

# Monthly water situation report

## East Anglia

### Summary – May 2020

East Anglia had a very dry month in May receiving only 4mm of rainfall resulting in 8% of the Long Term Average (LTA); and this makes it the driest month of May since the year 1891. Soil Moisture Deficit (SMD) continues to increase across the area with an exceptionally low SMD of 98 mm and river flows has decreased in all the indicator sites. Groundwater recharge has stop in majority of the key sites and reservoir levels in majority of the indicator sites falls below the normal operating curve.

### Rainfall

East Anglia received a total averaged rainfall of 4 mm in the month of May resulting in 8% of the Long Term Average (LTA). The amount of rainfall was fairly consistent with an exceptionally low category across all sub-catchments. The accumulated rainfall totals for this May has been the driest for East Anglia as a whole since records began in 1891. Similarly the last 3 months rainfall accumulation is the 5<sup>th</sup> driest on the record. The 12 month rainfall surplus has decrease to 660mm.

### Soil Moisture Deficit/Recharge

Soil Moisture Deficit (SMD) across East Anglia continues to increase during May and ended the month at exceptionally high category with an averaged SMD of 98 mm.

### River Flows

Monthly mean river flows for May has decreased at all the 20 indicator sites in the area; with 80% of the indicator sites classified as below normal or lower category. The River Tove at Cappenham, Chelmer at Springfield and Colne at Lexden has fall in the notably low category while flow in the River Waveny at Needham is classified as exceptionally low.

### Groundwater Levels

The low rainfall and high SMD during May has stopped the groundwater recharge at majority of sites with the exception of Therfield Rectory in the North Herts Chalk which shows a small recharge. Groundwater levels are receding and levels at 15% of the key sites (Linton and Redlands Hall in the Cam chalk, and Newmarket in the Snail Chalk) are now classified as below normal. However, groundwater levels at majority of the key sites remains in the normal category.

### Reservoir Storage/Water Resource Zone Stocks

Reservoir levels has decreased at all the indicator sites during May with 60% of the indicator sites reporting normal levels and 40% of the indicator sites reporting below normal levels. Reservoir levels in all the sites except Abberton has gone down below their normal operating curves.

### Environmental Impact

The Lodes-Granta groundwater support scheme had 3 out of 6 pumps operating during the month of May. There are no pumps operating at the Rhee, the Hiz, the Thet and Little Ouse for this time of the year.

## Forward Look

### Probabilistic ensemble projections for river flows at key sites

**June 2020:** There is an increased probability of normal flows in the Eastern Rivers and an increased probability of below normal or lower flows in the Great Ouse catchment with the exception of the Ivel.

**September 2020:** There is a reduced probability of exceptionally low flow at majority of the key sites with the exception of Gipping in September.

### Probabilistic ensemble projections for groundwater levels in key aquifers

**September 2020:** There is an increased probability groundwater levels to be in the normal category at all the key sites in September.

**March 2021:** There is an increased probability groundwater levels to be notably low or lower at majority of the key sites.

Author:

[Hydrology & Operations](#)

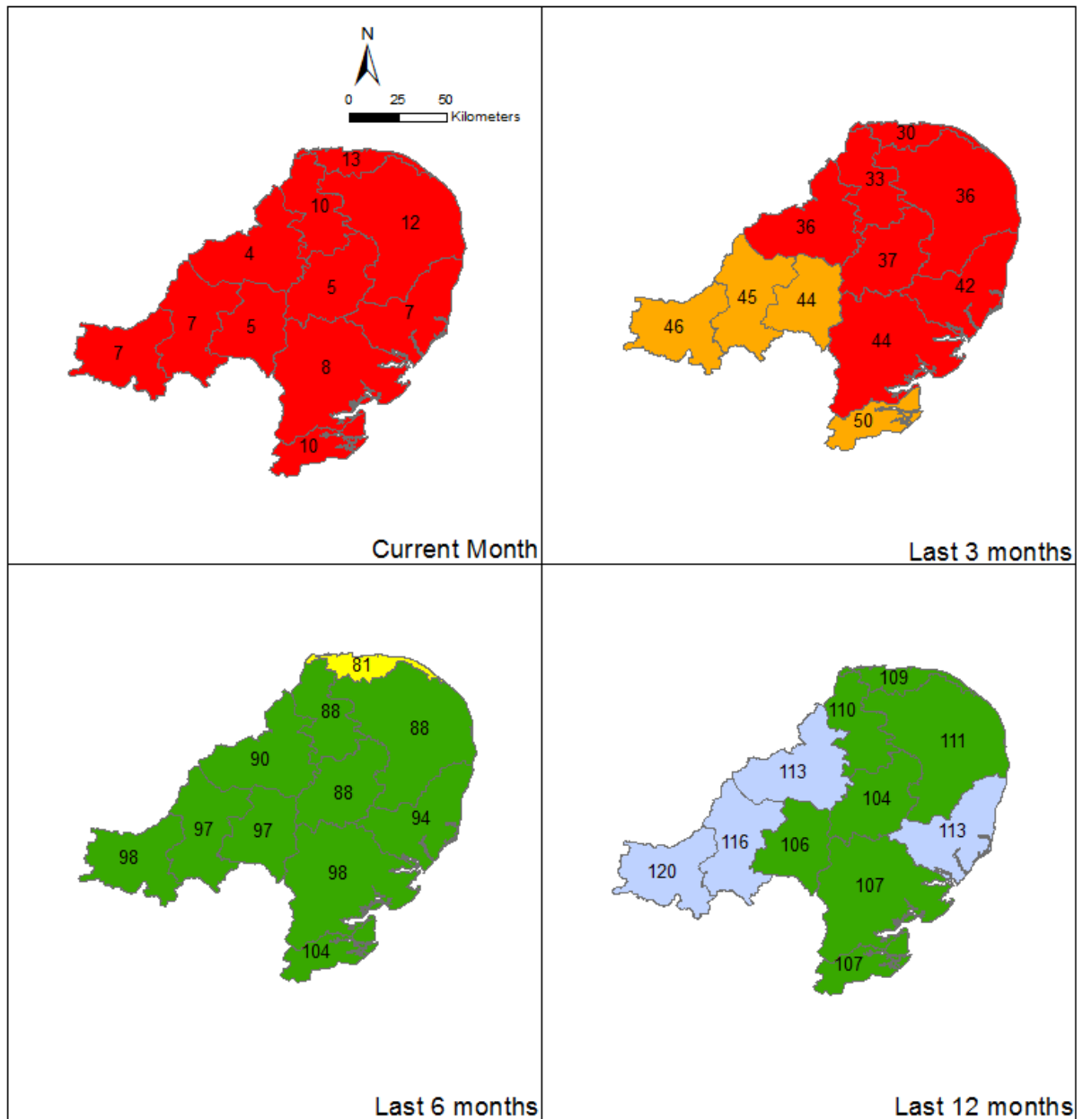
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# Rainfall

May 2020



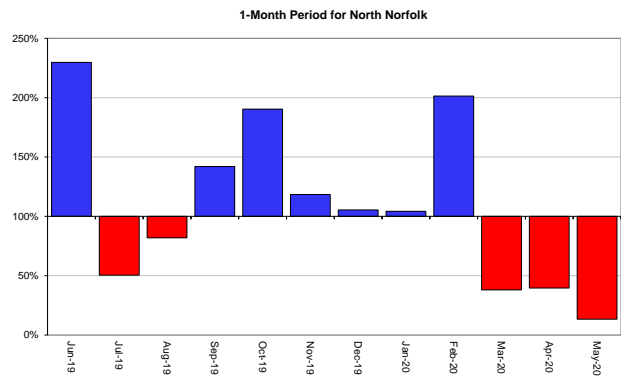
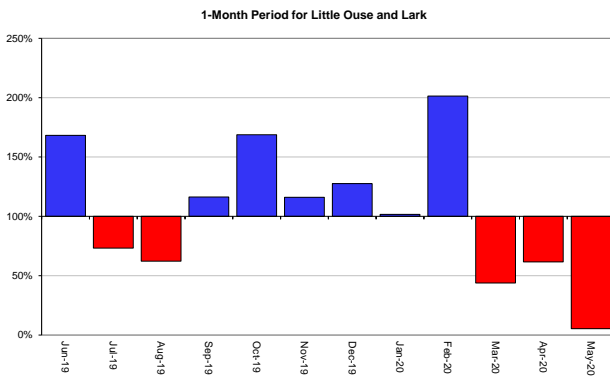
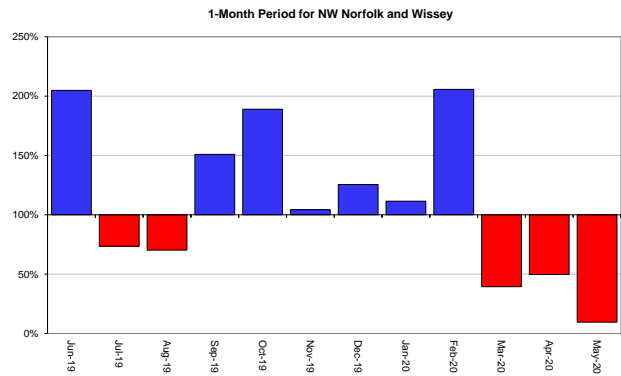
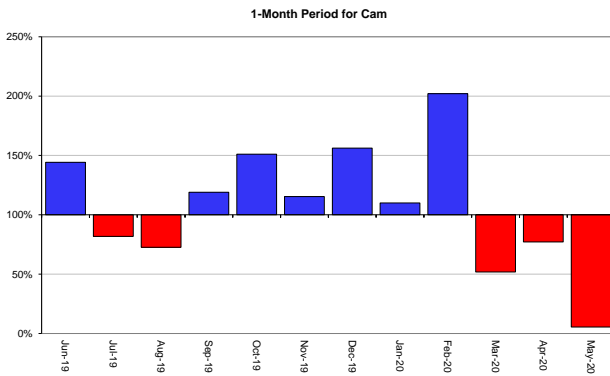
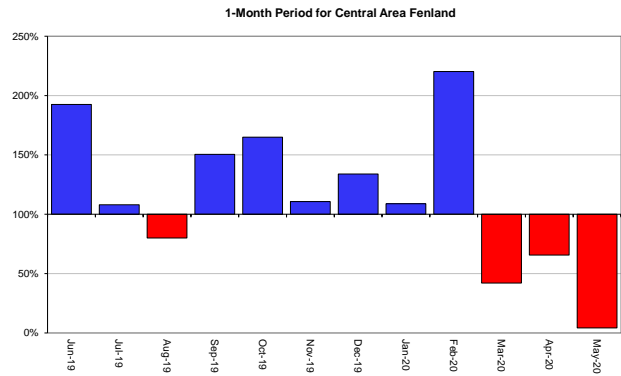
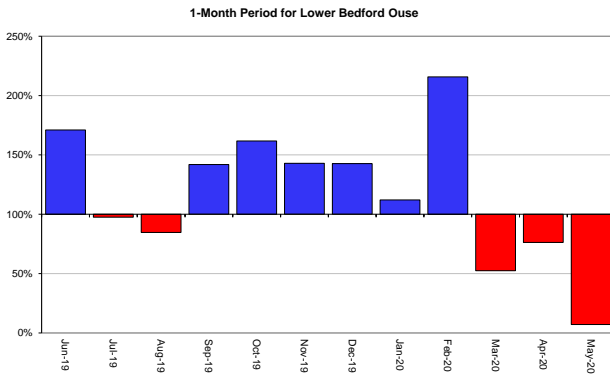
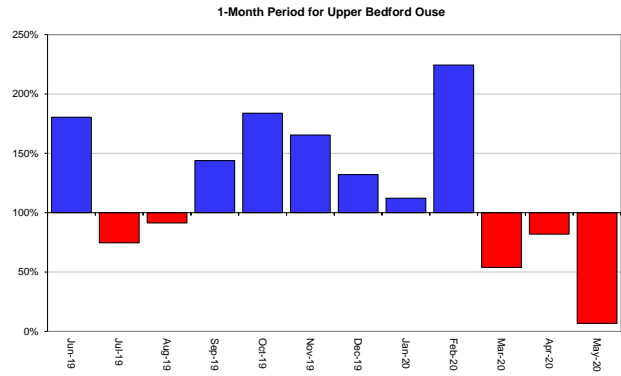
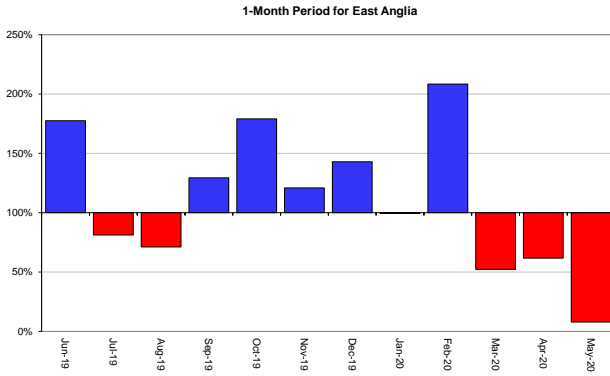
- Exceptionally high
- Notably high
- Above normal
- Normal
- Below normal
- Notably low
- Exceptionally low

