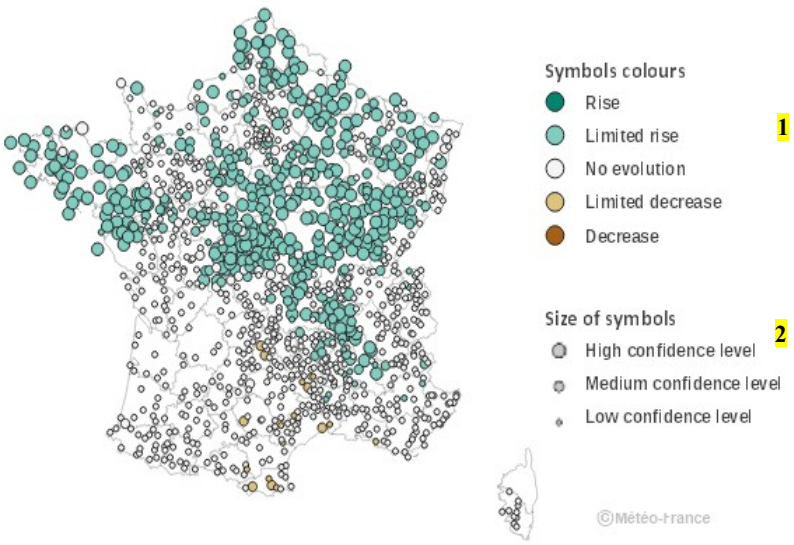
Evolution of annual and seasonal rainfall
Past climate – metropolitan France

1. Graph reading aid



This map represents the evolution of rainfall amount during the period 1961-2014, at different temporal frequencies: annually, in winter, in spring, in summer, in autumn.
Each coloured dot shows the location of a weather observation station for which chronological sequences of climatic data were able to be established.

1 Colour of symbols: from homogenised sequences (cf § 3 Data and methods) trends were able to be calculated; a dot is green when the trend shows an increase in rainfall, in red when the trend shows a decrease.

2 Size of symbols: the size of the symbol represents the level of confidence of the estimated trend, based on a statistical test (cf § 3 Data and methods).

2. Definitions

Meteorological seasons:

- Winter of year A : December of the year A-1 to February of the year A
- Spring : March to May
- Summer : June to August
- Autumn : September to November
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Annual or seasonal rainfall amount: amount across the year or the season of daily precipitations

- Daily rainfall: quantity of water collected between the day J at 06:00 UTC and the day J+1 at 06:00 UTC

Published on July 18,, 2023

3. Data and methods

Homogenised series:

The sequences of measures are not immediately usable for the analysis of climate evolutions. They are affected by changes in measurement conditions over the course of time, such as alterations in the position of the measuring station, or sensor changes. These changes cause biases, which can be in the same order of magnitude as the climatic signal. Homogenisation is a statistical treatment the aim of which is to detect and correct biases in the raw sequences, so as to produce reference sequences adapted for quantifying climate change.

In metropolitan France there are more than a thousand monthly sequences of homogenised rainfall beginning in the 1950s, obtained by applying the HOMER method (cf. *§ 4.Références)*.
These trends are all calculated during the period 1961-2014, the period being common to all the homogenised sequences covering metropolitan territory. The calculation of the trend is completed by a statistical test (Mann-Kendall test) which can estimate if a sequence of chronological data shows a rising or decreasing trend for a given level of confidence.

4. References

*HOMER: a homogenization software – methods and applications. Idojaras, Quarterly journal of the Hungarian Meteorological Service, **117**, no. 1, 2013.*
Mestre, O., P. Domonkos, F. Picard, I. Auer, S. Robin, E. Lebarbier, R. Böhm, E. Aguilar, J. Guijarro, G. Vertachnik, M. Klancar, B. Dubuisson, and P. Stepanek: