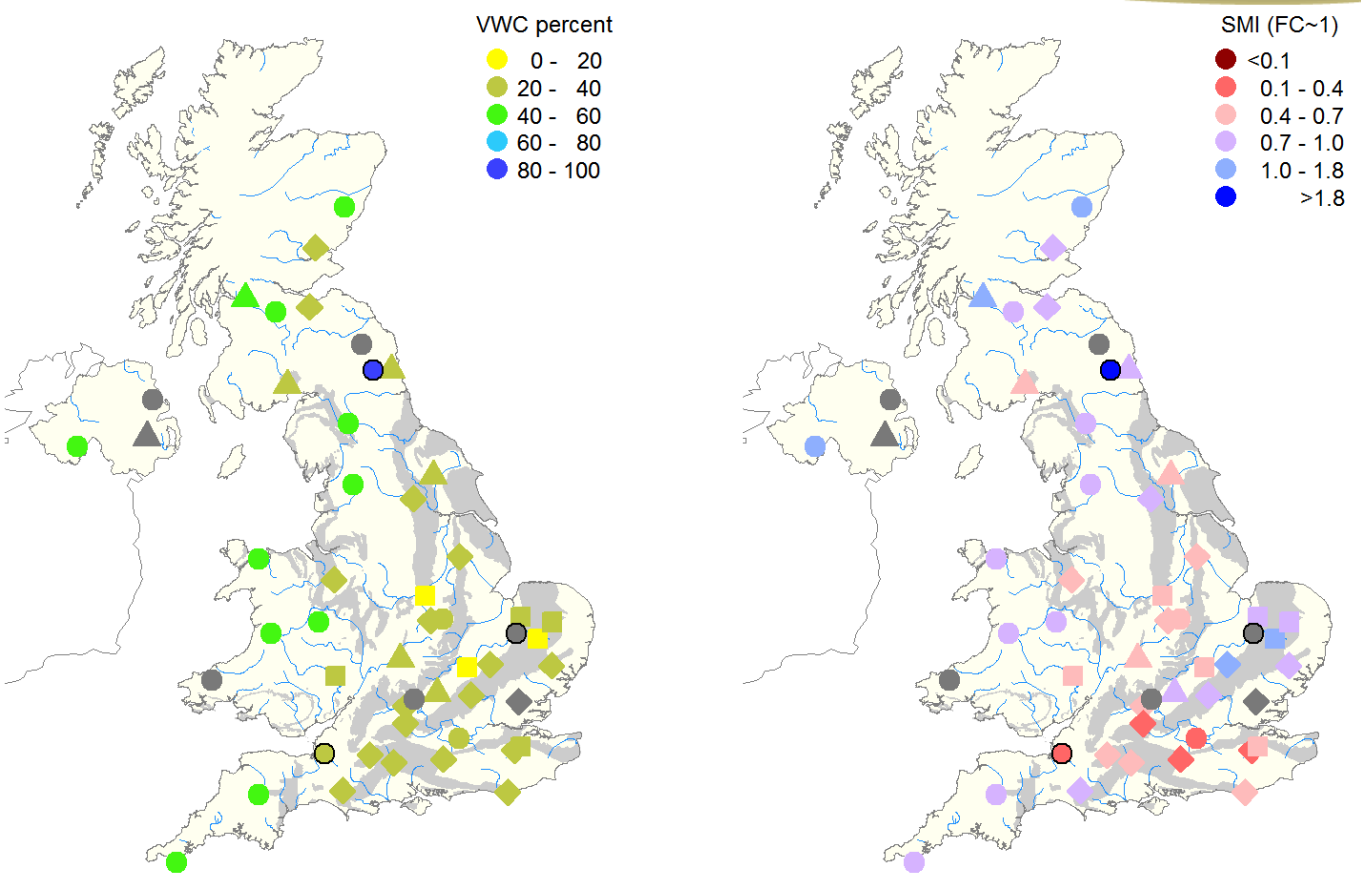
COSMOS-UK | soil moisture

UK Soil Moisture Monitoring Network

Issued on 1 October 2020



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

Notes on period to 30 September 2020

At the end of September soil moisture is generally close to normal for the time of year across much of the UK; a notable exception is an area of eastern England where soil moisture is above normal.

