

Reply on RC2

Esther Githumbi

Community comment on "European pollen-based REVEALS land-cover reconstructions for the Holocene: methodology, mapping and potentials" by Esther Githumbi et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2021-269-CC3>, 2021

Please find below detailed responses to the comments.

Specific comments

- p 27-28. Given the likelihood that the maps created by this approach will be used in various other applications (which are indeed mentioned in the discussion), some idea of progress towards a more "believable" depiction of LCC it might be useful: i) some comments on how far the process has come, compared with simple pollen-based maps or land cover maps generated by other means, and ii) perhaps a "health warning" that the data (RPPs and maps) are still approximations, for which there are suitable but also unsuitable applications. Some mention of this is made in the discussion of the use of the LOVE package for local sites, such as might be of interest in archaeology. It is quite difficult to use this package (that is, to bring together the right site and the right data); given that, and the easy information the maps provide, it might be useful to emphasise that single grid cells on don't reflect "local" information.

Response:

We appreciate the suggestions of a) making clear that the REVEALS maps are **approximations** of **regional** plant cover (not local cover!), b) developing a bit what is/are the advantage(s) of such reconstructions compared to pollen maps or maps based on other methods (e.g. biomization), and c) adding some words on the use of REVEALS vegetation cover for the application of the LOVE model. We take this comment into account by adding some text at the beginning of section 4.3 and restructuring the existing text.

- P 29. It would be good if the first sentence acknowledges that while the LRA goes far beyond anything attempted before in the way of bias correction for pollen-based reconstructions, it is built on previous ideas, notably, the R-value approach of Davis, which was taken up by many other authors, including Prentice (who is mentioned) and actually, biomization, which because it uses a square-root function, does, in a non-specific way, reduce the impact of high pollen producers on large-scale reconstructions of vegetation cover.

Response:

We agree that it is of importance to mention the R-Value Model of Davis and biomization in the context of this paper. We have taken into account this comment as follows:

- We develop the question of biomization in comparison to REVEALS reconstructions in the discussion under "Use of the REVEALS reconstructions" (see above).
- We deleted the first sentence of the section 7 Conclusions, i.e. "The LRA REVEALS and LOVE models (Sugita, 2007a, 2007b) are the only current land-cover reconstruction approaches based on pollen data that incorporate assumptions that reduce the biases caused by the non-linear pollen-vegetation relationship, differences in sedimentary archives and spatial scales." Because this statement is not entirely correct, as highlighted.
- We mention Davis R-Value in section 2.1 and refer to other papers for the development of pollen-vegetation modelling from the R-Value to the REVEALS model.

Technical comments

- The map figures have great value, and it might be worth reviewing how easily they can be read and interpreted.
- Fig 1: difficult to distinguish lake and bog colours
- Figs 2-6: ensure error circles are visible on dark cell colours. It takes high magnification to see them and even then they are indistinct. Many are large and therefore important to show.
- Table B2 should read Romania (is correct in Tab C1)
- The manuscript is well written and largely devoid of typos. I did spot a few (this list is unlikely to be comprehensive though).

Response:

- We have done so far what we could to maximize the readability of Figures 1-6. We are also of the opinion that such Figures can be studied at the computer with zooming, which is a big advantage. Making these Figures very easily readable on paper would imply that we decrease significantly the number of Figures per Figure, which would decrease the number of maps we could include in the paper. However, we will rely on and follow the decision of the Editor in this issue and will follow it.
- We have implemented all corrections of points 4 and 5.