

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

Notes on period to 30 June 2020

Soils in southern and eastern parts of UK are drier than normal for the time of year, elsewhere soil moisture is more typical for the time of year.

Provisional data for June indicate that precipitation was very much above average across much of the UK. However at some locations in south-east England, along the east coast of the UK and in northern Scotland rainfall was close to average. While the rainfall was distributed throughout the month to the north and west, in the south-east there was notably heavy rainfall around the 17th June.

At the end of May, soils across the UK were drier than normal for the time of year and there were concerns of a developing agricultural drought. At the end of June some sites in the south-east of England remain very dry having received only moderate rainfall (e.g. Alice Holt, Hadlow), or are again dry after a short-lived response to the mid-month rainfall (e.g. Cardington, Redhill). The rainfall has, for the time being at least, relieved much of the stress on vegetation.

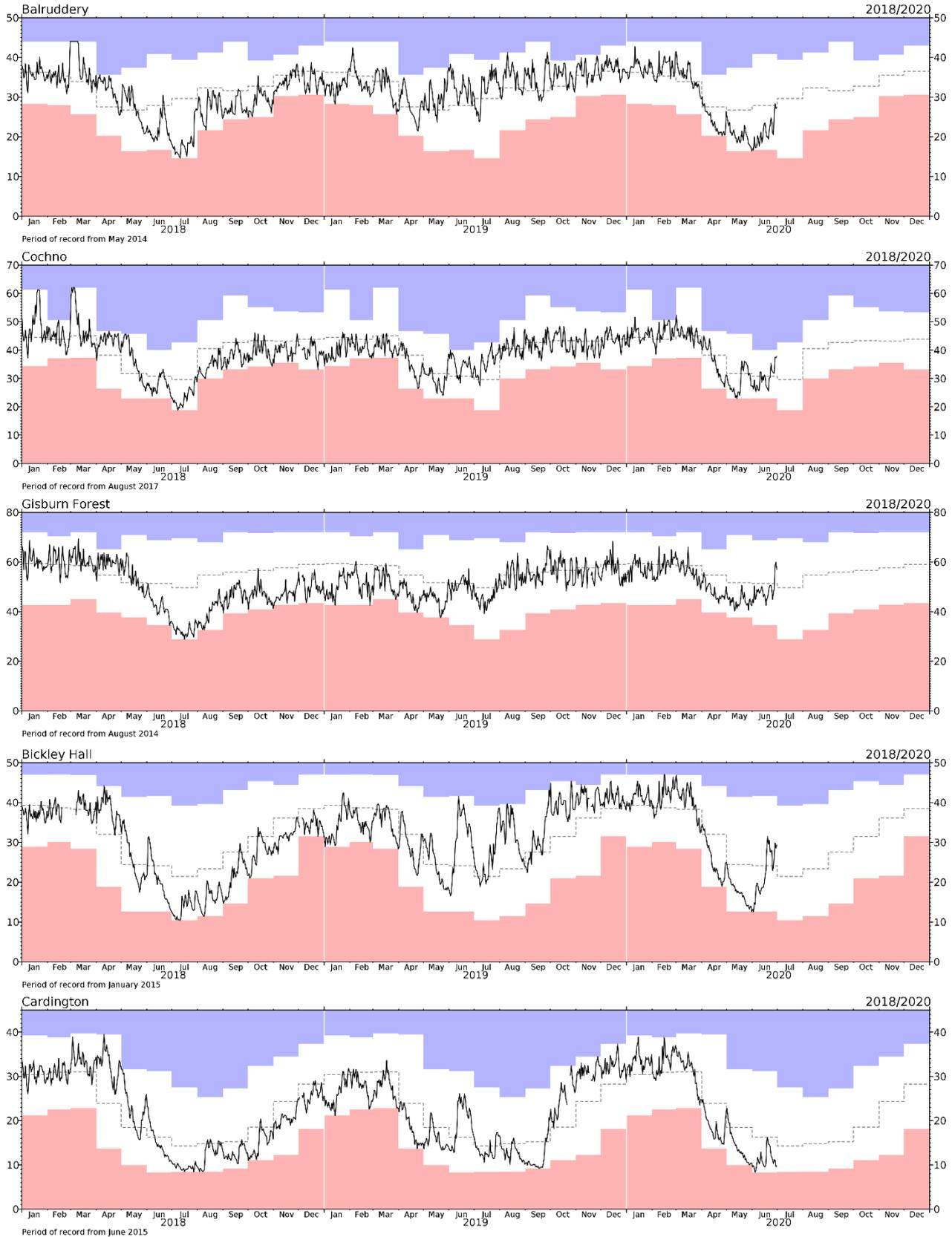
In contrast sites towards the north-west are now wetter than normal for the time of year (e.g. Bickley, Cochno, Gisburn).

