Monthly water situation report

East Anglia

Summary – June 2020

East Anglia received a normal amount of rainfall in June with an average total rainfall of 59 mm (116% of the Long Term Average (LTA)). The groundwater levels continues to decrease in majority of the key sites with the soil moisture deficit (SMD) remaining above normal. The monthly mean river flows in majority of the sites are classified as below normal or lower with the River Cam reporting an exceptionally low flow. Reservoirs levels at all the sites remain below their normal operating curves and some of the support schemes have been operating to support river flows.

Rainfall

East Anglia received a total averaged rainfall of 59 mm in the month of June resulting in 116% of the Long Term Average (LTA). The amount of rainfall was fairly consistent with a normal category across all sub-catchments with the exception of Upper Bedford Ouse, Central area Fenland and South Essex which received an above normal rainfall (relative to the monthly LTA). The 12 months rainfall surplus has decreased to 629 mm.

Soil Moisture Deficit/Recharge

Soil Moisture Deficit (SMD) across East Anglia start reducing during the first three weeks of June but eventually increased by the end of the month and falls within the above normal category. The SMD is fairly consistent across the area and ended the month with an averaged SMD of 111 mm.

River Flows

Monthly mean river flows has decreased at majority of the indicator sites in June. Out of the 20 indicator sites 8 sites are reporting normal flows and 12 sites are reporting below normal or lower flows. The flow in the River Cam is exceptionally low at 41% of the LTA, while the flows in the River Colne and Waveny are notably low.

Groundwater Levels

Groundwater levels at majority of the indicator sites continues to decrease in June with 56% of the indicator sites classified in the normal category. The groundwater levels in the Cam chalk of Redlands Hall, Linton and Stapleford and levels in the Snail chalk of Newmarket are classified as below normal.

Reservoir Storage/Water Resource Zone Stocks

Reservoir levels has decreased at majority of the indicator sites reporting normal levels at all the key sites with the exception of Abberton. Reservoir levels in all the sites remain below their normal operating curves.

Environmental Impact

The Lodes-Granta groundwater support scheme has 4 out of 6 pumps operating. The Rhee groundwater support scheme has 2 out of 8 pumps operating with 1 of these operating 24 hours a day. There are no pumps operating on the Hiz, the Thet and theLittle Ouse.

Forward Look

Probabilistic ensemble projections for river flows at key sites

September 2020: There is a reduced probability of notably low flows in majority of the sites and an increased probability of below normal flows in the Ely Ouse and Stiffkey rivers.

December 2020: There is an increase probability of below normal or lower flows at all sites next December.

Probabilistic ensemble projections for groundwater levels in key aquifers

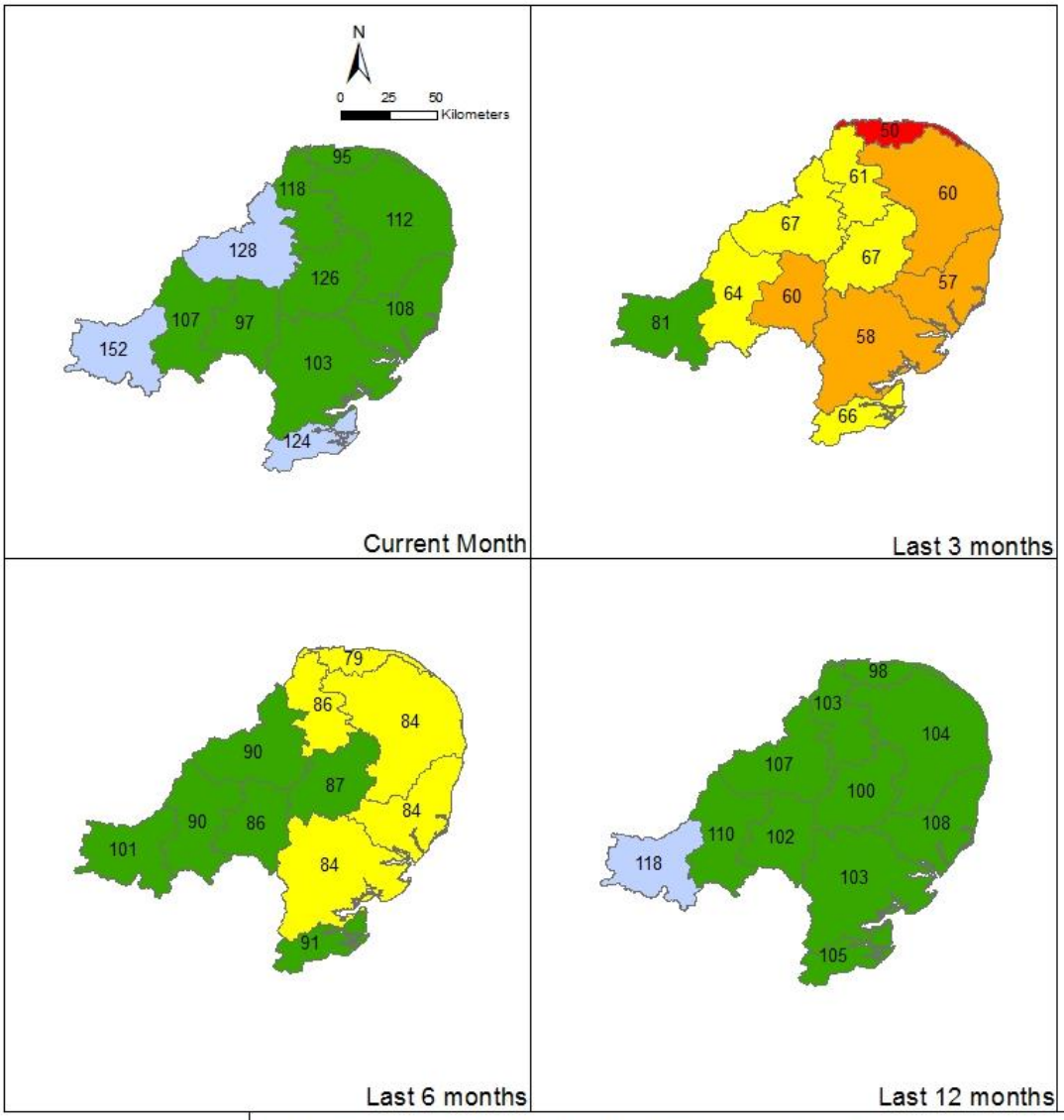
September 2020: There is an increased probability of normal groundwater levels at all the key sites except at Redlands Hall where there is an increased probability of below normal level in September.

March 2021: There is an increased probability of below normal or lower groundwater levels in majority of the key sites with the exception of Therfield Rectory and Washpit Farm where there is an increased probability of normal or higher levels.

Author: Hydrology & Operations Contact details: 03708506506

Rainfall

June 2020



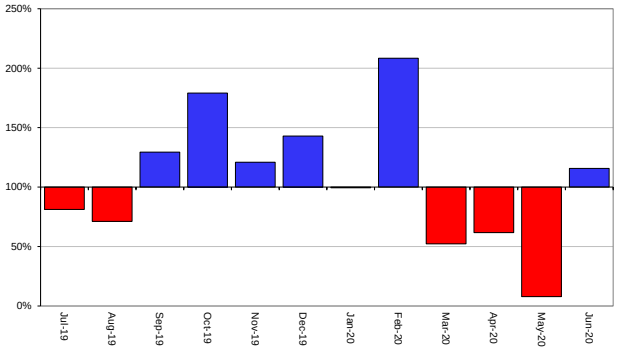
Rainfall expressed as percentage of 1961-1990 Long Term Average for the specified duration. Classes derived from data for the period 1891 to 2017 based on the HadUK dataset (Met Office © Crown Copyright)

Total rainfall for hydrological areas across England for the current month, the last three months, the last six months, and the last 12 months, classed relative to an analysis of respective historic totals. Final HadUK data based on the Met Office 1 km gridded rainfall dataset derived from rain gauges (Source: Met Office © Crown Copyright, 2020). Provisional data based on Environment Agency 1 km gridded rainfall dataset derived from Environment Agency intensity rain gauges. Crown copyright. All rights reserved. Environment Agency, 100024198, 2020.

