

Soil moisture on 30 April 2023 (see back page for explanatory comments).

Notes on period to 01 May 2023

At the end of April, soil moisture levels at most COSMOS-UK sites remain high, following the large amounts of rainfall seen in March, and close to, or above, average rainfall across most areas in April.

Provisional data for April indicate a mixed picture regarding rainfall for the UK. In Northern Ireland, rainfall lay within its normal range, while rainfall fell below the long-term average in Northern Scotland. Northern England experienced close to normal rainfall levels. In the rest of England and Wales, rainfall was above average for most of the month, particularly in the Southeast. Temperature varied across the country, being below average for England but above average for Northern Ireland.

Soil moisture remained high at many COSMOS-UK sites, although generally getting drier in mid-April. Sites located in Central and Eastern England, such as Chimney Meadows, Elmsett and Rothamsted, continued to have wet soils above their normal range. Sites in Northern England, such as Gisburn, and Fivemiletown in Northern Ireland, similarly recorded high soil moisture content. In Wales and the Southwest of England, soils were generally drier and near their usual moisture level in mid-April but wetted up again at the end of the month (e.g. in Plynlimon, the Lizard, and Sydling). In Scotland, soil moisture varied between mid-range levels at Crichton in the southwest to very wet at Glensaugh in the Northeast.

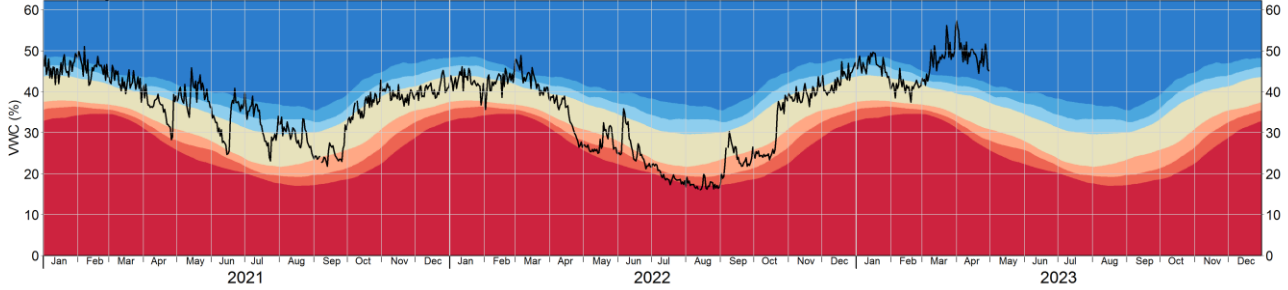
Overall, soil moisture remained high in most locations, despite varying amounts of rainfall.

Network News

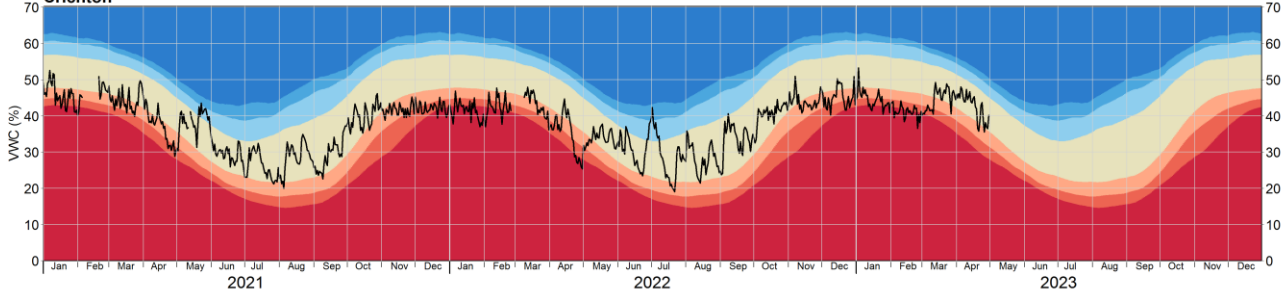
Lambrecht rain gauges which are currently installed at 15 sites are being raised to 1m above ground level throughout the network in order to avoid clogging by grass and debris.



