

Soil moisture on 30 September 2022 (see back page for explanatory comments).

Notes on period to 30 September 2022

At the end of September, soils across the UK are gradually wetting up, following the extremely dry summer.

Provisional data indicate that England & Wales only received 65% of the long-term average September rainfall, with Northern Ireland at 85% and Scotland at 90%. In central, southern, south-west England, eastern Scotland and the Scottish Borders rainfall was well below average, with large areas below 50% of their long-term average for the time of year. Air temperatures remained warm until mid-September, particularly in central and southern England, increasing evaporation rates.

The patchy precipitation picture has resulted in COSMOS-UK stations wetting up in general, but with exceptions and generally more slowly than would be expected for September. Tadham Moor remains exceptionally dry, with less than 33% of average rainfall in the area, and there has been relatively little recovery of soil moisture at Alice Holt and Waddesdon, both remaining notably dry at the end of the month, despite Alice Holt receiving over 70 mm of rain in the first nine days of the month.

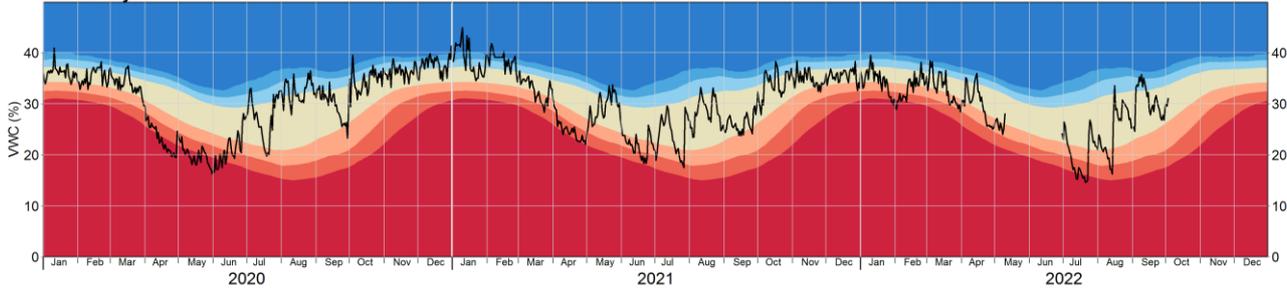
Scottish sites have had generally low rainfall during September, but having remained relatively wet over the summer, they are now at or above normal soil moisture levels. The East Anglian sites (Fincham, Morley and Euston) have had low rainfall, with Morley remaining drier than normal, whilst Fincham and Euston being normal or close to normal, having received significant rain in late August.

Network News

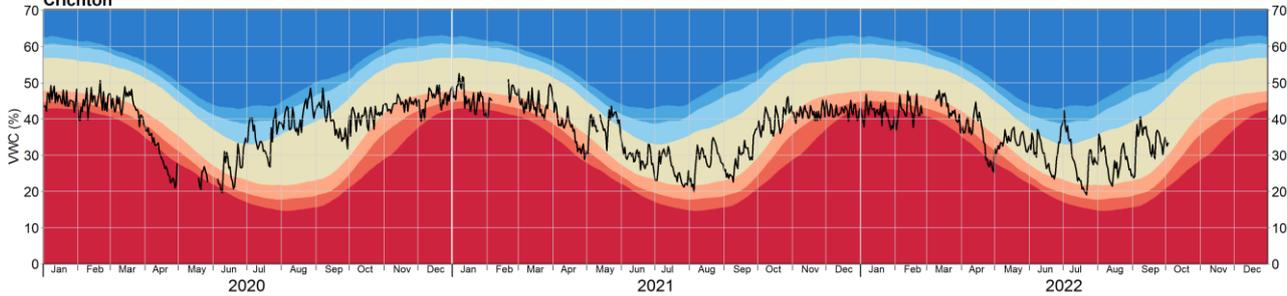
Redhill, Heytesbury, Hartwood & Wimpole are back online, but Spen Farm and Porton Down are offline.



