



Torrential rainfall event in Genoa: Coupled WRF-NMM and HBV model

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On November 4th, 2011, the city of Genoa was affected by a torrential convective rainfall episode. The finger-shape mesoscale system remained stationary for a significant number of hours on the same area of few square kilometers. About 500 millimeters of rain, one third of the average annual precipitation amount, fell in approximately six hours. A flash flood occurred in the Bisagno river and Fereggiano creek, causing six casualties and the inundation of the Brignole area. For the catchments, where flood events usually occur in a few hours time and peak discharge generally last only a few minutes, it is necessary to use high resolution meteorological data as an input to hydrological model. The effectiveness of flood warning is dependent on the forecast accuracy of certain physical parameters, such as the peak magnitude of the flood, its timing, location and duration. The conceptual HBV rainfall - runoff models enable the estimation of these parameters and provide useful operational forecasts. This paper presents the results of coupled meteorological WRF-NMM and hydrological HBV model. Hourly quantitative precipitation forecasts, for three days ahead, were used as input to the conceptual hydrological model. HBV model was able to predict significant increase of water level with exceedance of regular defence level and exact time of the flood peak on the observed hydrological profile even weather forecast model wasn't successful in the prediction of the hourly amount of precipitation.