# Monthly water situation report

## Midlands Area

### Summary – April 2022

Rainfall – During April all hydrological areas received either ‘Below Normal’ or ‘Exceptionally Low’ amounts of rainfall compared to the long term average.
Soil Moisture Deficit – Soil moisture deficits continued to increase during April following an unusually dry month.
River Flows – The majority of river flow monitoring sites recorded ‘Below Normal’ monthly mean flows for April, compared to the long term average.
Groundwater Levels – The majority of ground water monitoring sites are now beginning to record decreases in level but still remain at a typically expected level for this time of year.
Reservoir Storage– Most reservoirs recorded a downward trend in reservoir storage.

**Please note that the regions stated in this report refer to the following counties:**

- **East Midlands: Derbyshire, Nottinghamshire and Leicestershire**
- **West Midlands (West): Shropshire, Herefordshire, Worcestershire & Gloucestershire**
- **West Midlands (East): Staffordshire, Warwickshire, & West Midlands**

### Rainfall

During April all hydrological areas received either ‘Below Normal’ or ‘Exceptionally Low’ amounts of rainfall compared to the long term average (LTA).
East Midlands received 14% of the monthly rainfall we would typically expect. With slightly higher totals of 24% for West Midlands (East) and 32% for West Midlands (West) area.
Overall Midlands received only 40% of the rainfall which we would normally expect during April.

### Soil Moisture Deficit

Soil moisture deficits continued to increase during April following an unusually dry month. Soils are becoming drier. Soils also continue to record moisture deficits which are slightly higher than we would typically expect for this time of year.

### River Flows

The majority of river flow monitoring sites recorded ‘Below Normal’ monthly mean flows for the month of April, compared to the long term average. Five sites recorded ‘Normal’ flows, six sites recorded ‘Below Normal’ flows, seven recorded ‘Notably Low’ flows and one recorded ‘Exceptionally Low’ flows.
The ‘Exceptionally Low’ site was Butts Bridge on the River Lugg.

### Groundwater Levels

The majority of ground water monitoring sites are now beginning to record decreases in level but still remain at a typically expected level for this time of year.
There are a few of our monitoring sites which are recording unusually high levels compared to long term averages which we are investigating and continue to keep an eye on.

### Reservoir Storage

Most reservoirs recorded a downward trend with reservoir storage. Half remain above the typical long term average storage for this time of year whilst the rest are below. Vyrnwy, Tittesworth, Elan and Charnwood have all fallen below the long term average storage during April. Whilst Derwent reservoir continues to remain below.

### Flood alerts / warnings

Current flood status in your area can be obtained by visiting the Environment Agency Website.

## Weather Outlook

For an up-to-date weather outlook for your area please visit the Met Office Website.

## River Severn Operations (as of 06-05-2022)

The River Severn is regulated to maintain a minimum flow at Bewdley gauging station. This ensures sufficient water flows along the river to support environmental and water supply requirements. Regulation is instigated when flows drop below a threshold.
No regulation releases have been required.

## River Wye Operations (as of 06-05-2022)

Elan storage is below the release control line but flows at Redbrook have recently risen above the regulation release threshold as a result of some rain in May.

## Water abstraction restrictions (as of 06-05-2022)

As of 06-05-2022 there are 32 water abstraction licence restrictions in place across the Midlands.

| Abstraction Licence Restrictions | |
|---|---|
| | **Rivers & (Stations) Restricted** |
| **West Midlands** | River Tern at Walcot<br>River Sow at Great Bridgeford<br>River Stour at Puxton<br>River Wye at Redbrook<br>River Lugg at Butts Bridge |
| **East Midlands** | River Derwent at Derby St Marys<br>River Torne at Auckley<br>Rothley Brook at Rothley<br>River Soar at Kegworth<br>River Ryton at Blyth |

**Table 1**. Water abstraction licence restrictions as of 06-05-2022.

If you are interested in receiving this report in Welsh, please contact us.

Author: Midlands Hydrology Contact details: 03708 506 506

## Regional Coverage

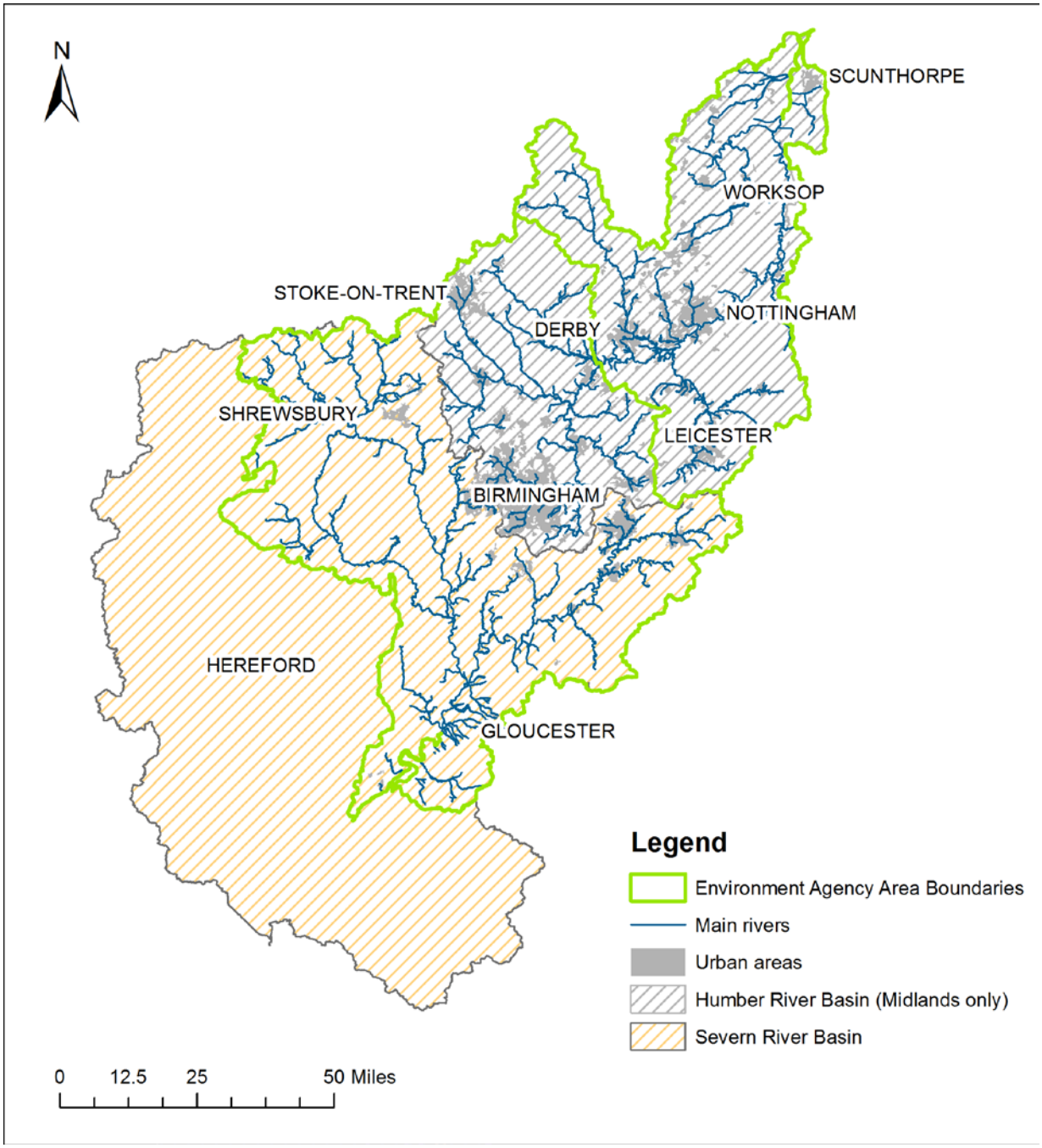



Figure 1. The Midlands regional boundary and the Severn/Trent hydrological boundary. Crown copyright. All rights reserved. Environment Agency, 100024198, 2022.

## Midlands Hydrological Areas


Figure 2. The 12 hydrological areas that make up the Midlands region. Natural Resources Wales are not currently producing a monthly water situation report. Crown copyright. All rights reserved. Environment Agency, 100024198, 2022.

