

Soil moisture on 01 September 2022 (see back page for explanatory comments).

Notes on period to 31 August 2022

At the end of August many soils across the UK are notably or extremely dry for the time of year.

Provisional data for August indicate that most regions received significantly less rainfall when compared to the long-term average. Despite heavy rain events for some areas in the second half of the month, the total amount of August precipitation remained low. There were some exceptions to this, including regions in Scotland and East Anglia, where total rainfall was closer to average.

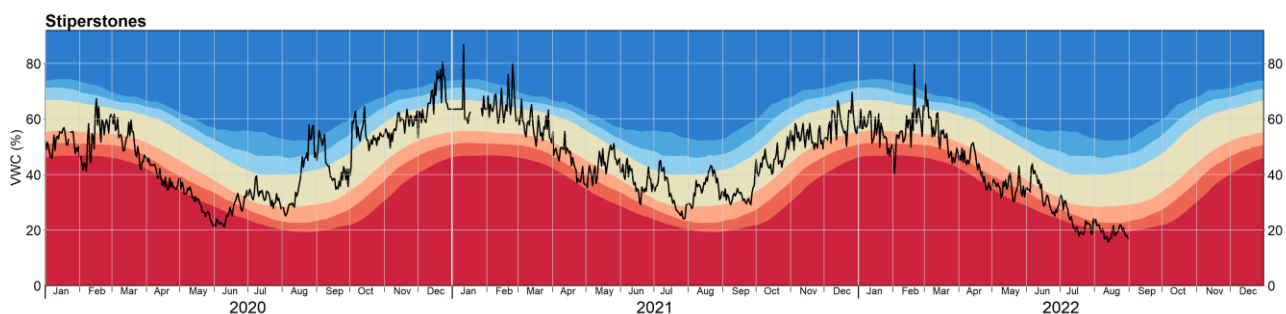
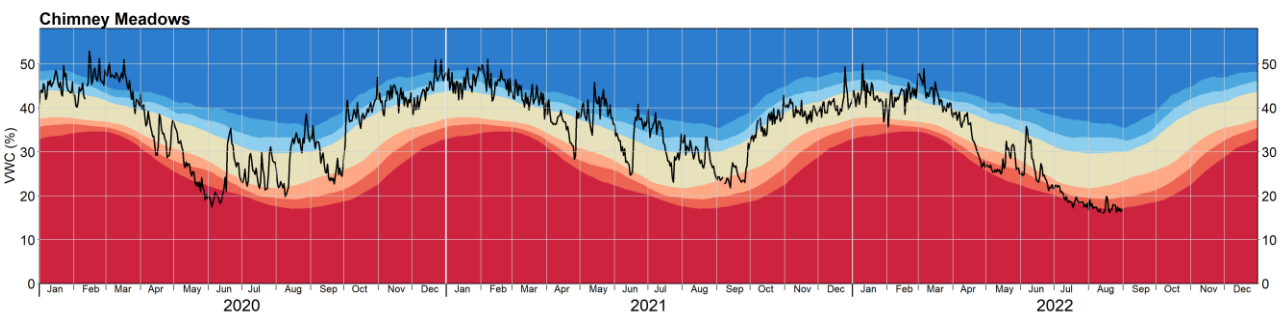
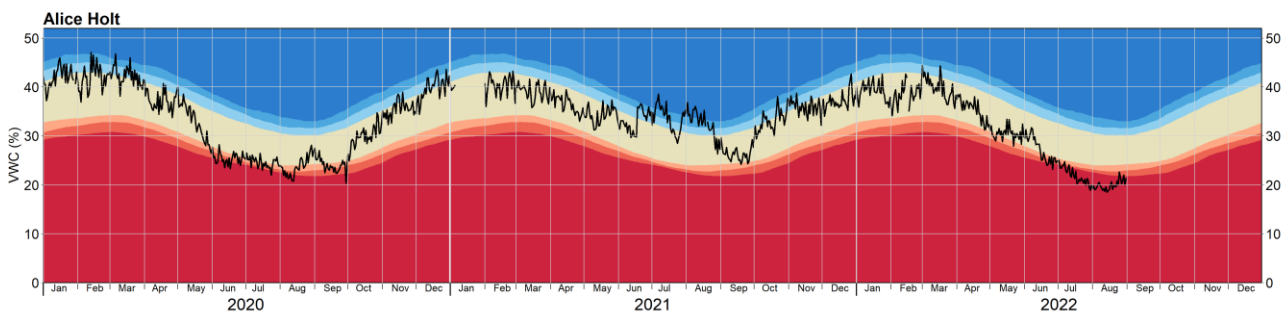
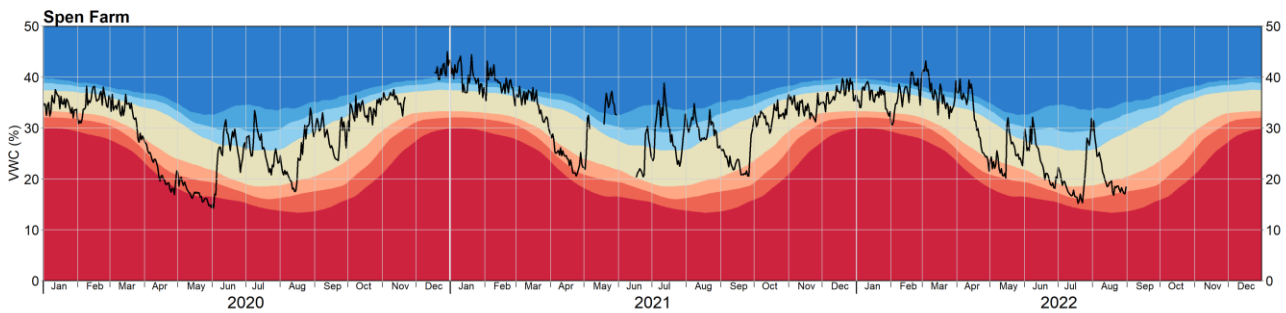
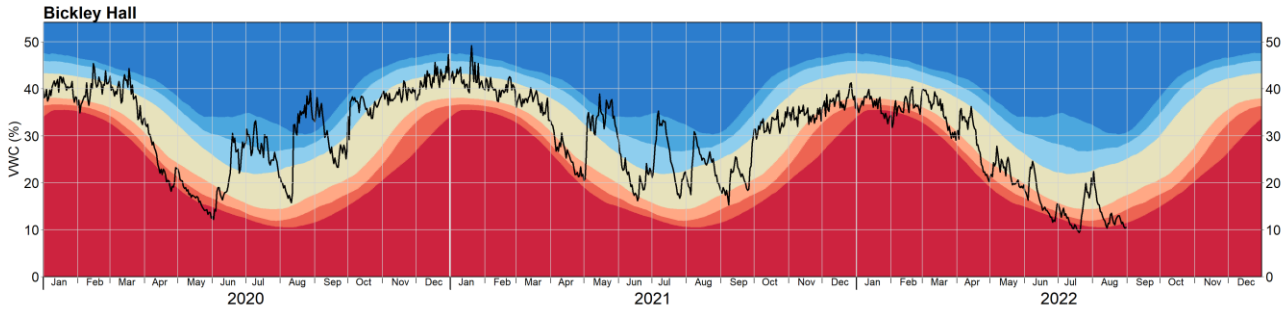
At the end of July, soils had been generally dry across the UK with a notable difference for southern England where soils had dried to extremely low levels following heatwave conditions. After another month with less than average precipitation and high air temperatures, many soils further north and west have now also become notably dry for the time of year (e.g. Bickley Hall and Spen Farm).

