

Soil moisture on 28 February 2021 (see back page for explanatory comments).

Notes on period to 28 February 2021

At the end of February soil wetness is close to normal for the time of year across the UK, i.e. at typical wetness for the end of winter, albeit with some local variability.

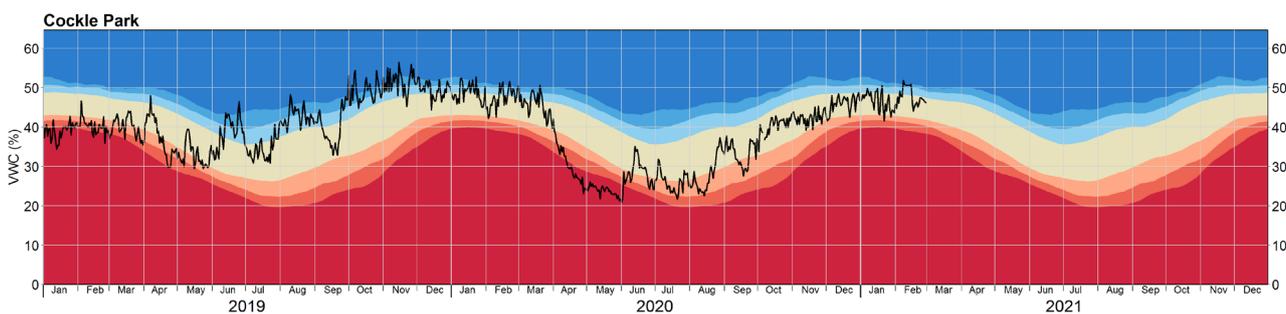
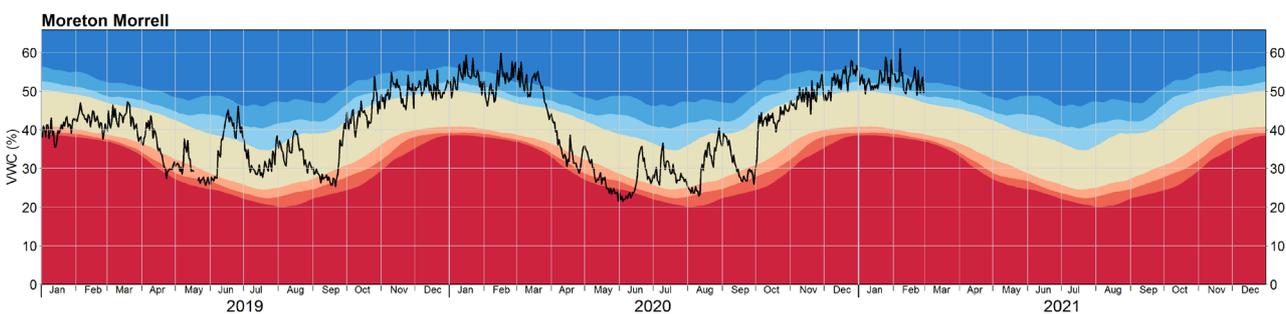
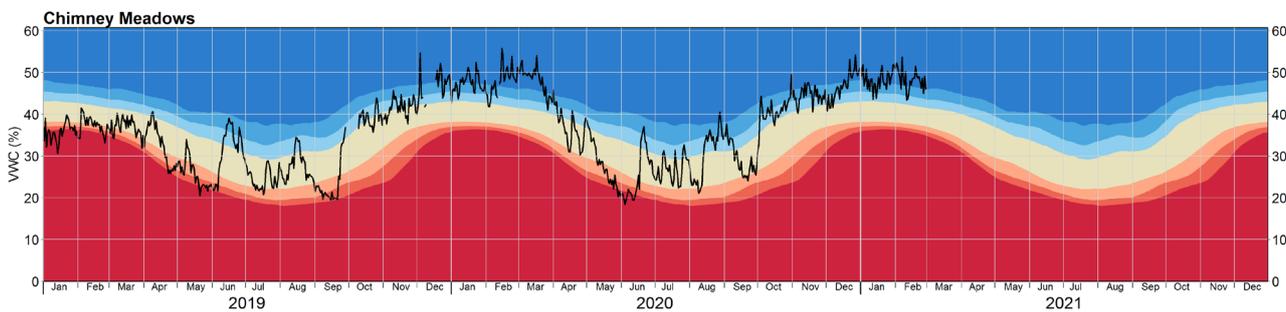
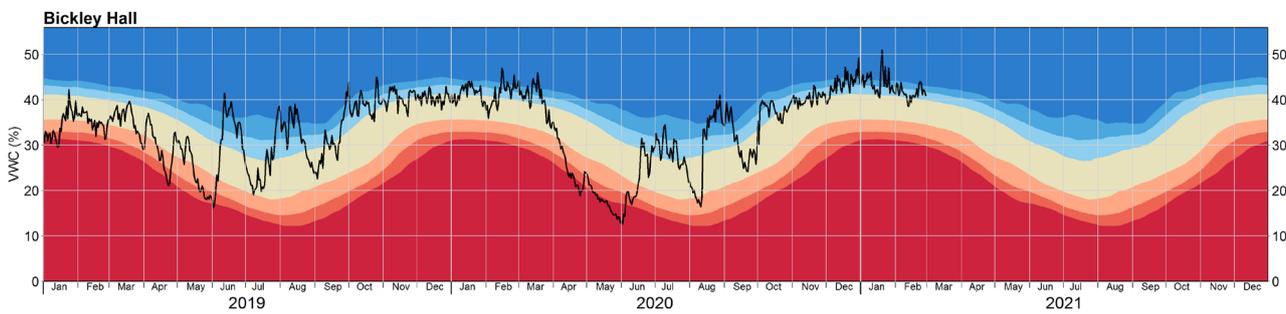
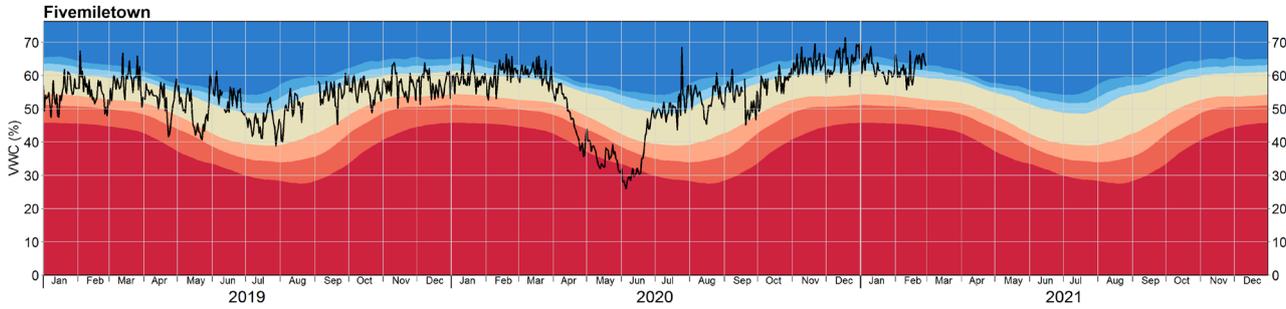
Provisional data for February indicated that precipitation was close to normal in northern Scotland, above normal in southern Scotland, Northern Ireland, and the north of England, and close to normal again further south. In most parts of the UK there was a particularly wet start to the month, and a few dry days at the month end. Several COSMOS-UK sites saw significant snowfalls, most notably Glensnough where there was lying snow from mid-January to mid-February.

