

Soil moisture on 31 August 2018 (see back page for explanatory comments).

Notes on period to 31 August 2018

At the end of August soil moisture remains below normal for the time of year across the UK, with the exception of parts of south-east England which are now at normal levels for the time of year.

Provisional data for August indicate that rainfall was close to normal across most the UK, the exceptions being south-east England, where rainfall was above normal, and eastern Scotland, where rainfall was below normal. Several COSMOS-UK sites in the south had daily rainfall totals over 25mm around the 10th and/or 26th of August, but further north rainfall was more evenly distributed throughout the month.

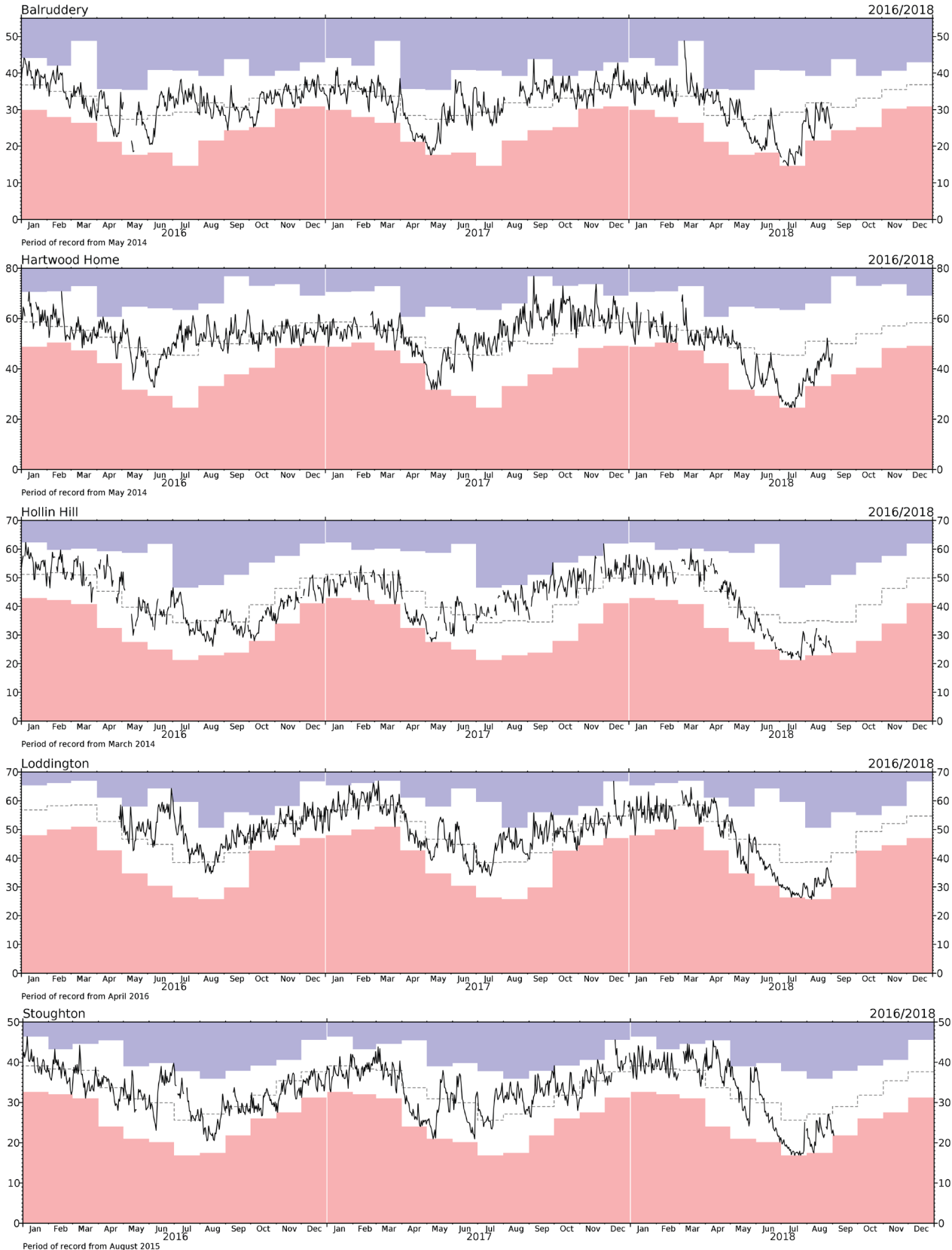
Rainfall at the end July had caused soil moisture to increase from notably low values at most COSMOS-UK sites. During August, the bursts of heavy rainfall in the south-east were interspersed with periods during which temperatures and evaporation were high, but overall there was recovery in soil moisture to levels typical for the time of year (e.g. Lullington, Morley, Rothamsted). Further north and west, with less rainfall, there has been a modest recovery in soil moisture but levels remain below what is normal for the time of year (e.g. North Wyke, Waddesdon, Hollin Hill).

