



## **Deciphering the Geochronological Framework of Serbian Loess Using Amino Acid Stratigraphy and Luminescence Dating**

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Serbian loess deposits preserve the most widespread, semi-continuous terrestrial records of glacial-interglacial climate variability in Europe. The sedimentary deposition, distribution, and thickness of loess in SE Europe are closely linked with major fluvial systems draining the continental interior. The geomorphic setting of these loess formations on adjacent fluvial terraces, however, made them vulnerable to fluvial erosion and reworking, resulting in unconformities. Such unconformities, often of unknown duration and spatial extent, confound regional chronostratigraphic and paleoclimatic interpretations.

Amino acid racemization (AAR) geochronology, although primarily a relative dating method, offers an independent assessment of numerical age estimates when results are at or near their methodological limits and can assist in the chronostratigraphic evaluation of loess units beyond the applicable range of numerical dating methods. In this study we present the first comprehensive aminostratigraphic results measured on fossil gastropod shells from the loess series at Stari Slankamen and Mosorin in Serbia, in order to verify the chronostratigraphic position of the upper stratigraphic units and to establish a reliable correlation between older loess-paleosol couplets.

AAR analyses allow us to establish an independent chronostratigraphic framework for Serbian loess sequences correlated with marine oxygen-isotope stages 16-2. The results are also supported by a chronology for Serbian loess derived using optically stimulated luminescence (OSL) and thermally-transferred optically stimulated luminescence (TT-OSL) signals from quartz.

Ultimately, these results contribute to the development of a robust regional chronostratigraphic framework in support of paleoclimate reconstructions from high-resolution proxies, such as grain-size data, resulting in an improved understanding of the paleoenvironmental dynamics of SE Europe in an intra-hemispheric context.