



Automatic Methodology to merge Raingauges and Radar by Kriging: Effect of data source employed to compute spatial variability models

C. Velasco-Forero (1), D. Sempere-Torres (1), R. Sánchez-Diezma (1), E. Cassiraga (2), J. Gómez-Hernández (2)

(1) Grup of Applied Research on Hydrometeorology (GRAHI). Universitat Politècnica de Catalunya. (2) Hydraulics and Environmental Engineering Department. Universidad Politècnica de Valencia (velasco@grahi.upc.es / Fax: (+34) 934 054 194 Phone: +34 934 017 371)

Raingauges and weather radar provide rainfall information with different characteristics. If both data sources were combined, the resulting rainfall fields could improve the performance of hydrological models. Different authors have studied geostatistical approaches in the past but none have become a reference method. We have developed a methodology to merge raingauges and radar data using a non-parametric definition of spatial variability models and Kriging estimators seeking to avoid the need of fitting a variogram model (Velasco-Forero et al. 2003, 2004). Spatial variability models can be computed automatically from either raingauges or radar data. Therefore, in this study, we are interested in testing the sensitivity of the results to the data source employed in the definition of the variability models. We have chosen two rainfall events (10th/June/2000 and 28th/Septembre/2000) occurred in Catalunya (NE Spain) as case studies. Original adjustment between radar and raingauges data, duration and total accumulated rainfall in each event are different. Radar data were pre-processed to remove ground clutter echoes and partial screening (Sánchez-Diezma et al. 2001), and stability (Sempere-Torres et al. 2002) before merging them with the raingauges data. Two different estimations were computed for each case study: first using raingauges data as primary variable and correlograms computed from raingauges data and, second, also using the raingauges data as primary variable but employing correlograms computed from radar data. Cross-validation analysis was performed and the results are analyzed in this paper. In both events, cross-validation results show better adjust-

ments with accumulated raingauges values when correlograms from radar data were employed in the estimation. These results could indicate that the use of correlograms computed from radar data could improve the estimation of rainfall fields through the proposed methodology.

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