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Conference on European Tornadoes and Severe Storms

Spatial and temporal distribution of torrential rain events on the Spanish east coast (Valencia Region) for the period 1971-1995

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One of the main characteristics of the Mediterranean climate is the torrential nature of its precipitations. In fact, in many areas a few rain events contribute most of the total annual precipitation. This is the case in the Valencia region, on the East coast of the Iberian Peninsula. The objective of this paper is to analyse the frequency and spatial distribution of the most intense events that took place in the region during the period 1971-1995. The 125 mm. daily precipitation threshold is used, and rains above that limit but with a highly local character are also rejected. Two main types of synoptic situations associated with torrential rains have been identified in this region: Eastern advections and summer orographic-convective storms. In this paper only the Eastern advection events, will be considered, which are recognised as the most important ones in the region. We analyse the seasonality of the intense events by starting with their monthly frequency; autumn is seen to be the season in which the genesis of torrential precipitations is most frequent. The daily maxima for some return periods show that this area has the highest torrentiality in the Iberian Peninsula, and one of highest in the Mediterranean. In our spatial distribution analysis of the intense precipitations, we use several methods and automatic mapping as support tools. For each event the location of the daily maximum is determined first. This appears to be closely linked to local orographic conditions. Secondly, a spatial analysis of the highest daily precipitations is performed. Over most of the region this can be above 200 mm., and can reach over 800 mm. in the area with highest torrentiality in the region. Finally, for the areas showing precipitation above several thresholds, the relationships between the location of maximum precipitation is analysed in relation to the absolute humidity of the maritime advection, and some other parameters.