

Interactive comment on “Hydroclimatic variability in the Levant during the early last glacial (~ 117–75 ka) derived from micro-facies analyses of deep Dead Sea sediments” by I. Neugebauer et al.

I. Neugebauer et al.

inaneu@gfz-potsdam.de

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Response to Referee #1:

This review of the anonymous referee #1 is in general very positive and we would like to thank the reviewer for these encouraging words. Four minor suggestions/ technical comments were given by the referee that we addressed in the revised manuscript; please see also below:

1. Page 3641/lines 16-19: It would be good for the non-expert readership to provide some additional information on how the geochemistry of the brine and the geometry of the basin do not allow a complete drying of the Dead Sea.

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Reply: We fully agree to this point and have added in the revised manuscript (pages 13-14/lines 382-389): "... First, the specific chemical composition of the Dead Sea brine (mainly Mg, Na, Ca and Cl) allows reaching a very high salinity with a low water activity and vapour pressure. Therefore, the rate of evaporation decreases with increasing salinity. Second, the low surface area to volume ratio of the lake basin limits the amount of evaporated water. In addition, the relative humidity of the air above the brine has to be close to zero in order to further evaporate a highly concentrated brine which, however, was never observed (Katz and Starinsky, 2015) and is considered unlikely especially at very low lake levels due to the wind-protected topography of the deep Dead Sea basin."

2. Page 3644/line 25: You may also see Rohling et al. (2015) for a recent review on the sapropel formation in the Mediterranean Sea (including sapropels S3 and S4).

Reply: We have added this reference in the revised manuscript (page 16/line 472).

3. Please check the Fig. 2 call outs. I think they should be 'Fig. 2d' and 'Fig. 2e' in page 3633/ line 26 and page 3633/line 3, respectively.

Reply: This has been corrected.

4. Please spell out MIS and XRF when they first appear in the text; add XRD after '... diffraction' in page 3632/line 11.

Reply: This has been corrected.

Additional references in the revised manuscript:

Katz, A. and Starinsky, A., 2015. No drawdown and no hyperaridity in the ancient Dead Sea: (Comments to Torfstein's et al. (2015) paper, EPSL 412, 235–244). *Earth and Planetary Science Letters* 427, 303-305.

Rohling, E.J., Marino, G. and Grant, K.M., 2015. Mediterranean climate and oceanography, and the periodic development of anoxic events (sapropels). *Earth-Science Re-*

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views 143, 62-97.

Interactive comment on Clim. Past Discuss., 11, 3625, 2015.

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