Dear Editors,

We sincerely thank the Editor, Associate Editor, and Reviewers for their constructive and helpful comments for our manuscript entitled ***“Regional Base-Flow Index in Arid Landscapes Using Machine Learning and Instrumented Records”***. We have revised the manuscript accordingly and provide a detailed point-by-point response below. Reviewer comments are reproduced in *italics*, followed by our responses. Line numbers refer to the revised manuscript.

**Reviewer #2 Comments**

1. *The authors have opted for spelling "baseflow" with a space ("base flow"; noun) or hyphen ("base-flow", adjective) throughout the manuscript. Please note that the spelling in the "Highlights" has not been updated yet.*

* We updated the spelling in the “Highlights” document to reflect the changes suggested.

1. *The reference list seems to miss one of the newly added references (Jaffrés et al., 2021).*

* This reference was added to the reference list.

1. *In response to the other reviewer, the authors noted that multicollinearity was evaluated using variance inflation factors (VIFs). For transparency, this should also be stated briefly in the methods section.*

* We added two sentences to the Statistical Analyses section as follows: “We evaluated multicollinearity of predictors using variance inflation factors (VIF). All predictors had VIF values < 5, with precipitation (4.3) and AET (4.2) being the highest, which are below commonly accepted thresholds for problematic collinearity (James et al. 2017).” (Lines 295-297)

We hope that these revisions address the reviewers’ and editor’s concerns. We would like to thank the anonymous reviewers for taking the time to provide feedback to improve this manuscript.

Sincerely,

**Caelum Mroczek** (corresponding author)

*on behalf of all co-authors*