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Evaluation of very short term precipitation forecasts for management of urban sewer systems

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The alert system HIDROMET for real-time management of the sewer systems of Barcelona has been developed in the last years by Clavegueram de Barcelona S.A. (CLABSA, from the AGBAR group) funded by R+i Alliance, to prevent urban flooding. This system feeds radar based short term forecasts of precipitation together with observations from limnimeters, gates and pumps into a hydraulic model of the sewer system to monitor simulated and observed water levels. The radar nowcasting module uses advection techniques and has been develop by CRAHI-UPC based on the S-PROG approach. The input to the hydraulic model are 6 hours of precipitation data in terms of 5-minutes accumulations: 4 hours observations and 2 hours of forecasts. Alarm levels are activated when predefined thresholds of accumulated precipitation are reached for selected time intervals.
This work presents an evaluation of the short-term high-resolution rainfall forecasts in terms of resulting alarms and the precipitation fields used as input to the HIDROMET. Classical skill scores will be applied to a number of case studies which are representative to the most relevant meteorological conditions for high impact weather. The results of this study will provide a first estimate for the benefits and the reliability of radar based short term forecasts for urban flood prevention in function of different meteorological conditions.