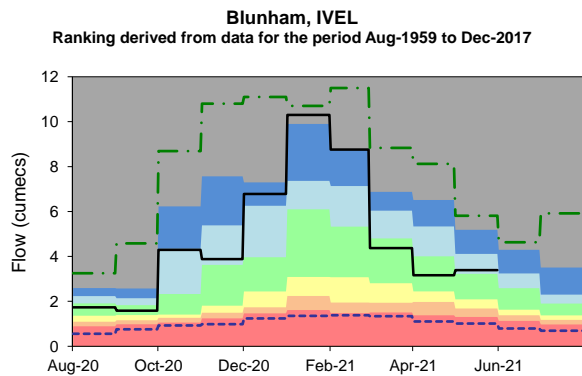
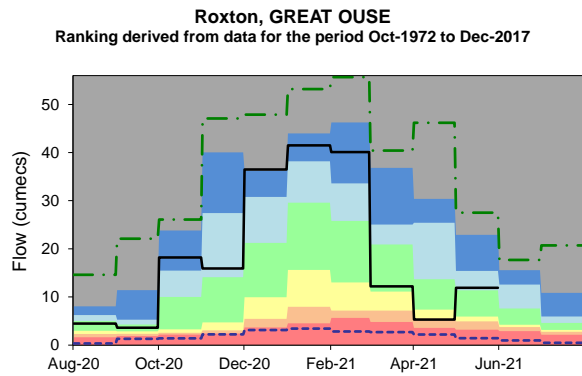
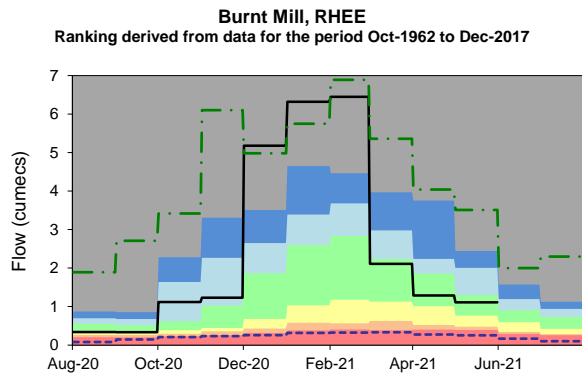
Data based on MORECS (Met Office © Crown Copyright)

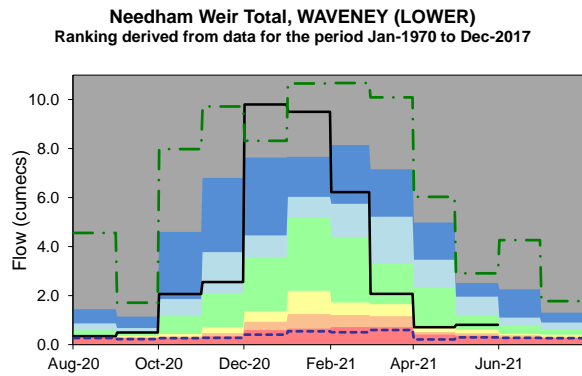
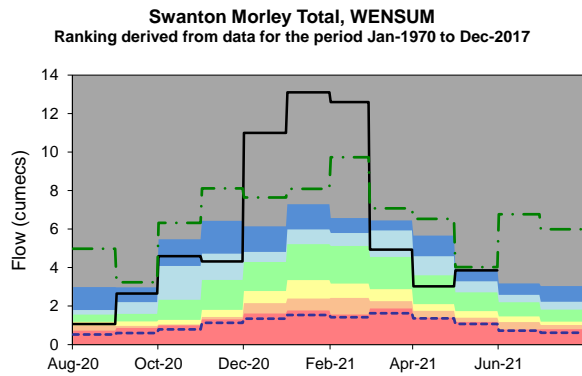
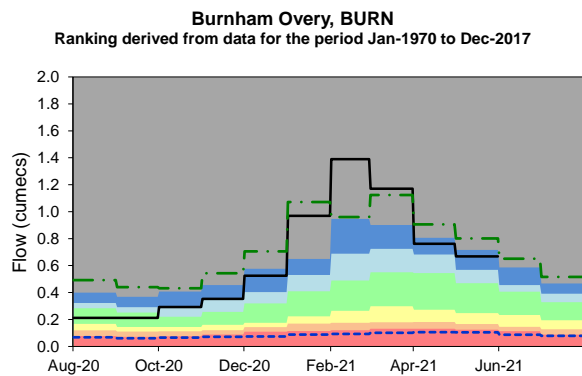
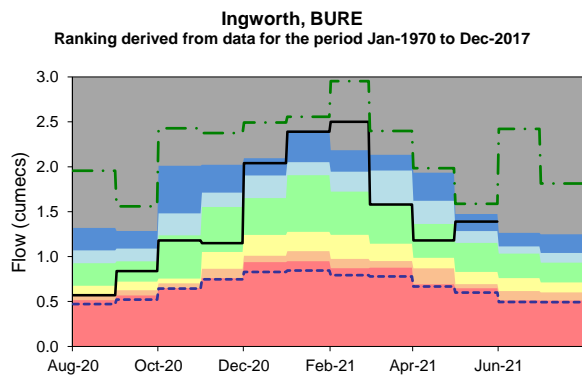
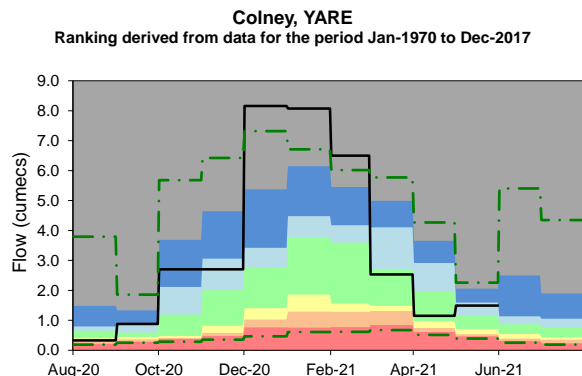
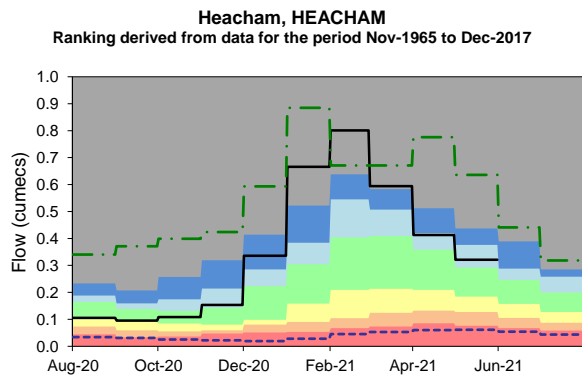
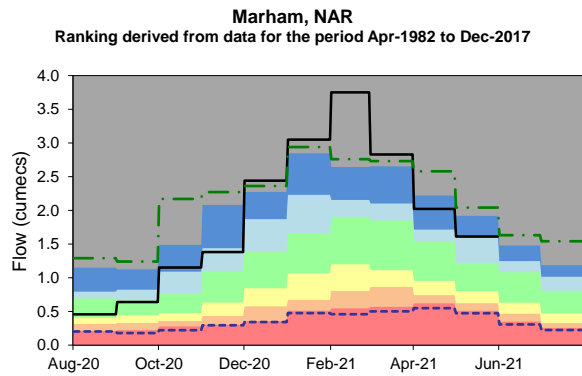
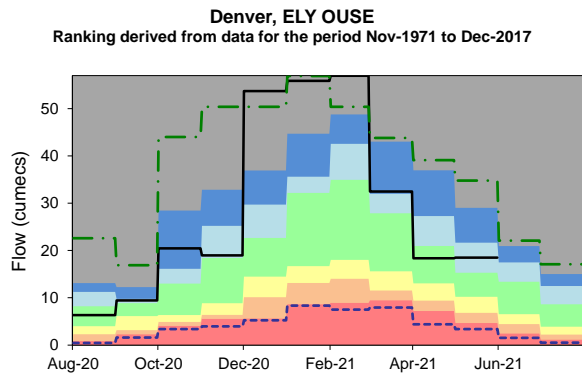


