

Soil moisture on 31 May 2025 (see back page for explanatory comments).

At the end of May, soil moisture levels across COSMOS-UK sites remained generally low; however, rain in the latter half of the month led to a recovery of soil moisture levels at some sites.

Provisional data indicate that the total monthly rainfall in May was below average for England, Wales, Scotland and Northern Ireland, though it was a month of two halves. High pressure dominated during the first half of the month, with most regions experiencing no rain during the first week. The second half of the month was more unsettled, with lower pressure and frontal systems bringing rain to much of the country. Southeast and Southwest England were the driest regions in the UK, recording just 40% of the long-term average rainfall for May. Temperatures were around 1.3°C above the long-term average for the UK.

Over the whole month, more than half the COSMOS-UK sites experienced their lowest average soil moisture levels for May on record. By the end of the month, soil moisture levels remained well below field capacity for most of the UK, but the rain towards the end of the month helped some sites recover to their normal range for the time of year (e.g., Bickley Hall, Cwm Garw, Cockle Park, Easter Bush). However, a significant number of sites, particularly in Southern England, remain much drier than usual (e.g. Chimney Meadows, Sheepdrove, Heytesbury).

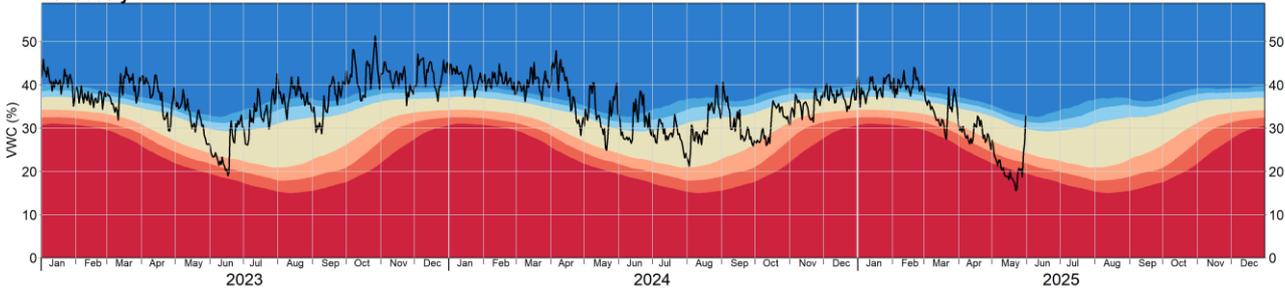
Overall, most COSMOS-UK sites remain drier than usual, though the rain towards the end of the month helped some sites recover soil moisture conditions to within their expected range for May.

Network news

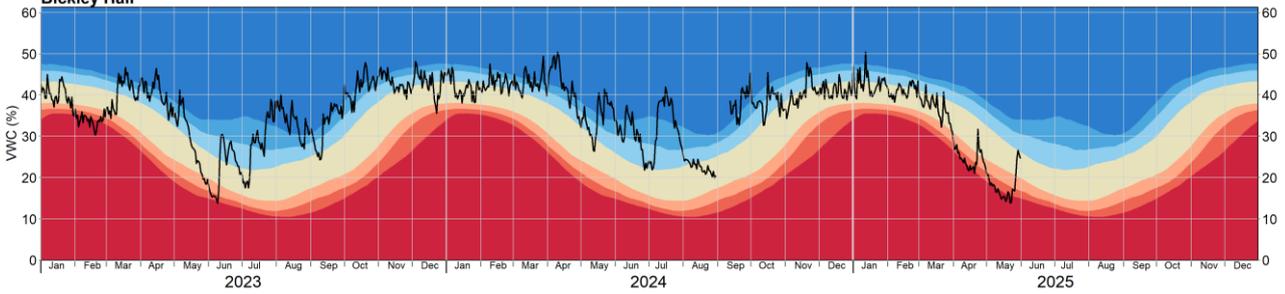
The first round of planned preventative maintenance on the network has come to an end, and the remaining round is scheduled to start in July. Sydling was visited on May 28th to replace a faulty solar regulator and install a new rugged array of point-scale soil moisture sensors.



