



The Gard flood: high resolution simulations of an intense convective precipitation episode

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The flood event of 8-9 September 2002, occurred over southeastern France, was caused by the development of a quasi-stationary mesoscale convective system (MCS), responsible for heavy precipitation, more than 600 mm in 24 hours. Convection started over the Mediterranean sea and moved inland over the Gard region, near the southern flank of the Massif Central. The maximum precipitation was observed at some distance upstream of the main mountain slopes. Several simulations have been performed employing the non-hydrostatic high resolution model MOLOCH, in order to evaluate the capability of the model to realistically simulate the evolution of the MCS. Different quantitative precipitation forecasts (QPF), in term of both location and intensity, obtained by changing the initialization time (e.g. 00, 06 and 12 UTC, on Sept. 8), were evaluated. Due to the strong convective instability, high sensitivity to initial conditions is present. The forecast initialized at 06 UTC describes quite accurately the development and evolution of the MCS, at least in the first stage of the event. An Optimal Interpolation procedure has been also applied in order to define a more detailed initial condition. Surface observations of temperature, humidity and wind have been assimilated at relatively high resolution. Finally, further experiments have been performed in order to assess the role of the orography in triggering the MCS and controlling its evolution.