

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

Notes on period to 30 April 2020

Soils are drier than normal for the time of year in northern parts of the UK and wetter than normal in the south-east.

Provisional data for April indicate that precipitation was generally below average across the UK with very low rainfall in southern Scotland and northern England. In southern England there was little rainfall until the end of the month when a sequence of wet days brought rainfall totals up to closer to average, and possibly even above average in central southern England.

At the beginning of April, soils across the UK were drier than normal for the time of year, and in some parts more typical of mid-summer than early spring.

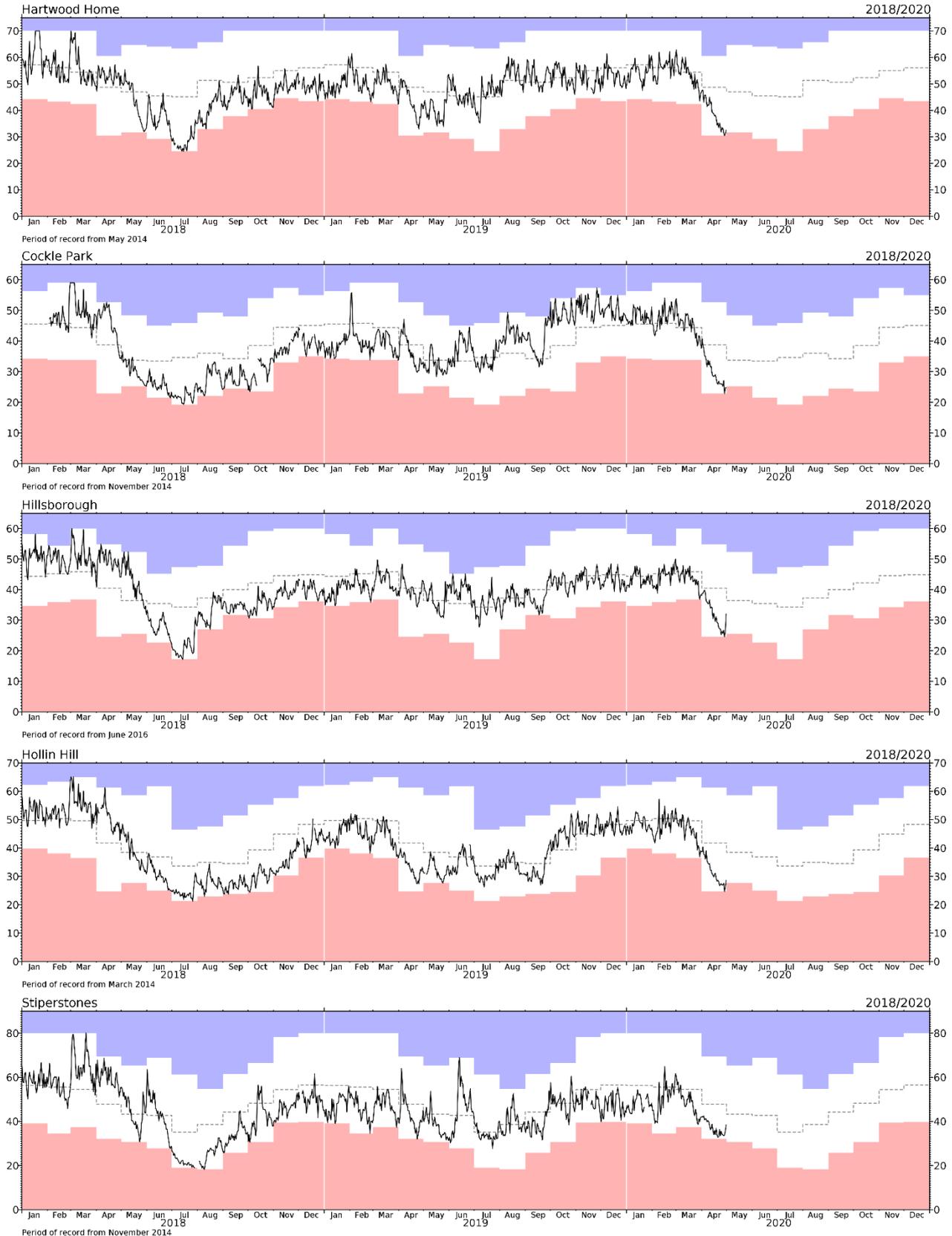
In southern Scotland and northern England, there has been little rainfall in April and soils have dried further to well below moisture levels typical of mid-summer (e.g. Cockle Park, Hartwood Home, Hollin Hill). In contrast, central southern England saw some rainfall mid-month and combined with the end of month rainfall, soil moisture is now well above normal for the time of year (e.g. Heytesbury, Porton Down, Redhill).