# Midlands Rainfall Map for April 2022

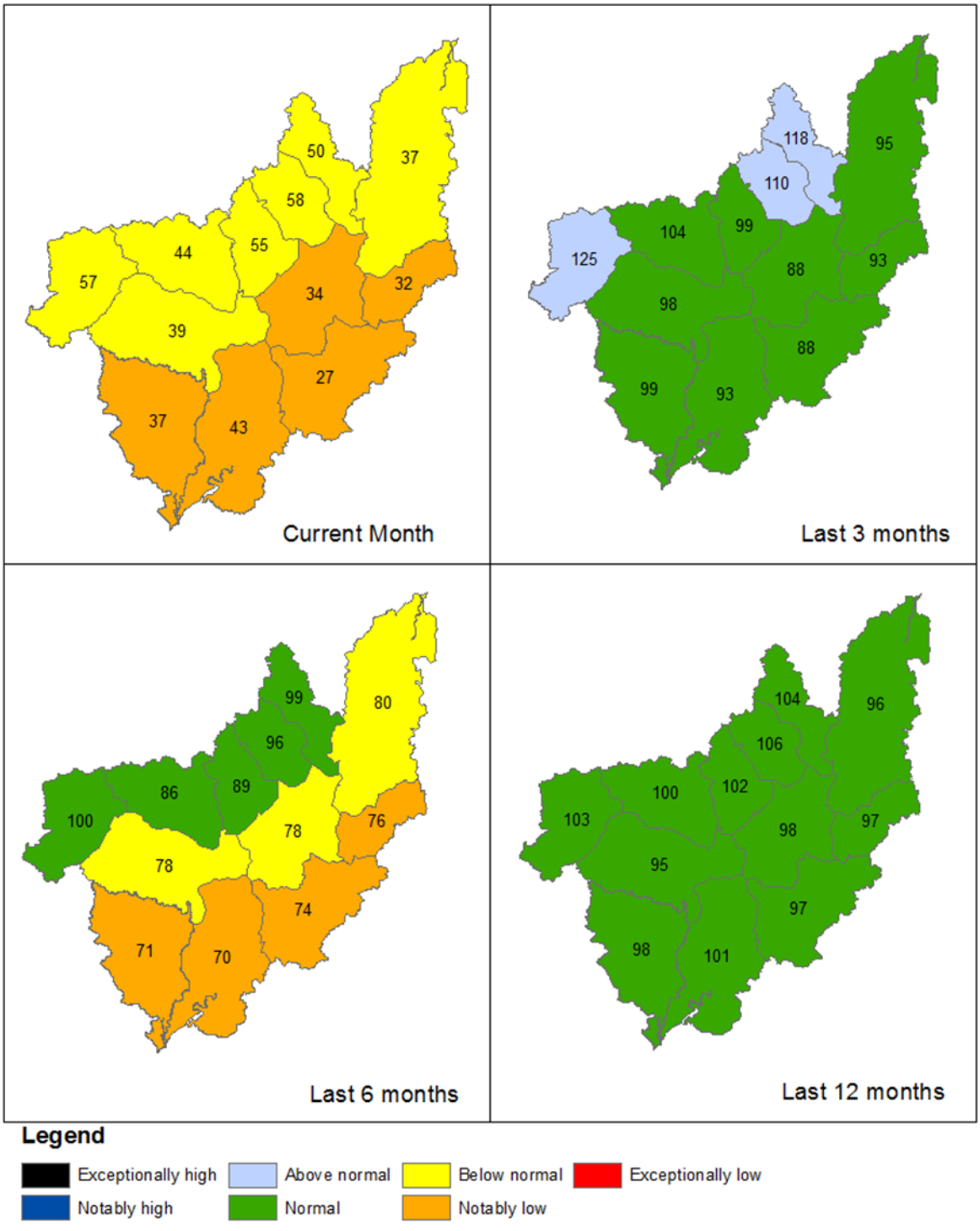



Figure 3. Total rainfall for the 12 hydrological areas across the Midlands for the current month, last 3 months, last 6 months and last 12 months. Classes relative to historic averages. TBR rainfall data based on 1 km gridded rainfall dataset derived from rain gauges. Environment Agency, 100024198, 2022.

| Region/ Area | Current month (mm) | LTA (mm) | Region/ Area | Current month (mm) | LTA (mm) |
|---|---|---|---|---|---|
| **Midlands region** | **21.2** | **52.6** | Lower Severn | 20.8 | 48.5 |
| **East Midlands** | **7.8** | **54.1** | Upper Trent | 30.3 | 54.6 |
| **West Midlands East** | **12.7** | **52.9** | Tame | 17.6 | 51.4 |
| **West Midlands West** | **17** | **51.3** | Dove | 38.1 | 64.1 |
| Welsh Mountains | 44.2 | 73.9 | Derwent | 36.6 | 70.5 |
| Shropshire Plains | 22.2 | 49.6 | Soar | 16.3 | 50.8 |
| Mid Severn/ Teme | 22.8 | 56.5 | Lower Trent | 18.4 | 49.9 |
| Avon | 12.7 | 47.1 | Lower Wye | 21 | 56.0 |

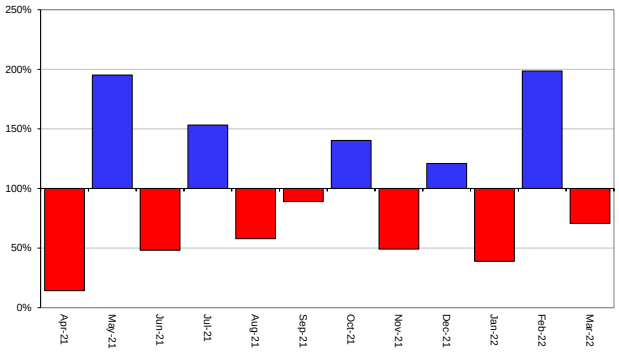
Table 2. April average rainfall totals and April LTA values for 12 hydrological areas across the Midlands; using EA TBR rainfall data. Values for Midlands region, East Midlands, West Midlands East and West Midlands West use Met Office HadUK data (Met Office © Crown Copyright. All rights reserved. Environment Agency, 100024198, 2022).

# Midlands Rainfall Charts

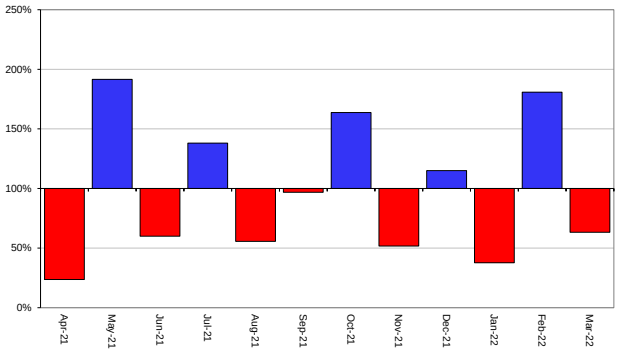
Above average rainfall

Below average rainfall

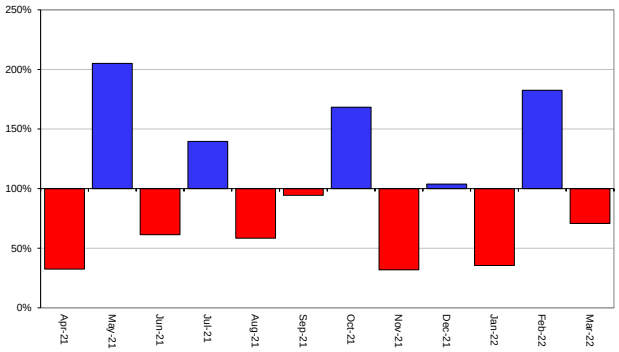
1-Month Period for Midlands East



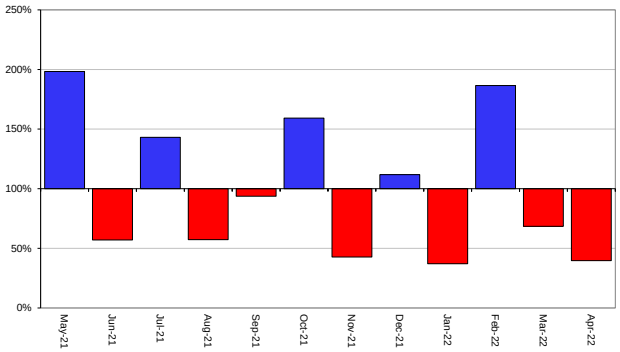

1-Month Period for Midlands Central



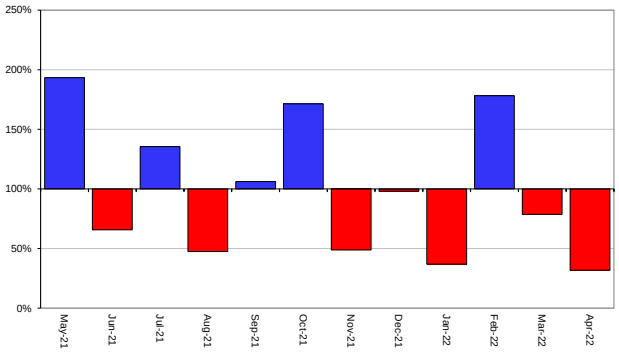

1-Month Period for Midlands West



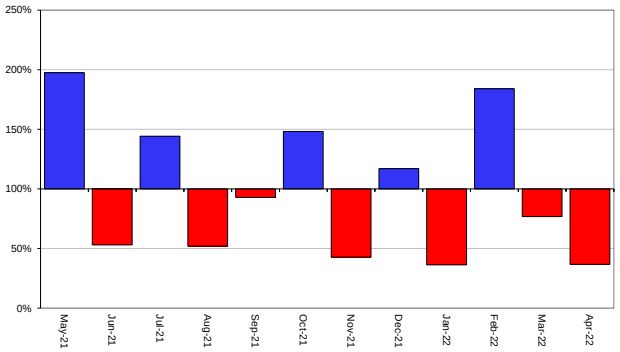

1-Month Period for Central England



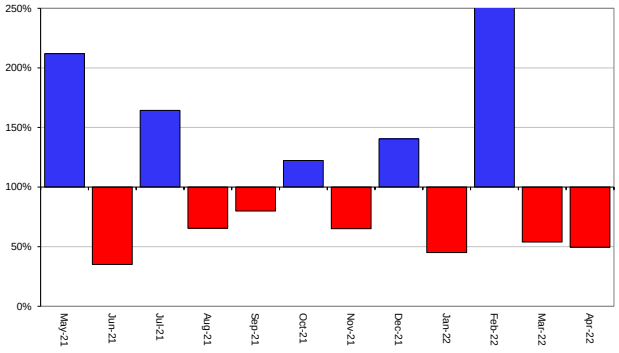

1-Month Period for Soar



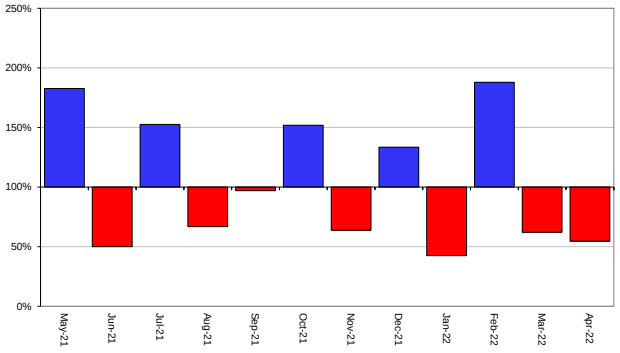

1-Month Period for Lower Trent




1-Month Period for Derwent (Midlands)