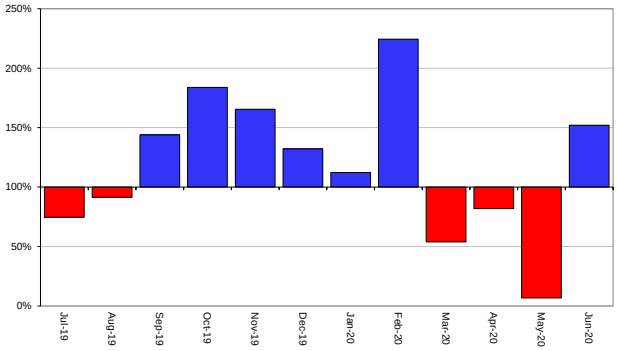
Above average rainfall

Below average rainfall

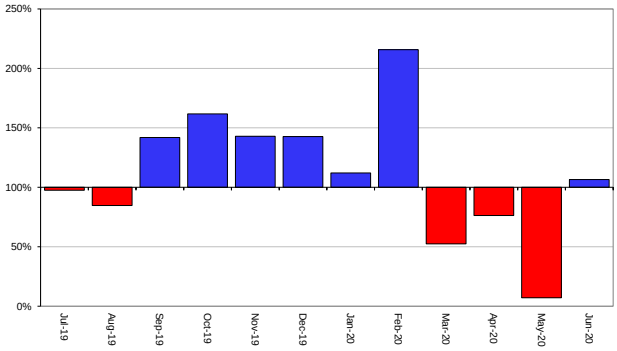
1-Month Period for East Anglia



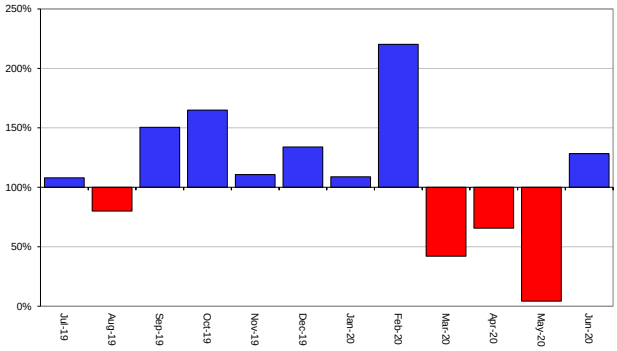
1-Month Period for Upper Bedford Ouse



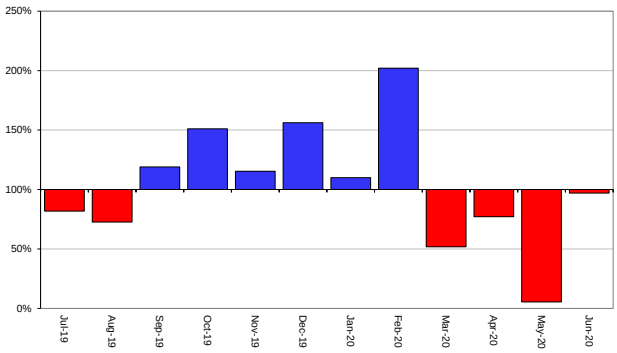
1-Month Period for Lower Bedford Ouse



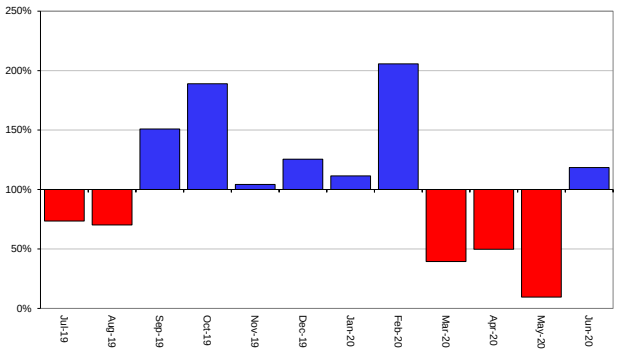
1-Month Period for Central Area Fenland



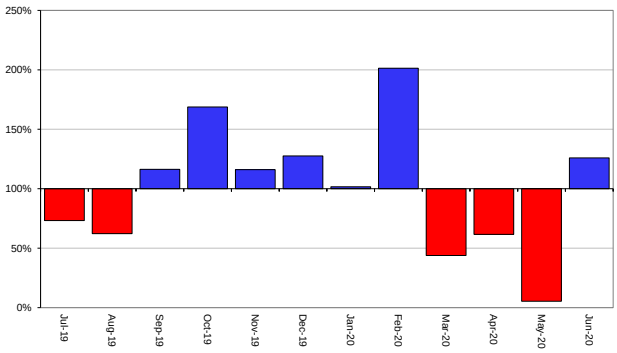
1-Month Period for Cam



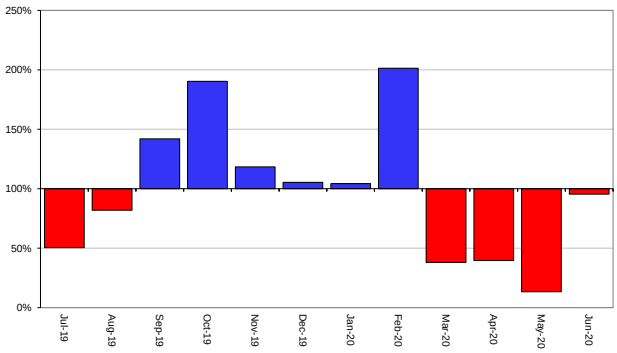
1-Month Period for NW Norfolk and Wissey



1-Month Period for Little Ouse and Lark

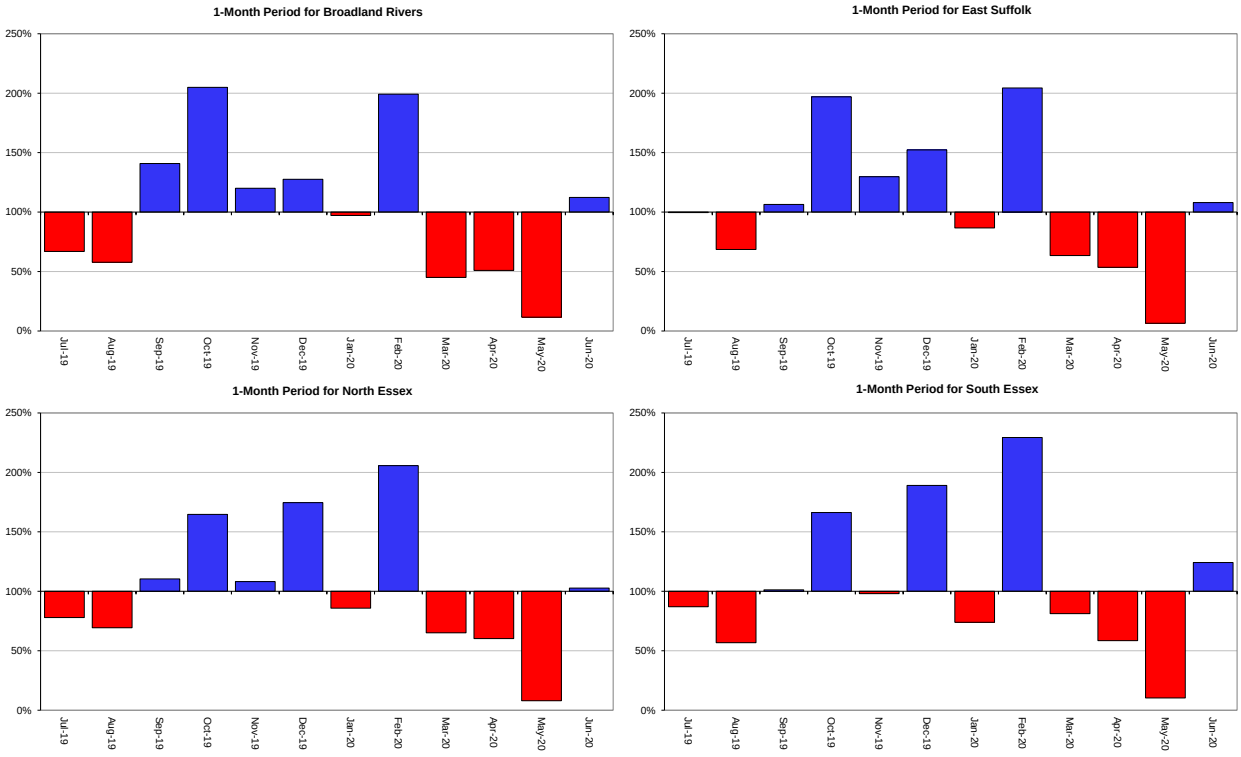


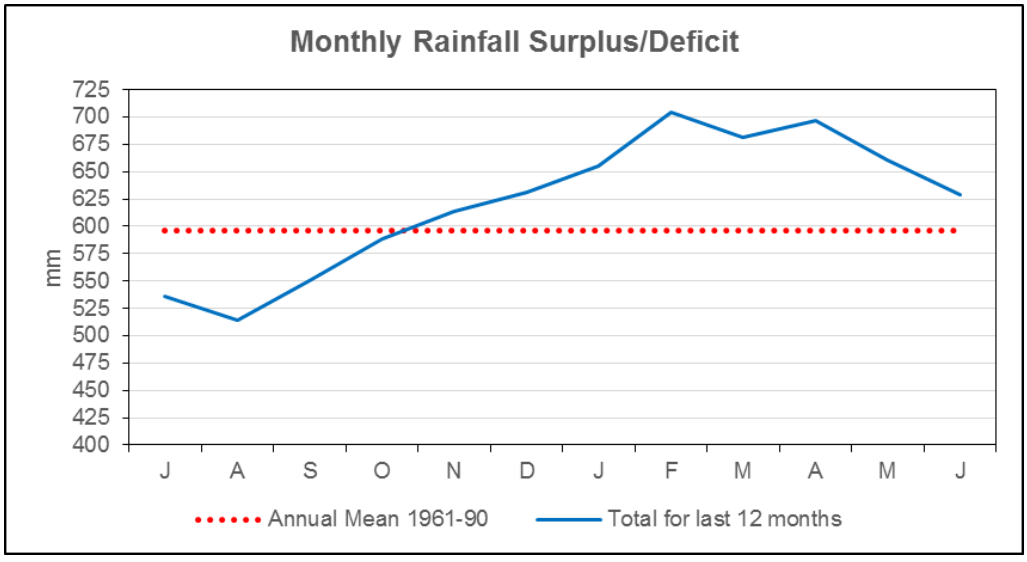
1-Month Period for North Norfolk



Above average rainfall

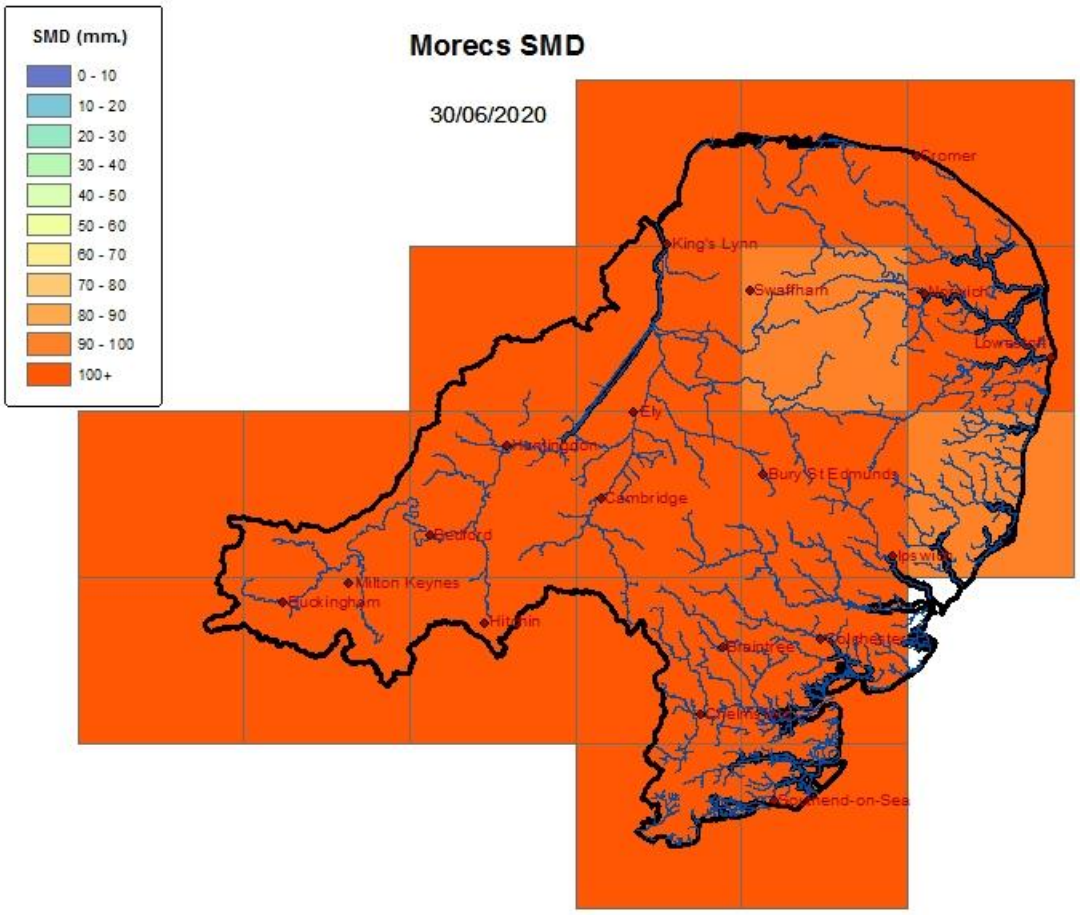
Below average rainfall





Soil Moisture Deficit

Data based on MORECS dataset (Met Office © Crown Copyright)