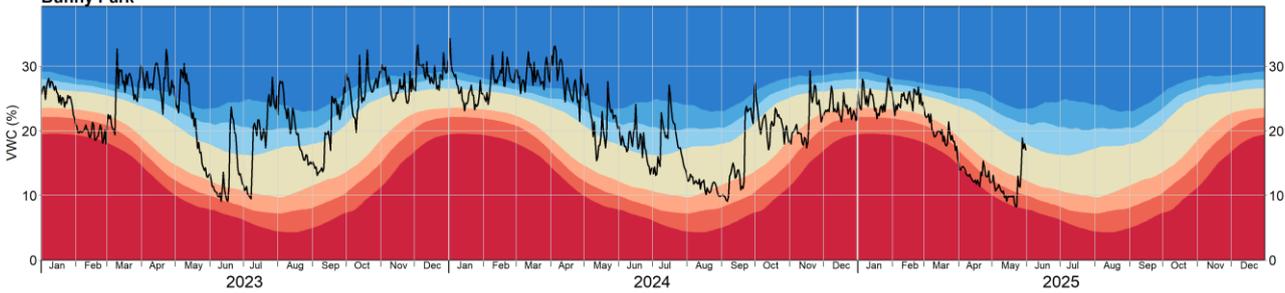
Balruddery



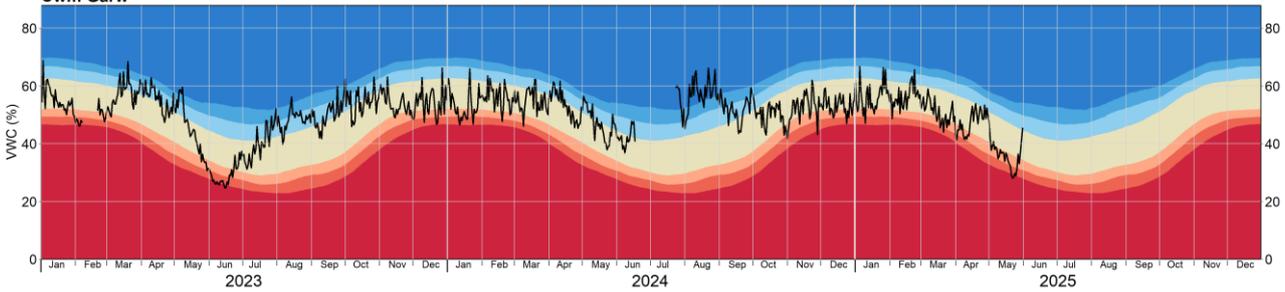
Bickley Hall



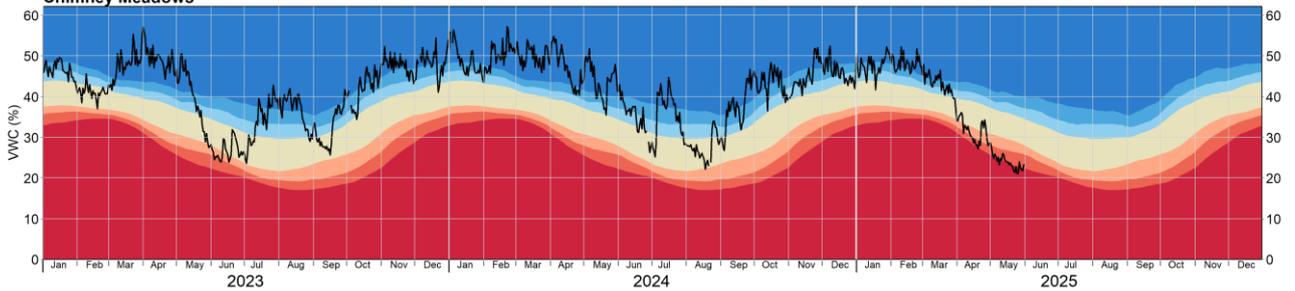
Bunny Park

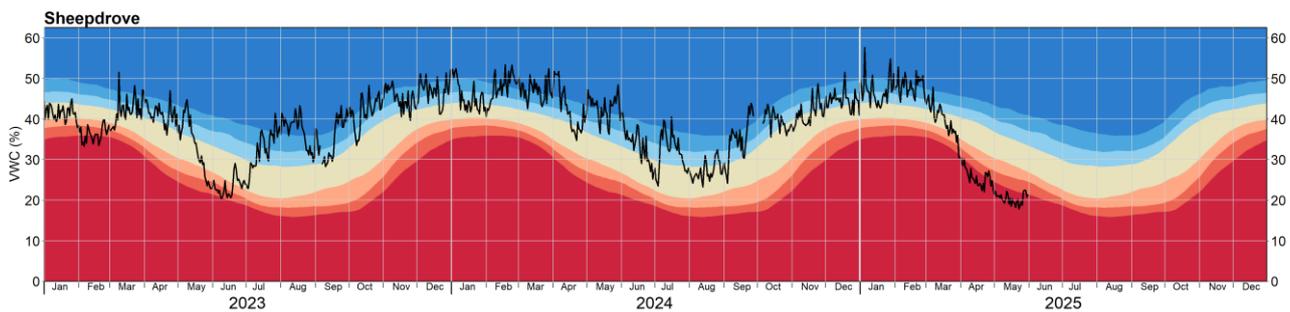
