

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.

Anonymous Referee #2

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Reviewer Comments: Neugebauer et al., CPD 11, 3625-3663

This paper presents new data from the Dead Sea basin for the time interval corresponding to the last interglacial to glacial transition. Overall, the paper presents a very high quality sedimentological and geochemical dataset based on a sound and well detailed methodology, and represents an important contribution to the understanding of regional palaeohydrological change, with important implications for climate dynamics at the interface between tropical and temperate systems. The paper is convincingly argued, in particular regarding counter-arguments to previous interpretations of gravel deposits and total lake dessication during this interval. There is a detailed discussion of possible interpretations of the patterns of inferred lake level change, well supported

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by reference to relevant wider literature, and chronological uncertainties are carefully taken into account. The text is clear and well organised, and supported figures of very high quality. In my view, the paper should be published in *Climate of the Past* with little change from its present form.

The point that, in my opinion, could benefit from further or more explicit comment is the interesting finding that during the studied time interval, lake level changes are in phase with Greenland and European climatic and environmental changes. This is in contrast to the well-known prevailing opposition, as expressed in this introduction to the paper: "The lakes expanded during glacial intervals... whereas interglacials are generally characterised by lake contraction". This switching of phasing across the glacial inception period is not explicitly stated (although it may be implicit in discussion of forcing factors in section 5.4 and also in the final conclusion point in section 6). In general, the long interstadial episodes of the early last glacial share many characteristics with interglacials (for example, with forest development in long southern European pollen records), but here the hydrological pattern is opposed. Can the authors comment further on why this switching may occur (i.e. expand further on the global boundary conditions under which the Dead Sea experiences dominant Atlantic-Mediterranean climate impacts), what the wider implications are for pan-Mediterranean climate gradients, and whether it may be a predictable feature of glacial inceptions during earlier climatic cycles?

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