



Reconstructing the Palaeogeographies of a Neolithic – Bronze Age Settlement Mound at Ephesos, Turkey

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Although Ephesos and its surroundings has long been an area of archaeological interest and investigations, the focus has mainly been on sites related to Antiquity and Late Antiquity. Until recently systematic research concerning prehistoric phases of occupation within this region have been lacking. Due to the growing interest in these time periods along the West Anatolian coast, archaeological research projects involving the study of the newly discovered prehistoric settlement mounds located in the vicinity of the prominent ancient city were initiated.

The aim of this study was to examine the palaeogeographical and geoarchaeological contexts of the mound (tell), Çukuriçi Höyük, in order to determine the thickness and age of the settlement layers as well as the spatial extent of the tell throughout the different periods of settlement. As additional research to the excavations, 20 sediment cores drilled on and around Çukuriçi Höyük were examined and their physical and geochemical properties as well as existing data were used to reconstruct the palaeoenvironment. The chronostratigraphy relies on AMS-¹⁴C ages and findings of diagnostic ceramics; a further attempt was made by luminescence dating.

The results reveal that the inhabitants intentionally choose the location due to the beneficial topography, initially, i.e. during Pottery Neolithic times in the early 7th mill. BC, lying upon an elevation within a fertile alluvial plain about 1.5-2 km away from the coast. It seems that during the time of settling (Pottery Neolithic – Early Bronze Age) several rivers flowed in the direct vicinity of the tell. The elevated terrain provided the inhabitants security from the torrents. In addition, the corings reveal that the tell covers an area of about 11,000 m² and a thickness of settlement layers of c. 8 m. Finally, as a possible result of water management conducted by the inhabitants, sediments related to low-energy depositional conditions are identified at the foot of the tell. With the start of sedentary lifestyles and the beginning of animal domestication, the availability of freshwater became a critical factor. An artificial source – e.g. in the form of a reservoir or cistern – might have provided year-round water availability for the livestock which was especially crucial during the dry and hot summers, typical for this region.

The luminescence dating of the cultural layers resulted in an OSL-age of $6,620 \pm 750$ a, which underlines the early occupation. The measurement of the quartz minerals of the 100-200 μm grain size fraction from the underlying alluvial and colluvial layers indicate malign luminescence properties; an explanation might be the poor mineralogical characteristics of the quartz from this region. A further attempt to measure the final deposition of these layers was conducted with the 4-11 μm grain size fraction resulting in an OSL-age of $44,650 \pm 4,460$ a.