

Soil moisture on 30 November 2020 (see back page for explanatory comments).

Notes on period to 30 November 2020

At the end of November soils across the UK are generally at wetness levels typical for the time of year. In parts of central England soils are wetter than normal for the time of year.

Provisional data indicate that rainfall in November was close to average in western Scotland, Northern Ireland and north-west England, elsewhere rainfall was below average particularly in eastern parts of the UK. In many areas the month ended with a spell of dry weather.

At the start of November soils were wet across most of the UK and, even with below average rainfall during the month, this remains the situation at the month end.

Soils are wetter than normal for the time of year in an area of central England extending to the Thames estuary. Here soils are at levels more typical of winter months than the end of November (e.g. Cardington, Chimney Meadows, Redhill, Waddesdon).

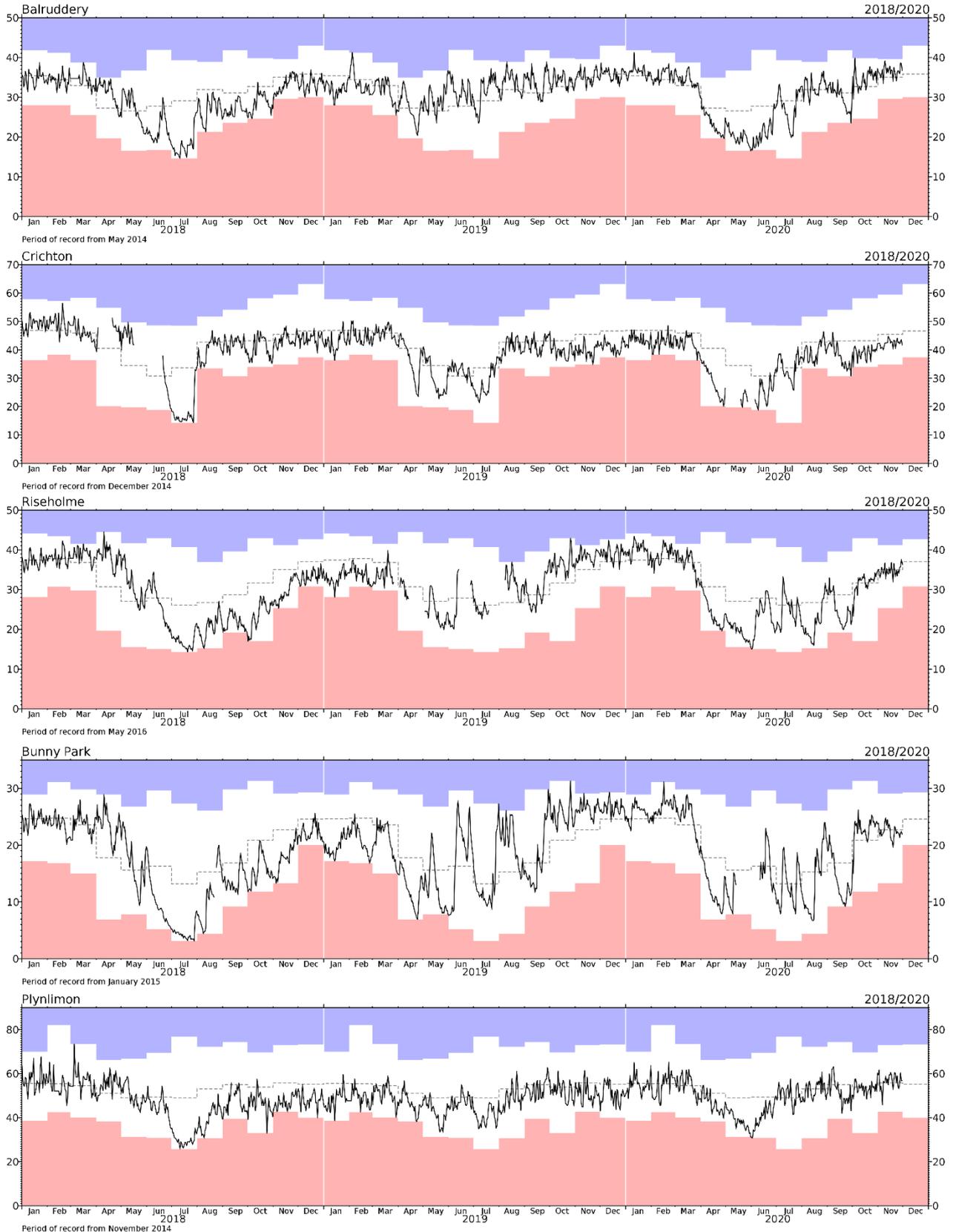
Across most of the remainder of the UK, soil wetness is typical for the end of November (e.g. Balruddery, North Wyke, Plynlimon, Riseholme).

