



## **Construction of a temperature and precipitation high resolution database in Catalonia for the 1970-2014 period. Analyses of recent climatic variability.**

Vicent Altava-Ortiz (1,2), Antoni Barrera-Escoda (1), Mercè Barnolas (1), Mònica Herrero (1), Aleix Serra (1), Abdel Sairouni (1), and Marc Prohom (1)

(1) Meteorological Service of Catalonia, Barcelona, Spain (valtava@meteo.cat), (2) Catalan Wildfire Prevention Service, Sta Perpètua de la Mogoda, Spain

Meteorological Services and related organisations spend significant resources collecting and storing observational data. Such information, well managed and filtered, is highly valuable in the context of a changing climate and for the assessment of derived impacts in many sectors such as agriculture, tourism and water resources management. It has been created a first high-resolution (1-km) gridded precipitation and temperature dataset covering the period 1970-2014. Temperature and precipitation observations were collected from the automatic weather station network of the Meteorological Service of Catalonia and other stations from the Catalan Historical Archive and the Catalan Water Agency. The construction of the gridded dataset started with the selection of time series without suspect of containing inhomogeneity or being nonrepresentative due to misplaced sensors. Therefore, a multiregression technique has been performed selecting the more relevant static variables related to precipitation and temperature daily geographical variability. The gridded dataset has shown success on the purpose of representing the highly geographical variability of precipitation and temperature throughout the region. However, it produces a possible overestimation of the precipitation in the Atlantic influence zone of the Pyrenees, and minimum temperatures are thought to be underestimated in higher inland valleys.

A first analysis of the dataset reveals important variability in the number of tropical and torrid nights ( $TN > 20^{\circ}\text{C}$  and  $25^{\circ}\text{C}$ , respectively) in the coastal strip and the Ebro valley during the last few decades, as well as an outstanding increase of the warm and torrid days ( $TX > 30^{\circ}\text{C}$  and  $35^{\circ}\text{C}$ , respectively).

The constructed dataset is a first step in the process of establishing updated and new Catalan Climate Normals for temperature, precipitation and derived climatic indexes. It also constitutes a base for future studies related with the construction of the Climate Atlas of Catalonia.