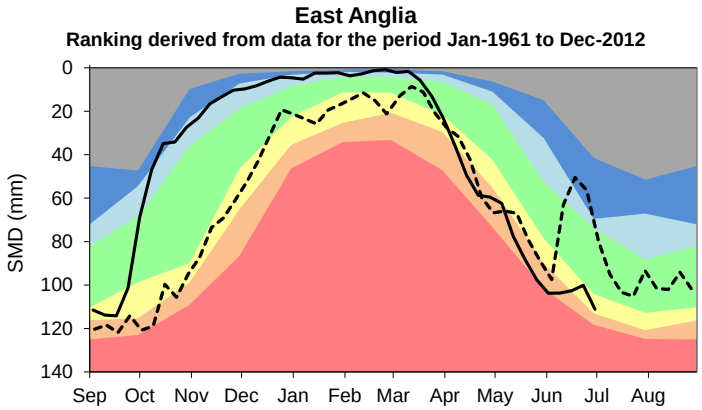


Data based on MORECS (Met Office © Crown Copyright)

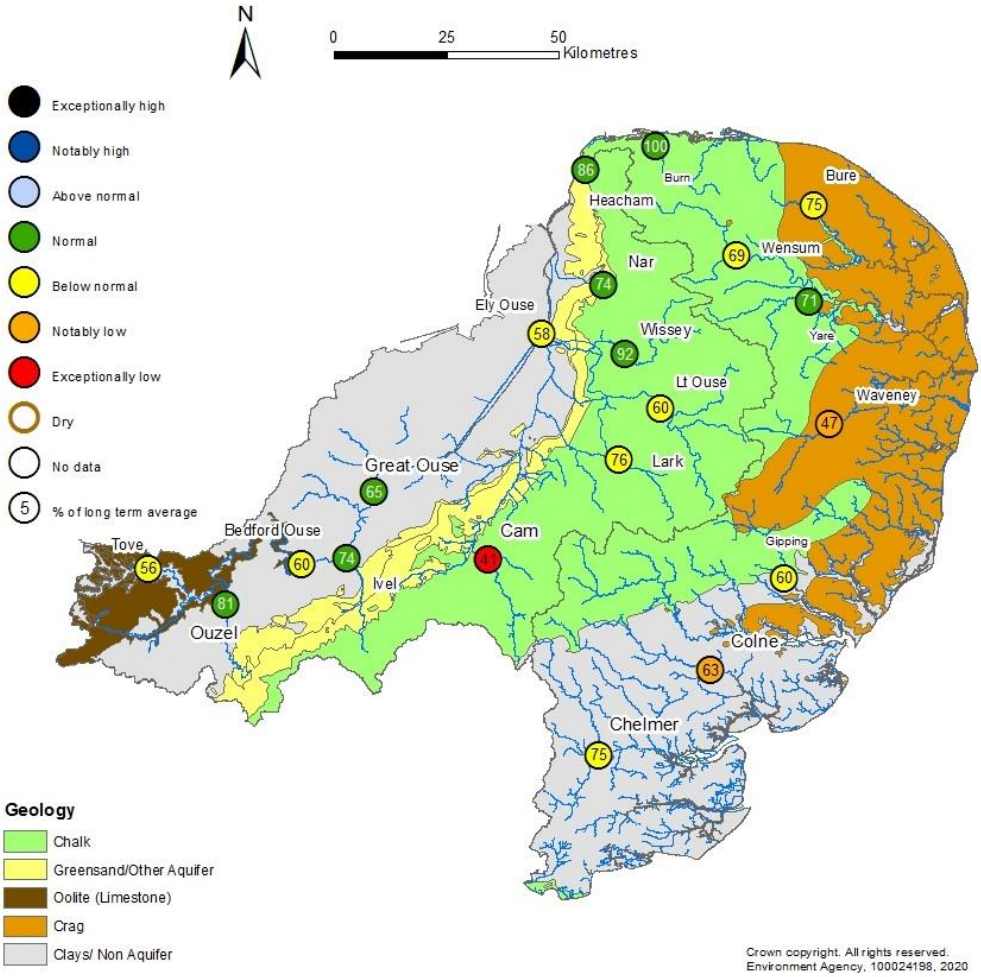
——2019-20
– – –2018-19

Exceptionally high | Notably high | Above normal | Normal

Below normal | Notably low | Exceptionally low | —— Latest data

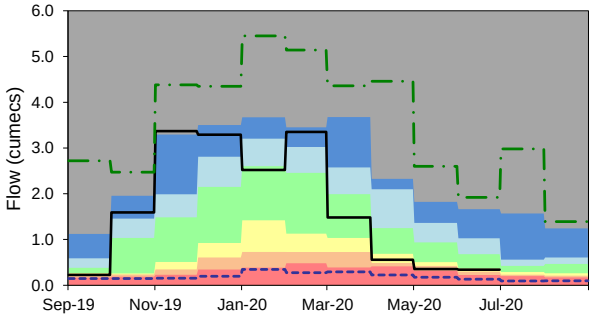


River Flow June 2020

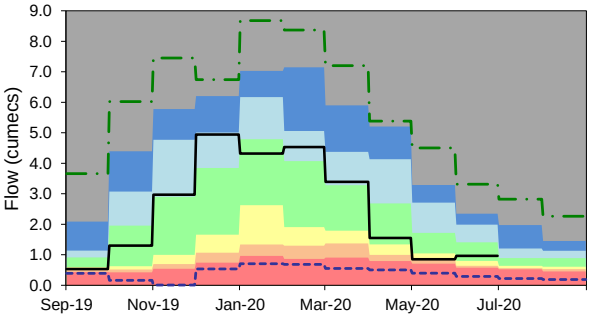


Exceptionally high | Notably high | Above normal | Normal
Below normal | Notably low | Exceptionally low | Latest data

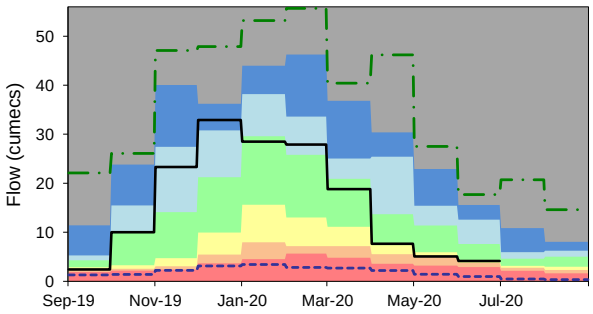
Cappenham, TOVE
Ranking derived from data for the period Feb-1962 to Dec-2017



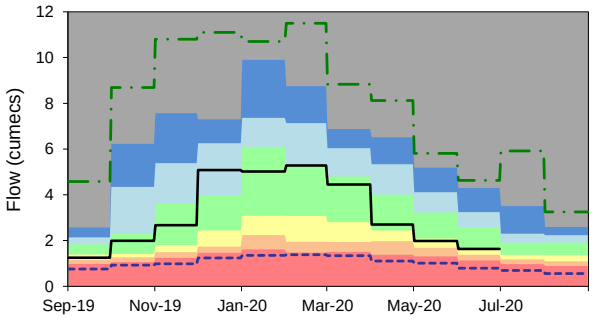
Willen, OUZEL
Ranking derived from data for the period Jan-1962 to Dec-2017



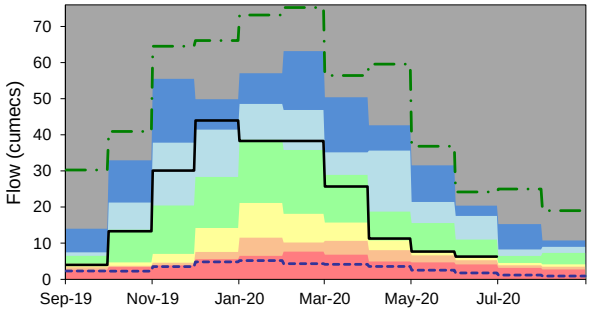
Roxton, GREAT OUSE
Ranking derived from data for the period Oct-1972 to Dec-2017



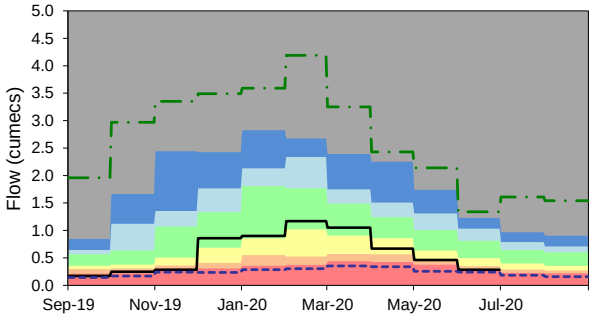
Blunham, IVEL
Ranking derived from data for the period Aug-1959 to Dec-2017



