



High-resolution Lower Pleniglacial paleoclimatic record in the Titel (Vojvodina, Serbia) loess sequence

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The 16-m-thick loess sequence of Titel (Vojvodina, Serbia) has recorded the late, middle and lower Pleniglacial climatic and environmental evolution. In this study we focus on the high-resolution malacological, sedimentological, geochemical and magnetic evidence from the basal Lower Pleniglacial loess unit L1L2. Chronological frame is defined based on IRSL dates.

Identified, poorly preserved malacofauna suggests a stable dry and relatively warm lower Pleniglacial climate including the complete absence of cold-resistant species. Furthermore, the composition of the mollusc fauna suggests that the Titel loess plateau mountain was a refugium for warm-loving and xerophilous mollusc taxa. There is strong evidence that those faunal elements persisted in this region through the otherwise unfavourable glacial climates of the Lower Pleniglacial.

Geochemical proxies and magnetic susceptibility record provide a small range of variations as a consequence of the continuous presence of a dry steppe environment. However, the grain size record shows many episodes of alternating loess and sand layers that might suggest a possible correlation with abrupt paleoclimatic fluctuations as recorded in the North Atlantic region. Anyway, these alternations are associated with oscillations in the wind strength that might match the dust deposition rate in Greenland, as recorded in the GISP2 ice core. Our study shows that abrupt changes in atmospheric circulation are also recorded in the SE European loess sequences. This

should imply an atmospheric mechanism linking dust deposition over Greenland, Europe, and Central Asia which is probably connected to global climatic events during the Lower Pleniglacial.

Generally, the Lower Pleniglacial loess from the Titel section accumulated and formed when global climate was in a glacial mode with intensive aeolian dynamics. However, the reconstruction of local environmental conditions indicates significantly warmer and drier glacial climatic conditions than in other well investigated localities of the European loess belt. These results open questions about the importance of local environmental conditions for loess deposition.