



Trend Analysis of extreme temperature events over the Iberian Peninsula

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Heat wave (HW) events are exceptionally extreme meteorological events that are increasing in frequency, duration and intensity. In the context of climate change, the Iberian Peninsula (IP) is a susceptible area. Moreover, events of relatively high temperature different than HW have shown increasing trends for Extremadura, a south-western area of the Iberian Peninsula (Acero et al. 2018). The aim of this study is to study trends in the characteristics of different extreme temperature events over the Iberian Peninsula. Two different events are studied: heat waves (warm events) are defined as two consecutive days above the 95th percentile (75th percentile) of the daily maximum temperature of June, July and August.

For this purpose, a dataset from a climate simulation made with the WRF model will be used, using data from the ERA-Interim reanalysis as boundary conditions. These datasets correspond to the summer months between 1980 and 2010 for the Iberian Peninsula (Spain and Portugal) using a grid width of 9 km. The results obtained for the climate model are compared with those from the gridded observational temperature dataset SPAIN02.

Trends in frequency, duration and intensity are analysed for both events. For the trend estimation Mann-Kendall test and Theil-Sen estimator have been applied. Mann-Kendall test returns the significance of the trend of each observatory, while Theil Sen estimator calculates the value of this trend.

The results for HW do not show a clear trend, however, warm events show a significant positive trend over the IP. This is expected to prove that moderate maximum temperatures are tending to increase as the same time as highest maximum temperature are stable, so the maximum temperature range will be narrower. The same results are obtained for maximum night temperatures

References: Acero, F.J., Fernández-Fernández, M.I., Carrasco, V.M.S., Parey, S., Hoang, T.T.H., Dacunha-Castelle, D., García, J.A. (2018). Changes in heat waves characteristics over Extremadura (SW Spain). *Theoretical and Applied Climatology*, 133, 605-617. DOI 10.1007/s00704-017-2210-x