

Soil moisture on 29 February 2024 (see back page for explanatory comments).

Notes on period to 29 February 2024

At the end of February, there was high soil moisture across much of the COSMOS-UK network.

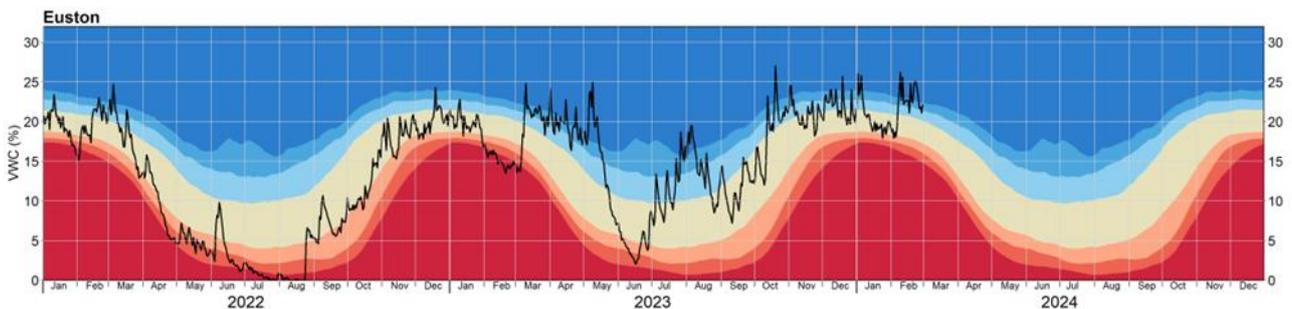
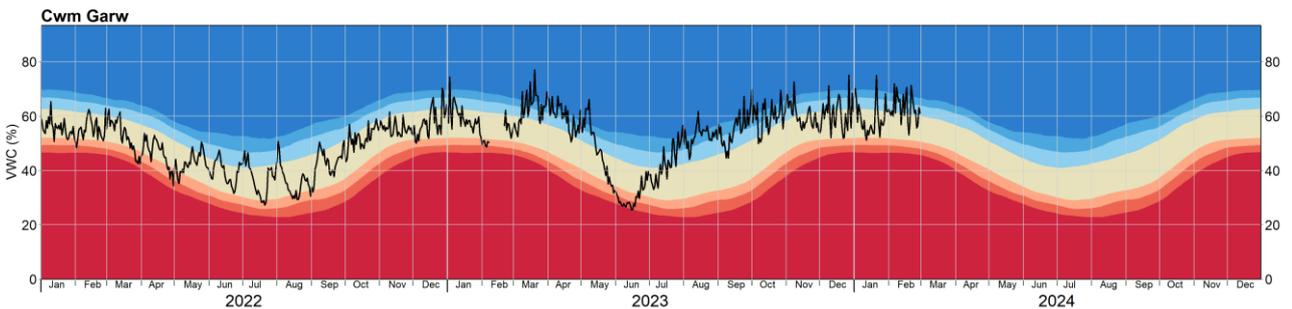
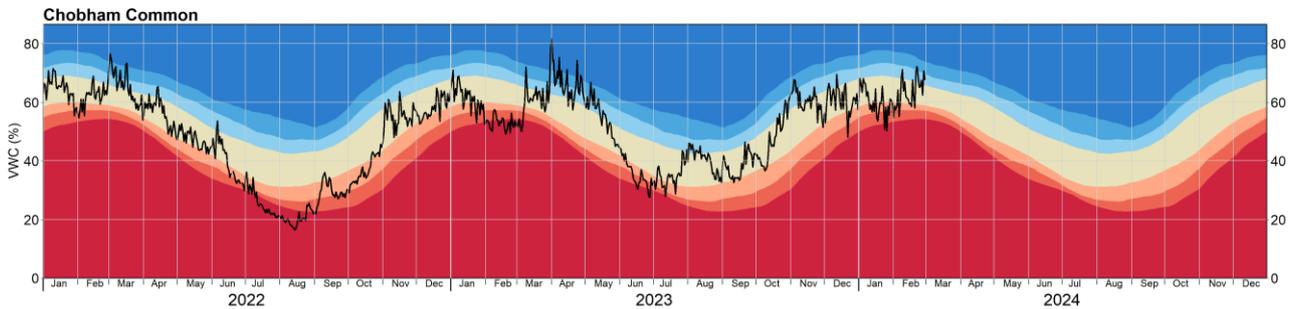
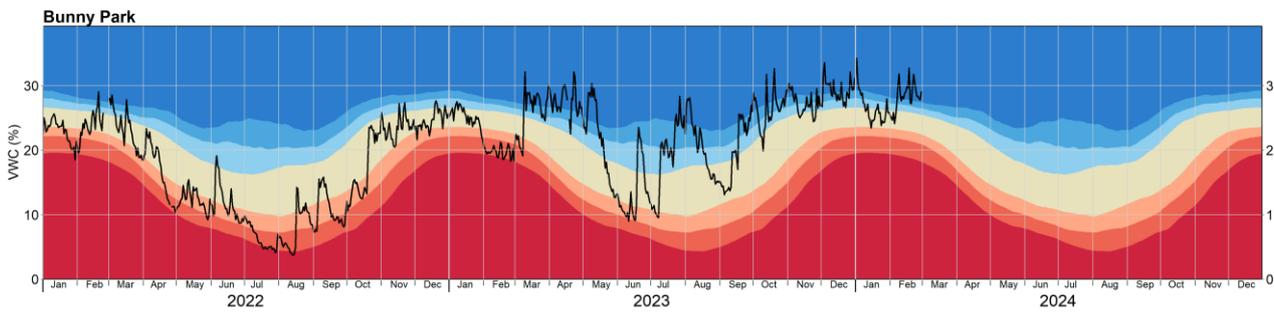
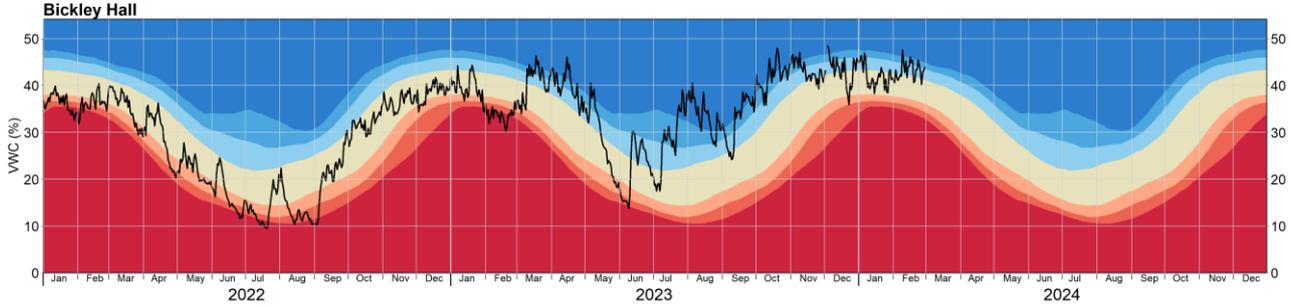
Provisional data indicate that February monthly rainfall totals were above average for the UK as a whole. However, there were regional differences; central and southern England and Wales were particularly wet, with southern England experiencing its wettest February on record. Rainfall totals in Scotland and Northern Ireland were about average for the time of year. Though there weren't any major named storms, the high rainfall totals were due to persistently wet weather. Temperatures have been very mild for the time of year, with England and Wales recording their warmest Februaries on record.