River Flow

May 2021



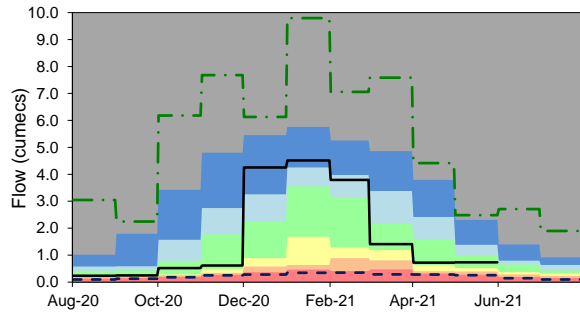






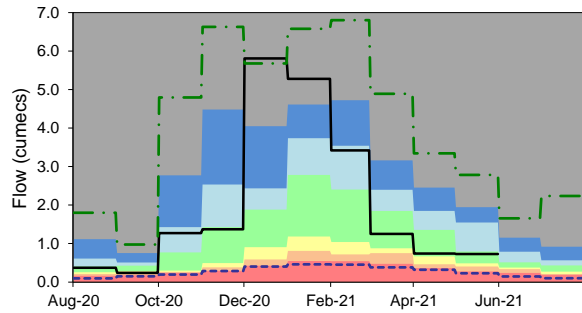
Bramford, GIPPING

Ranking derived from data for the period Jan-1970 to Dec-2017



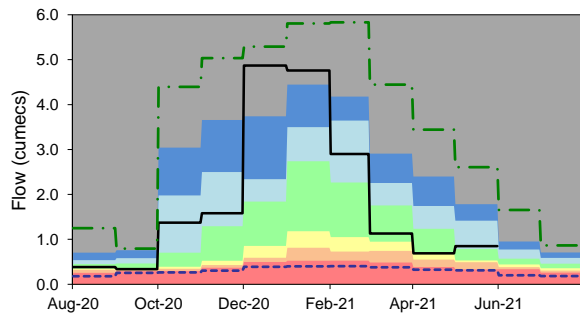
Lexden, COLNE

Ranking derived from data for the period Jan-1970 to Dec-2017

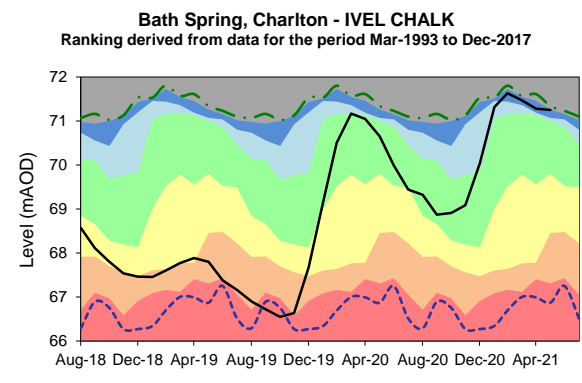
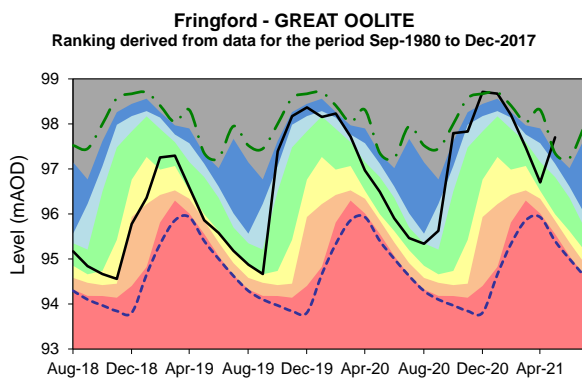
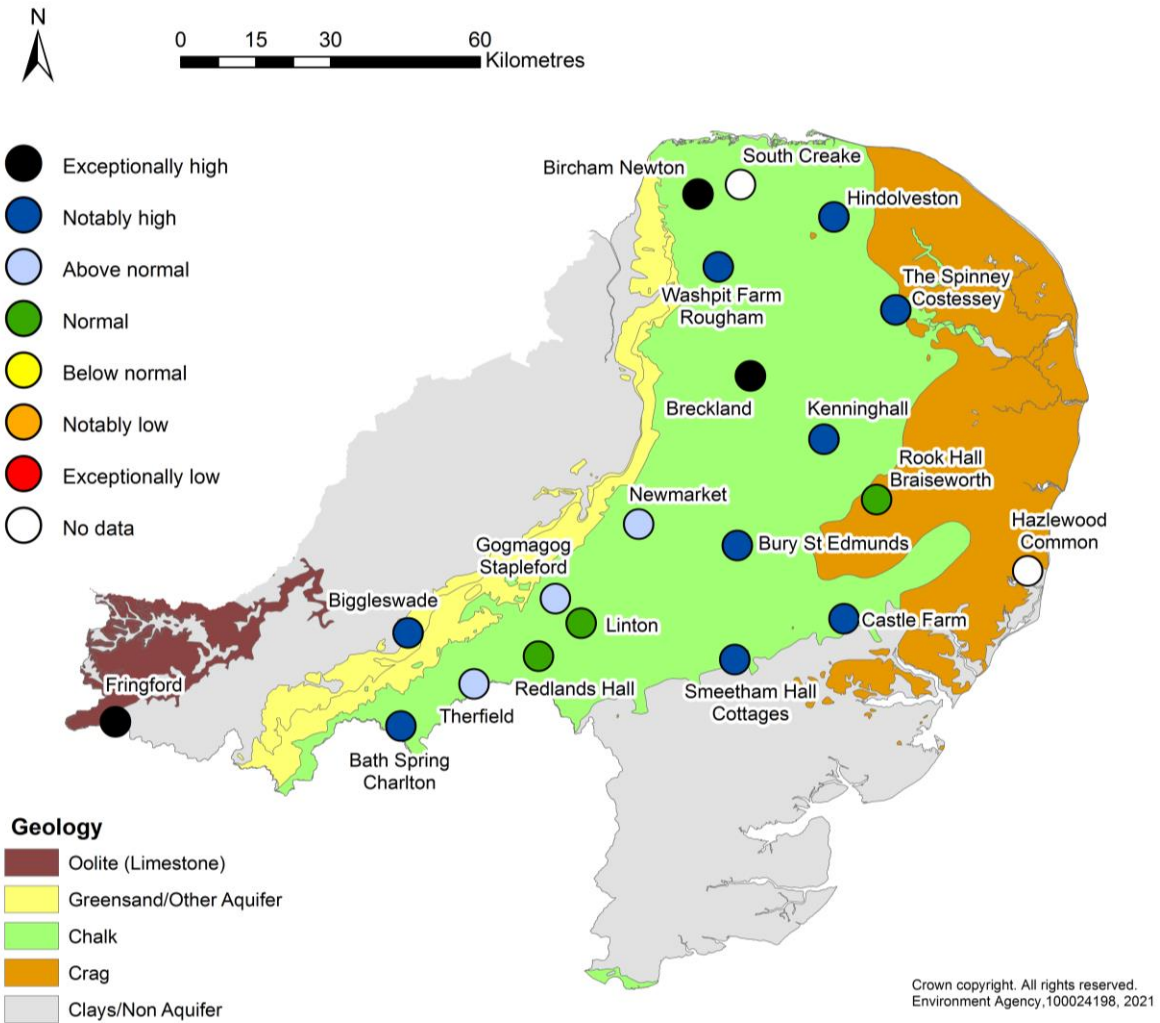


