EMS7/ECAM8 Abstracts,
Vol. 4, EMS2007-A-00590, 2007
7th EMS Annual Meeting / 8th ECAM

Characterization of uncertainty in radar-based precipitation estimates using Kriging.

X. Llort (1), C. Velasco-Forero (1), K. Schrˆter (2) and D. Sempere-Torres (1)

(1) Group of Applied Research on Hydrometeorology - UPC. Gran Capit‡ 2-4, Nexus-106. 08034 Barcelona, Spain, (2) TU-Darmstadt, Section for Engineering Hydrology and Water Resources Management, Darmstadt, Germany.

Radar precipitation estimates have been traditionally used in a deterministic way. That is, trying to obtain the best rainfall field at a given moment and using it as ìthe truthî in quantitative applications (for example in hydrological models). However, the large uncertainties inherent to radar measurements make necessary to develop methodologies to deal with the uncertainties of these estimates.

A possible way to describe the uncertainty associate to the estimates is through the use of ensembles (set of equiprobable scenarios) taking into account the different sources of errors and their structure.

The present study shows a methodology to characterize the global error affecting radar-based precipitation estimates. Firstly, estimated rainfall fields calculated by Kriging, merging radar and raingauges data, were considered to be the best estimation of the rainfall fields, i.e. the reference. Then the error in radar estimates was defined as the ratio between the Kriging estimates and radar estimates in logarithmic scale.

The distribution, as well as spatial and temporal correlation of this error is characterized for several events. The obtained structure is then used to generate an ensemble of equiprobable precipitation scenarios, compatible with the observations, ready to be used in probabilistic applications.