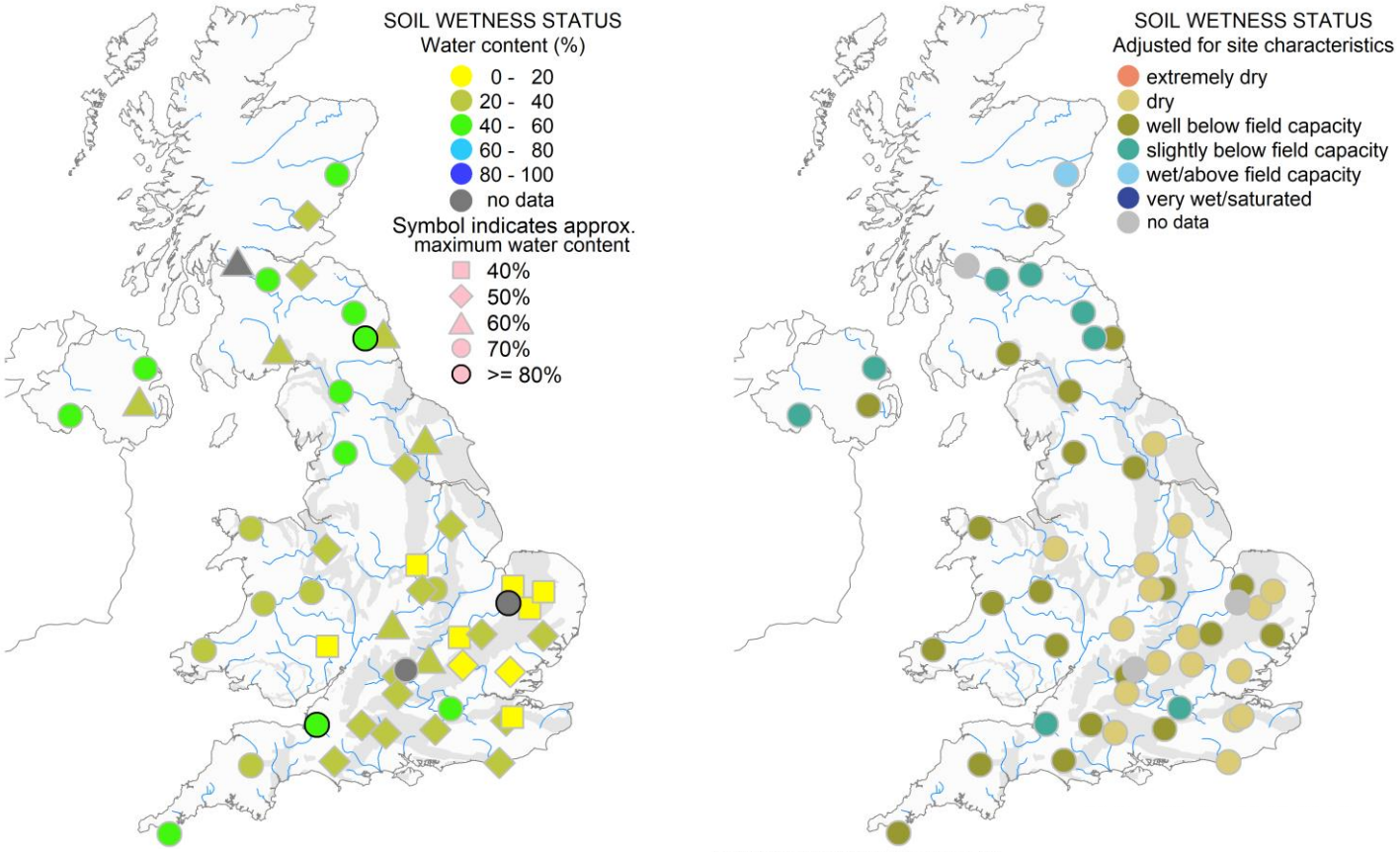
COSMOS-UK | soil moisture

Issued on 3 May 2022



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

Notes on period to 30 April 2022
At the end of April, UK soil moisture is drier than normal for the time of year at 80% of sites.

Provisional data indicate that April precipitation for England and Wales was around 50% of the long-term average. The majority of precipitation in England and Wales occurred during the first half of April followed by a much drier second half of the month. Converse to this, some parts of Scotland and Northern Ireland received as high as 130% of their long-term average precipitation, with this precipitation being much more evenly distributed throughout the month.

