

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

### Notes on period to 30 November 2021

**At the end of November soil moisture is normal or drier than normal for the time of year.**

Provisional data indicate that in November precipitation was generally below normal, with regions in the south receiving as little as 20% of the long-term mean. Rainfall was closer to normal in north-east England and southern Scotland, and perhaps slightly above normal in northern Scotland. Storm Arwen resulted in many areas experiencing a particularly wet end to an otherwise very dry month.

November is a month during which soil moisture is expected to increase, since normally rainfall will exceed evaporation, yet at some sites the low rainfall has led to a reduction in soil moisture (e.g. Easter Bush, Holme Lacy, Porton Down and Lullington Heath). At other sites, rainfall and evaporation have been roughly equal and soil moisture has remained fairly constant through the month (e.g. Crichton, Bickley Hall, Morton Morell and Hadlow).

Where there was heavy rainfall associated with Storm Arwen this has caused rapid increases in soil moisture at the end of the month where otherwise soil moisture had been falling (e.g. Bunny Park) or was relatively constant (e.g. Cockle Park).

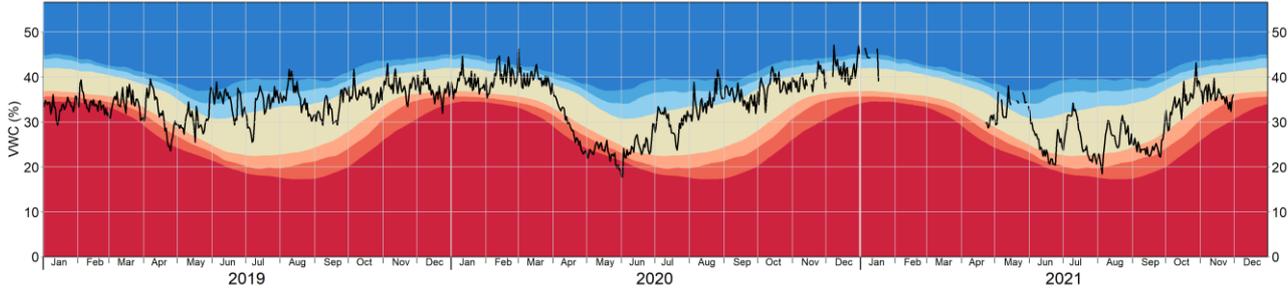
At the end of November soil moisture is close to field capacity at most sites; since this is a time when soils are often above field capacity, many sites are drier than normal for the time of year.

### Network News

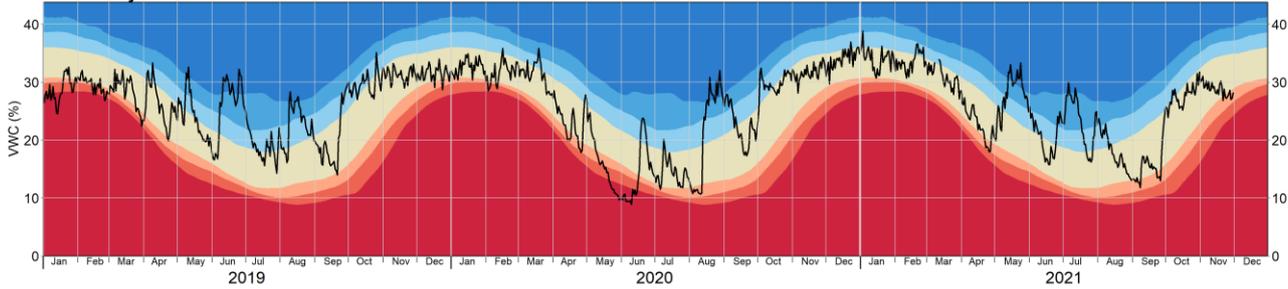
- Henfaes is currently experiencing power system issues.
- Sourhope is now back online following power system and telemetry problems.