1-Month Period for Upper Trent



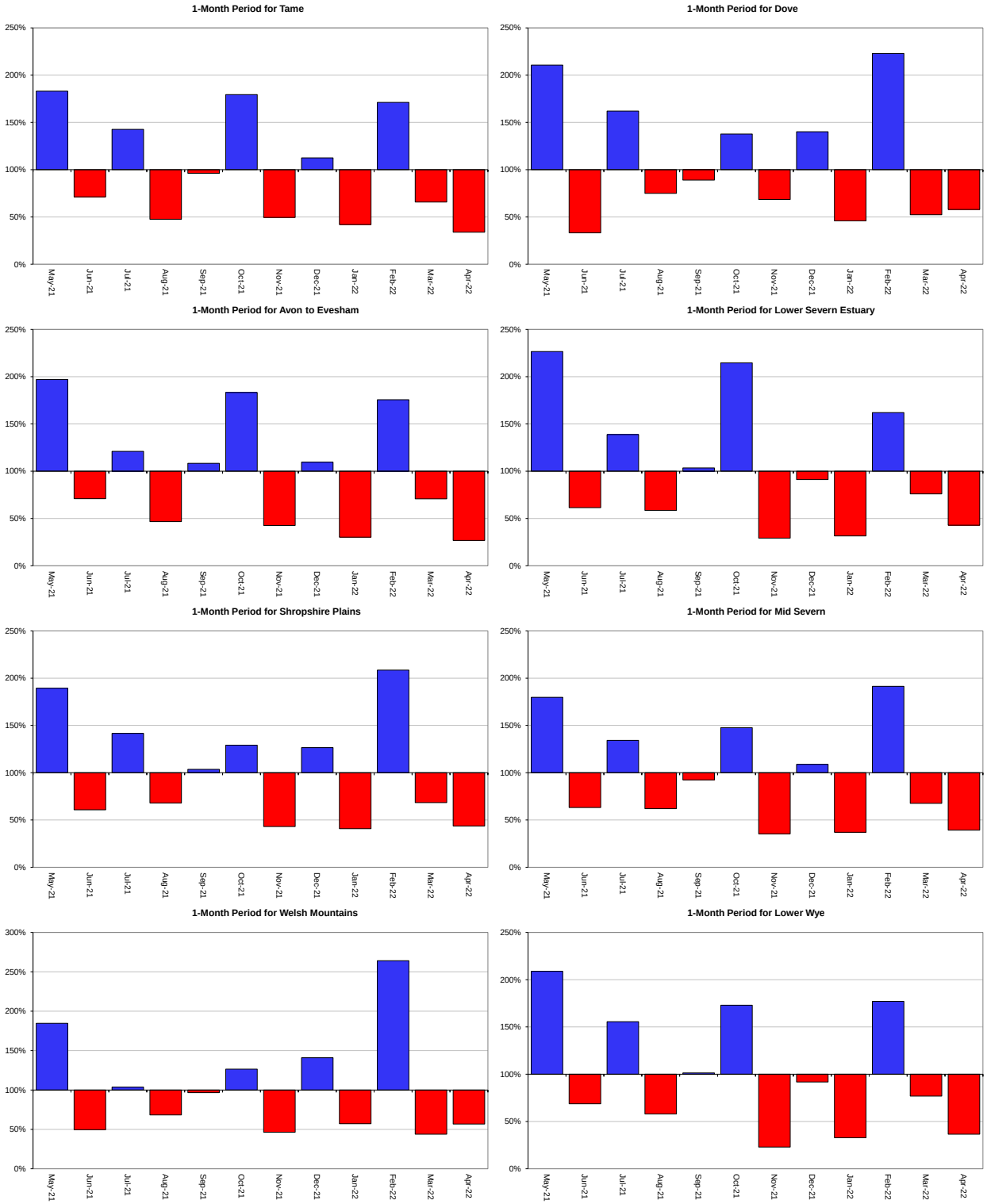



Figure 4. Total rainfall (as a percentage) for hydrological areas across the Midlands region for the current month, the last 12 months, classed relative to an analysis of respective historic totals. HadUK data based on the Met Office 1km gridded rainfall dataset derived from rain gauges (Source: Met Office © Crown Copyright 2022). Provisional data based on Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges.

## Midlands Soil Moisture Deficit Map

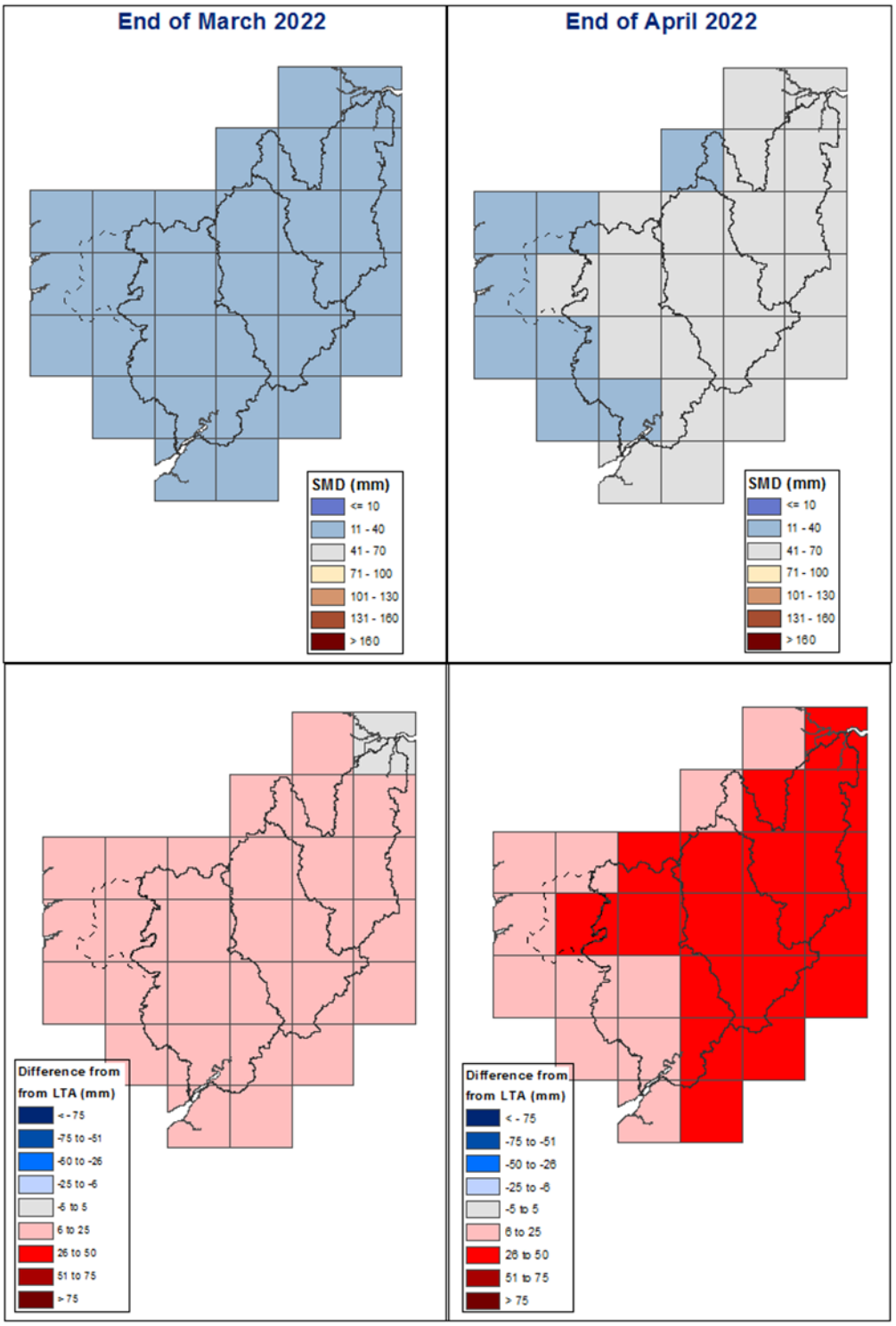



Figure 5. Soil moisture deficits for weeks ending 29-03-2022 (left column) and 26-04-2022 (right column). The top row shows actual soil moisture deficits and the bottom row shows the difference from the LTA (1961 – 1990). MORECS data for real land use (Met Office © Crown Copyright. All rights reserved. Environment Agency, 100024198, 2022).

