

## ***Interactive comment on* “Evaluation of radar-gauge merging methods for quantitative precipitation estimates” by E. Goudenhoofd and L. Delobbe**

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Thanks to Referee 1 for his valuable contribution to the discussion including interesting propositions for improving our paper.

### **Responses to general comments**

The questions about the spatial resolution of the radar data and the representativeness of the 9-pixel average have been discussed in details in the author’s response to Milan Salek.

Cokriging is a geostatistical method that considers the radar and gauge observations

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as two distinct random variables. The linear estimator at a given location is a combination of the  $N$  gauge and  $M$  radar observations. Consequently, the determination of the coefficients requires solving a linear equation system of size  $N + M$ . As the radar spatial resolution is high,  $M$  is very large compared to  $N$ . This method is therefore very time consuming and not very suitable for an operational use, which is a criterion for the selection of the methods tested in our study. Furthermore, cokriging requires the estimation of a variogram for both radar and gauge measurements as well as a cross-variogram. This is a tricky issue as discussed in the literature (e.g. Goovaerts, 1997).

Concerning the transferability of the results, we think that similar conclusions would be obtained in other regions as long as (1) the influence of orography on the precipitation field and the radar errors is relatively limited, (2) the gauge network is of good quality, and (3) the spatial distribution of the gauges is homogeneous enough to allow a good coverage of the region. Nevertheless, it is clear that it would be interesting to carry out this evaluation study on different regions using the same robust methodology.

## Responses to specific comments

On page 2986, last sentence, our statement can indeed be explained by convective events which prevail in the summer.

In figure 5, we only show 4 methods for the sake of clarity. We will try to produce a new figure showing all the methods without loss of clarity.

The other corrections and suggestions will be taken into account in the revised paper.

## References

Goovaerts, P.: Geostatistics for Natural Resources Evaluation, Oxford University Press, New York, 1997.

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