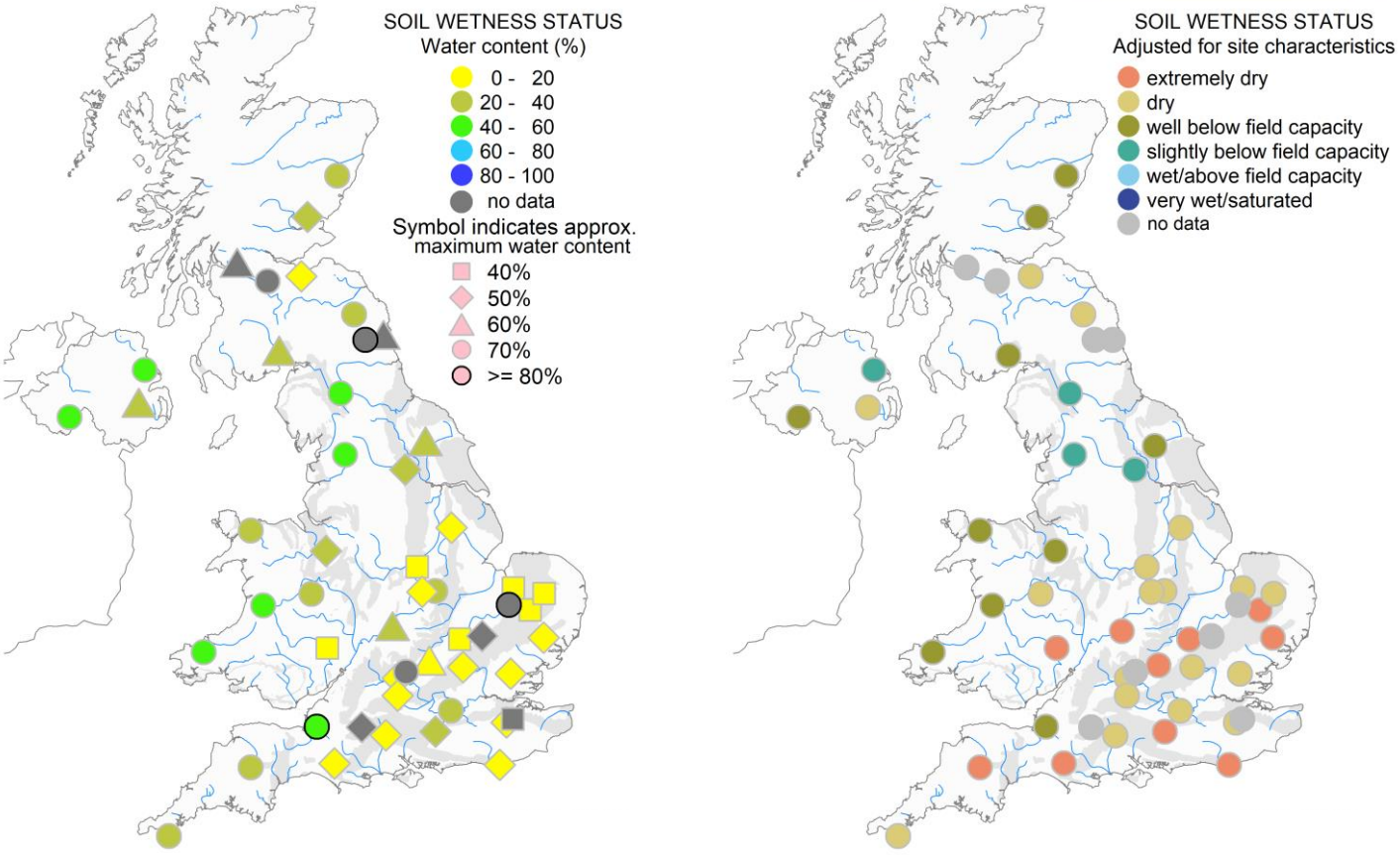
COSMOS-UK | soil moisture

Issued on 1 August 2022



Soil moisture on 31 July 2022 (see back page for explanatory comments).

Notes on period to 31 July 2022

At the end of July, soils across the UK are dry for the time of year and are extremely dry in some areas in the south of England.

Provisional data indicate that precipitation in July was far below the long-term average for most of the UK, e.g. southern England received only 15 % of its long-term average precipitation. The north of Scotland was an exception, which received 95 % of its long-term average for the time of year.

