Response to Community Comment (CC1) by Nima Zafarmomen
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Manuscript: Effectiveness of Multivariate Bias Correction in Hydrology and Agriculture: A Systematic Review

We would like to thank Nima Zafarmomen for taking the time to read our preprint and for providing such thoughtful and constructive feedback. We greatly appreciate this community input, which will certainly help us improve the clarity and precision of our manuscript during the revision process.

Below, we address each point raised:

1) Resolving numerical inconsistencies in the review flow.

Thank you for catching this oversight. We will thoroughly review the text and correct the numerical inconsistencies. The revised manuscript will uniformly reflect the final PRISMA flow: an initial corpus of 60 unique studies, with 39 included in the final synthesis and 21 excluded. This will be standardized across the abstract, text, Section 2, Figure 2, and Tables 1 and 2.

2) Softening categorical claims.

We agree that phrases like "100% of relevant studies" can read too categorically, even if mathematically accurate for our specific 39-paper corpus. In the revised manuscript, we will adjust these phrases to reflect a more nuanced synthesis (e.g., using terms like "Consistently across the evaluated sample...") and ensure we explicitly mention the boundaries of our sample size and the inherent heterogeneity of the evaluated studies.

3) Compact synthesis table.

While we appreciate the suggestion for a new, consolidated table, we feel that adding it would introduce significant redundancy. Currently, Table 1 details the application domain, geographical region, and the specific MBC methods evaluated for each study, while Table 4 outlines the validation metrics used. We believe these existing tables, combined with the detailed methodological descriptions in the text, already provide the necessary transparency regarding our synthesis without expanding the manuscript's length and complexity.

4) Distinguishing Hydrology subdomains.

We completely agree that distinguishing between streamflow, snow/hydroclimate, and extreme events is critical. In fact, we structured the manuscript to highlight this exact division. Section 4.2.1 is titled "Ambiguous Value for General Streamflow Characteristics" to address bulk streamflow, while Section 4.2.2 is titled "Critical Importance for Process-Specific Hydrology", explicitly covering snow-dominated basins and compound events like floods and droughts. Figure 5 also visually separates these specific subdomains. To ensure readers do not miss this, we will add a clearer signposting sentence at the introduction of Section 4.2 to emphasize this structural division.

5) Elaborating on method classes.

This is a great suggestion. We will expand Section 3.1 slightly to include a brief discussion of the practical advantages and drawbacks of the "marginal/dependence," "all-in-one," and "successive conditional" method classes. Adding context regarding computational cost versus physical robustness will improve accessibility for the interdisciplinary audience.

6) Conflating review evidence with author interpretation.

This is a very fair critique. Our discussion characterizing the impact model as a "low-pass filter" or a "spatiotemporal integrator" represents our conceptual synthesis of the literature's divergent findings, rather than a universally tested hypothesis from the evaluated corpus. In the revision, we will adjust the wording in Section 5.1 to explicitly frame this as our proposed conceptual interpretation based on the synthesized evidence.

7) Glossary of major acronyms.

We appreciate the suggestion to include a short glossary of major acronyms to improve readability for an interdisciplinary audience. However, in standard manuscript formatting, a formal glossary or list of abbreviations is typically placed in an appendix at the end of the document. We believe that requiring readers to repeatedly navigate back and forth between the main text and an appendix to check acronym definitions would disrupt the reading flow and ultimately hinder readability. To maintain a smooth narrative flow and avoid redundancy, we have opted to keep our current approach. We ensure that all acronyms (e.g., MBCn, dOTC, MRNBC) are clearly defined at their first mention in the text. Furthermore, these acronyms and their full definitions are already compiled centrally in the footnotes of Table 1 and Table 3. We believe this existing structure provides the necessary reference points directly where the reader needs them, without the need for an additional section.

8) Suggested citation (Hirmand River Basin).

We appreciate you bringing this relevant study to our attention. Because our manuscript is a systematic review governed by a strict, pre-defined PRISMA search protocol and predefined inclusion/exclusion criteria (detailed in Section 2 and Figure 2), we cannot retroactively add studies to our formal 39-paper evaluation corpus without violating the established methodology. However, we agree that the study provides valuable context on bias correction in data-scarce regions. We will review the study and, if appropriate, include a citation in the general Introduction or Discussion sections where the strict systematic protocol constraints do not apply.

Thank you again for your time and the highly constructive feedback.