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Interactive
comment

Interactive comment on "Practical experience and framework for sensitivity analysis of hydrological models: six methods, three models, three criteria" *by* Anqi Wang and Dimitri P. Solomatine

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I am afraid I gave up on this paper (after making quite a lot of comments in the manuscript) at the point where Figures 4-6 are introduced and demonstrate the irrelevance of sensitivity analysis in the chosen case study. Almost certainly in these cases the performance of the model has more to do with uncertainty in the input and output data, that is totally neglected, than the factors included in the analysis. This is indicative of the apparently naïve way the issues associated with sensitivity analysis are presented in the introductory sections which can only be described as poorly presented. In particular, there is no real recognition of the potential for complexity of

surfaces with sometimes rapidly changing covariation, including changes of sign, of factors in producing the outputs (that can be concealed in plots such as Fig 4) - yet such behaviour is common for real model applications. Also, despite the discussions of the last 30 years, the authors still seem (surprisingly?) to believe in the possibility of an optimum calibrated model.

The authors recognise that nearly all past intercomparisons of SA methods have suggested that different methods give different results, and that the same method might give different results when used with different outputs. So it is here too. This is not therefore unexpected, so where is the value in this paper, or in continuing to explore further SA methods as they suggest. Are the results really ever used to decide parameters "on which more resources can be put to ensure their higher accuracy". How would you actually do this for the conceptual models used in the paper, when it is effective values of model parameters that are needed to give good predictions? That would be a much more interesting paper. As it is I cannot suggest that this paper is suitable for publication.

Keith Beven

Please also note the supplement to this comment:
https://www.hydrol-earth-syst-sci-discuss.net/hess-2018-78/hess-2018-78-RC1-supplement.pdf

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