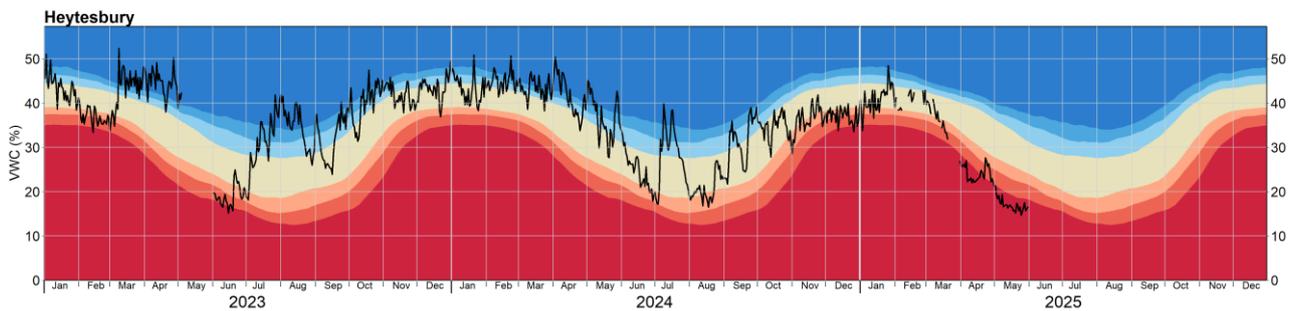
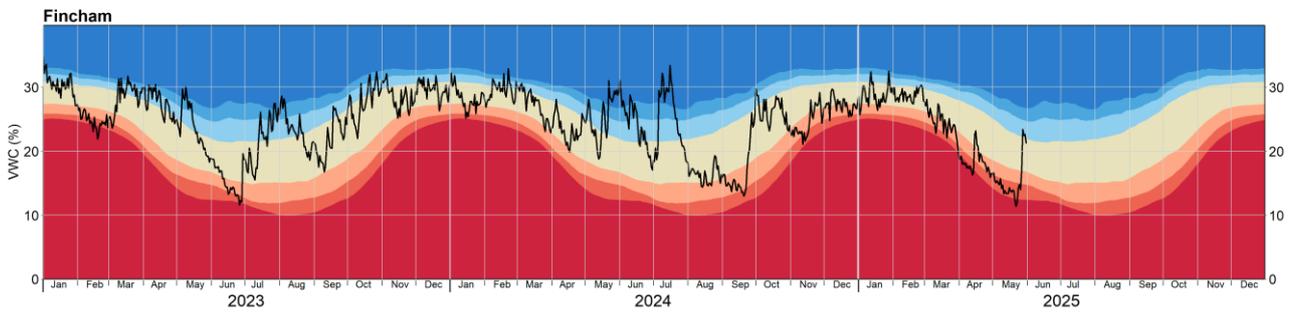
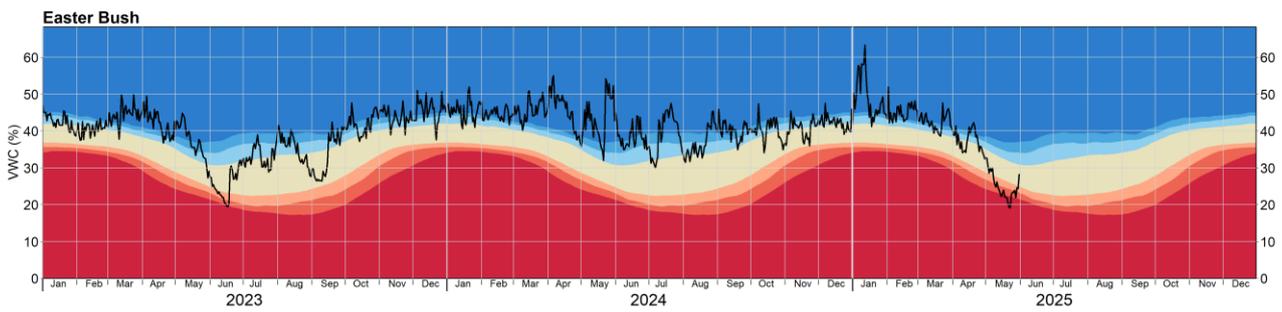
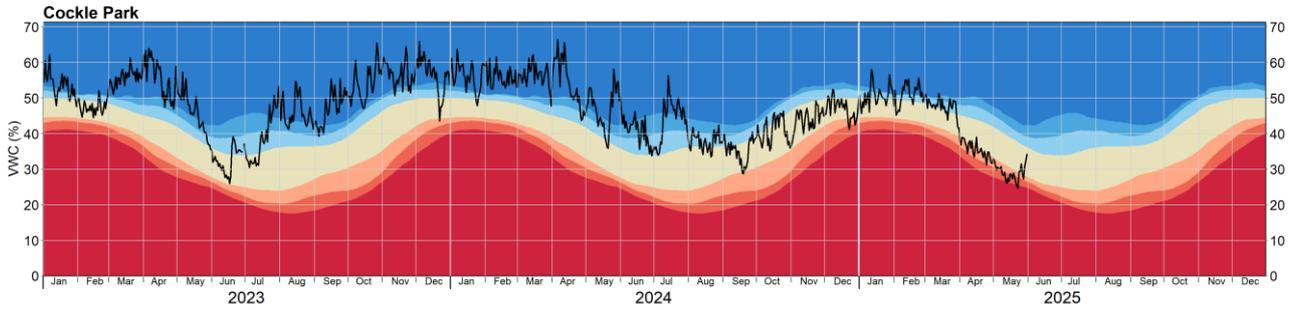


