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Mid-Holocene inundation of the Lower Danube Valley - Lake sediments reflecting changing environmental conditions and human impact

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Geoarchaeological research has been conducted in the valley of the Lower Danube between Giurgiu and Oltenita to reconstruct changing environmental conditions and human impact during the Holocene with special focus on the Copper Age (5th millennium BC). Numerous settlement mounds indicate that settlements existed along the Lower Danube during this period, one of the most important being the tell of Pietrele in the study area. Our palaeoecological research concentrates on floodplain sediments covering the valley bottom, which is about 8 km wide. More than 160 sediment cores were taken and complemented by geoelectric measurements. A multi-proxy approach consisting of sedimentological and geochemical analyses as well as analysis of microfauna (ostracodes), pollen and macro remains has been applied. The chronological frame is based on AMS-14C and OSL-dating. The results indicate that after the deposition of sands and gravels by a braided river system, lake sediments accumulated covering nearly the whole valley bottom. While the sands were dated to LGM and Late Glacial the deposition of lake sediments occurred from mid to late Holocene. The inundation of the Lower Danube valley was possibly caused by the transgression of the Black Sea. Within the lake sediments several black layers, each with a characteristic geochemical composition, appear. Those marker layers indicate changing conditions or events during lake evolution. The lowermost dark layer can be attributed to the Copper Age settlement period. It can be presumed that the development of the distinctive layer was caused by an increase of eroded soil material and/or of nutrients originating from settlements and agriculture that were washed into the lake. The upper part of the sediment record indicates that branches of the Danube prograded into the lake, starting not earlier than 2000 years ago. An anabranching river system established. Only remnants of the vast palaeolake prevailed until they were drained in the 1960ies.