Provisional data for September show that rainfall was below average across most of the UK, with a long dry spell between the 4th and 20th. There were however exceptions to this and some places had more than average rainfall, most notably parts of eastern England which ended the month with a spell of very wet weather.

At the end of August soil moisture across the UK was above normal for the time of year. With less than average rainfall soil moisture at many sites has fallen to levels typical for the time of year (e.g. Bickley Hall, Easter Bush, Holme Lacy, North Wyke). At some sites, scattered throughout the UK but mainly in England, soil moisture has even fallen below normal levels for the time of year (e.g. Chobham Common, Crichton, Risehome).

Despite drying through the earlier part of the month, the wet end to September led to soils at some sites in eastern England being wetter than normal at the end of the month (e.g. Euston, Morley, Waddesdon).

Network News

- Data to the end of 2018 have now been published in The Environmental Information Data Centre (EIDC).
- New technical faults have arisen at Cwm Garw and Writtle.
- Redhill, Hillsborough and Glenwherry are now back online.

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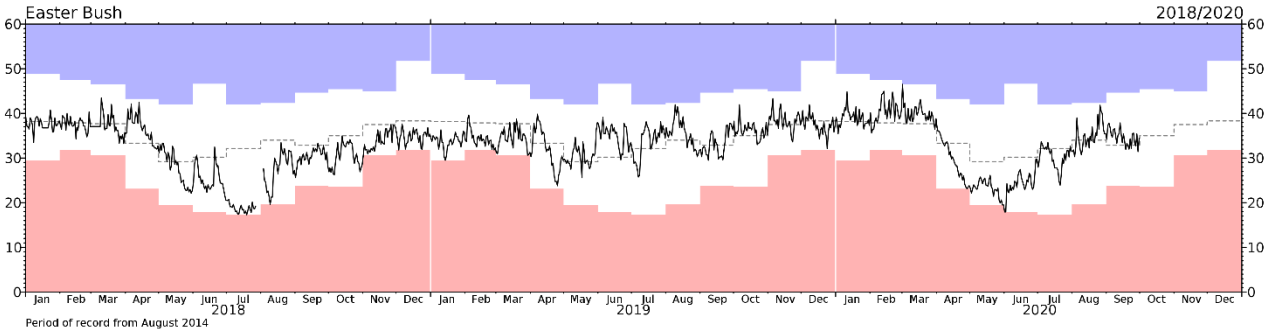
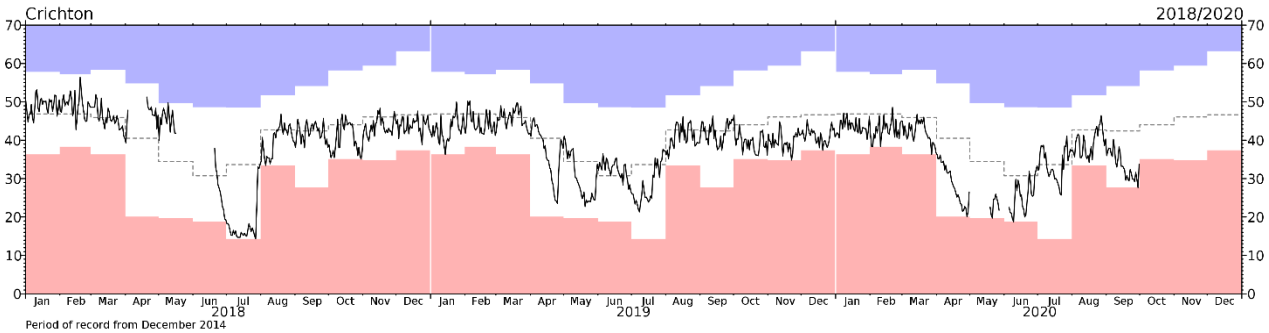
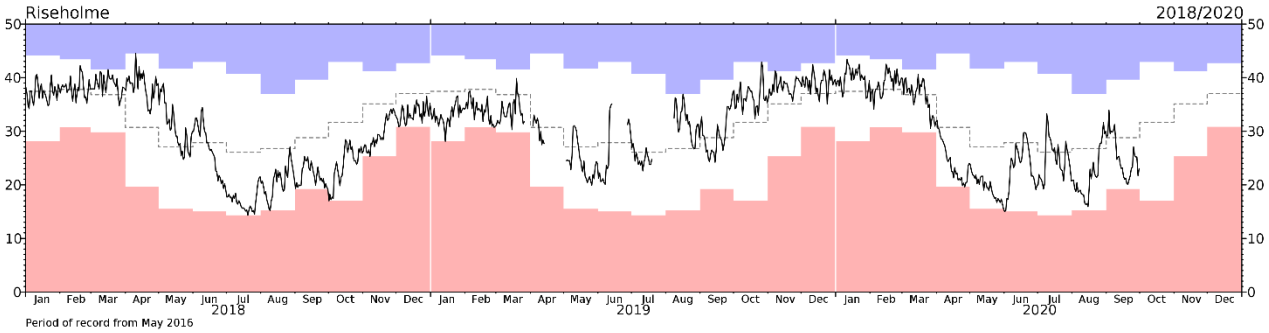


