SOIL WETNESS STATUS
Water content (%)
- 0 - 20
- 20 - 40
- 40 - 60
- 60 - 80
- 80 - 100
- no data

Symbol indicates approx. maximum water content
- 40%
- 50%
- 60%
- 70%
- >= 80%

SOIL WETNESS STATUS
Adjusted for site characteristics
- extremely dry
- dry
- well below field capacity
- slightly below field capacity
- wet/above field capacity
- very wet/saturated
- no data

Soil moisture on 30 November 2023 (see back page for explanatory comments).
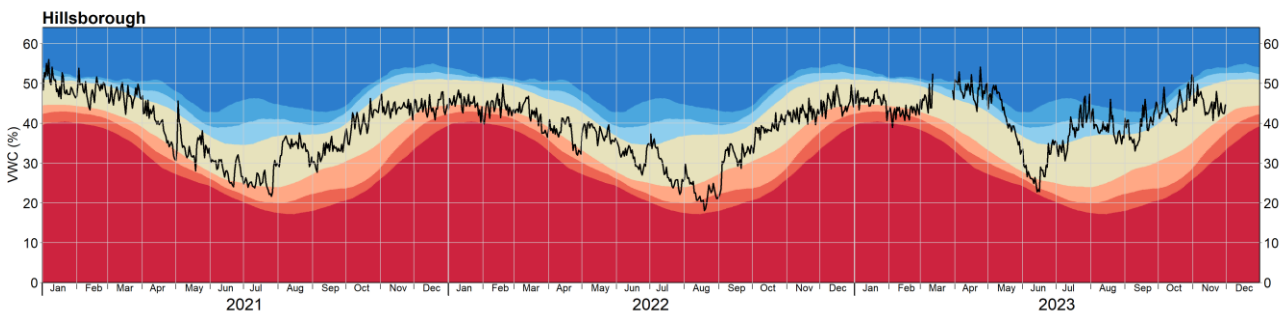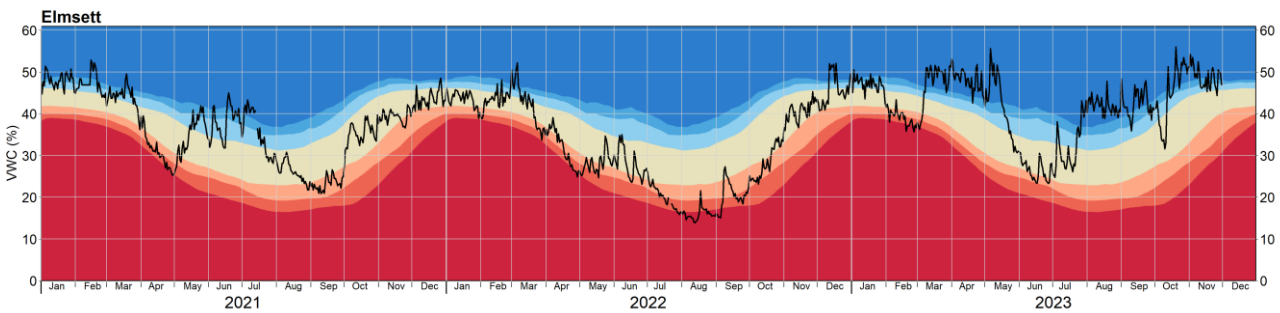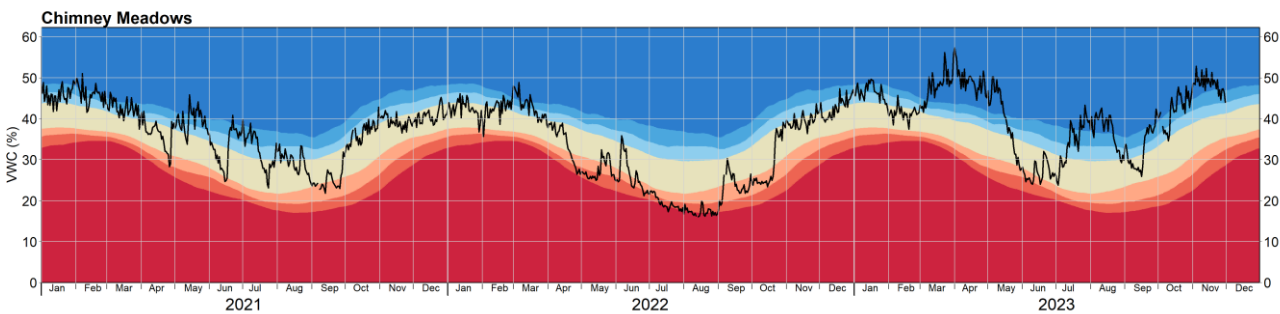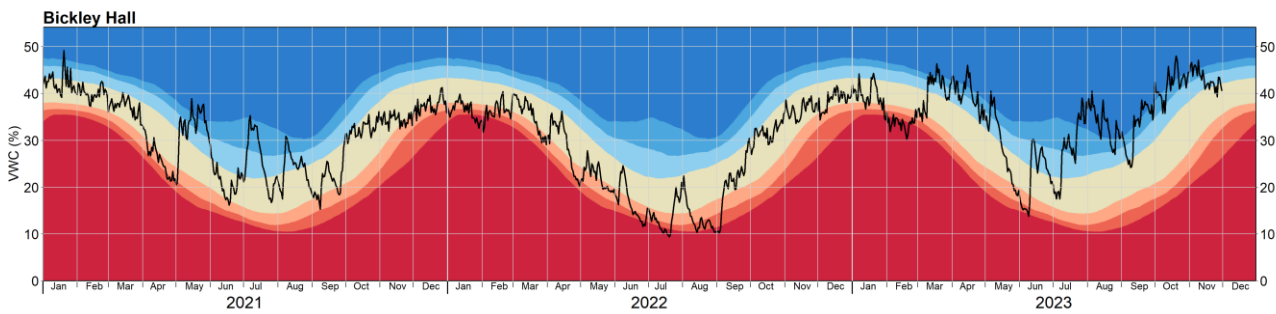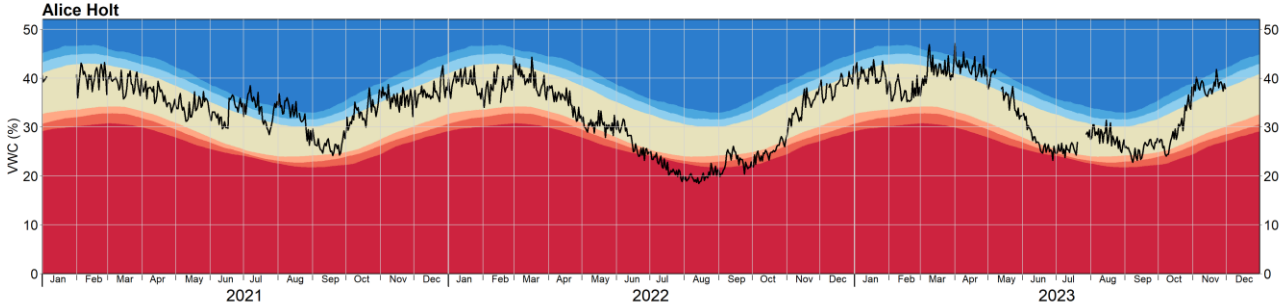
Notes on period to 01 December 2023