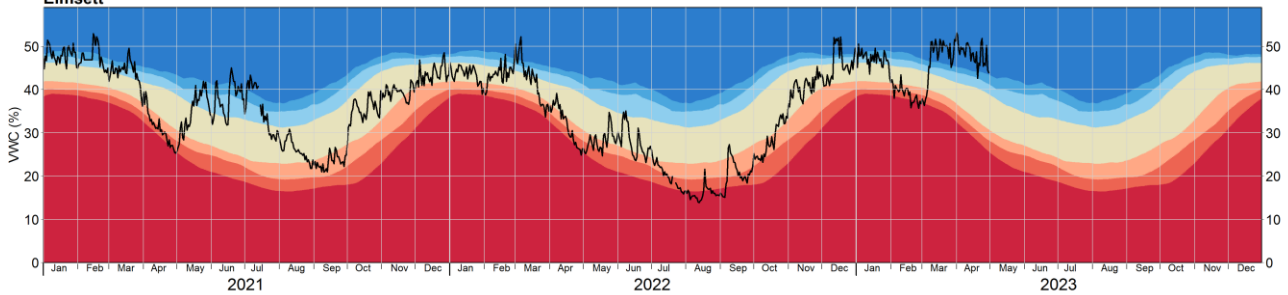
Chimney Meadows



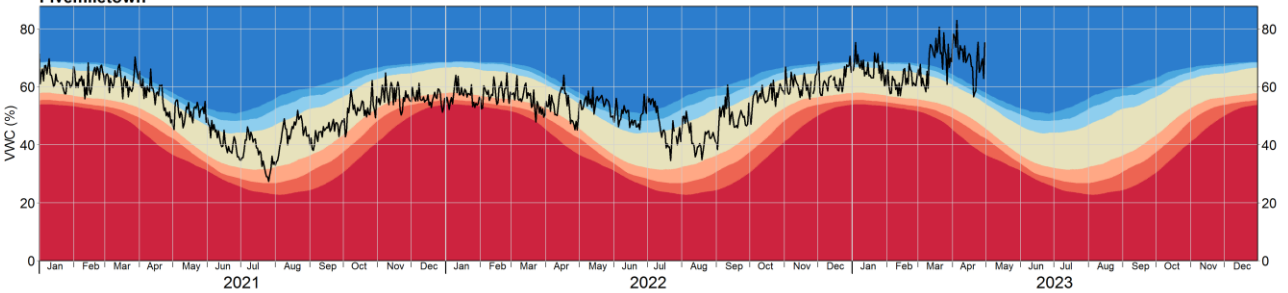
Crichton



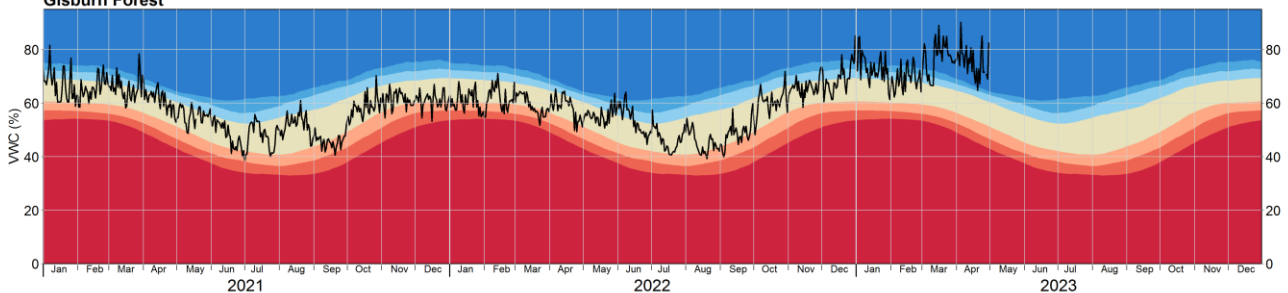
Elmsett

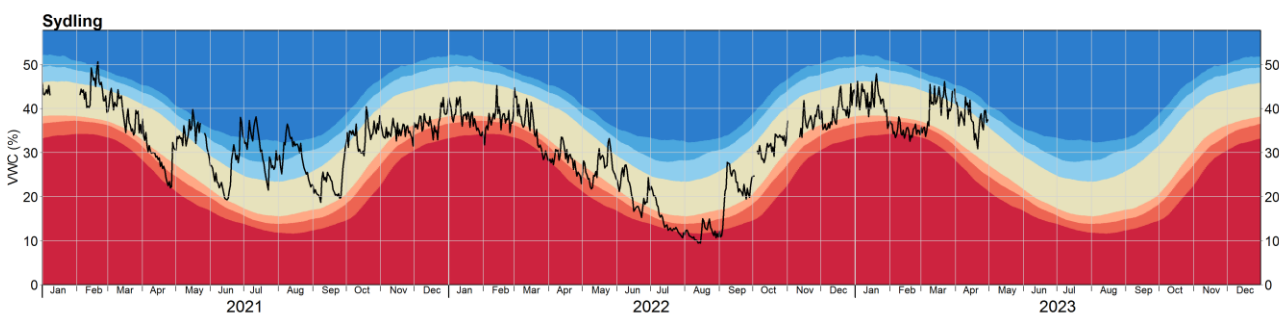