# Midlands Soil Moisture Deficit Charts

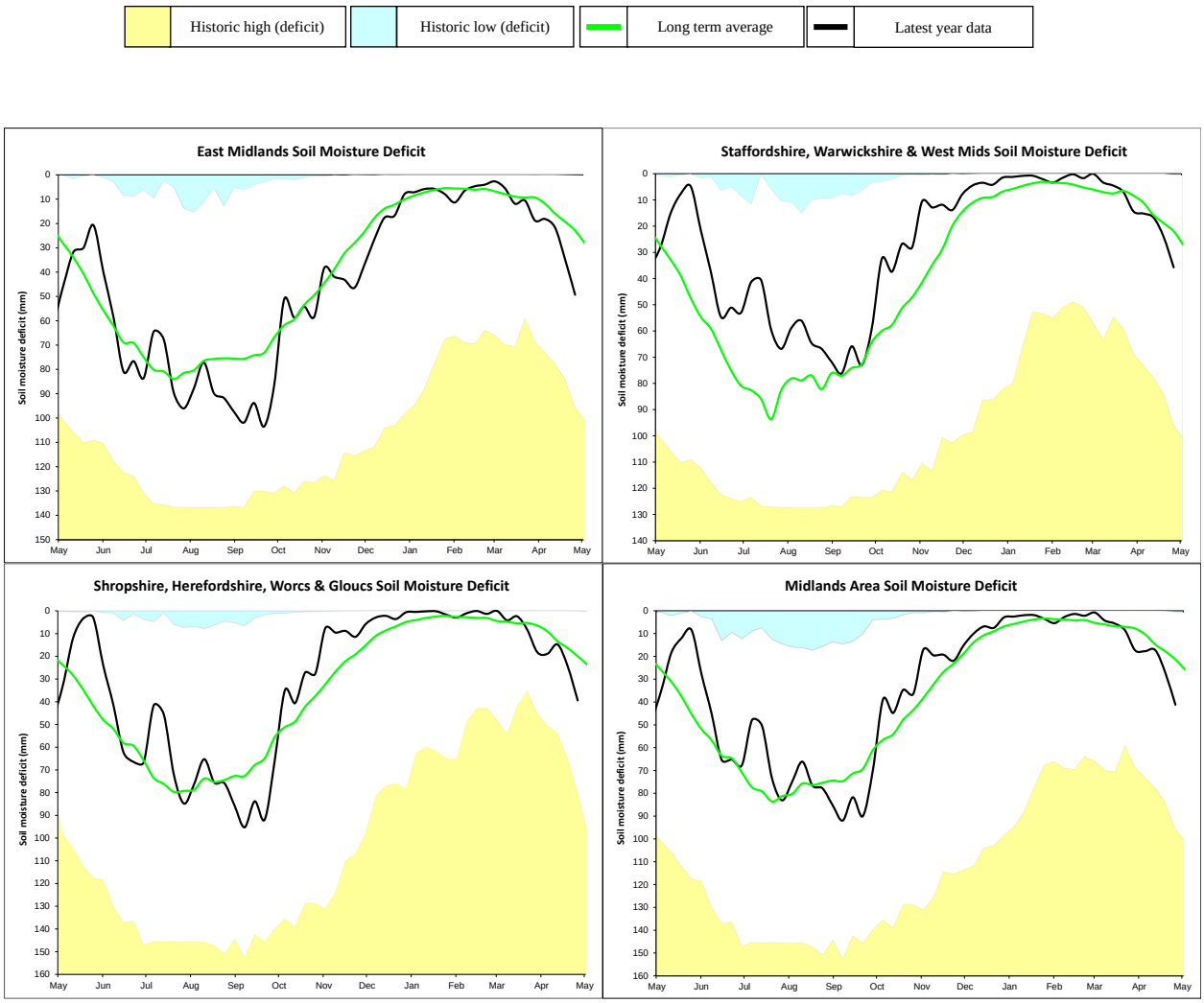



Figure 6. April soil moisture deficit charts for selected areas across the Midlands. MORECS data for real land use (Met Office © Crown Copyright. All rights