

***Interactive comment on “ Late Quaternary
palaeoenvironmental reconstruction from Lakes
Ohrid and Prespa (Macedonia/Albania border)
using stable isotopes” by M. J. Leng et al.***

A. Schwalb (Referee)

antje.schwalb@tu-bs.de

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General Comments

Leng et al. have submitted a very informative paper that brings together new stable isotope data with sedimentological and geochemical data from the interconnected lake systems Prespa and Ohrid. They evaluate the similarities and specifics of the two modern lakes as well as their individual response during the past 40 (130) ka. This provides an important foundation for any future work dealing with stable isotopes as tools to characterize present and past lake hydrologies and climate of the Balkans, and also

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for comparison with other sites in the Mediterranean as well as Central and Northern Europe.

The manuscript is well suited for publication in Biogeosciences, especially for the volume dedicated to Lake Ohrid. It underlines very well the potential of these lakes for paleoclimatic and paleoenvironmental studies.

The methods and assumptions are valid and clearly outlined, the results are sufficient to support the interpretations and conclusions. In terms of conclusions, however, I would like to learn more about what we learn from this new data set, especially in terms of agreements or differences with current ideas of Mediterranean climate change in the past.

Specific and technical comments

The text seems to have been written in a hurry. It needs editing, which should be an easy task for the authors. I also think that some statements can be more specific. Try to avoid comments in brackets. Are the isotopes spikes, you are referring to a couple of times, true spikes or just single measurements and rather outliers that can be disregarded?

Here are a few specific comments/questions, I have tried to list those that have not already been listed by Referee 1:

Abstract:

line 13: are complacent, in contrast ? line 15: climate deterioration ? line 21: (the more sensitive) ? line 22: is “aridification” the proper expression ?

Introduction:

It would be good to add some information about the motivation and the goal of this study, where it adds important information and increases our knowledge.

Material and Methods:

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p3820, line 12: “new data collected” ? p3822, 3.2.2 “Organic analysis” ? How many samples were unable to be measured?

Chronology:

Provide an overview of total number of dates from 14C-dating and tephra layers before going into details.

Results:

p3824, line 3: “variety of springs” ? line 17/18: “depleted winter” ? lines 26 to end of 5.1 on p3825: better suited for discussion?

p3826, lines 2/3: “Holocene” section ? “in the glacial” Glacial section ? I agree with Referee 1 that an enlargement of the Holocene section of the core would be helpful
line 19: “negligible” ? calcite content below ?% ? line 27 – p3817 line 1: be specific about changes in calcite and organic carbon contents

p3827: line 7/8: “as in” ? “as with” ? Please be more specific with the remainder of this chapter

Discussion:

Insert chapter on modern water isotope composition; take text from above p3828, line 5 (?) and combine with text from “5 Results” before starting to discuss bulk calcite.

p3828 Discussion of results by Belmecheri et al. (2009) concerning calcite preservation seems appropriate here.

p3830 Line 8/9: Can’t see a spike for Lz1120 at 9.5 ka in Fig. 5; record seems to start after 9.5 ka after Fig. 7 Line 27: “The fact the Prespa reach...” ?

p3831 lines 2-15: Fig. 4 is too small to check isotope data at 11 ka. Why would you expect a confirmation of Mediterranean records by these records? line 24: “which is also produced a”

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p3832 line 7-14: Could that “freshening trend” also have been caused by O-fractionation driven by eutrophication?

line 20: “While...” incomplete sentence I would find it helpful to add the names of the stadial to the isotope curve.

p3834 line 26/27: not clear

p3835 lines 11/12: “, but.... but...” ? lines 14-17: Is this consistent with potential changes in C4 vs C3 plants?

Table 1: “Characteristic of”

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