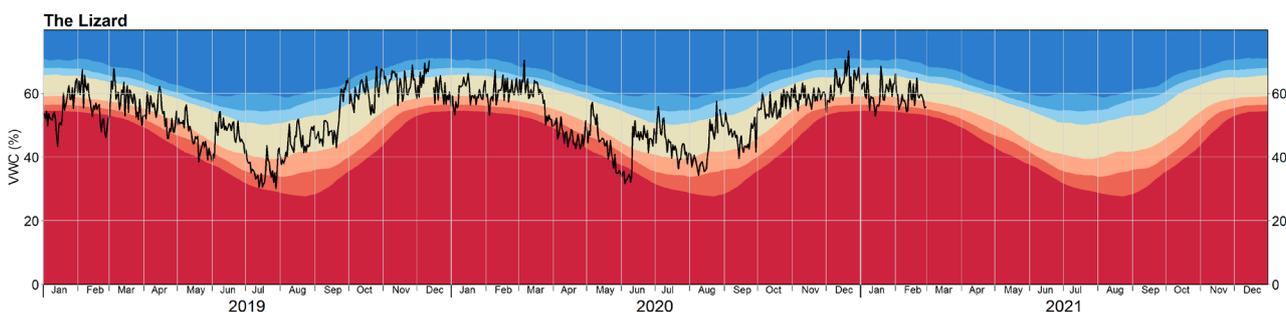
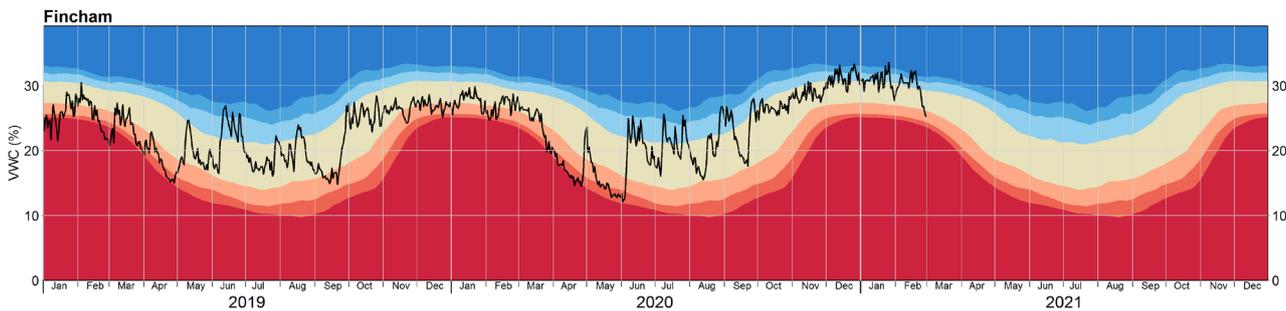
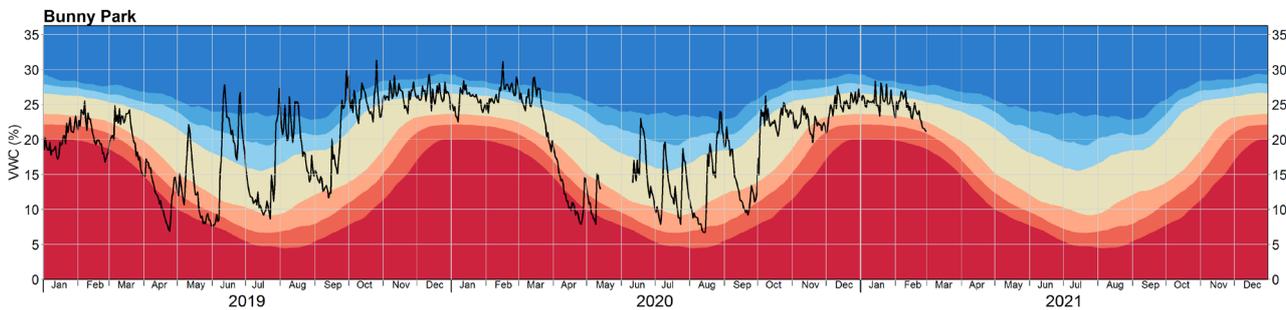
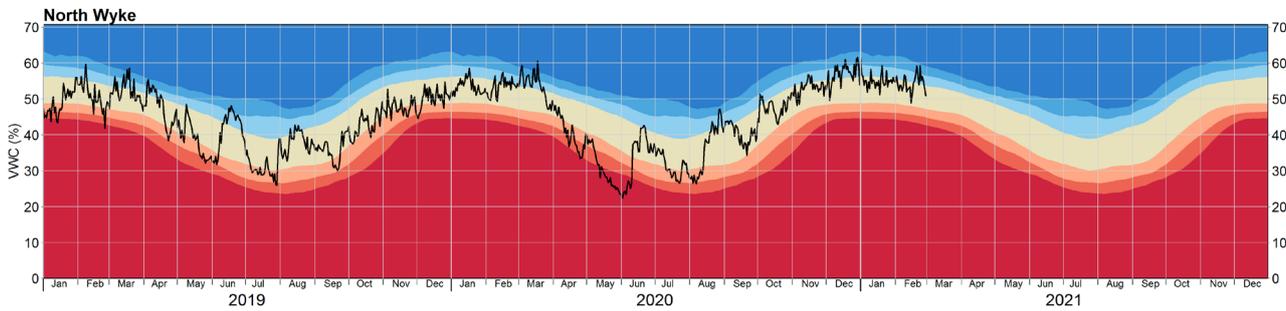
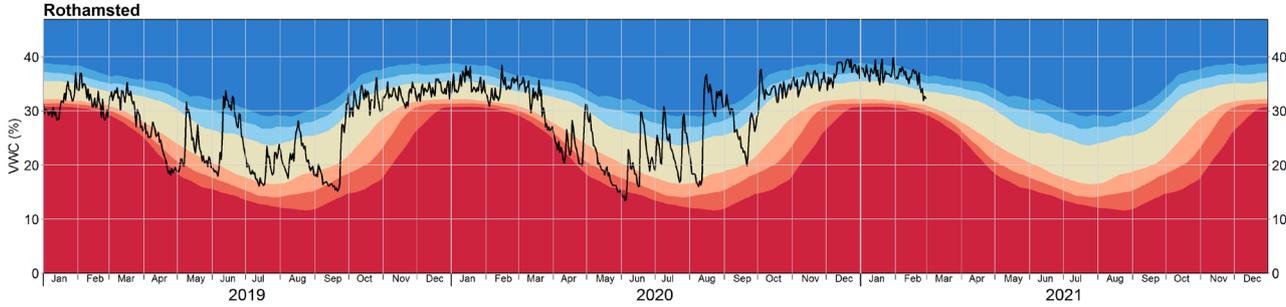
Soil moisture at the start of the month had been at, or above, typical levels for the winter months. In more northerly areas where rainfall was above normal the soils remain wetter than normal for the time year (e.g. Fivemiletown, Bickley Hall). This was also true at some sites further south indicating the variability of the precipitation (e.g. Chimney Meadows, Morton Morrell). At most sites soil wetness is now very much in the normal range for the time of year (e.g. Cockle Park, Rothamsted, North Wyke).