reserved. Environment Agency, 100024198, 2022).

# Midlands Mean River Flows For April 2022.

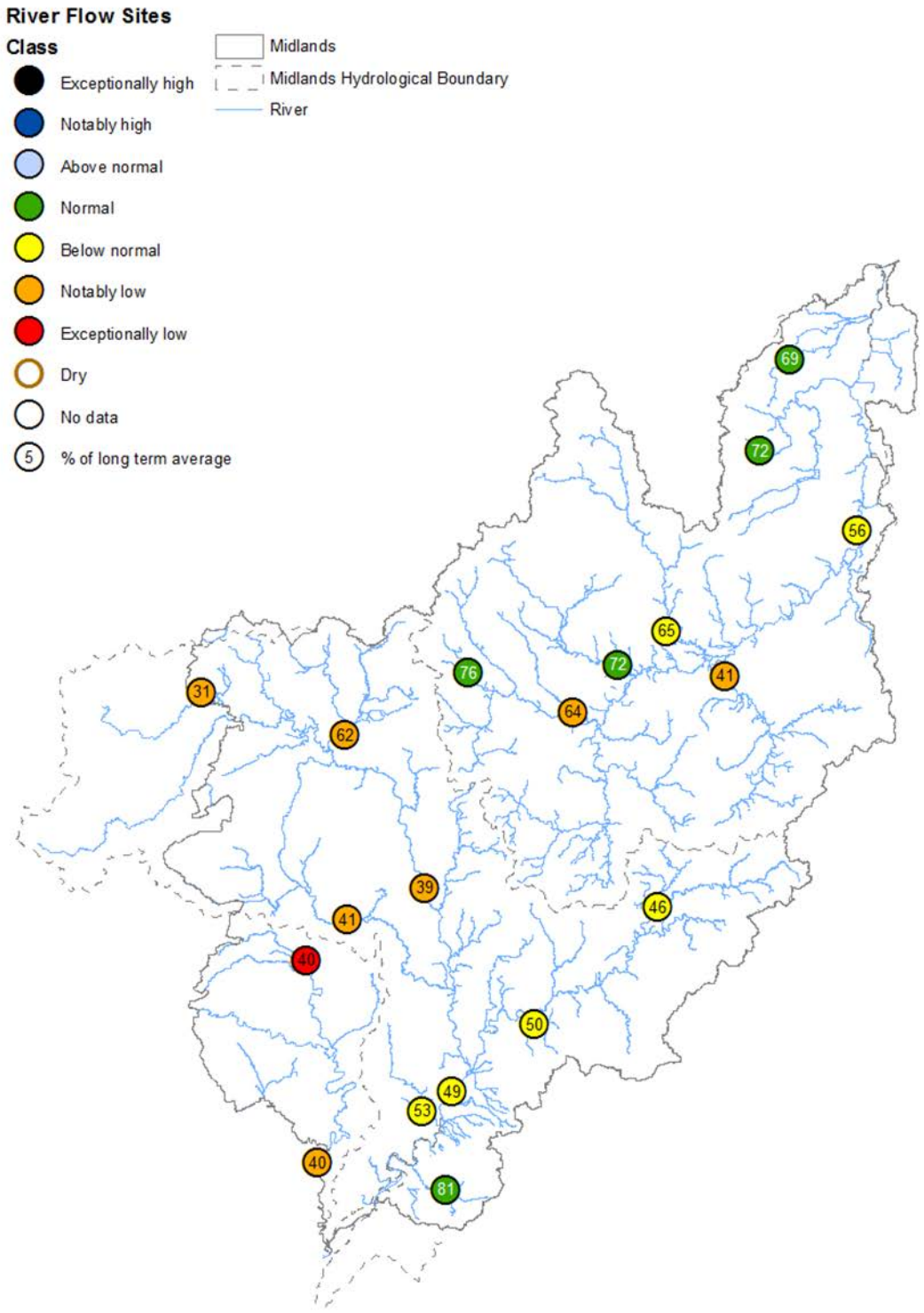
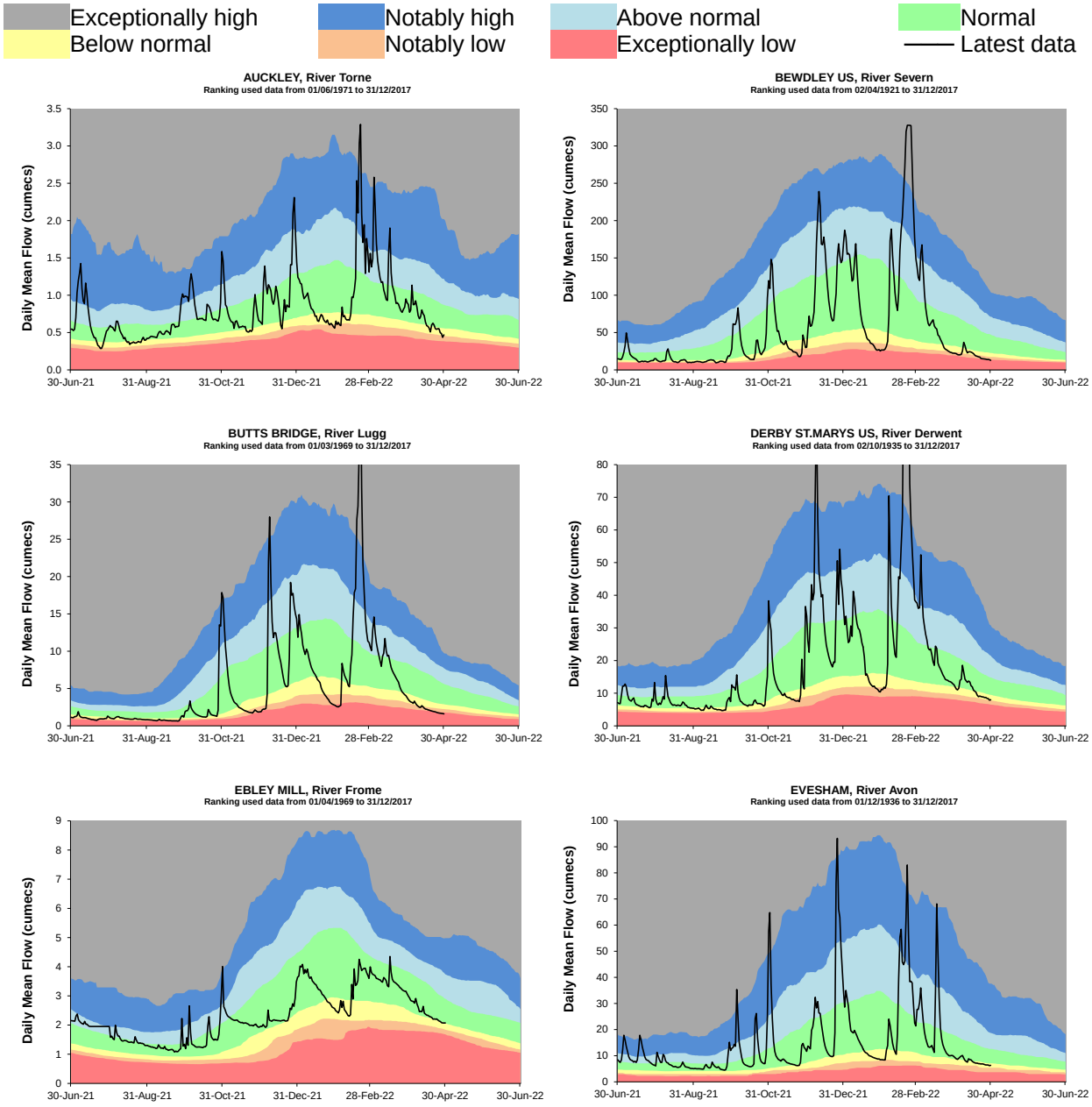
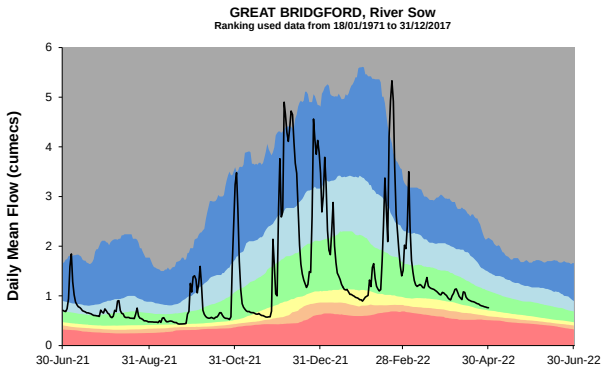
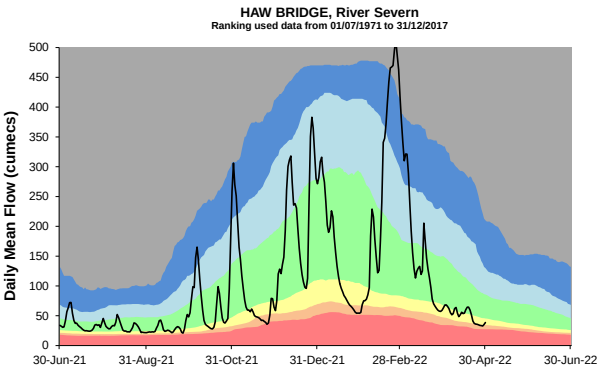


