

**The changes have been made according to the Author reply to the reviewer comments, namely:**

<https://doi.org/10.5194/hess-2021-381-AC1>

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**Full details available in the file with track change.**

More specifically:

- Typo were checked, abbreviations were reviewed, and significant part of the manuscript was clarified.
- A table of abbreviation have been added.
- The difference between micro canonical and canonical multiplicative random cascade was clarified.
- A paragraph about green infrastructure and green roofs have been added. It discusses the relevance of using the RCP 8.5 for future performance of green infrastructures.
- Details about data from Marseille were added.
- The table was improved to add the main characteristics of each location.
- The part 2.2.2 “Downscaling process” was clarified.
- Notation in equation and figure were unified.
- The part Downscaling models conceptualization and calibration was added. The different models are described and the calibration procedure for the different generator is specified.
- The structure of the different models is available in appendix A.
- An indicator relative Kolmogorov Smirnov, relevant for log survival distribution was developed and used to evaluate the resulting survival distributions.
- A part of the green roof model analysis was moved to the method section.
- A subsection in method about the design perspectives was added.
- In analysis of climate properties, link to other location and other time-scales was added. a figure was added in appendix B to support this analysis.
- The analysis of the downscaled time-series was improved with the relative Kolmogorov Smirnov.
- A figure about autocorrelation for an in-depth analysis was added to show the link between lag-1 autocorrelation depending on time-scale and autocorrelation with multiple lag time for different time-scales.
- Details in design perspectives and the behaviour of the different roofs was added.
- The acknowledgement section was completed.