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Homogenization of daily Spanish temperatures using SNHT and HOM methods

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In recent years, in connection with the need to improve our knowledge about climatic extremes, the homogenization community has focused on the adjustment of daily climatological data. The Spanish funded projects EXPICA (Spanish grant CGL2007-65546-C03) and its coordinated project CAFIDEXPI (Spanish grant CGL2007-65546-C03-02) is devoted to analyze changes in extremes over the Iberian Peninsula, thus needing daily homogeneous data suitable for such purposes. As daily resolution would increase the problems encountered by homogenizers to apply the different detection/correction methods, a widely used approach (as demonstrated by the survey conducted in the framework of the Working Group I of the COST-ES0601: Advances in homogenization methods of climate series: an integrated approach-HOME) is to combine a detection approach based on lower resolution data (monthly, seasonal, annual) and a correction method specifically designed for daily data.
In this work, we present the results of the homogenization of a subset of 28 daily temperature stations, centered around the Iberian Peninsula, which were subsequently used to derive a basic climatology for the above mentioned projects. All stations are almost complete for the 1971-2000 reference period and many of them go back to the 19th century. The procedure detects potential breaks applying the SNHT test to annual and quarterly data, using additional support station as references and the limited available metadata. Daily adjustments were calculated using the HOM method and covering the longest possible period (variable for each station), allowed by available, well correlated, overlapping data. Trends before and after homogenization were assessed by calculating a set of climate change indices.