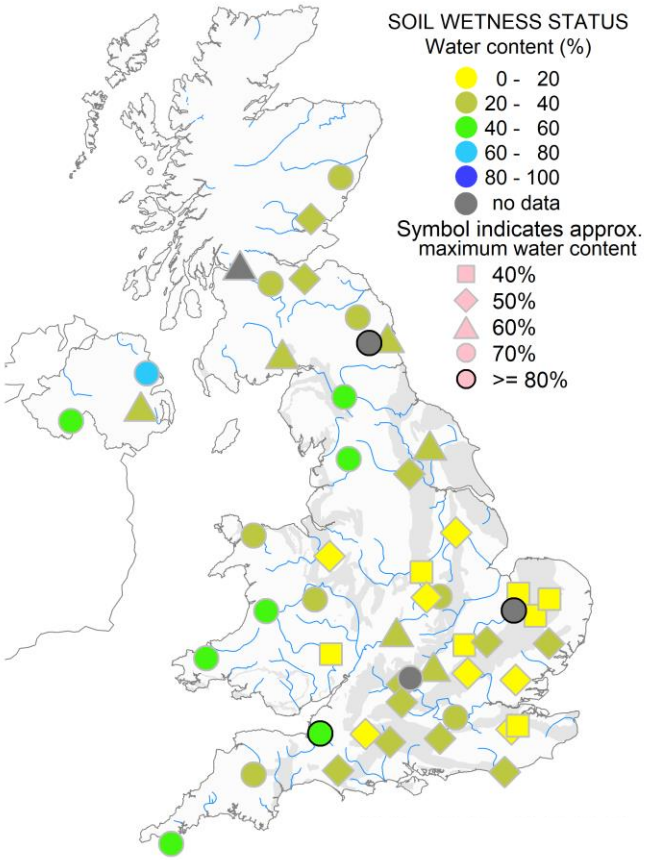
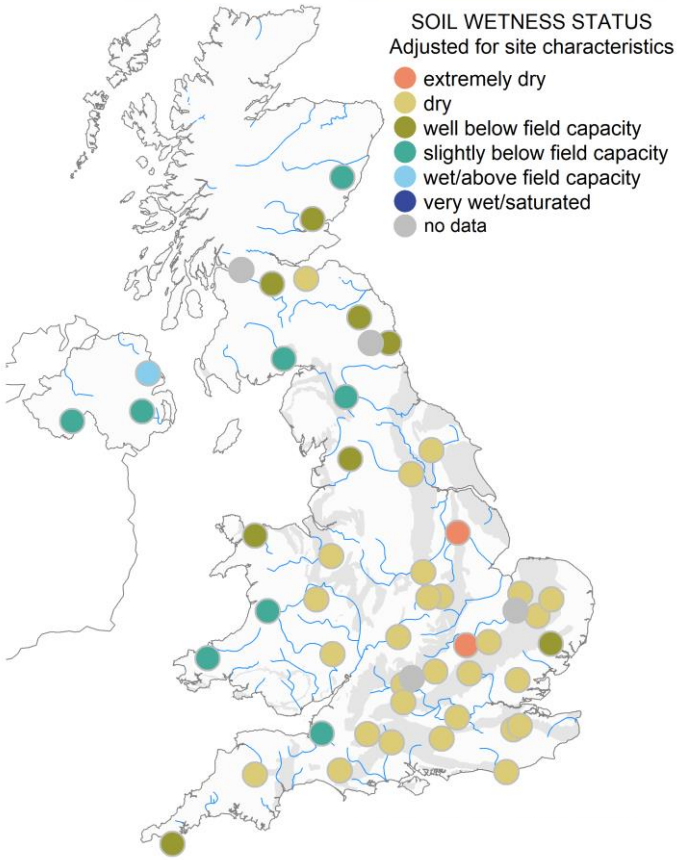
COSMOS-UK | soil moisture

Issued on 4 July 2022





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

Notes on period to 30 June 2022

At the end of June, soil moisture index is below field capacity for the majority of sites across the UK, but with significant regional differences.

Provisional data indicate that June precipitation was below average across most the UK, except Northern Ireland where a wet end to the month resulted in up to 150% of the long-term average rainfall.

Eastern parts of the UK received less than average precipitation for the time of year and many soils have become notably dry (e.g. Cardington, Alice Holt) or even exceptionally dry (e.g. Writtle) for the time of year.

Most parts of Scotland received marginally less precipitation than their long-term average. Soils in this area ended June with normal levels for the time of year (e.g. Glensaugh). Parts of east Scotland received as little as 45% of their long-term average precipitation, leading to soils transitioning from normal to drier than normal for the time of year (e.g. Easter Bush).

