

**Dear Editor**

First of all on behalf of all co-authors, I would like to thank the editor for his helpful comments and suggestions. I believe that we have successfully integrated all the editor comments and requests, and that these changes have greatly improved the manuscript. Please find the revised version of our manuscript CP-2016-40 entitled: **“Extreme floods events reconstruction spanning the last century in the El Bibane lagoon (Southeast of Tunisia): A Multi-proxy Approach”** by **A. Affouri, L. Dezileau and N. Kallel.**

In this revised MS the text has been modified taking into account the editor comments. Please find in this MS one text color. The **green text color** reflects the modifications as suggested by the editor comments. In addition, figures qualities had been enhanced and some figures were modified as recommended by the reviewers.

I look forward to hearing from you and please do not hesitate to contact me for any further requests.

Sincerely yours,

Aida Affouri

## Response to the Editor

*We thank the Editor for his thoughtful comments and suggestions. We have included almost all of the raised suggestions and below we present a point-by-point response to the comments.*

In acknowledgements, please do not forget to thank the reviewers. They took time to read your paper and provide comments. Thank you.

We thank the editor for his remark. An acknowledgement to the editor and the reviewers was added.

“We are particularly grateful for editor comments of Dr Nathalie Combourieu-Nebout. We thank Maria-Angella Bassetti, MCF-HDR Assistant Professor at the university of Perpignan, France and anonymous reviewers for their helpful comments and their criticism, which led to a considerable improvement of the manuscript”.

1- The text will benefit by a reading by an English native could be done before acceptance. I propose some primary corrections.

Line 50: please verify Raji et al, 2014. It does not exist in the reference list

We agree with the editor. We correct this reference as follows:

“Raji et al., 2015”

Line 69: add and before “is constituted”

We have placed “and” before “is constituted”.

Line 70: there is no Figure 1 B

We agree with the editor.

Fig.1B is replaced by Fig.1

Line 71: replace as following by as follows

We replace “following” by “as follows”

Line 137: replace for by from “the connection...”

We replace “for” by “from”

Line 154: add “on” before “the BL12-10...” and correct the sentence “Each sample...”. Perhaps it will be better to write something like “sieved through a 1cm mesh” at the end.

We thank the editor for his remark and we take into account his suggestion.

We added “on” before “the BL12-10...”

This sentence is modified as follows:

“Each sample was primary sieved through a 1mm mesh,”....

Line 213: delete these before “three groups” and add an “s” a to “follow”

We have deleted “these” and we added an “s” as to follow.

Line 262: write “The same distribution”

We write “The same distribution”.

Line 285-287: please write a single sentence

We agree with the editor and we take into account his suggestion. This sentence is modified as follows:

“It is characterized by high positive loadings for Fe, Ti, K, and Al which indicates the dominance of alumino-silicates minerals in surface sediments (Spagnoli et al., 2008; Plewa et al., 2012).”

Line 287: delete thus as the prevalence of these elements is not a consequence of what you say in the previous sentence.

We thank the editor for his comment and we delete “thus”.

Lines 292 to 294: Rephrase from “silicon... to 1989”) it is not clear. You explain that you may have two origins first and choose the second why?

We agree with the editor and the sentence is rephrased as follows:

“Zr and Si are associated to silicates originating either from adjacent desert areas by erosion or from western Saharan dunes by storms.”

Line 297: write Ca is high in the marine samples

We thank the editor for his comment and we take into account his suggestion. The sentence is modified as follows:

“Ca is high in the marine samples”.

Line 298-299: “both.... Material” and (not but)”also.”

We replaced “not but” by “and also”.

At the end of the 5.1.3 we have no real conclusion after the last sentence we need more explanations!! What was the real input of this component analysis? It is not clear. And we need a sentence to link with the following paragraph or at least an opening to the paleorecord. In which way does such study will serve you for the paleoreconstruction?

We agree with the editor comment and we take into account his suggestion. A sentence was added in the end of this paragraph:

“This method allowed us to label elements of terrigenous source (Fe, Ti, K and Al) from those from in situ marine origin (Ca and Sr). These proxies will be used to reconstruct past flood and storm events with the help of sedimentary archives.”

Line 324: delete “we have seen that” it is not necessary for me

We thank the editor for his remark and we take into account his suggestion.

“We have seen that” is deleted from the sentence.

Line 330: replace the “:” by /

“:” is replaced by “/”

Line 341: rephrase the sentence. You can write “this study proposed the preliminary analyses performed on the first 30cm only although “the whole..... cm”

This sentence is rephrased as follow:

“This study proposes the preliminary analyses performed on the first 30 cm only although the whole BL12-10 core length is 90 cm.”

Line 342: replace made by composed

We replace “made” by “composed”

Line 351: where are represented the profiles cited in the sentence? There are not values in the Table 5. I suppose it is in figure 11 but the citation is nine lines below!!

We agree with the editor and Fig.11 is added in this paragraph.

It's ok in the table 5 we have not values because it shows the statistical analysis of grain size of BL12-10 core samples.

Line359: “a similar ratio (without s) .... is applied” or “the similar ... ratios ....were”

We thank the editor for his remark and change this sentence as follows:

“Single element concentrations may be sensitive to dilution effects to allow reliable reconstructions of terrestrial climate, elemental ratios often better reflect the origin of the sedimentary material”.