At the end of November, soil moisture is close to or above field capacity at most COSMOS-UK sites.

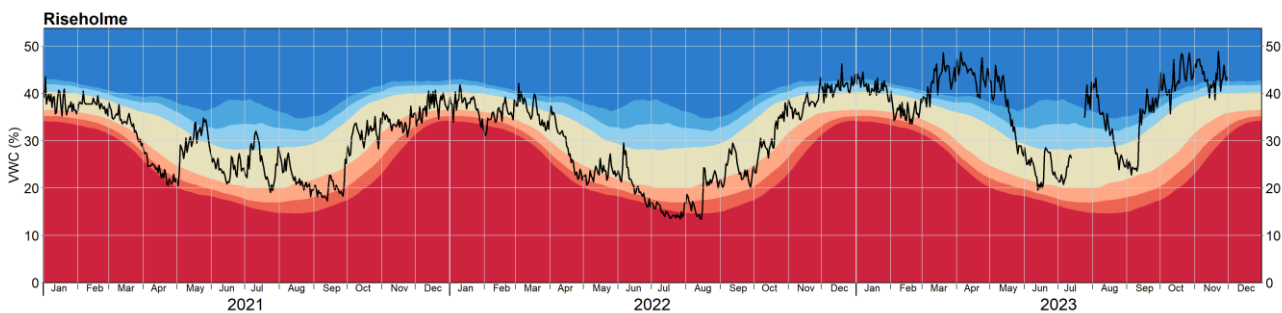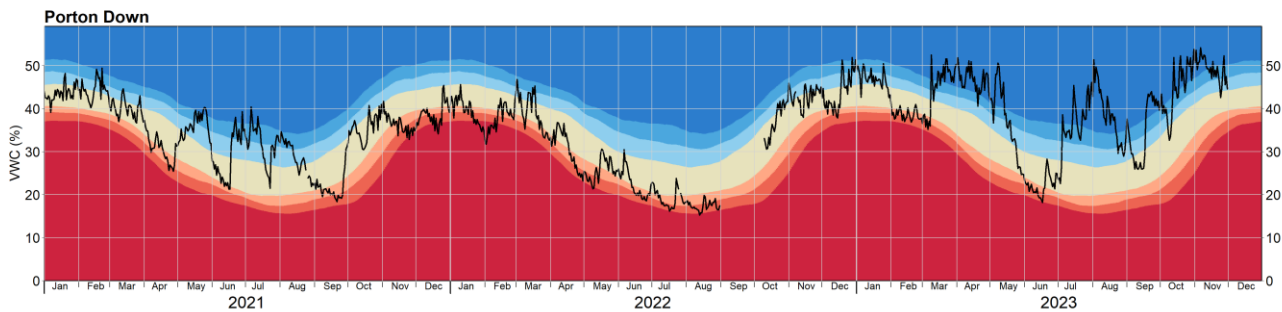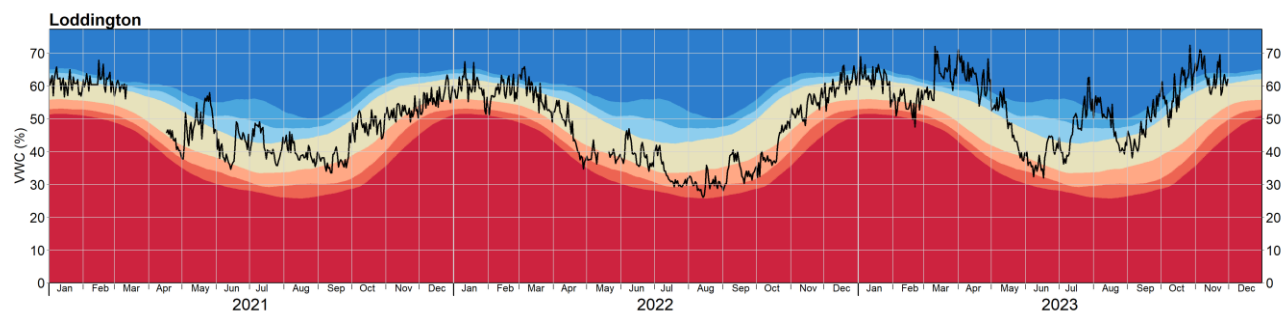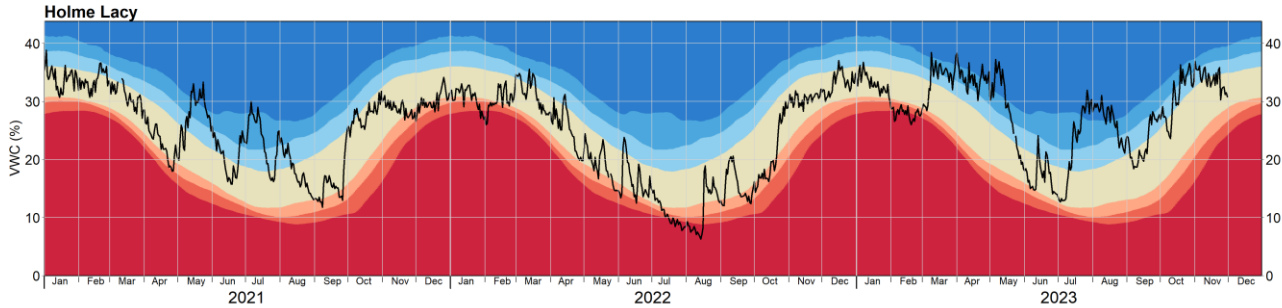Provisional Met Office data indicate that precipitation was close to the long-term average for November in most regions. Storm Debi brought very wet weather on 13 November, particularly to Northern Ireland, south-west Scotland, north-west England, and North Wales. However, for the month as a whole, it was slightly wetter in the south of England, whereas Northern Ireland and Northern Scotland were slightly drier than average. Temperatures were around normal for the time of year, though turning colder towards the end of the month, with snowfall seen at some northern COSMOS-UK sites.

At the end of the month, soil moisture is close to or above field capacity most COSMOS-UK sites, which is expected for this time of year when there is more consistent rainfall and lower temperatures. There has been a slight reduction in soil moisture at most COSMOS-UK sites compared to the very wet month of October. Some sites remain wet (for example Chimney Meadows, Riseholme) whereas others have returned to more normal levels, (for example Hillsborough, Holme Lacy, Loddington).