Much of the UK experienced significantly warm and dry conditions throughout July with record-breaking air temperatures in many regions and below-average rainfall. The highest air temperatures on the COSMOS-UK record were measured at 43 of 46 active sites in July, with the highest at Cardington of 39.5°C. The heatwave conditions, particularly in the south and midlands led to rapid and sustained soil drying. Many sites that began July with normal soil moisture levels have ended the month with dry or extremely dry soils for the time of year (Easter Bush, The Lizard, Sydling, Lullington and Holme Lacy). Other sites which either started the month with wetter soils and/or received substantial precipitation have still ended the month below field capacity, as would be expected for the time of year.

North-westerly parts of the UK received more rain than the south, however total precipitation was still much lower than normal. Sites that began July with extremely wet or wetter than normal soils in this region have subsequently dried to normal levels for the time of year (e.g. Fivemiletown, Glenwherry and Henfaes Farm).

Northern parts of the UK received closer to average amounts of rainfall, which has resulted in sites in these regions maintaining normal levels of soil moisture for the time of year (e.g. Crichton and Gisburn Forest).

Network News

- Redhill, Heytesbury, Hartwood and Wimpole are currently offline.

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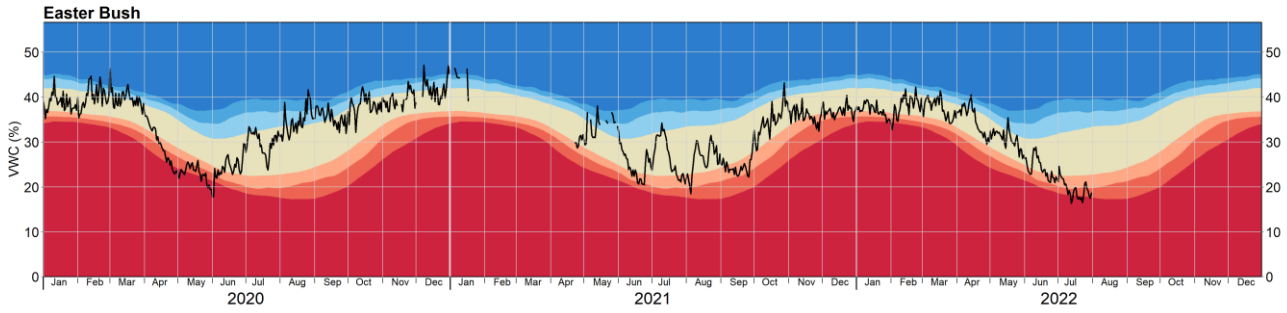

