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Reconstructing ancient sustainability: a comparison of onsite and offsite data

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With the onset of sedentism humans started to convert their surroundings. Whereas reconstructions of geochemical traces of settlement activity (e.g. Arrhenius, 1931) or man's pressure on the soils of landscapes (e.g. van Andel et al., 1990; Bork, 1998) were carried out at many sites holistic approaches questioning the sustainability of ancient societies are missing so far.
A new approach, applied to the multi layered settlement mound "Cukurici Höyük" (western Anatolia, Turkey) aims at comparing land use intensity and settlement intensity. Land use intensity of the former settlers will be described by determining slope instability phases and quantifying slope deposits at hills adjacent to the settlement. Geochemical and physical properties as well as bio remains will be analysed of the dated debris layers onsite and quantified as matter fluxes. Matter accumulation onsite, being an indicator for settlement intensities, is compared to slope instability phases offsite, describing the impact of former settlers on their environment. The approach aims at quantifying historical settlement pressure over several settlement phases and might shed light on different phases of sustainability in ancient Times.
The planned project is imbedded within the archaeological project (ERC Project / Austrian Archaeological Institute) which investigates alternating societal systems in a changing environment between 7000 and 3000 BC. Focus is laid on architectural research, archaeobotany, archaeozoology, lithics, metallurgy, and ore deposit.
In a first geoarchaeological field campaign differentiable slope deposits could be proved. These contained datable organic material as well as pottery sherds dating to different historical phases. A well-established archaeological chronosequence of settlement layers will provide the onsite framework for this new project.
The paper presents preliminary results of the outlined approach. Additionally several geochemical methodologies applied to the debris layers will be compared.

Ref:
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