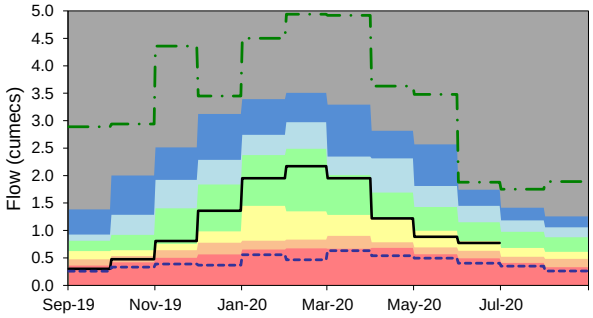
Offord (Gross Flows), GREAT OUSE
Ranking derived from data for the period Jan-1972 to Dec-2017



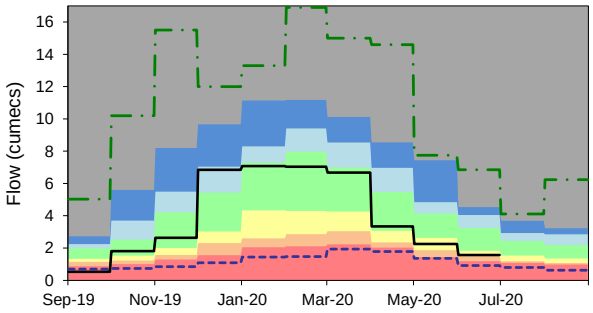
Dernford, CAM
Ranking derived from data for the period Feb-1949 to Dec-2017



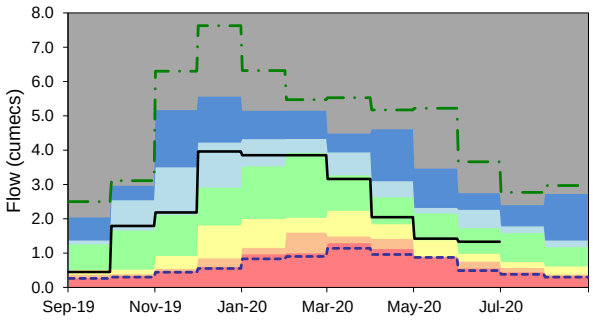
Temple, LARK
Ranking derived from data for the period Nov-1960 to Dec-2017



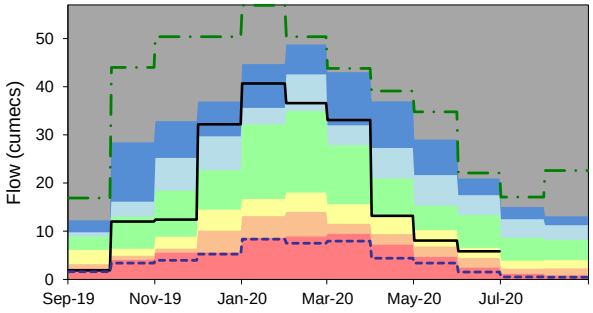
Abbey Heath, LITTLE OUSE
Ranking derived from data for the period Jun-1968 to Dec-2017



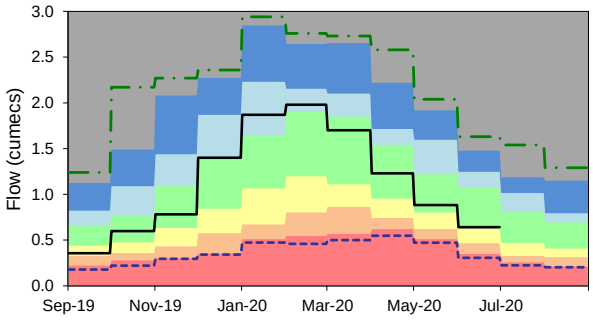
Northwold Total, WISSEY
Ranking derived from data for the period Jul-1983 to Dec-2012



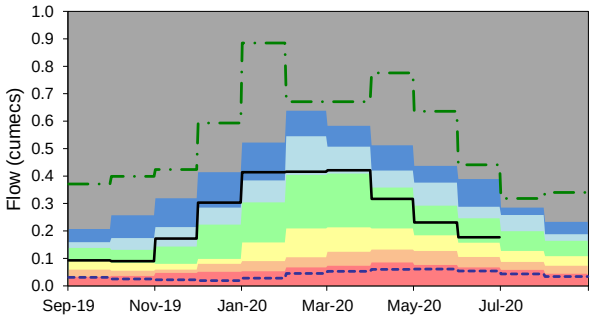
Denver, ELY OUSE
Ranking derived from data for the period Nov-1971 to Dec-2017



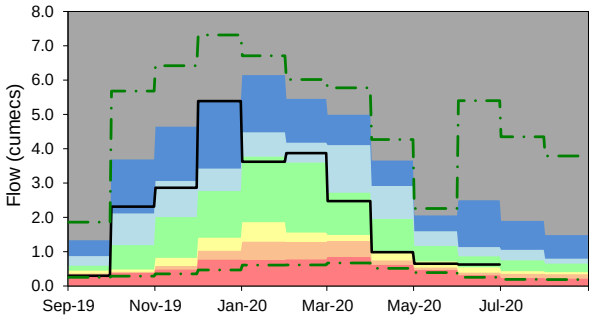
Marham, NAR
Ranking derived from data for the period Apr-1982 to Dec-2017



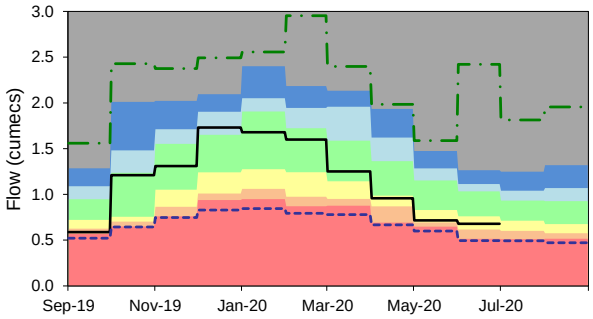
Heacham, HEACHAM
Ranking derived from data for the period Nov-1965 to Dec-2017



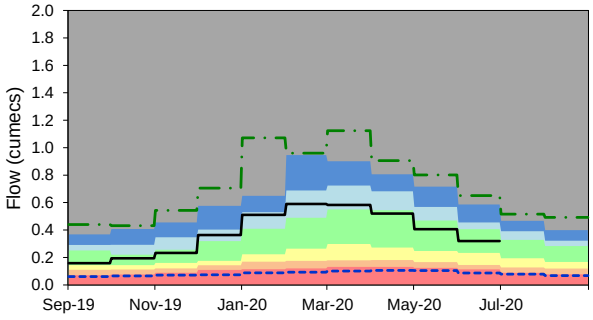
Colney, YARE
Ranking derived from data for the period Jan-1970 to Dec-2017



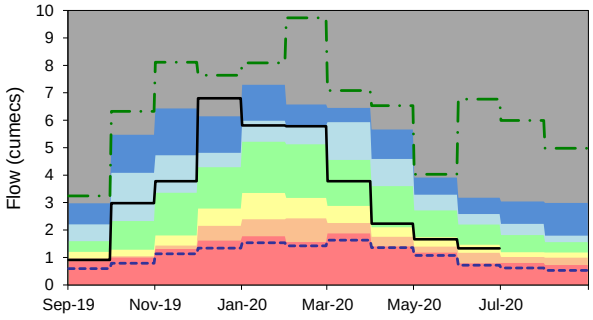
Ingworth, BURE
Ranking derived from data for the period Jan-1970 to Dec-2017



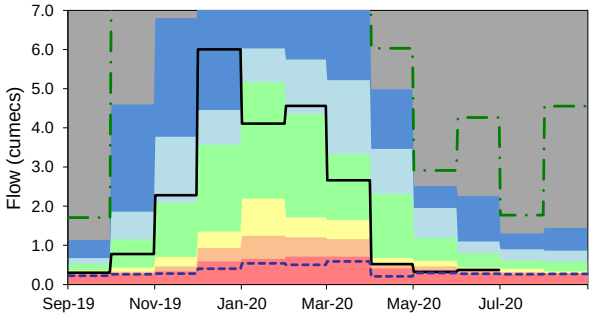
Burnham Overy, BURN
Ranking derived from data for the period Jan-1970 to Dec-2017



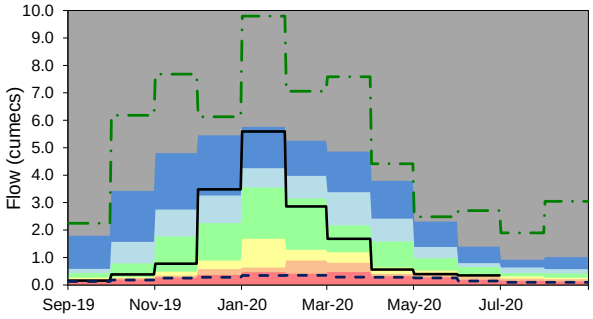
Swanton Morley Total, WENSUM
Ranking derived from data for the period Jan-1970 to Dec-2017



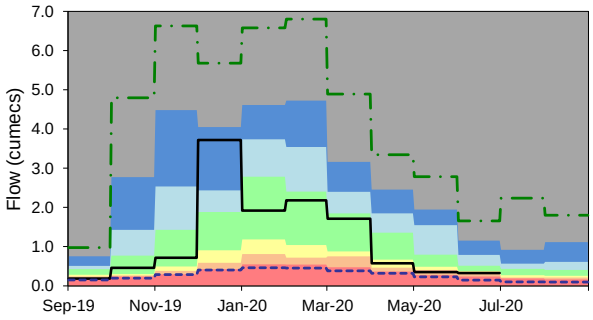
Needham Weir Total, WAVENEY (LOWER)
Ranking derived from data for the period Jan-1970 to Dec-2017



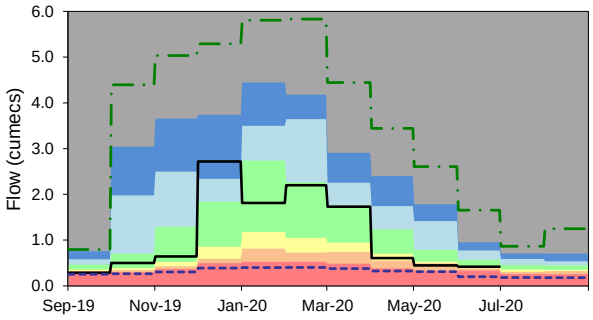
Bramford, GIPPING
Ranking derived from data for the period Jan-1970 to Dec-2017



