



## **Spatial and temporal structure of intense Mediterranean precipitation**

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The French Mediterranean regions are regularly affected by intense rainfall events which produce rain amounts in the order of 200-600 mm within a few days. Such huge precipitation amounts generate flash floods with catastrophic human and material consequences (e.g. Nîmes in 1988, Vaison-la-Romaine in 1992, Gard in 2002). The meteorological conditions favourable for these events to occur are relatively well known at the synoptic scale, but the interactions of the atmospheric processes remain to be clearly understood at the meso-scale.

The organization of the intense Mediterranean events, through the identification of their characteristic space and time structures, is an important issue to further our understanding of the processes involved and to improve our ability to correctly model and forecast these intense events. In this work, we focus on the geostatistical analysis of OHM-CV rainfall re-analyses obtained by combining radar and rain gauge measurements over a 5-years period (2000-2004). The spatial and temporal structures are quantified using the indicator and rain 1D or 2D variograms from the local (1 km and 10 min) to the regional (1000 km and 1 day) scales. Various Mediterranean rain types are considered including orographic rainfall, frontal rainfall, localized convection and convection organized at the mesoscale (V-shaped MCS that are rather frequent in the region). We show that these different meteorological "objects" have very different characteristics in terms of intensity, extent and dynamics, which certainly influence the hydrological response of the catchments in this region.