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Interactive comment on "Mapping mean and variance of runoff in a river basin" *by* L. Gottschalk et al.

L. Gottschalk et al.

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The comments to our paper by the two reviewers Profs. Blöschl and Bolgov and by the editor Dr. Gelfan are well appreciated. We especially acknowledge the very constructive and detailed comments by Prof. Blöschl. We regret that we for the moment are not able to live up to the high expectancies of Prof. Bolgov.

We are in an exploratory phase and many aspects need further development. To stress this and to respond to the first comment by the editor we add the following text in section 2: "The study focuses on the two first order moments of runoff variability in time. By this we accept the concept of "partial characterization" of complex variation patterns and of a sequential analysis of variability (Gottschalk, 2005). Characterization by the one dimensional distribution function is the first step. In a characterisation by distribution function in the general case a multivariate distribution would be needed for a complete

characterisation. The one dimensional distribution constitutes in this case the marginal distribution of the data, which is the same as the flow duration curve widely used in hydrology. We thus choose to study the two first moments of this marginal distribution constructed from data averaged over different durations and for the time being do not consider the structure of this variability over time, for instance the role of seasonality." The figures 2, 5 and 6 are redrawn based on the 17 observation stations in the Moselle basin. We once more regret the confusion. We avoid for the moment to go into very precise interpretations of the results in terms process understanding. We hope to be able to in the future to develop this aspect in more detail. We want to stress that the parameters characterizing the space scale K and time scales k1 and k2 refer to the instantaneous point process.

The parameters are at present identified by a least square approach to match observed runoff data with those modelled. We have added more details about the precision in those estimates for the data set of 17 records.

There is a potential for further development along the lines of the "derived distribution function approach", and we referred to this in the concluding part of the paper. We anyway decided to delete this paragraph as we do not really use it here. For the moment we are only using statistical laws.

References

Gottschalk, L. Methods for analysing variability. In Anderson, M.G. & McDonnell, J.J. Encyclopaedia of Hydrological Sciences, John Wiley & Sons Vol. 1 Ch. 6 pp. 95-122, 2005.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 3, 299, 2006.