Rainfall was close to the long-term June average in the west of the UK, with the majority of the rain occurring towards the end of the month. This resulted in some soils in westerly parts of the UK transitioning from normal to notably wet or wetter than normal for the time of year, while staying slightly below field capacity (e.g. Cwm Garw, Crichton, Moor House).

In contrast to the rest of the country, Northern Ireland received a higher than average amount of rainfall for the time of year leading to soils ending June wetter than normal to exceptionally wet (e.g. Glenwherry, Hillsborough).

Network News

- COSMOS measurments have resumed at Balruddery.
- Harwood Forest has been decommissioned due to storm damage.

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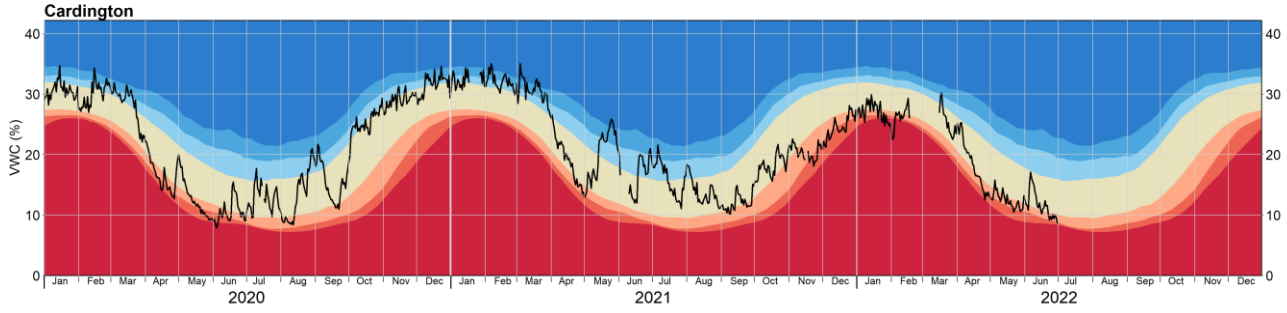
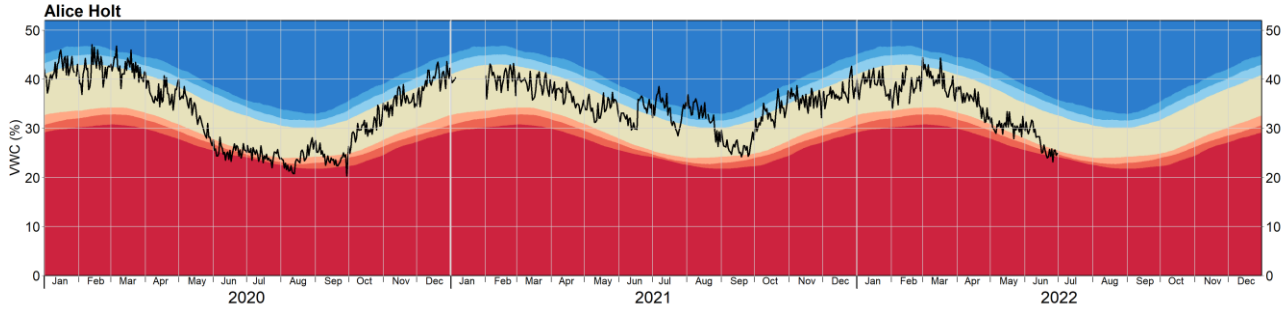
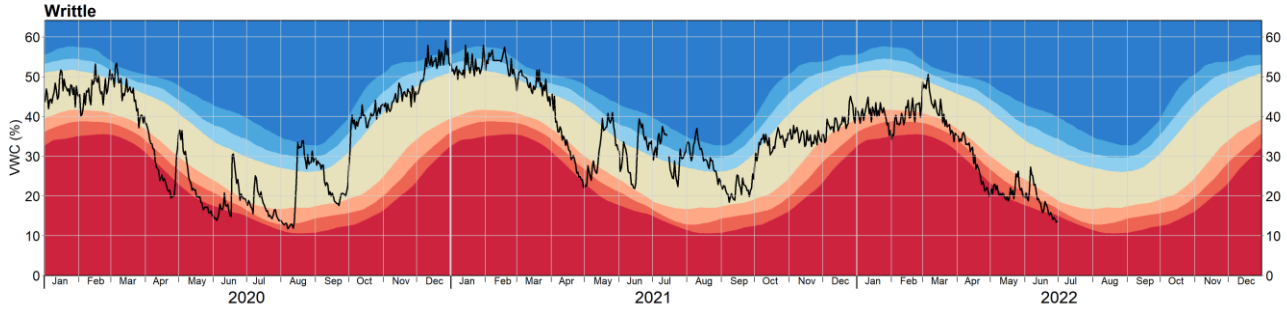
Cardington



