

**Soil moisture on 30 September 2021** (see back page for explanatory comments).

### Notes on period to 30 September 2021

**At the end of September soil moisture is generally normal for the time of year.**

Provisional data indicate that in September precipitation across the UK was variable but generally below, or close to, the long-term average. In all regions of the UK there was a particularly wet end to the month, before this many regions received below average rainfall.

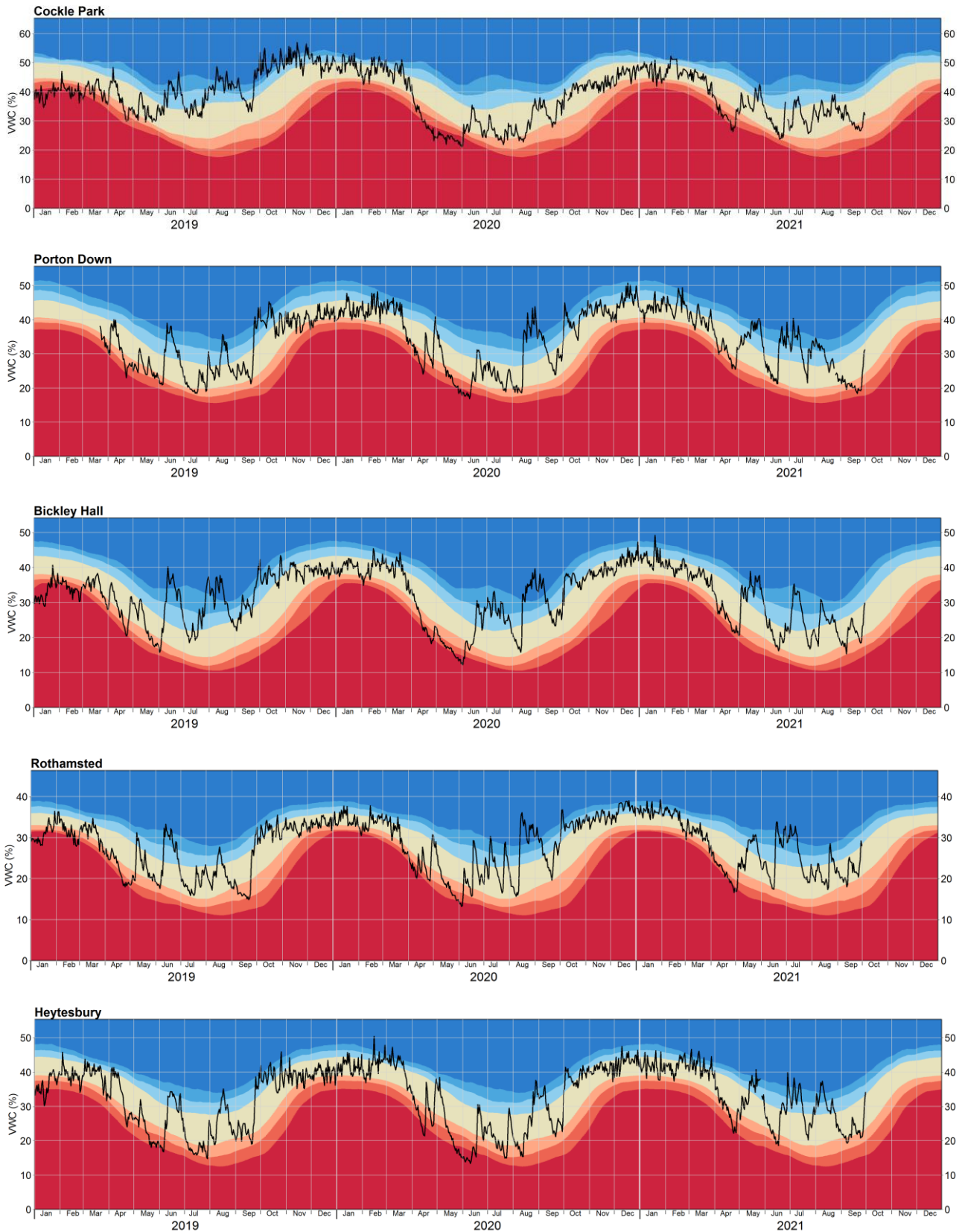
At the end of August, soil moisture was generally normal or below normal for the time of year. For many sites, drier conditions throughout most of September initially led to soils drying to levels below normal for the time of year (e.g. Cockle Park and Porton Down). Soil moisture at some sites, particularly in Central and Southern England, increased following rain in the middle of the month before decreasing again during a second dry period (e.g. Bickley Hall and Rothamsted).