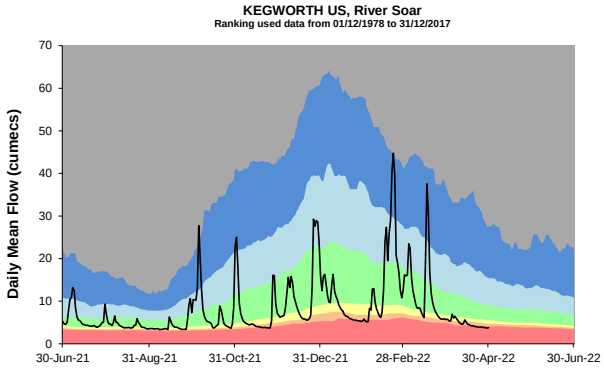

Figure 7. Mean river flow for April 2022, classes relative to April LTA. Crown Copyright. All rights reserved. Environment Agency, 100024198, 2022.

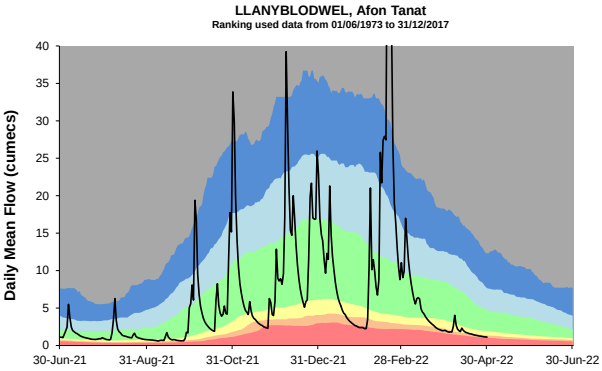
# Midlands River Flow Charts

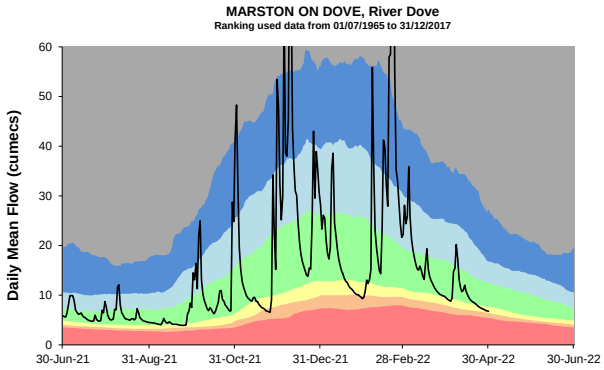


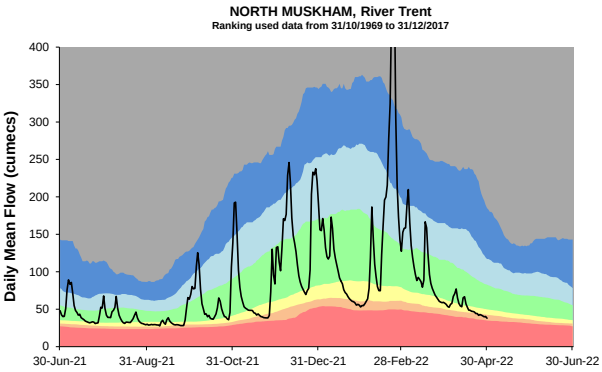


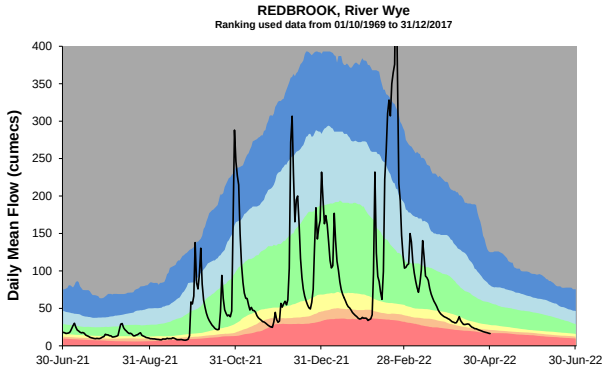



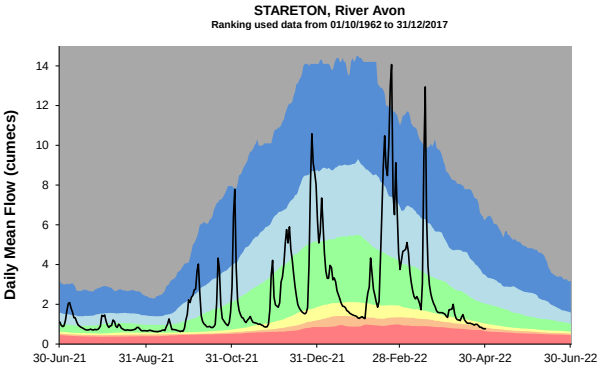



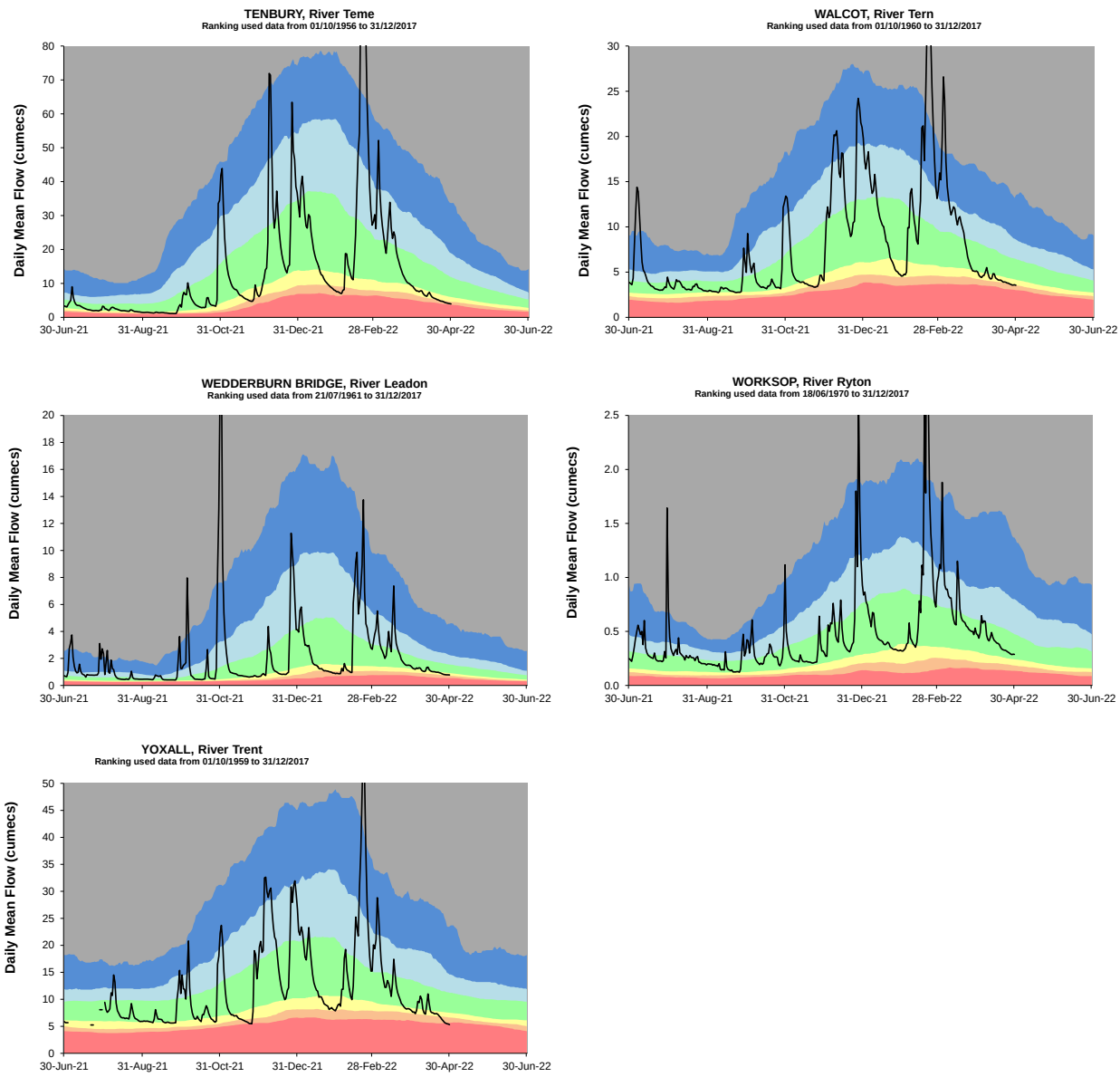



Figure 8. Daily mean river flows for the past 10 months at selected sites. Crown Copyright. All rights reserved. Environment Agency, 100024198, 2022.

# Midlands Monthly Groundwater Levels For April 2022.

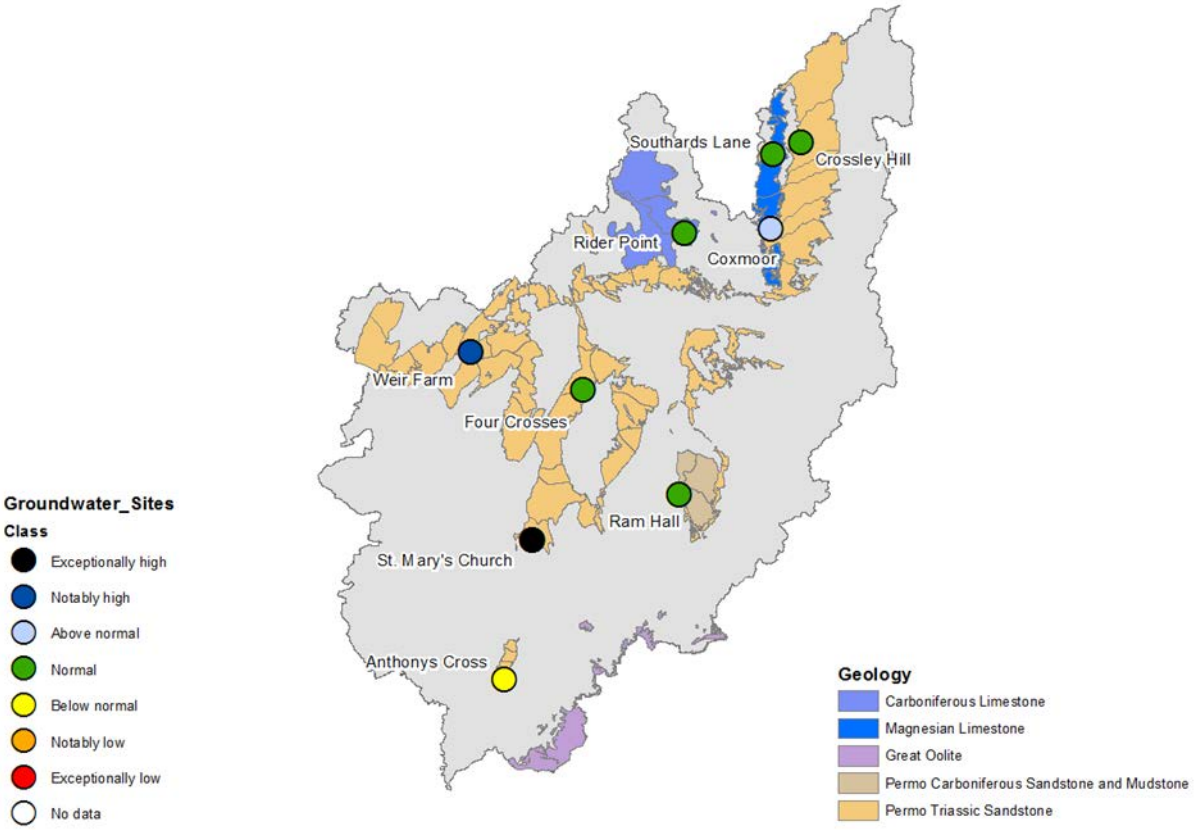
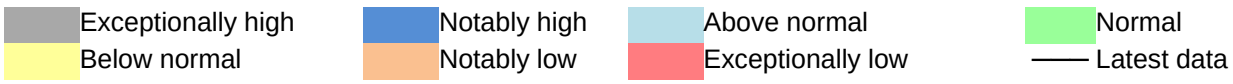
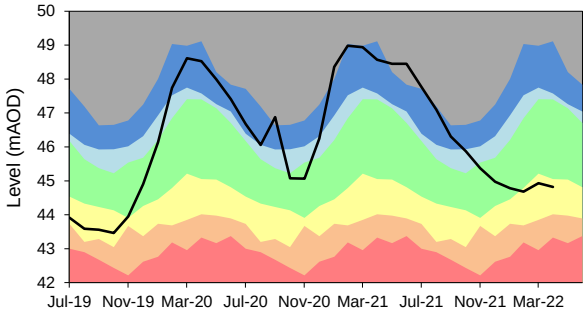



Figure 9. Groundwater levels at the end of April 2022, classed relative to April LTA values. Crown Copyright. All rights reserved. Environment Agency, 100024198, 2022.

