

## ***Interactive comment on “Extreme marine events revealed by lagoonal sedimentary records in Ghar el Melh during the last 2500 years in the northeast of Tunisia” by Balkis Samah Kohila et al.***

### **Anonymous Referee #2**

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The manuscript “Extreme marine events revealed by lagoonal sedimentary records in Ghar el Melh during the last 2500 years in the northeast of Tunisia” by Balkis Samah Kohila and colleagues focuses on paleo-extreme events and paleo-environmental changes of the Northeastern part of Tunisia during the Late Holocene.

I do have some major recommendations to improve this paper:

The first issue is the chronology. Figure 7 clearly illustrates the uncertainty linked with the age model. The core GEM 4 is badly dated (where is the table with the details of the radiocarbon dates?). A chronological gap of ~1400 years in the middle of the core hinders any calculation of a secure age-depth model, and may suggest an important

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chronological issue. The authors must correct this point (more radiocarbon dates in the middle part of the core), otherwise, they must discuss this chronological uncertainty in the manuscript. As it stands, the core GEM 4 is too “subject to caution” to be really used here as evidence. The part “4.2.1. Age model” is clearly insufficient to answer to this issue.

The second problem is the lack of objective analyses to probe what the authors claim. Statistical analyses must be considered here. The PCA (Fig. 2) is a good start but other tests must be used. What is the software used for the PCA? With which parameters? Why the authors did not apply the same PCA on all the data from the cores? Why were only the “surface sediment sources” included in the matrix? The authors must develop this analytical part to probe their conclusions and, mostly, they must use all the data from their cores, not only the surface deposits.

The discussion is too weak to really be “a discussion”. This part only summarizes the results, with auto-citations, and does not compare or integrate the data in a wider perspective (climate shifts, human impacts, etc. . .). This part must be rewritten and must integrate more references, more comparisons, more “other hypotheses”. As it stands, we have the bad impression that the authors take their results as evidences and do not feel the need to compare or integrate their findings with what has been previously published on this subject. More caution is needed here.

The paper presents interesting data. Nonetheless, there are a number of problems that must be addressed before publication.

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