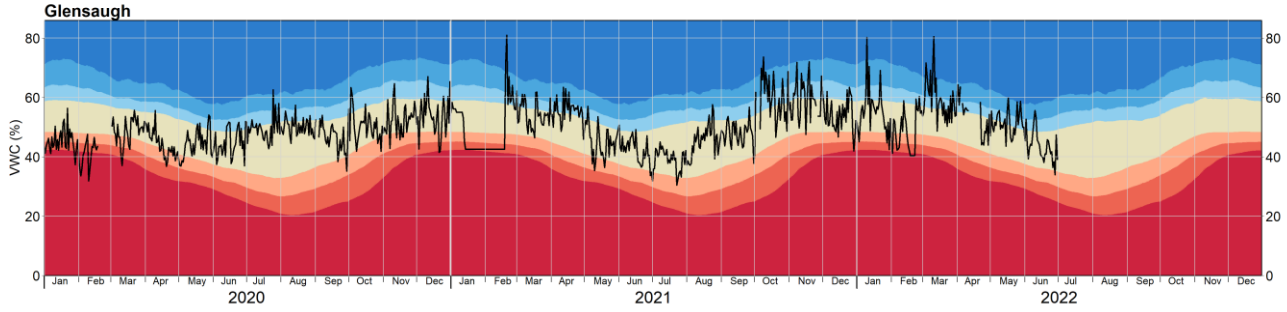
Alice Holt



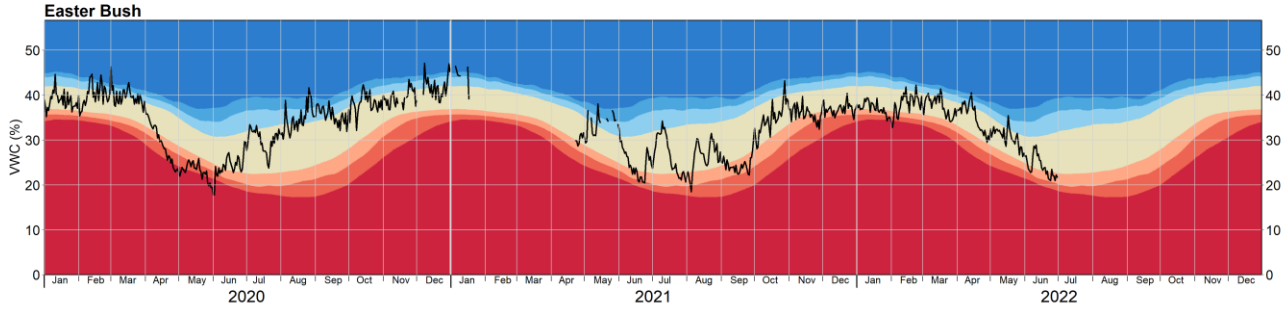
Writtle



Glensaugh



Easter Bush



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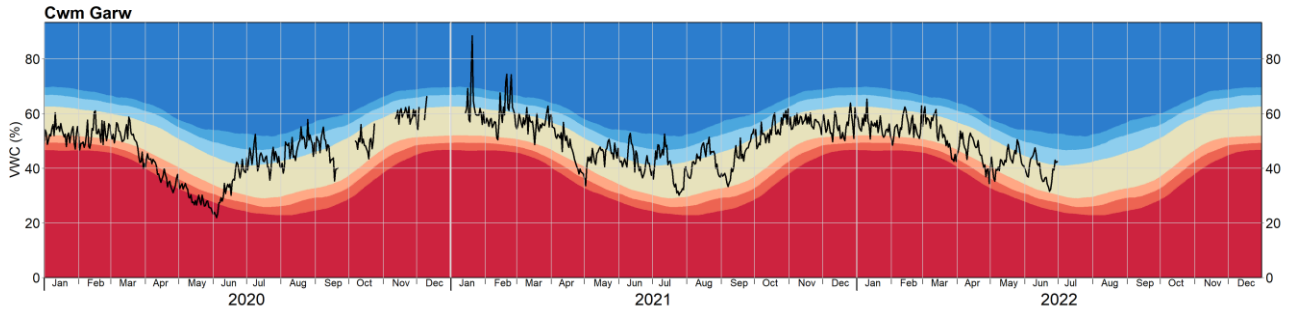

