Review for manuscript egusphere-2026-1503

Using pollen analysis to assess recent changes in floristic diversity, an example from the Swiss Plateau

The manuscript presents a methodological evaluation of pollen-based estimates of floristic diversity using two high-resolution lake records from the Swiss Plateau. The study addresses an important and well-known issue in palaeoecology, namely the biases affecting palynological richness, and tests several approaches to reduce them. The topic is relevant and the dataset is of high quality, providing valuable insights into both methodological challenges and long-term biodiversity changes related to land-use intensification.

Overall, the manuscript is well structured and clearly written. Although it is relatively long, this is justified for a methodological study, where it is important to describe all aspects in sufficient detail to allow other researchers to reproduce the analyses and understand the results. Additionally, a considerable amount of relevant and interesting material is provided in the appendices.

However, a major concern is the inconsistent use of terminology throughout the manuscript, particularly with respect to terms such as “pollen richness”, “palynological richness”, “palynological diversity”, “plant richness”, “plant diversity”, “floristic richness”, “floristic diversity”, and “vegetation richness”, which are not clearly defined and appear to be used interchangeably.

The specific remarks for the study are below.

Introduction

The introduction clearly and thoroughly presents the biases and problems associated with the diversity of pollen types.

Line 55. ….depends greatly **on** the amount of pollen produced ..

Methods

The methods section clearly explains how the different approaches (e.g., binning, constant-count and accumulation-based rarefaction, and separation of pollination types) were applied to assess palynological richness.

Line 163. … the overrepresentation of **wind**-pollinated taxa …

Results

The results are convincing in showing that standard approaches may lead to biased interpretations.

It would be helpful to add a sentence at the beginning of Section 3.2 that refers to Fig. C1, so that the appendices are cited in the correct order. Otherwise, Figs. C2 and C3 are referenced before C1. Given the large number of figures in the appendices, this adjustment would improve readability and make the paper easier to follow.

Line 264: "…increase of ~2 taxa in Hallwilersee since ~1800 AD." It is not entirely clear how this value was estimated, as the figure seems to indicate a larger change. Similar discrepancies may also be present in line 275 (~2 taxa), line 316 (15 taxa), and line 318 (3–4 taxa).

Line 271-273. "A temporary decrease around ~1960 AD is most apparent at bin size 10 though hardly visible at bin size 15, which is likely a result of the lower temporal resolution at the latter bin size." It is unclear whether the statement about the temporary decrease around ~1960 AD refers to Fig. 3 or to the appendix figures (e.g. Fig. C2). This pattern is not clearly visible in Fig. 3, and the reference should be clarified to avoid confusion.

Lines 268–276: You describe results based on Fig. 3, which presents the Baldeggersee data using the oldest age of the samples in each bin. However, in the following section (lines 277-280) on Hallwilersee, you refer to Fig. C3, which is based on the youngest age of the samples. This inconsistency in age assignment may lead to confusion and should be clarified or made consistent throughout the text.

Line 317: The reference to Fig. 4 (left) appears to be incorrect and should likely refer to Fig. 4 (right).

Line 287-289. It is not clear from the figures where the increase in the influx of pollen from wind-pollinated taxa around ~1960 AD can be observed. Could the authors clarify this.

Line 326. … two methods is the trend after 1945 AD … The timing of the richness increase described as occurring after ~1945 AD is not entirely clear from Fig. 4, where the trend may appear to begin earlier. Clarification would improve consistency between the text and the figure.

Line 468. The terms "Aphanion" and "Caucalidion" refer to phytosociological alliances of arable weed communities, but this may not be clear to all readers. A brief explanation when first introduced would improve clarity.

Figures

The time axes of the figures appear to vary, with some starting around 1875 and others around 1900. Harmonizing these starting points would improve comparability between figures and enhance overall clarity.

Fig. 2. The p-values reported in Figure 2 are presented with excessive numerical precision. Report p-values using a simplified format ($p < 0.001$ or rounded to 2–3 significant digits).

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