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.

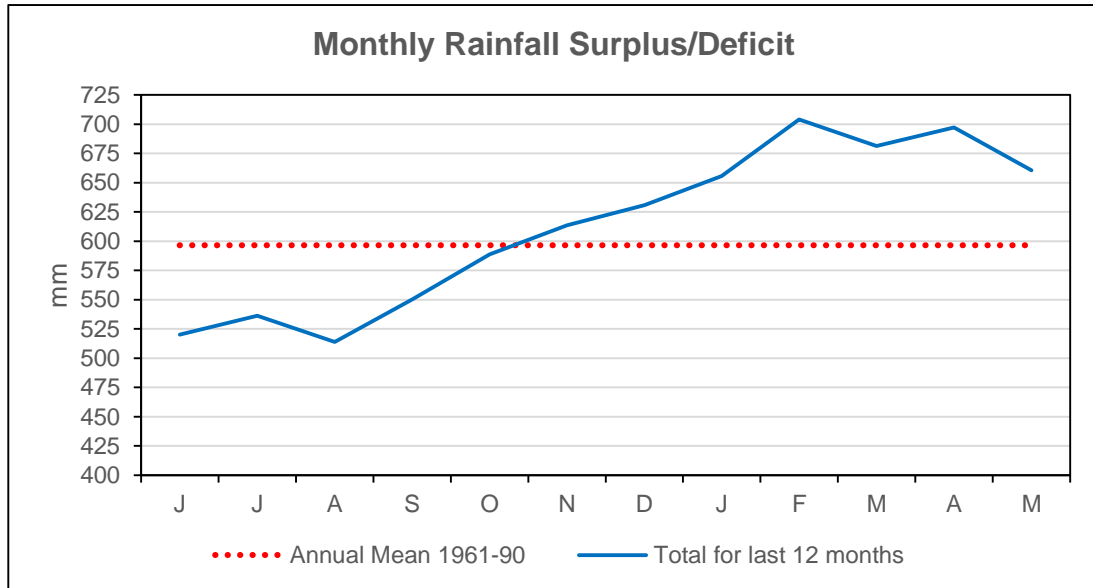
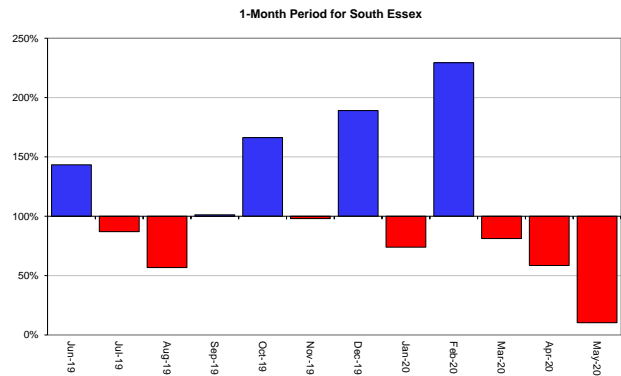
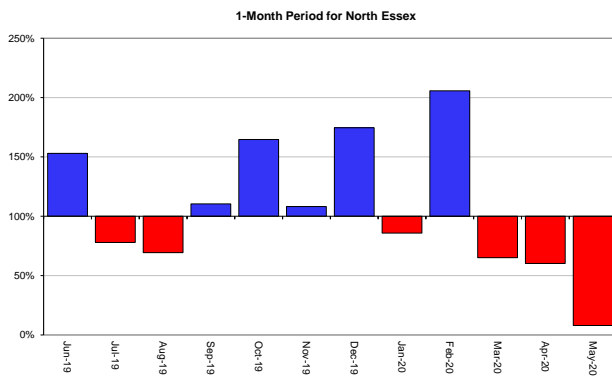
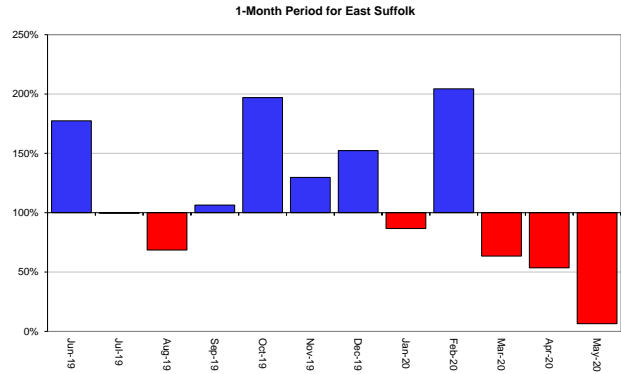
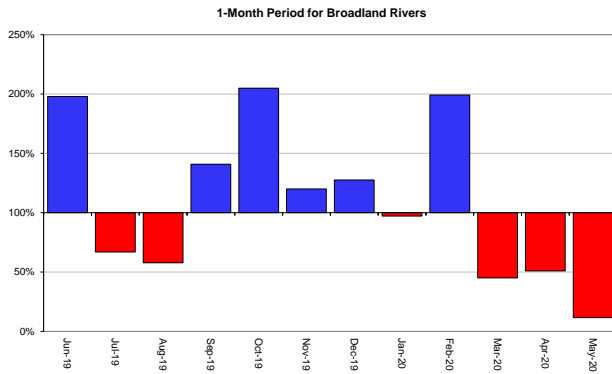
**Above average rainfall**