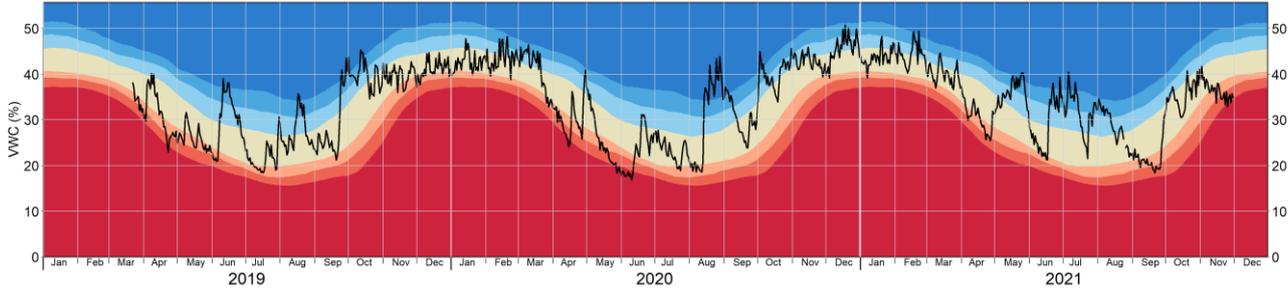
Easter Bush



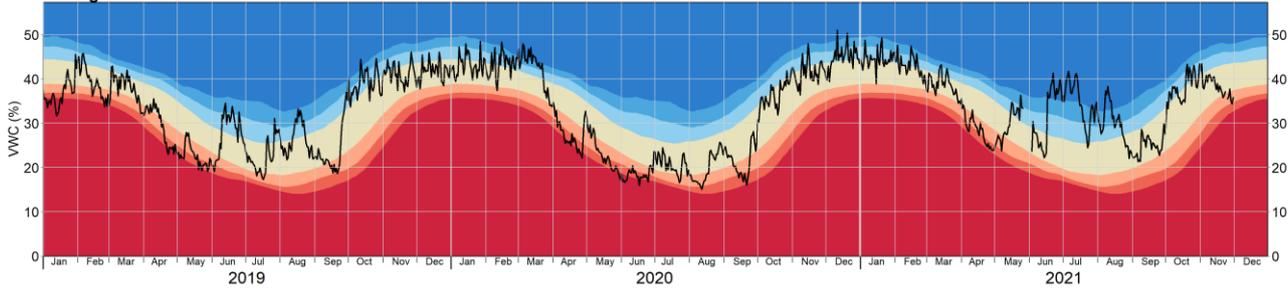
Holme Lacy



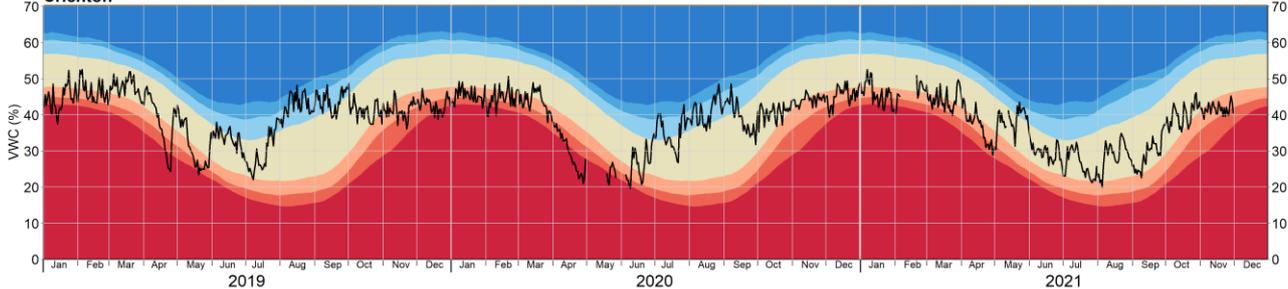
Porton Down



Lullington Heath