Line 361-363; is it necessary to write “our data” you may begin directly with the measured elemental....ratios...show ....and the mud.....12a)

We agree with the editor. This sentence is modified as follow:

“The measured elemental ratios Fe/Ca and Ti/Ca will be used to reconstruct past flood events (Fig. 9). A higher Fe/Ca and Ti/Ca ratio in the lagoon sediments would be a signal of more sediment contribution from the Fessi River during flooding.”

Line 371 to 374: could you please link the two sentences as one is the conclusion of the other. It is what I have understood. Or link the second to the third, it will be easier to follow.

We thank the editor for his remark and we take into account his suggestion. This sentence was rephrased in the text as

“The combination of geochemical and grain size data suggest that the BL12-10 core deposits had registered three flood events namely FL1, FL2 and FL3 (Fig. 12). These flood deposits have a thickness of 5cm, 4cm and 2.5cm respectively. ”

Line 381: do not mark an automatic wrap return and continue the previous paragraph. Or you have to do the same thing at line 387 and 407. Perhaps the best thing will be to have a unique paragraph on the flood chronology. Without, it is not so long to read.

We agree with the editor. We have changed as one paragraph.

Line 394-398: rephrase the sentence and simplify the text.

We thank the editor for his remark and we take into account his suggestion. This sentence is rephrased as follows:

“The activity of  $^{210}\text{Pb}$  in this flood deposit is not disturbed; it is homogeneous (Fig. 10). For this reason we assume that no significant erosion happened in the lagoon during this period. During these heavy precipitation events, most of the sedimentary material was deposited in the floodplain, in the lagoon and probably transported to the Mediterranean Sea through the passes.”

Line 401-405: it will be better to link the sentences as at that time the facts shown appear not complementary to end in your conclusion.

We thank the editor for his comment and we change this paragraph as follows:

“The thickness of the sediment layer associated with these flood events is low, i.e. about 5 cm. The grain size and geochemical values of this flood deposit are rather homogeneous. This homogeneity is probably linked to the action of weak bottom currents within the El Bibane lagoon. Finally, since these ...archive”.

Line 410: write “El Bibane flood record shows”... instead of “the results”

We agree with the editor and we modify this sentence:

“El Bibane flood record shows .....events”.

Line 418: add at the beginning “moreover these data demonstrate that...”. And in the next sentence “Thus the association...”

We thank the editor for his comment and we take into account his suggestion. This paragraph is rephrased as follows:

“Moreover these data demonstrate that finer material with a high content of mud (clay+silt), and high ratios of Fe/Ca and Ti/Ca are associated to flood events in the lagoonal sequence. The association of these proxies in the sedimentary sequence of the El Bibane lagoon can therefore be used to reconstruct flood activities in Southeastern Tunisia.”

Line 425: I suggest “Lagoon records shows that such costal environments...” and place “despite the importance of these topics in Mediterranean coastal areas” at the end if you want.

We thank the editor for his remark and we take into account his suggestion:

“Lagoon records shows that such costal environments are good study areas to record past climatic and environmental changes, and extreme sea events.”

Line 433: delete “despite ...topics” and begin you sentence with “such...”

We thank the editor for his comment and we take into account his suggestion. This sentence is modified as follows:

“Such studies are still scarce in southern Tunisia, despite the importance of these topics in Mediterranean coastal areas.”

Line 438: verify the references. There are no Medhiou et al 1997 and medhiou and Jedoui, 2000.

We agree with the editor we correct these two references in the text.

“Medhioub, 1979; Jedoui, 2000”

Line 456: I think that it will be better to mark “Affouri et al., data in progress” instead of “in prep”

We thank the editor for his remark and we take into account his suggestion.

“Affouri et al., data in progress”.

Sometimes the citations of legend are Fig. sometimes fig., please use the CP.

Done

2-In the figures.

I saw that the quality is considerably improved than in your previous versions. Nevertheless it remains that you have to take into account that the figures will not be published all in full page and will be largely reduced in the published document produced after acceptance.

So it is very important to enlarge the characters in figures to be sure that they will be readable after reduction. It is particularly important in the maps where the names of the localities sometimes cited in the text are definitively too little. See figure 1, 2, 3 and 7.

We agree with the editor and we have enlarged the characters to the names of the localities for these figures

- On Fig. 3 and 5 what did you represent by the numbers around the map (570900 to 72000 and 3640000 to 3740000). I think that they represent the latitudes and longitudes. Please write them in a classic format, I never saw such format in papers. Take care about the all numbers and names if the figure is in reduced format

We thank the editor for his remark and change all these figures in a classic format.

- Figure 6 is was not labelled in your document

We labelled in the document Figure 6.

- Figure 7: that one could be probably one conserved in full page, but enlarge text and the legends too, you have the place to do that on each small maps. There no indications of the number of the samples on the maps on this figure and you only put the location of five samples on Fig.4. so we have not the link with the Table 3.

We thank the editor for his comment.

Figure 7 is modified with high resolution. All the indication of the number and the location of the samples studied are putted in figure 3: S1 to S18. In figure 4 we just put only the samples studied by binocular observation.

The table 3 show the XRF analysis results of the major and trace element in studied samples (S1 to S18) in ppm (parts per million) and in percentage (%). Indeed, we have use three intervals for each elemental analysis: lower values by yellow colour, intermediate values by orange colour and red colour for higher values.

- Fig. 9: Names are still fuzzy

We modify this figure.

- There was not the name on the fig 12. On it, you have some indications in landscape and some indications in portrait. Could you please put the legend of the stratigraphy near the log and all the names. Same remark for the fig 11

We thank the editor for his comment and we have putted the legend of the stratigraphy near the log.