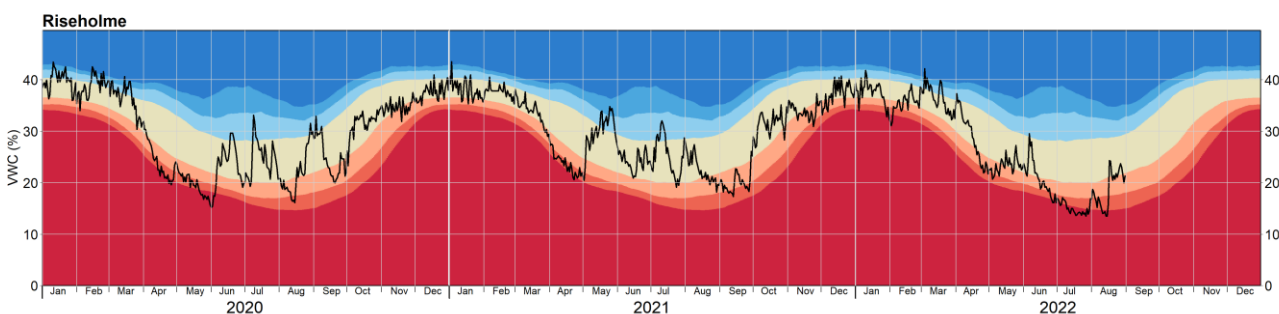
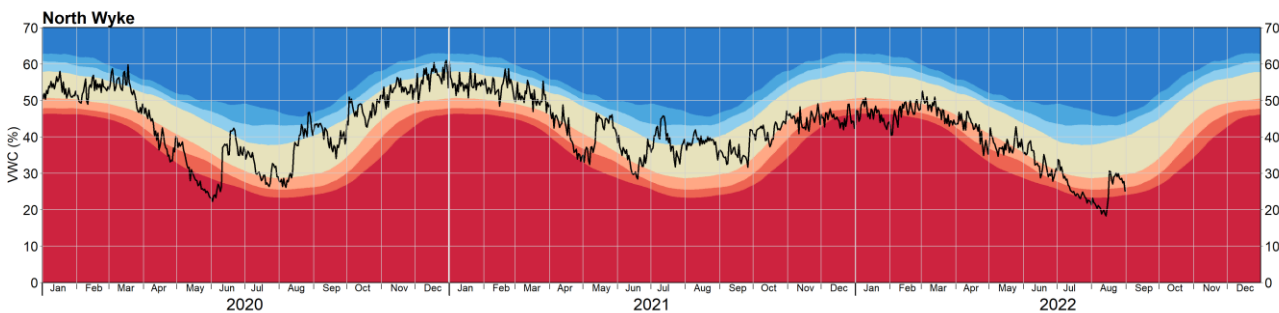
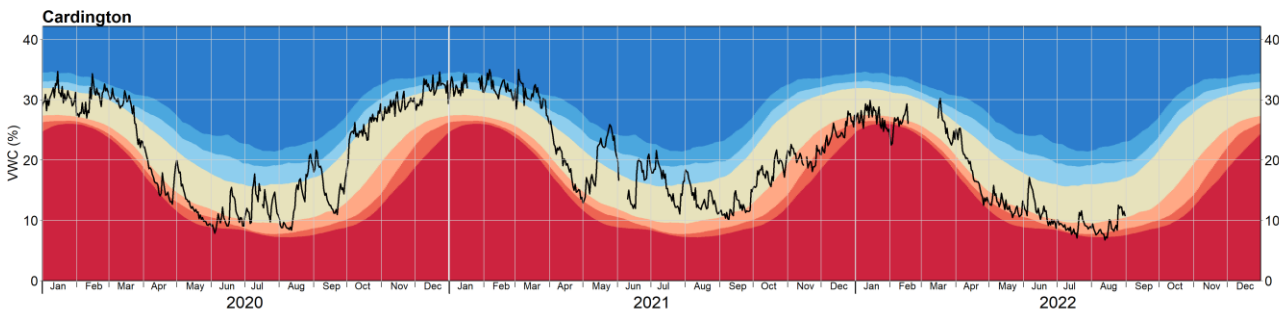
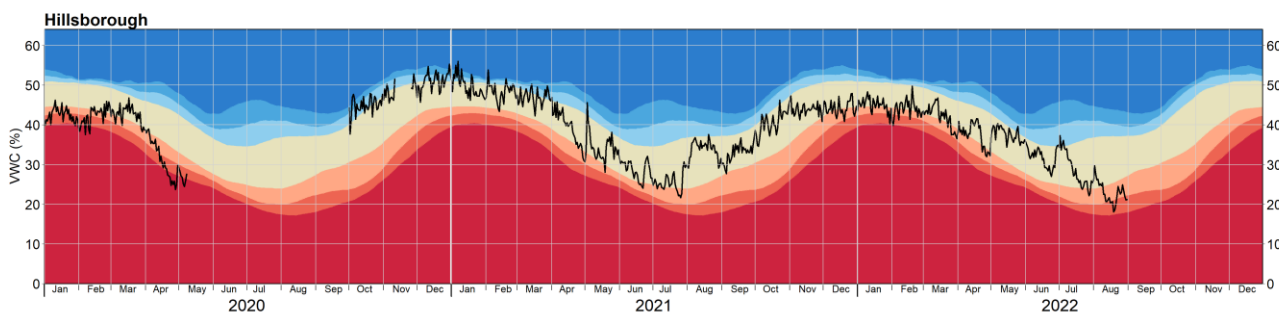
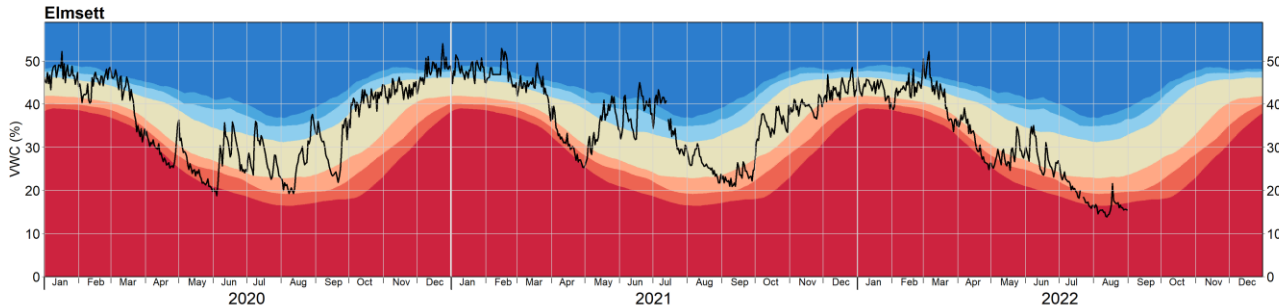
The combination of warm weather driving high levels of potential evapotranspiration and prolonged periods of very low rainfall means that some sites are remaining exceptionally dry (e.g. Alice Holt, Chimney Meadows and Stiperstones). Many sites which received rain during the month experienced only a short-lived increase in soil moisture before drying again (e.g. Elmsett and Hillsborough), whilst others have now ended August with somewhat less dry soils than they started with (e.g. Cardington, North Wyke and Riseholme).

