

Hydrol. Earth Syst. Sci. Discuss., referee comment RC2
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Comment on hess-2021-546

Anonymous Referee #2

Referee comment on "Performance-based comparison of regionalization methods to improve the at-site estimates of daily precipitation" by Abubakar Haruna et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2021-546-RC2>, 2022

General comments: The manuscript gives a nice overview of state-of-the-art methods for regionalization of precipitation, with a clear aim of comparing and evaluating these methods. Comparison strategy and evaluation criteria seem adequate and the different methods' strengths and drawbacks are well presented. The manuscript would however benefit from a clearer structure (especially of Chapter 3) and a more concise language (see below).

Specific comments:

Chapter 1 Introduction: It could be stated more clearly what potential practical uses and benefits of such methods are, besides "modeling the whole range of positive precipitation"

Chapter 2: Could you please comment on the histogram in Figure 1; why the large number of stations in Switzerland in 1900-09 for instance?

Chapter 3: It is unclear what the difference is between "methods of regionalization" and "regional models". I would prefer moving Table 1, and maybe the whole chapter 3.5 to the beginning, as an introduction to the models, and then describe details in the sub-chapters. Also consider adding a column to Table 1, naming the section where the model is described. You could also mark clearly in the text whenever one of the 5 models is described/introduced, since only number 5 has its own sub-chapter. I believe repetition, for instance in the summary at the end of chapter 3.2 and chapter 3.3, is a bit confusing. Could you rather base your description on the steps of the summary?

Chapter 5: The first five paragraphs (lines 337 - 356) describe the method and should be

moved to a previous chapter. Would you please comment on the seasonal differences in Figure 3 (chapter 5.2).

Technical corrections: There are several examples of unclear language and wordy sentences. I have listed the most obvious ones below, but I recommend a full language review.

L1: performances --> performance

L15: "these events" points back to the previous sentence, where you also write "these events". Please specify which events you are referring to.

L19: Missing a comma after "signal".

L28: What does "This" refer to?

L43: Remove quotation marks around "regional".

L58: Remove "though".

L68: Add commas after "authors" and after "study".

L72: "... also using GEV compared the ..." --> "... also used GEV to compare the..."

L78: "...we consider a model, the EGDP ..." --> "...we consider the EGDP model ..."

L81: Remove "by".

L93: Remove "by". "recorded at" --> "from".

L96: Add "While" before "the main study area...".

L98: "the whole" --> "all".

L102: Please rephrase "It is also marked by...".

L104: Please rephrase "The Ticino stands generally as the...".

L107: Please rephrase. "necessitates..." does not follow from "Resulting from...".

L115. Should it be "precipitation", not "rainfall"?

L117: Please define "positive precipitation". Non-zero?

L118: Remove "though".

L256: Remove "method".

L405: Remove "for this model".

L420: Add "Figure" before "5".

L427: Please rephrase. For instance "In Figure 6 we also show the 100-year return level...".

L429: Remove "in comparison to the other regions". It is intuitive.

L430: Remove "in comparison to the other seasons".

L441: Suggest to rephrase to "We based our comparison on criteria that measure ...".

L449: "estimate" --> "estimation".

L471: Remove the first "Of".