Production of a reference data set of homogenised series for analysis of temperature evolution in France since 1959

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Climate change analysis requires reliable long term series. The first step to produce such series of climate data is the Data Rescue. It includes searching documents, saving the archives, inventorying the data, selecting useful set of data and metadata, digitising documents and data, and controlling the data. The second step is to homogenize the series, in order to detect and correct the biases due to changes in measurement conditions. Indeed, the raw series contain numerous heterogeneities, due to the successive changes in measurements conditions and practices along time. The related biases can be of the same magnitude as the climate change signal that we are analysing. Homogenization is a statistical process allowing to detect and correct the breaks due to these heterogeneities.

Since 2010, Meteo-France has undertaken the homogenization of monthly minimum and maximum temperature and precipitation series over France, associated with a major effort of data rescue. The objective is to get monthly homogenized series covering France, with the highest spatial density and the best quality available, for a period starting in the fifties. The series are homogenized using HOMER over climatic homogeneous areas. Météo-France has now a complete set of around 230 monthly homogenized temperature series covering the whole territory. This new set of series bring an up-to-date diagnosis for climate evolutions over France, with a high spatial density useful for climate impact and adaptation studies.

The first analysis covers the 1959-2009 period, which is the common period for all the available series. The mean trend over this 1959-2009 period is around 0.29°C/decade for minimum temperature and 0.32°C/decade for maximum temperature. To get information on extremes, daily reference series are required. Meteo-France will now select amongst the monthly homogenized series those which are close enough to apply SPLIDHOM method in good conditions and deliver some daily homogenized temperature. In the future, these homogenized series will be regularly updated, as the raw series can contain inhomogeneities during the recent years.