

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

Notes on period to 31 October 2022

Increased precipitation throughout September and October has resulted in COSMOS-UK stations wetting up to near-normal conditions with a few exceptions.

Provisional data indicate precipitation in England & Wales was below the long-term average until late October. In contrast, precipitation was above the long-term average in Scotland and Northern Ireland. Regionally, precipitation in Northwest England was above the long-term average, whereas Eastern Scotland was slightly below. On average, air temperatures were cooler than those in September, but conditions were generally mild.

More than 80% of the COSMOS-UK sites reported normal soil moisture, with some sites still exhibiting drier conditions, mainly in the southeast and some central regions. Morley, Elmsett and Loddington were dry at the beginning of October but gradually recovered towards average conditions by the end of the month.

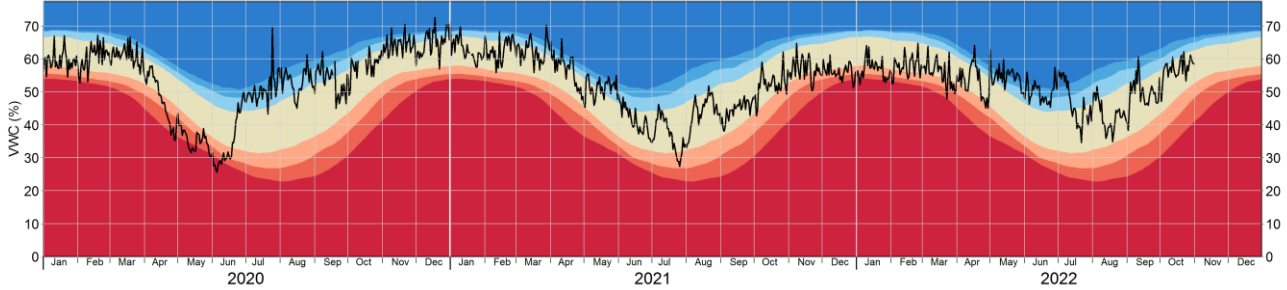
Soil moisture at Tadhams Moor has increased significantly over the month after a very dry summer, but as the seasonal soil moisture expectation is also increasing, it remains exceptionally dry for the time of the year. Alice Holt and Waddesdon are also recovering slowly, but remain drier than normal.

Network News

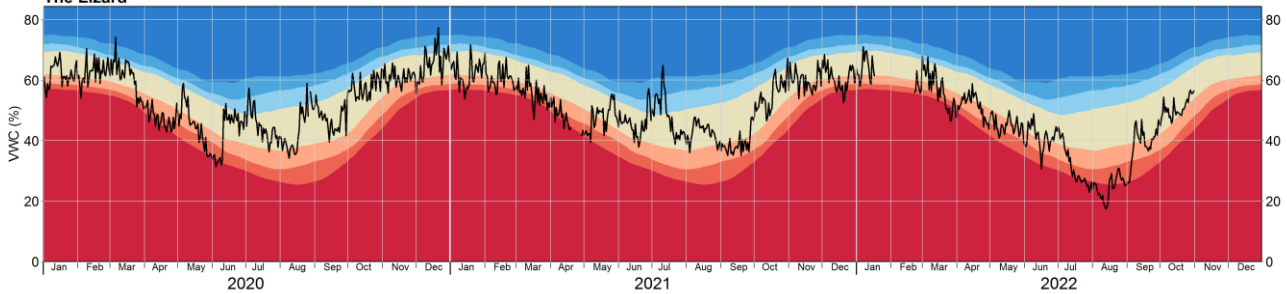
Moor House is experiencing power issues, and a maintenance visit is scheduled for November.