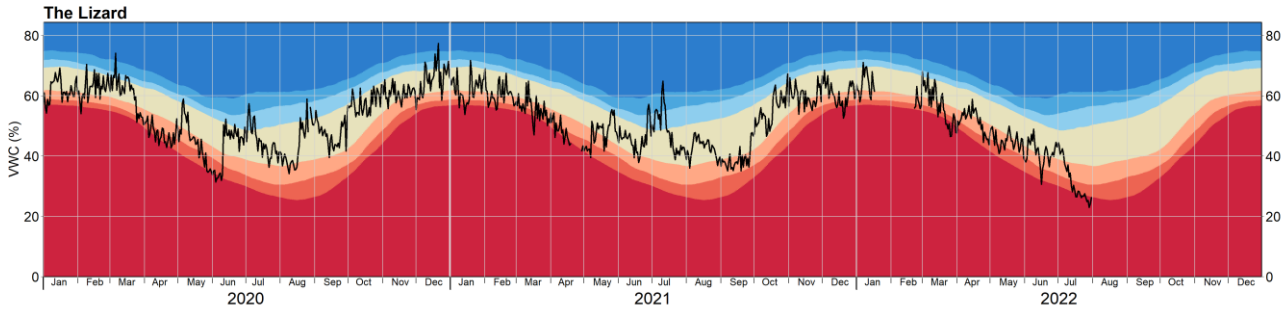

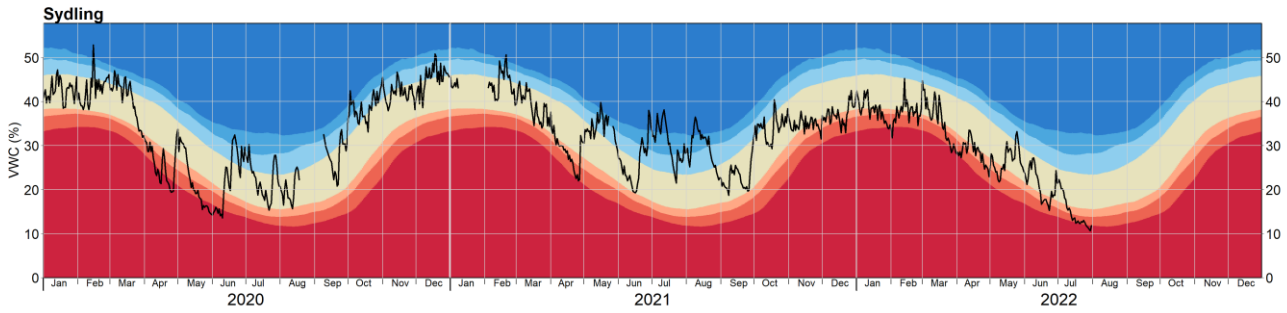

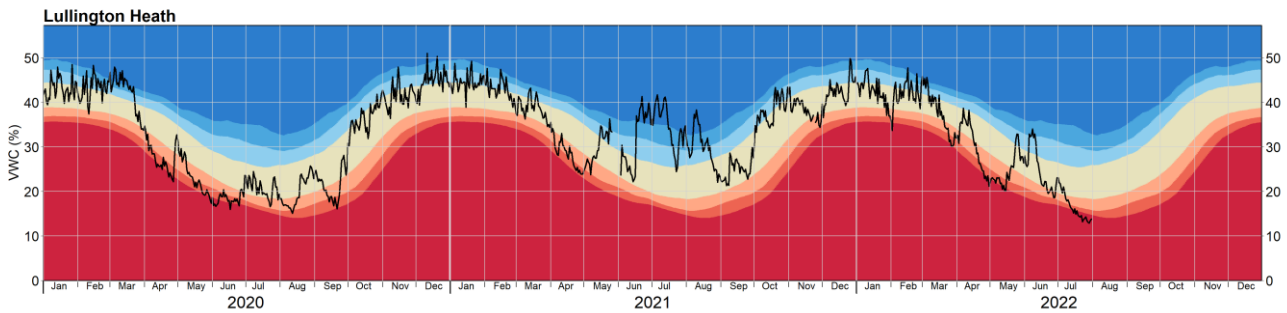

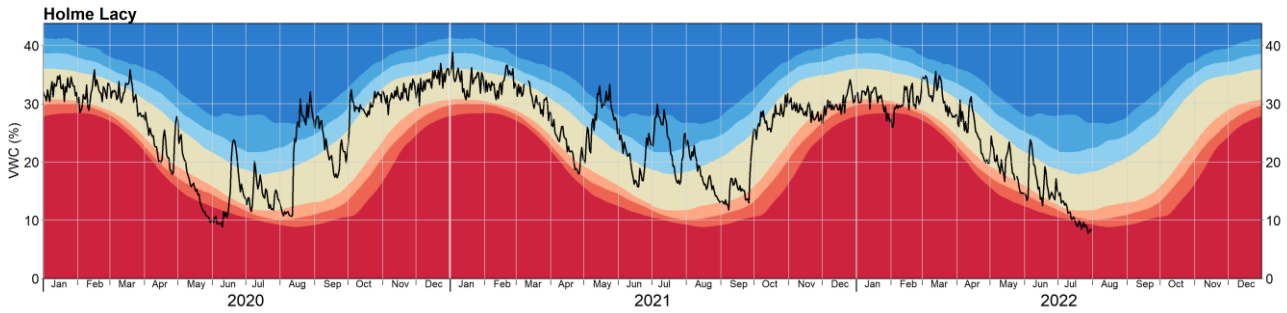