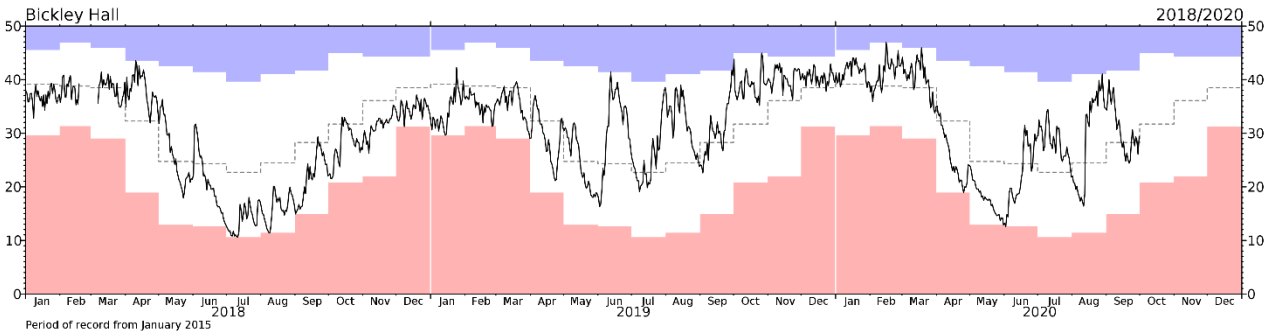
Period of record from August 2014



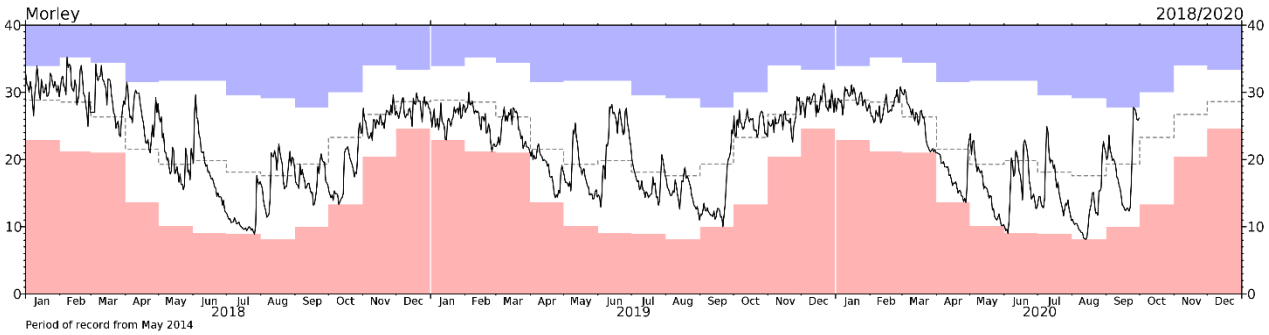
Period of record from December 2014



Period of record from May 2016