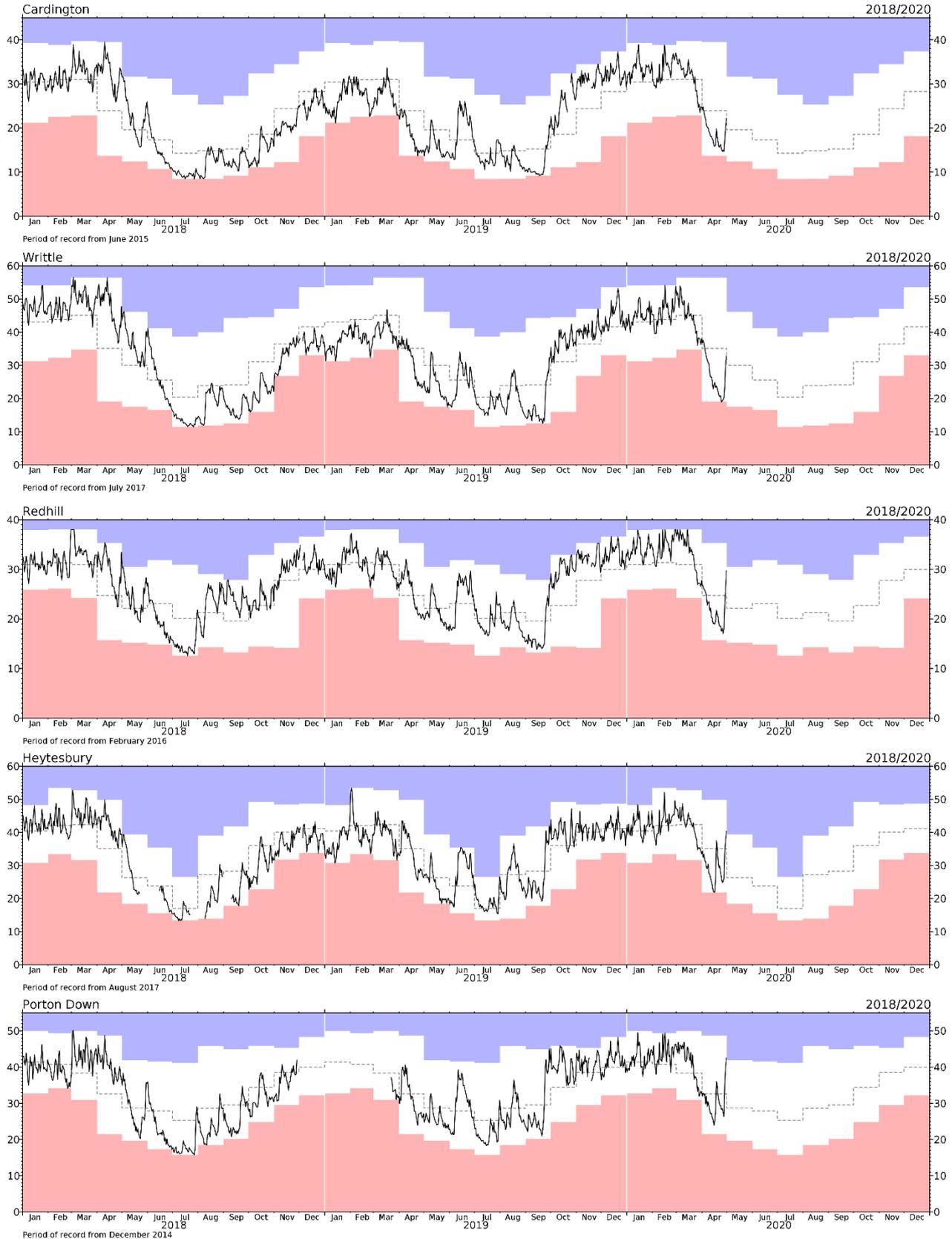
There is considerable variation between these extremes with some sites seeing just a small increase in soil moisture at month end and remaining at below normal levels (e.g. Hillsborough, Stiperstones), while others have had more substantial increases in soil moisture to normal levels for the end of April (e.g. Cardington, Writtle).

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

- The COSMOS-UK site at Loddington has now been collecting data for over four 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.

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