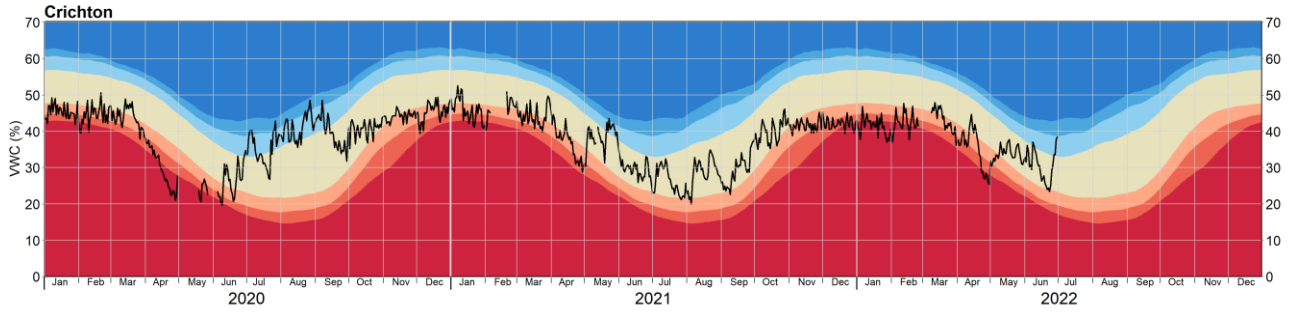

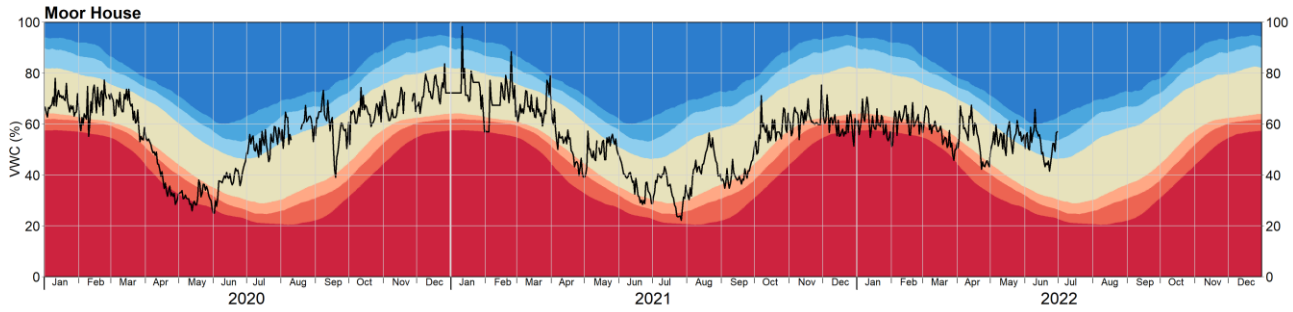

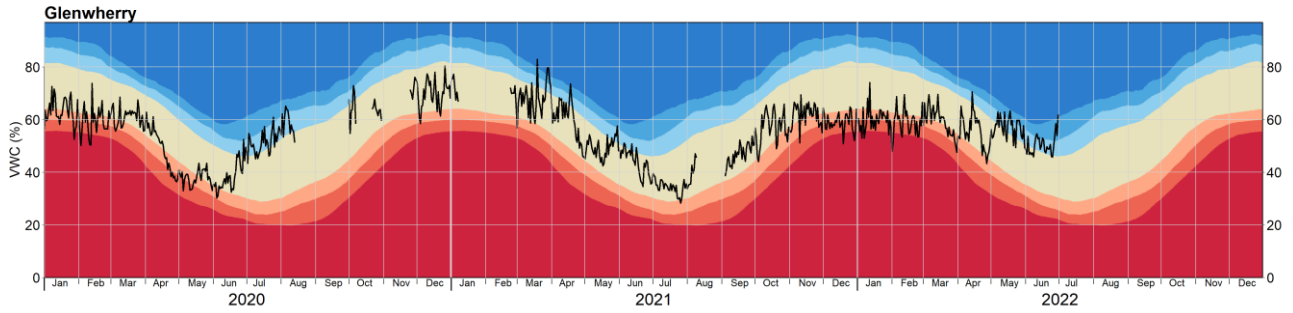

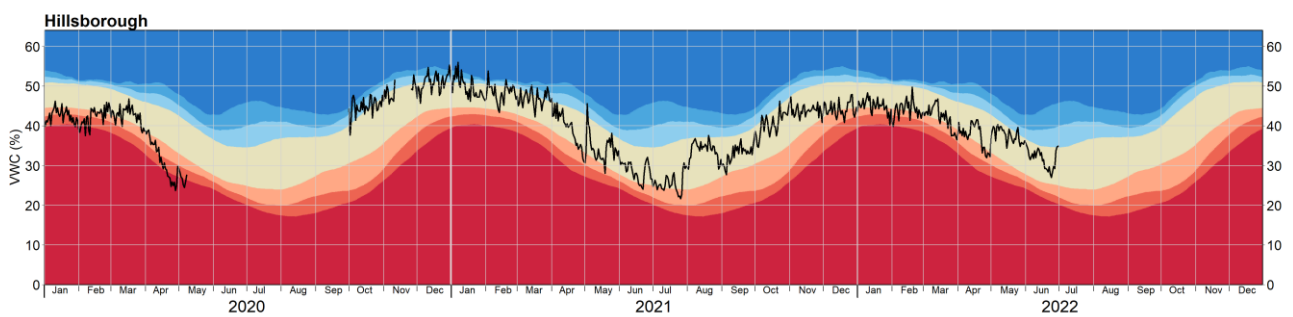

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