



Generation of radar precipitation ensembles to assess radar QPE uncertainties in real time

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In the last years, new comprehension of the physics underlying the radar measurements as well as new technological advancements have allowed radar community to propose better algorithms and methodologies. So, significant advancements have been achieved in improving Quantitative Precipitation Estimates (QPE) by radar. However, few of these algorithms and methodologies have been thoroughly tested, and the majority of them are essentially used in scientific studies or just applied by the same institutions that have developed them. This work proposes a methodological framework to assess the associated uncertainties of a general QPE processing chain. This methodology could be used both, to provide quality metrics applicable to the inter-comparison of different algorithms and processing to evaluate their respective performances, as well as to assess the uncertainties of a QPE scheme to monitor and control its quality in real time. The results obtained in the hydrometeorological observatory of Catalunya are used to show the potential of the methodology as well as the interest of the automatization of such a procedure in real-time QC management. The methodology makes also possible to infer the 2-D error structure of the QPE estimates, and to generate multiple precipitation ensembles, compatible with the observed data and the inferred error structure, as a way to represent the uncertainty associated to the precipitation estimates by radar. The discussion of the results on a case study on the Hydrometeorological Observatory of Catalunya and their potential interest in hydrological applications are also included.