**Below average rainfall**



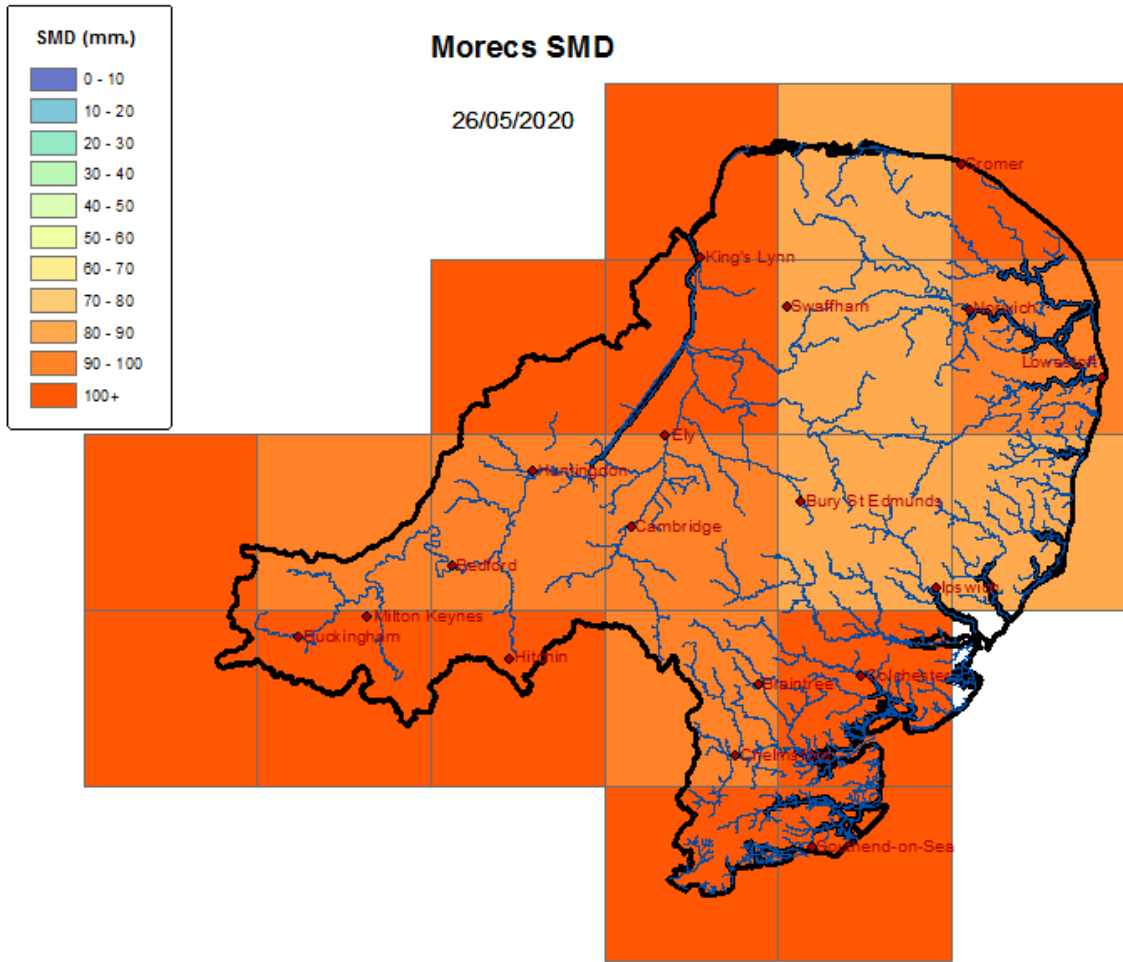
**Above average rainfall**

**Below average rainfall**

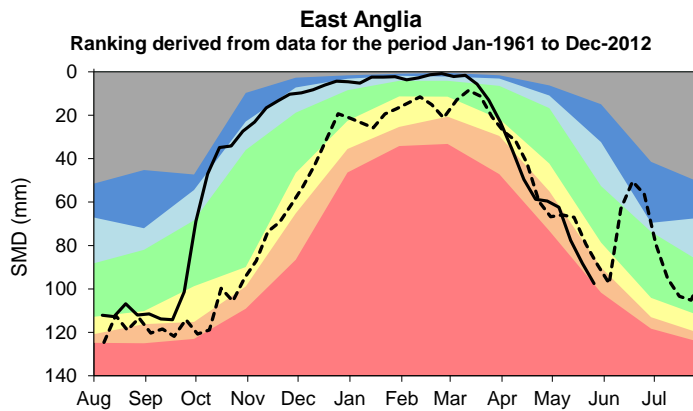


# Soil Moisture Deficit

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

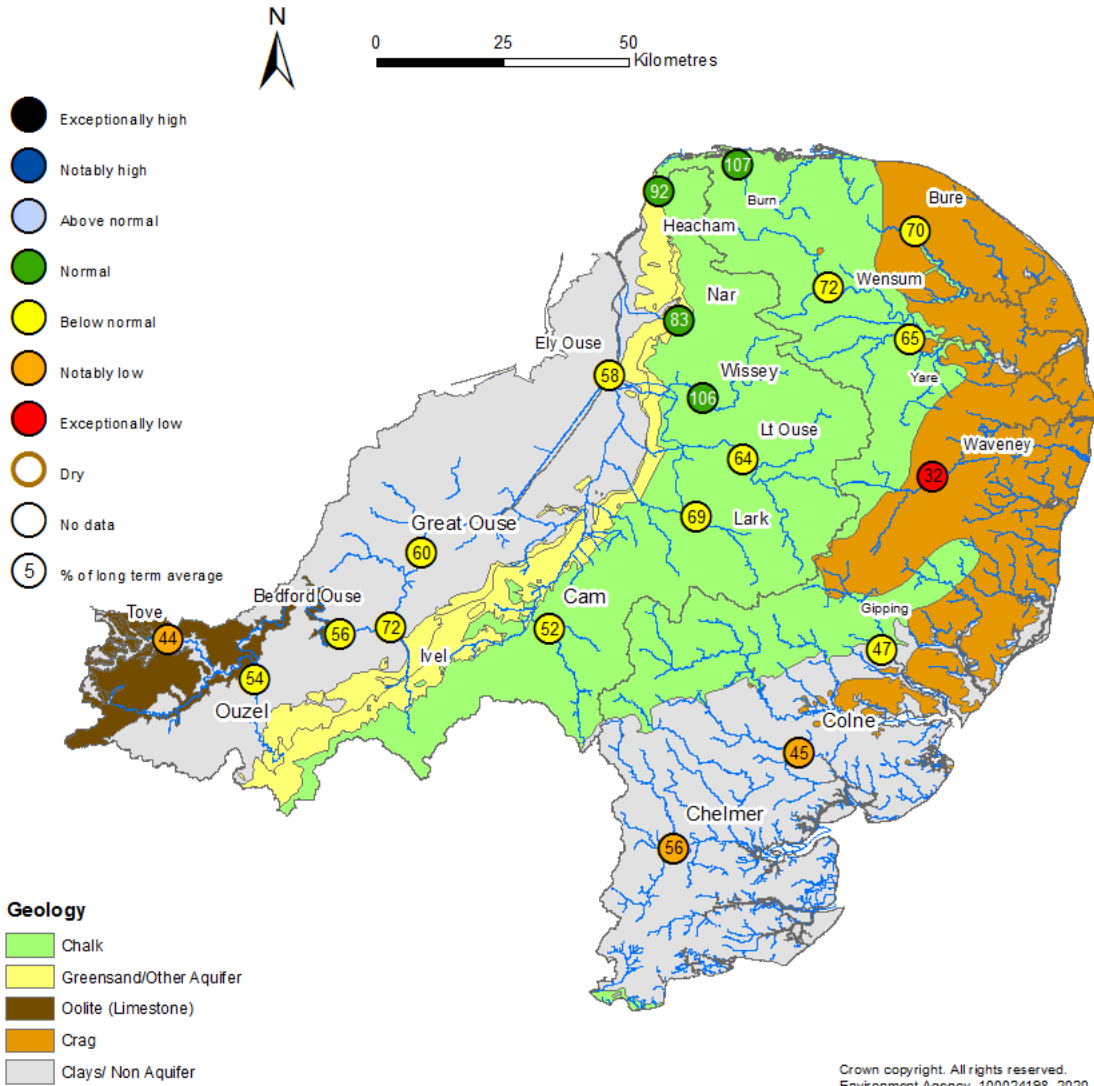


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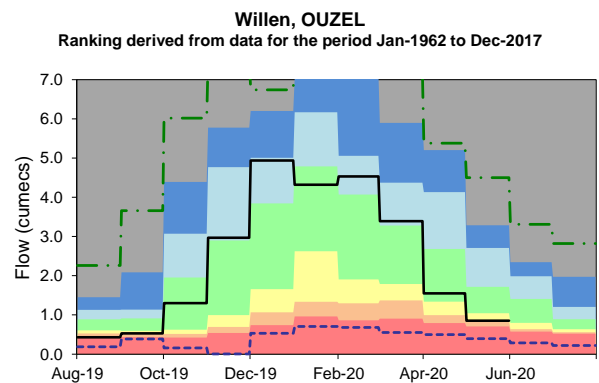
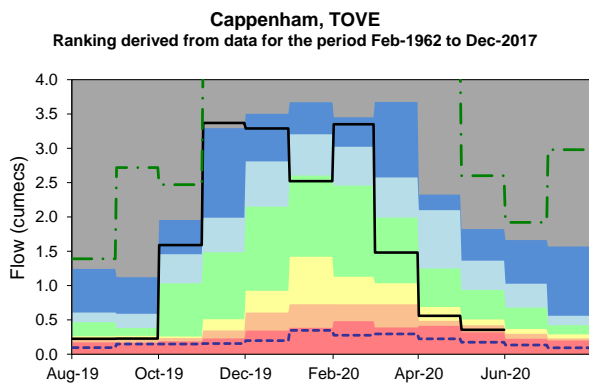


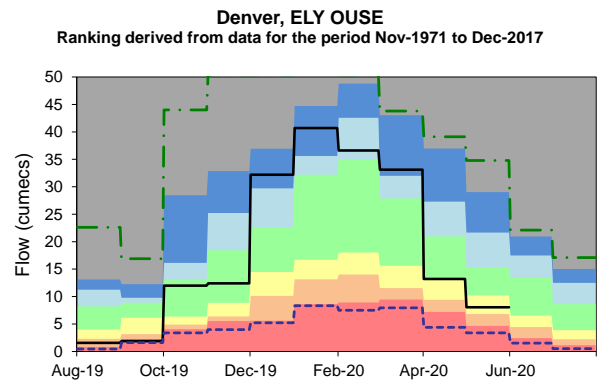
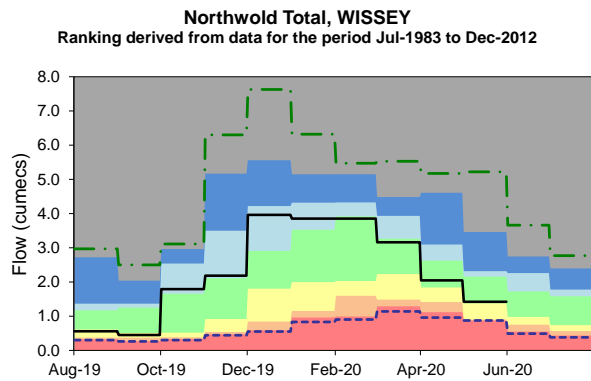
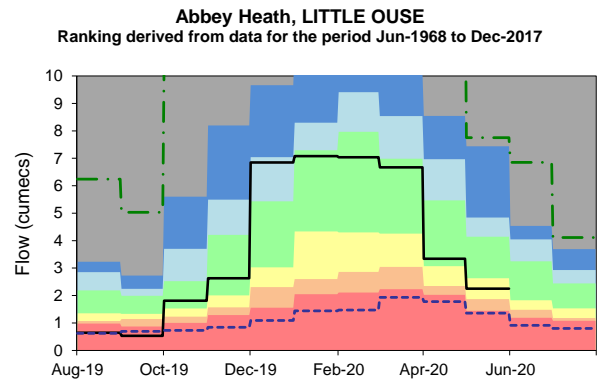
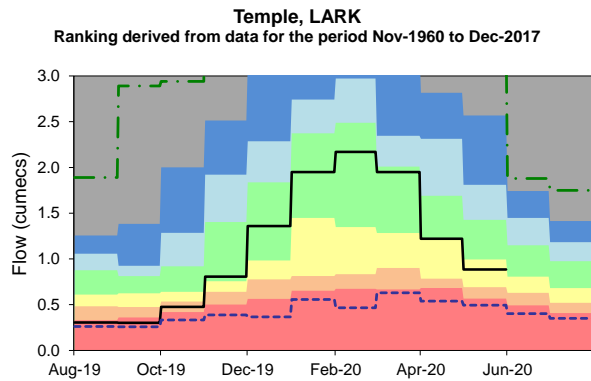
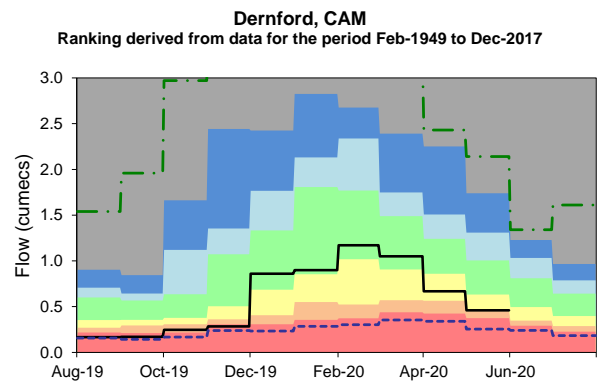
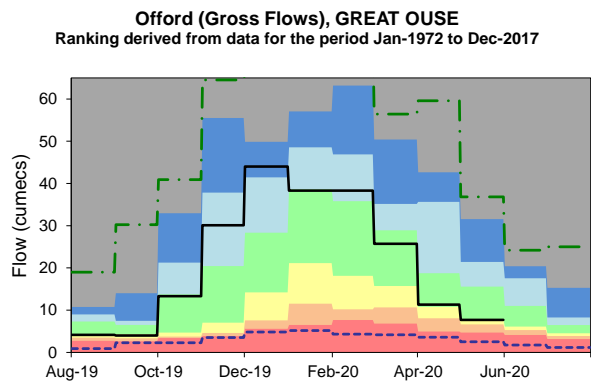
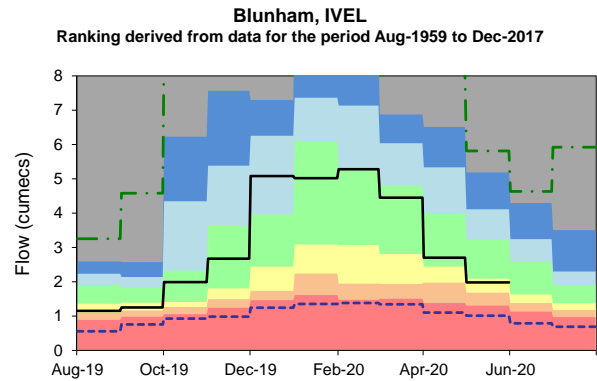
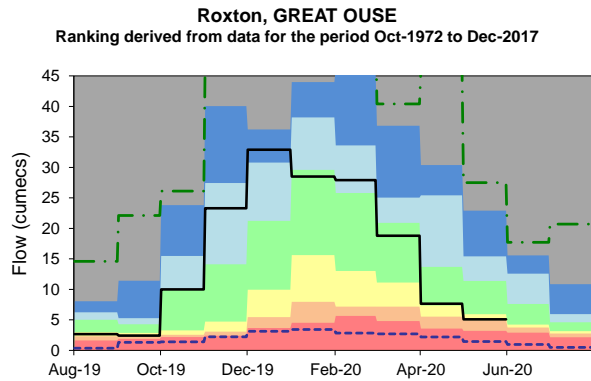
# River Flow

