

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC2
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Comment on nhess-2021-267

Anonymous Referee #2

Referee comment on "Spatio-temporal evolution of wet-dry event features and their transition across the Upper Jhelum Basin (UJB) in South Asia" by Rubina Ansari and Giovanna Grossi, Nat. Hazards Earth Syst. Sci. Discuss.,
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The paper of Ansari and Grossi provides an exercise where the main features of dry-wet condition transitions are analysed at the monthly time scale in the Upper Jhelum Basin located in between India and Pakistan. The authors use a mixed dataset for the period 1981-2014, including ERA5 derived precipitation and observed temperature, they first calculate the SPEI index and then derive several related indices highlighting both dry, wet and combined dry/wet transition events characteristics.

The main contribution of the paper, besides the specific results achieved for the study area, is the effort of proposing a methodological framework, yet based on well-known approaches and methods. I suggest some improvements detailed below. I hope my comments can contribute to enhancing the quality of the paper.

Major comments

- First, I suggest the authors carefully checking the text to avoid several grammar errors and typos widespread in the manuscript (I list some of them at the end of the review as examples).

- I classify this comment as 'main' because it concerns the title. In practice, if the authors agree, it can be easily solved. I don't agree with the term "wet event" because the expectation of the general audience is for smaller time scales than monthly. Therefore, for the sake of clarity, I suggest different phrasing. Probably "wet-dry months" is a correct,

yet simple choice (please refer also to the note at lines 226-227).

- I see several problems with data. First, I can't read the source of observed temperatures. Then, the reliability of ERA5 precipitation data needs to be accurately checked against available observations. In this regard, the authors provide a reference to a conference abstract (Ansari and Grossi, 2021). It's not enough, a section about data validation is needed. Finally, I'm not that keen on using the Thornthwaite method, which is very dated. I would suggest using at least a temperature-based model, e.g. Hargreaves-Samani. However, ERA5 provides potential evaporation data, a comparison between such data and the results achieved by the authors with another method would be interesting and could provide useful insights. The authors should discuss their choice of relying partially on datasets and partially on ground observations.

- Overall, I found the results and, mainly, the discussion, not particularly vivid. The authors should strive to emphasize better the added value of their study, avoiding not very fitting comments. E.g., I don't think the sentence in LL396-398 is very appropriate, because it refers to actual ET, while the method used refers to potential ET (PET).

Minor comments

L30: the authors refer to AR5, maybe they can update considering the brand new AR6

LL80-85: I think this sentence should be better placed in the Conclusions

L93: SSI is cited only here and not explained

L119: a paper under review is cited. I would avoid it. Anyway, it is not in the References

Fig. 1: it is not very clear. Only part of the Kunhar borders is visible. Please flip the colour palette of Elevation (high brown and low green)

L136: basically, a period of 35 years is not enough for such kind of analysis. Please extend the discussion of this issue and hint at the possibility of using an extended (in the past) ERA5 dataset

Table 1 and elsewhere: I guess it's "extremely wet", "severely wet", etc., not "extreme wet", "severe wet", etc.

Section 4.4: I suppose that also the number of transitions for each grid cell should be considered. Is it so? If not, why?

L200: alteration --> maybe "rapid transition"?

Fig.3: The year 1980 should not appear here, it's not within the analysed period

Fig. 4: it's like AWD and ADD, and MWD and MDD are almost complementary (my feeling)

L279: TDI results are not yet introduced

Fig. 7: only here maps coordinates are made explicit. Please make all maps homogeneous.

L328 and L339: "a greater number": please quantify

Fig. 8: what are the units? Months?

Typos and English grammar (examples)

L8: "more than" or "rather than"

L24: Extremes weather events

L29: extremes events

L67: standardized indices, which facilitates

L123: The monsoon pattern bring

L161: The severity levels... was classified

L167: Following to Spinoni et al.

L215: not clear, please rephrase

L226: the terms... presents...

L266: "...exhibit two distinct parts of the basin". Not clear, please rephrase

L313: The higher positive values: I guess "the highest". Also, in the next line, "highest"

L384: El Nino suppress monsoon rainfall activity over Pakistan