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From a hiatus of 10 ka to loess of 6 m thickness - the MIS3/2 transition in the Central European loess belt

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Periglacial loess is not only suited as a high-resolution terrestrial archive of palaeoenvironmental conditions but also as a record of geomorphodynamic phases charactererized by the alternation of sedimentation and repeated unconformities through erosion, visible as both, parallel unconformity (often hard to detect by untrained bare eyes) and relief unconformity. The synopsis of complete refined stratigraphy and unconformities is, thus, essential for "Deriving palaeoenvironmental information from non-continuous sedimentary archives".

The Central European Loess Belt is well-suited to monitor this approach, at least in its northern part. The onset of periglacial conditions following a pedocomplex of interstadial soils (attributed to the Denekamp Complex) dates from late MIS 3. Periglacial conditions continue through MIS 2. The interaction of sedimentation and erosion during the MIS 3/2 transition is studied in a transect from Alsace (Eastern France) via Germany to Silesia (Poland). At Achenheim (Alsace) this transition is represented by a ca. 10 ka lasting hiatus. At Nussloch (near Heidelberg, Germany) 6 m thick loess intercalating with tundra-gleys is dated into late MIS 3 and is covered by up to ca. 9 m of MIS 2 loess. In Ostrau (Saxony, Germany) this transition occured in ca. 1 m thick loess derivates including three tundra-soils, a weak brown soil, solifluction and cryoturbation features, and ice wedging. Age control of Silesian loess (Poland) is still ambiguous, but from own IRSL test measurements it is obvious that late MIS 3-loess deposited rather close to the Weichselian ice margin was also affected by gelifluction and cryoturbation. At Dolní Věstonice (Southern Moravia, Czech Republic) the MIS 3/2 transition can be assumed in an up to 40 cm thick tundra gley layer developed under the influence of gelifluction.

The thickness of loess deposited in the time window under debate appears to depend on sediment availability from nearby sources, e.g. from large rivers, and the efficiency of periglacial denudation. Periglacial geomorphologic processes are best unlocked by composite profiles constructed from several well-dated sections.