



Reconstruction of long-term instrumental series. Rainfall data series for Barcelona (NE Spain), 1786-2013

Mariano Barriendos (1), Marc Prohom (2), and Arturo Sanchez-Lorenzo (3)

(1) Department of Modern History, University of Barcelona, Barcelona, Spain (barriendos@telefonica.net), (2) Climatology Unit, Catalan Meteorological Survey, Catalonia, Spain, (3) Department of Physics, University of Girona, Girona, Spain

Detection and reconstruction of old instrumental series with meteorological data is an interdisciplinary activity with a large number of difficulties. Scientific history of Barcelona city contains a good number of documentary sources, bibliography, newspapers and scientific reports with enough potential to make possible reconstruction of long-term instrumental series since the late 18th century.

Motivation for this research is present uncertainty of precipitation patterns on rainfall regime over the Mediterranean region caused by the global change. Water resources are so important that any improvement of knowledge is welcome. Research for long-term series is focused in detection and analysis of low frequency patterns, both for climatic variability but also for meteorological anomalies.

Long-term temperature measurements for Barcelona since 1780 are already developed and now effort is focused on rainfall. Usually, data available for the 20th century have complete metadata to make possible a correct reconstruction, homogenization and analysis. In present work, collection of different data sources from different periods and locations, with different methods and instruments, managed by institutions or private observers, offer next results: Barcelona has continuous daily resolution rainfall series during the period 1850-2013 and at monthly resolution for the period 1786-1849, with any important gap produced by civil wars and social riots.

Difficulties to homogenize this long series are also described with respective proposed solutions. The result is the longest rainfall series available in Spain, second available in the Iberian Peninsula after Gibraltar series (United Kingdom).