Period of record from January 2015



Period of record from May 2014

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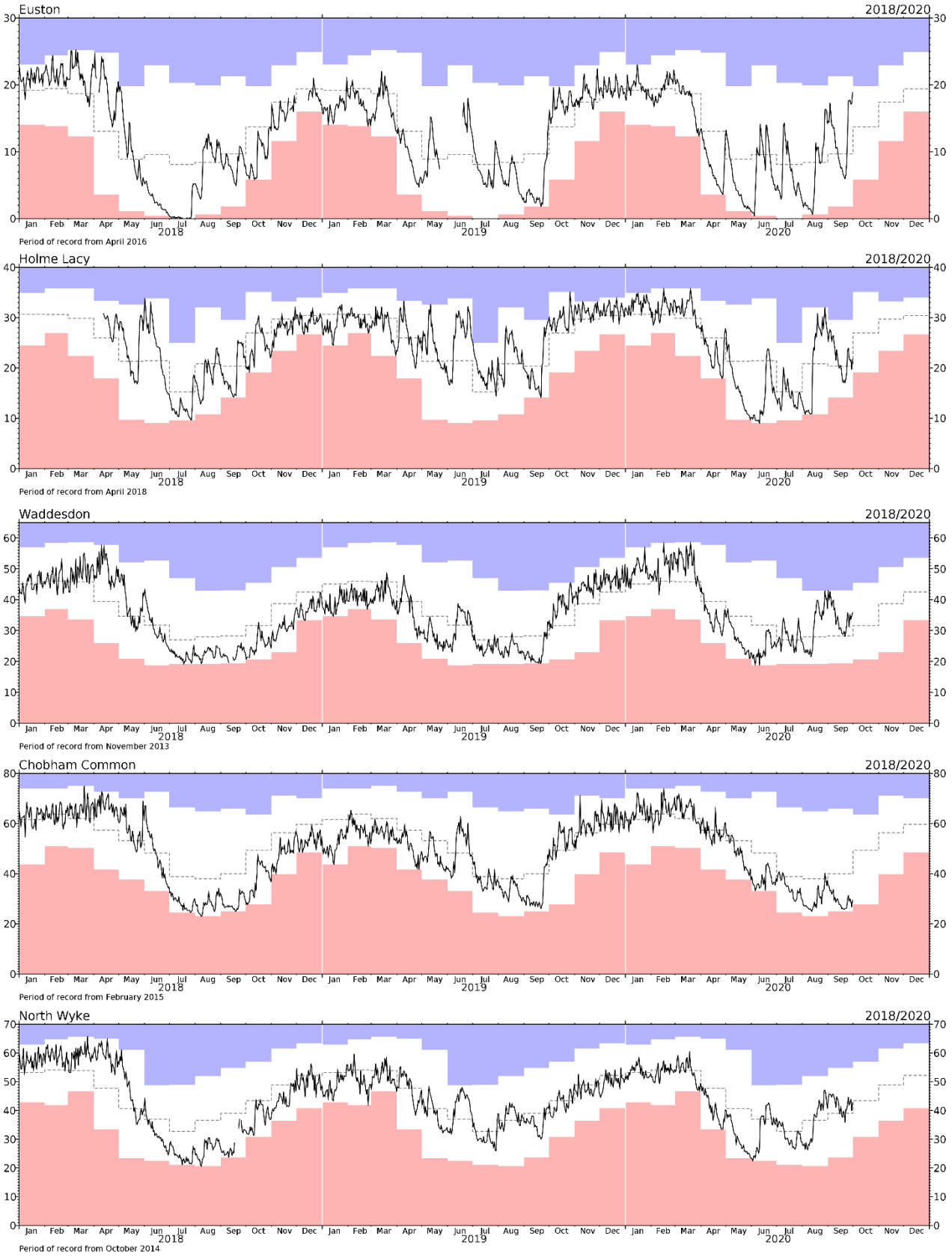

