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# Within- and between-lake variability in proxy response to climate change: Quaternary diatom records of the circum-Mediterranean

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Ancient lakes with deep sediment records spanning more than one glacial-interglacial cycle are rare, and offer unique potential for long-term continental palaeoclimate reconstruction. Interpretation of proxy data preserved in sediment records relies on an understanding of proxy response to climate. Here, we tested linearity of diatom response to climate by analysis of shifts in diatom species assemblage composition in response to relatively well-understood episodes of Quaternary climate change, as part of larger, multi-proxy research projects. This poster presents summary results of diatom analysis of Quaternary sequences from two lake sediment sequences from contrasting lake basins, comprising the the deep, oligotrophic graben lake, ancient Lake Ohrid (Albania/Macedonia; Ohrid ICDP project; B. Wagner et al.; core Co1202; 135 ka) and the last three glacial-interglacial transitions in the currently hypereutrophic subsidence lake, Ioannina (NW Greece; core I-284 and others; >200 ka). The results indicate that the assumption that taxa exhibit a linear response to a single environmental parameter can be false; in the case of these two lakes, which share some dominant taxa, the response is driven variously by changes in lake level, nutrient status and ice cover. In Ioannina, climatic response varies over time, indicating that the influence of lake infilling on lake status is significant on a Quaternary timescale. In contrast, diatoms appear to exhibit a strong, linear response to climate over the last glacial-interglacial cycle in Ohrid. Key inferences of this preliminary research, in advance of deeper drilling projects, include improving our understanding of the expression of the Marine Isotope Stage 3 and the Younger Dryas and in the northeastern Mediterranean. Controversially, the results also indicate that, contrary to pollen-based inferences, the northeastern Mediterranean was a major source of water to the Mediterranean Sea at the start of the Holocene.