



## Tell formation processes as indicated from geoarchaeological and geochemical investigations at Xeropolis, Euboea, Greece

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### ABSTRACT

Xeropolis is a tell site on the island of Euboea, Greece just to the east of the village of Lefkandi, and was occupied from the Early Bronze Age to the Early Iron Age. Excavations in recent years have provided an opportunity to investigate site formation processes using geoarchaeological and geochemical techniques. Sediments derived from the tell on the southern side have been lost by coastal erosion whilst those on the north mantle the flanking slope. Of particular interest is a homogeneous and unstratified deposit of over 2 m which overlies the archaeology near the southern perimeter of the summit area. The soil structure as evident in thin sections indicates a high degree of bioturbation, probably stimulated by recent manuring and cultivation. The implication is that tillage erosion has had a major impact on the morphology as well as on the surface soils of the tell. Despite such reworking and redeposition of near surface materials, it is still possible from multi-element analysis to identify the geochemical distinctiveness of six archaeological contexts (pit, house, plaster floor, alley, road and yard); pits and floors have high loadings of all elements except Pb; in contrast pits and floors have the lowest elemental concentrations.

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### 1. Introduction

Geoarchaeological and geochemical investigations can make fundamental contributions to our understanding of site occupation and formation processes associated with tells. Lloyd (1963) provides an overall survey of these sites in the Middle East and he appreciated the potential of geoarchaeology in assisting with the interpretation of these anthropogenic landforms. Kirkby and Kirkby (1976) model the effect of surface erosion process on tell morphology and sherd distribution. Rosen (1986) is the first to provide a geoarchaeological synthesis of tell formation in the Middle East. She discusses such themes as mound development using case-studies primarily from Israel. Geoarchaeological investigations at a Neolithic/Early Bronze Age tell in northern Greece demonstrate the substantial impact of erosion with about half the original surface area lost (Davidson, 1986). Despite these studies, overall there have been comparatively few investigations of tell erosion, an obvious reason being the loss of sediment sequences from tells. Instead, the focus has often been on understanding the relationships between sediment sequences derived from tells and

the local alluvial history, typified by the work of Boyer et al. (2006) on the Konya basin in Turkey. Multi-element soil analysis has been used in archaeology as a tool for geoprospection for identifying the extent of archaeological activity around sites (Aston et al., 1998; Bintliff et al., 1992) and as a means of aiding interpretation of space use and activity within and around archaeological structures (Middleton and Price, 1996; Parnell et al., 2002; Wells, 2004). A study of known contexts on abandoned farms across the UK has confirmed the ability of multi-element analysis to distinguish activity areas (Wilson et al., 2008). Previous multi-element work in Greece includes the work of Bintliff et al. (1992) and James (1999). These were geoprospection studies and topsoil samples from unexcavated sites were analysed, rather than archaeological floor deposits. Results show that high concentrations of P, Cu, Pb and Ca are associated with artefact scatters and settlement sites. The use of multi-element analysis to aid interpretation of space use on archaeological floor layers or 'activity surfaces' is also well established although the approach has not yet been widely applied to sites in Greece.

This paper reports the results from both geoarchaeological and geochemical investigations at the tell site of Xeropolis in Euboea, Greece (Fig. 1) with the aims of contributing to the interpretation of site occupation history and to understanding the extent to which