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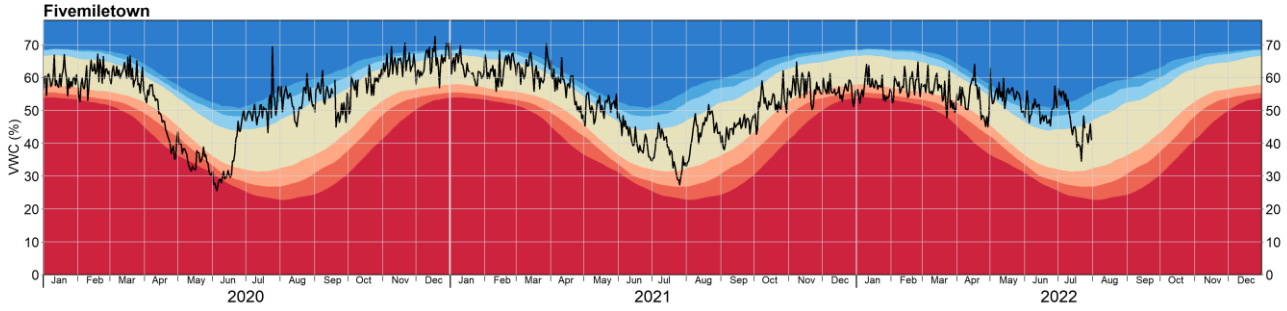
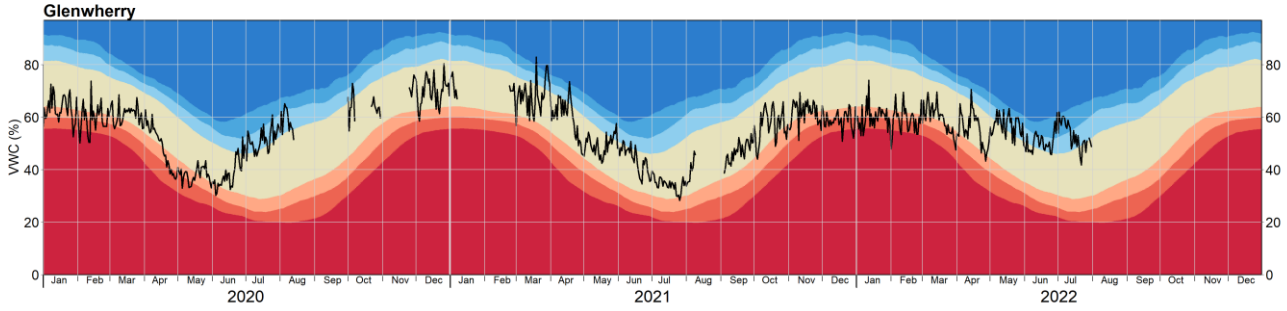
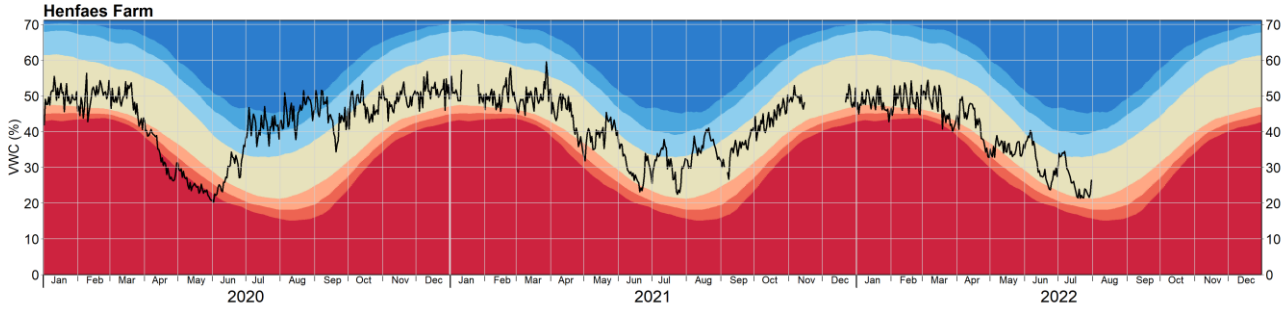
Fivemiletown