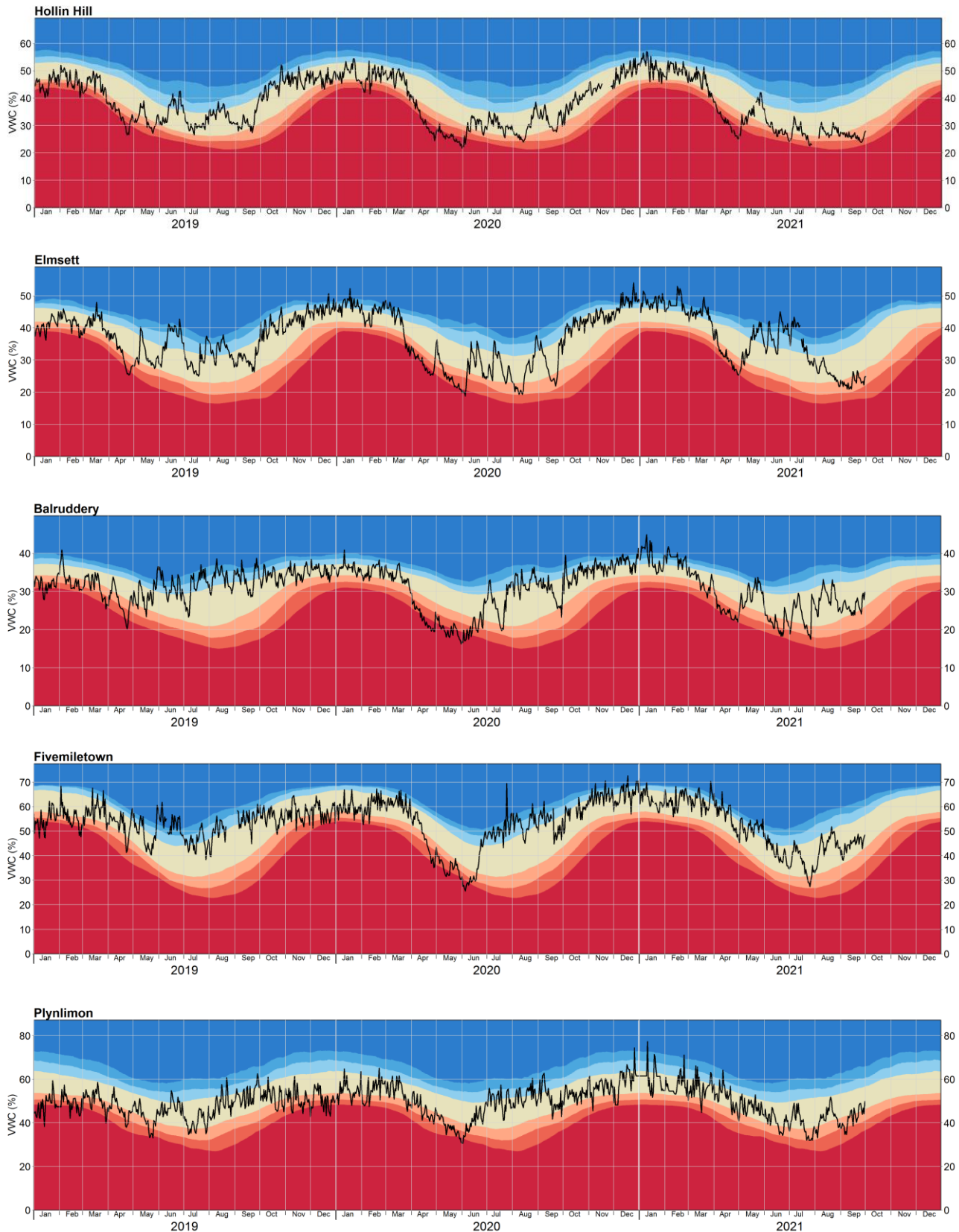
Rainfall at the end of September led to an increase in soil moisture at most sites. Soils at some sites are now slightly wetter than normal for the time of year (e.g. Heytesbury), whilst at other sites soil moisture is slightly below normal for the time of year (e.g. Hollin Hill and Elmsett).

