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Reconstruction of the Holocene landscape development at an Early Bronze Age settlement in Vrable, Slovakia

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Close to Vráble, southwestern Slovakia, the remnants of an Early Bronze Age settlement mound are buried on a terrace above the floodplain of the river Žitava. Due to its size, its access to metal deposits of the Slovak Ore Mountains and as a melting pot of at least three different cultures, the settlement was of immense importance during its time. Within the framework of an interdisciplinary, geoarchaeological collaboration, the Holocene landscape development of the extraordinary settlement area is to be investigated. The goal is to reconstruct the environmental conditions and changes both during and long before the time of settlement. A wide range of methods, such as geophysical prospecting, percussion drilling and sedimentological analyses, was employed to explore the Holocene and Quaternary landscape development as well as the evidence of early settlement activity. First insights into the sediment fill of the settlement mound were given by the electrical resistivity tomography. A horizontal stratification of the archaeologically relevant settlement layers and the Quaternary sediments has been carried out. On the basis of this data three trenches as well as vertical structures as possible remains of building foundations could be detected. The results were confirmed by several cores with a maximum depth of up to eleven meters, which were recovered at different positions on the mound and its surroundings. The uppermost levels consist of multiphase Early Bronze Age culture layers, characterized by ashy horizons, ceramic finds, burnt clay and animal bones. Beneath follows a thick loess horizon and a palaeosoil of probably interglacial origin. The deepest layer is comprised of fluvial gravel deposits. Additional physical and chemical analyses of the sediments helped refine the stratigraphy. Among others, varying concentrations of phosphor within the different layers indicate human activities starting at a certain level. Furthermore, the analyses of copper, zinc and other heavy metal contents provide a first inception of metal processing in the settlement area. To summarize the investigations and findings, a first model of the geomorphologic landscape evolution was developed. Thereby glacial terrace gravel deposits of a periglacial river constitute the first stage of the landscape development. These fluvial sediments are overlain by an interglacial soil formation and a thick layer of loess, interspersed with interstadial pedological phases, above which lies Holocene soil and, most notably, the layers of Early Bronze Age settlement.