



New early instrumental series since the beginning of the 19th century in eastern Iberia (Valencia, Spain)

Arturo Sanchez-Lorenzo (1), Mariano Barriendos (2), Elena Guinaldo (3), and Joan A. Lopez-Bustins (4)

(1) Climate Research Laboratory, Barcelona Science Park, Catalonia, Spain (asanchezl@pcb.ub.cat), (2) Department of Modern History, University of Barcelona, Catalonia, Spain (mbarriendos@ub.edu), (3) Group of Environmental Physics, University of Girona, Catalonia, Spain (e.guinaldo@udg.edu), (4) Group of Climatology, University of Barcelona, Catalonia, Spain (jlopezbustins@ub.edu)

Early instrumental series are the main source for climate information in the 18th and the first part of the 19th century, which is when systematic meteorological observations started in most national meteorological services. The first continuous series in Spain starts in 1780 in Barcelona due to meteorological observations made by the medical doctor Francisco Salvá Campillo. Moreover, only two other series have been recovered at the present in Spain: Madrid and Cádiz/San Fernando. Until present, in Spain the major part of the meteorological observations detected in early instrumental periods were made by medical doctors, who started to pay attention to the environmental factors influencing population health under the Hippocrates oath, although also there are military institutions and academic university staff (e.g. physicists, mathematicians, etc.).

Due to the high spatial and temporal climate variability in the Iberian Peninsula, it is important to recover and digitize more climatic series, and this is one of the main goals of the Salvá-Sinobas project (<http://salva-sinobas.uvigo.es/>) funded by the Spanish Ministry of Environment, and Rural and Marine Affairs for the 2009-2011 period. The first new series with systematic observations was detected in the city of Valencia, in the eastern façade of the Iberian Peninsula. The meteorological observations were daily published in the newspapers *Diario de Valencia* (1804-1834) and *Diario Mercantil de Valencia* (1837-1863) until official meteorological observations started in 1858 at the University of Valencia. Each day 3-daily observations (morning, midday, afternoon) were published with five climatic variables: temperature, air pressure, humidity, wind direction and the sky state. Only during the 1804-1808 period daily rainfall data is available.

We checked the observer comments published in the newspapers to obtain metadata about the instruments and meteorological station information. Unfortunately, temperature data was recorded indoor and unknown hygrometer was used during the first decades until 1841. One curious detail of the Valencia early instrumental series is that the records were initiated by a local clockmaker, a new profession interested in meteorological observations in Spain during this period. A great effort has been made to detect original manuscripts, but the archive revision did not provide encouraging results.

We started to digitalize daily air pressure records, to improve atmospheric circulation reconstruction in the Mediterranean region, and the sky observations (defined as cloud free, cloudy or overcast conditions), since we are interested into reconstruct cloud cover variability since early 19th century in Valencia. Finally, due to the lack of metadata about wind direction, we tried to assess the reliability of these measurements using the daily Western Mediterranean Oscillation index (WeMOi), a regional circulation pattern in the western Mediterranean basin. Wind direction records in Valencia were registered in 32 class intervals. The negative phase of the WeMOi is linked to those intervals associated to easterly humid flows.