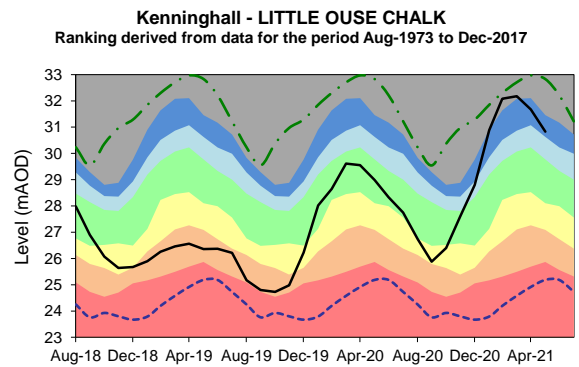
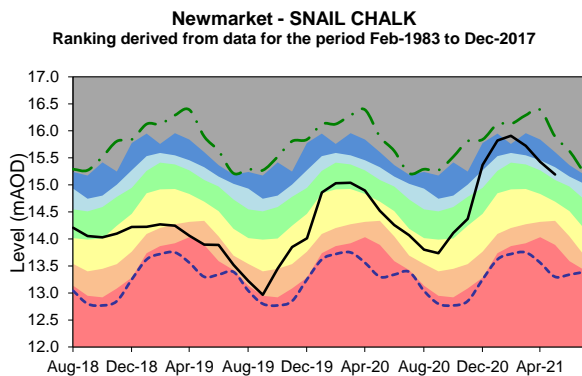
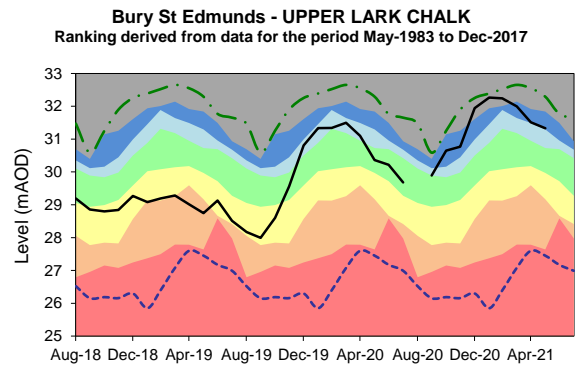
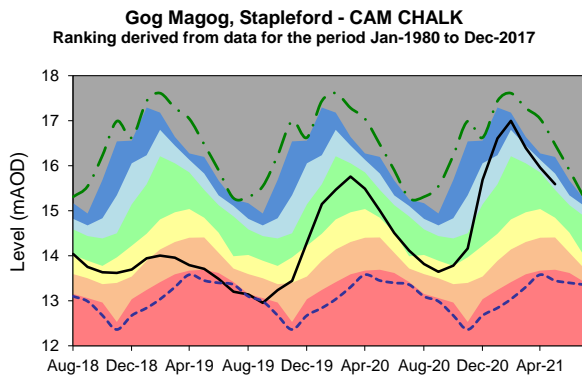
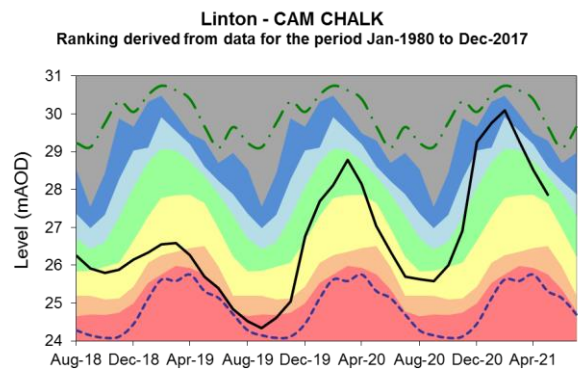
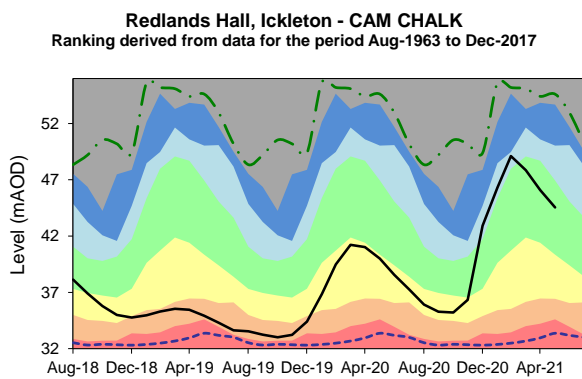
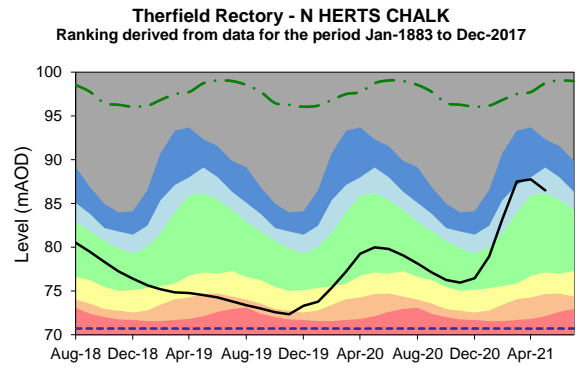
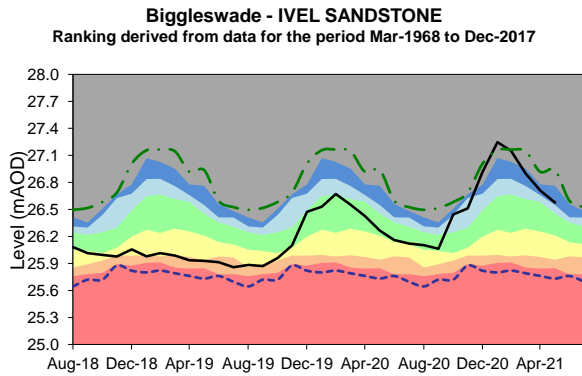
Springfield, CHELMER

