

Hydrol. Earth Syst. Sci. Discuss., referee comment RC1  
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## **Comment on hess-2021-381**

Anonymous Referee #1

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Referee comment on "Forecasting green roof detention performance by temporal downscaling of precipitation time-series projections" by Vincent Pons et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2021-381-RC1>, 2021

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The manuscript "Temporal downscaling of precipitation time-series projections to forecast green roofs future detention performance" presented by Pons et al. describes the procedure to simulate rainfall through multiplicative random cascades. Six downscaling models, with time-scale, depth, and temperature dependency, have been developed to simulate time-series based on RCP8.5 to be applied on two green roofs with different properties and in different locations in France and Norway. Two green roofs have been modelled. Results show that the green roof performance shift due to climate change highly depends on the location.

Although the manuscript presents an innovative methodology and interesting results, it needs few minor adjustments and modifications before publication in an international journal such as HESS.

Green infrastructure, and in particular green roof, description could be more detailed in the introduction, explaining why green roofs have been chosen for this study and better highlighting the potential benefits of this work. Meaning and implications of RCP8.5 projections should also be included in the introduction.

The use of abbreviations should be reviewed: sometimes abbreviations are not introduced, or not used. An abbreviation and symbol list could help the reader.

The paper is overall well structured, although it could benefit from a review to catch typos (double or missing spaces etc..)

Specific comments [Page, line]

[Abstract] Please avoid unnecessary abbreviations in the abstract

[1, 9-10] Please add an explanation for this result

[1, 14] What's a?

[1,15] Evaporation processes time-scale could be higher than 24 hours, please add a reference to this sentence.

[1, 20-24] What is the temporal resolution of these data? daily scale?

[2, 40] Please use the previously introduced abbreviation MRC

[2,45] Reference written twice

[2, 54] What is MC? This abbreviation has not been introduced before

[2, Introduction] Please consider adding some background for green infrastructures and in particular for green roofs.

[3, 66] and in Marsille? what data are available?

[3, 69] Climate projections in France have the same temporal resolution and length of the Norwegian projections? please specify

[5, 100] The acronyms used here have not been introduced before

[8, 170-174] This paragraph fits better in the model description

[9, Figure 2] Please include in the figure the green roof type

[9, 175-185] Consider adding the results related to all locations in the appendix, to help the reader understanding the results

[17, Paragraph 3.5] It would be interesting to have some considerations also for the French case studies