

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

The soil moisture recovery across the COSMOS-UK network largely stalled during a drier spell late in December.

Provisional data indicate that December rainfall was 8% above the long-term average for England and Wales combined, but below average for Scotland and Northern Ireland. Central and Southwest England were the wettest regions, recording 116% and 122% of average rainfall, respectively. The month started with wet and mild conditions, until high pressure from Scandinavia brought drier and sunnier conditions to much of the UK over the festive period. Up until the 21st of December, the month was looking to be one of the warmest on record, but cold easterly winds dropped temperatures before the New Year.

COSMOS-UK sites show that the soil moisture recovery seen in November has stalled, with a slight drying trend at many sites driven by the more settled weather leading up to the New Year. By the end of the month, thirteen sites (31% of the network) that had been above field capacity at the end of November were slightly below it. Several sites that were within their normal soil moisture range at the start of the month were drier than usual by the end of the month (e.g., Bickley, Bunny, Euston, Loddington). Some sites that saw a small recovery in November remained drier than usual for most of December (e.g., Glenwherry, Lullington, Riseholme, Sourhope), and only a few sites were wetter than usual for most of the month (e.g., Balruddery, Rothamsted).

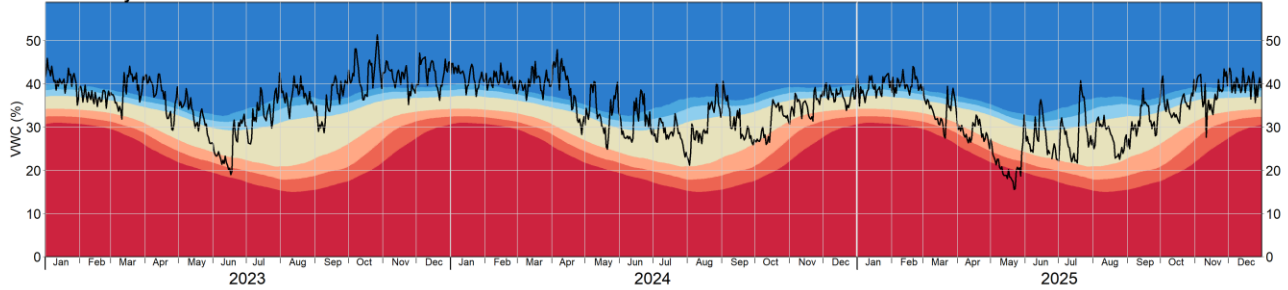
Overall, soil moisture across the COSMOS-UK network declined towards the end of the month, with some sites ending December drier than is typical for the time of year. Despite near-average rainfall across many regions, the drier conditions late in the month meant the soil moisture recovery seen in November was not sustained.

Network news

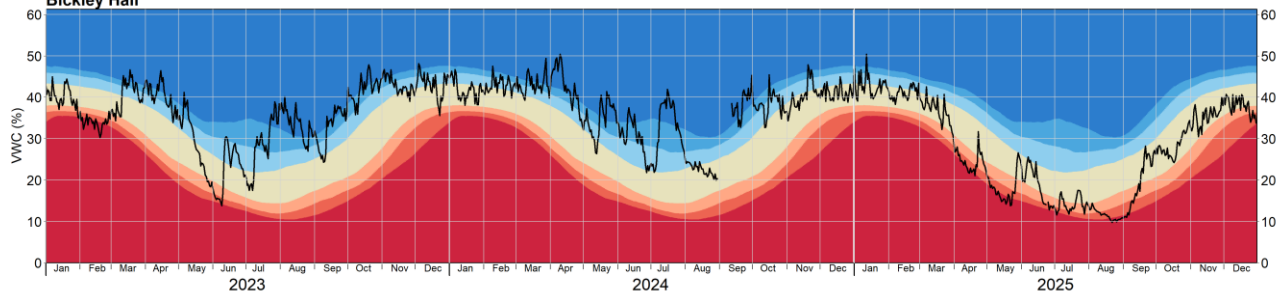
Network restructuring continues in January – a further three sites will be decommissioned and two new ones installed.



