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High-resolution magnetic record of environmental changes during Middle – Late Pleistocene from a loess-palaeosol sequence in NE Bulgaria – pilot data from the LOEs-CLIMBE project

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Continental sedimentary sequences of alternating loess and palaeosol horizons preserve detailed records of past global climate changes during the Pleistocene. Obtaining deeper and genuine knowledge on the history of past climates using proxy data depends on interdisciplinary approaches, novel techniques and thinking "out-of-the-box". The LOEs-CLIMBE team members gather around this concept and present here the first pilot magnetic data from the Kolobar loess-palaeosol section in NE Bulgaria. The 25 m thick section is exposed in an active quarry and was sampled at 2-cm-resolution, covering the Holocene soil, seven palaeosol units and loess horizons L1 to L7 of varying thicknesses. New high resolution magnetic susceptibility data, delineates palaeosol horizons with high values of mass specific magnetic susceptibility except the special case of fourth palaeosol S4, showing no magnetic enhancement as compared to the underlying thin loess. Such depletion of pedogenic magnetic enhancement in paleosol units from the Lower Danube area is rarely reported. This phenomenon will be further examined by detailed magnetic and colorimetric methods. The strongest pedogenic magnetic signal is observed in the three youngest palaeosol units S1, S2 and S3, tentatively related to the interglacial stages MIS 5, MIS 7 and MIS 9. The weakest magnetic susceptibility is typical for the younger part of the loess unit L2, punctuated by the signal of a tephra layer, which is a widespread chronostratigraphic marker in the region. This research is carried out and financed within the framework of the second Swiss Contribution MAPS, LOEs-CLIMBE project № IZ11Z0_230102.