Low rainfall of around 30 to 40% of the long-term average in southeast and central England occurred mostly in the first half of April. This left many sites finishing April with exceptionally dry soils for the time of year and a dry soil wetness status (see map top right) (E.g. Morley, Lullington Heath, Sheepdrove, Writtle). Compared to central and southeast England, the west and southwest of the UK received slightly more precipitation relative to the regional long-term average, at up to 70%. Despite closer to average precipitation many of these sites began May with notably dry soils for the time of year, resulting in soil moisture well below field capacity at the end of April (e.g. North Wyke, Sydling and Henfaes Farm).

Unlike England and Wales, sites in Scotland and Northern Ireland received up to 130% of their long-term average precipitation. This led to sites in these regions ending April with normal soil moisture for the time of year, slightly below field capacity (e.g. Fivemiletown, Glenwherry and Easter Bush).

Network News
Soil moisture derived from the ‘cosmos’ sensor at Hollin Hill and Harwood Forest is being reviewed.
North Wyke is now back online.

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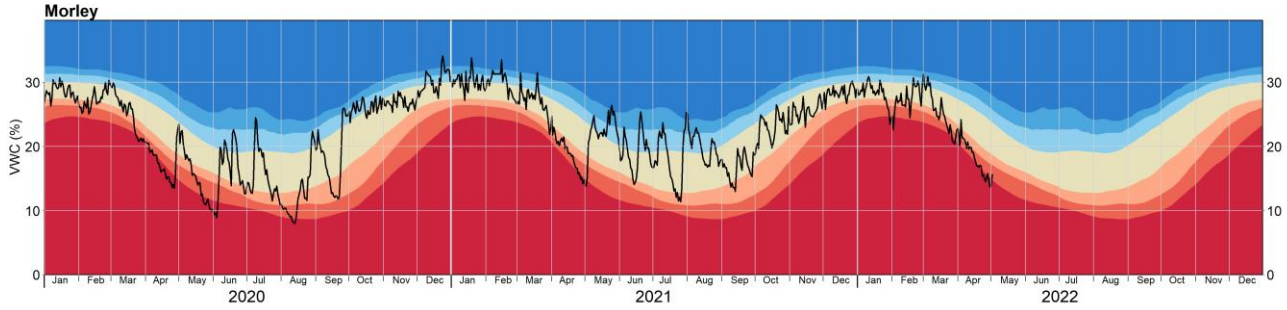
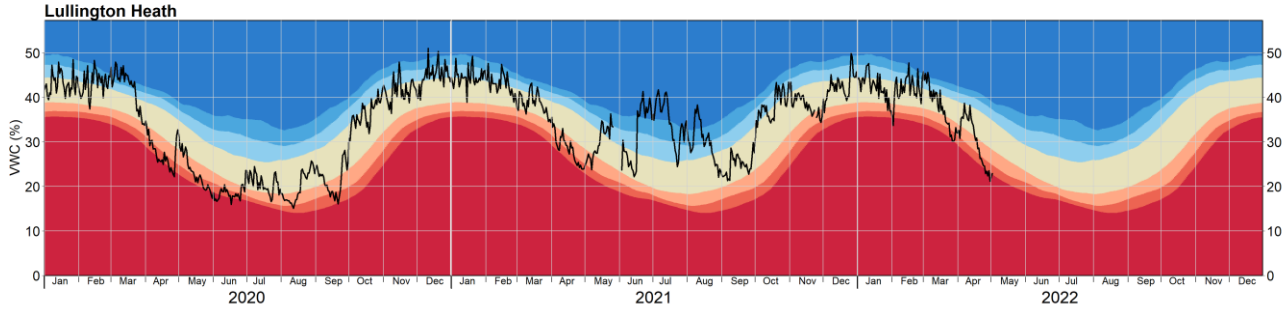
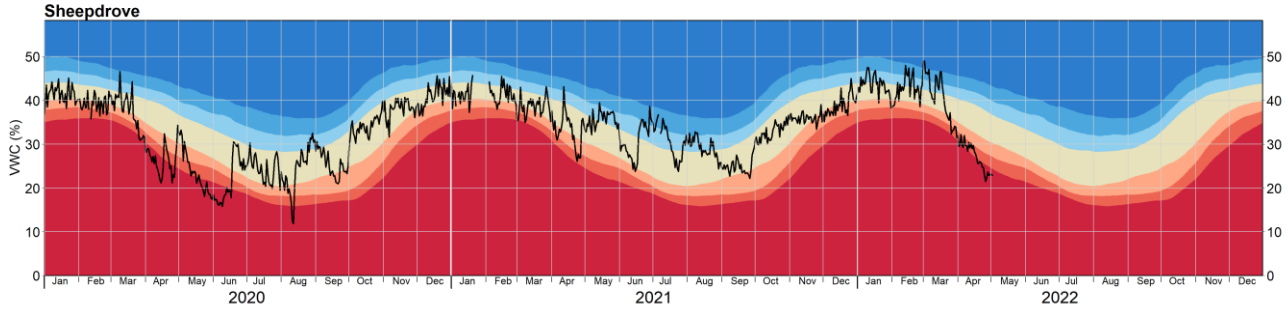
Morley



