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Biogeosciences Discussions

Interactive comment on "Stratigraphic analysis of lake level fluctuations in Lake Ohrid: an integration of high resolution hydro-acoustic data and sediment cores" *by* K. Lindhorst et al.

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Dear authors,

First of all, thank you very much for this interesting manuscript! Nevertheless, I would like to comment on a minor issue that, as it happens, falls into my field of expertise, i.e. paleoclimate.

I was puzzled by the suggestion that the climate of the Ohrid Basin was dry during the Last Interglacial (page 3666, line 28). This clearly contradicts the observations, e.g.,

by Lezine et al. (2010, Palaeo3) of humid conditions in the Ohrid Basin during this period as well as numerous paleoclimate records from the wider SW Balkan area (e.g., Tzedakis et al., 2003) and Central Europe (the Eemian was definitely humid there). No doubt, the climate of the area was probably warmer during the Last Interglacial but 'warmer' does not mean 'dryer'. There is, as far as I know, no source for a warm but dry air mass that might have reached the Ohrid Basin and influenced its climate at the time from neither the Mediterranean nor the Central European side. The climate of the latter plays an important role for the Ohrid Basin today through the dominant northerly winds. In fact, if we regard the Holocene (represented in core Co1200 by lithofacies I) as generally humid relative to the last glacial then the elemental records of Co1200 (Ti, K, CaCO3) clearly suggest comparable, i.e. humid, environmental conditions for the period in question represented by lithofacies III. Furthermore, increased surface run-off (incl. dissolved CaCO3) and nutrient supply under a humid climate regime is likely to result in higher primary productivity in the lake. This pattern is evident from the diatom data presented by Reed et al. (BGD manuscript in this issue) that has been produced for the nearby site Co1202. To my opinion, the lack of a high-energy signature and fluvial influence in lithofacies III of core Co1200 does not necessarily imply drier climate conditions with "only minor rivers draining into Ohrid Bay". The layout of the drainage system might have been different or, actually, might have looked like today - with no fluvial influence at the site since the glacier feeding the assumed river(s) at the eastern slopes during MIS 6 summer melting events has vanished. Is it possible that the karst springs in the east and southeast of Ohrid Bay (green area in Fig. 2) were inactive or submerged during the formation of lithofacies III? Or is there a chance that the karst systems were active during seasonal glacier melts and low lake level, thus, feeding short streams entering Ohrid Bay during MIS 6 and resulting in the formation of lithofacies IV?

In any case, I would suggest to refrain from the interpretation of the low-energy signatures of lithofacies III as indication for drier climate, in particular with regard to the convincing evidence for humid conditions during the Last Interglacial from the Lake

Ohrid Basin itself (Lezine et al, 2010; Reed et al., this issue) and the wider area.

Best regards,

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