Ranking derived from data for the period Jan-1970 to Dec-2017



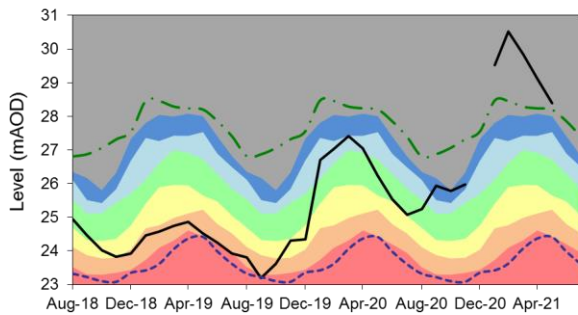
Groundwater Levels May 2021



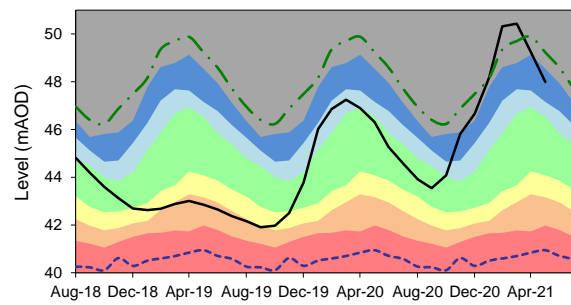




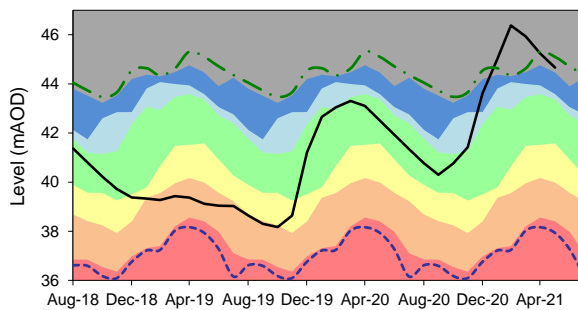
Breckland - WISEY CHALK
Ranking derived from data for the period Jan-1971 to Nov-2017



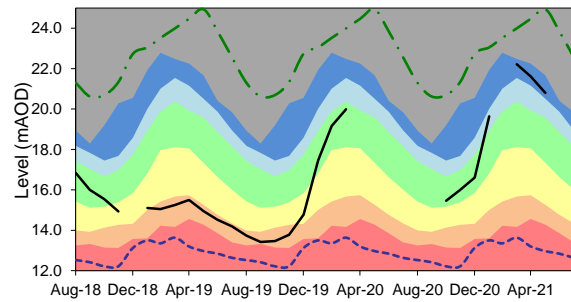
Washpit Farm, Rougham - NW NORFOLK CHALK
Ranking derived from data for the period May-1950 to Dec-2017



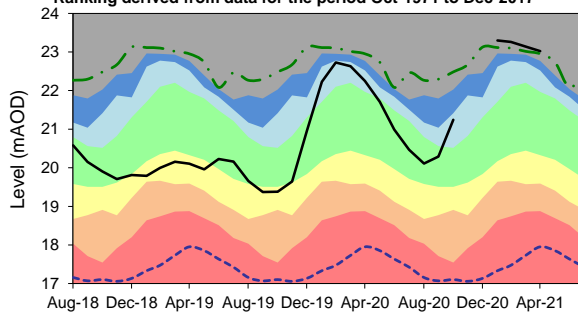
Bircham Newton - NW NORFOLK CHALK
Ranking derived from data for the period Mar-1995 to Sep-2017



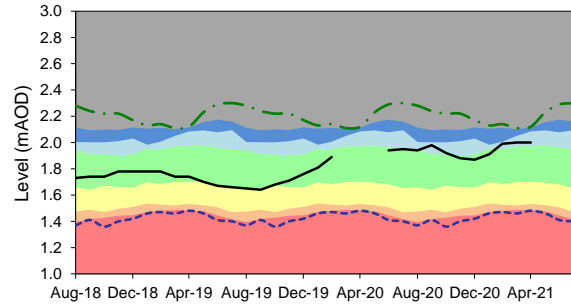
Castle Farm, Offton - MID SUFFOLK CHALK
Ranking derived from data for the period Mar-1967 to Dec-2017



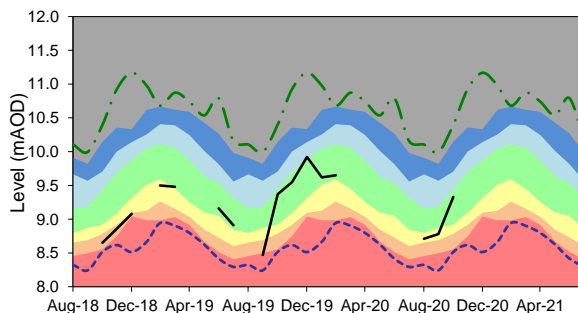
Old Primary School, South Creake - NW NORFOLK CHALK
Ranking derived from data for the period Oct-1971 to Dec-2017



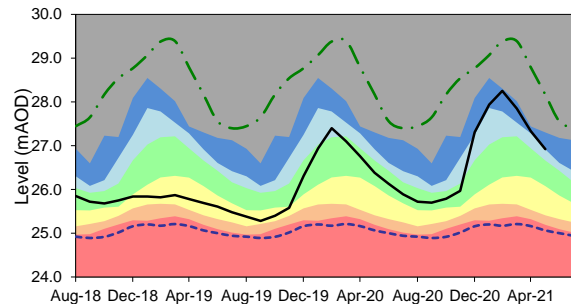
Hazlewood Common - SUFFOLK CRAG
Ranking derived from data for the period Oct-1988 to Feb-2020



The Spinney, Costessey - WENSUM CHALK
Ranking derived from data for the period Oct-1971 to Dec-2017

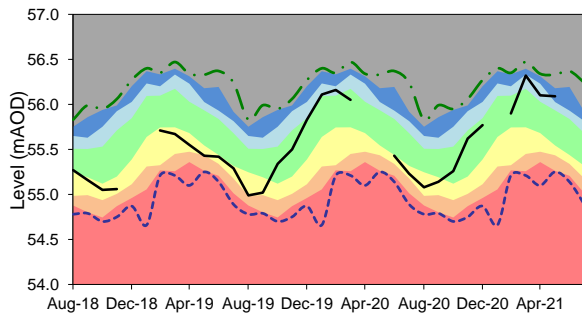


Smeetham Hall Cottages, Bulmer - ESSEX CHALK
Ranking derived from data for the period Jan-1964 to Dec-2017