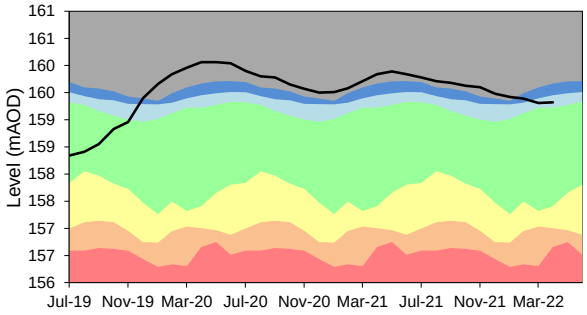
# Midlands Groundwater Level Charts



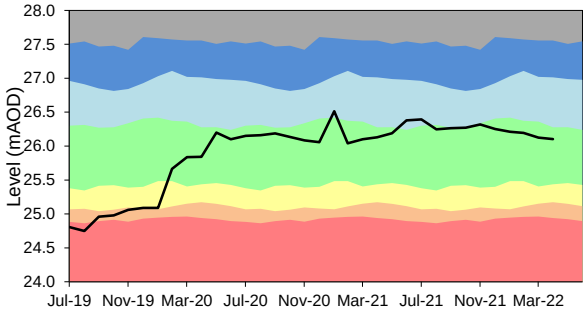

**ANTHONYS CROSS**
**Ranking derived from data for the period Jan-1973 to Dec-2017**



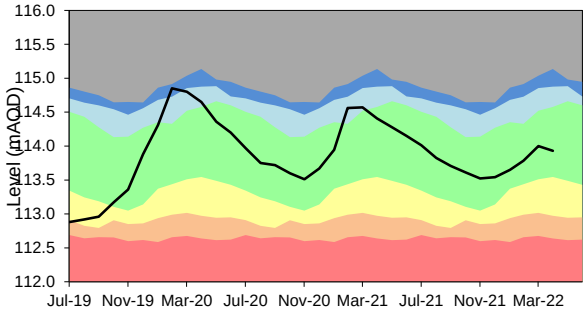

**COXMOOR**
**Ranking derived from data for the period Jan-1979 to Dec-2017**



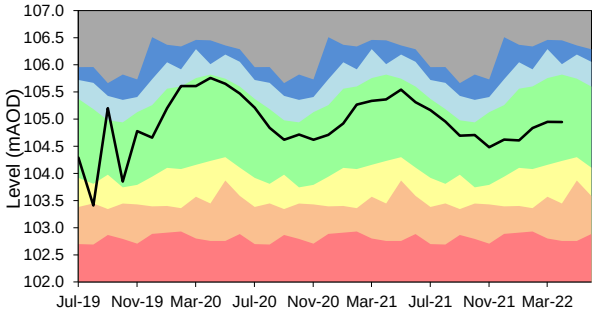

**CROSSLEY HILL**
**Ranking derived from data for the period Dec-1969 to Dec-2017**



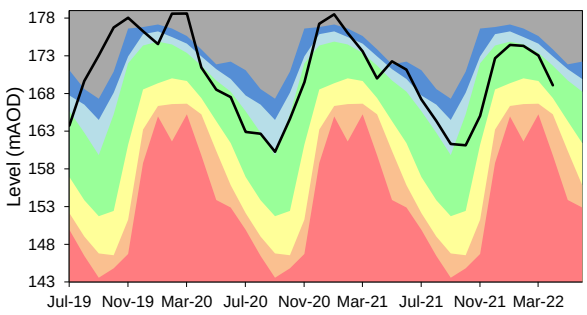

**FOUR CROSSES**
**Ranking derived from data for the period Jul-1969 to Dec-2017**




**RAM HALL, MERIDEN**
**Ranking derived from data for the period Sep-1973 to Dec-2017**




**RIDER POINT VIA GELLIA**
**Ranking derived from data for the period Jan-1976 to Dec-2017**



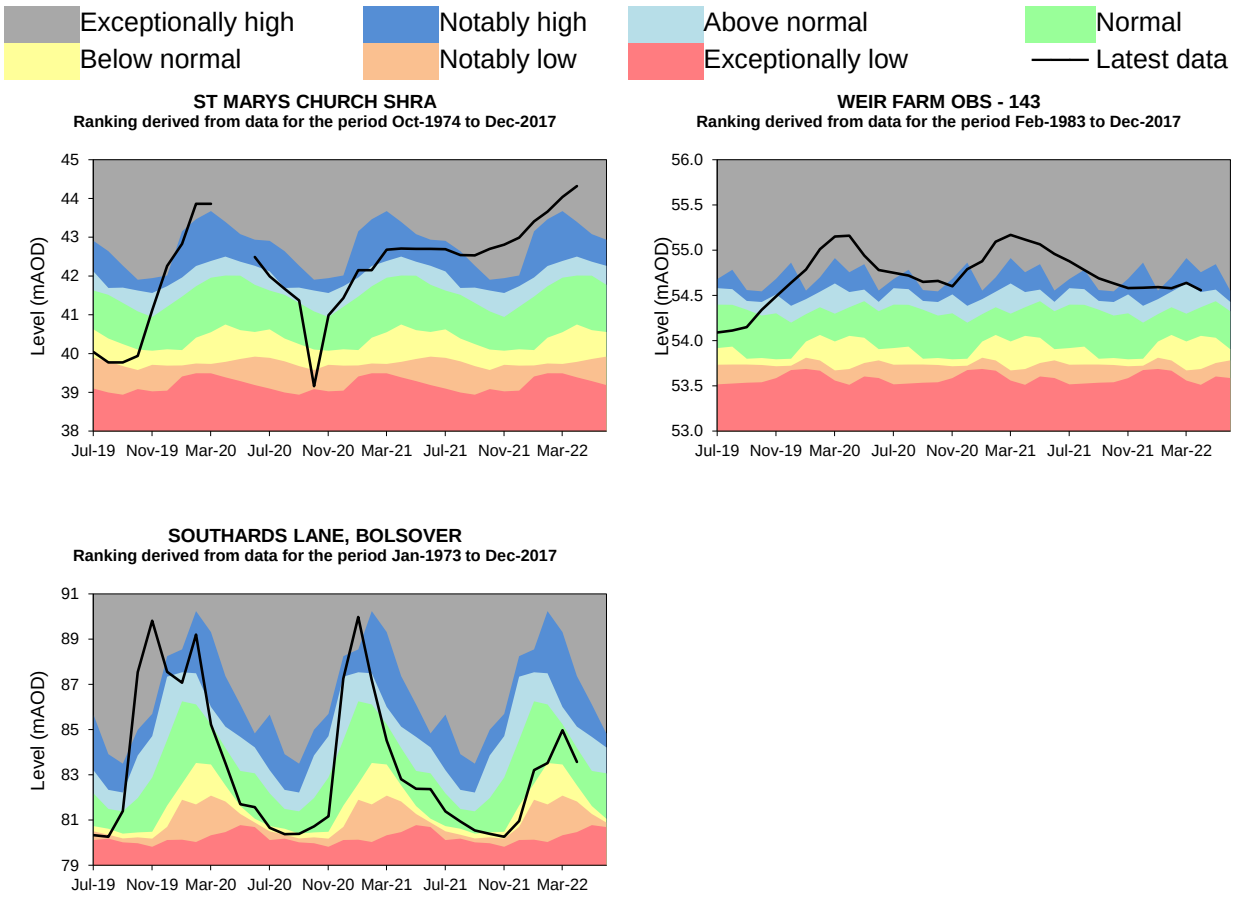



Figure 10. End of month groundwater levels over a 34 month period at selected observation boreholes. Crown Copyright. All rights reserved. Environment Agency, 100024198, 2022.