Network news
Reactive maintenance was carried out at Gisburn Forest, Moor House and Glensaugh. A visit is planned to Sydling to investigate issues with intermittent TDT and Rain[E] sensors. There is ongoing work investigating trends in incoming cosmic ray neutron flux used to measure soil moisture.

Holme Lacy

Loddington

Porton Down

Riseholme

Sydling

Map of the UK showing COSMOS-UK soil moisture monitoring sites: Glensaugh, Balruddery, Cochno, Easter Bush, Hartwood Home, Sourhope, Crichton, Harwood Forest, Cockle Park, Glenwherry, Fivemiletown, Hillsborough, Moor House, Gisburn Forest, Hollin Hill, Spen Farm, Henfaes Farm, Riseholme, Bickley Hall, Bunny Park, Stiperstones, Loddington, Fincham, Morley, Plynlimon, Stoughton, Redmere, Euston, Moreton Morrell, Cardington, Wimpole, Elmsett, Cwm Garw, Holme Lacy, Waddesdon, Rothamsted, Wytham Woods, Chimney Meadows, Writtle, Sheepdrove, Chobham Common, Redhill, Tadham Moor, Heytesbury, Hadlow, North Wyke, Sydling, Porton Down, Alice Holt, Lullington Heath, The Lizard.

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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