

Review of Pons et al Temporal downscaling of precipitation time-series projections to forecast green roofs future detention performance.

Multiplicative random cascades is not within my field of research and I cannot therefore not perform a qualified review of this part. I will therefore leave it to the other two reviewers to detail herein. I have, however, worked quite a bit with climate projection of rainfall and downscaling issues related to urban hydrology where continuous rain series are required to simulate long term hydrological performance (see e.g. Thorndahl and Andersen (2021)). Especially cases like the green roofs where the performance indeed depend on the antecedent conditions are interesting to investigate under future climate conditions.

The paper is generally well written but more details at the conceptual level could help the overall understanding of the proposed procedure.

I suggest describing more in detail the observational outflow data from the green roofs, the physical details of the green roofs, description of dominant processes of the roofs (e.g. in the introduction and not only in the method section), etc.

Table 3 shows the differences in retention fraction between observed and projected conditions. It could be interesting to see a similar table with observed values versus modelled performance for the current climate conditions in different MRC modes. Unlike fig 5 and 6, which are difficult to interpret, a table summarizing the performances would clarify this part.

Is it possible to summarize the change of climate in some specific parameters, eg. changes in annual and seasonal precipitation, change in consecutive dry days, temperature, etc. for the different locations? This would help understand the differences between locations and maybe lead to an interpretation of the most important processes for the green roof performance and how the processes change under a change in eg. temperature, rainfall patterns, etc.

Best regards

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Thorndahl, S., Andersen, C.B.(2021) CLIMACS: A method for stochastic generation of continuous climate projected point rainfall for urban drainage design; Journal of Hydrology, 602.