

## ***Interactive comment on “Sedimentological processes and environmental variability at Lake Ohrid (Macedonia, Albania) between 640 ka and present day” by A. Francke et al.***

### **Anonymous Referee #2**

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The paper "Sedimentological processes and environmental variability at Lake Ohrid (Macedonia, Albania) between 640 ka present day" deals with a spectacular sediment record of Neogene Mediterranean Climate Change, likely providing the missing link between terrestrial and marine palaeoenvironmental archives. The goal of the paper is to provide an overall lithostratigraphic overview of the record, as a base for later studies on special aspects of the record. As it stands, it provides an important contribution, suited for the scope of the journal, though there is need for some revision.

The available online reviews already have stressed some issues, which I can confirm to be addressed in the revised version of the manuscript. These comprise: (1) the

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chronostratigraphic tuning aspects, (2) interpretation of lithological facies in terms of sediment structures, (3) interpretation of organic-matter parameters, such as TOC and C/N ratios. In addition to this, the following issues have to be clarified:

- Introduction: the first paragraph of the introduction on the meaning of palaeolimnology is too general. Please start with open questions concerning Mediterranean palaeoenvironmental history. Lake Ohrid can help to unravel those. The introduction repeats the goals of the SCOPSCO project, but does not mention the specific goals of the paper.

- Page 15116, line 26: Is it important to know that Macedonia once belonged to Former Yugoslav Republic? Avoid political issues.

- Page 15116, lines 24-25: The geological exposures comprise lithified formations, correction to metasedimentary rocks and siliciclastic rocks instead of metasediments and siliciclastics.

- Groundtruthing of data: There is a better way to give evidence of carbonates in the record, rather than by acid treatment (HCL) and element data (XRF). XRD may provide direct evidence of siderite and calcite. This only needed for a few representative samples. Or use published data from cited papers.

- The interpretation of Zr/K ratios is not straightforward. As stated, Zr is usually included in the heavy mineral zircon. Zircon grains are usually enriched in the fine-sand fraction, not in clay. Potassium can be related to both feldspars and mica, but normally is included in sheet silicates of the clay fraction (as in gamma-ray logs). The Zr/K ratio seems to be positively correlated with clay concentrations, but not at all in Fig. 4. Show scatter plot. Thus the grain-size signal might be overprinted by other sedimentary processes, such as changes in sediment provenance. Zircon often is enriched in aeolian sedimentary components. Maybe, sediment supply changed from proximal to distal sources during glacial stages. This has to be discussed.

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