

21 September 2018

**Dr. Nathalie Combourieu-Nebout**

**Editor Climate of the Past**

Dear Nathalie,

Thank very much for your constructive comment, all of them have been take into account. We hope that the manuscript now fulfil the journal requirements. Here you have a point by point answer (in **bold**) to your comments (in *italics*). We attached the track mode version as supplementary.

- *First, in all diagram is it possible to report the scale (cm and or cal yr) on the two sides (left and right or top and bottom), it will be easier to see correlations between the different curves. This has to be done on fig 3, 4, 8. We included the scale on the two sides of each figure.*
- *Figure 2: it remains very difficult to see the grey shadow. Perhaps with another color it will be more readable. We changed it to red to make it more readable.*
- *Figure 3: The problem of pine has been underline and you respond satisfactorily to the reviewer but I do not see the additional paragraph at the place indicated in your response. Probably it correspond to the paragraph between line 291 and 299. I understand that you interpret the high percentage of Pine as a migration of the tree line. But for me it is not sufficient for the third sample. In fact, I have a doubt on the third sample as this sample is almost completely full of pine. Do you really think it is reliable? In fact it is very strange to have almost only Pine in a sample of a continental site. Does this sample not rather reflect a problem of differential grain conservation? If it is the case, this sample has to be removed from the diagram or at least it has to be more extensively discussed if you keep this sample because it remains highly questionable. As the peak is defined and by one sample composed only by pine it has to be taken with cautious in my opinion. The following peaks do not show the same picture and seems more reliable even if defined by one sample. **First of all, I am very sorry that the paragraph did not coincide with the lines indicated in the author's response file, the manuscript changed its format when I opened it with other PC and I did not noticed it. On the other hand, the third sample definitely present a preferential conservation of Pinus, so we decided to remove it. We also made the corresponding changes in the manuscript. See lines 186; 188; 191.***
- *Figure 6: I do not understand what are the small dendrograms in the upper right corner of each blue figure. In fact they are too little to be red. Remove them if it is not used in the paper or enlarge them to propose them in a readable way. **The dendrograms indicate the elemental composition of each mineral, we enlarged them in order to make it more readable. See line 1052.***
- *Figure 7: Decrease is not written in a good way (decrease) for forest, African dust and same for increase (icrease). Please verify all. The characters in yellow, light green and light orange are very difficult to read but perhaps it is a printing problem. Verify that please. When you mark runoff decrease it correspond to an abrupt stop of the runoff at*

*the beginning of the arrow. Wouldn't it be better to write stop and not decrease? We corrected the misspellings and we replaced the light colors for darker ones. Since there is no a runoff stop, we changed "runoff decrease" for "more peaty lithology" which also implies a runoff decrease.*

- *In the text, you added something on Olea but it is not clear for me. For you which pollen have the thicker endexine (and not intine which is not present in the past pollen) and which one has the higher size of reticulum? I think it is Olea and not Phyllirea. Please rephrase you sentence. In the same paragraph, I think that precision are needed on the way you calculate the percentages. What does the basic pollen sum contain: all the grains or only the 300 without aquatic? Is pine included in it (probably)? You have to precise that. Please add something. **We rephrased both paragraph. See lines 126-129 and 131-132***

Kind regards,

Jose