Reconstruction of a floodplain area over the last 40.000 years (Tisza river, Hungary) – comparative case study of 14C and OSL methods

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Abstract

14C and OSL results of the 5 parallel, neighbouring cores (avg. depth 19 to 20 meters) were compared for a flood basin area (Jászság-basin). Four major sedimentary horizons were identified: meadow soil on the top; silty clay as the second horizon; a clay-silt section; and fine sand. 14C and OSL data were integrated into a consolidated age model by BACON software package. Formation of the recent top meadow soil (the upper 1-1.5m) falls in the Holocene. The mean conventional apparent radiocarbon age (940 ± 420 years) was used for correction of the radiocarbon reservoir effect of soil bulk ages. The SubAtlantic + SubBoreal section show increasing apparent deposition rates (~11 cm / ka). The silty-clay strata represents the whole Würm (Weichselian) Last Glacial to Upper Pleniglacial period (aDR ~6.3 cm/ka). The Ságvár-Lascaux interstadial climate period section was apparently much slower (aDR decreases from ~4.2 to ~1.6 cm / ka). About 10 to 60 cms of sediment must be missing from this section. The next part of the section is a very long period (~10 kyrs) with a stable, much greater aDR than even at the end of the Holocene (~20-25 cm/ky). The
clayey silt layers fall into the Late Pleistocene / Middle Pleniglacial period, a period of nearly 7,000 years of sedimentation resulting in deposits with a thickness of ~9 m, shown a very high apparent deposition rate (aDR) about ~0.12 m/ka.

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