

Met Office
Hadley Centre



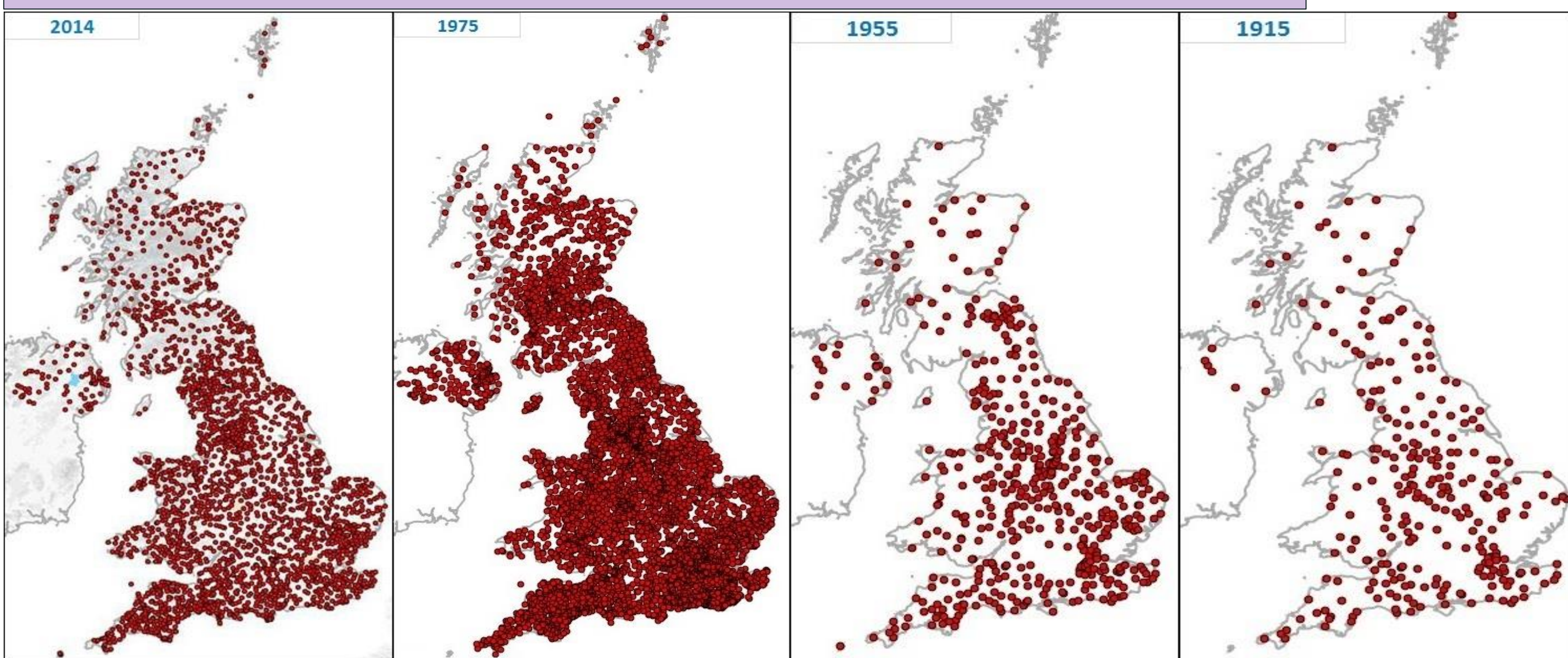
Historic
Droughts

Recovery of historical climate records to support analysis of past drought

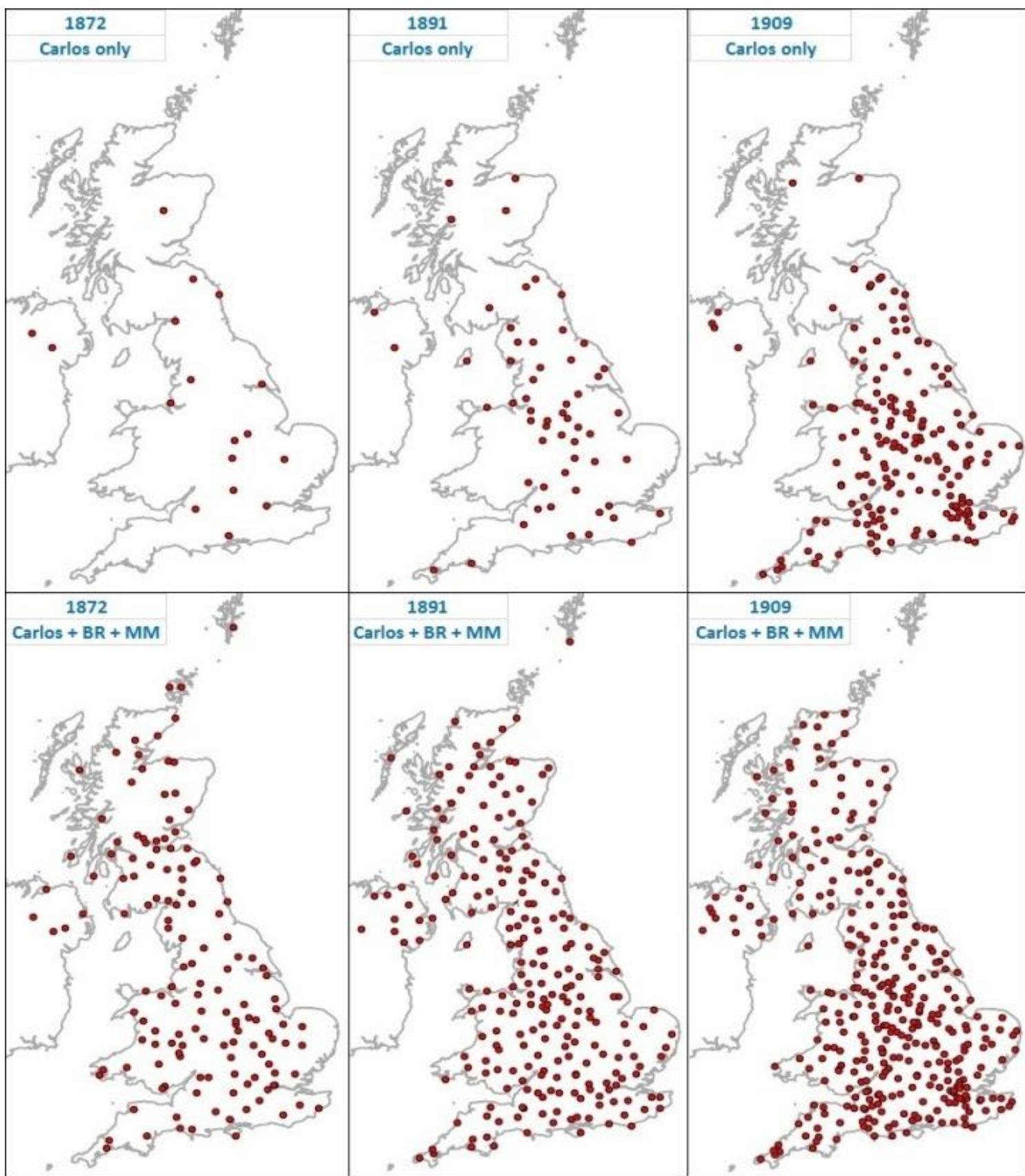
At the Met Office we have been sourcing historical station observations and adding them to our digital archives. This will enable us to extend our historical gridded series further back, to well before the present start-dates of 1910 (monthly series) and 1960 (daily series).

Together with our work which has identified the magnitude of uncertainties in the gridded daily & monthly data, we know that we can construct reliable monthly grids as far back as 1862 for rainfall, and probably around 1890 for temperature.

