Response to Reviewer's Comments

on

Theoretical framework to estimate spatially averaged rainfalls conditional on river discharges and point rainfall measurements from a single location: An application to Western Greece

By Andreas Langousis and Vassilios Kaleris

We thank Reviewer #2 for his/her constructive comments and suggestions. We have implemented all recommendations to improve the quality of the presented work. Point-by-point responses are given below.

Paper summary

The article presents a statistically solid method of using basin outlet flow and single-location raingauge information, in order to compute spatial rainfall averages. Multifractal properties of rainfall fields are being skillfully employed, and an application to the Glafkos basin in Western Greece is presented. I think this is very good work, and therefore I recommend the article for publication in HESS, with the following minor observations:

We thank the Reviewer for his/her kind words.

Comment 1

I'd find it useful to relate the rainfall-runoff consistency in a multifractal framework to the work of Eleuch et al. (SERRA 24(5), 2010, p.559-565).

Reference to the work of Eleuch et al. (2010) has been added; see lines 104-105, 153 and updated reference list.

Specific Comment 2

I'd suggest mentioning the use of a (perhaps temperature-related) heuristic approach to outliers (without necessarily applying it at this point, but pointing out the need of relating outliers rather to some phenomenological aspect, than just statistics).

A discussion has been added; see lines 706-710.

Specific Comment 3

Last, a note on language: I'd avoid using the plural "rainfalls", replacing it with whatever term best fits each context (e.g., "rainfall events").

We have implemented the suggested change throughout the manuscript, including the title.

References

Eleuch, S., A. Carsteanu, K. Bâ, R. Magagi, K. Goïta and C. Diaz (2010) Validation and use of rainfall radar data to simulate water flows in the Rio Escondido basin, *Stoch. Environ. Res. Risk Assess.*, **24**(5), 559-565, doi:10.1007/s00477-009-0336-9.