

Earth Syst. Sci. Data Discuss., referee comment RC2  
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## Comment on **essd-2022-23**

Angela Bruch (Referee)

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Referee comment on "*Artemisia* pollen dataset for exploring the potential ecological indicators in deep time" by Li-Li Lu et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2022-23-RC2>, 2022

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This manuscript provides a wealth of data on the pollen morphology of *Artemisia* and its relation to the habitat preferences of their mother plants. Such data will serve in the future for better reconstructions of paleoenvironmental setting, which in turn will help to better understand the earth's climate past.

The manuscript is well written, well structured and with a very informative introduction. The methods used are all well established and robust. I could envision more sophisticated statistical analyses to be applied, but this may be done in the future with the database grown further.

One critique I may raise here, is the assessment of the distribution of taxa in different biomes (here wrongly called ecoregions). First of all, the results shown in Figure 18 do not support the claims made in the text with respect to habitat preferences of the species or morpho-groups. Second, biomes are too large a vegetation unit to be able to reflect habitat preferences. Here, probably the actual habitat of the sampled specimen needs to be considered, or a different approach to be developed.

The data are well documented. The rich dataset of detailed high quality pollen fotos is crucial for palynological studies and a treasure in itself. The dataset on measurements of pollen grains is quite small, considering only one specimen per species. It should definitively, and hopefully will, be enlarged in the future, but for sure will serve as a basis or blueprint to other overarching statistical analyses on pollen morphology.

With respect to the dataset which was downloaded from GBIF and WorldClim, I do not see the necessary to provide them here (except to justify the figures in the manuscript). GBIF is a dynamic database growing constantly and new retrievals from GBIF will give more detailed information with every day. Moreover, GBIF data have to be carefully quality checked before further analyses, but there is no awareness of this mentioned here in the text.

In general, I consider this manuscript ready for publications after minor revisions.

I have a few remarks annotated in the pdf.

Please also note the supplement to this comment:

<https://essd.copernicus.org/preprints/essd-2022-23/essd-2022-23-RC2-supplement.pdf>