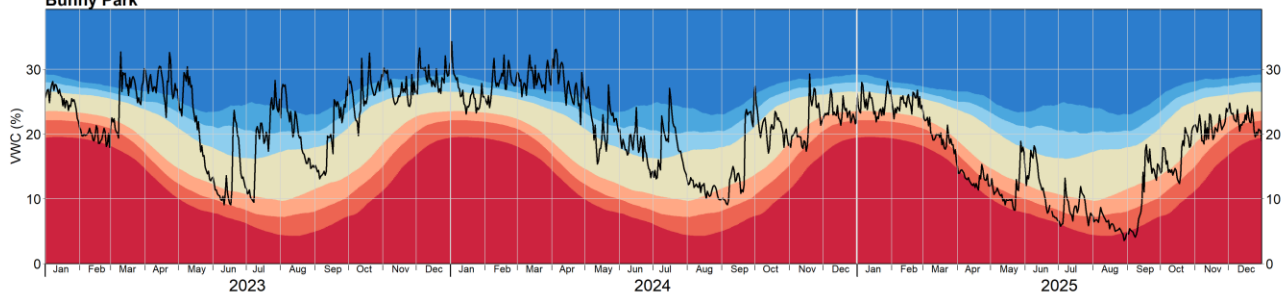
Balruddery



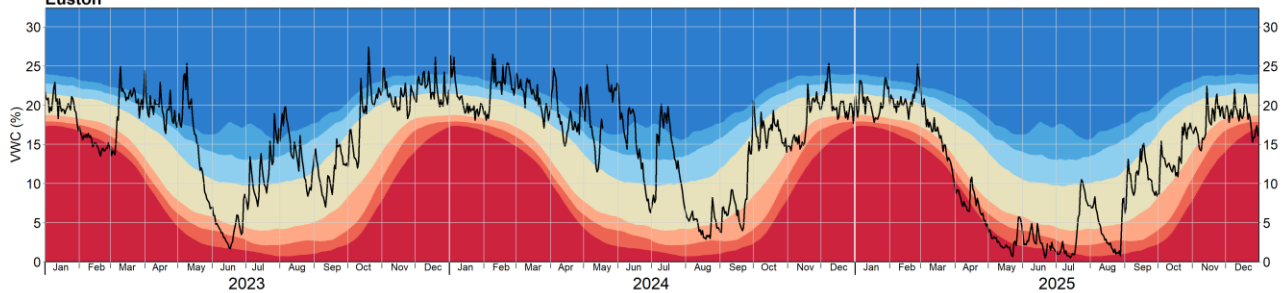
Bickley Hall



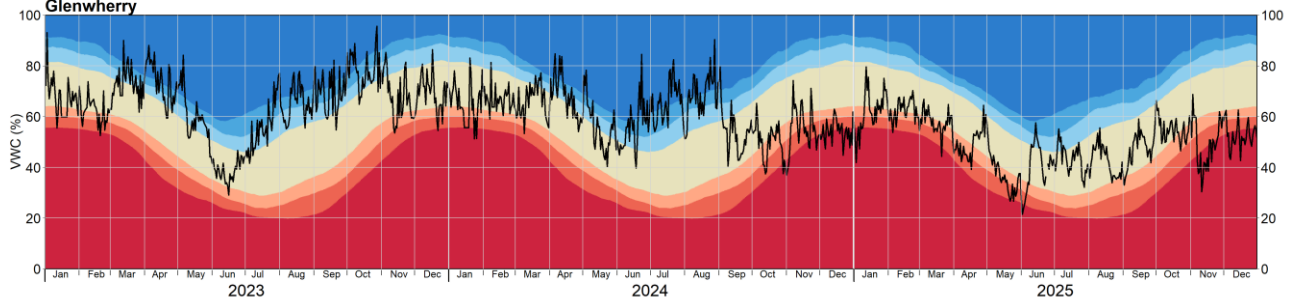
Bunny Park

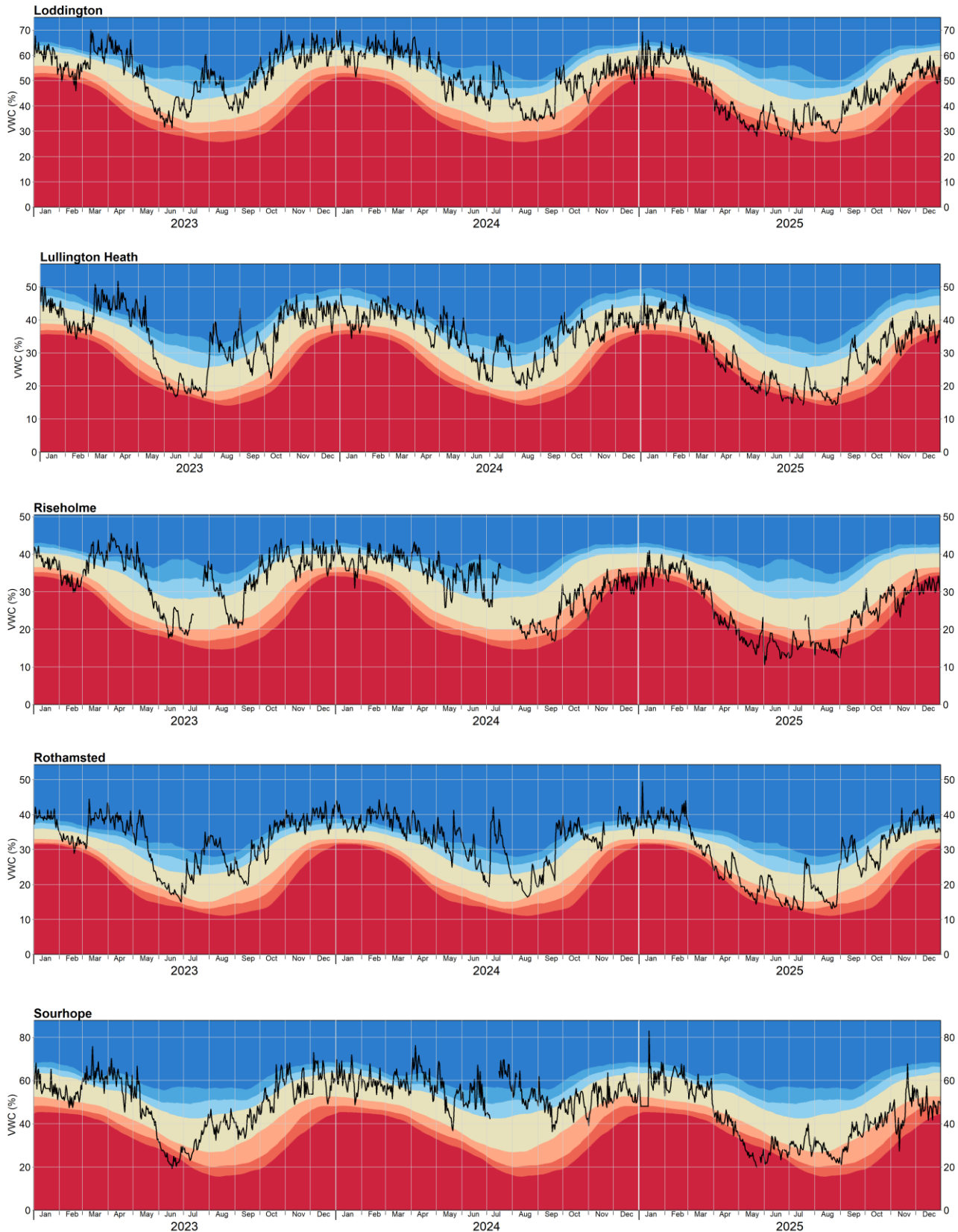


Euston