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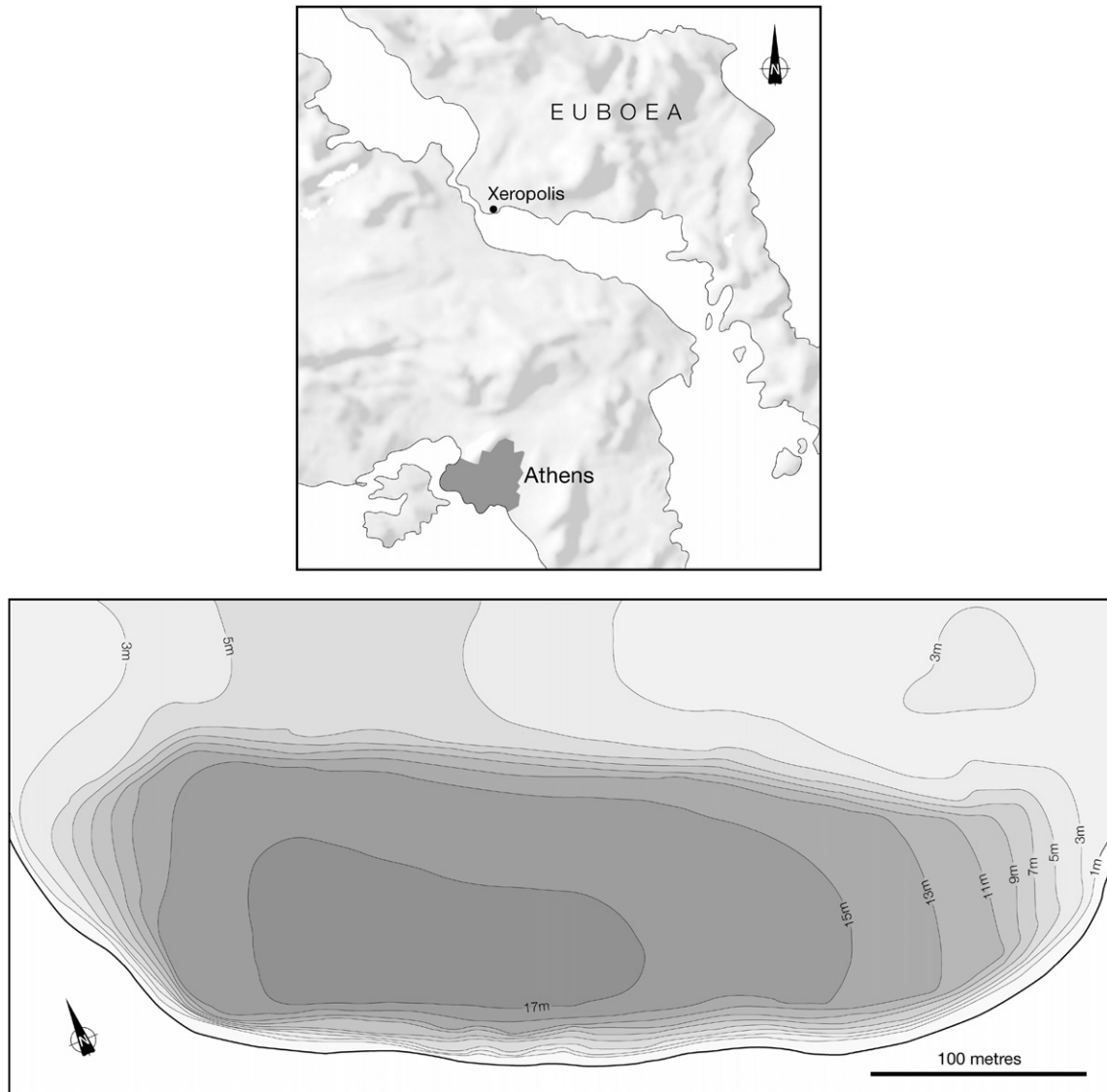


Fig. 1. Topography and location of Xeropolis on Euboea.

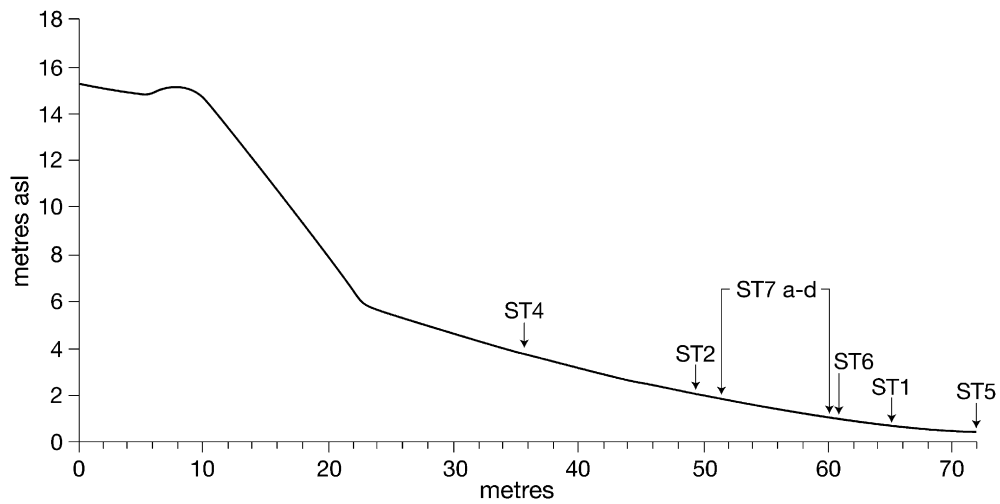


Fig. 2. Soil pit locations along slope profile.

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