

## Referee 1:

In this paper the new approach to downscale precipitation field, based on equal-volume areas (EVAs) is evaluated. The topic of the paper is relevant for hydrology, meteorology and water management. The author compared the EVA method and “classical” discrete microcanonical random cascade and bilinear interpolation. The composition of the paper is valid. The methods are clearly described. The author mentioned both pros and cons of the EVA cascade generator and pointed the directions of further development. The results of EVA method application are worth to be published. However, some details should be corrected:

1. Page 6 line 30: "(. . .) from uniform (Olsson, 1998) to log-normal, Beta (. . .)". Please add reference to log-normal distribution usage and correct spelling to "beta".

Response: The spelling will be corrected and two additional references to Over and Gupta (1996) and Xu et al. (2015) will be added to the paper.

- Over, T. M. and Gupta, V. K. 1996: A space-time theory of mesoscale rainfall using random cascades, JGRA, vol.101, 2156-2202

<https://agupubs.onlinelibrary.wiley.com/doi/abs/10.1029/96JD02033>

- Xu, G. and Xu, X. and Liu, M. and Sun, Y. A. and Wang, K. 2015: Spatial Downscaling of TRMM Precipitation Product Using a Combined Multifractal and Regression Approach: Demonstration for South China, Water, vol.7(6), 3083-3102

<https://www.mdpi.com/2073-4441/7/6/3083>

2. Page 9 line 6: "While the EDA (. . .)" - Please check spelling.

Response: Thanks! The typo will be corrected during revision.

3. Page 10 line 11: "It shows large differences between estimated model parameters as a function of the methods and spatial resolutions." No relationship in tab. 2 is observed. Please paraphrase this sentence.

Response: The formulation will be changed to: “Retrieved model parameters are clearly sensitive to the spatial resolution of the input data, exhibiting different types of error patterns and biases as a function of the selected event and chosen cascade model.”

4. Figure 4 - Please use the same bounds in vertical axis for the same parameter and do not use "true" adjective in horizontal axis title. Please name axis explicitly which parameter value is obtained for coarse-scale generator and which for radar data resolution.

Response: sure, no problem.

5. The author used plural form "we" multiple times, however, he is the only person sign to this paper.

Response: Sure, no problem. I will correct this during revision.

6. Figure 9 - Please correct the labels: "Sample gen" and "Best gen" – it is not known which is for 8x8 km resolution and which is for 1x1 km resolution.

Response: The labels will be adjusted accordingly.

7. Page 13 line 7: "Therefore, big local differences in scaling behavior exit within the field" - Please check spelling.

Response: Thanks! This was a typo.

8. Page 13 line 33: "Also, performance clearly decreases with intermittency" - Please add if the intermittency was calculated for empirical precipitation fields or for generated ones.

Response: The intermittency was obtained from the original high-resolution radar fields.

9. Page 14 line 23: "However, accuracy drops rapidly and large uncertainties are to be expected for such large downscaling ratios." - Please check grammar.

Response: I will replace the sentence by the following text: "However, the accuracy of downscaled rainfall fields for scale ratios of 256 or higher is likely to be low given that it is not always possible to reliably estimate the cascade generator from such coarse scale inputs."

10. Page 14 line 23: "(. . .) the EVA model is likely to be closer to the truth." - Please paraphrase this part of the sentence (the model results where compared with weather radar scans) - for instance "(. . .) the EVA model is likely to be closer to the observed precipitation fields".

Response: done.