



The case of October 1982 mesoscale convective system in Tous (Spain): Back-trajectories analysis from lagrangian particle simulation of the heavy rain episode

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Source-receptor water vapor content areas are analyzed for a particular case of deep mesoscale convective system (MCS) developed over the mediterranean margin of Spain. The aim of this work is to set the atmospheric instability conditions joint water vapor availability which finally resulted in severe precipitation rates reaching up to 600 mm. Humidity amounts are quantified along the trajectories computed from a lagrangian particle simulation model (FLEXPART6.2). To evaluate the precipitation likelihood, the water vapor content and the thermodynamical-dynamical atmospheric instability were assessed jointly. The October 1982 Iberian MCS occurred jointly with a 4-day remaining cut-off upper level low detected between 500-200 hPa geopotential and identified from an objective algorithm. Dynamical instability contribution was measured taking into account Potential Vorticity figures and Q vector divergence values, showing 3-days lasting maximum and minimum centers respectively, over south-eastern Iberia. Specific Humidity was increased along the lowest-eastern trajectories, mainly spread over the Mediterranean Sea.