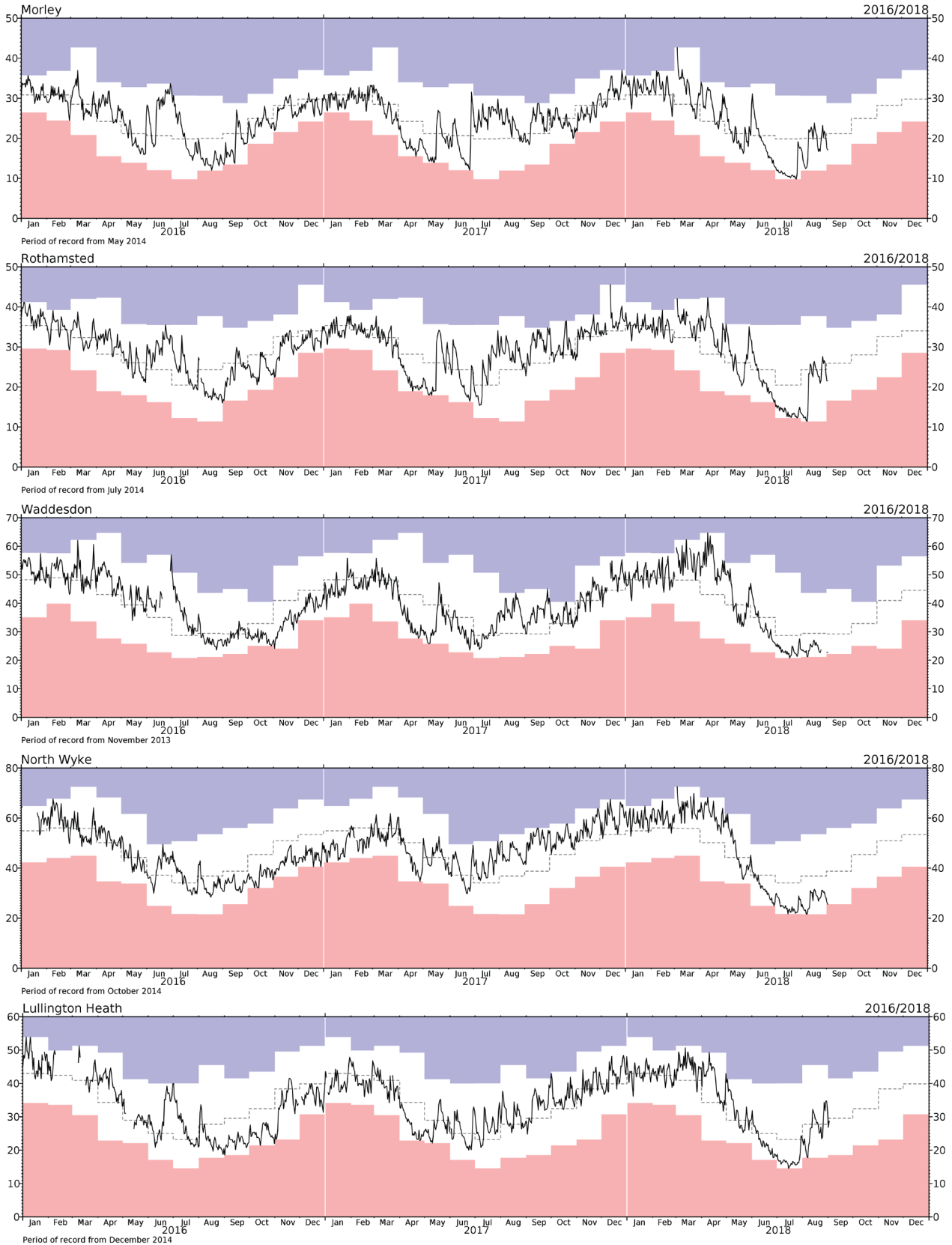
A fine end to August saw soil moisture fall even where there had been recovery back to normal levels for the time of year (e.g. Hartwood Home, Stoughton, Balruddery).

