

Author response to:

RC1: 'Comment on hess-2021-104', Anonymous Referee #1, Dec 14 2021

The authors have addressed most of my previous comments. Some minor suggestions below for the authors to consider:

Thank you for your time spent reviewing our manuscript and for your valuable comments. We hope our notes below address your concerns about this paper.

1. L54: water instead of H₂O?

We have fixed this. Thank you for the comment.

2. Theta was mentioned here as model weights in L207 but as parameters in L222. Please clarify

We have fixed this by changing 'weights' to 'parameters' to maintain consistency in the description. Thank you for the comment.

3. L226: unbold 'and'

We have fixed this. Thank you for the comment.

4. equation 13 and 14: mean of the TWS for all times not average for month t?

We have fixed this by removing the 't' subscript in the last terms of Eq 13 and 14. Thank you for the comment.

5. L295: The comparison with prior simulations is one of the main results in this study. I suggest include the subfigure A of Figure S2 in Figure 4. It can be plotted together in the top subfigure showing only the mean of the prior. Include the subfigure labels.

Thank you for the comment. We now include the prior simulations in Figure 4.

6. Figure 5: maybe no need to show the catchment location figure since it has been shown in Figure 1.

Although we agree with the reviewer that this map is repeated here, we prefer to keep the subpanel to match the maps shown in supplementary Figures S5-S6.

7. Figure 7: same suggestion here. it would be good to include the prior simulations in Figure S7 here as a comparison. Authors refer to many figures in supplementary materials which can be included in the main manuscript.

Thank you for the comment. We now include the prior simulations in Figure 7.

8. Table 1: no need to have bold font for all the parameters and values.

We have fixed this. Thank you for the comment.

9. L421, L433: Basin 2 not 6?

We have fixed this. Thank you for the comment.