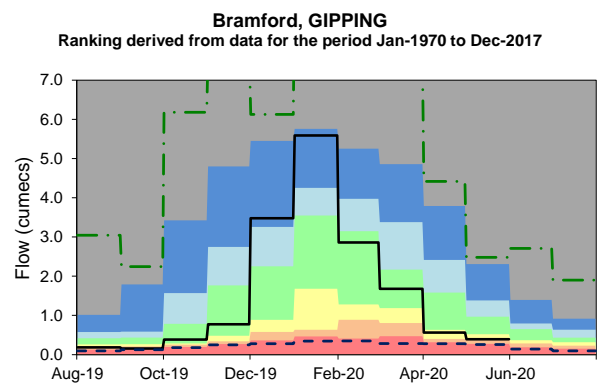
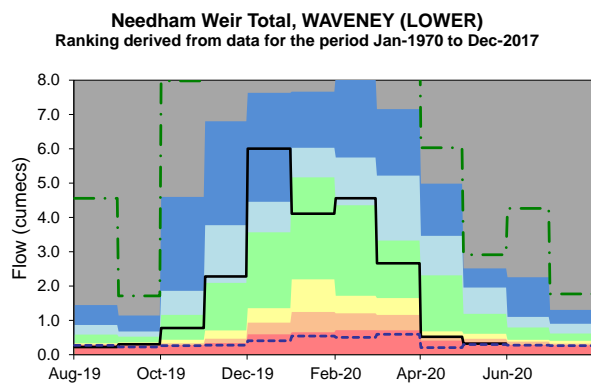
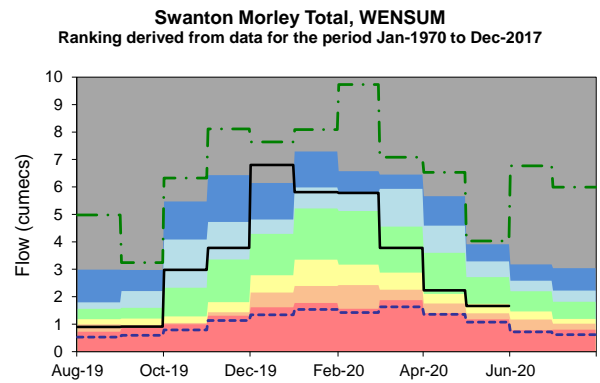
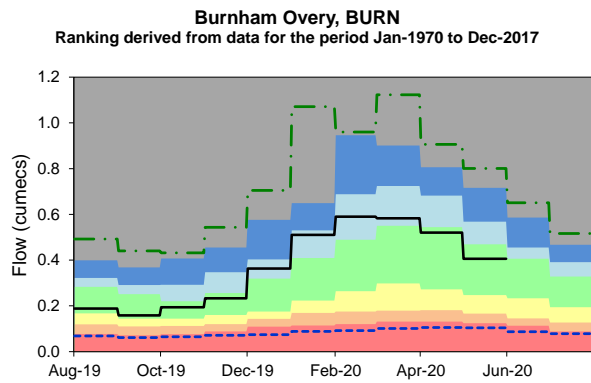
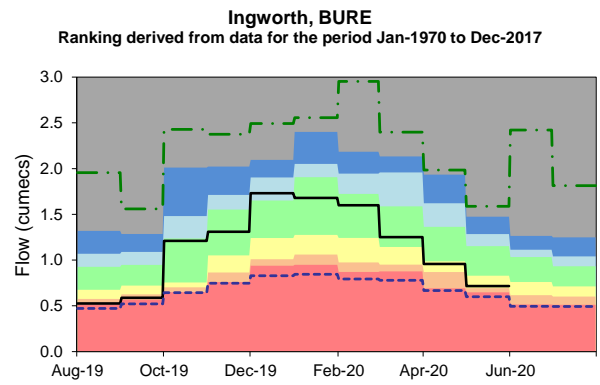
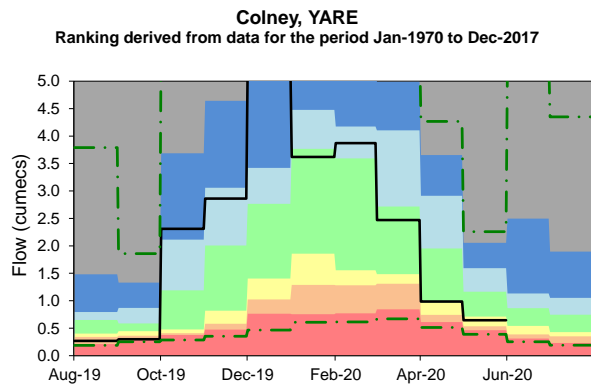
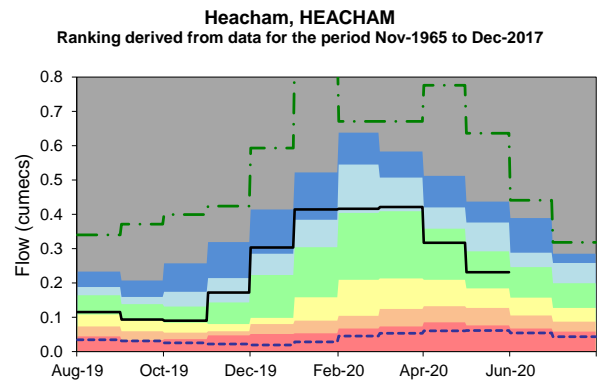
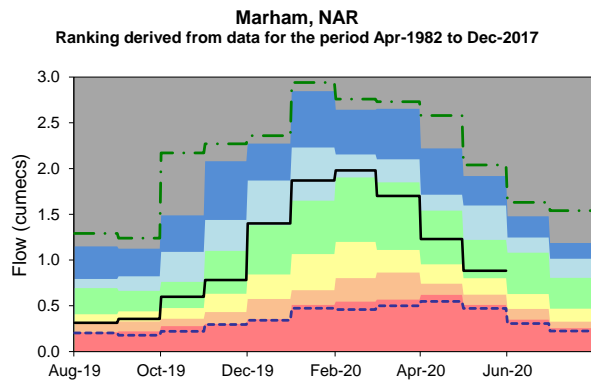
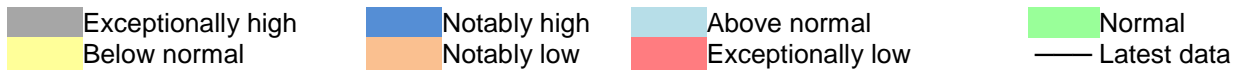
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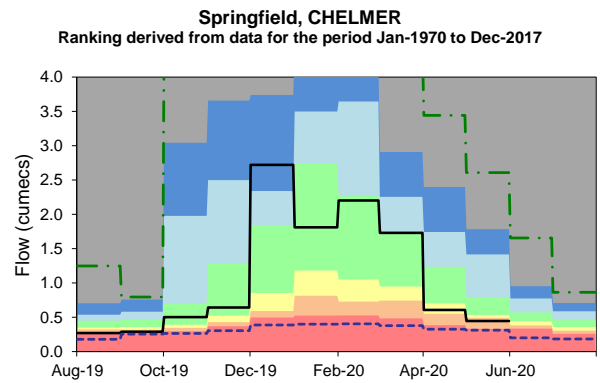
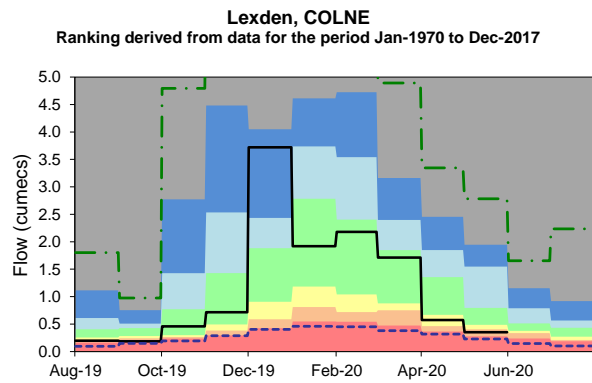
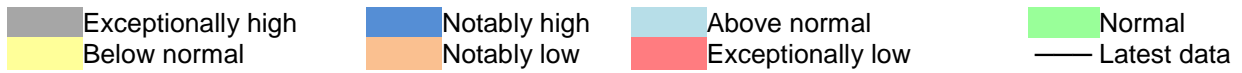


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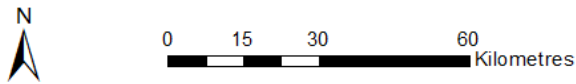








