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Discussions

Interactive comment on "Disentangling timing and amplitude errors in streamflow simulations" *by* S. P. Seibert et al.

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We thank the anonymous reviewer for his/her constructive comments. The main point of critique is that we have not provided proof that the new version of Series Distance (SD) outperforms the previous version as published in Ehret and Zehe (2011). This perceived shortcoming is most likely based on a misunderstanding which we will try to clarify in the following: The core improvements of SD as presented in the new manuscript are extensions or examples for applications rather than changes of the core idea. It is hence difficult to compare the old and the new version in a meaningful way. There are however two novel aspects in the paper:

The first is the development of a fully automated 'coarse-graining' scheme which efficiently mimics the techniques applied in visual hydrograph inspection by humans. This

method can be used for an automated application for the SD which was not the case for the previous version. The use of a fixed no-event threshold is over simplistic and proved to be cumbersome in practical applications. The coarse-graining procedure can also be applied on its own right to derive time series statistics such as those provided in the first paragraph of section 5.3. Both examples expand the functionality of the SD concept, while the core concept remains unchanged.

The second is an application of the SD concept for an efficient and intuitive evaluation of the importance of timing errors in continuous streamflow simulation. Here we provide a method to construct 2-dimensional uncertainty envelopes based on the 'error dressing' concept, which was not present in the 2011 paper. While the error dressing method for 1-dimensional applications is not new, it has in the new manuscript been further developed for application to 2-dimensional error distributions and their visualization (see Figures 6 and 7).

We hope that we could clarify that the main purpose of the new manuscript is not to replace the 2011 SD core concept with a new one, but to report on useful additions and potential applications. In order to give the reader an idea of SD performance, we also have provided a comparison with a benchmark model.

We will consider this point in a revised version of the manuscript; If questions remain we will be happy to answer them.

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