Biblical Tel Burna: contribution of POSL and PXRF to the discussion on sedimentary and site formation processes in archaeological contexts of the southern Levant

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An ancient tell is a multi-period archaeological site, where anthropogenic, and natural sedimentation processes took place. Although a tell is primarily an anthropogenic type of geomorphological feature, it is affected by natural processes as well. This contribution discusses how these processes can be determined within the context of archaeological research and how it is possible to differentiate and interpret past-human activities and natural processes. Tel Burna, a site intensively occupied from the Early Bronze to Iron Ages (3rd millennium BCE – 6th century BCE) located in the southern Levant, was chosen for this study of the studying sedimentary processes and chemical compositions of sediments. The sedimentary processes were studied in the course of an archaeological excavation using POSL (portable optically stimulated luminescence), granulometry and PXRF (portable X-ray fluorescence). Focusing on the area along the fortification walls, data was collected from strata around the casemate fortifications dating from the Late Bronze Age to the Late Iron Age.

The gradual increase of OSL values obtained inside the casemate wall, indicate accumulation of sediment during a long period of time. Whereas similar values along the entire profile outside the casemate wall indicate sediment accumulation in one-time event. This might be related to defensive preparations, allegedly in response to advances made by Sennacherib's army in 701 BCE. Results from the PXRF demonstrated a correlation between the Cu, P, K, Zn, Mn content and human activities. Ca content decreased as sampling descended from the tell's surface, suggesting its origin in post-abandonment aeolian processes. The results demonstrate that the use of POSL and PXRF can be useful for determining sedimentary processes at ancient tells. The presented
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