



Drought and flood episodes during the 19th Century in Catalonia (NE Iberian Peninsula)

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The current context of climate change is leading to an increase in hydroclimate variability in the Mediterranean region. This situation is resulting in more frequent and longer dry periods but also in an increase of torrential rainfall events. Current situation justifies the study of the behaviour of droughts and floods from an integrated long-term perspective.

This study aims to study droughts, floods and their interaction during the 19th century in Catalonia using historical and administrative documentary sources. The 19th century corresponds to a climatic period of transition between the Little Ice Age and the current climatic period that includes the appearance of different climatic forcing factors such as solar minimums and extraordinary volcanic eruptions.

In Catalonia 19th century stands out for having some of the most important droughts recorded in the instrumental series of Barcelona (1812-1825), along with experiencing some notable catastrophic flood events. Administrative documentary data allowed us to study at daily resolution flood episodes such as in August 1842, May 1853, September 1874 and January 1898, together with the duration and frequency of drought episodes. Complementarily, in order to characterize the atmospheric general patterns during these episodes, we also generated daily barometric synoptic maps using old instrumental pressure data from different points of Europe. This approach provided the identification of different atmospheric anomalies driving these extreme hydrometeorological events.