

## Review of the manuscript “Ecosystem adaptation to climate change: the sensitivity of hydrological predictions to time-dynamic model parameters”, ID hess-2021-204

I want to thank the authors for their detailed reply to my comments. I think that they have been well addressed in the revised version of the manuscript which further improved the manuscript.

I only have some minor suggestions/comments left:

- L. 19-21: Revise this sentence for better readability (“with in the non-stationary scenarios up to...” is hard to follow)
- L. 740-743: “This root-accessible water volume is independent of soil type ...”, is there a reference for these two sentences?
- L. 793: “increasing its root-zone storage capacity **by** 34%” -> replace “with” with “by”

**Figure 2:** This graph is a nice addition to the method section, as it nicely supports understanding of the methods workflow. However, I think that it should be revised a bit for more structure, readability and consistency. The workflow/concept presented in the figure should also be clear to someone that has not read the full method section. I have a few suggestions that might help revising the figure:

- Text:
  - o Could be a shorter and more consistent across the columns to make clear how climate and input parameters differ between columns.
    - E.g. “fixed  $S_{R,max,A}$  parameter” (col 3) vs. “ $S_{R,max,A}$ ” (col 4) is inconsistent
    - Maybe instead of text, you could put two bullet points *Climate: xxx* and *Root zone storage capacity: xxx* in each modeling column. This would make it easy to compare at one glance in which ways columns differ from each other?
  - o Headings in the sub columns might help for structure of workflow
    - E.g. col (3) Calibration/Model calibration, col (4) Evaluation/Validation
- 4 Scenarios:
  - o It is a bit confusing to have the historical scenario from (4) also in each of the scenario description of (5). At a first glance, it looks like the reader has to understand 8 instead of 4 scenarios until they figure out that 4 of them are the same. I think the concept of 4 climate and land-use change scenarios that are all compared to the same historical scenario could be made clearer. You could, for example, have the scenario description of the historical scenario in col (4) and the four 2K scenarios in column (5). Then, in column (6) you explain that you compared all scenarios from (5) to the scenario from (4)
- Currently, there is only one arrow linking the output  $S_{R,maxA}$  from col (2) with column (3). But shouldn't there also be arrows linking the 4 Q/P Outputs from col (1) with col (2) and the remaining 3  $S_{R,max}$  B-D from col (2) with the scenarios in col (5)? I realize that in the current structure of the plot this might be difficult. Maybe it's easier if you flipped the plot structure to a top-bottom instead of left-right structure?
- Shading and boxes could be improved to support the workflow better:
  - o Too many shades of gray (e.g. headings are different from columns) make it difficult to see the clear main workflow from “Estimate  $S_{rmax}$ ” -> Modeling -> Change evaluation.