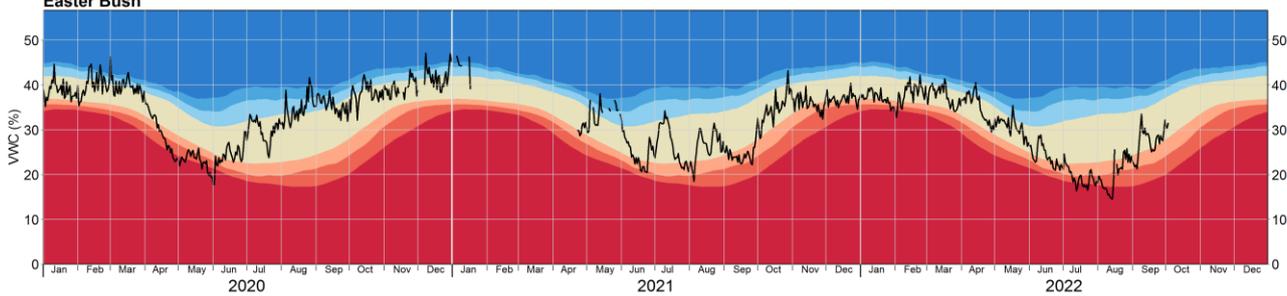
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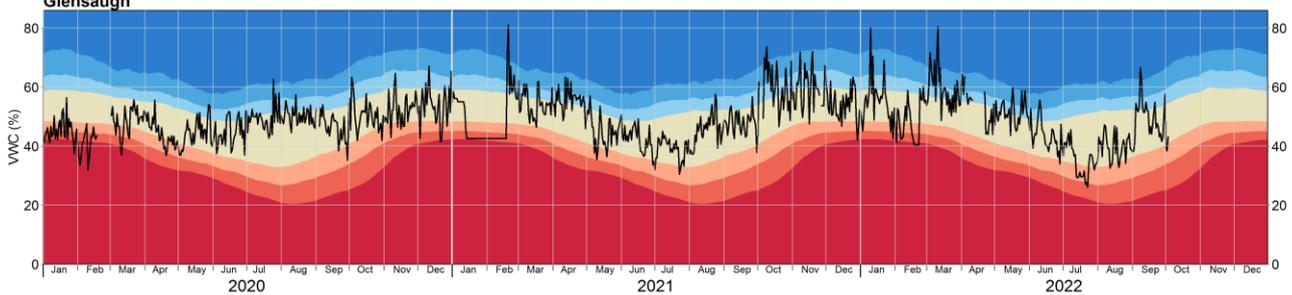
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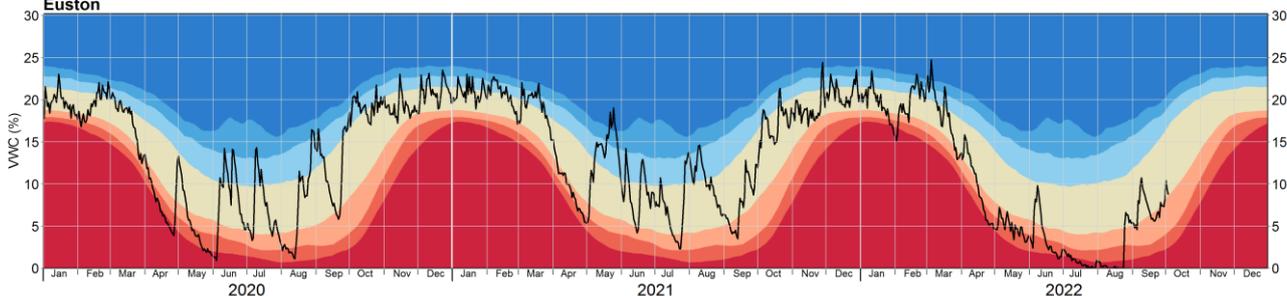
Easter Bush