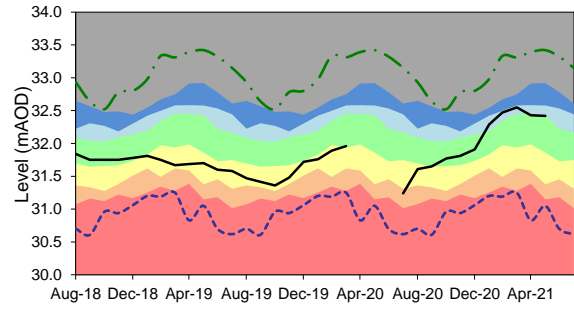




Hindolveston - NORFOLK CHALK
 Ranking derived from data for the period Sep-1984 to Nov-2017

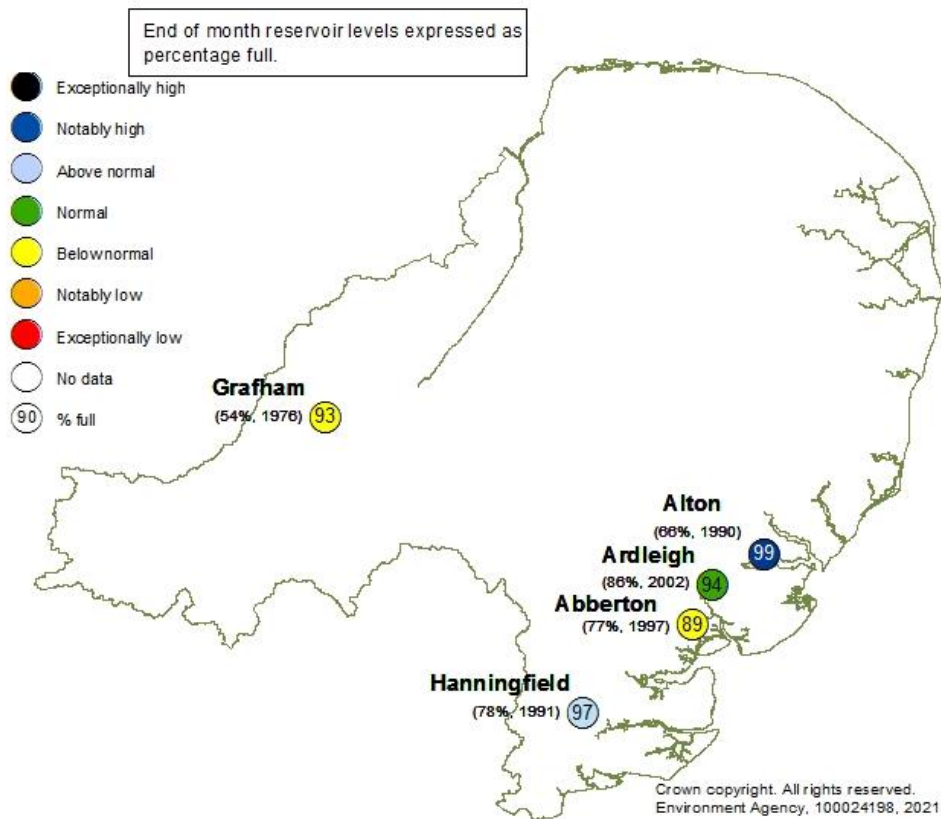


Rook Hall, Braiseworth - SUFFOLK CHALK
 Ranking derived from data for the period Jan-1980 to Dec-2017

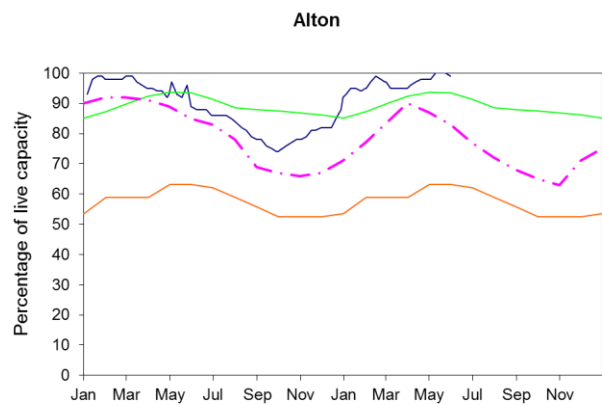
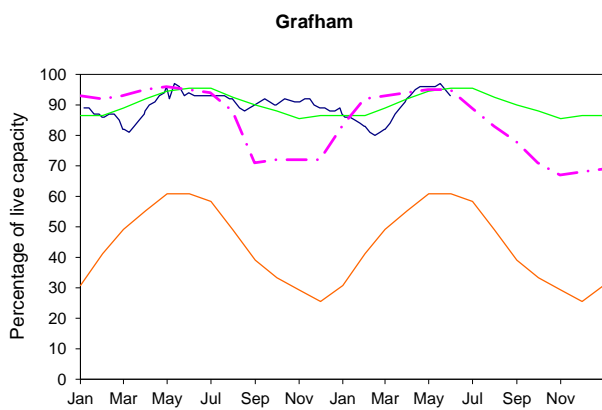


Reservoir Stocks

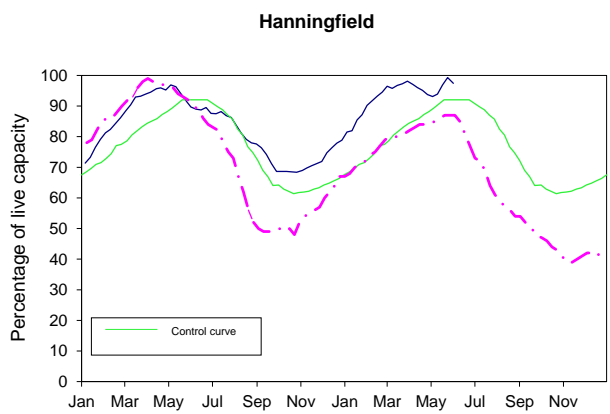
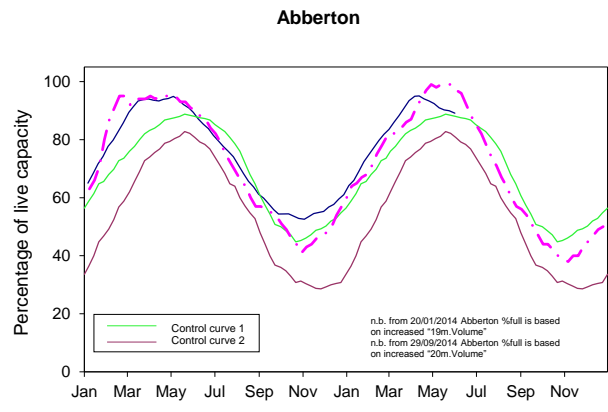
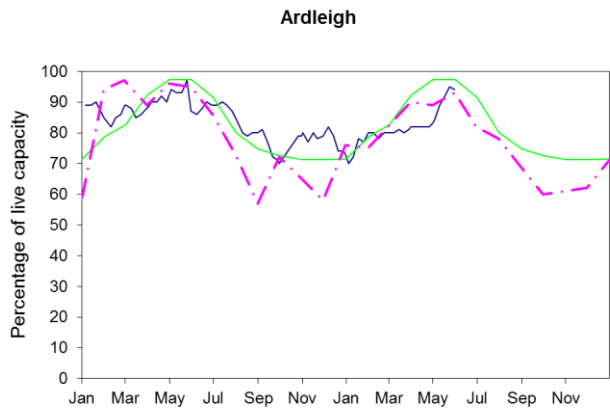
May 2021