## Midlands Major Reservoirs

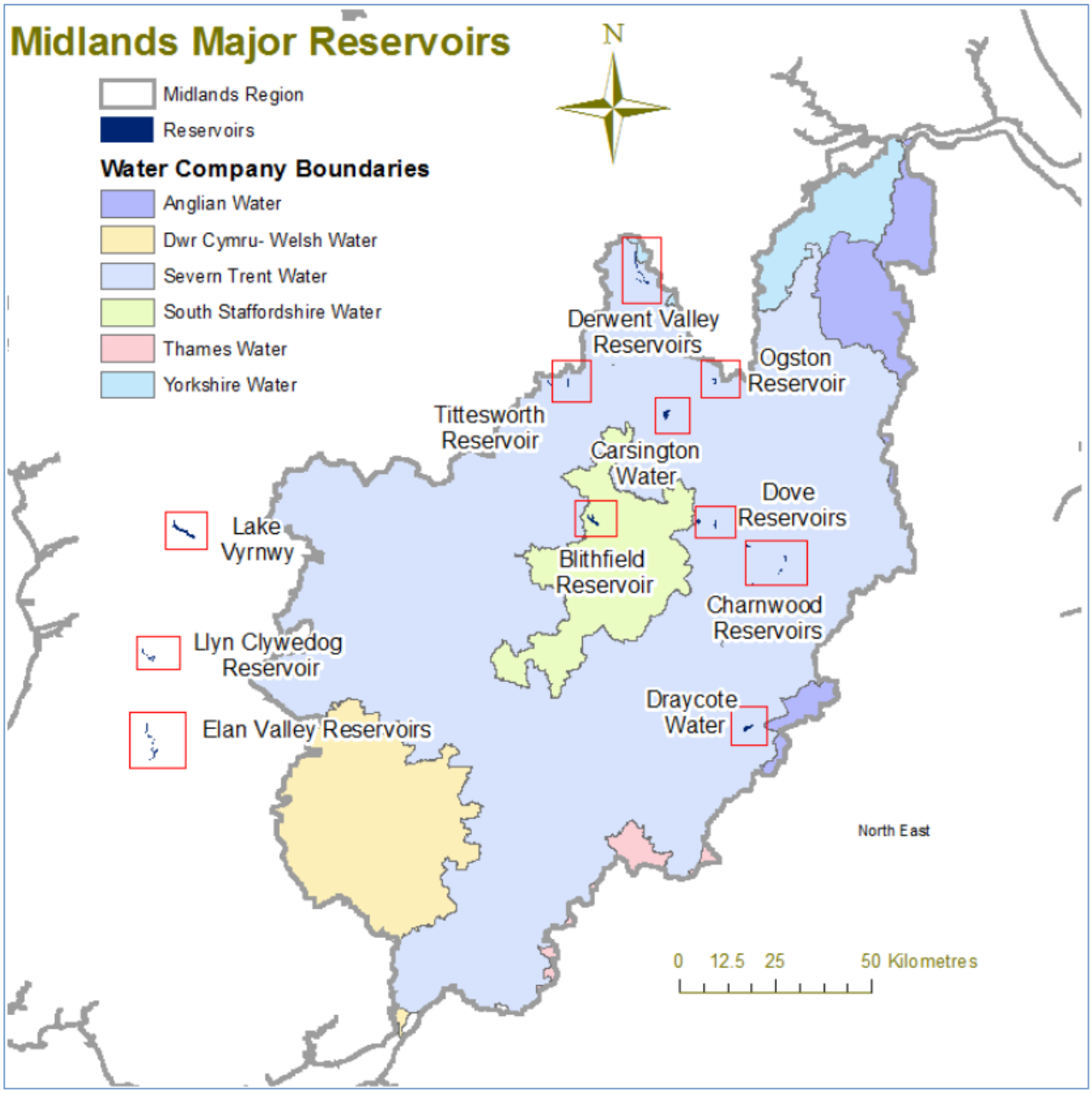
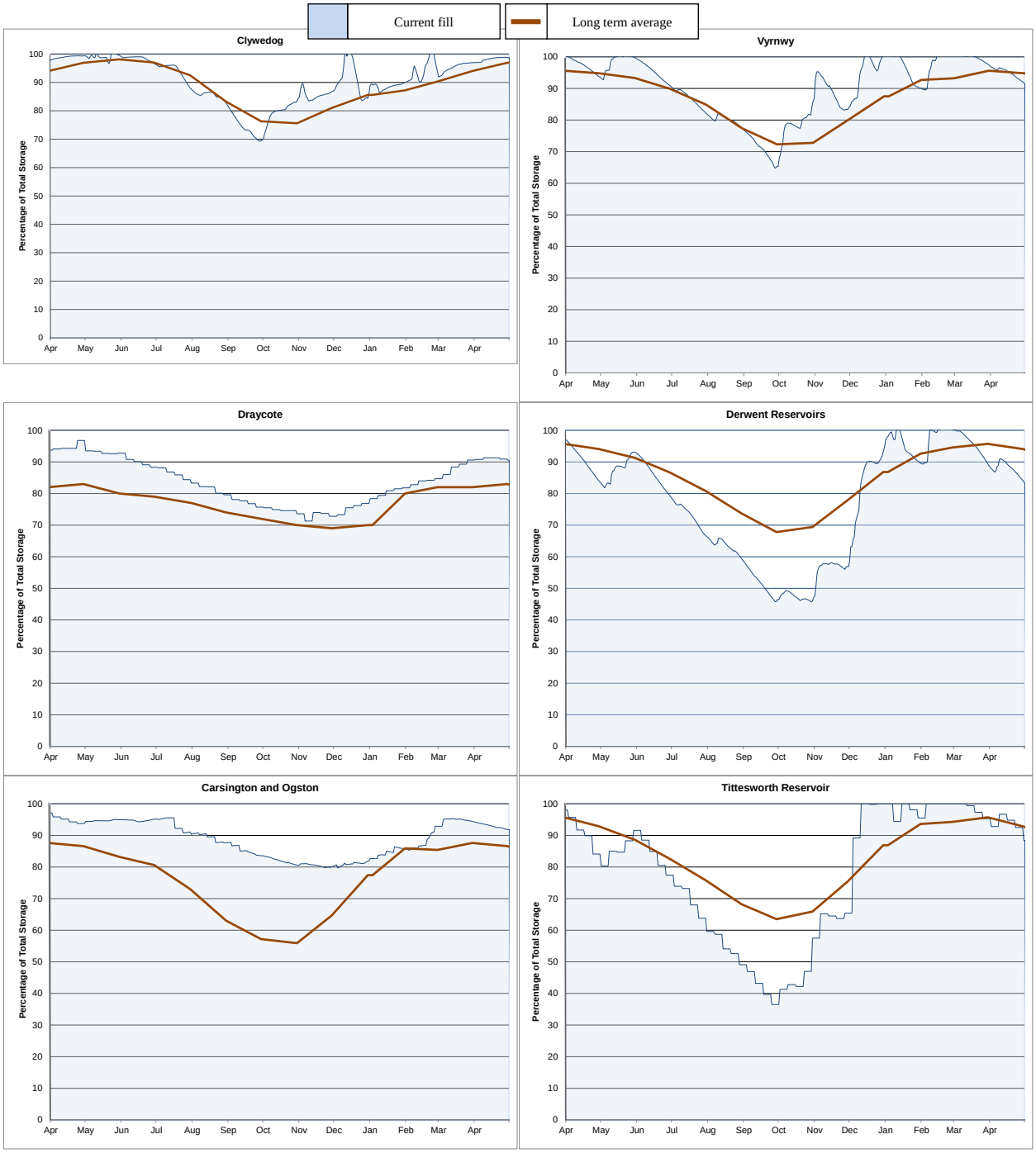



Figure 11. Location of major reservoirs in the Midlands. Crown Copyright. All rights reserved. Environment Agency, 100024198, 2022.

# Midlands Reservoir Stock Charts



# Midlands Reservoir Stock Charts

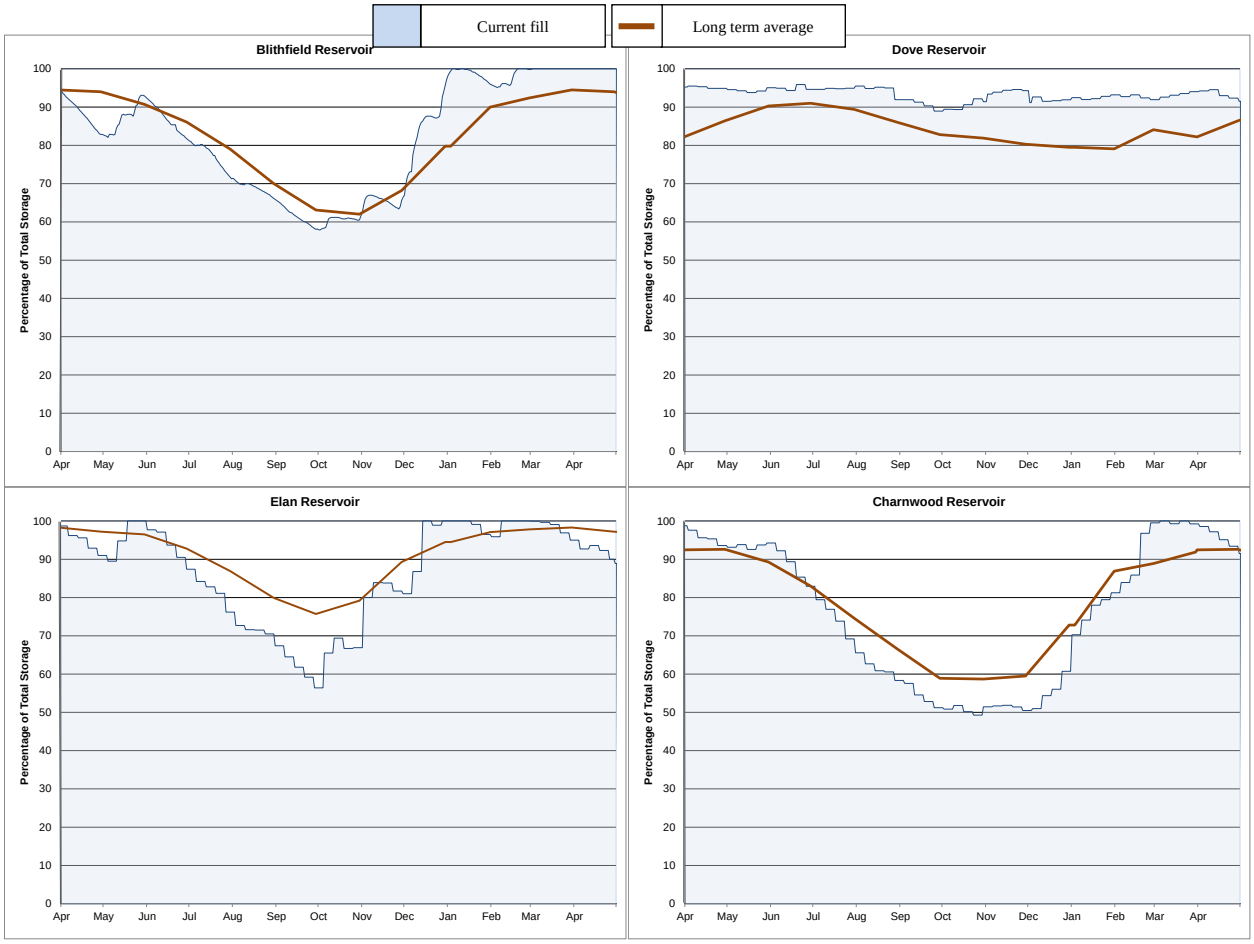



Figure 12. 12 month reservoir stocks (source: Severn Trent Water Plc and South Staffordshire Water Plc).

# 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). |
| Effective rainfall | The rainfall available to percolate into the soil or produce river flow. Expressed in depth of water (mm). |
| Groundwater | The water found in an aquifer |
| Recharge | The process of increasing the water stored in the saturated zone of an aquifer. Expressed in depth of water (mm). |
| Reservoir live capacity | The reservoir capacity normally usable for storage to meet established reservoir operating requirements. It is the total capacity less that not available because of operating agreements or physical restrictions. Only under abnormal conditions, such as a severe water shortage might this additional water be extracted. |
| Soil moisture deficit (SMD) | The difference between the amount of water actually in the soil and the amount of water that the soil can hold. Expressed in depth of water (mm). |
| TBR rainfall | 1 $km^2$ gridded rainfall data, calculated from a network of tipping bucket rain gauges. |

## 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 |

## Units

| | |
|---|---|
| cumecs | Cubic metres per second ($m^3 s^{-1}$) |
| mAOD | Metres Above Ordnance Datum (mean sea level at Newlyn Cornwall). |