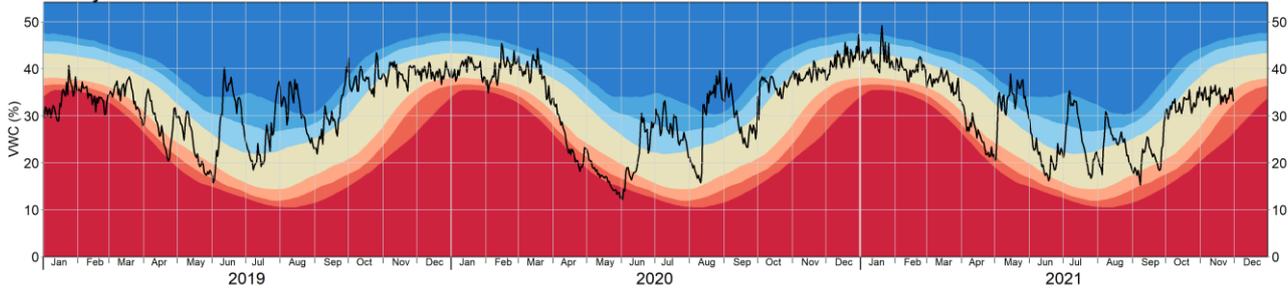


Crichton

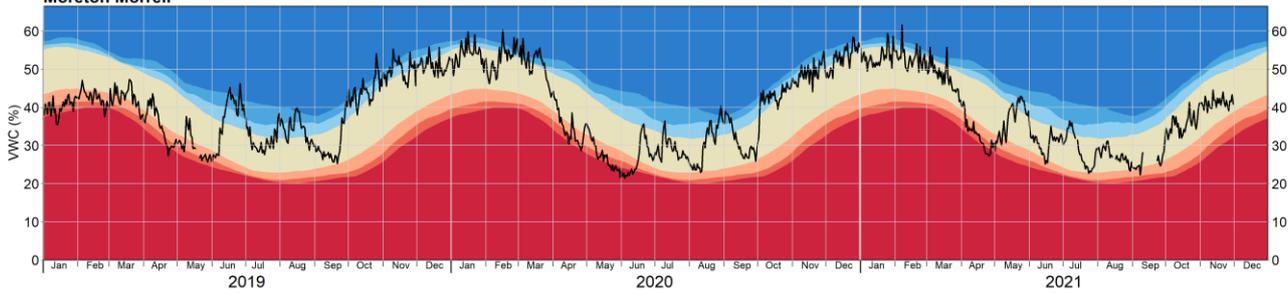




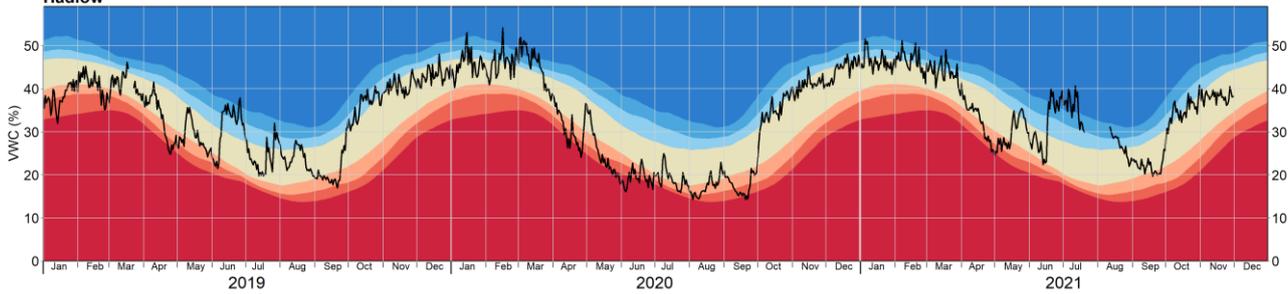
**Bickley Hall**



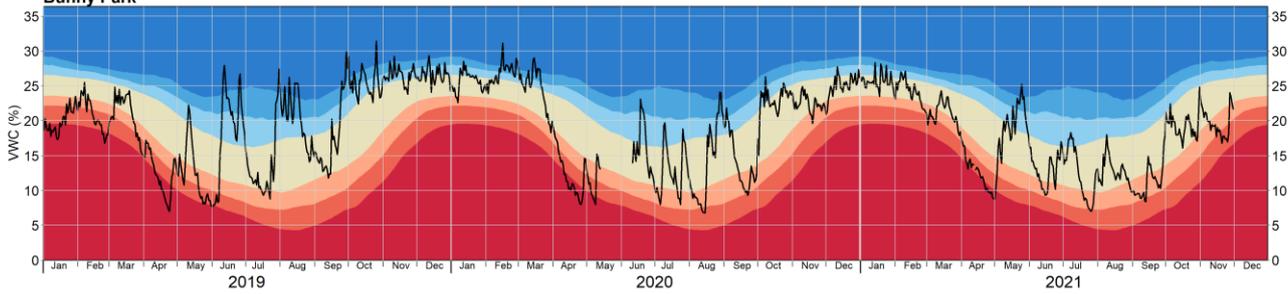
