



Identification of Convective Phenomena in Spain based in hourly precipitation data

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The study of convective phenomena is one the most challenging tasks in meteorological research and especially from the perspective of collected surface precipitation. To attain a particular subject of this study field, a data set of hourly rainfall has been analyzed for a period from 1998 to 2010, which is provided by AEMET (Spanish Meteorological Agency).

Firstly, a criterion has been established to identify the convective phenomena as strong precipitation events with high rates. Based on statistical properties of precipitation, a threshold value for the intensity of precipitation has been computed (critical Rate, R_c) which allows to classify every precipitation event into a stratiform or convective episode. Convective phenomena exceed the threshold value, R_c .

Before applying the methodology to split total precipitation into their two components (convective and stratiform) in order to obtain R_c , the whole study area has been divided in 5 different sectors according to a long term rainfall characteristics: Northern, Levant, Center, Southwest and Southeast. Apart from being conducted for the distinguished sectors, a study is seasonally addressed. Consequently, 4 different seasonal values of critical Rate are obtained in every one of five sectors.

The aim of this work is to identify and analyze the frequency of convective events. Afterwards, the characterization of some particular cases based on some phenomena features like maximum precipitation and duration, allows defining the rainfall characteristics convective events in every sector.

First results, referring to autumn from the entire study period, show dispersion in the convective phenomena frequency detected by this method, with the selected sectors. Nevertheless, this occurrence of convective episodes increases in regions with higher rainfall, meanwhile a much reduced number of events is observed in Levant and Southeast, probably influenced by higher values of R_c . However, the characterization of such convective episodes is a relevant point to determine the prevailing regime in every sector.