

## RESPONSE TO EDITOR COMMENTS

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Dear Nathalie Combourieu-Nebout,

Thank you for your support for this manuscript publication in *Climate of the Past*, we have made these last changes in the revised manuscript comments is provided in red below and in the new version of the manuscript.

Best regards  
Pierre Sabatier

1- Please follow the Rev. 1 and add something about scree I did not see that.

We add in the revised version of the manuscript « from glacial or rock fall origins »

2- Concerning the remark on page 6 line 17 of Rev.1 on the grain size, why didn't you add your remark in the text, it will be informative. Please do that.

We add « Grain size in this lake sediment is mostly affected by biogenic silica (see below) thus this data could not be used to track thin particle from Aeolian origin. We just use here grain size to illustrate that there is not coarse deposit link to flood or terrigenous events »

3- I agree with the reviewer 2 and ask you to precise what you call long term as this term is used for long records to explain the large changes and in fact for lot of researchers millennial changes are called short-term changes. Please modify or explain more.

We add this sentence in the abstract : « High resolution geochemical contents provide a reliable proxy of Saharan dust inputs with long term (millennial) to short term (centennial) variations »

At the end of the introduction we also add : « long term (millennial) to short term (centennial) variations »

4- I think that something has to be added concerning the remark of reviewer 2 on the composite section and the other section. Perhaps one or two sentences, may be in the "study area" §.

We probably not well formulate this part, now we add in the method part « These 3 cores were correlated and we used data from different sections to have enough material for different analyses. And we remove the term composite to avoid any confusion.

5- Concerning the palygorskite, I agree with reviewer 2 that values may be better in the figure 1 as it has been done for the ratios. You may add range of values if necessary. Please try to do that.

We add a range of palygorskite content in figure 1

6- In the same figure choose another colour to represent the Sahara/Sahel limit please. Orange is not very visible on the grey background.

We change orange to blod red in figure 1

7- In the Figure 7 You said that you aligned the scales but the 0 is not aligned here especially for the TSI and we do not see the marks that indicate the different ages. Please add them and change that. You probably mean for Figure 5, thanks the number 0 is not well aligned we correct this, but for the graph scales it is ok.

8- In response to the remark of Rev.2 on page 11 l.17-34 of your first version, I see nothing in the new text although you said that you added sentences. Perhaps it has been added elsewhere.

We first do not think that we need to add a sentence to support our demonstration, but according to your recommendation we add in the paragraph two new sentences related to our R2 response:

« To support this link between the TSI and changes in pressure pattern over North Africa, as the amplitude of centennial variability may be of the same order of magnitude as the well-observed 11-year cycle.... »

and

« Even if TSI variations are weak, this regression analysis show that such an amplitude is likely sufficient to have a significant impact on the climatic system »

9- A little remark on the Mt symbol in the introduction. Perhaps an explanation is necessary in the text for the reader as requested by Rev. 2.

We add « Metric Tonne »