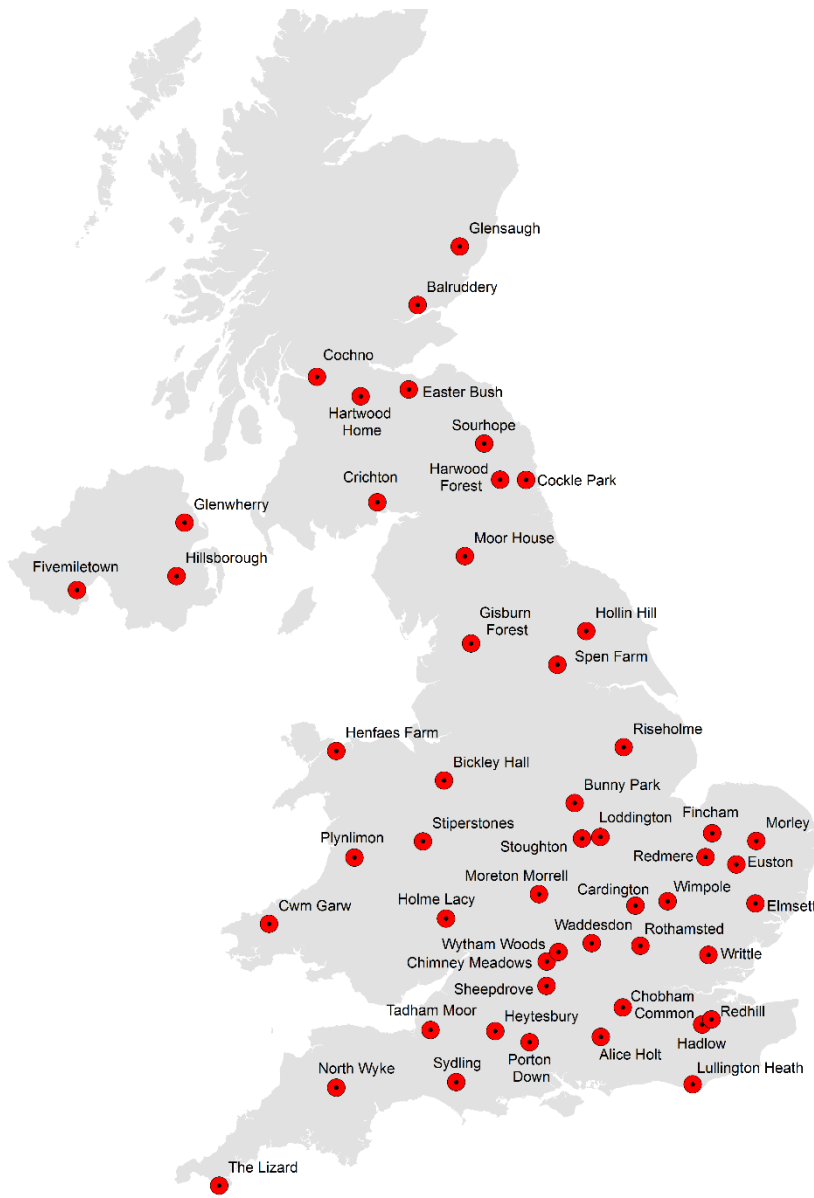
40 out of 46 currently active COSMOS-UK sites observed the lowest average August soil moisture on project record.

Network News

- Ongoing technical issues at Balruddery, Easter Bush, Hartwood and Heytesbury.







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, field capacity; additional rainfall either cannot enter the already saturated soil and flows across the land surface as overland flow, or infiltrates but drains quickly through the soil. 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.

About this summary: Every reasonable effort is made to publish this review on the first working day of the month.

