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Numerical study of the October 2007 flash flood Valencia region (Eastern Spain): the role of orography

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Abstract. A torrential rain event took place in the Valencia region in October 2007, mainly affecting coastal areas and nearby mountain center-south of the region, in northern Alicante province. More than 100 mm in 24 h were recorded at some stations in these areas, with 100 mm accumulations in the rest of the region where rainfall was less. In the first part of this work a description of the meteorological situation is given. The synoptic frame of the event is characterised by an advection of easterly maritime winds across the Western Mediterranean, lasting for at least 48 h, driving moist air towards the Iberian Peninsula. The presence of an upper level isolated low over Eastern Iberian Peninsula. Then, the results of numerical simulations using the Regional Atmospheric Modelling System model are shown to study the rain event in detail. The Regional Atmospheric Modelling System reproduces satisfactorily the spatial distribution of the rainfall and the rain period, but it underestimates precipitation in the areas with the most intense vegetation. Finally, a sensitivity test was performed in order to evaluate the role of orography in the rain event, showing the importance of orography in triggering mechanism.

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