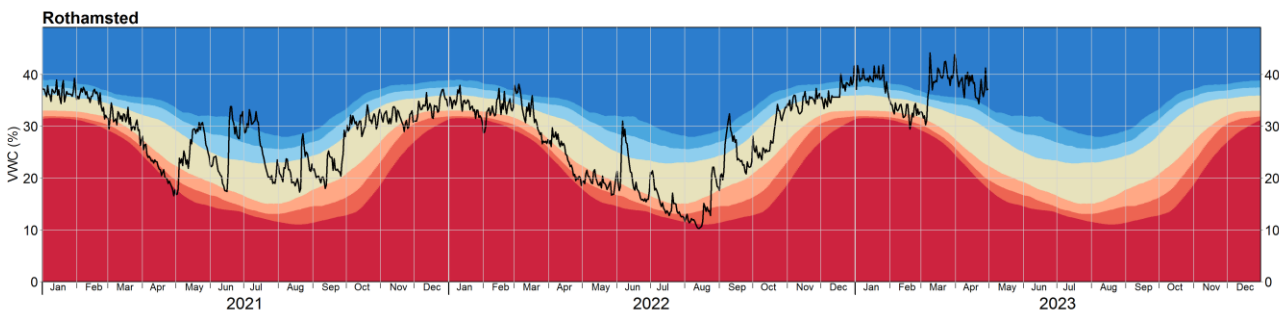
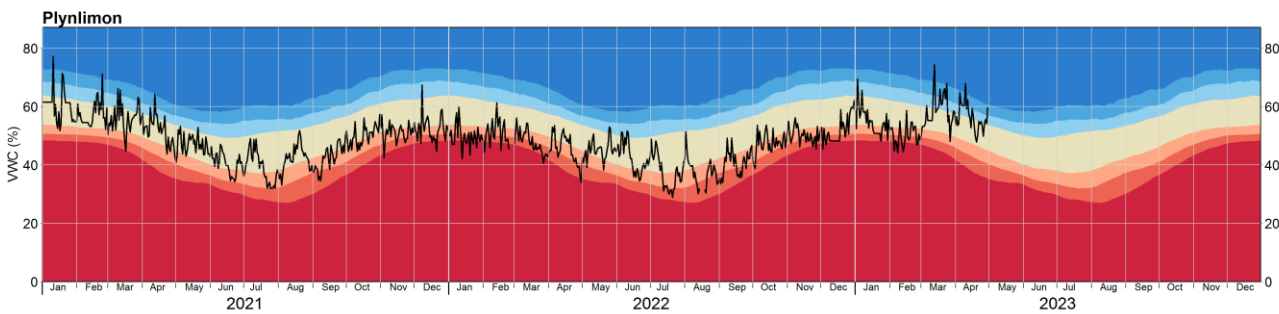
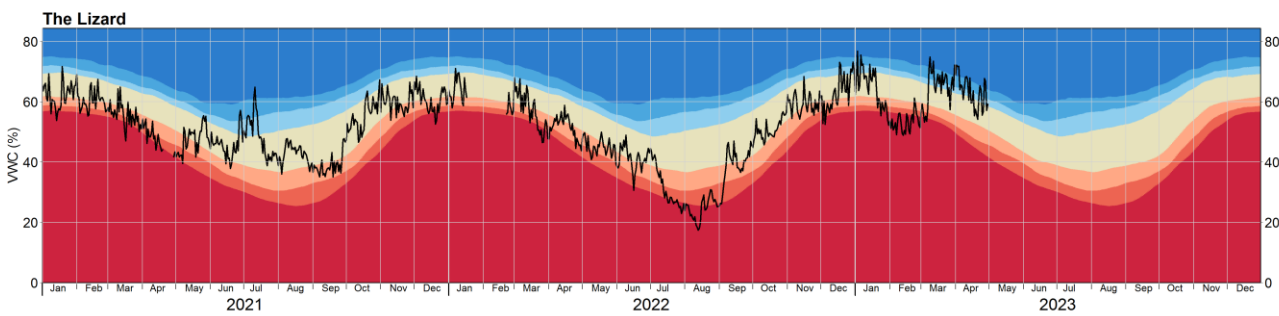
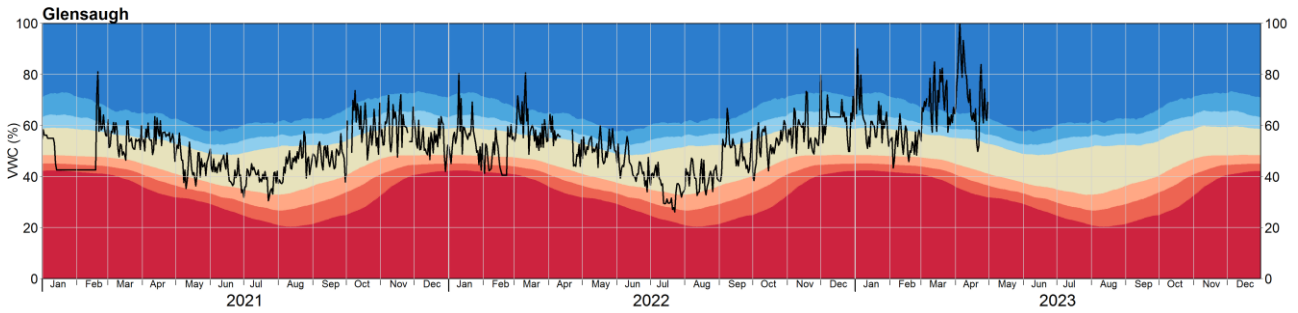


