

Soil moisture on 31 July 2021 (see back page for explanatory comments).

Notes on period to 31 July 2021

At the end of June there was a very distinct gradient in soil moisture across the UK from wetter than normal in the south-east to drier than normal in the north-west. To some extent this pattern remains albeit with greater local variability.

Provisional data indicate that in July precipitation was above normal in England, Wales, and eastern Scotland, with the south of England receiving over 150% of the long-term average. In western parts of Scotland and Northern Ireland rainfall was below average. In all areas there was a wet start to the month, followed by a dry period, and a return to wetter weather at the end of the month.

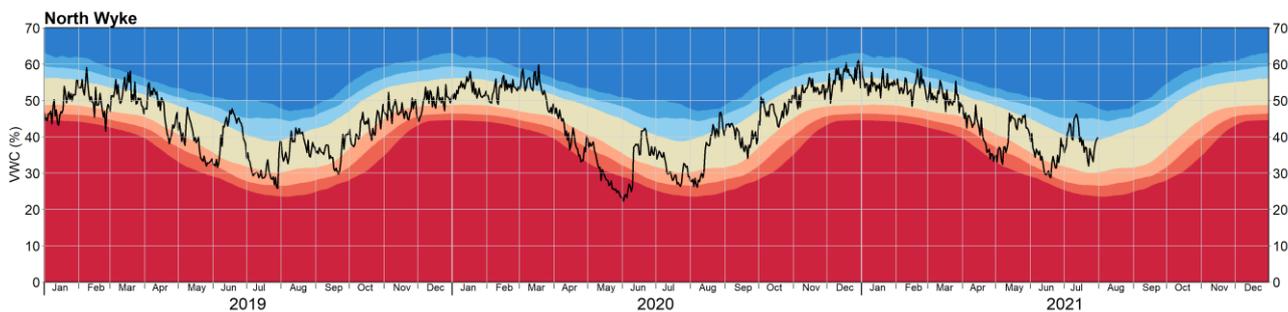
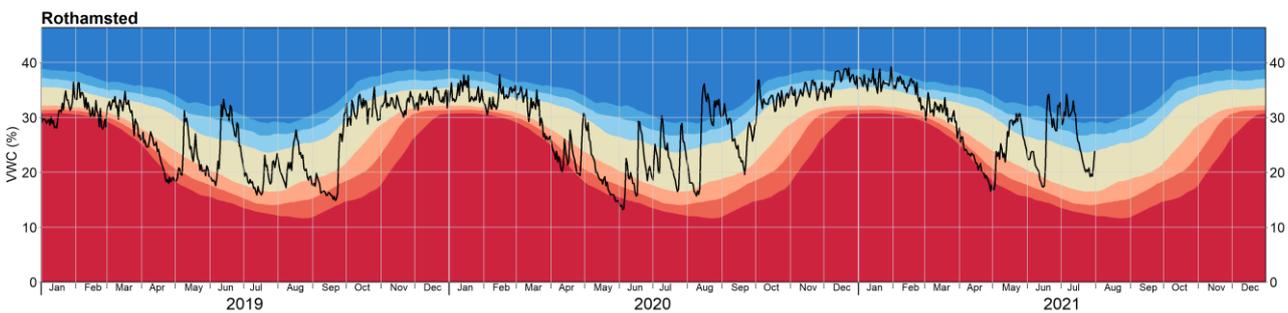
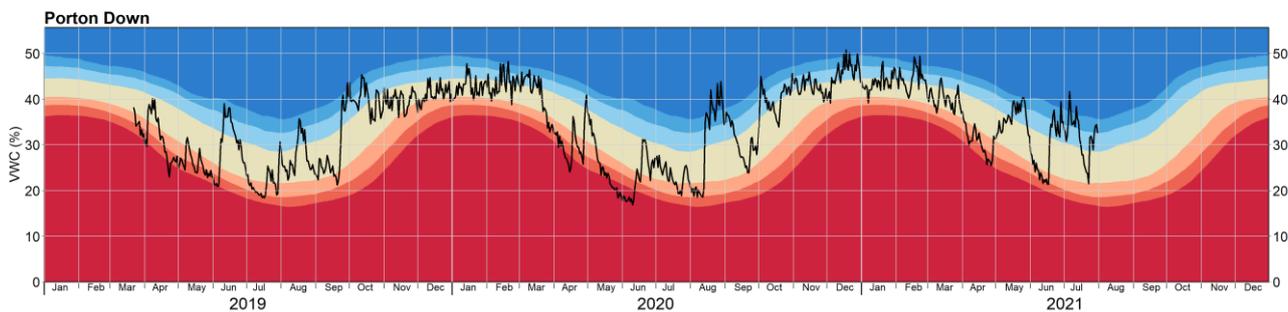
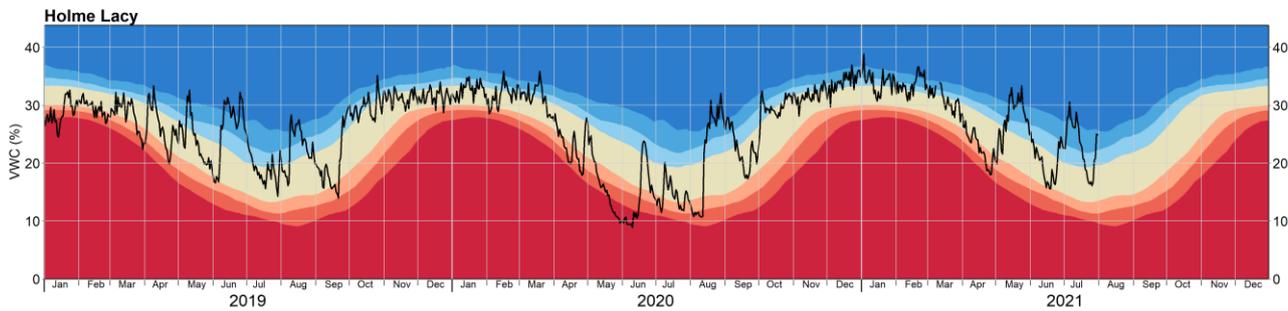
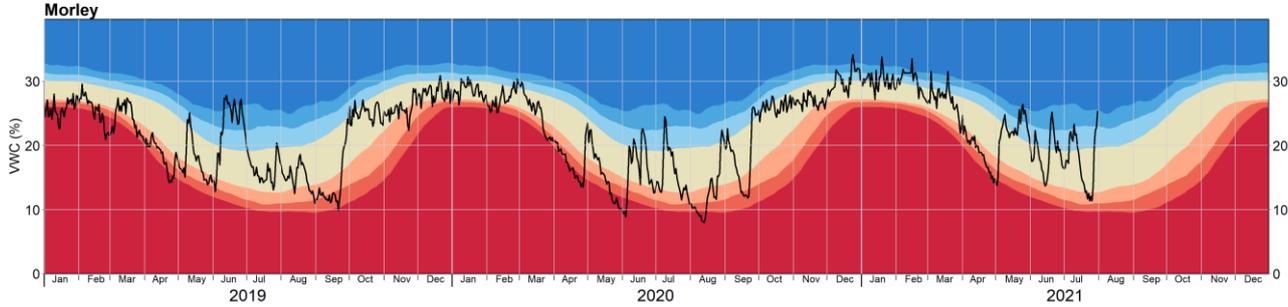
Most sites in the south and east of the UK started and ended the month with soils being wetter than normal for the time of year, but with a period in between when soil wetness fell rapidly (e.g. Morley, Holme Lacy and Porton Down). However, local variations in rainfall mean that other sites in this area showed a more subdued increase in soil moisture at the end of the month (e.g. Rothamsted and North Wyke).

