

Clim. Past Discuss., referee comment RC1
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Comment on cp-2021-143

Suzanne Leroy (Referee)

Referee comment on "Impact of terrestrial biosphere on the atmospheric CO₂ concentration across Termination V" by Gabriel Hes et al., Clim. Past Discuss., <https://doi.org/10.5194/cp-2021-143-RC1>, 2021

General comments

By focussing on interglacial forests during TV, the authors are looking for explaining reasons for low CO₂ before the MBE. The combination of three steps (new data, data compilation and modelling) makes for an interesting manuscript, deserving publication.

The grain size of pollen is not clay but silt and fine sand (line 94).

Lines 94-96: explain briefly why it reflects more the Guadalquivir? Is it a question of current? The paper you mention is not available yet at the time of this review.

Despite the justification proposed, the sum of 100 terrestrial pollen grains remains very low, and I cannot see how your % are stable with such a low sum. I would recommend that you increase your counts and reach a total terrestrial sum of 300, and a sum without *Pinus* of 150-200. Please provide clearly the sums used for terrestrial pollen for each sample, and also the sums without *Pinus*. So the reader can estimate himself/herself the quality of your data.

You should anyway delete the sentence "the more pollen counted, the better the concentration estimates are" as you do not seem to follow this recommendation.

Is the "200 grains" of Rull without *Pinus*?

Although this manuscript is on TV, adding a few more samples at the top of the diagram until the start of the following glacial (thus covering all types of forests), would provide you with the end of the interglacial and give you a more complete and satisfying view of MIS11 forests. This is only a suggestion.

Table 1: "fern spores" are unexpected proxy for forest. Please explain the rationale. ODP 658 is in front of the Sahara that was already developed in TV.

Section 3.1: is there a change in lithology at the transition between pollen zones 1 and 2? Could this be the reason for the high amount of oxidation-resistant *Taraxacum*?

Figure 2: add a lithological log to the left of the diagram. Line 93 suggests that it has changed over time over the whole core. What is the case for the portion of the core you studied?

Line 351: "Forests are reliable proxies for terrestrial biosphere". Please develop here. How much is this group better than swamps or other groups? provide figures/numbers if possible.

The text needs to be improved as it feels at times like a literal translation of French. It also contains with quite a few typos. Some of them were corrected in the annotated manuscript.

Throughout the manuscript I would recommend being more restrictive with the use of the word "event", and keeping it only for very brief changes. In many instances, it could be replaced by, for example, "period".

Points of details

Pollen/cm³: add superscript (eg lines 230, 271).

In section 2 besides fig.1, in most cases, it is not necessary to call to figures. This will facilitate figures calling in a logical order, later on.

Fig. 5a and 5b should be reversed. First the map, then the records.

Line 301: explain briefly here what SINES is (i.e. a forest phase ...).

In the text: the family names of plants should not be in italics, e.g. Cupressaceae, Poaceae. Moreover check their spelling.

Add the position of TV on figures 2, 3, and S2.

The reference format for the main text and the SI needs to be homogenised and adapted to the journal requirements.

See the annotated manuscript for further comments.

Please also note the supplement to this comment:

<https://cp.copernicus.org/preprints/cp-2021-143/cp-2021-143-RC1-supplement.pdf>