

Mapping a paleosurface and archaeological site location in an inland dune area in Brandenburg, Germany

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Mapping and visualizing the position of archaeological remains in the surface relief provides important basic information for archaeological survey design and interpretation. Geomorphological processes in (pre)history can have resulted in a modification of the local relief around archaeological sites, especially in areas that are prone to sediment erosion and relocation, so that models of past surfaces are necessary for a correct interpretation of archaeological survey results. In this study, we combined terrestrial survey and remote sensing methods to reconstruct the palaeorelief around two archaeological excavation sites in an inland dune area in southern Brandenburg, Germany. Remains from two Mesolithic hunter-gatherer camps were documented in archaeological excavations and found to be associated with a buried soil horizon. To gather information on the relief of the buried soil surface, we used a combination of sedimentological and pedological profile description of archaeological survey trenches and geophysical prospection with Ground-Penetrating Radar; supplemented by microdrone photography and photogrammetry, GPS surveys and analysis of LIDAR-based elevation models. A digital elevation model of the buried surface was created by combining point data from these sources. The buried surface morphology and the position of the archaeological remains within the reconstructed landscape were analyzed in GIS. The comparison of the generated paleosurface model with the recent surface elevation model shows that sand remobilization resulted in a considerable reshaping of the relief. Analysis of the buried surface model further shows that the relief position of the two archaeological sites in the study area was considerably more prominent in relation to the corresponding buried soil surface than in relation to the recent surface morphology. Results affirm the importance of considering Holocene relief modifications in archaeological surveys.