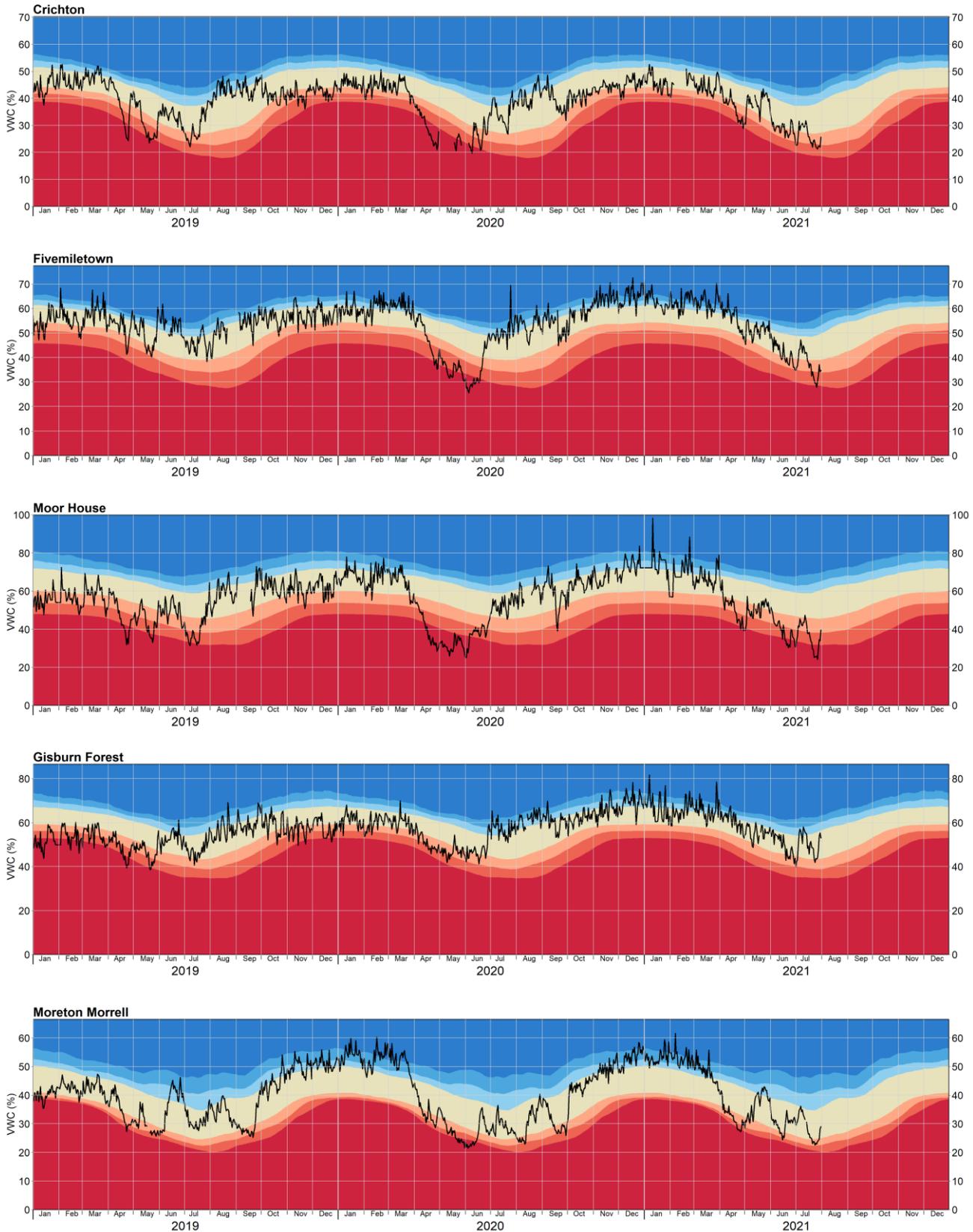
To the north-west of the UK the picture is very different, and although soil moisture has responded to recent rainfall, soils are drier than normal for the time of year (e.g. Crichton, Fivemiletown and Moor House).

