

UK Hydrological Bulletin: November 2018 – January 2019

Above average rainfall through the late autumn and early winter eliminated soil moisture deficits across almost all of the UK and spate conditions, with moderate local flooding, were common from mid-November until mid-December. The associated healthy runoff triggered an important recovery in reservoir stocks and groundwater levels in many areas but, entering 2019, reservoir stocks remained appreciably below average in a few areas, including parts of the southern Pennines and East Anglia. Similarly, groundwater levels, whilst generally remaining within the normal seasonal range, were appreciably below average in a few areas, including East Anglia. As is often the case, the water resources outlook — and prospective summer flows in groundwater-fed streams and rivers — will be substantially influenced by late winter and early spring precipitation patterns.

November rainfall was close to the average for UK as a whole but considerably below across northern Scotland and much of north-west England. The month was punctuated by the passage of several very active low pressure systems bringing spells of heavy rainfall; in the Scottish Highlands, Achnagart reported a 52.5 mm total on the 30th. The wet interludes generally triggered steep river flow recoveries and flood alerts were common during the second week — particularly in rivers draining impermeable catchments in the English Lowlands (the Mole for example). Intense local downpours also caused substantial traffic disruption. By contrast, the legacy of the arid spring and early summer remained evident in relatively depressed groundwater levels, for example in the Chalk at Chilgrove (west Sussex) and continuing flow recessions in groundwater-fed streams and rivers.

In the Cotswolds, daily flows in the river Coln fell close to their late-autumn minimum. In Derbyshire, the normally submerged village of Derwent, remained partially exposed as a result of continuing low levels of Ladybower reservoir.

At the national scale the December rainfall total was also well within the normal range but with a notable north-south contrast. Much of northern Scotland reported less than half of the long term average — a deficiency reflected in flows for the river Helmsdale which fell below previous minima for the time of year. By contrast, flood alerts were common across southern Britain where runoff for the river Camel (Cornwall) was the second highest for December in a series from 1964.

However, December runoff totals remained appreciably below average in most index catchments across the English Lowlands. In addition, whilst December groundwater levels in most index wells were within the normal end-of-year range, moderately depressed levels were registered in Northern Ireland and parts of East Anglia (where recoveries typically don't gain momentum until the spring).

Considering annual rainfall series, Scotland shows an increase of 13% since 1910 but for England & Wales no discernible trend is evident (Fig. 1) over a timespan when temperatures have increased by a little over one degree

centigrade. The lack of trend in England & Wales annual rainfall totals is clearly of significance in the climate change debate.

Entering 2019, reservoir stocks for England & Wales as a whole were well within normal range (Fig. 2), having been at their lowest since the 2003 drought in the late summer of 2018. However, stocks in a few reservoirs (e.g. Grafham in East Anglia) remained appreciably below the average for the time of year and, with high pressure dominating synoptic patterns, a dry spell which began at Christmas continued well into January across most of the UK.

Correspondingly, reservoir replenishment was meagre and most rivers were in recession by mid-month. Arctic conditions with appreciable snowfall characterised the fourth week of the month but precipitation totals were generally modest. Correspondingly, the February and March rainfall will assume considerable hydrological importance.

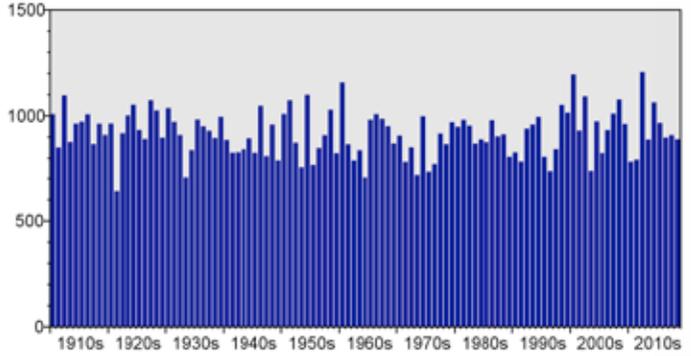


Fig 1 Annual rainfall totals (mm) for England & Wales (Data source: Met Office)

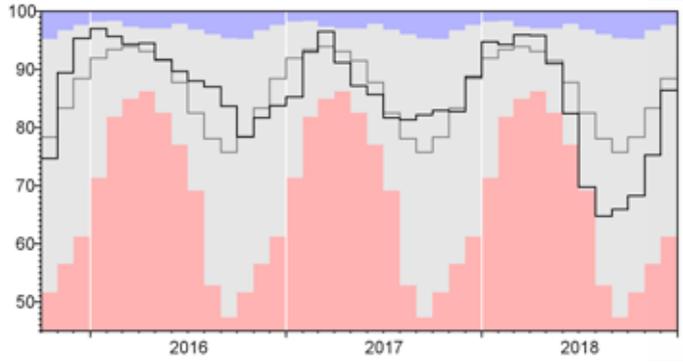


Fig 2 Estimated overall Reservoir stocks for England & Wales (as a % of the 1990-2017 average) - the grey trace is the long term monthly average; the blue and pink envelopes represent the long term monthly max. and min

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