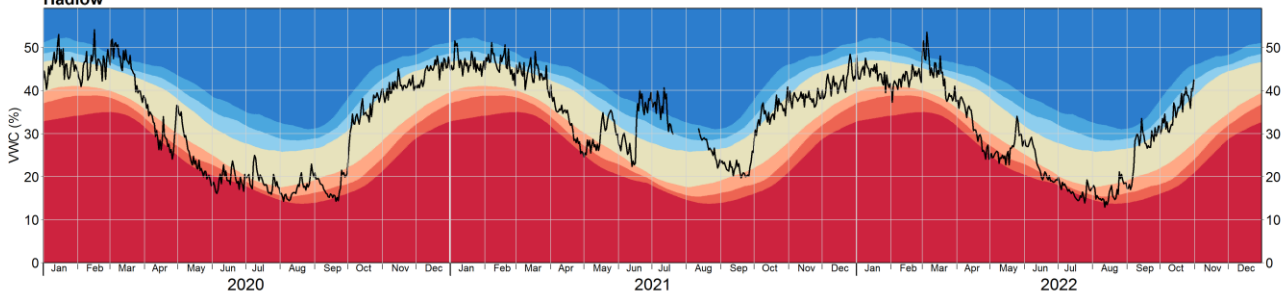
Fivemiletown



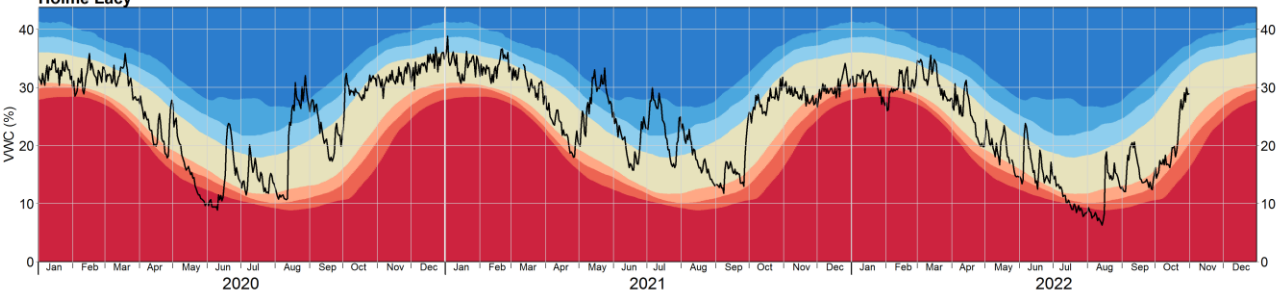
The Lizard



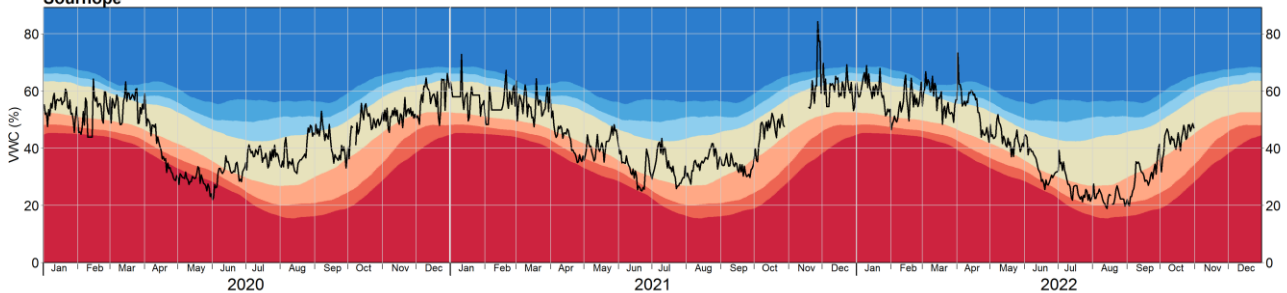
Hadlow

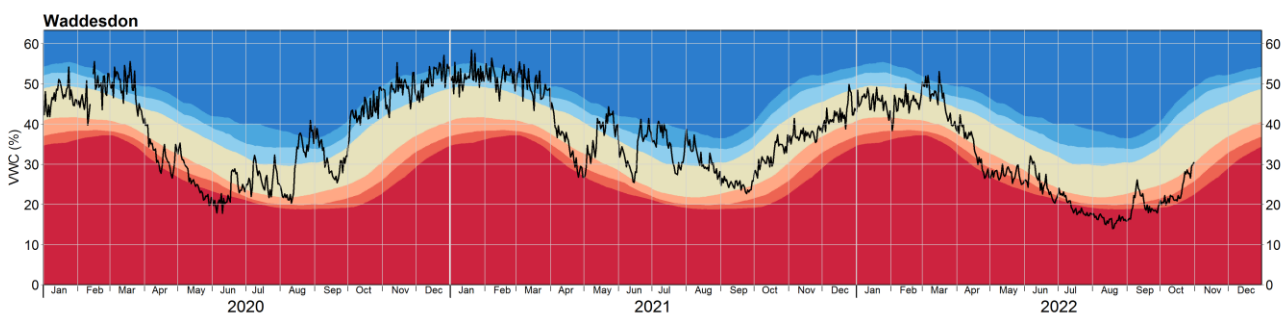