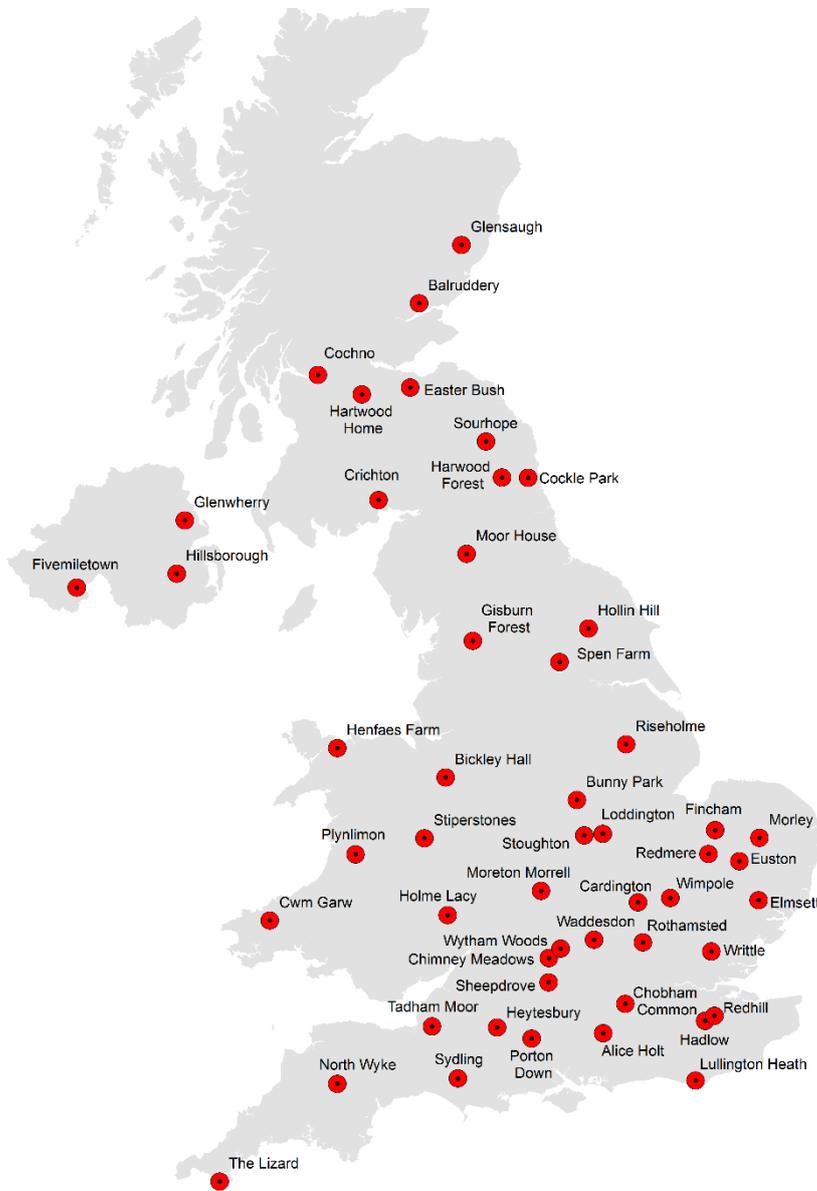
Between these two extremes, soil moisture has been less variable and is very much normal for the time of year (e.g. Gisburn Forest and Moreton Morrell).

Network News

- Technical issues at Hadlow, Hartwood Home Farm, Hollin Hill, Redhill and Wimpole.
- Red, green, blue (RGB) data derived from Phenocam photos are now available for many sites.







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.

