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## Soils in archaeological structures of the southern Levant: archives of Holocene dust dynamics

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Ruins and archaeological structures in the southern Levant are often covered by initial soils that developed on debris. The fine grain size fractions of these soils may stem from aeolian sediments, and the ruins could serve as effective dust traps. The physical parameters and chemical composition of archaeological soils in hilltop ruins, cleanout spoils of cisterns, and ancient runoff-collecting terraces were determined in the Petra region in southern Jordan and the northern Negev in Israel. Different types of ruins could not be distinguished with regard to substrate composition. This indicates a predominance of aeolian processes for primary sedimentation, while fluvial processes only re-distribute aeolian material. In the Petra region, a significant local contribution from associated weathered rocks could be observed. Compared to modern settled dust, archaeological soils in southern Jordan are enriched with various major and trace elements associated with clays and oxide coatings of fine silt particles. In-situ weathering seems minimal, but preferential fixation of silt and clay by surface crusts (similar to desert pavements), and a role of moisture in sedimentation processes lead to increased sedimentation of calcareous silt. Contribution of rocks is negligible in the Negev due to greater rock hardness and abundant biological crusts sealing surfaces. Archaeological soils in the Negev and current settled dust consist of complex mixtures of local and remote sources, including significant portions of recycled material from paleosols. Archaeological soils in the southern Levant are archives of Holocene dust sources and aeolian sedimentation processes, with accretion rates exceeding those of Pleistocene hilltop loess in the Negev. Comparison with Pleistocene paleosols suggests that dust sources did not change significantly, but disappearance of snow could have reduced dust accumulation during the Holocene.