



A pollen-based environmental reconstruction in Lake Hazar (Eastern Turkey) during the Late Pleistocene-Holocene: Example for the Eastern Mediterranean Realm

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Eastern Mediterranean realm historically is a melting area for ancient civilisations. This region has been therefore anthropogenically influenced since the Late Pleistocene. The understanding the processes between vegetation and climate, pollen analysis is a significant proxy in the investigation of past climate, vegetation records and the human influence on the environment. In this research, we carried out the environmental changes during the Late Pleistocene-Holocene using multi-proxy analysis (palynology, XRF core scanner, magnetic susceptibility and TOC) in the sediment core obtained from 54.39 m depth on the northern shelf of Lake Hazar using a percussion piston corer. Lake Hazar (38° 31' N-39° 25' E) is located at ca. 1255 m above sea level, 22 km south-east of Elazığ city in eastern Turkey in the south-east Taurus Mountains. It is an oligotrophic, alkaline soda and a tectonic lake being situated on East Anatolian Fault Zone (EAFZ). The chronology of the sediment core has been determined using AMS radiocarbon method. We present the first pollen record from the core sediments in Lake Hazar, providing insight into multi-millennial scale climatic changes over the last ~15 14C ka BP. In the piston core, the Bølling/Allerød period is associated by the presence of *Pistacia* reflecting milder winter conditions with high biological productivity. Onset of the Younger Dryas (YD) period is marked by increase in herbaceous plants and lake level lowering that can also be documented by high magnetic susceptibility and Ca/Ti ratio. The spread of deciduous *Quercus* at the beginning of Holocene can be attributed to significant forestation due to a high humidity that was presumably sufficient for the establishment of oak forest. An increase in *Quercus* continued in most of the early and middle Holocene. The 3rd millenium crisis is strongly characterized by an increase in herbal elements, and a decline in *Quercus*, pointing to dry climatic conditions. The most striking difference between Lake Hazar and some Near East sites is found concerning the delay during the early Holocene expansion of *Quercus* pollen. Such delay from the other studied sites in the Eastern Mediterranean has not been recorded in Lake Hazar. This can be explained by the existence of a warm and humid climate which provided favorable conditions for spreading of deciduous *Quercus*, starting in the early Holocene.