



## **Evolution of temperature and precipitation in France since the 1950s a new homogenised dataset**

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Climate change analysis requires reliable time series. The raw observed series are affected by heterogeneities, due to the successive changes in measurements conditions and practices over time. Homogenization is a statistical process allowing to detect and to correct these heterogeneities.

In 2013 and 2014, Météo-France has achieved the homogenization of monthly series over France for minimum and maximum temperature and precipitation, associated with a major effort of data rescue. The software HOMER was used to homogenize the series over climatic homogeneous areas. The new dataset offers the highest spatial density and the best quality available. There are around 230 monthly homogenized temperature series and more than 1000 precipitation series covering metropolitan France since the 1950s.

Temperature has increased with a mean trend of 0.29°C per decade for minimum temperature and 0.32°C per decade for maximum temperature over 1959-2009. Changes in precipitation depend on the region, the season and the period considered. At annual scale, precipitation increase in the North and decrease in the South, even if most of annual trends are not significant.

To study variations in temperature and precipitation events, reliable daily series are required. A few statistical methods exist to homogenize daily data. SPLIDHOM method is used to homogenize daily temperature series, when the conditions of application are satisfied (well correlated neighbour series, Mestre et al., 2011). In order to get a higher density of diagnosis, information coming from monthly homogenization was also used to select daily reference series, with little amplitude and adjustments of inhomogeneities. ETCCDI indices derived from these daily data are then computed to measure changes in extremes.