

Soil moisture on 31 March 2019 (see back page for explanatory comments).

Notes on period to 31 March 2019

Across the UK soil moisture is generally below normal for the time of year, and in some areas more typical of late spring than the end of March, although there is considerable local variability especially in southern parts of the UK.

Provisional data for March show a remarkable contrast between the first and second halves of the month. During the first half of the month most parts of the UK received the average monthly rainfall for March, and in Northern Ireland, northwest England, north Wales and southern Scotland rainfall was very much above the monthly average. The second half of the month was completely dry across most of the UK, with only extreme northwest parts of the UK seeing any rainfall.

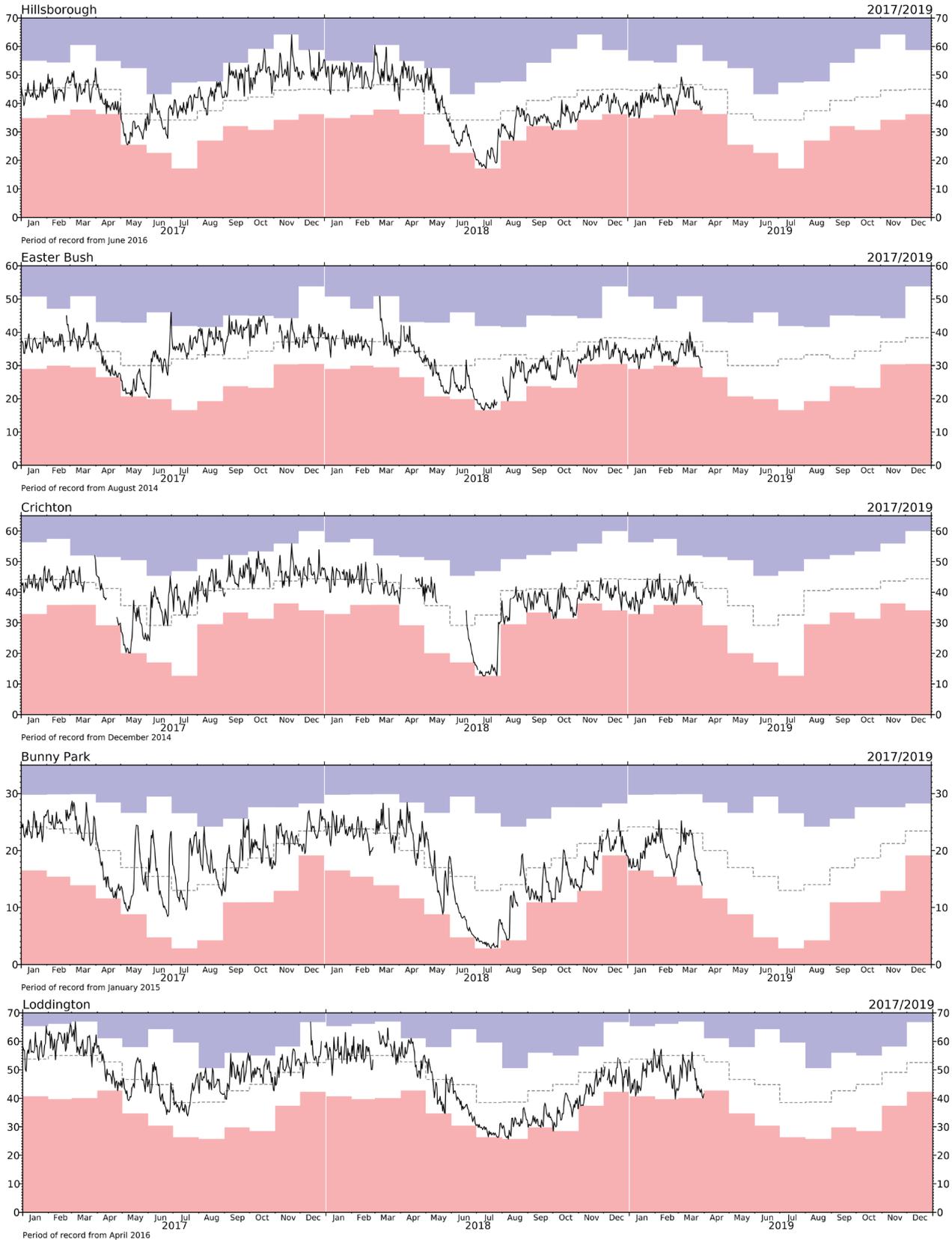
At more northerly sites there have been modest falls in soil moisture so that at month end soils are slightly drier than normal for the time of year (e.g. Crichton, Easter Bush, Hillsborough). Across much of the remainder of the UK there have been falls in soil moisture to levels more typical of late spring than the end of March (e.g. Bunny Park, Chobham Common, Loddington, Stiperstones).