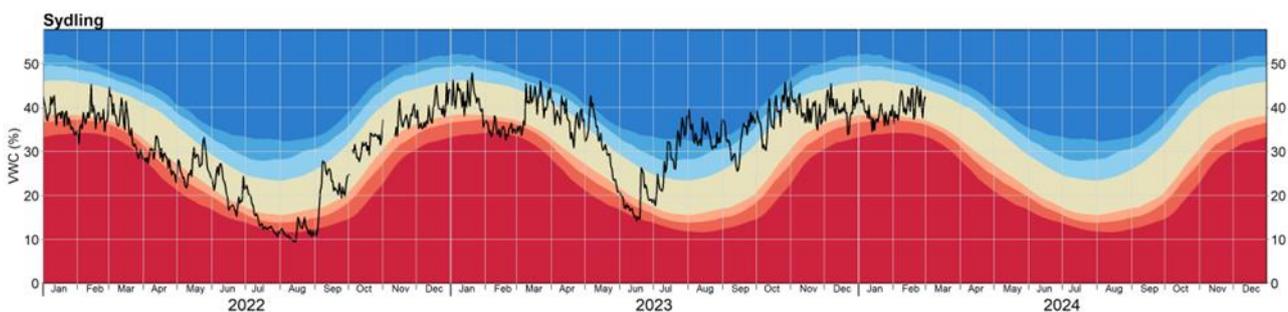
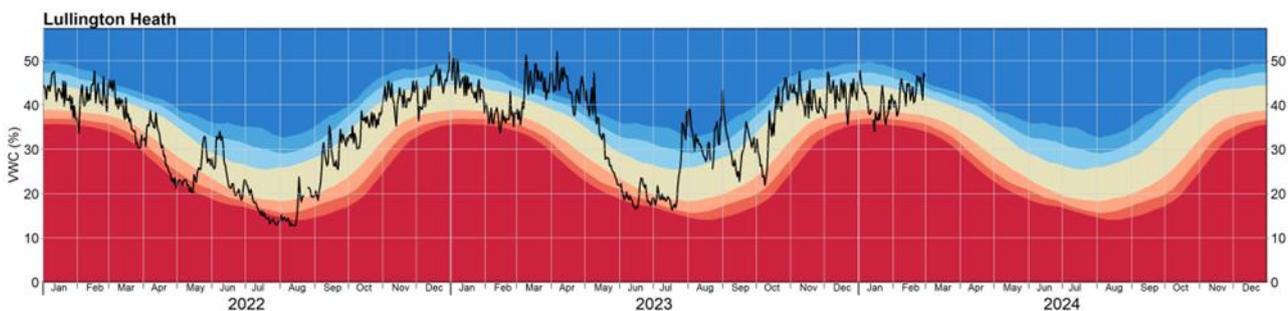
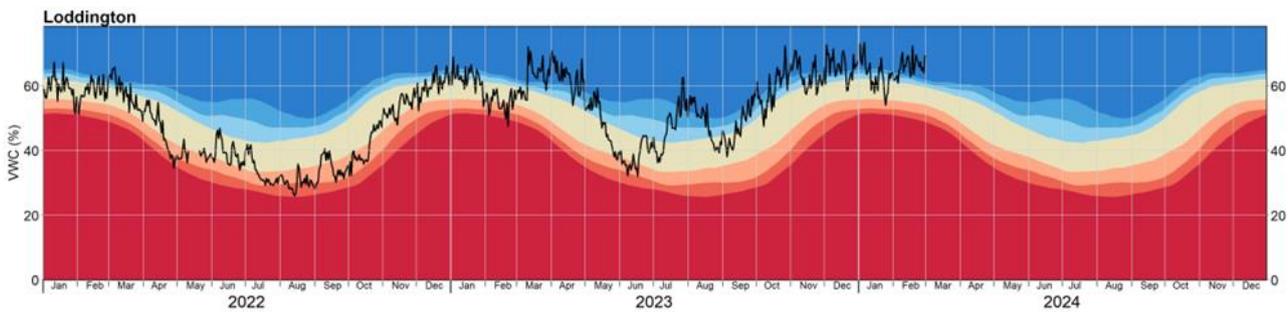
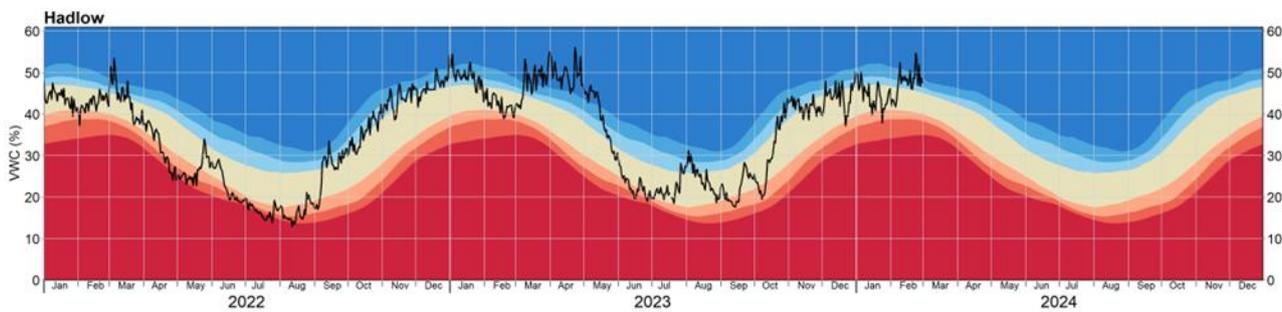
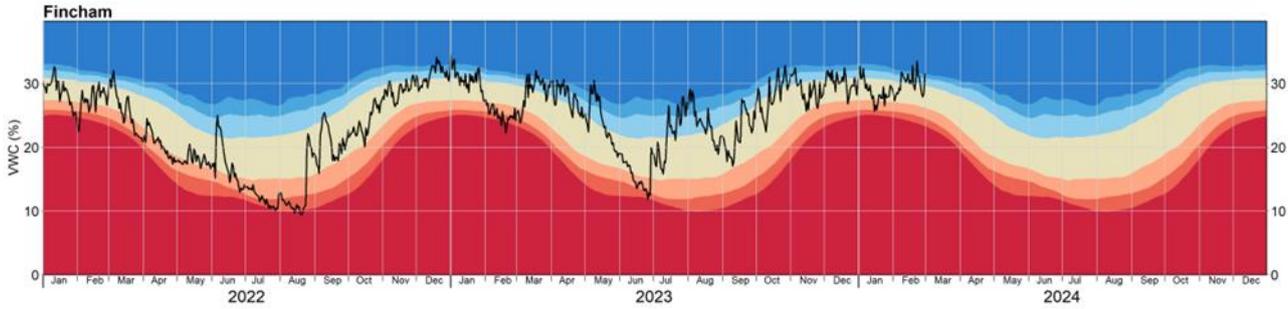
The persistent wet weather throughout the month means that soil moisture levels remain high at most COSMOS-UK sites. Some sites have been very wet throughout the month, compared to their historical variability, particularly in central and southern England e.g. Bunny Park, Euston, Hadlow, Loddington. Other sites, such as Sydling, are within their normal ranges for the time of year. Standing water is still affecting some sites, particularly Tadhams Moor, hence soil wetness reported can be well above saturation values.

