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A new 10,000 year pollen record from Lake Kinneret (Israel) – first results

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Lake Kinneret - as part of the Jordan Rift Valley in Israel - is situated in the southern Levant, which is affected by Eastern Mediterranean climate. The present lake level is around 212 m below msl. Lake Kinneret has a surface of ca. 165 km2 and its watershed comprises the Galilee, the Golan Heights, the Hermon Range and the Anti-Lebanon Mountains. Its most important tributary is the Jordan River. The geography of the Lake Kinneret region is characterised by big differences in altitude. Steep slopes rise up to 560 m above the lake level in the west, north, and east. Mount Hermon (2814 m above mean sea level, amsl) is the highest summit of the Anti-Lebanon Range, and Mount Meron (1208 m amsl) located in the Upper Galilee encircle Lake Kinneret within a 100-km range in the northwest. Due to the pattern of average precipitation, distinct plant-geographical territories converge in the region: The Mediterranean and the Irano-Turanian biom (after Zohary). Varying ratios of characteristic pollen taxa representing certain plant associations serve as proxy data for the reconstruction of paleovegetation, paleoenvironment, and paleoclimate. We present a pollen record based on analyses of sediment cores obtained during a drilling campaign on Lake Kinneret in March 2010. A composite profile of 17.8 m length was established by correlating two parallel cores by using magnetic susceptibility data. Our record encompasses the past ca. 10,000 years of a region, which has been discussed as migration corridor of humans to Europe and, being part of the Fertile Crescent, as the cradle of agriculture in West Asia. Conclusions concerning human impact on vegetation and therefore population density can be drawn by analysing changes of ratios of certain plant taxa such as Olea europaea cultivated in this region since the Chalcolithic Period (6,500 BP). In addition, stable isotope data were produced from discrete bulk samples, and the elemental composition of the sediments was determined by XRF-scanning. Caused by a key position within a sensitive climate region of the Near East, the multi-proxy data set of the sedimentary archive of Lake Kinneret hosts a wealth of information that will be used to reconstruct Holocene paleoclimate. Our work is a contribution to the Collaborative Research Centre SFB 806 (‘Our Way To Europe’), supported by the Deutsche Forschungsgemeinschaft (DFG), and dealing with culture-environment interaction and human mobility in the Late Quaternary.