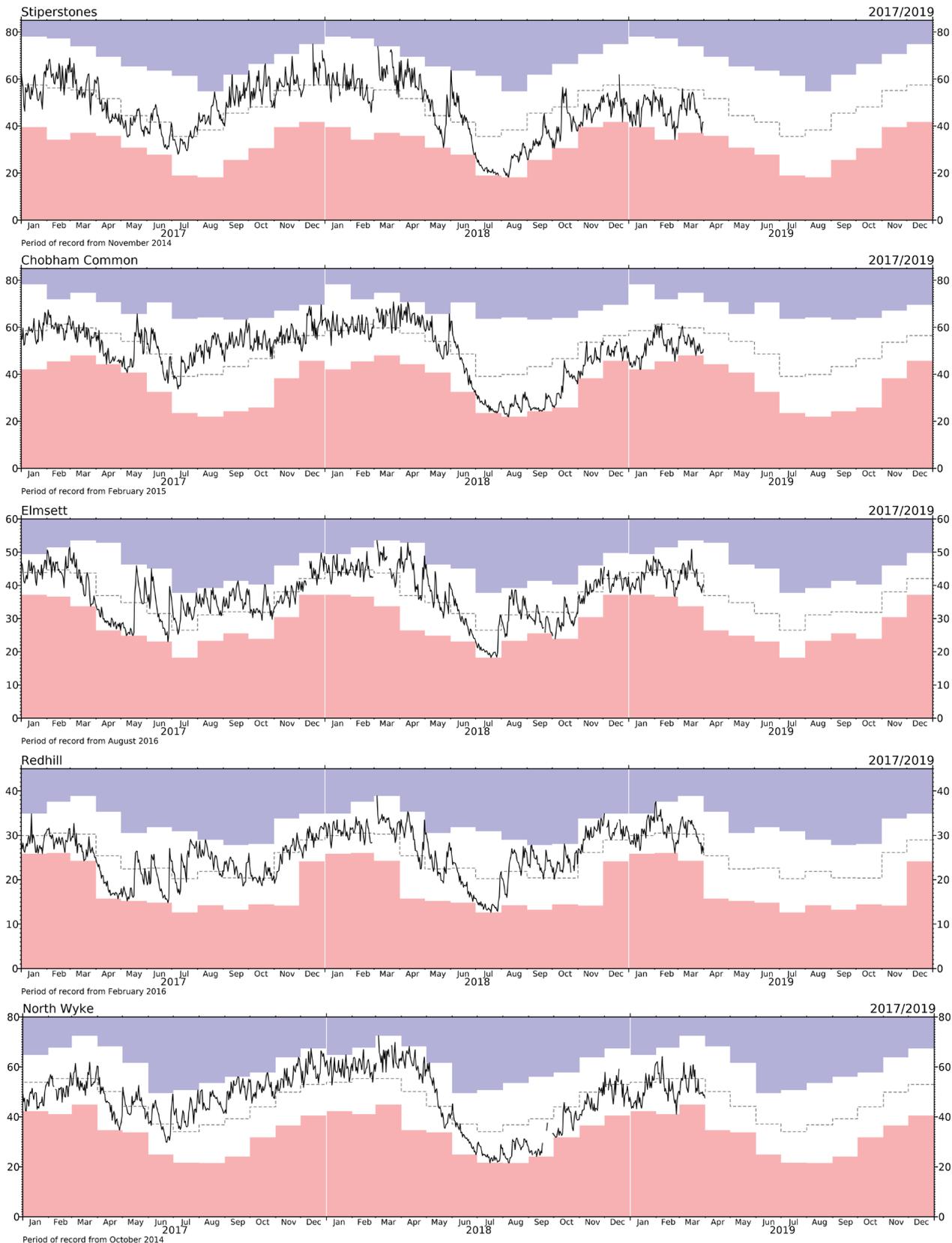
There are, however, some sites across southern England where, because of a wetter winter, the recent drying still leaves soil moisture at normal levels for the time of year (e.g. North Wyke, Elmsett, Red Hill).