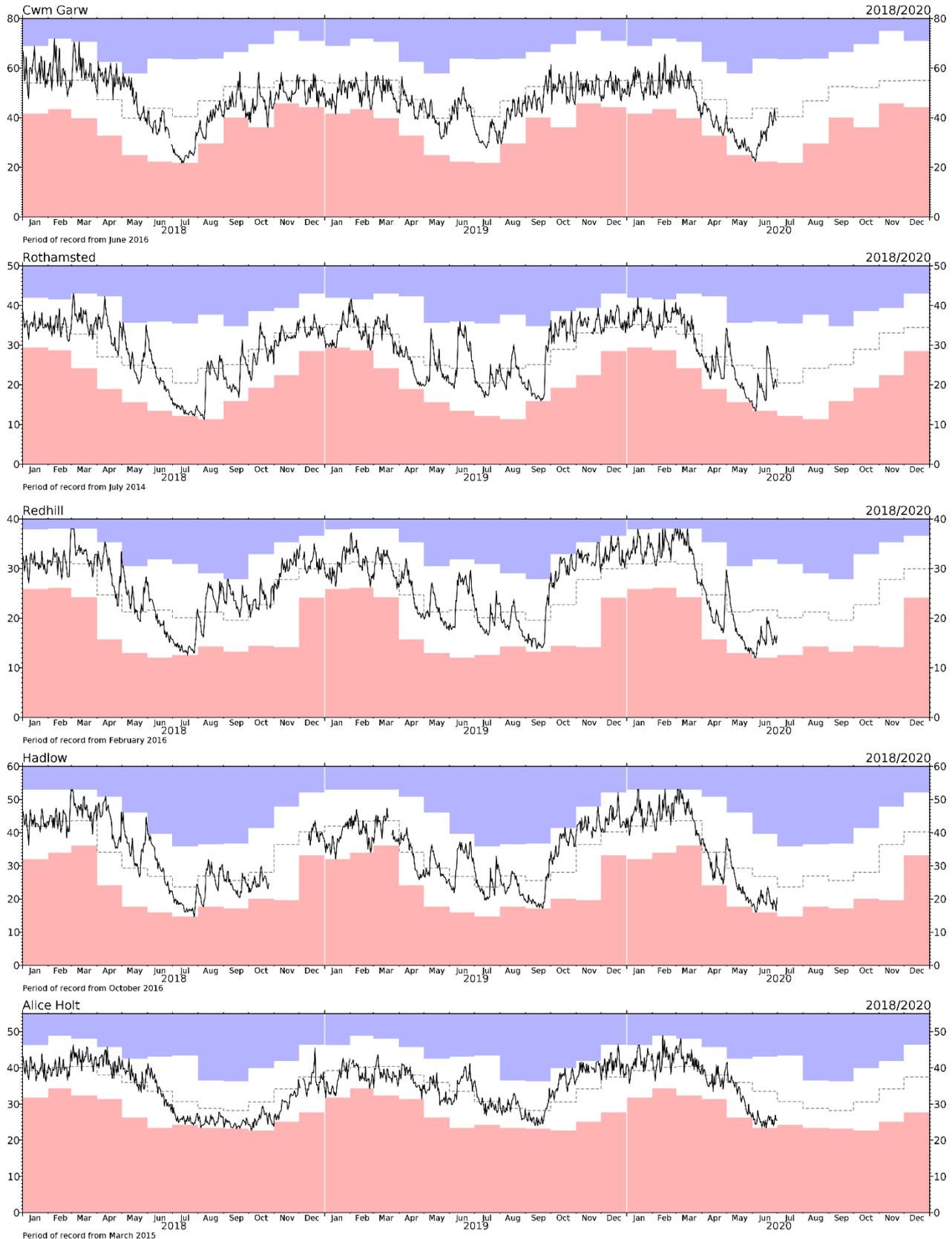
At most sites soil wetness is now typical for the time of year (e.g. Cwm Garw, Balruddery, Rothamsted).

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

- While site maintenance visits have now resumed, on-going restrictions imposed because of COVID-19 mean that not all technical faults have been resolved.





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.

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