



Loess-palaeosol sequences in Armenia: a challenging archive for the application of luminescence dating

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Loess-palaeosol sequences (LPS) in Armenia represent a new and important sedimentary archive for the Caucasus region, showing great potential for palaeoenvironmental reconstructions, with the possibility of closing the gap between loess distributions of E-Ukraine, S-Russia and Iran. The sequences are characterized by an alternation of loess layers, soil formations, relocated layers and tephras, reflecting at least three glacial-interglacial cycles. First results regarding the stratigraphy, chronology and palaeoenvironmental reconstructions of the LPS in NE-Armenia were published by Wolf et al. (2016).

Based on these first studies, a new project, funded by the German research foundation (DFG), will now further investigate the Armenian LPS, using a comprehensive methodological approach (e. g. sedimentological analysis, micromorphology, malacology, heavy mineral analysis, luminescence dating) to characterize the sequences. The main research questions of the project focus on the reconstruction of the environmental conditions under which the LPS have formed, provenance of the sediments and analysis of the tephras within the sections, with the main goal of putting the Armenian LPS into a supra-regional context. A crucial point for all this is the establishment of a chronostratigraphical record of the loess sequences. For this purpose, a central part of the project covers the building of a high resolution chronology for the investigated LPS using luminescence dating. However, the application of luminescence dating on loess sequences in Armenia proves to be a very challenging task. Reasons for this include a major volcanic influence in the Caucasus region, as well as an expected high age range of the sediments. Furthermore, $^{40}\text{Ar}/^{39}\text{Ar}$ -ages of a prominent tephra layer within the LPS show, that first luminescence ages have a strong tendency of age underestimation.

This poster gives a general overview of the project and the loess sections, which were sampled in a first field campaign in the main study area in NE-Armenia in 2017 and presents preliminary results of the luminescence analysis.

References:

Wolf, D., Baumgart, P., Meszner, S., Fülling, A., Haubold, F., Sahakyan, L., Meliksetian, K., Faust, D., 2016. Loess in Armenia - stratigraphic findings and palaeoenvironmental indications. Proceedings of the Geologists' Association 127, 29-39.