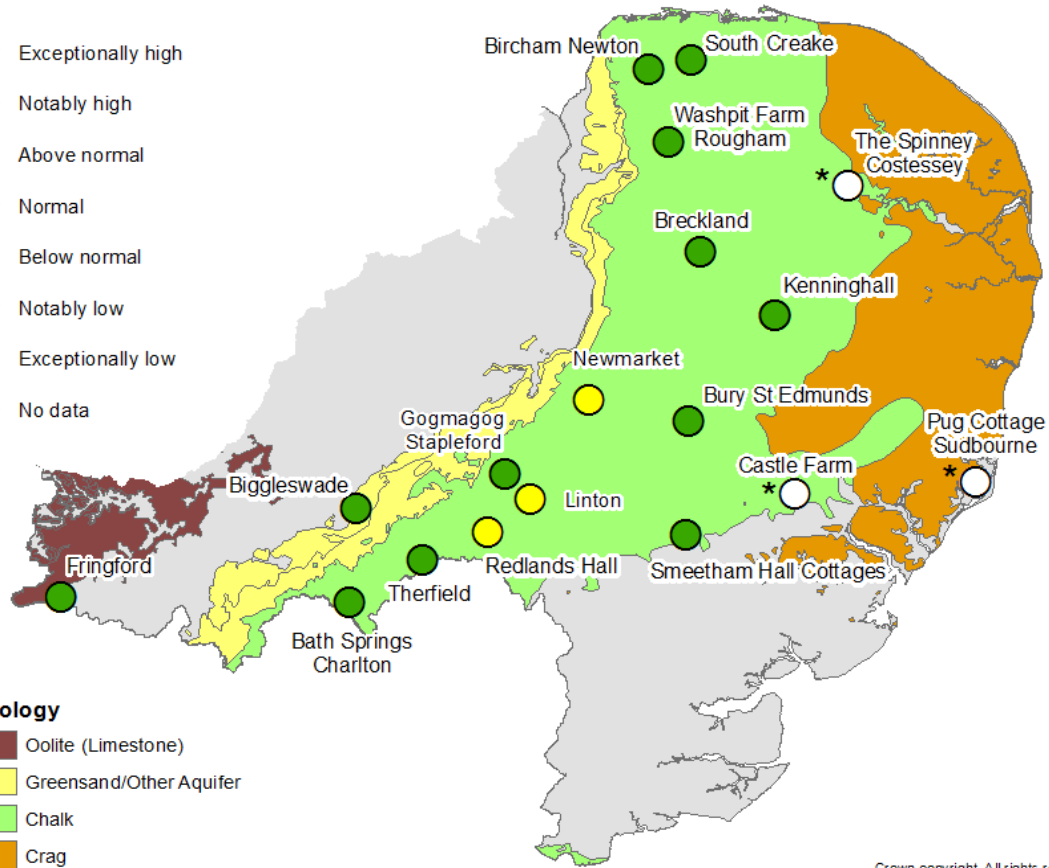
# Groundwater Levels May 2020



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- Notably high
- Above normal
- Normal
- Below normal
- Notably low
- Exceptionally low
- No data

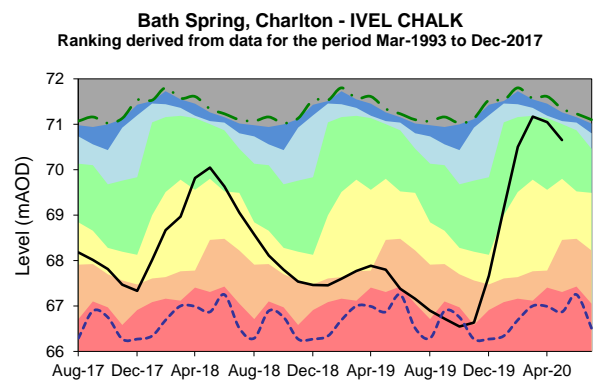
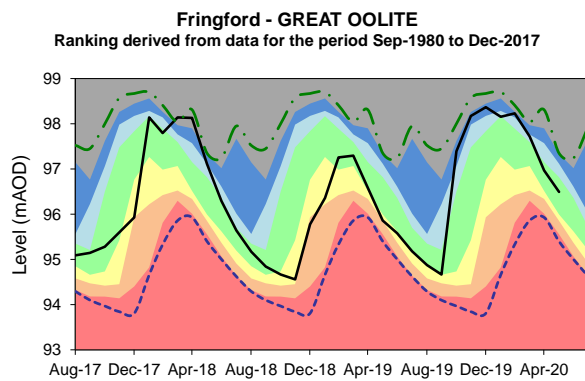
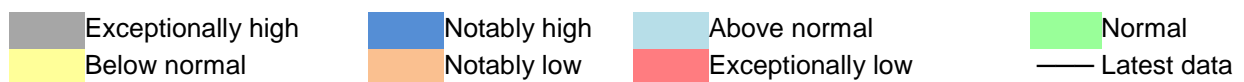
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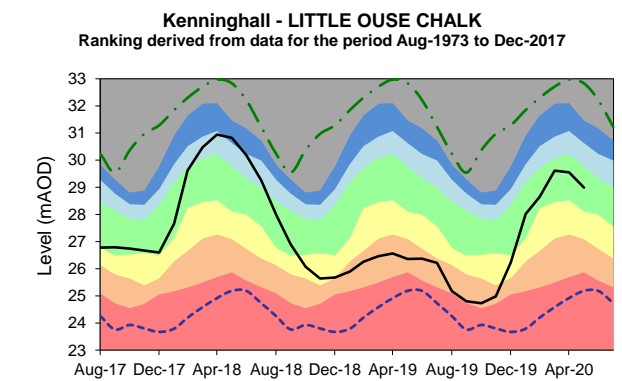
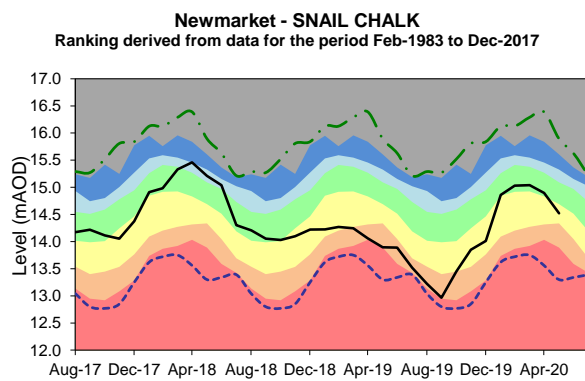
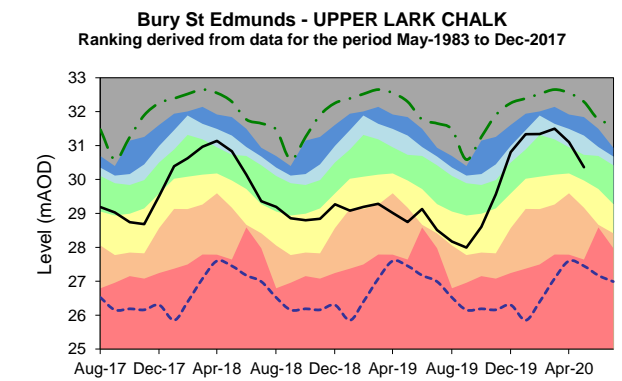
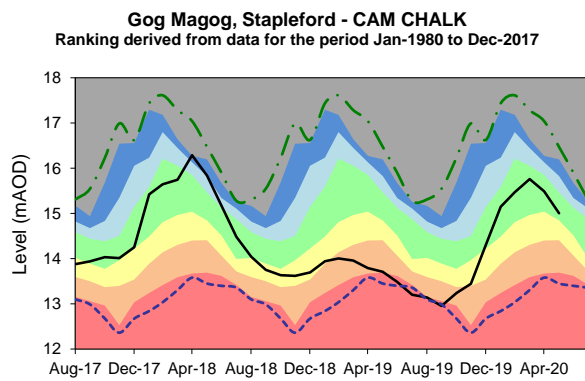
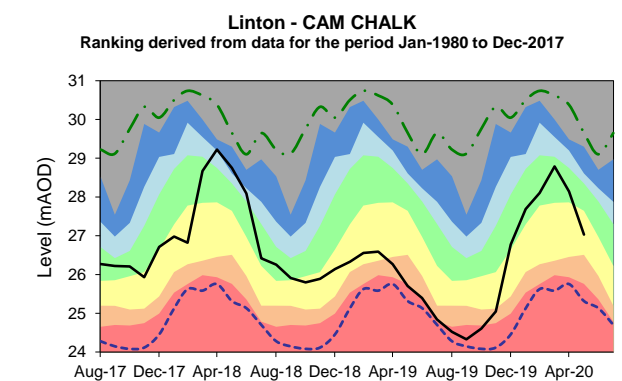
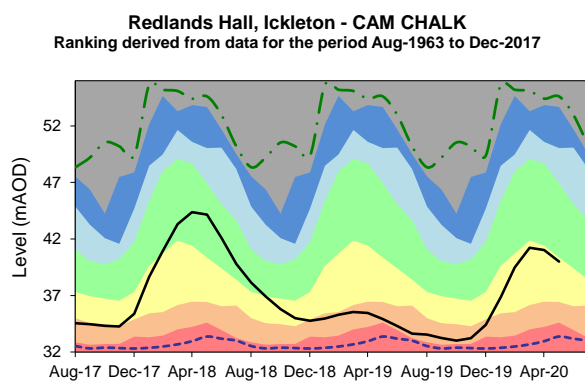
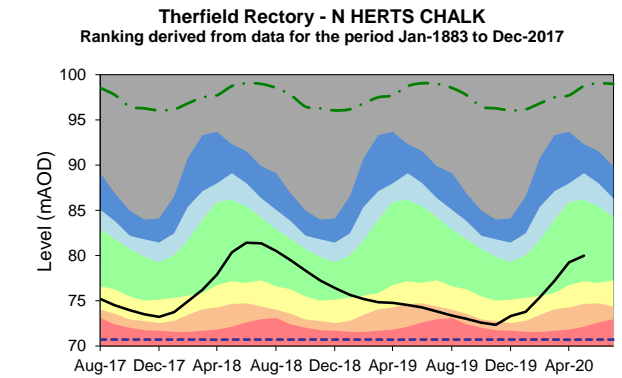
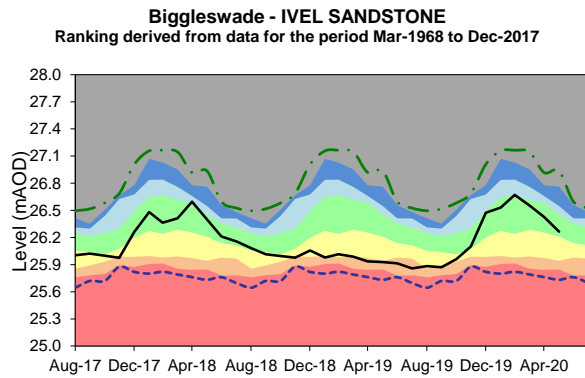
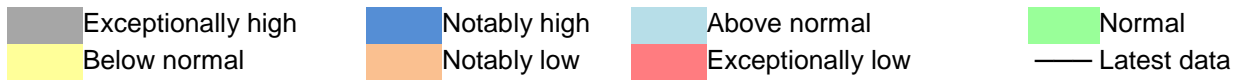
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- Chalk
- Crag
- Clays/Non Aquifer