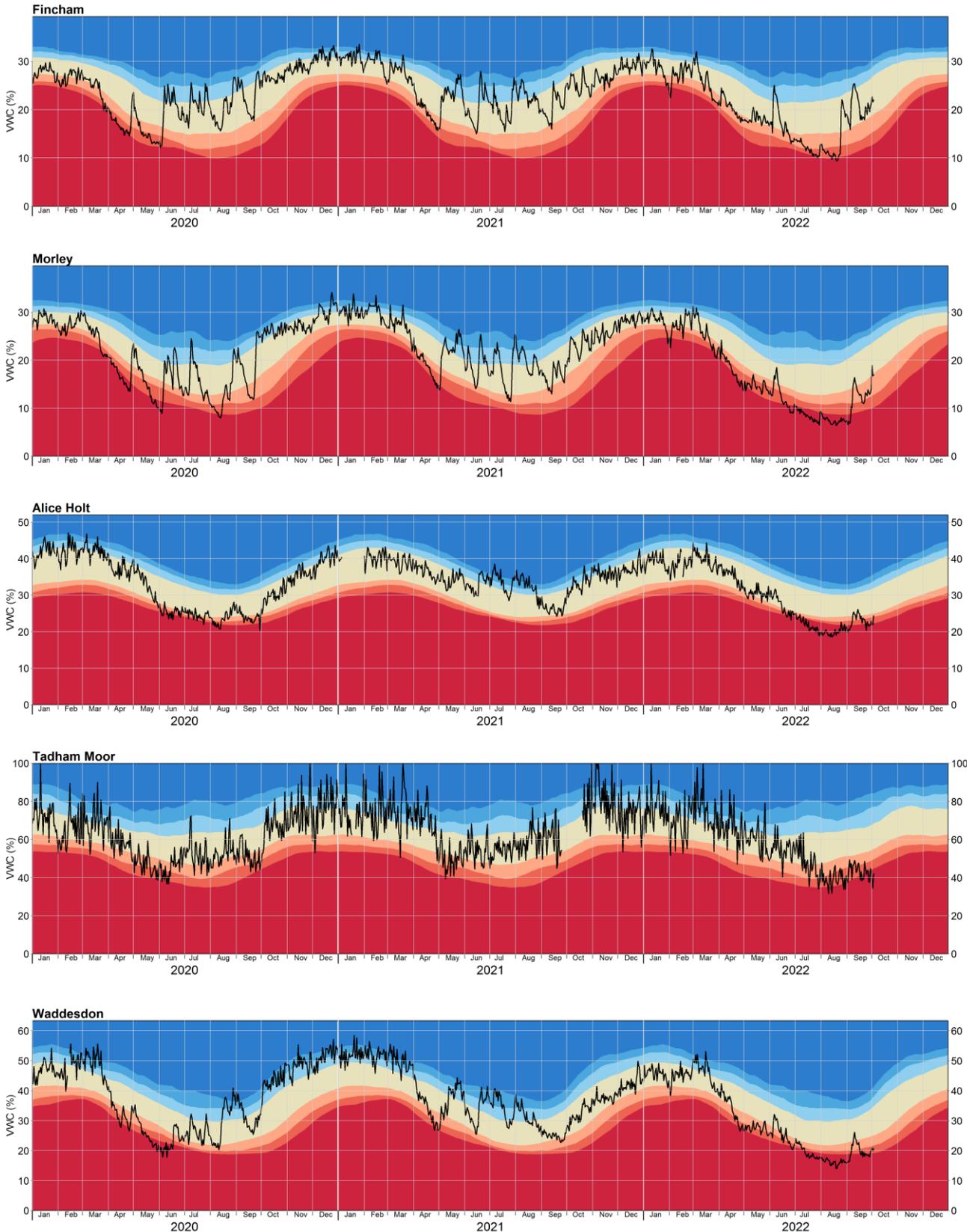


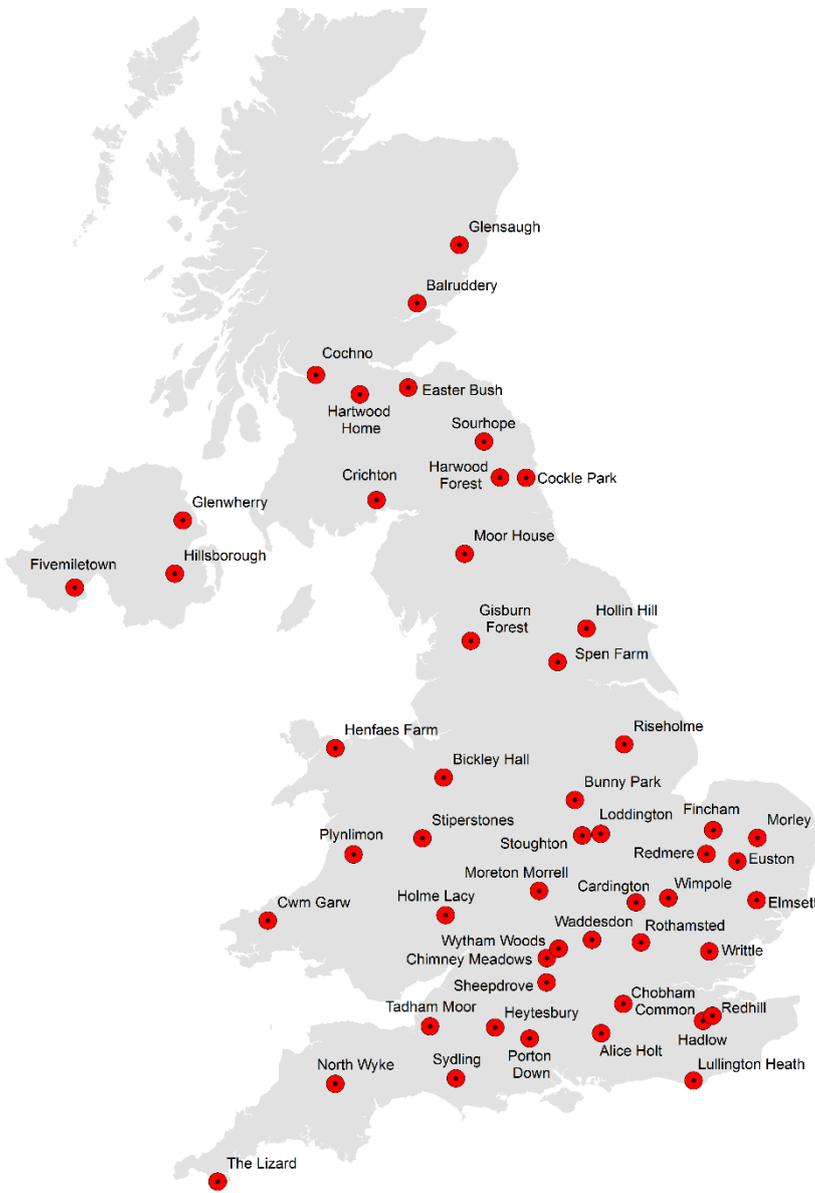
Glensaugh



Euston







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.

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