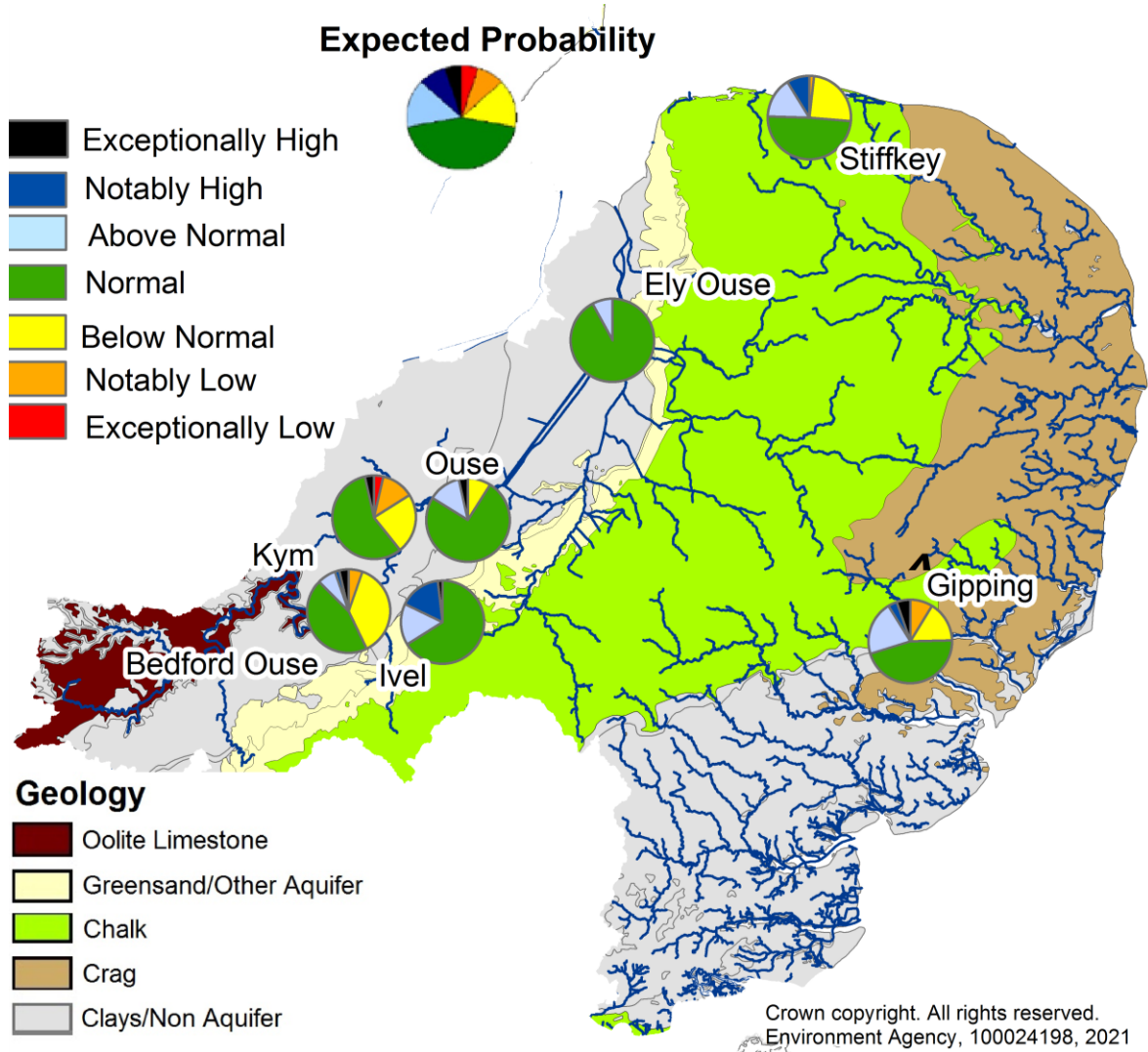
— 2020-2021 — Normal Operating Curve — Drought Alert Curve - - - 1995-1996