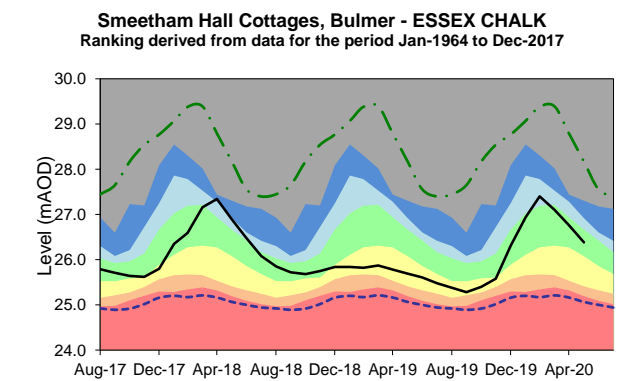
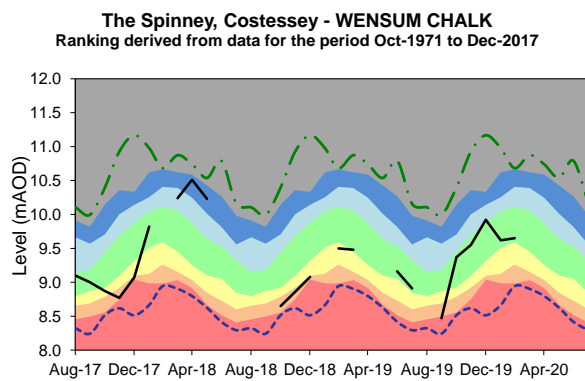
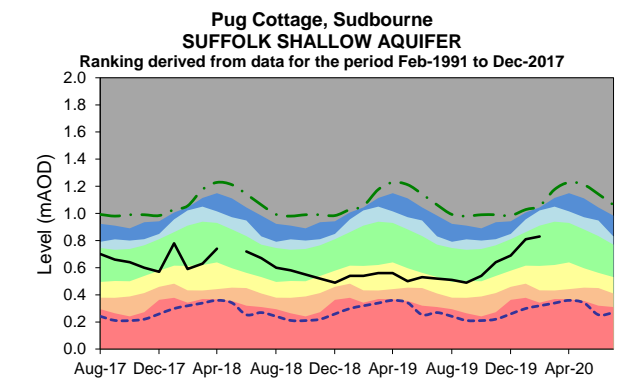
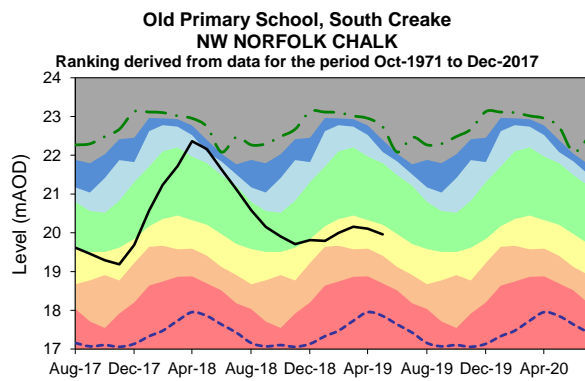
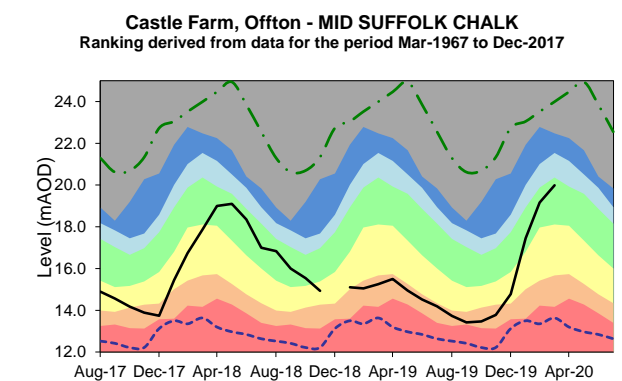
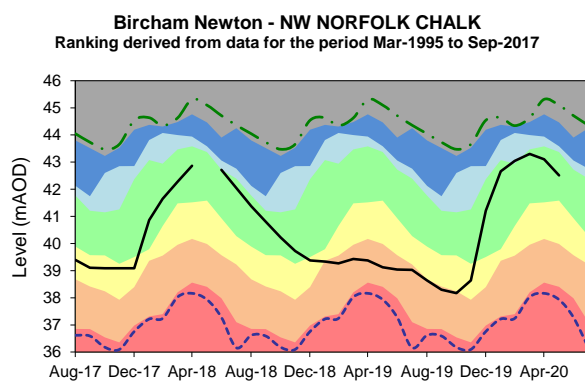
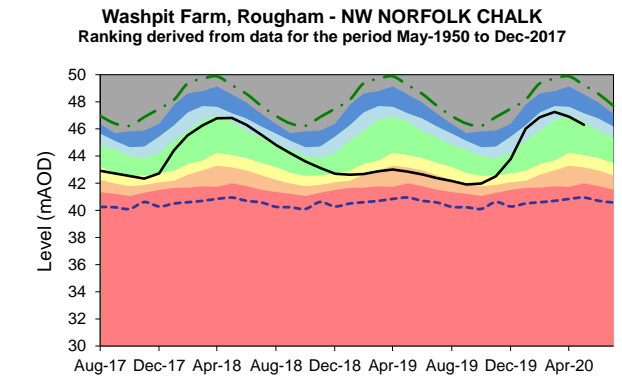
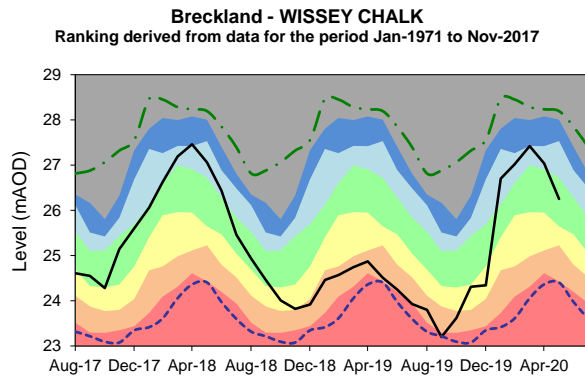
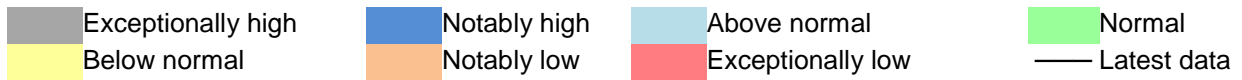


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\*Monitoring activities suspended due to the COVID19 incident.

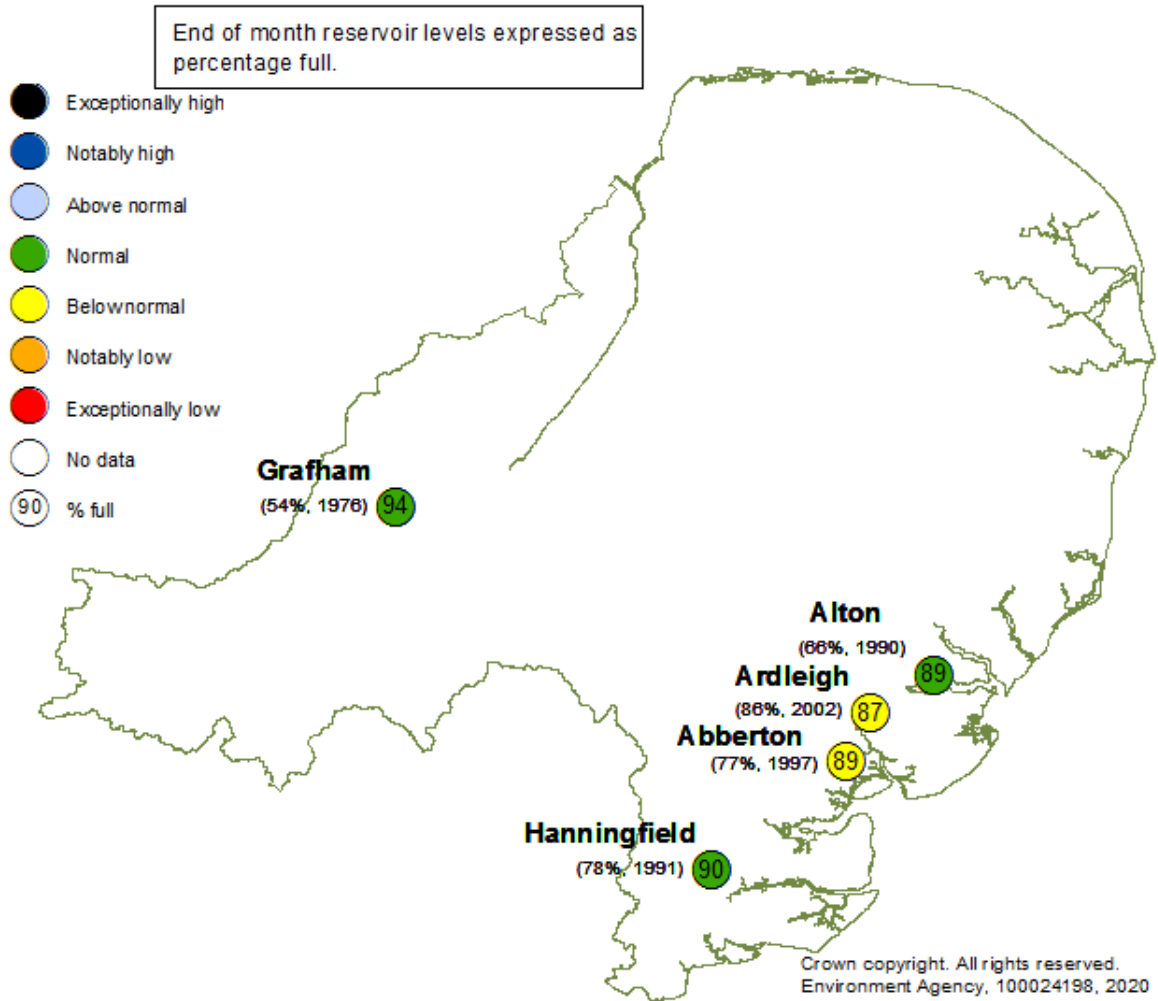




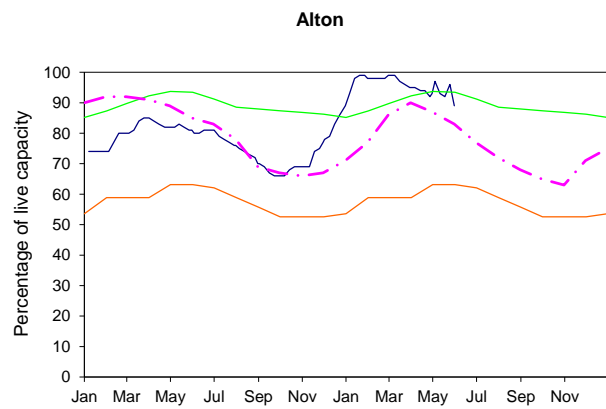
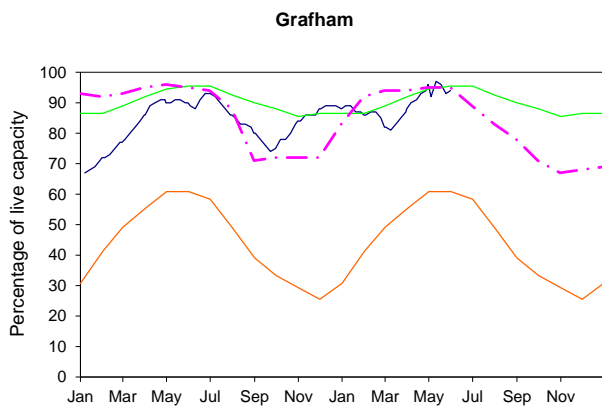


