

# ***Interactive comment on “Stochastic modelling of spatially and temporally consistent daily precipitation time-series over complex topography” by D. E. Keller et al.***

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The authors would like to thank referee # 2 for his/her efforts.

The main critics of Referee #2 is the novelty of the article. We understand this point in the sense that our precipitation generator is an implementation and calibration of a generator proposed in the literature by Wilks and others. We mention this at several locations in the original manuscript. The novelty lies in its application to a catchment over Switzerland with a cascade of methodological challenges to calibrate and implement it. We are convinced that it is of scientific relevance to document this specific implementa-

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tion, i.e. the “lessons-learnt”, in order to make use of this weather generator in further studies and to make it available to other groups. Having said that, we acknowledge that our manuscript-title may have been misleading (as claimed by the reviewer). From the title alone, one would expect a novel approach on stochastic modeling taking into account topographical information, which is not the case here. In the revised version of the manuscript, we will change the title to: “Implementation of a multi-site precipitation generator to a Swiss river catchment”. In addition, we fully acknowledge that the purpose of the study needs to be better motivated in the abstract, introduction and conclusions. The presented precipitation generator is mainly developed to be used in a subsequent study as a statistical downscaling technique for a future climate (to be published in a follow-up article in preparation). Therefore, we deliberately chose a tool which is sufficiently easy to handle also in a climate change context. The main aim of the article under review is to describe the generator, its implementation and validation for current climate.

Regarding the point concerning the review of existing literature, we realize that we indeed missed to cite some relevant literature (see also comment by the editor), in particular from the hydrology-community. We apologize for that and we will include in the revised version citations to the following stochastic precipitation-modelling approaches:

Huser, R., & Davison, A. C. (2014). Space-time modelling of extreme events. *Journal of the Royal Statistical Society: Series B (Statistical Methodology)*, 76(2), 439–461. doi:10.1111/rssb.12035

Mezghani, A., & Hingray, B. (2009). A combined downscaling-disaggregation weather generator for stochastic generation of multisite hourly weather variables over complex terrain: Development and multi-scale validation for the Upper Rhone River basin. *Journal of Hydrology*, 377, 245–260. doi:10.1016/j.jhydrol.2009.08.033

Paschalis, A., Molnar, P., Faticchi, S., & Burlando, P. (2013). A stochastic model for high-resolution space-time precipitation simulation. *Water Resources Research*, 49(12),

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Most of the other comments of referee #2 are difficult to address, since the critical points are not substantiated. Examples are the claim that we have not read the papers and that we have no idea about the published methods in detail. We strongly object to this substantial allegation of non-scientific practice.

It is rather difficult, if not impossible, to respond point-by-point to these review comments without more details on what the referee is specifically criticizing. We note that the journal guidelines for reviewers contain the following paragraph:

“Referees should explain and support their judgments adequately so that editors and authors may understand the basis of their comments. Any statement that an observation, derivation, or argument had been previously reported should be accompanied by the relevant citation.[http://www.hydrology-and-earth-system-sciences.net/review/obligations\\_for\\_referees.html](http://www.hydrology-and-earth-system-sciences.net/review/obligations_for_referees.html).

In general, we have to assume that referee #2 criticizes similar points as referee #1 and hence we hope that our reply to referee #1 also addresses the majority of the comments by referee #2.

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