



Paleolithic Human Responses to Changing Aridity at Üçağızlı I cave, southern-coastal Turkey: Application of a Novel Carbon Isotope-Based Method

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Abstract

This paper investigates relationships between intervals of local environmental aridity and site occupation intensity at the Upper Paleolithic cave site of Üçağızlı I (Hatay coast, south-central Turkey) by combining a stable carbon isotope-based paleoenvironmental record with several classes of archaeological evidence. A novel method for synthesizing stable isotope data from multiple ungulate species is used to create an integrated archaeofauna-based paleoenvironmental record. This method increases the temporal resolution of the investigation in the absence of precise chronological control for some sedimentary layers and reveals patterns of habitat segregation among coeval prey taxa in each layer. The method also demonstrates significant variation in the $\delta^{13}\text{C}_{\text{diet}}$ of ungulates occupying contemporaneous landscapes, reflecting the existence of multiple micro-habitats within the foraging ranges of the Paleolithic occupants. Overall, the degree of environmental aridity does not correlate with measurable changes in land use or site occupation intensity based on archaeological proxies in the Üçağızlı I sequence. One exception is the Ahmarian occupation in layer B1-3 that records the wettest environmental conditions in conjunction with a marked increase in site occupation intensity, increased dietary breadth, and evidence for meat storage practices. These patterns likely signal a reorganization of forager land-use strategies in response to a short-lived interval of especially productive environmental conditions, possibly in conjunction with reduced mobility of local foragers.

Keywords Stable isotopes · Paleoenvironment · Turkey · Paleolithic

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