# Reservoir Stocks

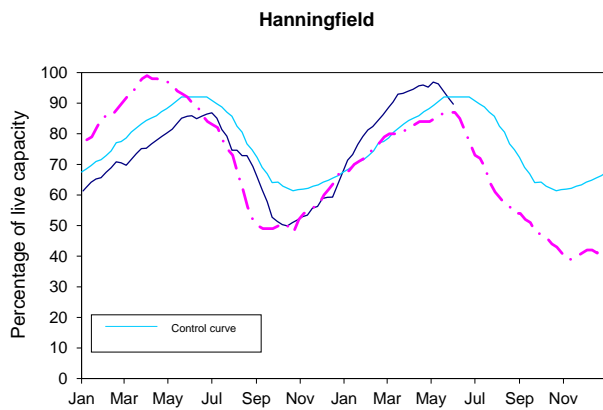
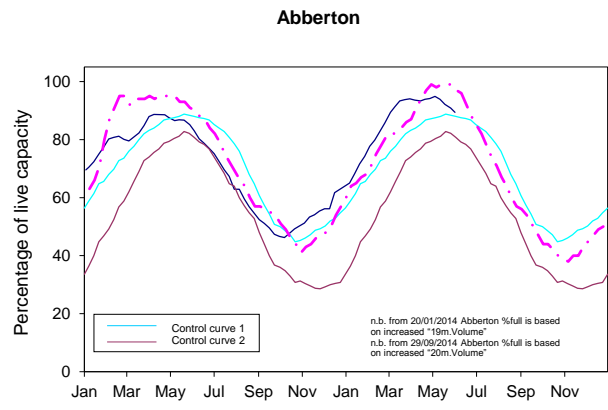
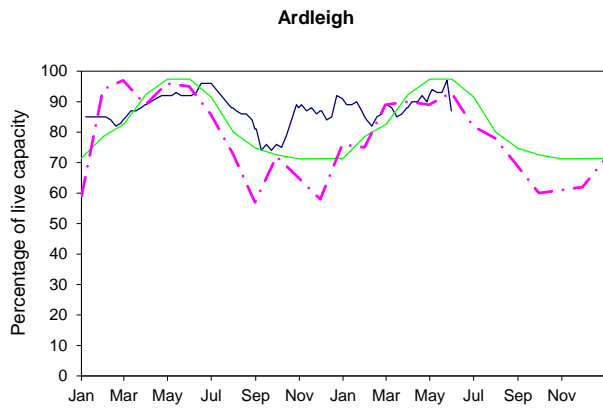
May 2020



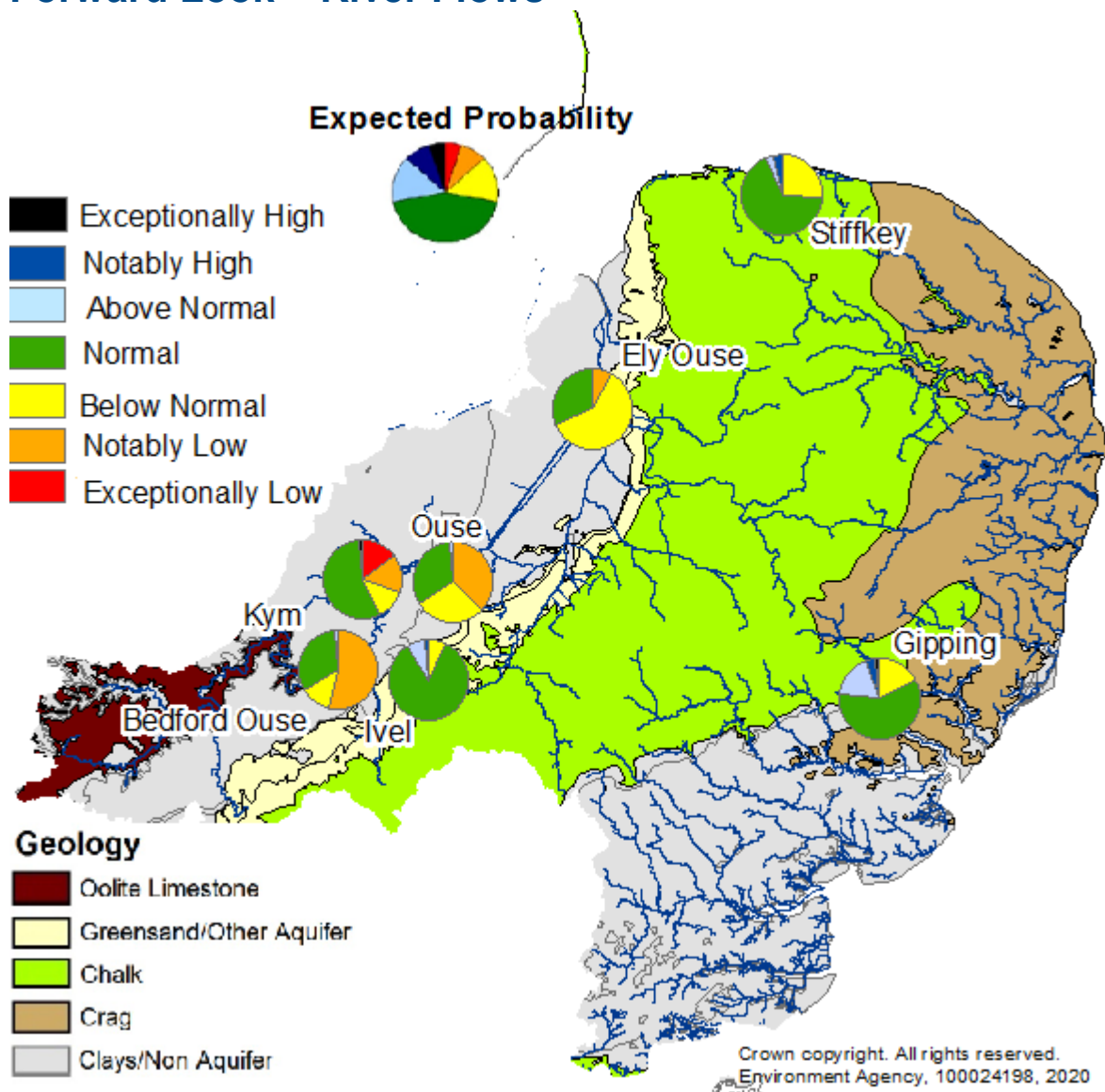
— 2019-2020      — Normal Operating Curve      — Drought Alert Curve      - - - 1995-1996



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



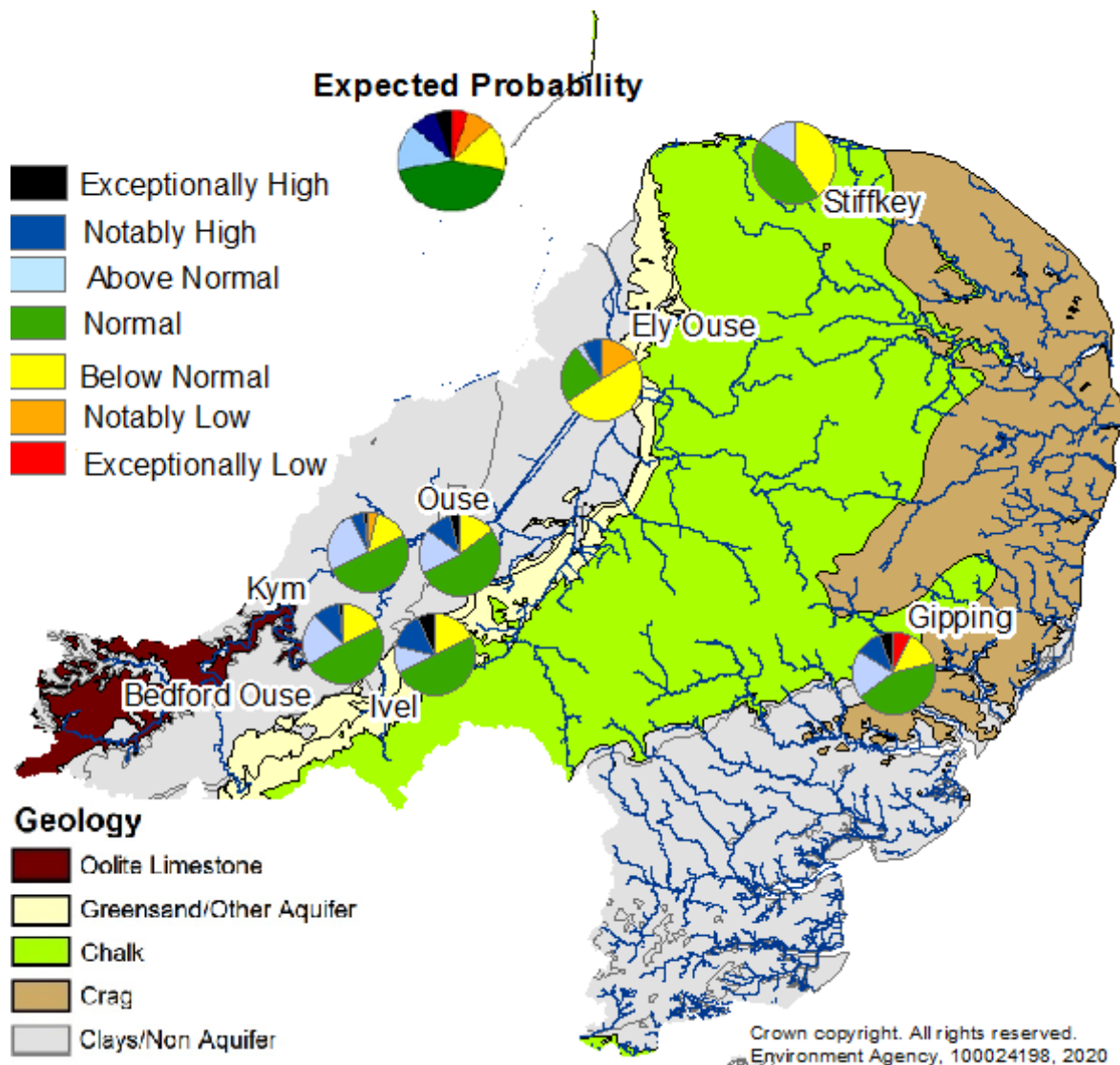
## Forward Look – River Flows



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 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.

