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Stable isotope composition of bivalve shells and bulk sediments in a 5-20 ky fluvial section at Körösladány, SE-Hungary: Sedimentary changes vs. climate signals

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In this paper we present sedimentological and geochemical data for a section of fluvial deposits from SE Hungary covering the period from about 20 to 5 ky BP. Major and trace element geochemistry of bulk sediments as well as stable C and O isotope compositions of the carbonate content indicate significant changes in depositional facies and/or sediment provenance as well as climate conditions. Variations in bulk sediment Sr, TiO_2 and P2O5 concentrations were correlated with major climate change events following the Late Glacial Maximum that support the age model established on the basis of AMS 14C age data. Bulk sediment Sr concentrations and stable C and O isotope compositions of bulk sediment carbonate were determined by changes in denudation of carbonate rocks in the recharge area. The Sr and C-O isotope patterns show correlations with global temperature changes during the Pleistocene-Holocene transition. However, TiO_2 and P2O5 contents show correspondence with humidity changes, suggesting variations in chemical weathering. In addition to the sedimentological effects, C and O isotope compositions of Unio crassus shell fragments show strong changes at the Pleistocene-Holocene transition, indicating that the bivalve shells can reflect climate conditions. On the other hand, shorter climate change events were difficult to track in the isotope records due to the competing fractionation processes. The combined evaluation of chemical and isotopic compositions revealed that beside the globally important Younger Dryas and Bølling/Allerød periods, the Ságvár-Lascaux microinterstadial had a local importance in accordance with earlier studies.