

Soil moisture on 31 August 2023 (see back page for explanatory comments).

Notes on period to 01 September 2023

Above-average rainfall throughout most of the UK maintained reasonably high soil moisture levels, with only areas in the southeast beginning to dry by the end of the month.

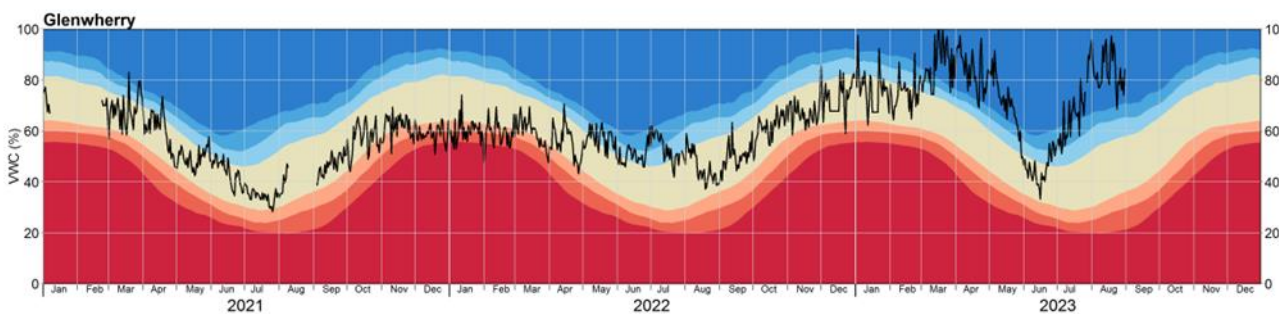
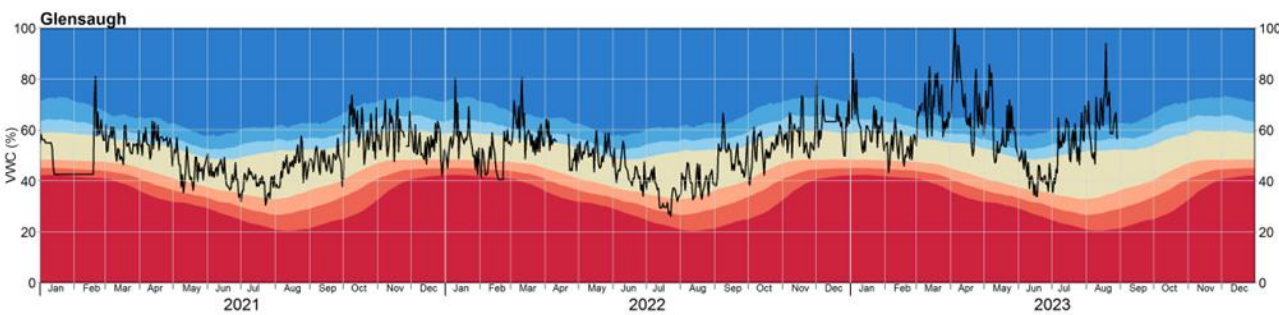
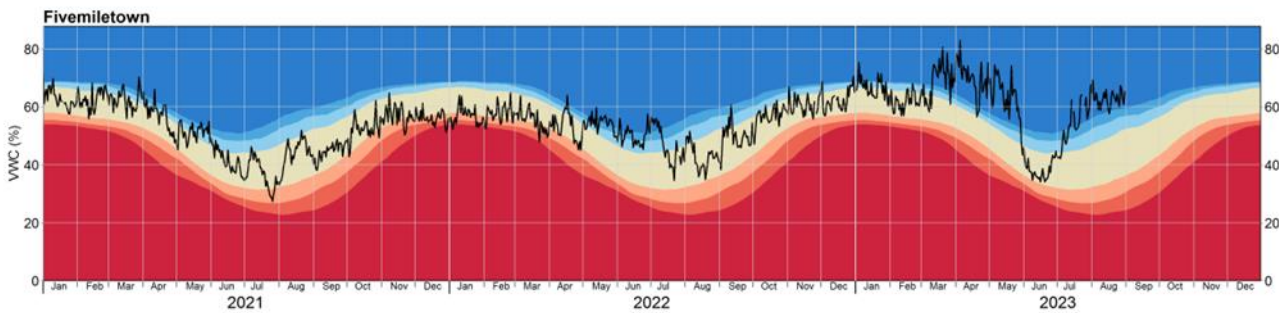
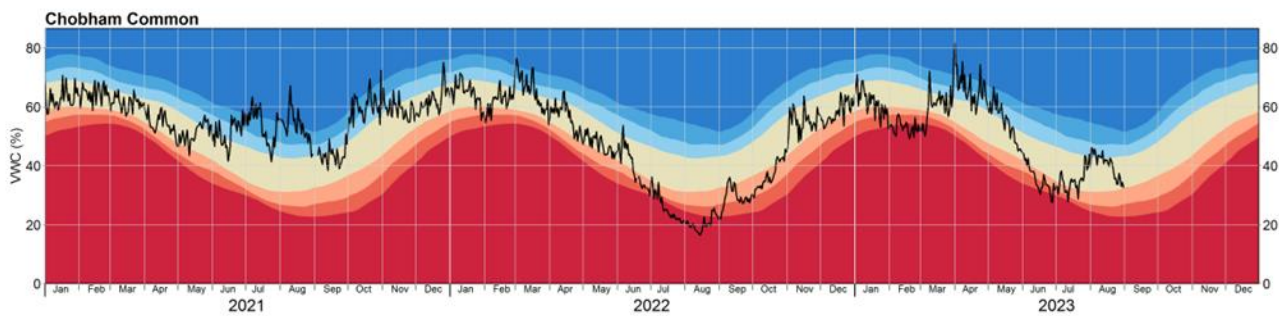
