

Anonymous Referee #1

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Reply to Anonymous Referee #1

Thank you very much for your valuable comments, which help to improve our paper significantly.

This is an interesting manuscript that, in the text, focuses too much on what has not been done rather than analyzing the interesting results that the authors have. I recommend revising the text to have a simpler and easier to follow structure focusing on three aspects (bias correction, signature analysis, comparative analysis across watersheds). If the authors focus the paper on this then they will have a valuable contribution. More specific comments below.

In the revised text we will change the focus much more on what we have done. Especially the application and interpretation of the indices relative to catchment properties and input data will be enlarged.

- Abstract should contain more specific conclusions and not focus on future work. What has been learned that was not known before? There are specific results in the paper, why not include them in the abstract? For example, what causes the differences between the catchments?

The abstract will now include the direct outcomes of the study. Future work will only be addressed in the outlook section.

Study areas are three different gauged catchments in the Nahe basin, SW Germany. The catchment of gauge Kronweiler shows steep slopes, low water storage capacities, high mean annual precipitation (MAP) and low potential Evapotranspiration (ET). On the other side, Gensingen is a flat catchment with high permeability, low MAP and high ET. The third catchment, Kellenbach, shows medium values of these properties.

- The introduction section needs to be more focused: climate change, bias correction, event scale, model diagnostic, ... All relevant, but it is difficult to read the introduction and see what the story of the paper is going to be. Focus the work. What is central and what is just secondary? E.g. the climate is changing, we need to assess the impact, so models need to work for the right reasons - and here is how we assess this. (Or a storyline of this kind)

We will change the storyline in the way recommended by you. Our study wants to assess differences in hydrological behavior. Our example shows that the difference between the reference scenario and the near future is much smaller than model errors or the effect of the bias correction procedure.

- Avoid one sentence paragraphs.

We will avoid one sentence paragraphs in the revised version of the paper.

- Why is one catchment more affected by the bias correction than the others? – My comment about the discussion/outlook section is the same as for the introduction. Why not give it a simple structure? E.g. we assessed three issues: bias correction, etc. and here are our main conclusions and what they mean.

We will follow your recommendation and give the discussion section a simpler to follow structure: We will focus on the applicability of signature analysis instead of discussing too much what has to be done to improve our bias correction. This part will be transferred to the (added) outlook section.

The section starting with “Figure 4 shows...” is for example not really connected to the rest of the section. Also, why is this section mainly about what the authors are going to do in the next paper? Discuss what you found here and what it means. Then use a conclusions section to summarize and add the outlook.

This section will be completely rewritten. A conclusions section will be added. Description of future work will consequently be transferred to the outlook section.