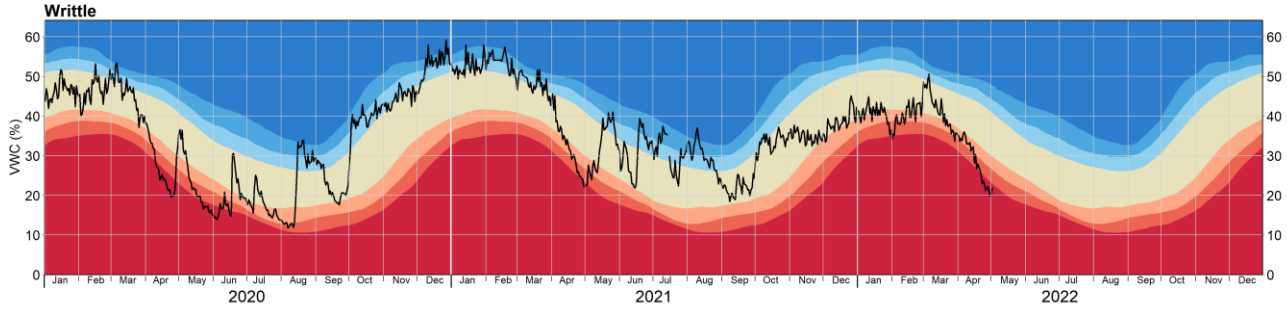
Lullington Heath



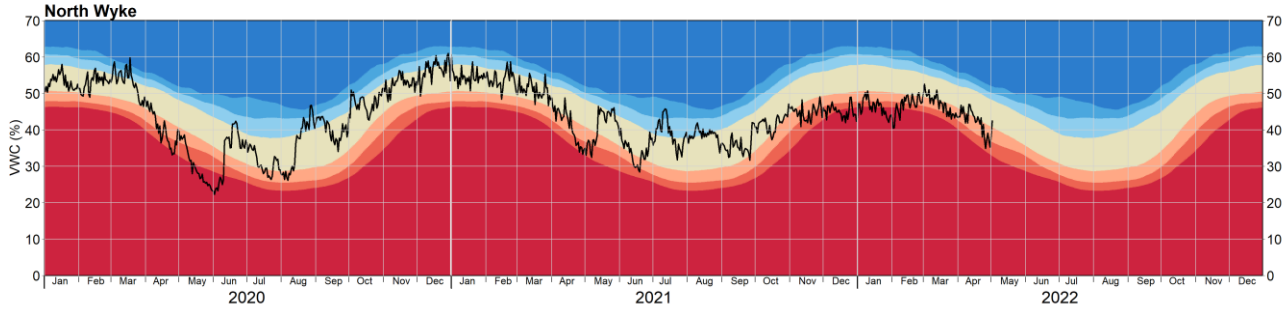
Sheepdrove



Writtle



North Wyke



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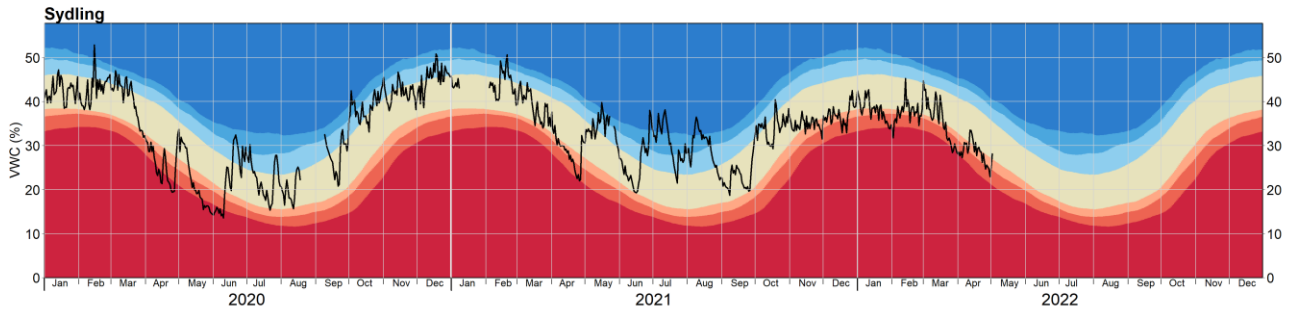