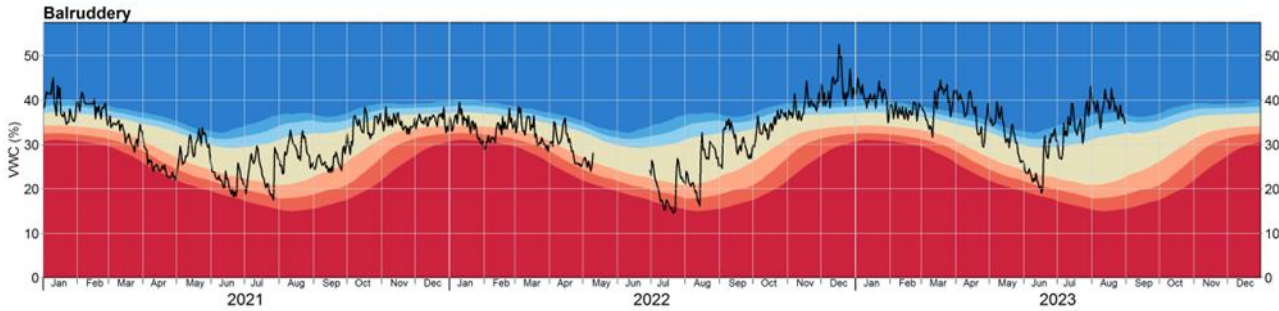
Provisional data indicate slightly higher-than-average rainfall across England, Wales, and Northern Ireland during August but lower than average for most of Scotland. Northeast England and Northern Ireland were two of the wettest regions, experiencing 118% and 129% higher rainfall than the long-term average. Temperatures throughout the country were 0.8 – 1.3°C above the long-term average.