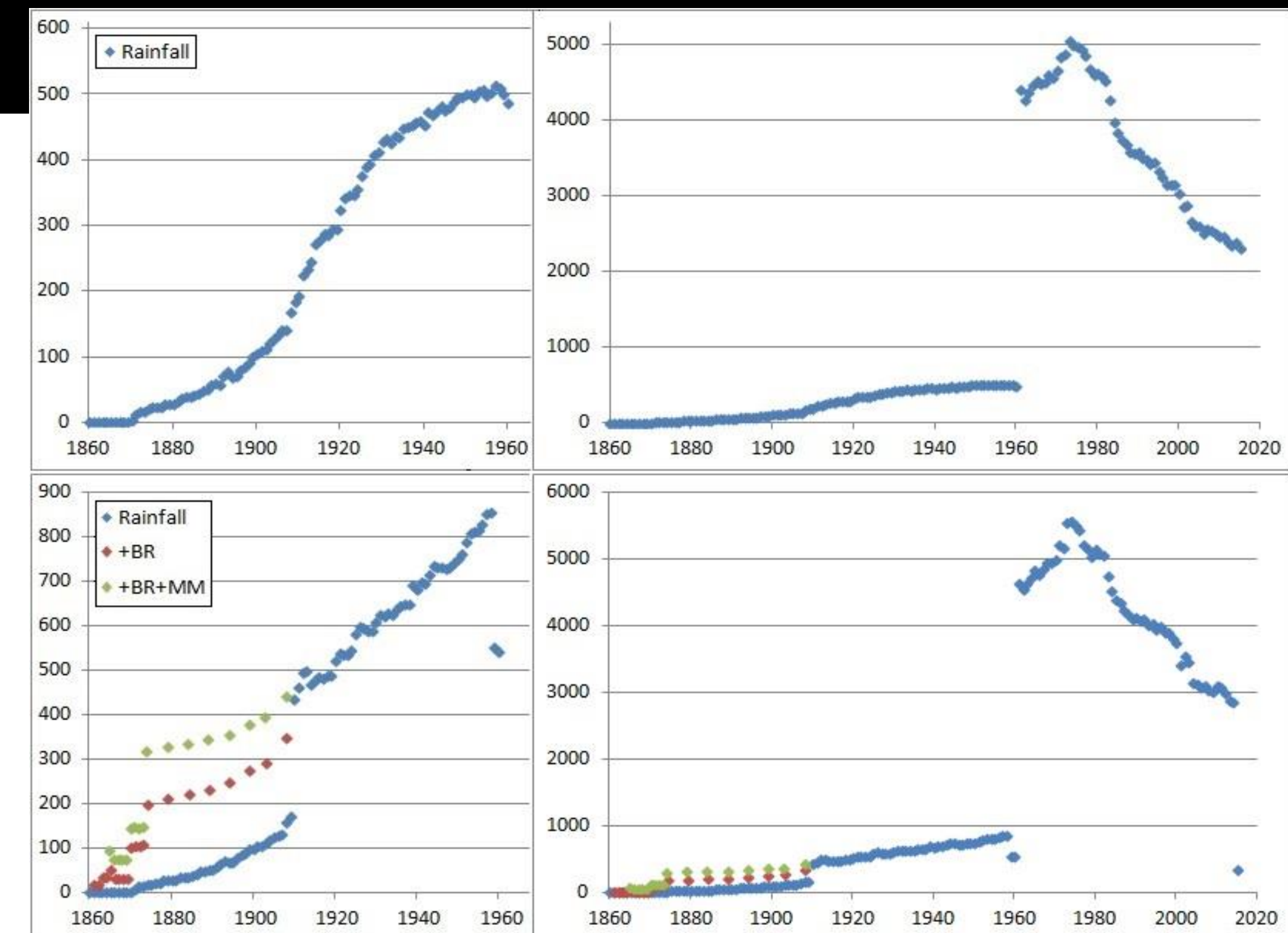
UK station networks for rainfall for various years: 2014, 1975, 1955, 1915.



These four maps (above) show the daily rainfall network, from 2014, 1975 (when the network was at its historical peak) and the earlier years 1955 and 1915. Additional daily rainfall data will be available following the digitisation exercise currently being undertaken by Met Office staff in Edinburgh.

