Letter to the Editor

Laura Schild and Ulrike Herzschuh

Dear Kirsten Elger,

Thank you for opening our manuscript to community discussion. We appreciate the reviewers for their insightful feedback and constructive comments. We made use of a global compilation of pollen data, and our collected metadata, such as basin size and basin type to reconstruct past vegetation using REVEALS.Notably, none of the reviewers criticized our general implementation of the method to reconstruct past vegetation using lake and peat sediments, the details which are criticized can be easily addressed. In addition, the validation of our results shows clear improvements in forest cover reconstruction compared to pure, uncorrected pollen data highlighting the validity of our dataset. Any issues raised by the reviewers and community members are either easily resolved or have already been implemented in our revisions and responses.

Marie Gaillard pointed out a wording problem with the name of the 80% pollen source area. We agree with her feedback and will change the name to improve clarity. She also asked for clarification on the inclusion of small sites. Since our dataset is intended to be used as a gridded dataset, we have provided an additional script to facilitate the inclusion of small sites. We will also flag small basins and peatland reconstructions in the dataset to avoid using these unreliable site-wise reconstructions alone.

Michela Mariani raised the issue of continental RPP syntheses and the inclusion of hemispheric values being a strong generalization. While we agree that this is the case, continental syntheses are common in large-scale pollen-based vegetation reconstructions and have been shown to yield improved results (e.g. Dawson et al., 2024; Githumbi et al., 2022; Serge et al., 2023; Trondman et al., 2015). This is also true in our reconstruction, as demonstrated by our validations, which are free from circularity. We tried to highlight and discuss the uncertainty regarding reconstructions in the Southern Hemisphere in our manuscript, but agree with Michela Mariani that excluding the Southern Hemisphere would be more sensible and will implement this change.

Williams et al. emphasized the need for better open science practices. In response, we have added citations to Neotoma and included the DOIs of the datasets used from Neotoma. Similarly, Giesecke also raised the need for Neotoma citations, which we have addressed as described above. Additionally, he pointed out the uncertainty in the Southern Hemisphere, and as mentioned, we agree with this point and have decided to exclude it for consistency. Furthermore, we will only publish forest cover reconstructions from the optimized dataset and exclude taxonomic reconstructions to address the uncertainty regarding this approach.

We emphasize that all these changes are feasible and have either already been implemented or are in the process of being implemented. We believe these revisions significantly improve our manuscript and would like to submit our revised version for your consideration.

Best regards,

Laura Schild and Ulrike Herzschuh

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