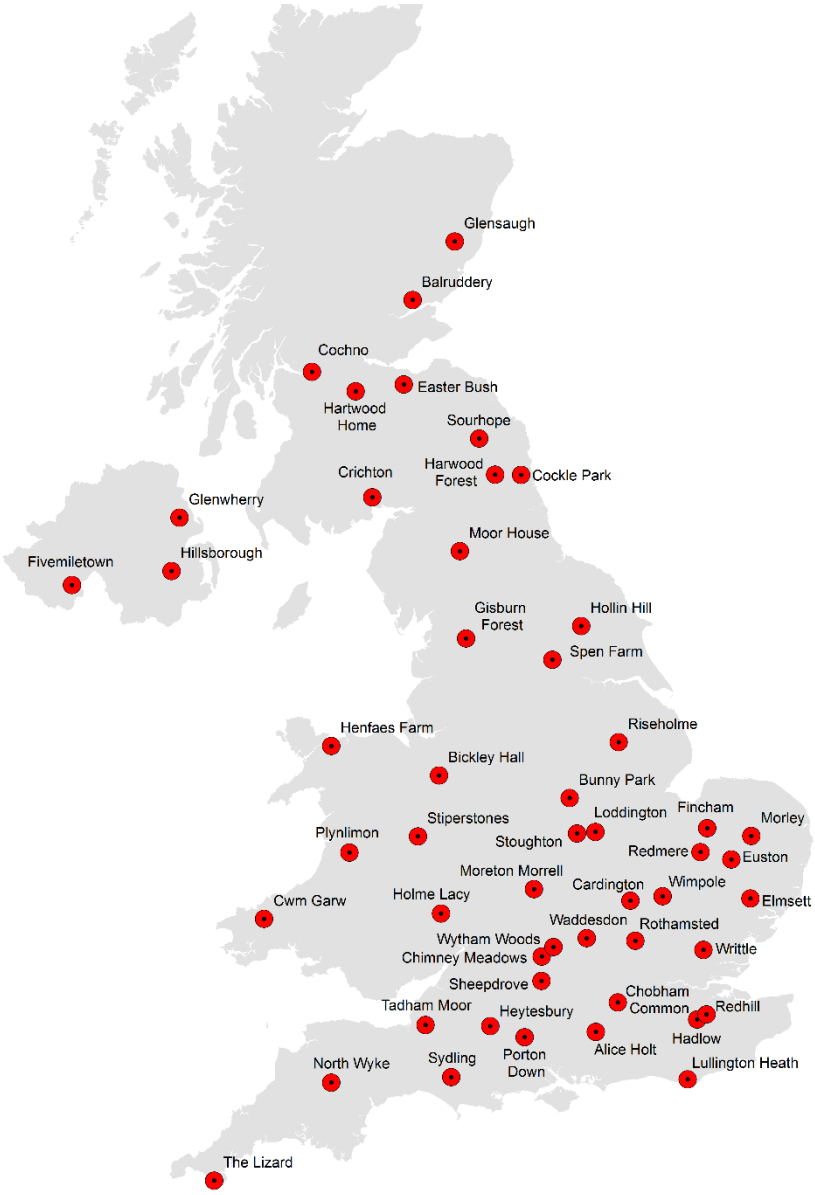

About the maps on page 1: The maps show daily mean soil moisture on the last day of the month. Colours indicate wetness as in the legends.

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.