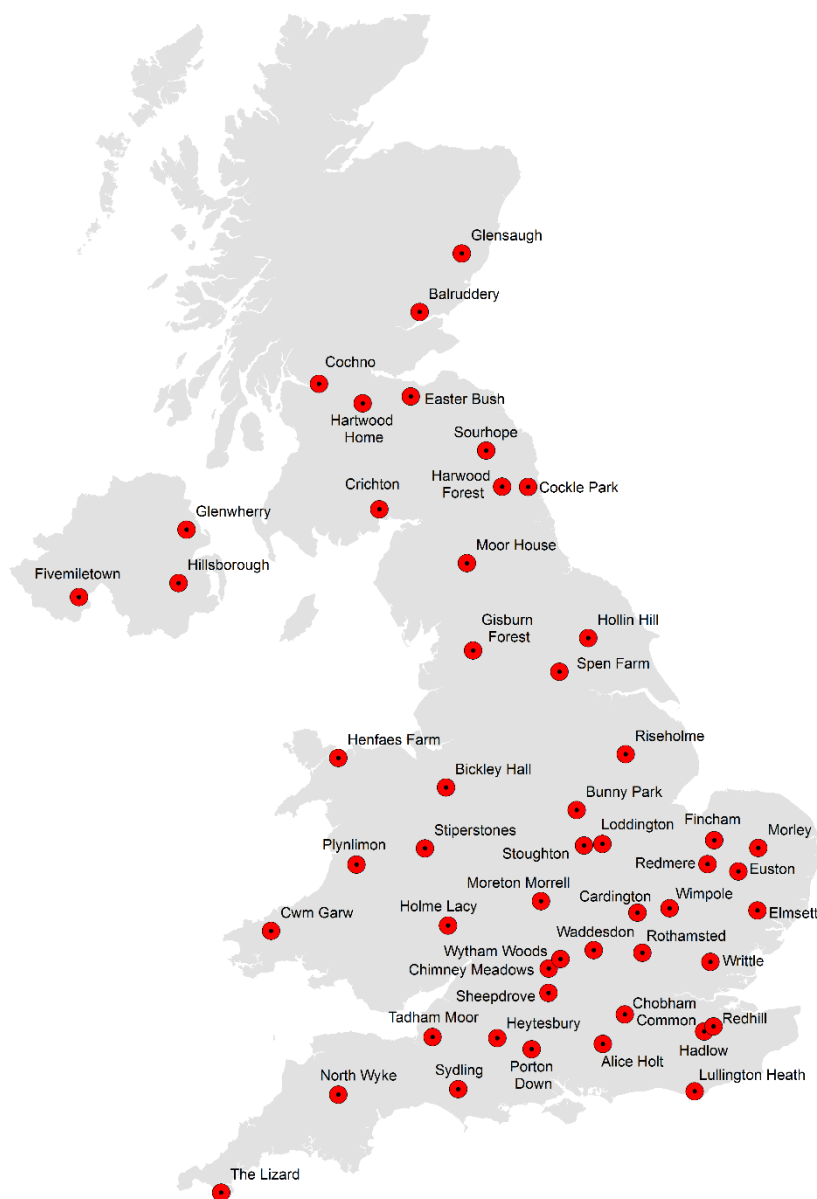
Glenwherry







Issued on 12 January 2026



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.



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.

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