

Soils, sediments and geoarchaeology in the vicinity of Caričin Grad (Justiniana Prima), southern Serbia

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Excavations at the early Byzantine hillfort-settlement Caričin Grad hint at a relatively short time of active settlement of only 90 years. The cause for abandonment is still unknown, though it is widely assumed that ecological and environmental factors played a pivotal role. This study aims to evaluate, if soils and sediments in the vicinity of the site can be used to gather information about the spatial and temporal impact of land use and whether that constituted to a higher rate of soil erosions and thus a possible decline of sustainability during the time of active occupation. A field campaign in 2016 documented the sediments of 15 exposures along riverbanks and erosional gullies as well as 15 core drillings. Samples for dating via radiocarbon and optically-stimulated luminescence (OSL) were also recovered. The field campaign was further supported by a DEM of the research area, archaeological reports, as well as geological, pedological and topographic maps. The heterogeneous stratigraphy of most of the documented sediments strongly reflects the clayey and loamy nature of the catchment areas. Inclusions of charcoal and fractured bricks can be found under two meters of overlaying colluvial and alluvial sediments. Floodplain sediments, especially those near a now bursted dam built in the Byzantine era, show inclusions of bigger stone blocks, hinting at several flashflood events, which occurred during historic times. Most of the topsoil in the catchment area, especially south-west of the site, is already strongly eroded, leaving only Ah-C sequences of Leptosols. The gathered data thus suggest that accelerated soil erosion during the time of occupation was very likely, probably caused by local brick production and deforestation. Exposed topsoil with a relative high amount of clay mineral further contributed to a marginal discharge to groundwater during rainfall, resulting in a stronger runoff and incision of gullies in the present-day landscape.