



Homogenization of long instrumental temperature and precipitation series over the Spanish Northern Coast

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The Spanish-funded research project Rapid Climate Changes in the Iberian Peninsula (IP) Based on Proxy Calibration, Long Term Instrumental Series and High Resolution Analyses of Terrestrial and Marine Records (CALIBRE: ref. CGL2006-13327-C04/CLI) has as main objective to analyse climate dynamics during periods of rapid climate change by means of developing high-resolution paleoclimate proxy records from marine and terrestrial (lakes and caves) deposits over the IP and calibrating them with long-term and high-quality instrumental climate time series. Under CALIBRE, the coordinated project Developing and Enhancing a Climate Instrumental Dataset for Calibrating Climate Proxy Data and Analysing Low-Frequency Climate Variability over the Iberian Peninsula (CLICAL: CGL2006-13327-C04-03/CLI) is devoted to the development of homogenised climate records and sub-regional time series which can be confidently used in the calibration of the lacustrine, marine and speleothem time series generated under CALIBRE.

Here we present the procedures followed in order to homogenise a dataset of maximum and minimum temperature and precipitation data on a monthly basis over the Spanish northern coast. The dataset is composed of thirty (twenty) precipitation (temperature) long monthly records. The data are quality controlled following the procedures recommended by Aguilar et al. (2003) and tested for homogeneity and adjusted by following the approach adopted by Brunet et al. (2008). Sub-regional time series of precipitation, maximum and minimum temperatures for the period 1853–2007 have been generated by averaging monthly anomalies and then adding back the base-period mean, according to the method of Jones and Hulme (1996). Also, a method to adjust the variance bias present in regional time series associated over time with varying sample size has been applied (Osborn et al., 1997). The results of this homogenisation exercise and the development of the associated sub-regional time series will be widely discussed.

Initial comparisons with rapidly growing speleothems in two different caves indicate that speleothem trace element ratios like Ba/Ca are recording the decrease in littoral precipitation in the last several decades.

References

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