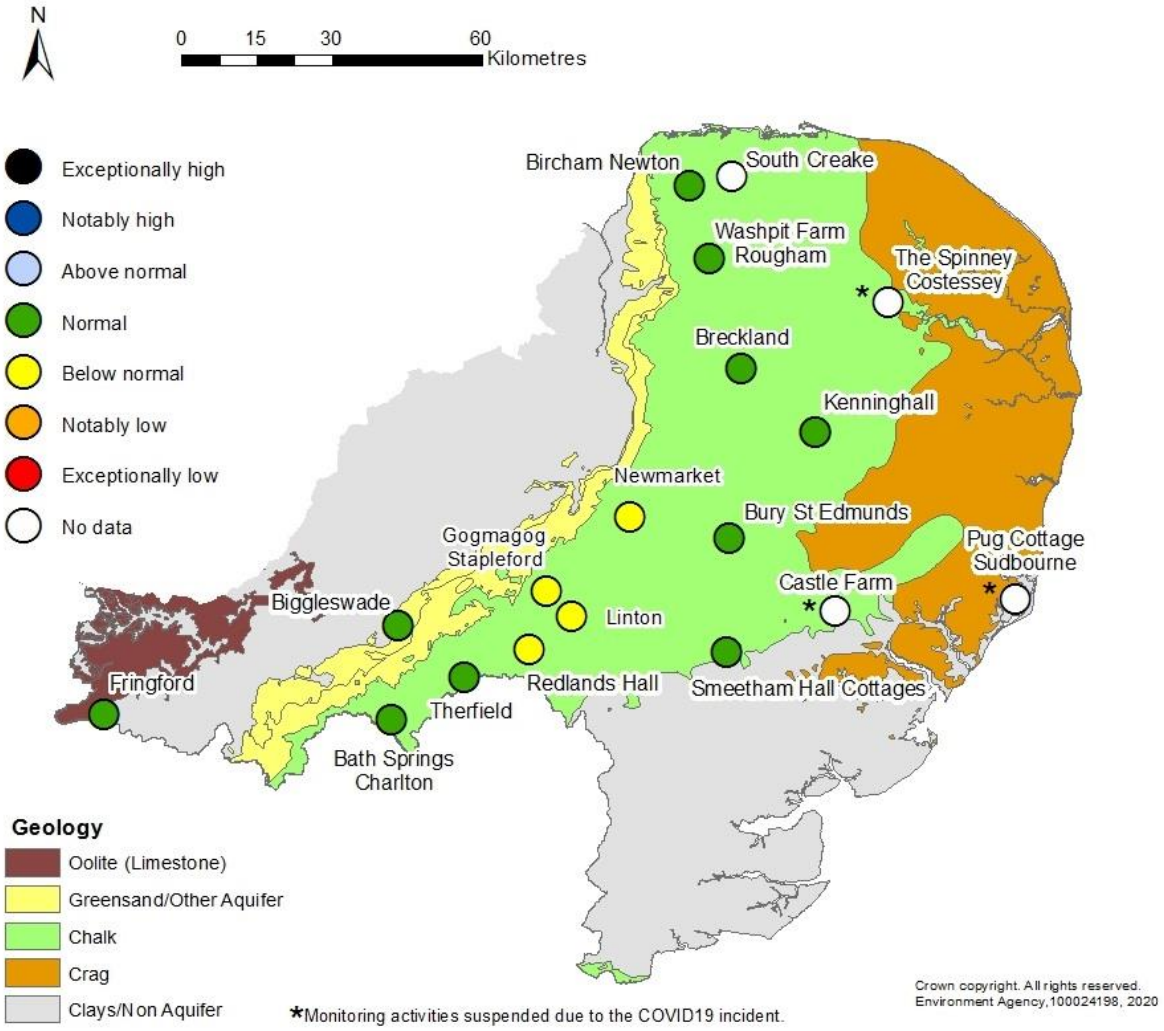
Lexden, COLNE
Ranking derived from data for the period Jan-1970 to Dec-2017

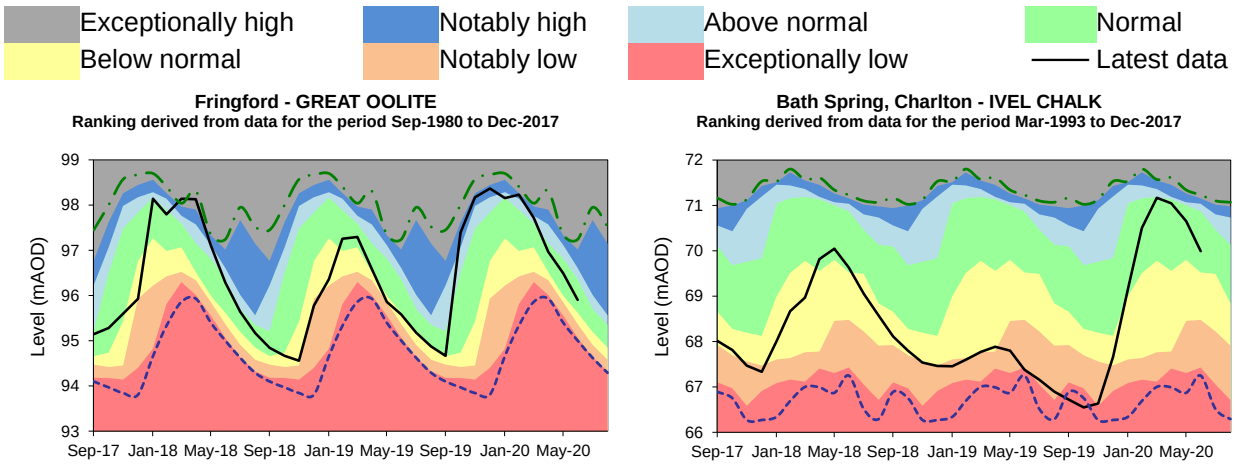


Springfield, CHELMER
Ranking derived from data for the period Jan-1970 to Dec-2017

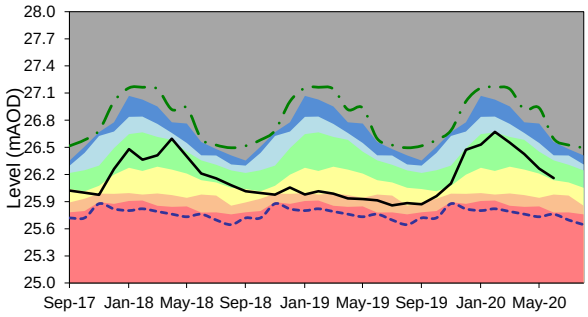


Groundwater Levels June 2020

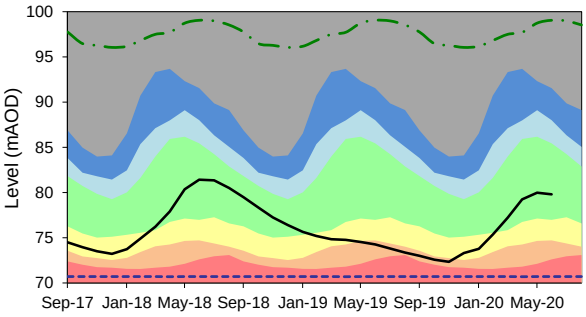




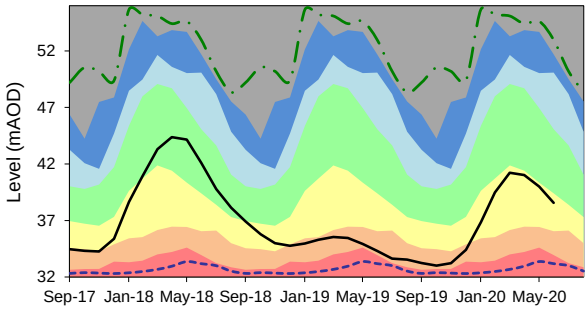
Biggleswade - IVEL SANDSTONE
Ranking derived from data for the period Mar-1968 to Dec-2017



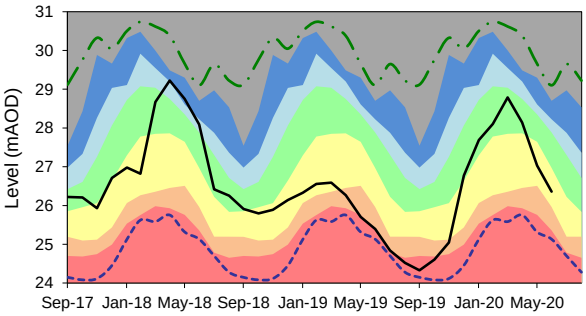
Therfield Rectory - N HERTS CHALK
Ranking derived from data for the period Jan-1883 to Dec-2017



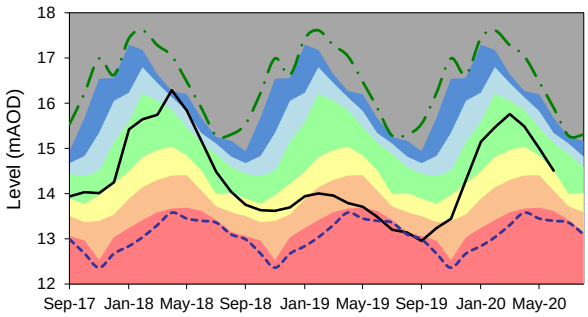
Redlands Hall, Ickleton - CAM CHALK
Ranking derived from data for the period Aug-1963 to Dec-2017



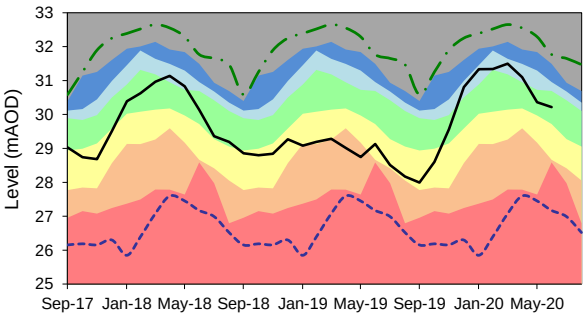
Linton - CAM CHALK
Ranking derived from data for the period Jan-1980 to Dec-2017



