

## **Geoarchaeological studies of a Middle-Neolithic circular enclosure near Velm, eastern Austria**

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A geophysical survey done by ground penetrating radar (GPR) of a middle-Neolithic triple ditch circular enclosure (German: "Kreisgrabenanlage") and its environs showed high reflections at 1.3 to 1.7-meter depth, which could not be explained by geophysical methods alone. These reflections especially occur at the locations of the posts belonging to the palisades of the enclosure as well as the adjacent buildings dating to the same period. Vibration core samples of post holes of the enclosure and of one building were retrieved to investigate the cause of the reflection. Additionally, three cores were taken from the ditches of the enclosure to evaluate the potential of further geoarchaeological work on such structure. The core samples from the post hole bottom show more cementation of the sediment at this depth, which can be attributed to the stronger reflection seen by GPR. The core samples from the ditches show typical ditch infillings at the lower 2 meters expected from a site situated in an alluvial environment, with slope wash in the form of gravelly sand or silt. At the third meter the substrate changes to layers of clayey, low-energy water-lain sediments with signs of lamination and organic inclusions. Samples for radiocarbon dating show an age for the organic inclusions around the 11th and 10th century BC, making those sediments about 6000 years older and thus highlighting that the ditches are not deeper than 2 m and also relatively shallow compared to other circular enclosures. The occurrence of water-lain sediments that date to the uppermost Pleistocene hints at a buried wetland under Holocene gravel sediments which will be the focus of further investigations.