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.

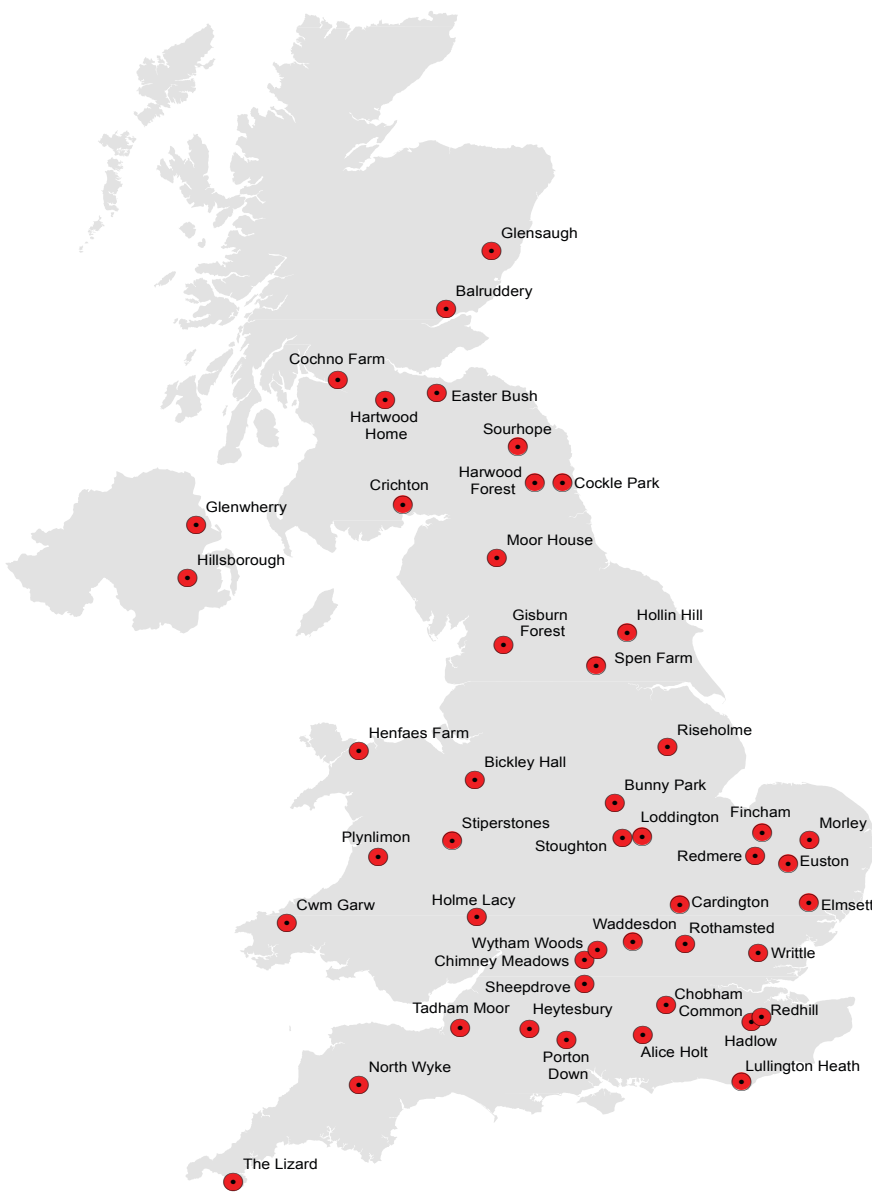
Technical issues during August

Telemetry: Sourhope, Heytesbury, Cwm Garw.
 "Cosmos" sensor: Bunny Park, Heytesbury.
 Minor issues: Easter Bush, Spen Farm, Stiperstones, Waddesdon, Bickley Hall





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.

The 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 funded as part of the NERC's National Capability.