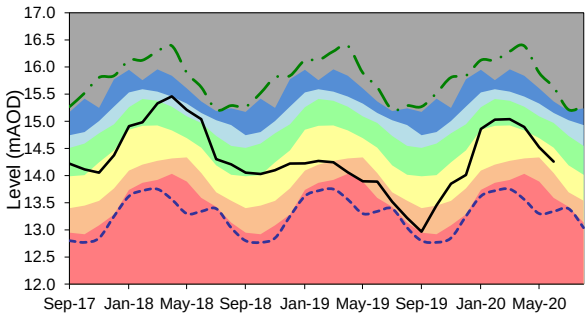
Gog Magog, Stapleford - CAM CHALK
Ranking derived from data for the period Jan-1980 to Dec-2017



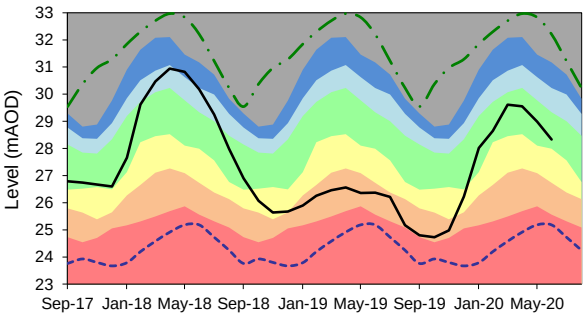
Bury St Edmunds - UPPER LARK CHALK
Ranking derived from data for the period May-1983 to Dec-2017



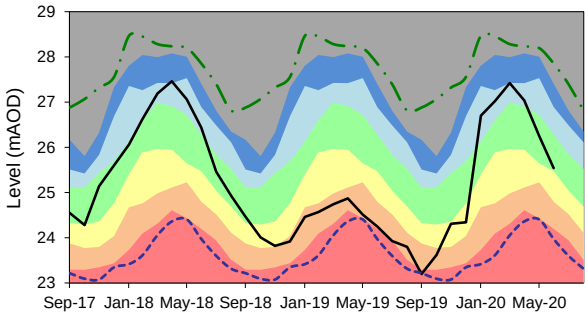
Newmarket - SNAIL CHALK
Ranking derived from data for the period Feb-1983 to Dec-2017



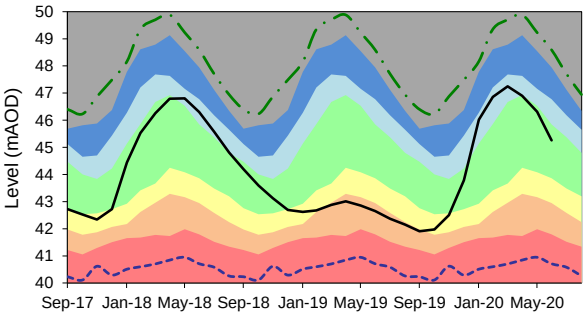
Kenninghall - LITTLE OUSE CHALK
Ranking derived from data for the period Aug-1973 to Dec-2017



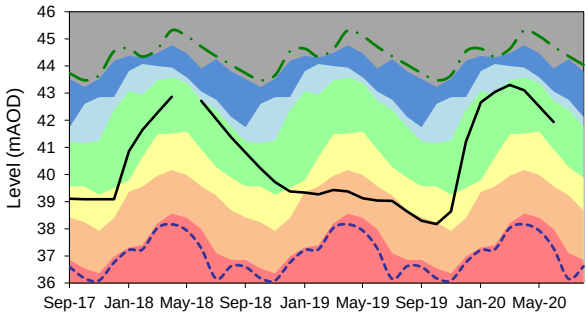
Breckland - WISSEY CHALK
Ranking derived from data for the period Jan-1971 to Nov-2017



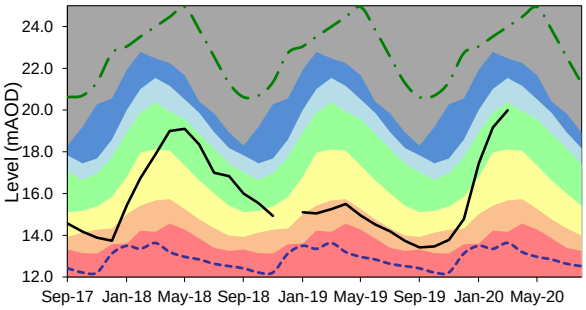
Washpit Farm, Rougham - NW NORFOLK CHALK
Ranking derived from data for the period May-1950 to Dec-2017



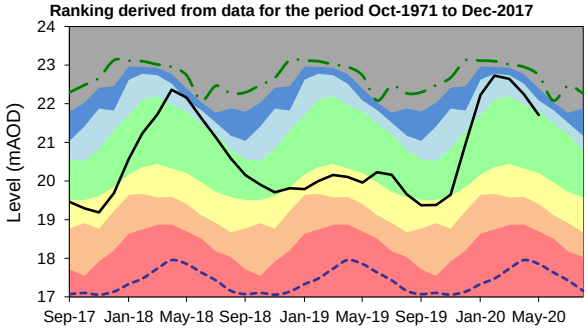
Bircham Newton - NW NORFOLK CHALK
Ranking derived from data for the period Mar-1995 to Sep-2017



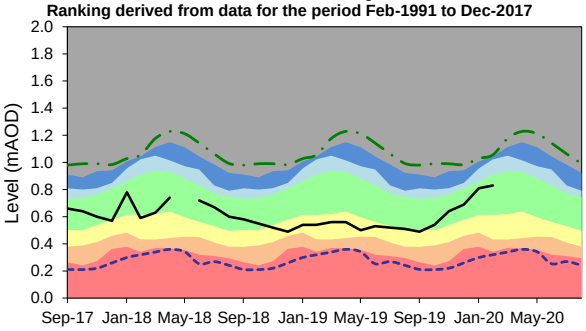
Castle Farm, Offton - MID SUFFOLK CHALK
Ranking derived from data for the period Mar-1967 to Dec-2017



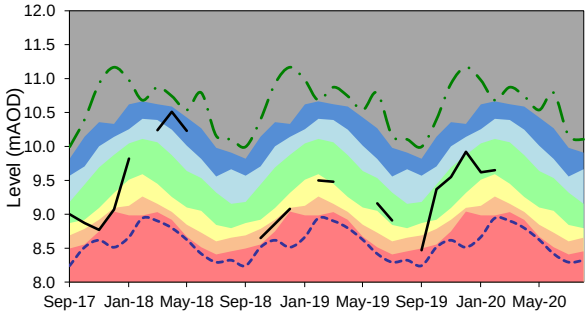
Old Primary School, South Creake
NW NORFOLK CHALK
Ranking derived from data for the period Oct-1971 to Dec-2017



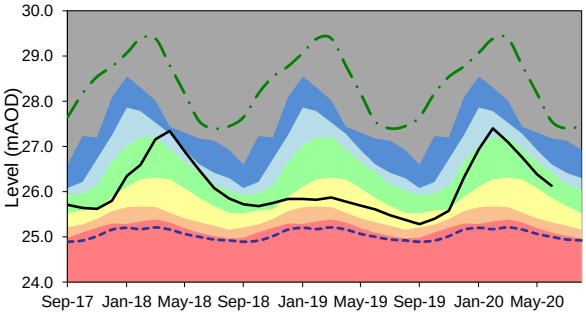
Pug Cottage, Sudbourne
SUFFOLK SHALLOW AQUIFER
Ranking derived from data for the period Feb-1991 to Dec-2017



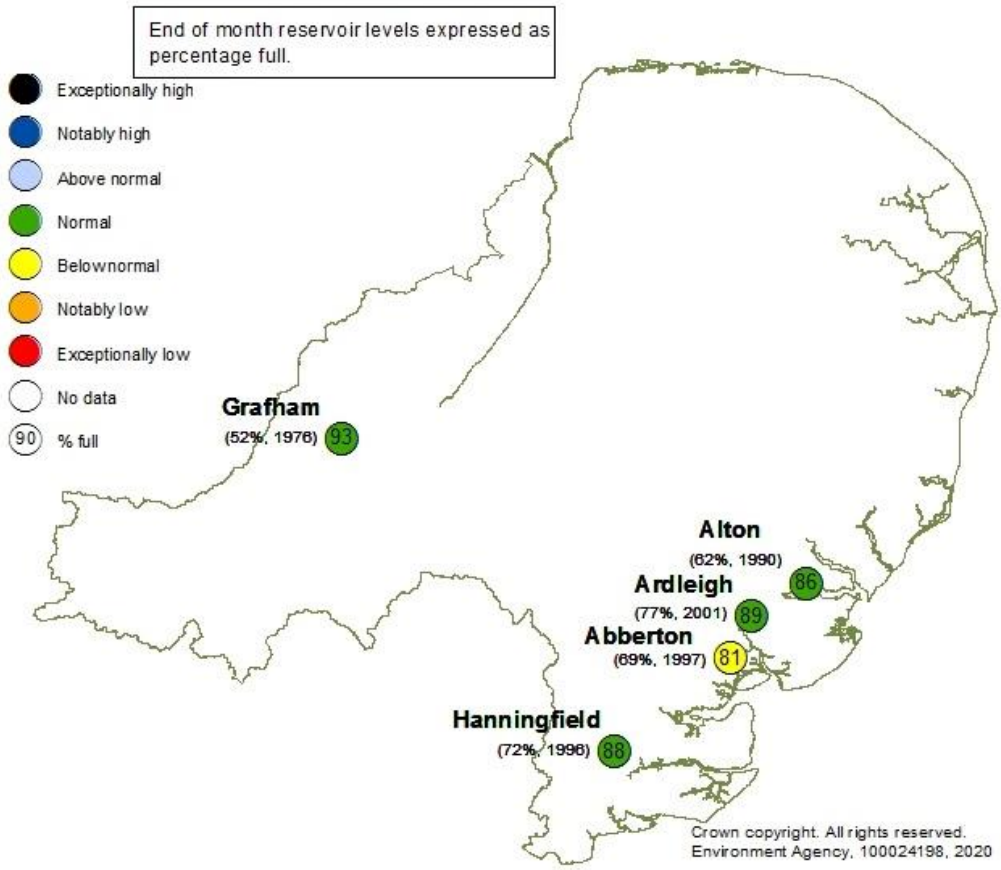
The Spinney, Costessey - WENSUM CHALK
Ranking derived from data for the period Oct-1971 to Dec-2017