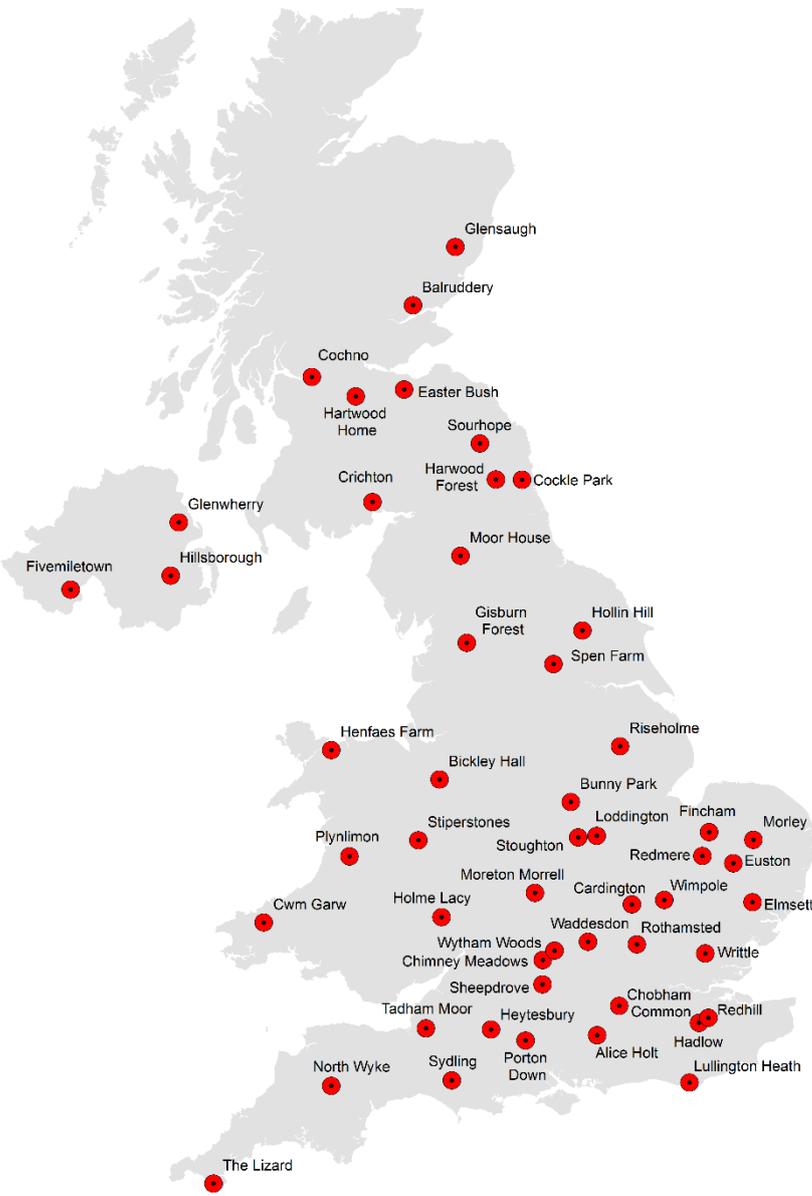
Cwm Garw



Chimney Meadows







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.

