

Response to Reviewer – General Revision Summary

In this revision, we have made the following modifications to improve clarity, consistency, and accuracy throughout the manuscript:

1. We have standardized the use of abbreviations by spelling out the full terms only at their first appearance in the abstract and main text, as well as in all figure and table captions. And then reviewed the capitalization of proper nouns and technical terms for consistency (e.g., Weighted-Averaging Partial Least Squares (WA-PLS) and Random Forest algorithm (RF))
2. The use of hyphens, en dashes, and minus including the replacement of em dash have been standardized throughout the text. Several grammatical issues (e.g., subject–verb agreement such as was/were) have also been revised.
3. We have clarified the usage of Amaranthaceae and Chenopodiaceae in this study to ensure consistency with current taxonomic conventions.
4. In Section 4: Data Description, the format for presenting the mean and maximum values of pollen percentages has been revised for improved clarity and conciseness.
5. Finally, several references have been corrected in terms of formatting and citation style.
6. For figure and table captions,
 - a) In Figure 1, we corrected the number of previously published samples indicated in the legend and the units of NPP value.
 - b) Table 1 has been revised to correct the names of several lakes.
 - c) In Figure 3, according to the revision of mentioned above (3.), we adjusted the ‘Chenopodiaceae’ to ‘Amaranthaceae’.
 - d) In Figure 4, we revised the unit labels for the A/C and A/Cy ratios, removing the percentage symbol (%) to reflect the correct measurement unit.
 - e) In Figure 8, we adjusted the arrangement of the five sub-graphs and refined the font settings and other visual elements.

We hope these revisions address the concerns and improve the overall quality of the manuscript.