



Sensitivity of precipitation mesoscale numerical forecast to different initial conditions and weather radar data assimilation strategy

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To evaluate the impact of radar data assimilation on a heavy rainfall case, different simulations are performed using the Weather Research Forecast (WRF) version WRFV3.2 model and the 3-dimensional variational (3DVAR) assimilation technique. The case study is the Aniene flood, occurred during May 19-22 2008 in the urban area of Rome causing severe damages. Weather radar data derived from Monte Midia single-polarization instrument (located at the border between the Abruzzo and Lazio regions) have been assimilated to improve high resolution initial conditions.

A set of numerical experiments is performed, making sensitivity tests both to different set of Initial Conditions (ECMWF analyses and so called 'warm start') and to a different assimilation strategy (3-hours data assimilation cycle). In addition, sensitivity tests to outer loops to include the non-linearities in the observation operators are performed for each of the previous experiments. To objectively identify the best simulations, statistical indicators are used as FBIAS, RMS and EQTS for the accumulated precipitation. Results will be presented and discussed during the talk together with open issues and ongoing work. The latter includes the tuning of the length scale of the background error covariance and observation error parameters.