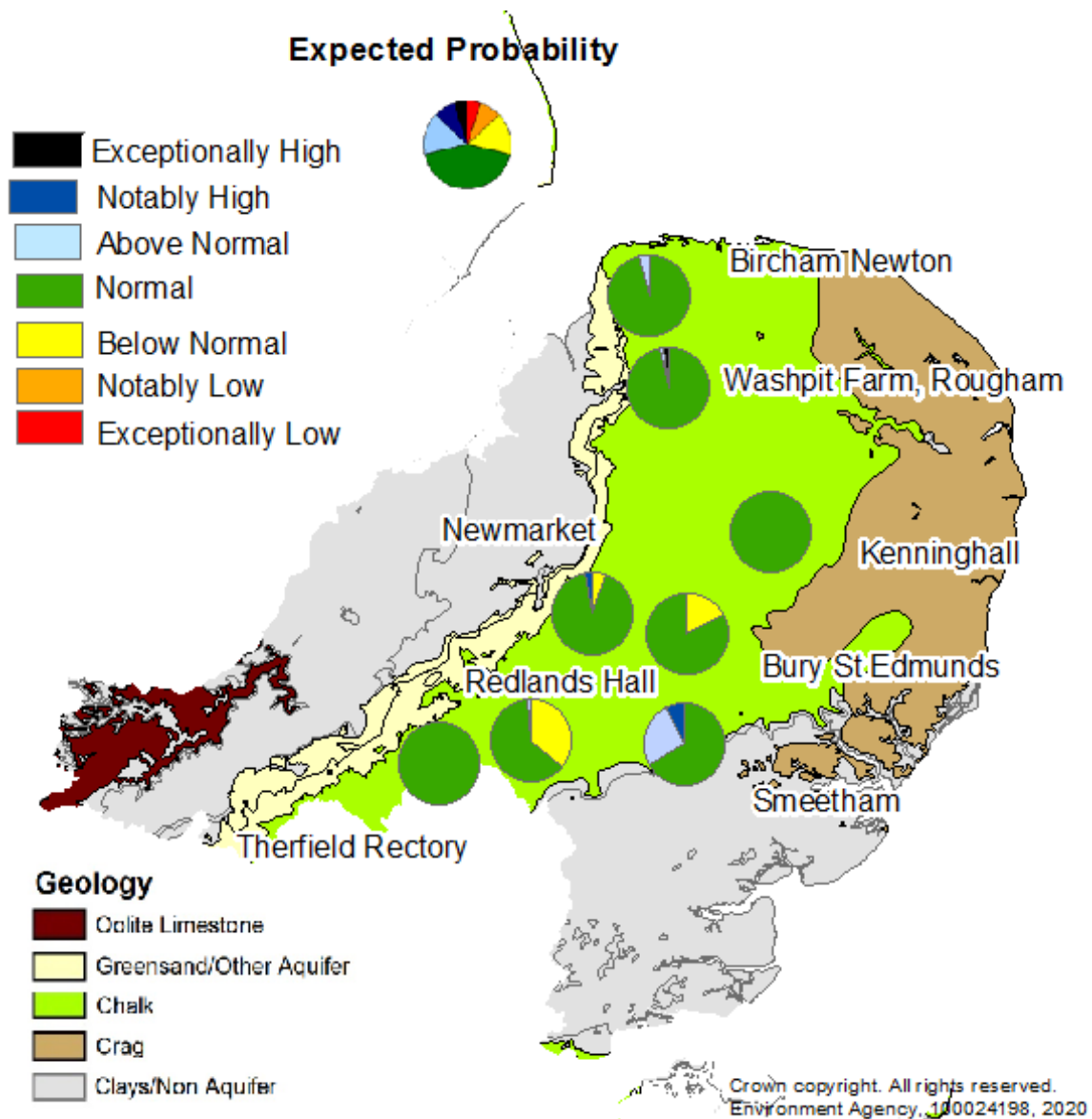
<sup>^</sup> "Naturalised" flows are projected for these sites'



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.

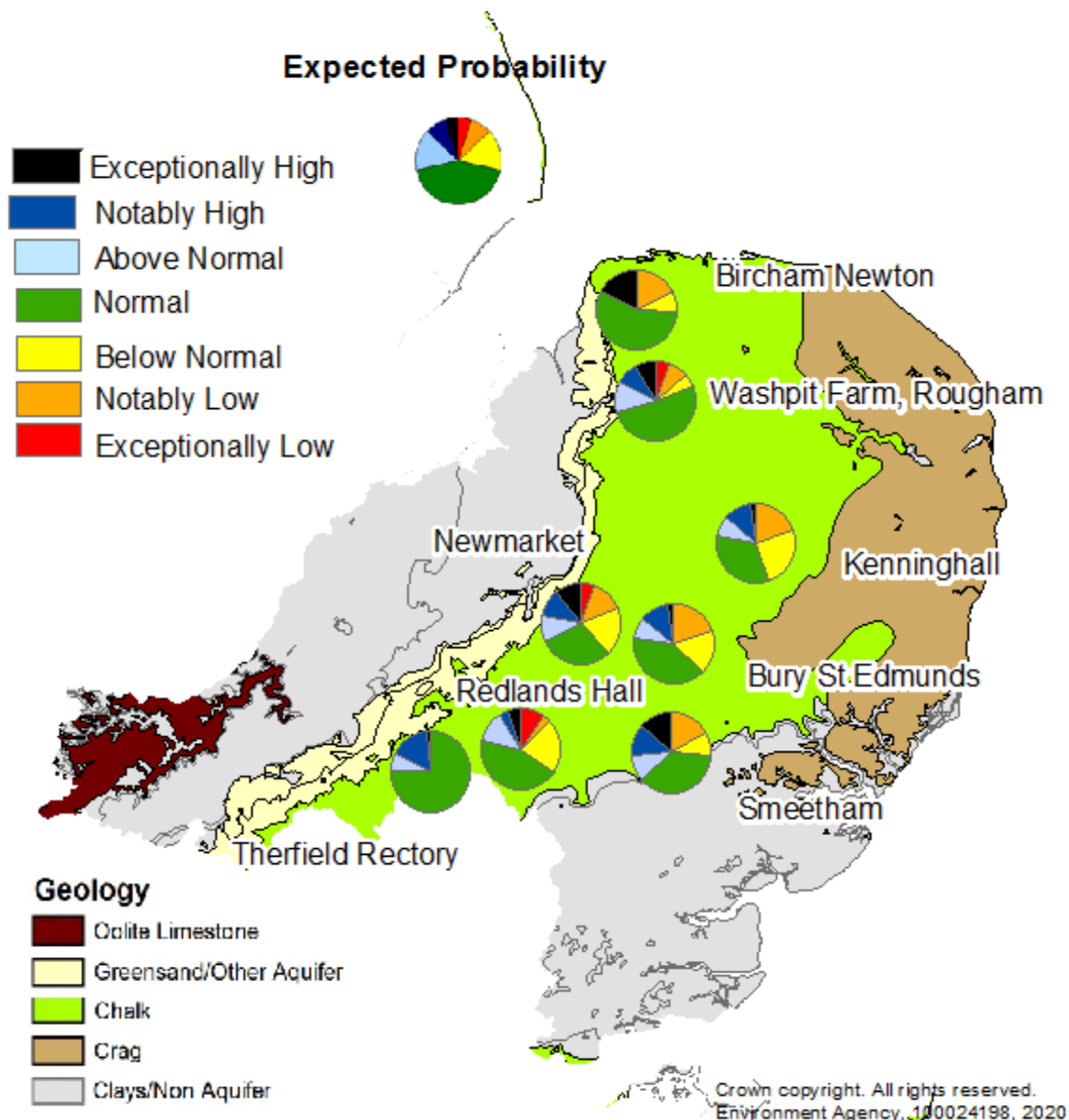
**Probabilistic ensemble projections of river flows at key indicator sites in September 2020.** Pie charts indicate probability, based on climatology, of the surface water flow at each site being e.g. exceptionally low for the time of year. (Source: [Centre for Ecology and Hydrology](#), Environment 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



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 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.



*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 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

Aquifer

Areal average rainfall

Artesian

Artesian borehole

Cumecs

Effective rainfall

Flood Alert/Flood Warning

Groundwater

Long term average (LTA)

mAOD

MORECS

Naturalised flow

NCIC

Recharge

Reservoir gross capacity

Reservoir live capacity

Soil moisture deficit (SMD)

### Categories

Exceptionally high

Notably high

Above normal

Normal

Below normal

Notably low

Exceptionally low

### Definition

A geological formation able to store and transmit water.

The estimated average depth of rainfall over a defined area. Expressed in depth of water (mm).

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.

Borehole where the level of groundwater is above the top of the borehole and groundwater flows out of the borehole when unsealed.

Cubic metres per second ( $m^3s^{-1}$ )

The rainfall available to percolate into the soil or produce river flow. Expressed in depth of water (mm).

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.

The water found in an aquifer.

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).

Metres Above Ordnance Datum (mean sea level at Newlyn Cornwall).

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.

River flow with the impacts of artificial influences removed. Artificial influences may include abstractions, discharges, transfers, augmentation and impoundments.

National Climate Information Centre. NCIC area monthly rainfall totals are derived using the Met Office 5 km gridded dataset, which uses rain gauge observations.

The process of increasing the water stored in the saturated zone of an aquifer. Expressed in depth of water (mm).

The total capacity of a reservoir.

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.

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).

Value likely to fall within this band 5% of the time

Value likely to fall within this band 8% of the time

Value likely to fall within this band 15% of the time

Value likely to fall within this band 44% of the time

Value likely to fall within this band 15% of the time

Value likely to fall within this band 8% of the time

Value likely to fall within this band 5% of the time