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Trends of daily extreme temperatures in the Iberian Peninsula

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Climatic extreme events may be changing their time patterns and intensity as consequence of the anthropogenic climate change. The development of policies to mitigate and adapt to the threat of climate change requires the accurate assessment of the potential impacts of climate change on societies and ecosystems at regional and local-scale and with fine time resolution. The EXPICA project (Spanish grant CGL2007-66546-C03/CLI) is focused on studying extreme events over the Iberian Peninsula. Under this umbrella, in this work a first approach of trends of extreme temperatures in a selected set of stations in the Iberian Peninsula since the 19th century is presented. These stations are located in the main climatic domains of the Iberian Peninsula, that is, northern cost, central and western area, and Mediterranean coast. Daily database SDATS was used in this study. For each month and location, percentiles 10 and 90 of daily maximum temperature (TX) and minimum temperature (TN), corresponding to the reference period 1971-2000, were chosen as threshold values to define extreme temperatures. Frequency of days with TX>TX90, TX<TX10, TN<TN10, and TN>TN90 was estimated for each month and station. Trends in these frequencies were calculated using the Mann-Kendall test and linear regression. Results corresponding to January and July are presented, and their relationships with dynamical conditions are discussed. Future challenges and developments are outlined.