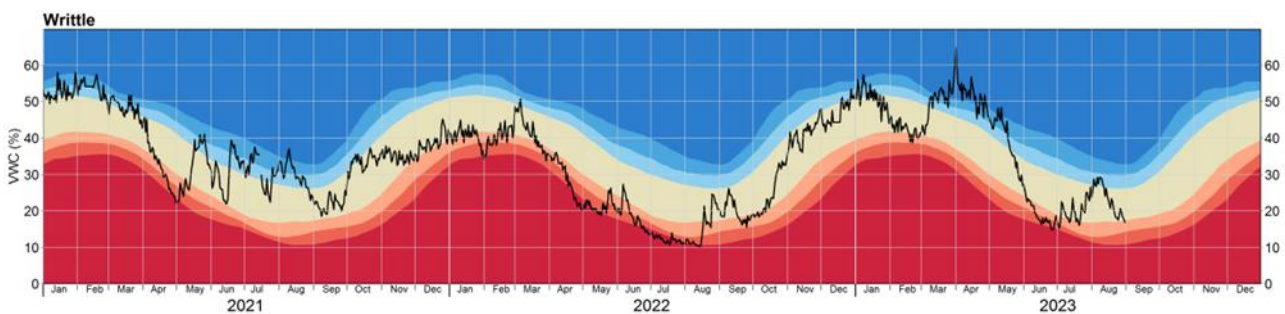
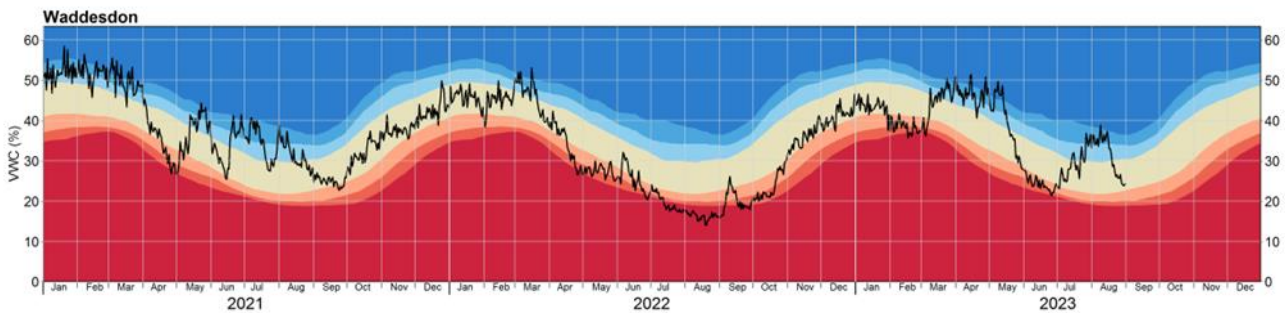
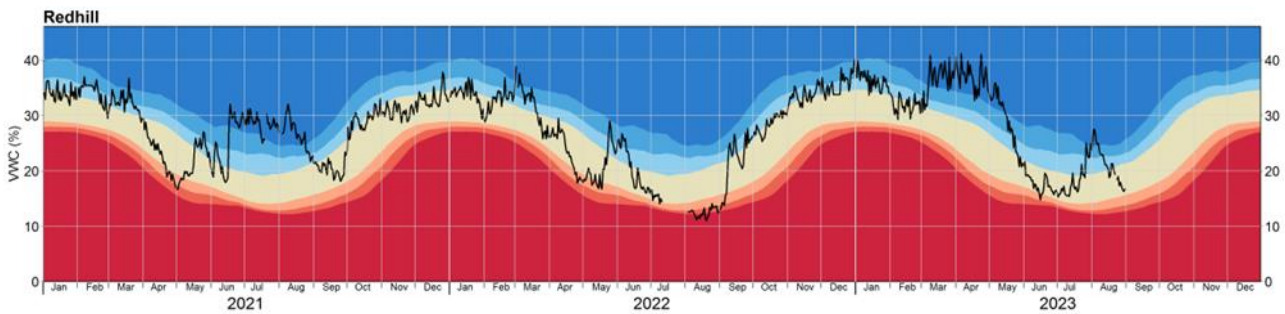
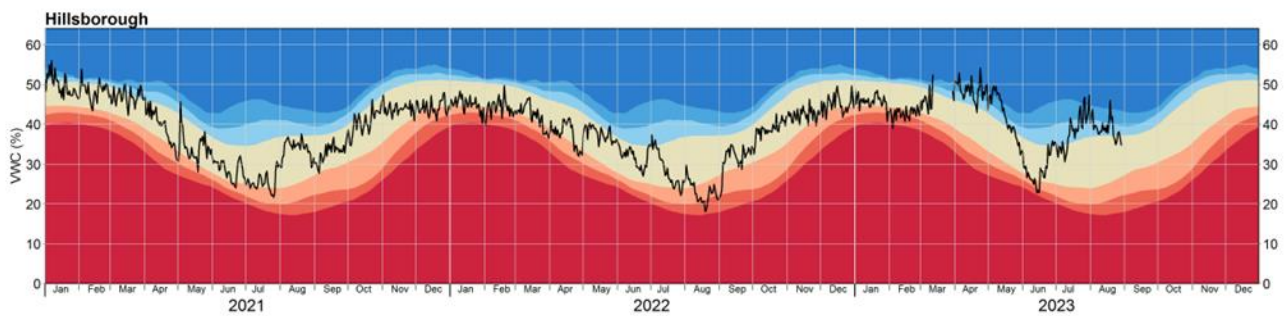
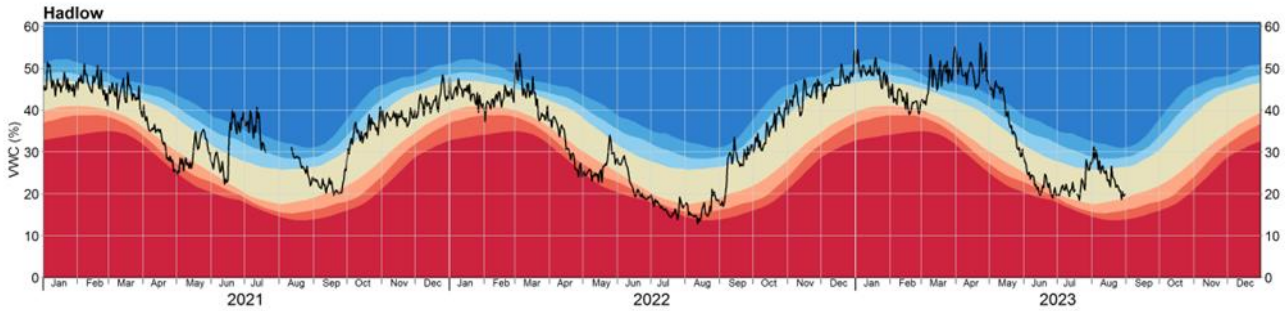
For most of August, soil moisture for most COSMOS-UK sites was above or within the normal range. The Glenwherry and Fivemiletown sites in Northern Ireland were quite saturated for most of the month, whereas Hillsborough fluctuated between field capacity, near-saturated and saturated conditions. Towards the end of the month, several sites in Southeast England had begun to dry out, particularly Chobham Common, Hadlow, Redhill, Waddesdon and Writtle. Soil moisture at most sites in Scotland remained above field capacity (e.g. Balruddery, Glensaugh) despite lower-than-average rainfall for the month.