At some sites with lower than normal rainfall during the month and a dry period at month end, soils are slightly drier than normal for the time of year (e.g. Bunny Park, Fincham, The Lizard).

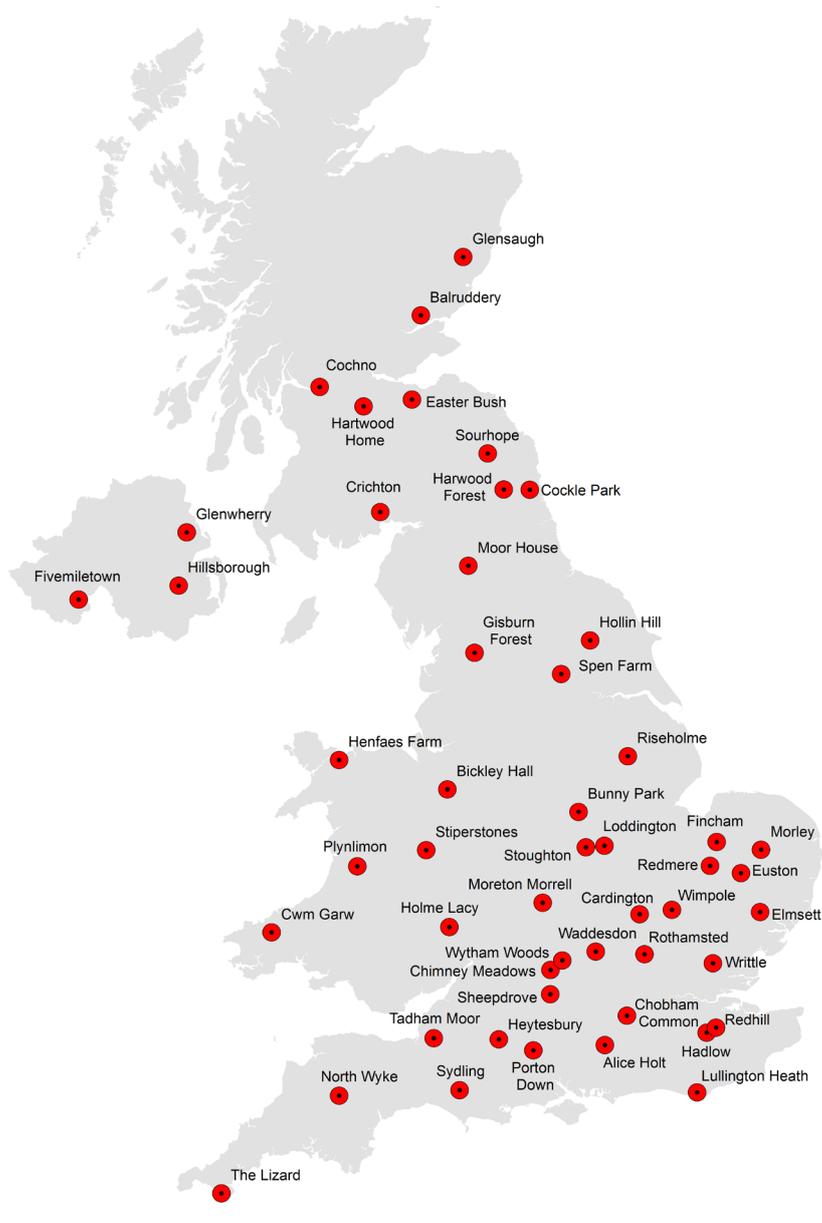
Network News

- Several telemetry and sensor faults have now been resolved.
- Periods of lying snow at sites are automatically identified, and during these periods VWC values remain constant until the snow has melted.





COSMOS-UK site locations



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.