Reply to Editor's Comment

There are still quite some issues with the writing/language of this manuscript that really affect the readers ability to understand what you want to say.
I have made some corrections and suggestions/remarks in the attached pdf.
Please work with the language editing service of Copernicus to improve the writing.
Otherwise all involved have worked really hard to improve this manuscript (reviewers and authors) and I am hoping it will find interest in the community!

Reply: Thank you for your feedback and for taking the time to review our manuscript. We appreciate your efforts in helping us improve the quality of our work. Your guidance is invaluable in making our research accessible and understandable to the readers. We will certainly work with the language editing service of Copernicus to further refine our manuscript's writing. It's essential for us to ensure that our work is presented in the best possible way.

SPECIFIC COMMENTS

"Streamflow recession, shaped by hydrological processes, runoff dynamics, and catchment storage, is heavily influenced by landscape structure and rainstorm characteristics*. However, our understanding of how recession relates to landscape structure and rainstorm* characteristics *remains inconsistent, with limited research examining their combined impact. This study examines* this interplay ~~*the interplay between landscape structures and rainstorm characteristics*~~ *in shaping recession responses, based on* ~~*upon*~~ *291 sets of recession parameters obtained through the decorrelation process. The data originates from 19 subtropical mountainous rivers* [rivers do not display rainfall amounts. I made a suggestion on how to rephrase the sentence.] and covers events with ~~*that display*~~ *a wide spectrum of rainfall amounts. Key findings indicate that the recession coefficient (a) increases while the exponent (b) decreases with the L/G ratio (the median of ratios between flow-path length and gradient), suggesting that longer and gentler hillslopes facilitate flow accumulation and aquifer connectivity, ultimately reducing nonlinearity.*

Reply: Revised as the suggestion.

Additionally, in large catchments, the exponent (b) rises [] *with increasing rainfall due to greater landscape heterogeneity, whereas in small catchments, it declines with rainfall, likely indicating* that the *catchment is prone to saturated* [this is not clear. The phrasing is incorrect and it is also not clear why a small catchment should be saturated.] *and thus reduced runoff heterogeneity.*

Reply: We rephrased this sentence: "Conversely, in small catchments, it declines with rainfall, indicating that these catchments have less landscape heterogeneity and thus reduced runoff heterogeneity."

Our findings ~~*discovery*~~ *underscores*~~*s*~~ *the necessity for further validation* of how L/G and drainage area regulate recession responses to varying rainfall levels *across diverse regions* ~~*regarding how L/G and*~~

~~*drainage area regulate recession responses to varying rainfall levels, given the pivotal role of assessing recession responses in understanding regional recession patterns within ungauged catchments, particularly within the context of climate change.*~~ [This last part is very convoluted: assessing recession responses in understanding regional recession patterns... is very confusing. Also, the sentence is much too long. I suggest to simplify or leave it out. I made suggestion above how to rephrase the sentence]*"* [L10-22]

Reply: Revised as the suggestion.

"Specifically, flow path length (l_{fp}) is the route length from a cell to ***the nearest*** *channel cell, flow path height (h_{fp}) is the elevation difference between the specific cell to* ***the nearest*** *channel cell, and flow path gradient (g_{fp}) is calculated as flow path height divided by flow path length."* [L84-86]

Reply: Revised as the suggestion.

"*In the hydrological context, l_{fp}/g_{fp} represents the residence time of each flow path and the median of l_{fp}/g_{fp} characterizes the flow paths within a catchment, while the median of l_{fp}/g_{fp} reflects catchment-wide residence time."* [L90-92]

I don't understand this. You are both times describing the same ratio, but linking it with a "while" which mean you are talking about different things. Something is wrong here, the sentence does not work.

Reply: We apologize for the incorrect sentence. The sentence now reads: "In the hydrological context, l_{fp}/g_{fp} represents the residence time of each flow path, while the median of l_{fp}/g_{fp} reflects catchment-wide residence time.".

"The weak correlation between recession nonlinearity and those variables might be explained by: First is the scale effect." [L267]

This sentence does not work

Reply: We rephrased this sentence: "The weak correlation between recession nonlinearity and those variables may be attributed to two factors. First, there is the scale effect."

"The fact that H is negatively correlated with the recession coefficient suggests that our [] *groundwater flow paths possess greater depth and length, consequently leading to slower drainage rates."* [L283-285]

Reply: We removed the term "our".

"*While H is commonly believed to be positively correlated with the velocity of gravity-driven flow at a small spatial scale, the high heterogeneity in ~~subsurface~~ geology or soil properties at a larger spatial scale (Karlsen et al., 2019) implies that a large H does not necessarily lead to a large recession*

coefficient." [L285-287]

Reply: Revised as the suggestion.

(In table S3 in the supplementary material)

7-day antecedent precipitation, ~~*could be*~~ *used to* ~~*present*~~ assess *the saturation status of the watershed before the rainstorm.*

Reply: Revised as the suggestion.

Total precipitation ~~*describes the magnitude of a rainstorm.*~~

Reply: Revised as the suggestion.

Duration of precipitation ~~*indicates how long does the rainstorm last.*~~

Reply: Revised as the suggestion.

Averaged precipitation intensity ~~*presents the magnitude of rainstorm intensity.*~~

Reply: Revised as the suggestion.

Total streamflow represents how much water is exported during a rainstorm [this is total specific discharge as you provide it in mm.]

Reply: Revised as the suggestion.

Rainfall period [I think this is not the rainfall period, but the window over which you cumulate rainfall. It would be good to also mention this in the text (the manuscript). Why do you cut off at peak flow? Rainfall continuing after the peak would affect the shape of the recession.]

Reply: We mentioned this in the main text [L100-102]:

> "The cumulative rainfall window was defined as the elapsed time from 6 h before the rising flow to the peak flow. We do not consider rainfall amount after peak flow because there is typically less rainfall occurring after the peak flow."

Length of time between the start and end of the defined rainfall period [does this also follow the definition below in the footnote? Or does this refer to the actual start and end of rainfall? The latter would make much more sense.].

Reply: We revised as "Length of the cumulative rainfall window."

Sum of flow rates during the rainstorm. [this is not correct.]

Reply: We revised as "Total discharge divided by the drainage area."

Remarks from the preceding review file validation

Checking your paper, I noticed that your tables contain coloured cells. Please note that this will not be possible in the final revised version of the paper due to HTML conversion of the paper. When revising the final version, you can use footnotes or italic/bold font. For now, the process will continue, but please note that the final version cannot be published by using coloured tables.

Reply: We have updated the table by using symbols (+, -, and x) to indicate positive, negative, and no correlation with the factors, in place of using colored cells in Table 1. As for Table 2, we replace the gray colored cells with bold fonts.