A high-resolution ^{14}C dated chronology and Mollusc-based paleoclimatological signals from the thickest and best resolved loess/paleosol record of the LGM in the Carpathian Basin

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The Madaras brickyard profile found at the northernmost fringe of the Bácska loess plateau is one of the thickest and best developed last glacial loess sequences of Central Europe. According to initial ^{14}C and paleontological (quartermalacological) dates, the 10 m profile corresponds to a period between 29 and 12 ky cal BP (MIS 1 & 2). In order to tackle signs of small scale centennial climatic fluctuations at our site, recorded in the NGRIP Greenland ice core and marine cores from the Northern Atlantic, the construction of an independent high resolution time-scale is needed. In our work 5 age-depth models have been constructed relying on 32 ^{14}C (AMS) dates using various statistical and probabilistic approaches. The best model was chosen to reconstruct an acceptable time-scale and calculate sedimentation rates for the profile. Based on our findings, sampling at 2 cm intervals thus yielded a resolution of ca. centennial scale even when uncertainty related to measurement and calibration error is considered. Calculated average sedimentation rates were 4 times higher than previously reported. The peak accumulation periods are dated to the nadir of the LGM and to the time of rapid climate changes recorded in the referred international paleoclimatic records (Heinrich Events 1-2). 24 species and 110 506 specimens of molluscs were collected and identified from 250 samples of the loess profile at Madaras in the southern part of the Carpathian Basin. Changes in the Quaternary malacofauna observed within the brickyard loess wall at Madaras suggest a number of dynamic climatic and local environmental changes in the Bácska loess area during the Middle and Upper Pleniglacial periods. Thermophilous immigrant forms from the Balkans (e.g. *Granaria frumentum*) also intruded into the central parts of the Great Hungarian Plain, corresponding to their northernmost distribution boundary for this period. On the other hand, due to its relatively low topography, this region is geographically

open towards the south, likely enabling the rapid expansion of thermophilous elements into the area from refugia located along the northern margin of the Balkans (e.g. from southern part of the Fruska Gora Hills) during the interstadials and terminal phase of the Middle Pleniglacial. Therefore, the malacological-based data suggests that this site represents as a paleobiogeograpical fluctuation unit during the last phase of the Ice Age.

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