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.

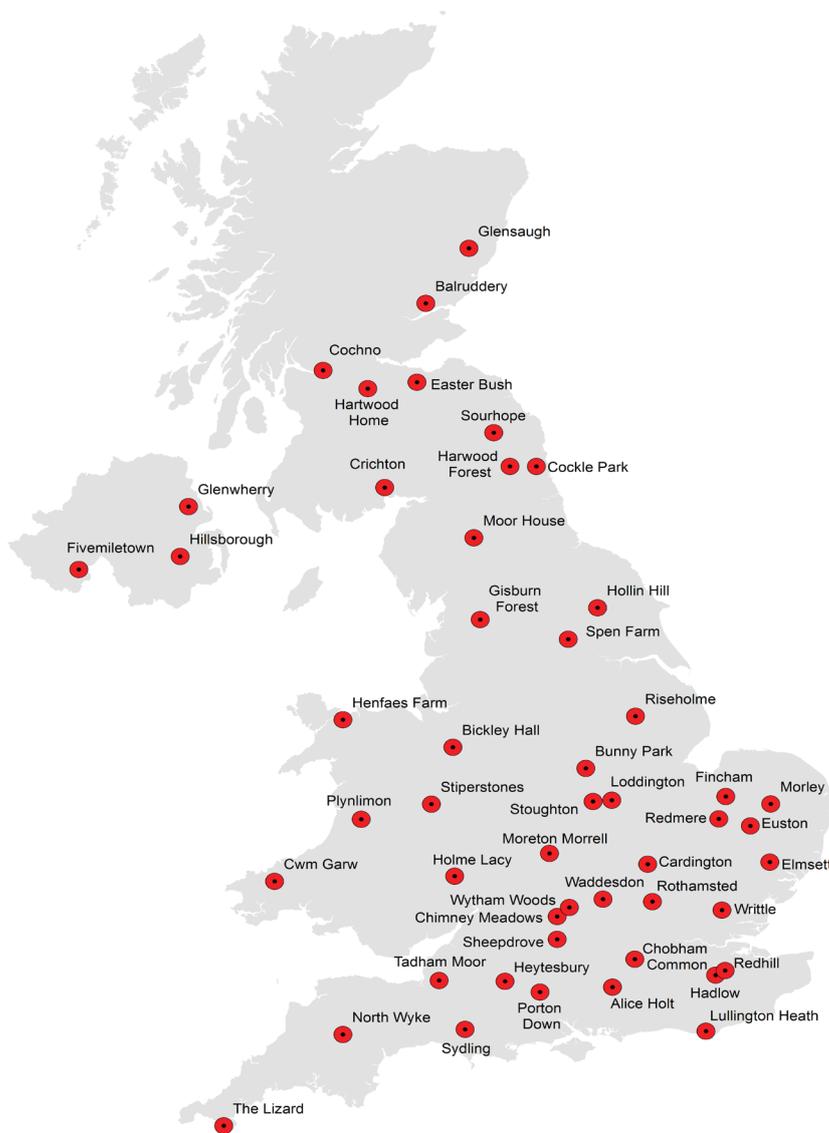
Technical issues during March

Telemetry:	Sourhope, Plynlimon, Porton Down
Power system:	Lizard
Cosmic ray neutron sensor:	Riseholme
Humidity sensor:	Cwm Garw, Hadlow
Precipitation:	Hillsborough, Lullington, Moor House, Moreton Morrell, Sydling
Minor issues:	Glensaugh, Hollin Hill





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 funded as part of the NERC's National Capability.