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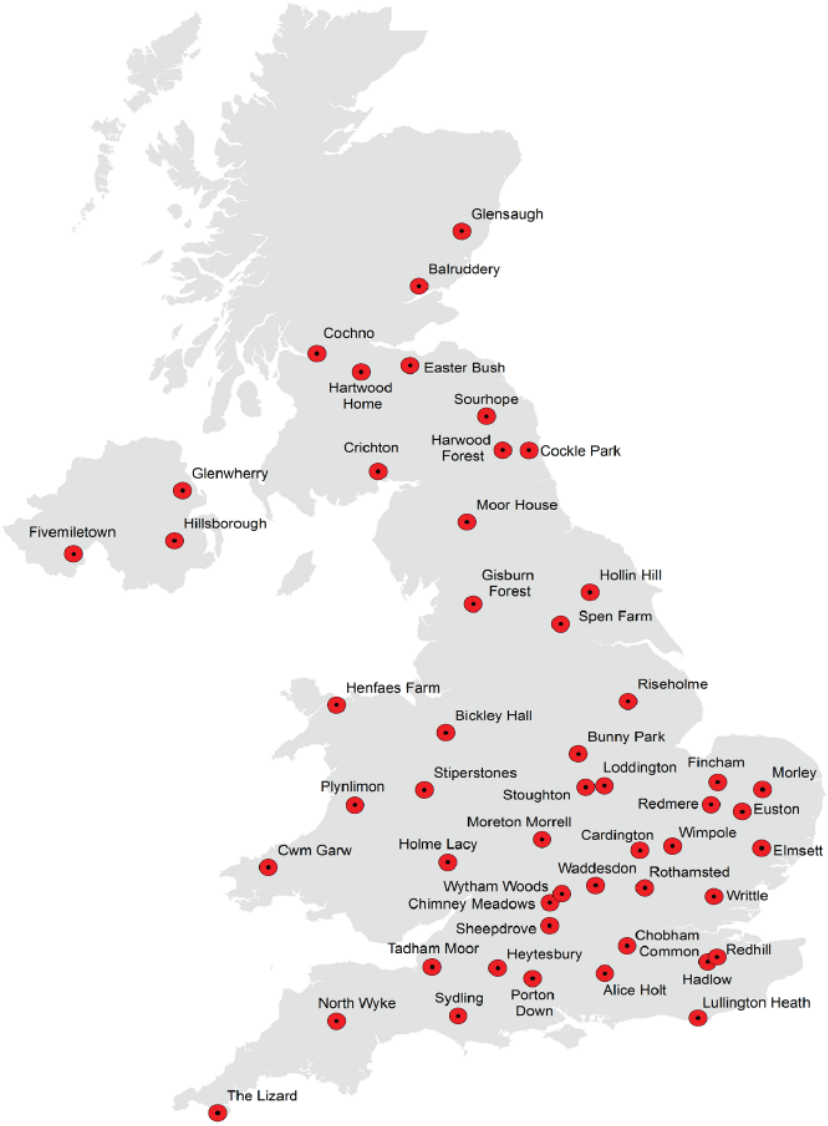
COSMOS-UK site locations



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.

~ 30%	■
~ 40%	◆
~ 50%	▲
~ 60%	●
>=~ 70%	●

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

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