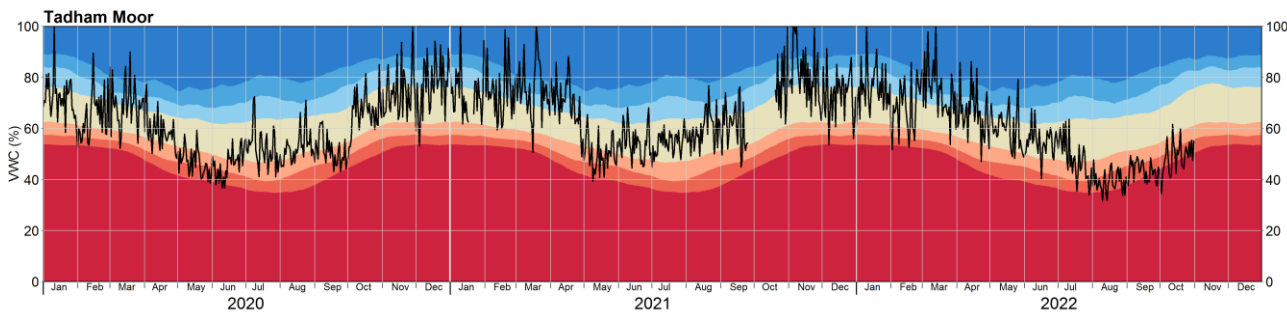
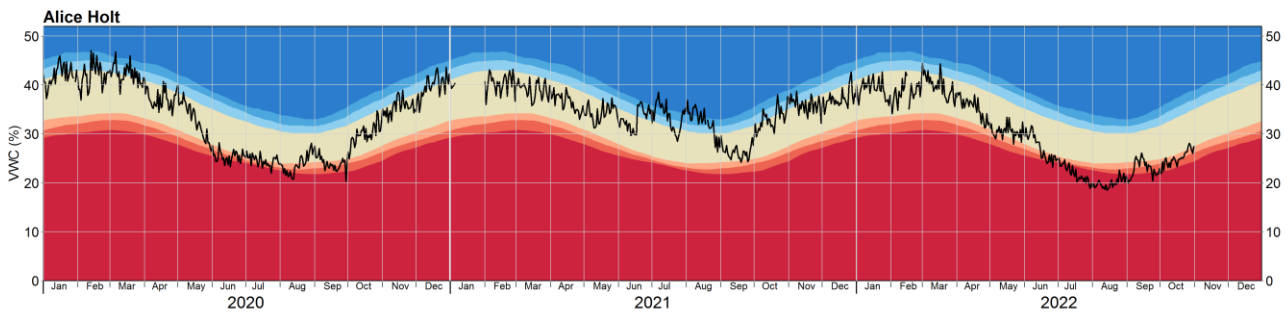
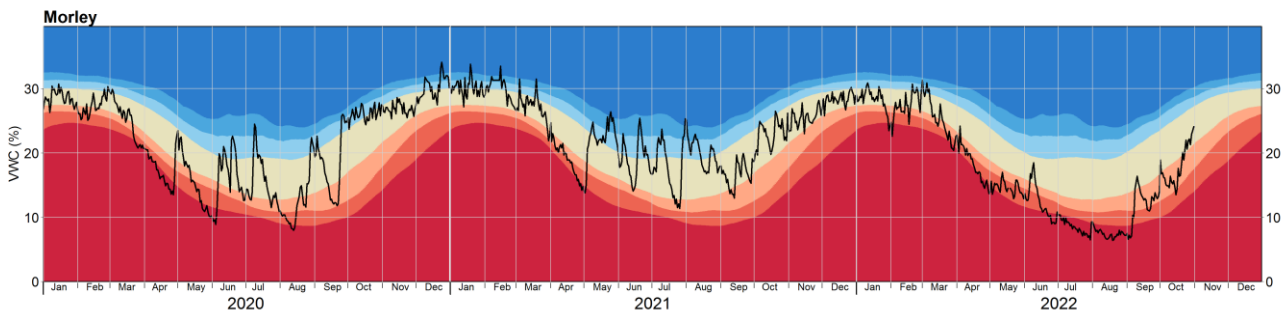
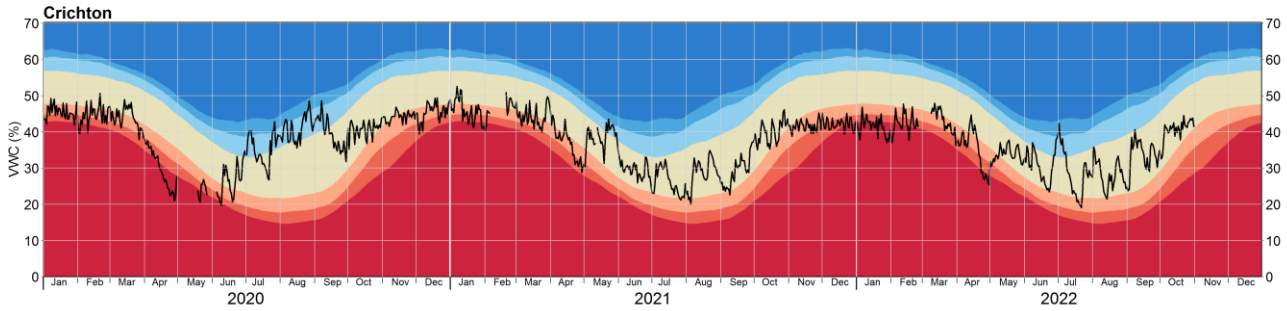