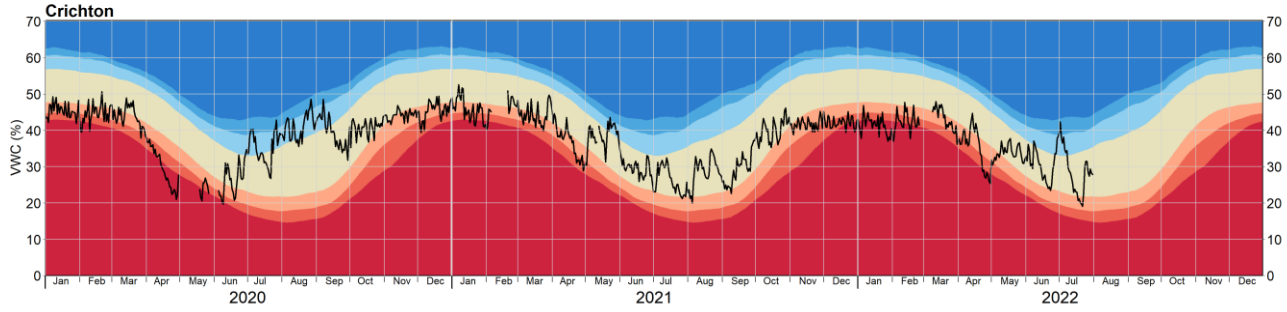
Glenwherry



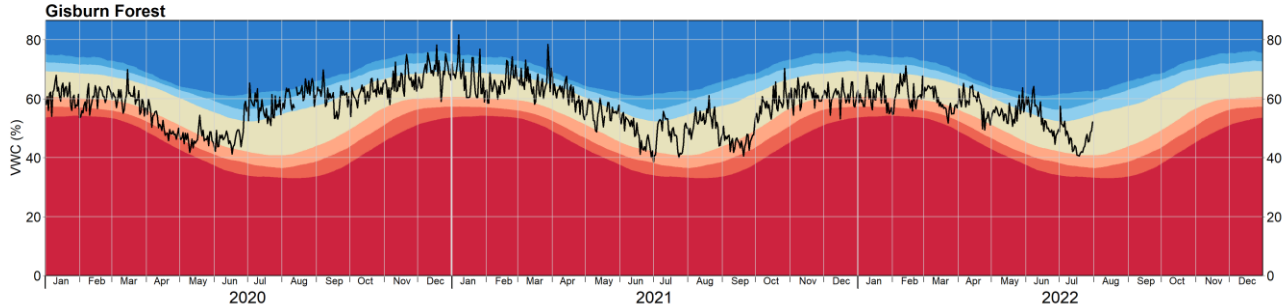
Henfaes Farm



Crichton



Gisburn Forest



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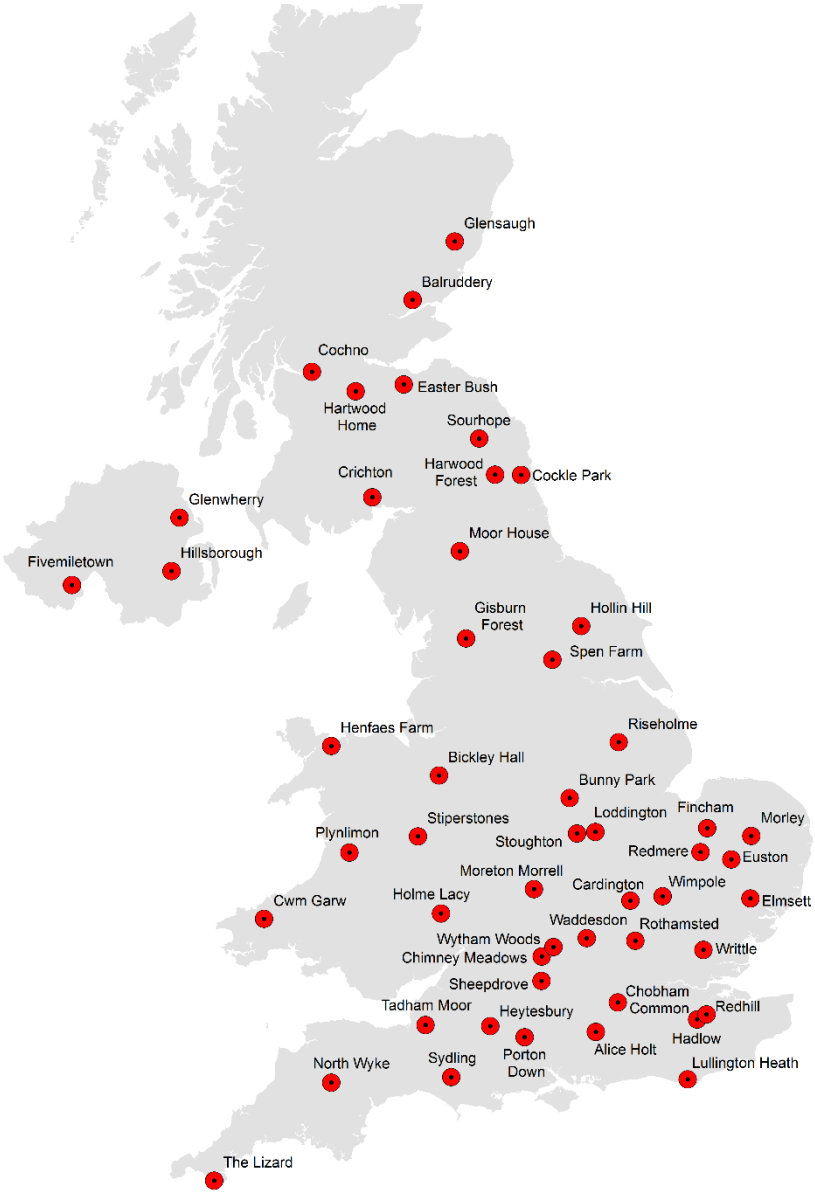

About the maps on page 1: The maps show daily mean soil moisture on the last day of the month. Colours indicate wetness as in the legends.

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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