For most sites across the UK, the wet end to the month has meant soil moisture has returned to levels which are normal for the time of year (e.g. Balruddery, Fivemiletown and Plynlimon).

### Network News

- Technical issues at Cardington and Tadham Moor.
- Issues resolved at Glenwherry and Sourhope.

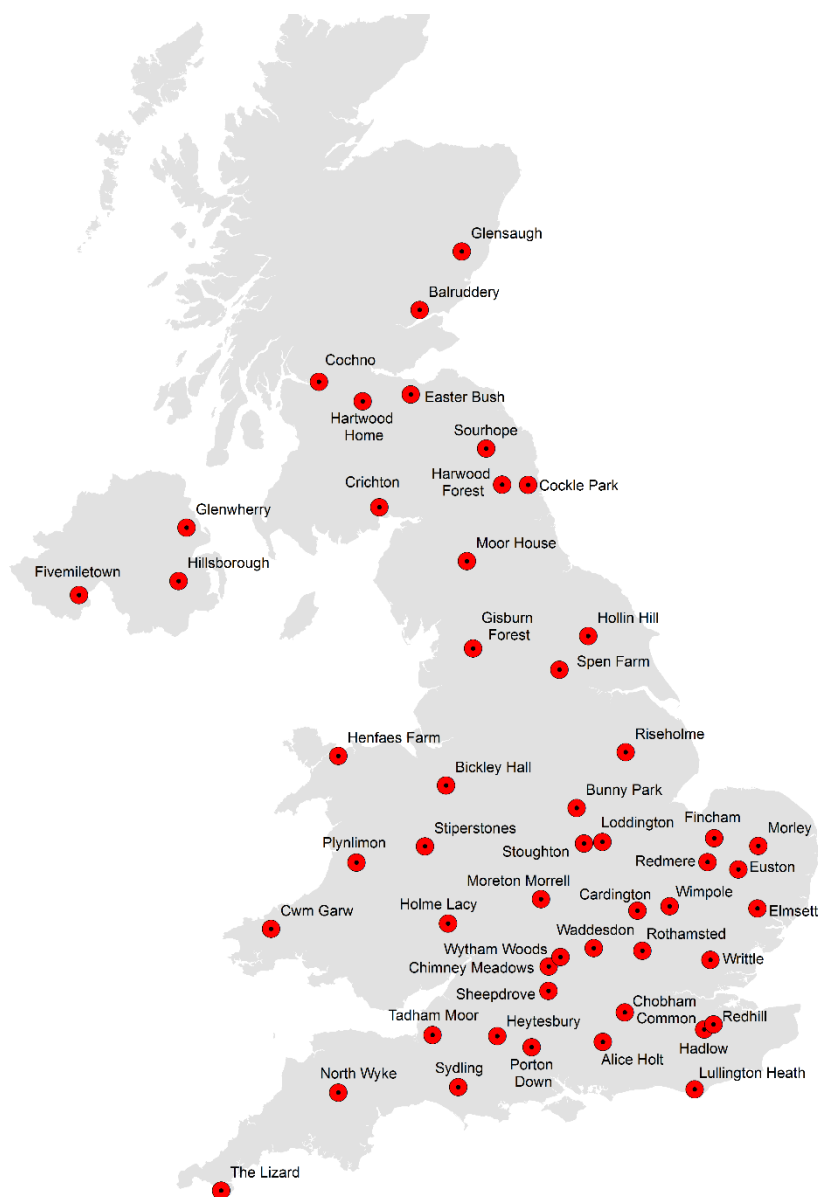








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**About the maps on page 1:** The maps show daily mean soil moisture on the last day of the month. Colours indicate wetness as in the legends.

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.



**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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