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

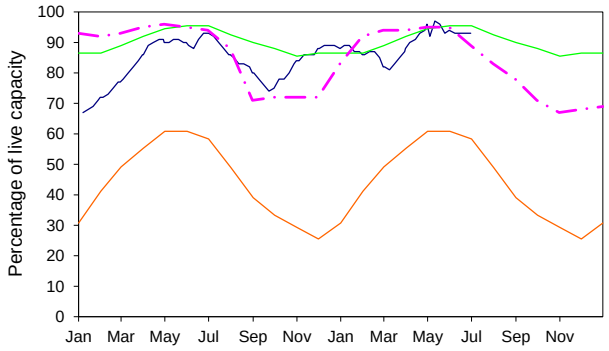


Reservoir Stocks June 2020

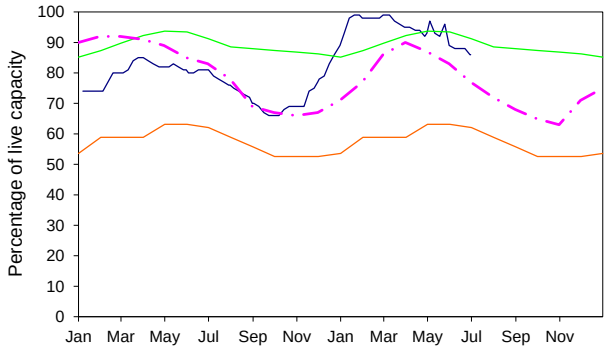


2019-2020 Normal Operating Curve Drought Alert Curve 1995-1996

Grafham

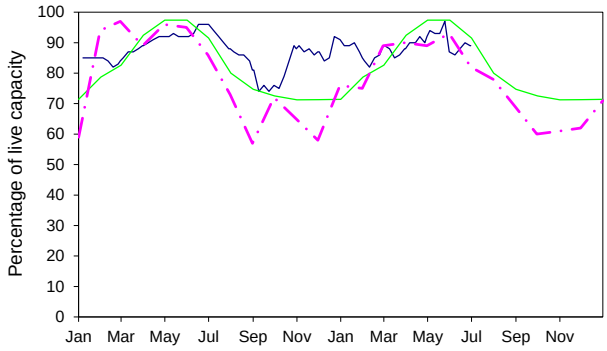


Alton

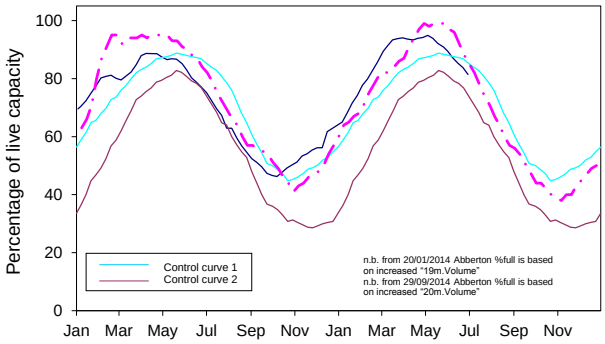


2019-2020 Normal Operating Curve Drought Alert Curve 1995-1996

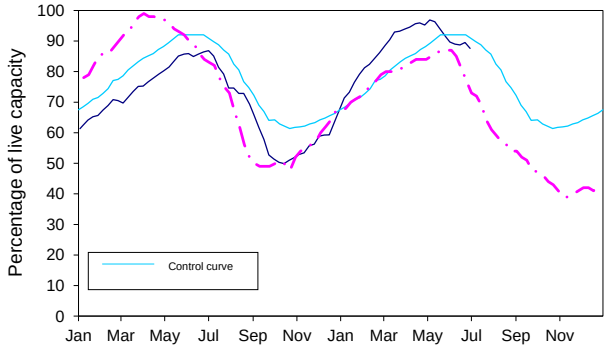
Ardleigh



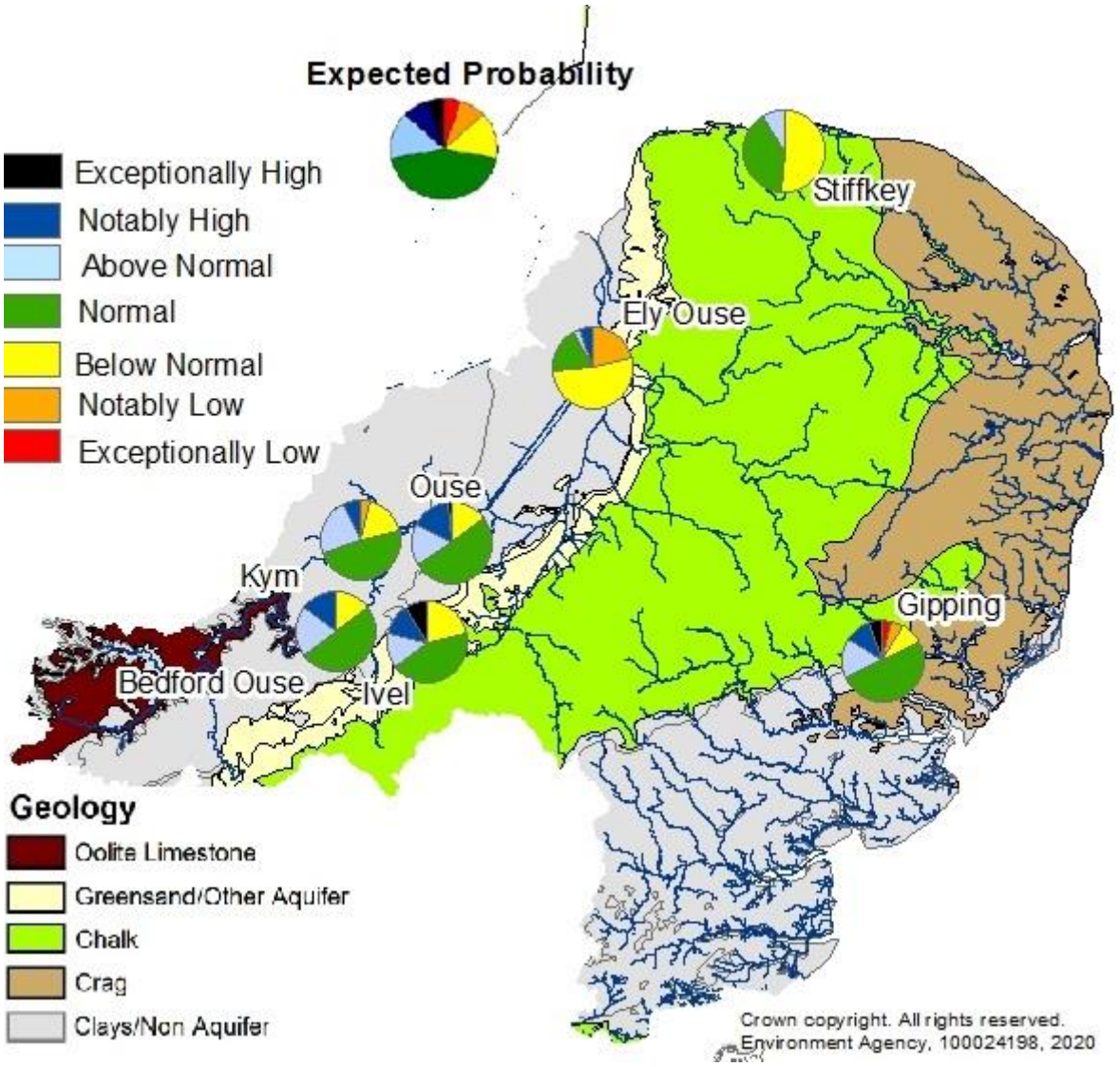
Abberton



Hanningfield



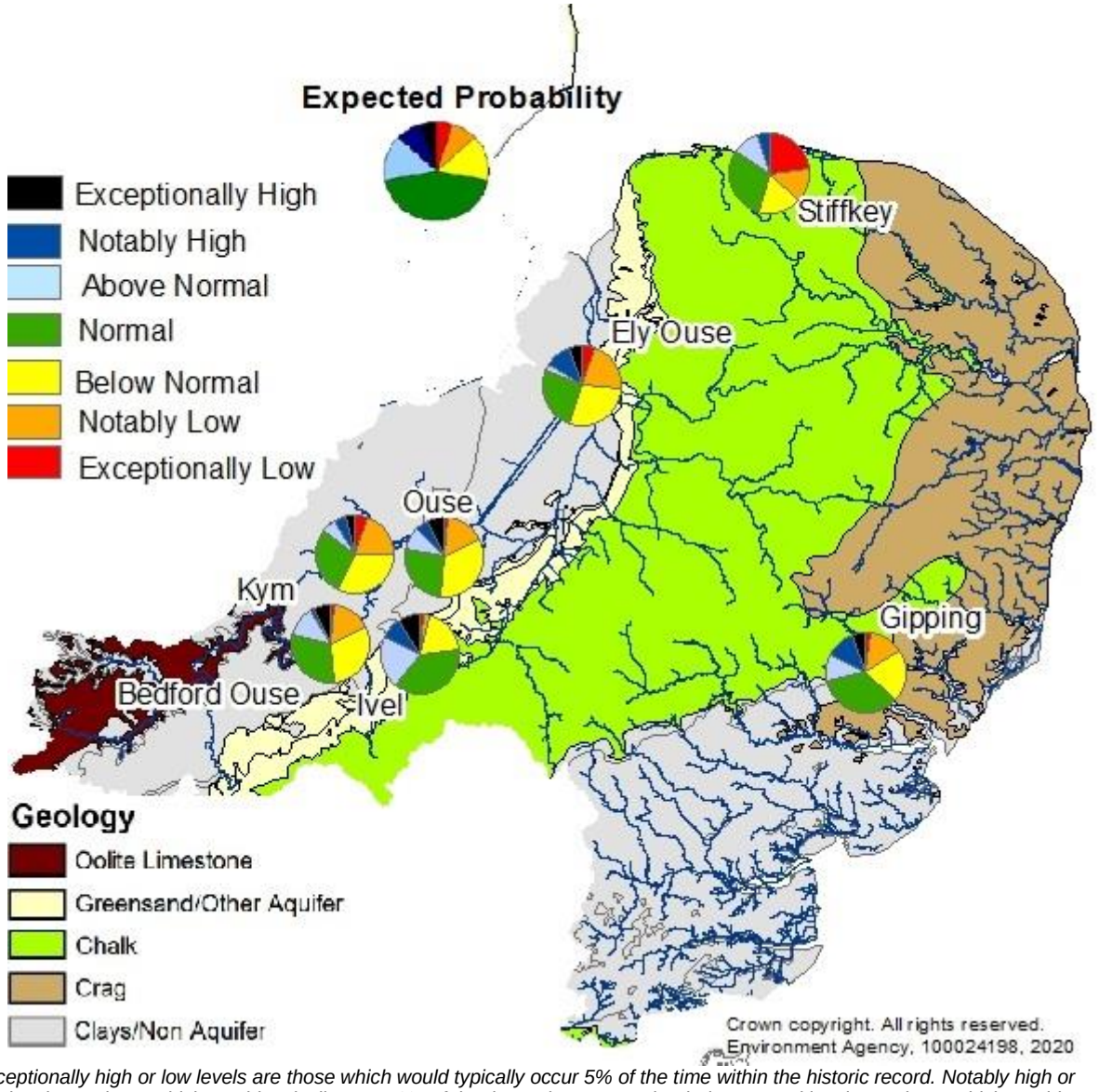
Forward Look – River Flows



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 September 2020. 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, 2020.