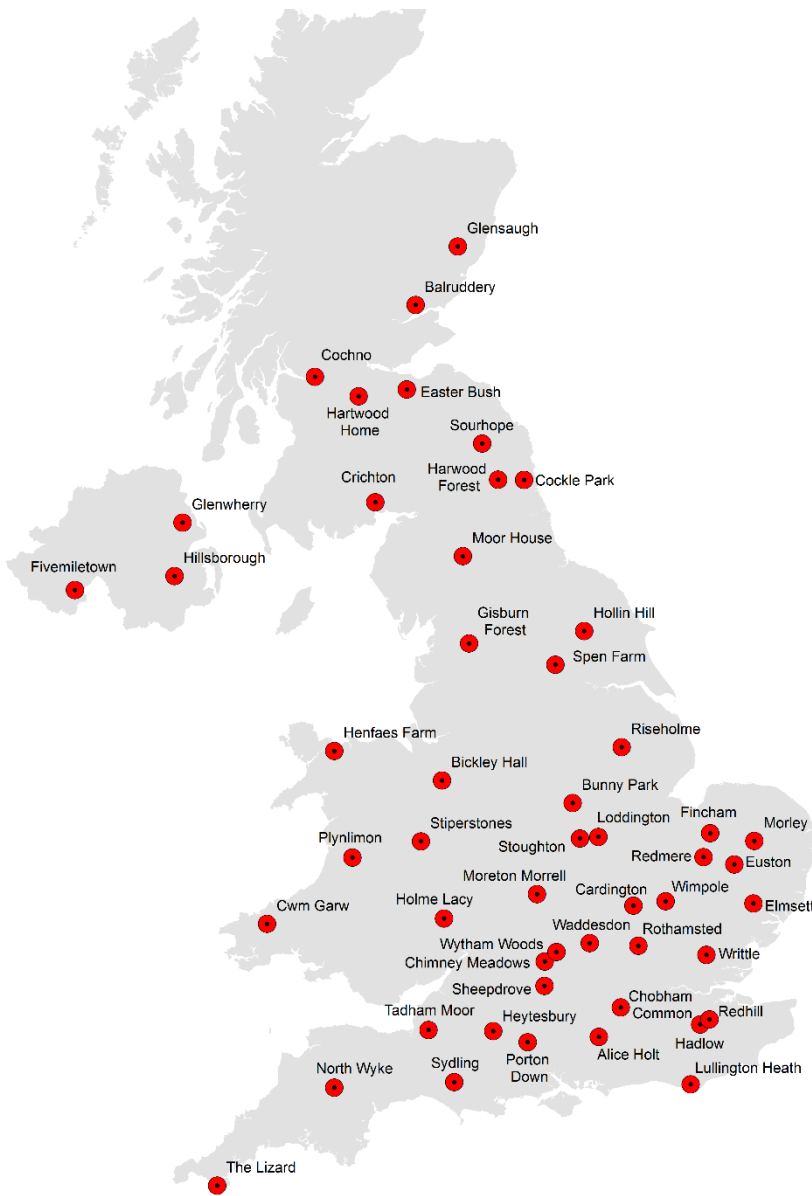
Overall, soils throughout the UK remained moist for most of the month due to a reasonably wet July and August.

Network news

The last round of annual planned preventative maintenance is coming to an end.







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.