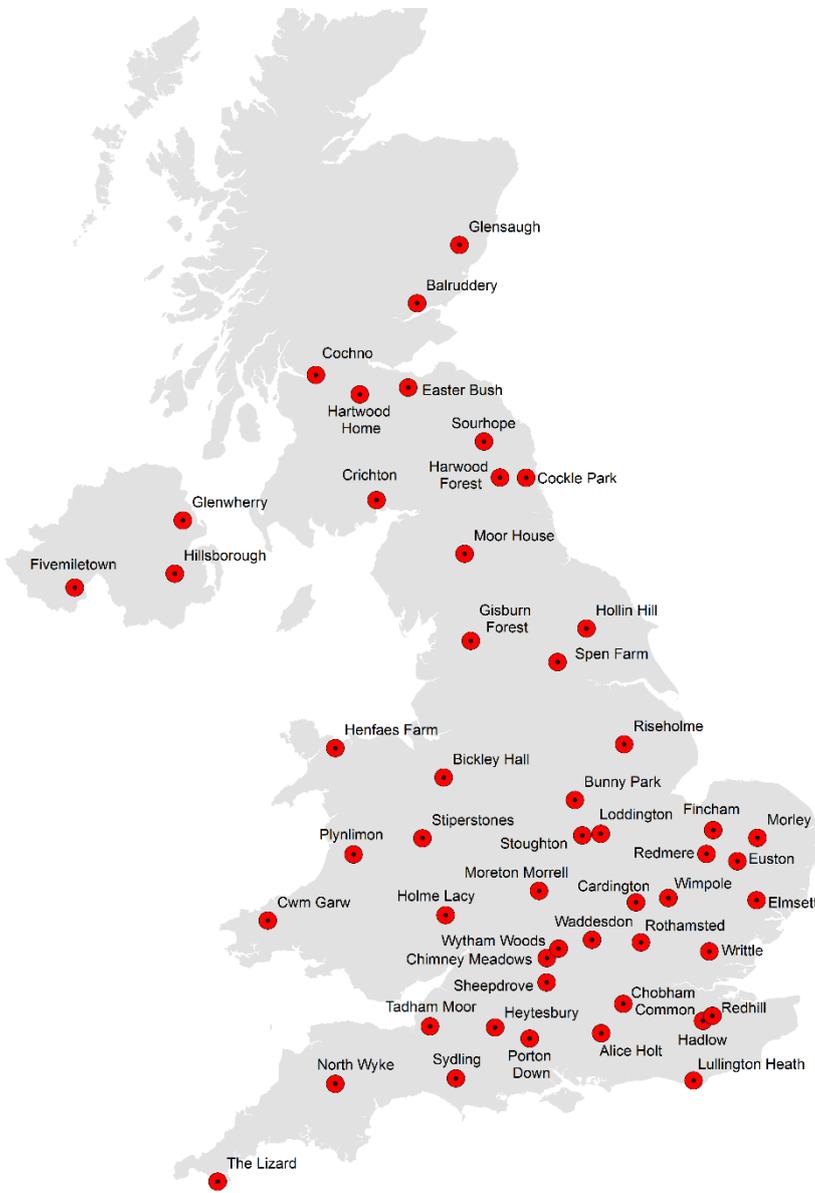
Overall, soil moisture remains high for much of the COSMOS-UK network, following a persistently wet February and an overall wet and mild winter.