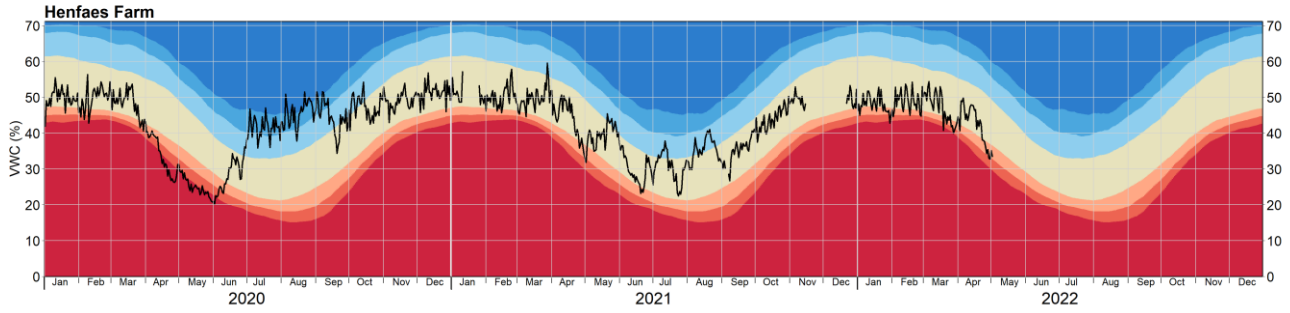

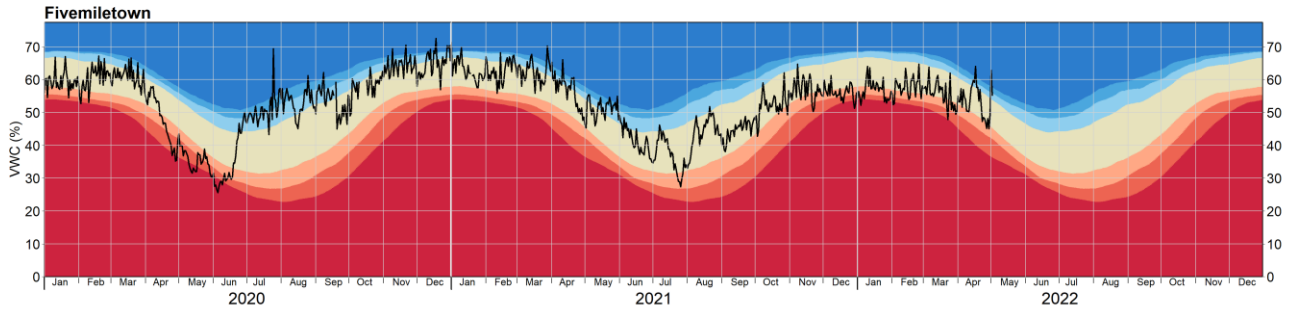

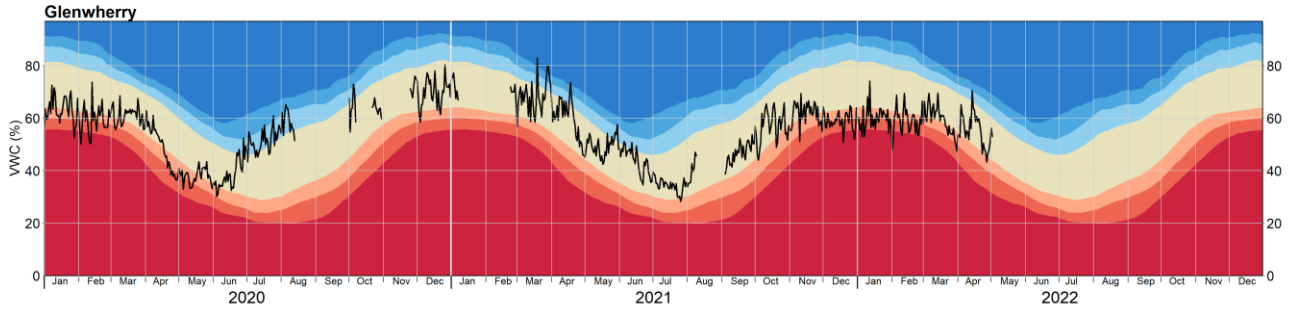

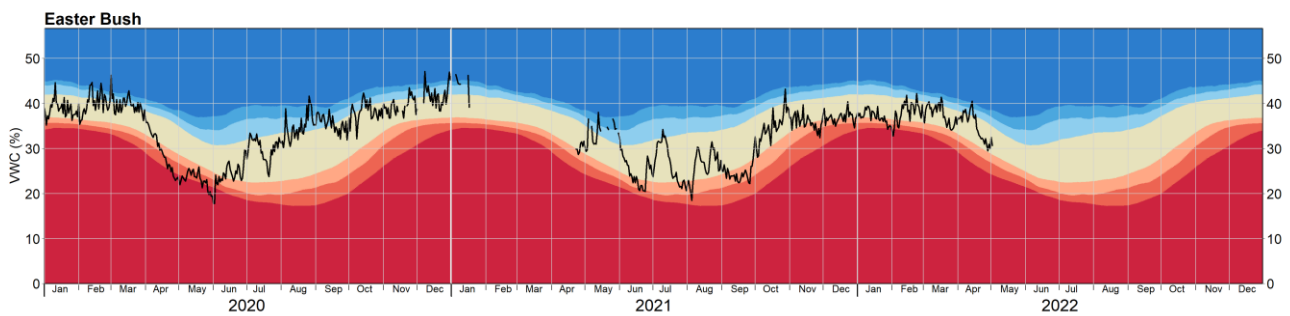

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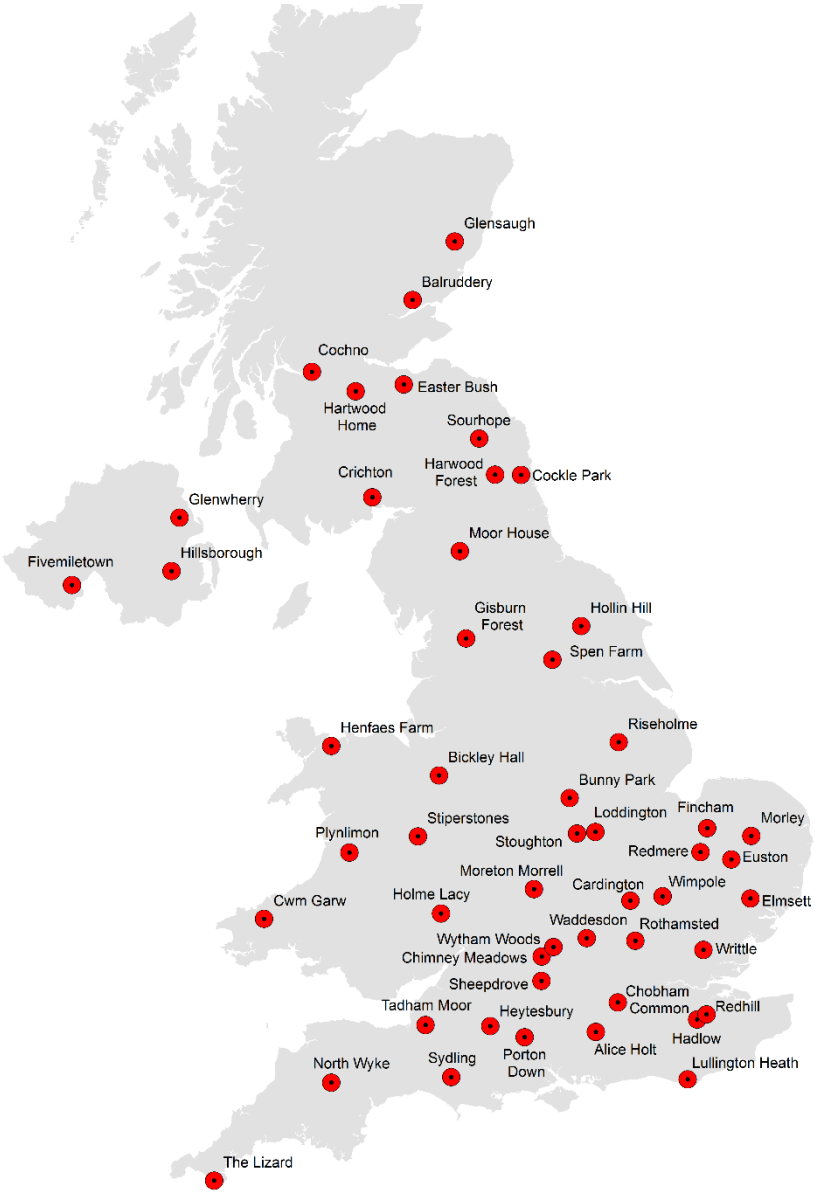

About the maps on page 1: The maps show daily mean soil moisture on the last day of the month. Colours indicate wetness as in the legends.

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.

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