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1 Monthly Air Temperature Homogenization over France

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Météo-France began a new air temperature homogenization program managed by the Climatology department last year. Homogeneity testing and data adjustments are applied to maximum and minimum temperature in order to create a dataset of long-term complete and homogeneous series since 1951. This program aims at creating around 200 of French monthly minimum and maximum homogeneous temperature series. Monthly maximum and minimum temperature series are considered separately.

This action is associated with the national data rescue program because most of the temperature series archived in the French national climatological database (BDCLIM) are available from 1959. Furthermore great efforts are dedicated to collect metadata in the departmental weather centres and to digitize these metadata.

Homogenization Caussinus-Mestre technique is applied. Each single series is compared to neighbouring stations within the same climatic area by making series of differences. The detection and correction are carried out with moving neighbourhoods based on the knowledge of the climatologist and the correlation. The final decision to adjust the temperature series is based on the statistical test. Metadata are used as a supplement to the statistical testing to validate the breaks and precise the shift dates. Unfortunately metadata are often not complete and missing. The most frequent identified reasons for inhomogeneities in French temperature series are due to systematic

changes in shelter and network automation.

The partial results of testing and adjusting long-term French temperature series is the realization that the temperature series are rarely homogeneous. The results reveal that professional weather stations series have more breaks than the climatological stations because of systematic changes in instrumentation during the second half of the 20^{th} century.

The first results for the South-West of France show that seasonal mean maximum temperatures increase more than seasonal mean minimum temperatures in the 1955-2006 period for all seasons.