— 2020-2021 — Normal Operating Curve — Drought Alert Curve — 1995-1996



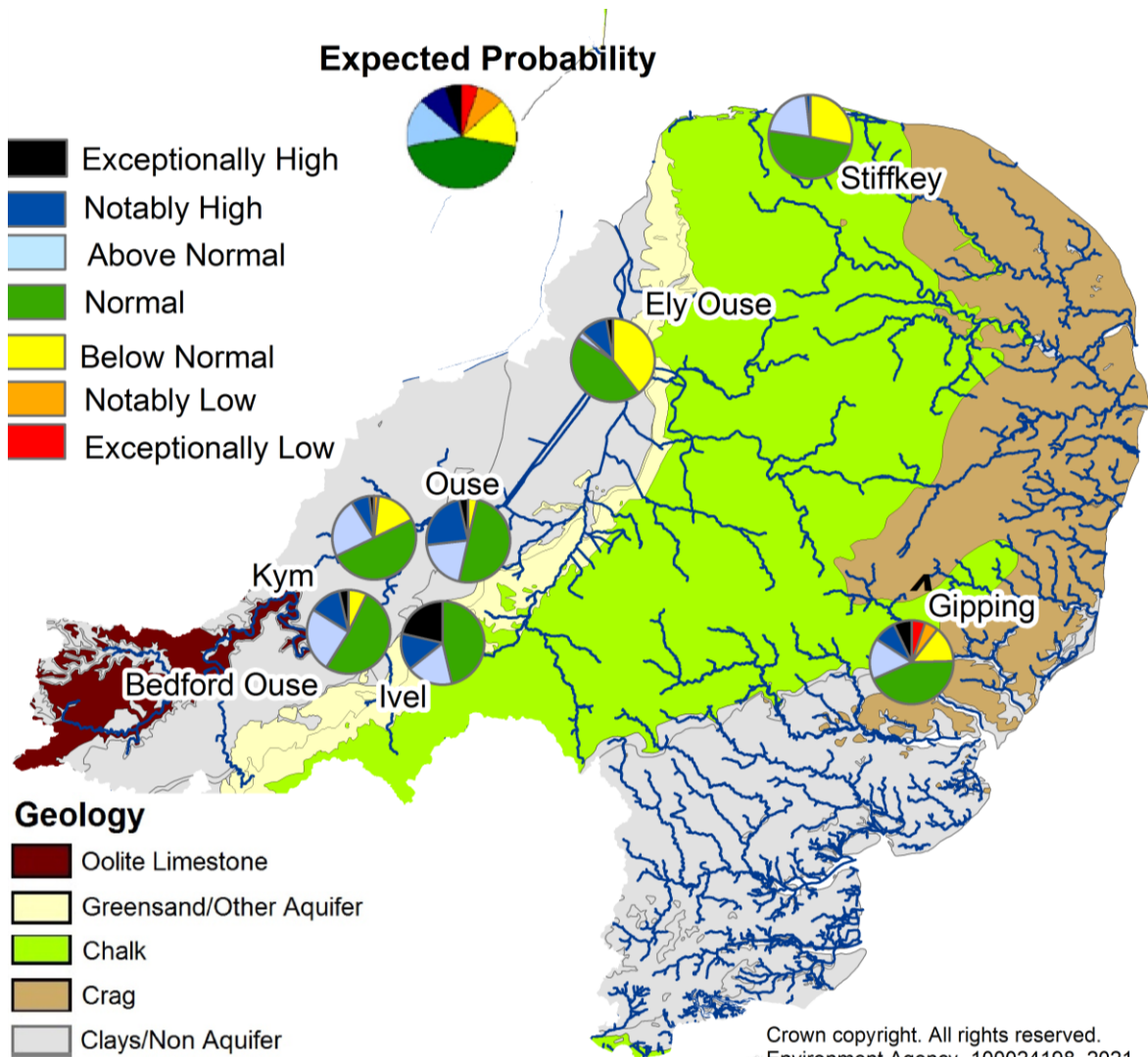
Forward Look – River Flows



Exceptionally high or low levels are those which would typically occur 5% of the time within the historic record. Notably high or low levels are those which would typically occur 8% of the time. Above normal or below normal levels are those which would typically occur 15% of the time. Normal levels are those which would typically occur 44% of the time within the historic record.

Probabilistic ensemble projections of river flows at key indicator sites in June 2021. Pie charts indicate probability, based on climatology, of the surface water flow at each site being e.g. exceptionally low for the time of year. (Source: [Centre for Ecology and Hydrology](#), Environment Agency) Geological map reproduced with kind permission from UK Groundwater Forum, BGS © NERC. Crown copyright. All rights reserved. Environment Agency, 100026380, 2021.

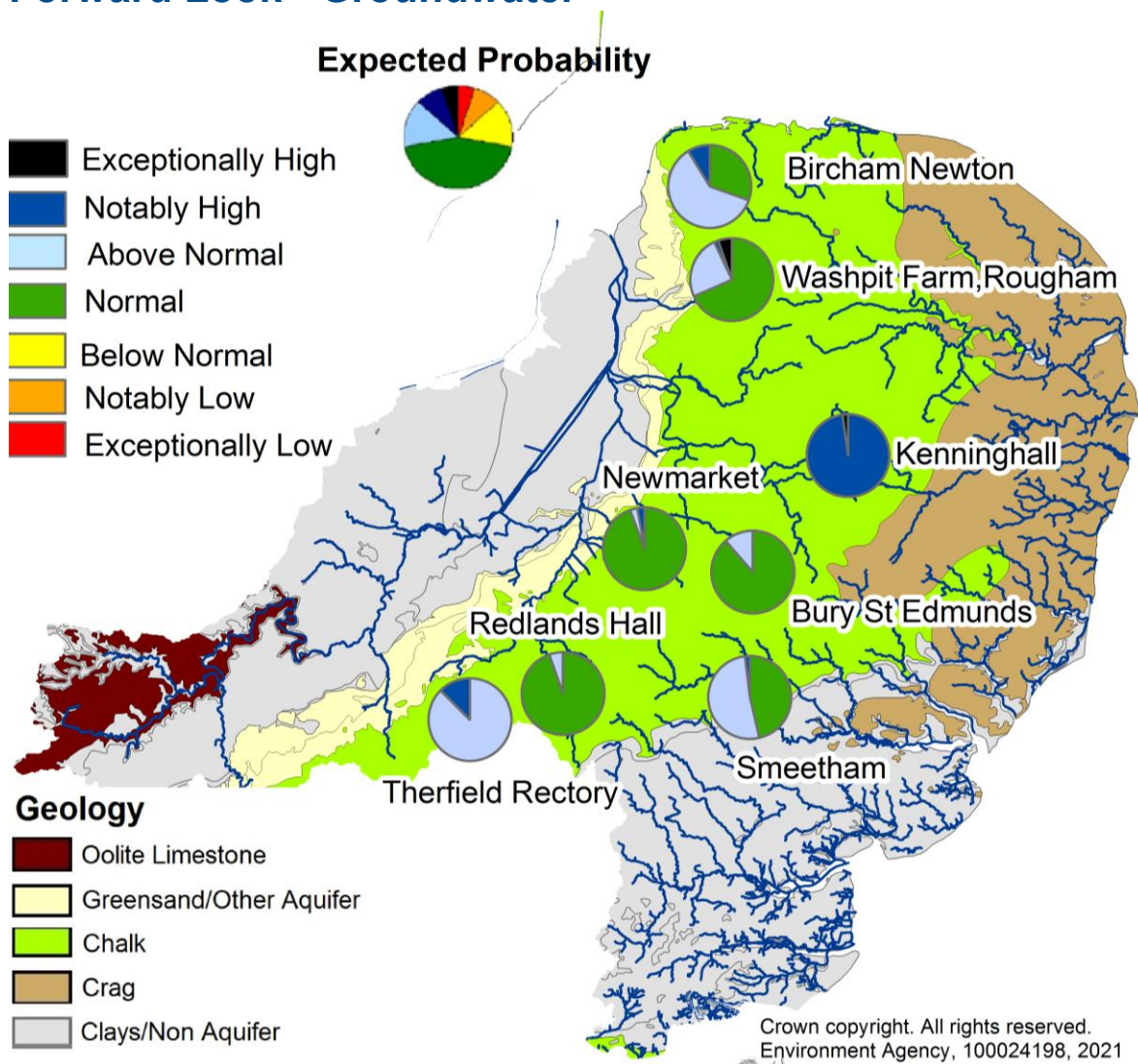
^ "Naturalised" flows are projected for these sites'



Exceptionally high or low levels are those which would typically occur 5% of the time within the historic record. Notably high or low levels are those which would typically occur 8% of the time. Above normal or below normal levels are those which would typically occur 15% of the time. Normal levels are those which would typically occur 44% of the time within the historic record.

