

Manuscript: "A Universal Multifractals perspective into the link between rainfall variability and temperature"

Journal: Hydrology and Earth System Sciences (HESS)

Reference: egusphere-2025-3571

Review round: Second (response to RC5)

Date: July 2026

Recommendation: Accept with Minor Revisions

1. Overview

I have carefully compared the Authors' point-by-point response letter and the revised manuscript (with tracked changes) against each of the nine major concerns, three moderate concerns, and six minor issues raised in my original review (RC5). The Authors have undertaken a genuine and, in several respects, commendable revision effort, thus the manuscript has improved substantially.

A small number of residual issues remain, none of which are structural. They can be resolved through targeted textual edits within a minor revision. My recommendation is therefore **"Accept with Minor Revisions"**.

2. Point-by-Point Comments on Remaining Minor Issues

2.1. Binned analysis

The weighted regression has been implemented. The Authors' clarification that the binned analysis involves ensemble scaling (i.e., joint TM/DTM analysis on all samples within a bin) rather than simple averaging of per-sample parameter values is a legitimate and important methodological distinction within the UM framework. This partially mitigates my concern, because the ensemble scaling exploits moment-resolution structure across all constituent samples rather than merely computing bin means. However, the revised manuscript still states (see [line 325](#)) that the binned analysis confirms the individual-sample results *"in a more robust way"*. This phrasing invites the Reader to weight the high bin-level correlations (i.e., $r = 0.7 - 0.9$) more heavily than the individual-sample correlations (i.e., $r = 0.2 - 0.4$). A minor softening, such as *"yields consistent trends with stronger correlations, as expected given the aggregation"*, would be appropriate.

2.2. Opposite-sign H behavior across scale regimes

The revised manuscript now provides physical interpretation for each scale separately: at large scales, the decreasing H with temperature *"suggests that successive rainy periods are less correlated and more independent from one another"* (see [lines 271 – 273](#)); at event scale, the increasing H *"suggests that with stronger temperature, the short range correlation within a given rainfall event tend to increase"* (see [lines 322 – 323](#)). These interpretive additions are welcome. However, the fact that the non-conservation parameter moves in opposite directions across the two scale regimes as a function of temperature is still not highlighted as a distinct and physically significant result. A brief paragraph explicitly noting and discussing this contrast would add value. This is a minor point that does not affect the overall acceptability of the manuscript, but I note it as a missed opportunity.

3. Items Requiring Attention Before Final Acceptance

The following items should be addressed before the manuscript proceeds to production. None requires reanalysis or restructuring; all are textual edits.

3.1. Binned analysis framing (see [lines 275 – 276, and 325](#)). The revised text states that the binned analysis enables assessment of *"more robust scaling estimates which yields more reliable trends"* and that it confirms the individual-sample results *"in a more robust way"*. This phrasing still invites the readership to weigh the bin-level correlations more heavily than the individual sample ones. I suggest rephrasing along the lines of: *"yields consistent trends with higher correlations, as expected when aggregating across samples, though it does not independently strengthen the individual-sample evidence"*.

3.2. Opposite-sign H behavior. The physical interpretations added for H at each scale separately (see [lines 271 – 273, and 322 – 323](#)) are valuable. I recommend adding a single bridging sentence (i.e., either at the end of Section 4.2 or the beginning of Section 4.3) that explicitly notes the contrast: something to the effect of *"The opposite signs of the H -temperature relationship across the two scale regimes suggest that warming is associated with greater within-event temporal coherence but reduced inter-event persistence, a finding that merits further investigation"*.

3.3. Remaining grammatical errors. Several errors survive in the revised text and should be corrected in a final language pass. For example: *"we can just mentioned"* (see [line 103](#)) should read *"we can just mention"*; *"this biases"* (see [line 106](#)) should be *"these biases"*; *"the short range correlation within a given rainfall event tend to increase"* (see [line 323](#)) should be *"tends to increase"*; *"Similar comments can be made from the Spearman rank correlation"* (see [lines 264 – 265](#)) is missing a verb form (please consider *"drawn from"*, as an alternative). I note that my original review recommended a careful language edit throughout, and the Authors state they have *"carefully proofread"* the manuscript, but a few errors persist.

3.4. Bootstrap confidence intervals (totally optional). Although the absence of bootstrap confidence intervals on the regression slopes is no longer a critical gap given the other additions (i.e., Spearman correlations, moderated tone, and weighted binned regression), providing them would further strengthen the paper. This is only offered as a suggestion rather than a requirement.

4. Summary and Recommendation

The Authors have undertaken a thorough and largely satisfactory revision. Of the nine (9) major concerns raised in my original review, six (6) are fully or substantially addressed, and three (3) are partially addressed but at an acceptable level. All moderate and minor issues have been resolved or acceptably handled, except for a few residual language errors.

The four (4) items listed in Section 3 are all textual edits that do not require reanalysis. My recommendation is [Accept with Minor Revisions](#), where the adjustments consist of the items in Section 3 (see items 3.1 – 3.3 required; item 3.4 suggested).