**Moreton Morrell**



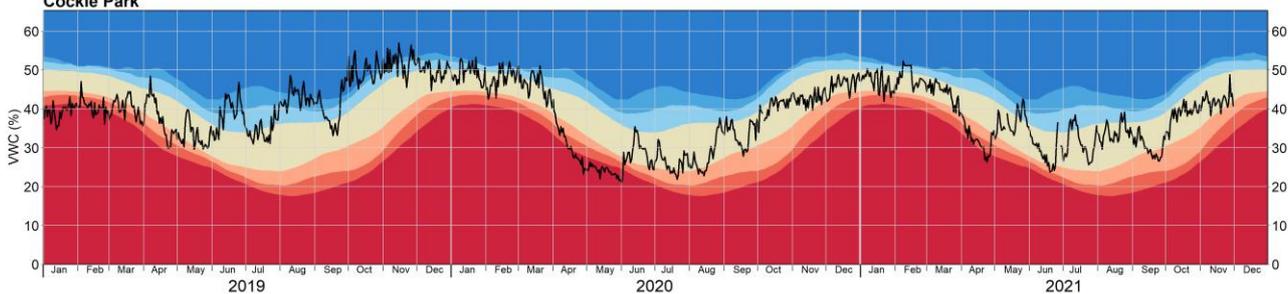
**Hadlow**

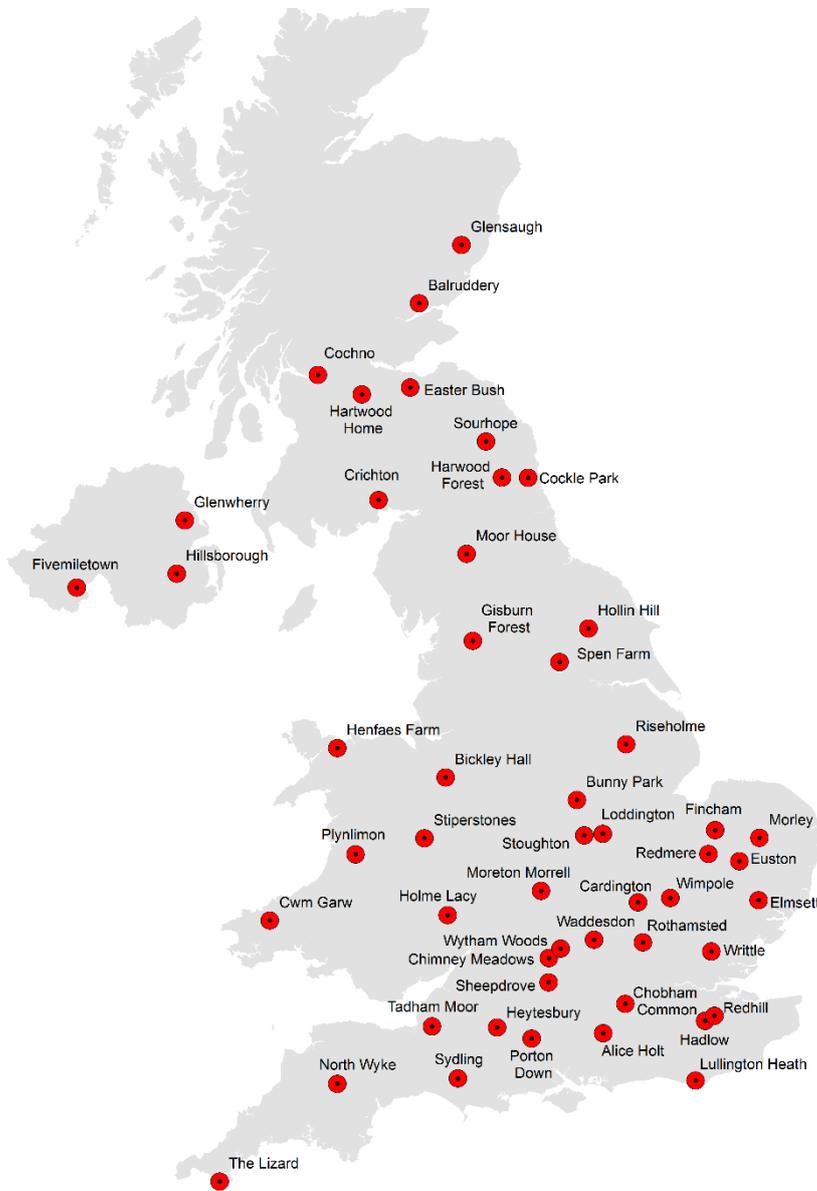


**Bunny Park**



**Cockle Park**





**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.