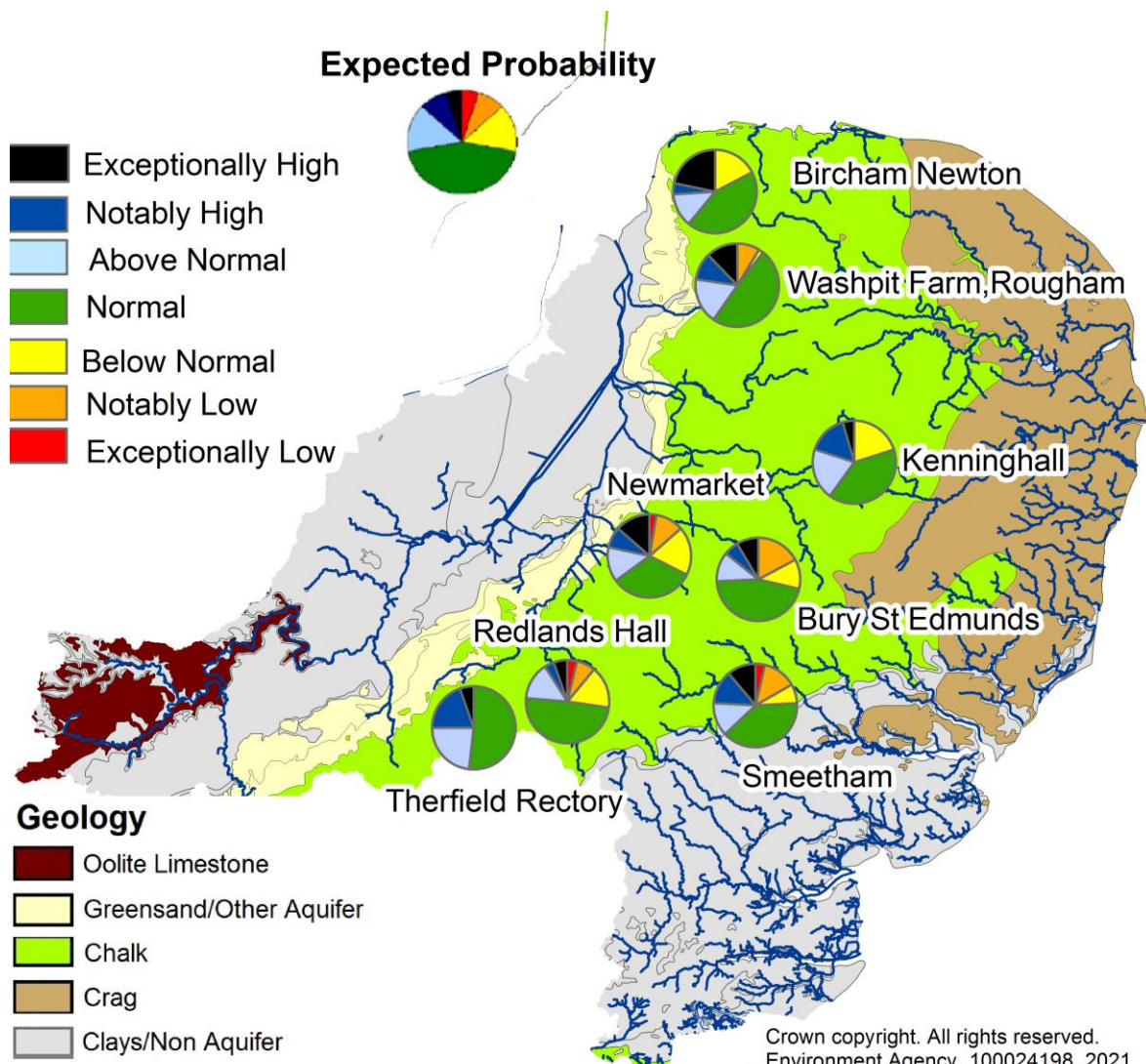
Probabilistic ensemble projections of river flows at key indicator sites in September 2021. Pie charts indicate probability, based on climatology, of the surface water flow at each site being e.g. exceptionally low for the time of year. (Source: [Centre for Ecology and Hydrology](#), Environment Agency) Geological map reproduced with kind permission from UK Groundwater Forum, BGS © NERC. Crown copyright. All rights reserved. Environment Agency, 100026380, 2021

Forward Look - Groundwater



Exceptionally high or low levels are those which would typically occur 5% of the time within the historic record. Notably high or low levels are those which would typically occur 8% of the time. Above normal or below normal levels are those which would typically occur 15% of the time. Normal levels are those which would typically occur 44% of the time within the historic record.

Probabilistic ensemble projections of groundwater levels at key indicator sites for end of September 2021. Pie charts indicate probability, based on climatology, of the groundwater level at each site being e.g. exceptionally low for the time of year. (Source: Environment Agency) Geological map reproduced with kind permission from UK Groundwater Forum, BGS © NERC. Crown copyright. All rights reserved. Environment Agency, 100026380, 2021.



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Probabilistic ensemble projections of groundwater levels at key indicator sites for end of March 2022. Pie charts indicate probability, based on climatology, of the groundwater level at each site being e.g. exceptionally low for the time of year. (Source: Environment Agency) Geological map reproduced with kind permission from UK Groundwater Forum, BGS © NERC. Crown copyright. All rights reserved. Environment Agency, 100026380, 2021.

Glossary

Term

Definition

Aquifer	A geological formation able to store and transmit water.
Areal average rainfall	The estimated average depth of rainfall over a defined area. Expressed in depth of water (mm).
Artesian	The condition where the groundwater level is above ground surface but is prevented from rising to this level by an overlying continuous low permeability layer, such as clay.
Artesian borehole	Borehole where the level of groundwater is above the top of the borehole and groundwater flows out of the borehole when unsealed.
Cumecs	Cubic metres per second (m ³ s ⁻¹)
Effective rainfall	The rainfall available to percolate into the soil or produce river flow. Expressed in depth of water (mm).
Flood Alert/Flood Warning	Three levels of warnings may be issued by the Environment Agency. Flood Alerts indicate flooding is possible. Flood Warnings indicate flooding is expected. Severe Flood Warnings indicate severe flooding.
Groundwater	The water found in an aquifer.
Groundwater level	The water level measured in the aquifer at a borehole, which may include the impacts of artificial influences.
Long term average (LTA)	The arithmetic mean calculated from the historic record, usually based on the period 1961-1990. However, the period used may vary by parameter being reported on (see figure captions for details).
mAOD	Metres Above Ordnance Datum (mean sea level at Newlyn Cornwall).
MORECS	Met Office Rainfall and Evaporation Calculation System. Met Office service providing real time calculation of evapotranspiration, soil moisture deficit and effective rainfall on a 40 x 40 km grid.
Naturalised flow	River flow with the impacts of artificial influences removed. Artificial influences may include abstractions, discharges, transfers, augmentation and impoundments.
NCIC	National Climate Information Centre. NCIC area monthly rainfall totals are derived using the Met Office 5 km gridded dataset, which uses rain gauge observations.
Recharge	The process of increasing the water stored in the saturated zone of an aquifer. Expressed in depth of water (mm).
Reservoir gross capacity	The total capacity of a reservoir.
Reservoir live capacity	The capacity of the reservoir that is normally usable for storage to meet established reservoir operating requirements. This excludes any capacity not available for use (e.g. storage held back for emergency services, operating agreements or physical restrictions). May also be referred to as 'net' or 'deployable' capacity.
River Flow	The flow in the river measured at a gauging station which includes the upstream impact of artificial influences.
Soil moisture deficit (SMD)	The difference between the amount of water actually in the soil and the amount of water the soil can hold. Expressed in depth of water (mm).

Categories

Exceptionally high	Value likely to fall within this band 5% of the time within the historic record.
Notably high	Value likely to fall within this band 8% of the time within the historic record.
Above normal	Value likely to fall within this band 15% of the time within the historic record.
Normal	Value likely to fall within this band 44% of the time within the historic record.
Below normal	Value likely to fall within this band 15% of the time within the historic record.
Notably low	Value likely to fall within this band 8% of the time within the historic record.
Exceptionally low	Value likely to fall within this band 5% of the time within the historic record.