^ *"Naturalised" flows are projected for these sites'*



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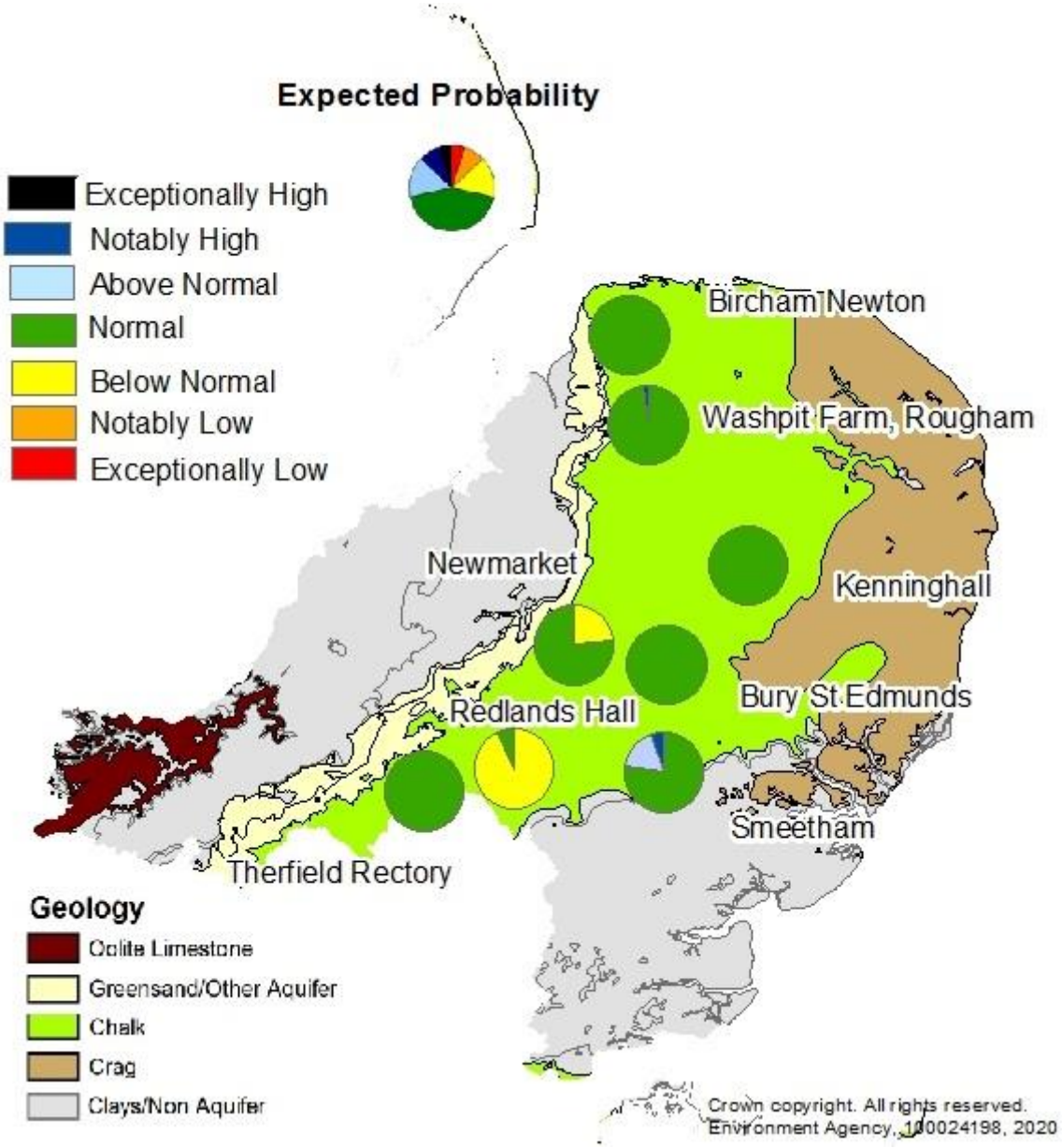
Probabilistic ensemble projections of river flows at key indicator sites in December 2020. Pie charts indicate probability, based on climatology, of the surface water flow at each site being e.g. exceptionally low for the time of year. (Source: Centre for Ecology and Hydrology, Environment Agency) Geological map reproduced with kind permission from UK Groundwater Forum, BGS © NERC. Crown copyright. All rights reserved. Environment Agency, 100026380, 2020

Forward Look - Groundwater



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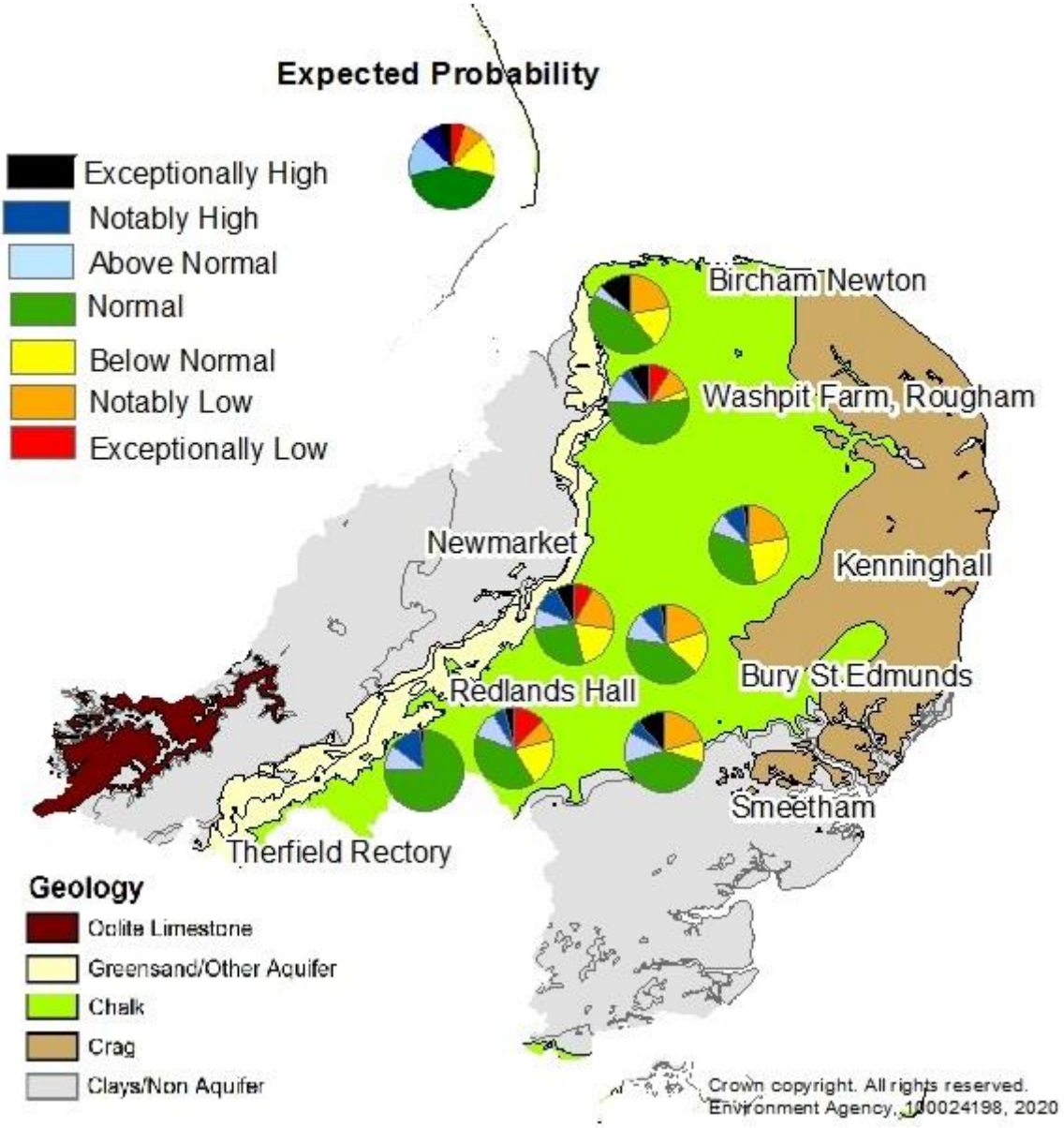
Probabilistic ensemble projections of groundwater levels at key indicator sites for end of September 2020. Pie charts indicate probability, based on climatology, of the groundwater level at each site being e.g. exceptionally low for the time of year. (Source: Environment Agency) Geological map reproduced with kind permission from UK Groundwater Forum, BGS © NERC. Crown copyright. All rights reserved. Environment Agency, 100026380, 2020.



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Probabilistic ensemble projections of groundwater levels at key indicator sites for end of March 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, 2020.

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^3s^{-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.
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.
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
Notably high	Value likely to fall within this band 8% of the time
Above normal	Value likely to fall within this band 15% of the time
Normal	Value likely to fall within this band 44% of the time
Below normal	Value likely to fall within this band 15% of the time
Notably low	Value likely to fall within this band 8% of the time
Exceptionally low	Value likely to fall within this band 5% of the time