Geophysical Research Abstracts
Vol. 17, EGU2015-3874, 2015
EGU General Assembly 2015

Climate and human impacts on the vegetation in NW Turkey: palynological insights from Lake Iznik since the Last Glacial

Andrea Miebach, Phoebe Niestrath, Patricia A. Roeser, and Thomas Litt

University of Bonn. Steinmann Institute for Geology, Mineralogy, and Paleontology. Nussallee 8, 53115 Bonn.
a.miebach@uni-bonn.de

The reconstruction of the climate and vegetation history of the Marmara region in northwestern Turkey is of particular interest because of its long occupation history and its location between different climate and vegetation zones. Geochemical and mineralogical investigations of the largest lake in the region, Lake Iznik, already registered climate related changes of the lake level and the lake mixing during the last 31 ka cal BP (Roeser 2014). However, a palynological investigation, encompassing the Late Pleistocene to Middle Holocene, was still missing. Here, we present the first pollen record of the last 31 ka cal BP from Lake Iznik sediments as an independent proxy for paleoecological reconstructions.

Lake Iznik is situated east of the Marmara Sea. Its catchment area is located in a climatic transition zone between the Mediterranean and Pontic climate zones. Today, the region is highly influenced by (sub-) Euxinian temperate deciduous and mixed forests dominated by deciduous oak and beech. Coastal areas of the southeastern Marmara Sea and the Aegean Sea are dominated by (sub-) Mediterranean woods and shrubs with sclerophyllous and evergreen elements (Zohary 1973).

The pollen record of Lake Iznik reflects typical Eastern Mediterranean vegetation pattern and northern hemispheric climate changes. In contrast to the recent vegetation, a steppe vegetation dominated during the Late Pleistocene. In response to Dansgaard-Oeschger events, the vegetation changed rapidly into a steppe-forest. A remarkable expansion of deciduous oak forest, indicating warmer temperatures, is registered since the Bölling-Alleröd. A short period of dryer and/or cooler climate, corresponding to the Younger Dryas, is marked by an increase of steppe components and by a decrease of several trees. Deciduous oaks predominated the vegetation since the Early Holocene. They were successively accompanied by cold temperate, warm temperate, and Mediterranean trees.

In addition to the climate impact, the vegetation was also influenced by anthropogenic activities. During an early settlement phase near Lake Iznik, beginning ca. 8 ka cal BP (Roodenberg & Schier 2001), only minor changes in the pollen assemblage are registered. Still, evidence for human activity consolidates since the Early Bronze Age: cultivated trees, crops, and secondary human indicator species appeared, and forests got cleared. Subsequent fluctuations between extensive agricultural use and regeneration of the natural vegetation can be clearly correlated to the regional archaeological history.

References:

Roeser, P.A. (2014): Paleolimnology of Lake Iznik (NW Turkey) during the past $\sim$ 31 ka cal BP. PhD thesis, University of Bonn, Germany.

Roodenberg, J.J. & Schier, W. (2001): Radiocarbon determinations. In: Roodenberg, J.J. & Thissen, L.C. (eds.): The Ilıpınar Excavations II. PIHANS 93, Leiden: 257-278.

Zohary, M. (1973): Geobotanical foundations of the Middle East. Gustav Fischer Verlag, Stuttgart.