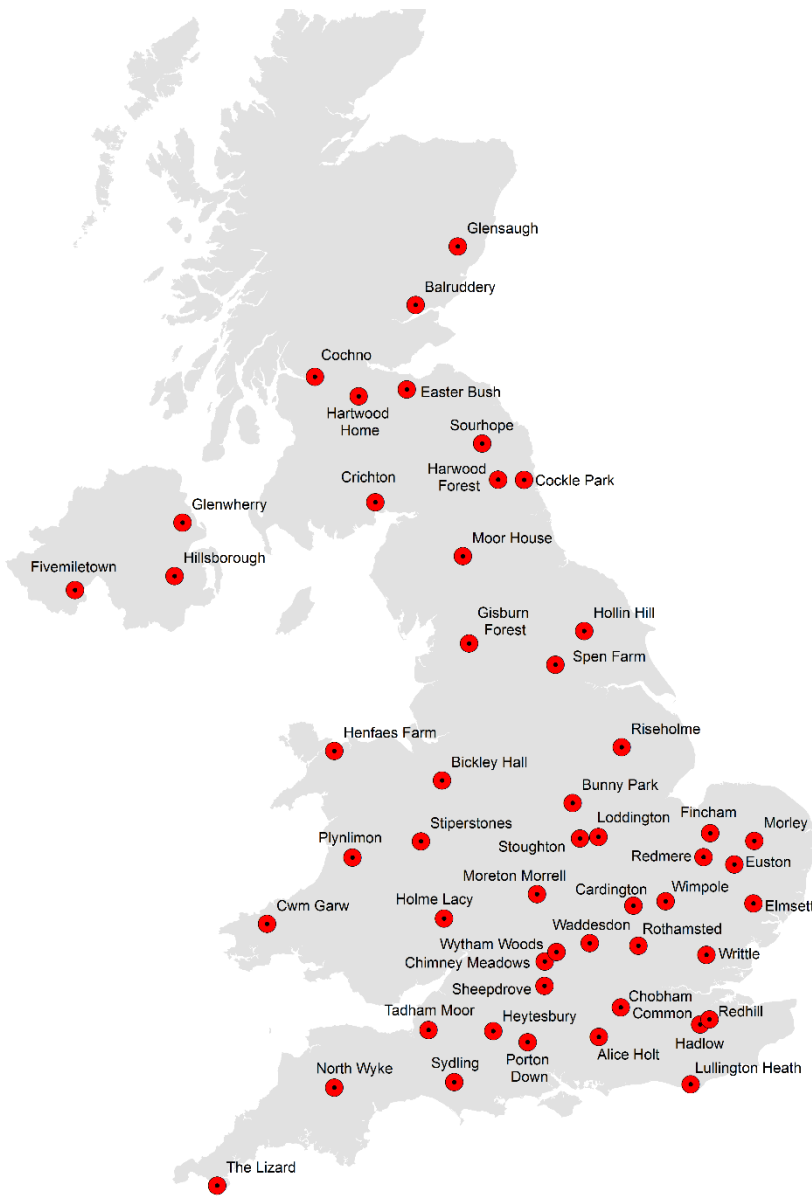
Holme Lacy



Sourhope







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, known as the field capacity. Field capacity is a measure of how much water the soil can hold against gravity and is strongly dependent on the soil type. Soils are expected to be around field capacity after being wetted to above field capacity and the excess water (e.g. from macropores) has drained away under gravity, which can take several days after heavy rain, to reach a near steady state. 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.

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