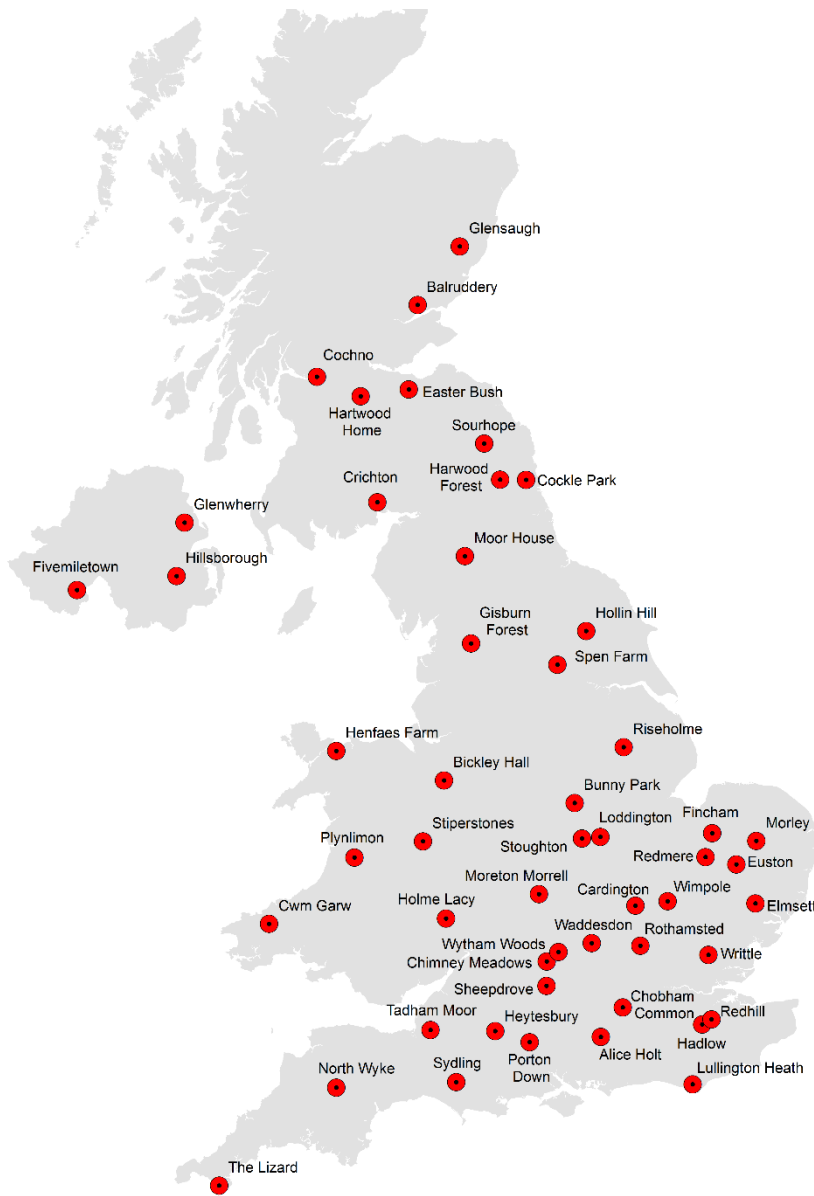
Fivemiletown



Gisburn Forest







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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