



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

Anne-Laure Gibelin (1), Brigitte Dubuisson (1), Lola Corre (1), and Thumette Madec (2)

(1) Météo-France, Direction of Climatology, 42 Av Coriolis, 31 057 Toulouse Cedex, France, (2) Météo-France, Direction Inter-régionale Ouest, 35136 Saint-Jacques de la Lande, France

Climate change analysis requires reliable long term series. The raw observed series contain numerous heterogeneities, due to the successive changes in measurements conditions and practices over 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 to correct the breaks due to 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 series have been homogenized using the software HOMER over climatic homogeneous areas. This 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, providing an up-to-date diagnosis of climate evolutions over France, with a high spatial density useful for climate impact and adaptation studies.

Temperature has increased with a mean trend of  $0.29^{\circ}\text{C}$  per decade for minimum temperature and  $0.32^{\circ}\text{C}$  per decade for maximum temperature over 1959-2009. This warming over France is mainly explained by spring and summer temperatures increase. It is higher than the one established over the XXth century ( $+0.1^{\circ}\text{C}$  per decade), due to a net warming acceleration since the end of the 1970s. 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. These patterns are modulated at seasonal scale, due to the large temporal and spatial variability of precipitation.