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Homogenization of Croatian monthly average and extreme air temperature data series

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The use of homogenized meteorological data time series is crucial for all climate analyzes because artificial shifts can cause misleading conclusions that do not correspond to real climate changes.
Here, the results of homogenization of some Croatian monthly mean, maximum and minimum air temperature data series will be presented. Three methods of homogenization, each with a different approach to the problem, were used and the results obtained from each method were compared. The methods were: PRODIGE (penalized likelihood), Multiple Analysis of Series for Homogenization - MASH v3.02 (hypothesis testing) and Standard Normal Homogeneity Test - SNHT (iterative t-test) applied with the AnClim software. Those three methods were applied on the monthly mean, maximum and minimum air temperature time series from 25 stations in Croatia. Five of 25 chosen stations cover the period 1900-2009 and 20 other the period 1950-2009. Available metadata of meteorological stations were used for improvement of the homogenization results. Furthermore, break points detected in three different temperature data series were compared for every station.