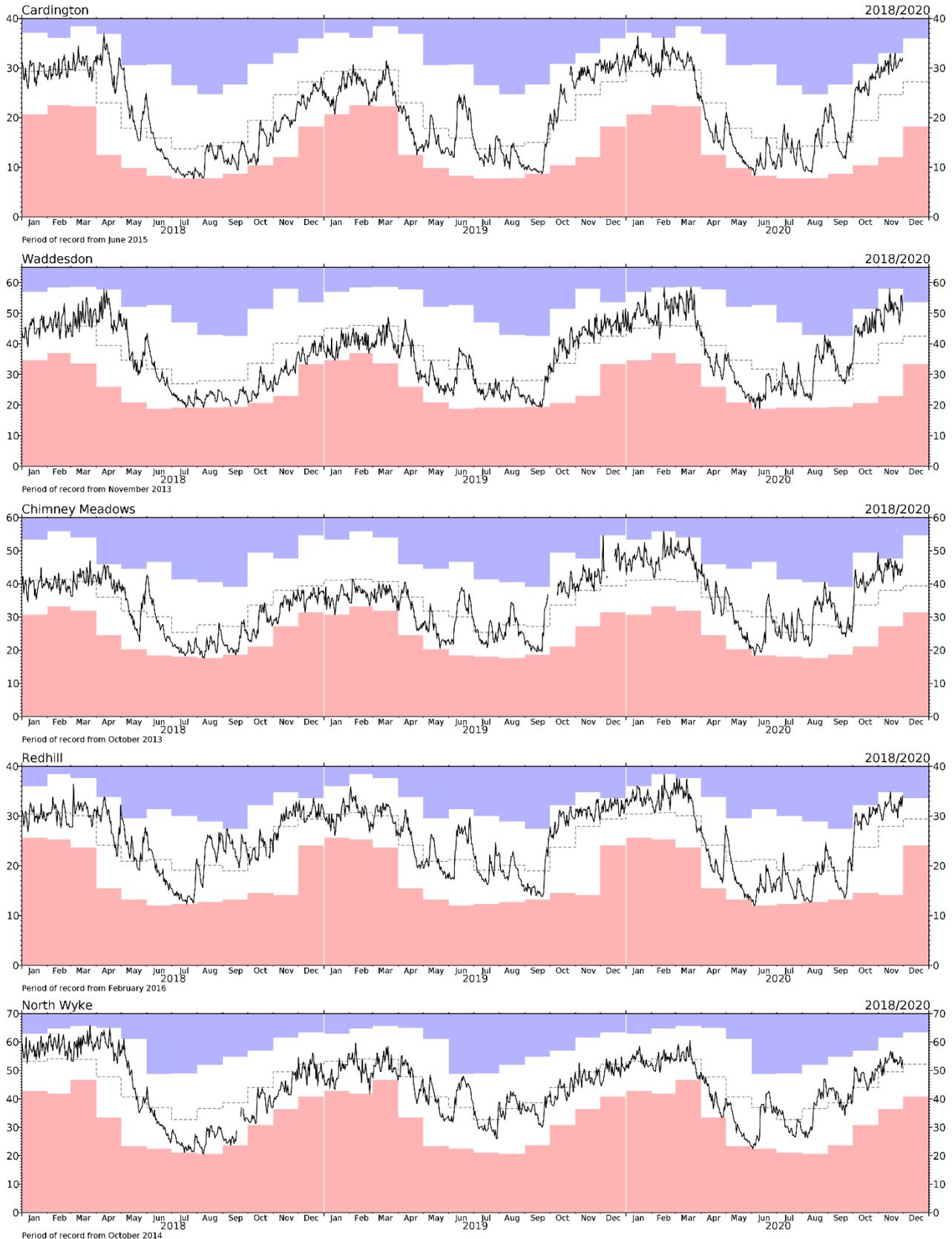
There are, however, a few sites at which soil moisture is slightly drier than normal for the start of December (e.g. Bunny Park and Crichton).

Note that the COSMOS-UK records are too short to reliably estimate long-term monthly averages and departures from them; it is therefore only possible to give qualitative indications about averages and what is typical for the time of year.