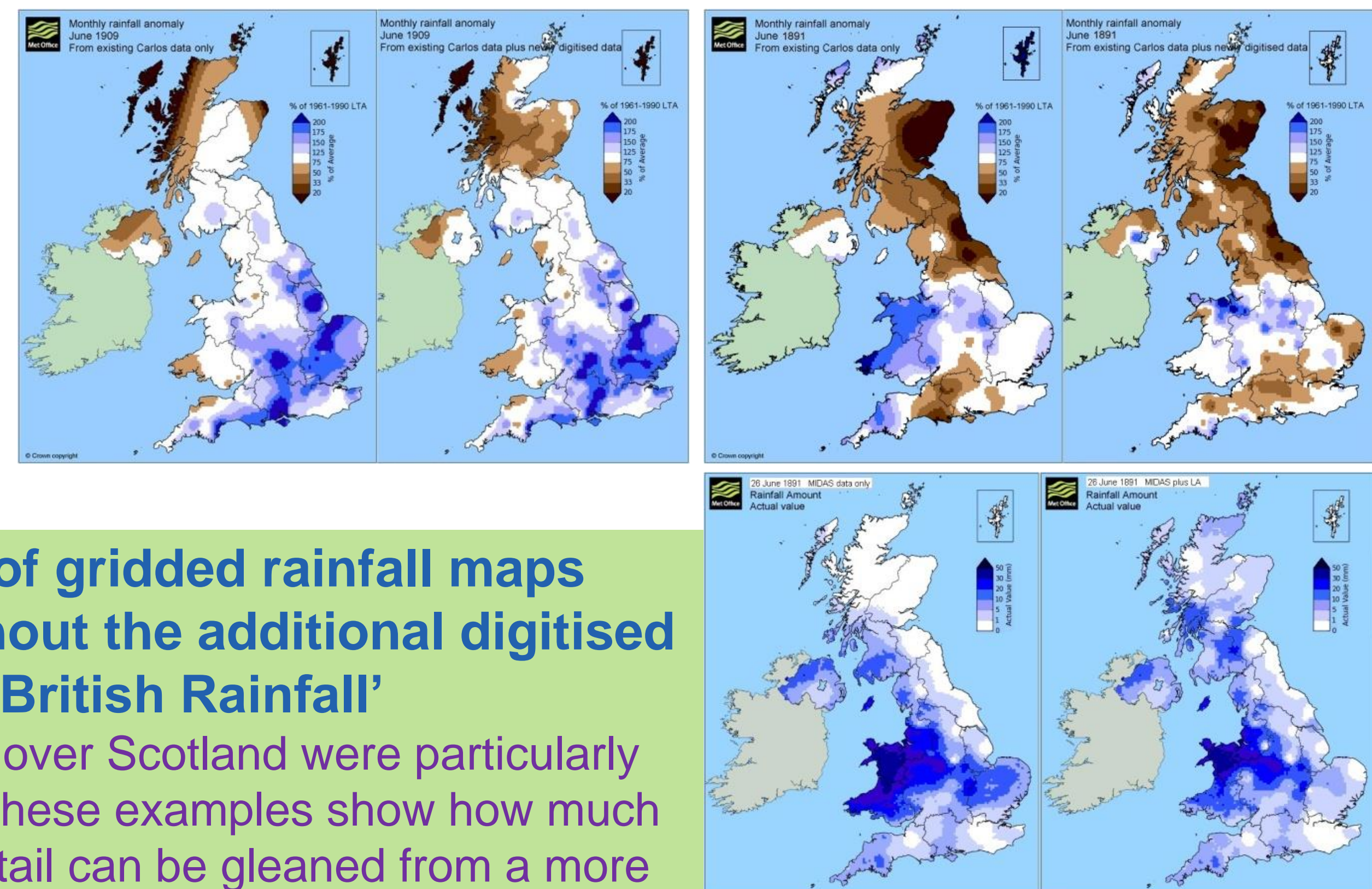


In terms of extending our historical rainfall series further back in time, these maps show what monthly data were already available for 1909, 1891 and 1872, together with what we have following the digitisation of further monthly data.



Changes in station network over time

These graphs show how many stations exist on our digital archives of (upper) daily and (lower) monthly rainfall. The latter also includes estimates of how many stations will be on our digital archive once digitisation is complete from the main sources of printed but hitherto non-digitised data: British Rainfall (BR) and Meteorological Magazine (MM). Digitisation of temperature records is also planned, using mainly the Monthly Weather Reports.



Examples of gridded rainfall maps with & without the additional digitised data from 'British Rainfall'

Rainfall data over Scotland were particularly sparse, and these examples show how much additional detail can be gleaned from a more complete network of stations. Monthly examples (above) are June 1909 and June 1891. Note that for the latter, the original data was sparse and the apparent wet area over western Wales, for instance, is due to extrapolation; notable differences can also be seen over East Anglia and SW England.

The bottom right pair of maps show the additional level of detail for one individual day (26 June 1891) with the additional station data.

Extending our grids back to 1890 or before will allow us to study the Long Drought of 1890-1910.

Having the 5km * 5km grid reveals much better spatial detail, such as at river catchment level, than the broader regional HadUKP series (as per example, on right, for 'SEEP' region).

Also extending our gridded temperature series will enable a wider perspective in terms of hydrological modelling and hydro-meteorological reconstructions, e.g. for river flows and groundwater.

Collaboration between project partners: Ben Marchant at BGS; Katie Smith and others at CEH. Development of models which estimates uncertainty based on available station data, e.g. at Met Office a 'leave-one-out' verification approach.

Future direction – Digitisation ongoing at present.

Feedback, including utility for end-users. [This is an interactive poster!!](#) If you have any unresolved questions or other comments then please write them in this box >

