Hydrol. Earth Syst. Sci. Discuss.,
https://doi.org/10.5194/hess-2019-142-AC1, 2019
© Author(s) 2019. This work is distributed under
the Creative Commons Attribution 4.0 License.

Hydrology and Earth System Sciences
Discussions

Interactive comment on "Technical note: Stochastic simulation of streamflow time series using phase randomization" *by* Manuela I. Brunner et al.

Manuela I. Brunner et al.

manuela.brunner@wsl.ch

Received and published: 21 May 2019

We thank the reviewers and the commentators for acknowledging the value of our work, their feedback, and their constructive comments. We appreciate the wide range of inputs, which allowed us to enrich our introduction and discussion section. In addition to many useful references, the reviewers and commentators point out where and how the stochastic streamflow generator could be reformulated or extended. While each of the points risen is valid, most of them would make the model more complex, less flexible, and less generalizable. With the stochastic simulator presented in the manuscript, we aim at proposing a simple and flexible tool, which can be adapted to different contexts.

This is facilitated by the provision of the simulation procedure as an R-package. In order to guarantee flexibility and generalizability, we combine phase randomization, which is a nonparametric approach for the generation of a time dependence structure, with the flexible four-parameter kappa distribution. Making the model more complex or more parametric would imply a loss in flexibility. We therefore would like to retain the main features of the model proposed. However, we agree that a more profound discussion of its limitations and potential extensions is necessary and valuable. We also agree that the issue with the replacement of negative values by zero values needs to be addressed and that the use of an empirical marginal distribution can in some cases be sufficient. In the PDF attached, we address the points risen by the two reviewers Ashish Sharma and Demetris Koutsoyiannis and state how we would like to address them in a revised version of the manuscript. Our replies to the reviewers' comments are written in blue and italic to distinct them from the reviewers' comments.

On the behalf of all co-authors, Yours sincerely,

Manuela Brunner

Please also note the supplement to this comment:
https://www.hydrol-earth-syst-sci-discuss.net/hess-2019-142/hess-2019-142-AC1-supplement.pdf

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2019-142, 2019.