EMS Annual Meeting Abstracts
Vol. 15, EMS2018-420, 2018

Homogenization of the ECA&D temperature dataset

Antonello Squintu (1), Gerard van der Schrier (1), Petr Štěpánek (2), Pavel Zahradníček (2), Yuri Brugnara (3), and Albert Klein Tank (4)

(1) Royal Netherlands Meteorological Institute, Climate Analysis, De Bilt, Netherlands (schrier@knmi.nl), (2) Czech Glob, Brno, Czech Republic, (3) University of Bern - Department of Geography, Bern, Switzerland, (4) Wageningen University & Research, Wageningen, Netherlands

The ECA&D dataset contains over 4800 temperature series from all European 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 a comparison of homogenization procedures which are applicable to daily data.
In this presentation, the homogenization procedure that is developed at KNMI and tailored to the ECA&D dataset is presented. It consists of a procedure for break detection which has been developed by the University of Bern, using an agreement-system of three different break detection methods having different statistical bases (Kuglitsch et al., 2012), and a quantile matching process inspired by the method of Trewin (2012).

Some results of this method are presented and the impact of the homogenisation on trend analysis of mean and extreme temperature is shown.

This method has 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.

The final homogenized version of the 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.