



Homogenization of ECA&D data-set

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ECA&D data-set collects over 4800 temperature series from all countries of Europe and Mediterranean countries. Large number of these series are affected by inhomogeneities due to relocations or changes of the instruments. These may lead to erroneous estimates of climate impact indices and trends. In the context of Copernicus project C3S.311a.Lot.4 KNMI is taking part in the selection and the development of a homogenization procedure.

In the context of Horizon 2020 EUSTACE Project a procedure of break detection has been developed by University of Bern and applied to ECA&D data-set. It consists in an agreement-system of three different break detection methods having different statistical bases (Kuglitsch et al., 2012).

The results of the break detection have been then used for the calculation of the amplitude of the breaks, basing on a quantile matching process inspired by the method of Trewin (2012). In order to perform a more effective homogenization, the results of this procedure have been used as input and as reference set for a second iteration of the same process, taking advantage of the higher signal-to-noise ratio and of the better quality of the adjusted series after the first iteration.

Results of this method have been compared with the output of the most common break detection and adjustment calculation software packages, applying all of them on a benchmark data-set. Break detection has been evaluated considering its temporal accuracy, while results of the adjustment calculation software have been compared looking at the indices of different homogenized versions of the same series. This comparison has been done using as a reference some manually homogenized series provided by NHMS which are viewed to have the superior adjusted series due to their access to complete metadata records.

Final homogenized version of ECA&D data will be soon made available for users and ECA&D partners, together with details about the intermediate steps of the homogenization procedure.