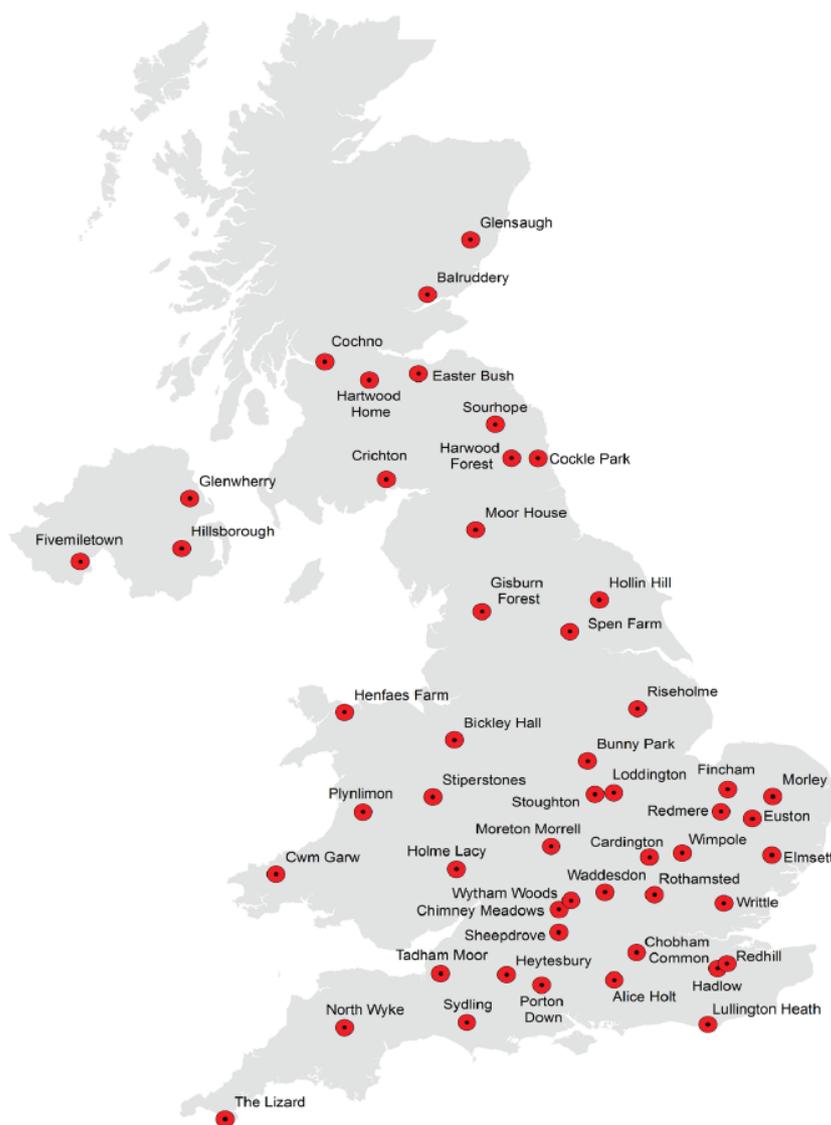
Network News

- There have been power issues at several sites during November with the majority now resolved.
- Waddesdon was the third COSMOS-UK site to be installed and has now been recording data for seven years.





COSMOS-UK site locations



About the maps on page 1: The maps of volumetric water content (VWC) and soil moisture index (SMI) show average daily soil moisture at the end of the month. Colours indicate wetness as in the keys. Grey symbols represent missing data.

The symbols represent groups of sites with similar soil maximum water content, i.e.



VWC – This is the percentage water content and reflects both capacity of the soil to store water as well as actual moisture content.

SMI – This is an index of soil moisture that is adjusted for the capacity of the soil to store water. A value of around 1.0 represents field capacity (FC) which is typical moisture content in late autumn and early spring. SMI will generally be lower than this in the summer and higher in the winter.

Nearby sites with the same symbol (i.e. similar rainfall and soils) should be in similar VWC and SMI classes; however neighbouring sites with different symbols (i.e. similar rainfall but different soils) can be in different VWC and SMI classes. Sites represented by circles with an outline are generally poorly draining and wet, and therefore often have VWC and SMI values different from their neighbours; data from these sites are less reliable than from other sites.

Grey shaded areas represent principal aquifers.

About the graphs on pages 2 and 3: These show the VWC over a three year period. The black line shows the daily soil moisture, the shaded areas show the monthly minima (pink) and maxima (blue) from the period of record, and the dashed grey line indicates the period of record monthly mean. These extremes and means are currently derived from very short records; they do nevertheless give some indication of the seasonal variability of the moisture content.

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 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