

Response to Reviewer 2

Reviewer 2: This manuscript is a well deployed, aptly presented contribution to Earth System Science, even if more statistically than dynamically oriented. A rare feature these days, this manuscript was a breeze to study: very clear and effective, ensuring a smooth assessment. Overall, I recommend publication of this manuscript subject to minor revisions (very minor indeed). In addition to the comments from the other reviewer, with whom I agree, and to which the author already gave a satisfactory answer, I would merely raise minor and technical notes: My main concern pertains the largely descriptive nature of the study, notwithstanding the technical merits of the analysis and the relevance of the presented developments for modelling purposes. As the title itself indicates, this is a study of “how”, not necessarily of “why”. Therefore, I would not require the authors to delve into the fundamental mechanisms behind the features being identified and analysed as that would make for a different study. Even so, it would be a nice addition to the paper to complement what is currently a good discussion with further remarks of mechanistic nature (a couple of sentences should suffice). This way, the physically oriented readers among the ESD community would be even more appreciative.

Response: Thank you for the kind and encouraging words. Indeed, the paper could benefit from some additional discussion about the physical mechanisms responsible for producing intermittency in rainfall and how these relate to the statistical analyses presented in this paper. I will add a new paragraph about that in the discussion, together with some references to the literature. As a start, I could use the paper by Neelin et al. (2017) “*Global warming precipitation accumulation increases above the current-climate cutoff scale*”, especially the part describing the link between the local fluctuations in atmospheric moisture during a rain event and the dynamics of precipitation accumulations on the ground. I’ll also add a few words about small-scale intermittency and its link to atmospheric turbulence.

Technical/notational remarks:

- Equation 1: the opening and closing brackets in the Probability operator should be the same - either [] or ().
- Equations 2 and 3: ‘ni’ should actually read n_i (subscript i as it is an index), otherwise it will appear as if n is multiplying by i .
- Page 5, last line: The variable q should come in math type (italicised) (Same remark on Page 6, line 14)
- Equation 4: The Expectation operator should be identified as such in the text.
- Equations 5, 7: The hierarchy of brackets would be recommended: $[\]$ rather than $(\)$.

Response: Thanks! I’ll correct these during the revision.