

Hydrol. Earth Syst. Sci. Discuss., author comment AC3
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Reply on RC2

John P. Bloomfield et al.

Author comment on "How is Baseflow Index (BFI) impacted by water resource management practices?" by John P. Bloomfield et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2021-259-AC3>, 2021

Response to Mariaines Di Dato

Once again we would like to thank the reviewer for providing their insightful comments and reiterate our previous response.

We are pleased that you think that the paper is suitable for publication in HESS.

Major comment 1

With regard to the observations that improvements could be made to the description of "baseflow generation dynamics" and that "the authors could discuss better the choice of the filters [for estimating baseflow index (BFI)]". We acknowledge that there is an extensive body of work and ongoing research related to understanding baseflow generation and the estimation of BFI. In that context, the target for the present study is to assess the effect of water resource management (WRM) practices on BFI using a previously published unique dataset (CAMELS-GB, Coxon et al., 2020a; 2020b) that contains two different estimates of BFI and a range of WRM co-variables (see lines 64-68 for specific aims of the work). Consequently, we did not actively choose the two BFI "filters" discussed in the current paper, they were the only two available for our analysis as part of the CAMELS-GB dataset.

Notwithstanding that observation, on revising the paper, we will: i.) add new context to section 1, the Introduction, to describe baseflow generation dynamics and how these may be related to WRM, and ii.) add a note to section 2.2 placing the two BFI filters analysed in the paper (BFI based on the UK CEH method and the Lyne and Hollick digital filter) in the wider context of other BFI filters.

Major comment 2

As the reviewer observes there have been many studies that have investigated the relationships between catchment properties and BFI, including studies such as that of Beck et al. (2012). Given the aim of the present study has been to assess the effect of water resource management (WRM) practices on BFI we chose to focus discussion on the implications of the results related to WRM (Lines 431-457). However, we acknowledge that there will also be interest in the results in the context of other catchment characteristics and we will add an additional section to the Discussion in a revised version of the paper that will discuss the results in the context of previous work exploring and quantifying the relationships between catchment properties and BFI.

Minor comment a

Noted. Will amend in revised text.

Minor comment b

Noted. Will amend in revised text.

References

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