



Uncertainty of high-resolution forecasting of a flood event near Venice

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Heavy precipitation due to the development of a mesoscale convective system (MCS) affected the area of the Venice Lagoon during the early morning of 26 September 2007. As a consequence of the impressive amount of rainfall (more than 300 mm in less than 12 hours), flooding was reported. The quantitative precipitation forecasts (QPF) provided by the high-resolution, convection-resolving model MOLOCH, operated daily at ISAC-CNR, allowed a suitable warning at least 36 hours in advance. However, remarkable sensitivity in terms of QPF to the specification of the initial and boundary conditions, as well as to different model configurations, was detected. Although in principle precipitation events characterized by deep convective activity are expected to have low predictability, the large scale flow in which the MCS development was embedded favoured a relatively small growth of the forecast error. Moreover, the analysis of the precipitation patterns and of other meteorological fields provided by several additional simulations allowed to identify the relevant mechanisms responsible for the flood and to capture the main characteristics of the MCS