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New insights into the paleoenvironment of northern Israel during the Last Glacial

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Archaeological findings in the vicinity of the Dead Sea rift display the outstanding role of the region for reconstructing human history. The environmental settings of the historical developments are obtained from the sedimentary sections that were accumulated in the lakes occupying the tectonic depressions along the rift. Here, we focus on the vegetation history in the vicinity of the Sea of Galilee (Lake Kinneret), northern Israel, during MIS2 when the lake reached its high stands and even merged with the southern Lake Lisan at an elevation of ~ 170 m below sea level (cf. Hazan et al., 2005). A continuous vegetation and climate record could provide valuable insights into the environmental context of human developments.

We analyzed pollen from sediment cores that were drilled at the Ohalo II archaeological site at the southwestern shore of the Sea of Galilee. New radiocarbon dates refined the age-depth model. Most of the cores comprise laminated authigenic calcites and detritus material that was deposited between ~27,000 to 22,000 years before present.

The Sea of Galilee is currently the lowest freshwater lake on the Earth (209 m below mean sea level). It is situated in the Mediterranean climate and vegetation zone of northern Israel. Further to the south and east, the Mediterranean biome is displaced by steppe and desert due to considerably lower precipitations.

Our results suggest that a steppe with dwarf shrubs, herbs, and grasses predominated in northern Israel during the Last Glacial. In contrast to the Holocene, there was no vegetation belt of the Mediterranean biome in the vicinity of the Sea of Galilee. Deciduous oaks were the dominant trees, although they only occurred in limited amounts. Trees and shrubs were almost absent during most arid periods. While the pollen data may indicate semiarid conditions (less precipitation) in the vicinity of the Sea of Galilee, the high lake levels and deposition of authigenic calcite require enhanced freshwater input to the lake. Thus, other environmental factors might have affected the pollen patterns or controlled the freshwater input to the lake.

Reference:
Hazan, N., Stein, M., Agnon, A., Marco, S., Nadel, D., Negendank, J. F. W., Schwab, M. J., and Neev, D. (2005): The late Quaternary limnological history of Lake Kinneret (Sea of Galilee), Israel. Quaternary Research 63: 60-77.