Network news

The annual COSMOS-UK data ingestion to the Environmental Information Data Centre (EIDC) will be submitted before the end of March.







About the maps on page 1: The maps show daily mean soil moisture on the last day of the month. Colours indicate wetness as in the legends.

The map on the left shows wetness as the volumetric water content (VWC) of the soil which is constrained by soil type, i.e. some soils are able to hold more water than others as indicated by the shape of the symbol.

The map on the right presents soil wetness adjusted for site specific characteristics, i.e. taking account of the possible range of soil wetness at each site. Field capacity (FC) is a key point in this range. When soil moisture is below FC soil moisture is said to be in deficit, i.e. there is a (positive) soil moisture deficit (SMD).

Grey shaded areas on these two maps represent principal aquifers.

About the graphs on pages 2 and 3: The black line shows VWC. The coloured bands indicate how VWC compares to historical variability for the site and time of year.

- exceptionally dry
- notably dry
- drier than normal
- normal
- wetter than normal
- notably wet
- exceptionally wet

About soil moisture: Soil moisture varies in the short term (hours to days) with rainfall and as water drains through the soil. Longer term variation is driven by the seasonal difference between rainfall and evaporation. Thus soil moisture decreases in the summer when evaporation exceeds rainfall but increases when this is reversed. In most winters under UK conditions, soil moisture reaches a relatively constant value, known as the field capacity. Field capacity is a measure of how much water the soil can hold against gravity and is strongly dependent on the soil type. Soils are expected to be around field capacity after being wetted to above field capacity and the excess water (e.g. from macropores) has drained away under gravity, which can take several days after heavy rain, to reach a near steady state. Differences in soil type and weather patterns cause variations in soil moisture between sites including when the soil returns to field capacity in autumn/winter and when soil moisture decreases in the spring/summer.

About COSMOS-UK: COSMOS-UK is supported by the Natural Environment Research Council award number NE/R016429/1 as part of the UK-SCAPE programme delivering National Capability.

