

EGU21-6381, updated on 29 Nov 2022

<https://doi.org/10.5194/egusphere-egu21-6381>

EGU General Assembly 2021

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



## A new reference loess-paleosol archive spanning the last 850 kyrs near Pleven (Bulgaria) – first results

**Christian Laag**<sup>1</sup>, Diana Jordanova<sup>2</sup>, France Lagroix<sup>1</sup>, Neli Jordanova<sup>2</sup>, and Yohan Guyodo<sup>1</sup>

<sup>1</sup>Université de Paris, Institut de Physique du Globe de Paris, CNRS, 1 rue Jussieu, 75005 Paris, France (laag@ipgp.fr)

<sup>2</sup>National Institute of Geophysics, Geodesy and Geography, Bulgarian Academy of Sciences, Acad. G Bonchev str., block 3, 1113 Sofia, Bulgaria

Loess-paleosol sequences (LPSs) are proven valuable archives for continental paleoclimatic reconstructions. However, studied LPSs worldwide, spanning multiple glacial-interglacial cycles, are seldomly sampled and analyzed at a continuous high resolution. Exceptionally, in a quarry setting near the city of Pleven (Bulgaria), a new LPS, with a thickness of 27 m, was continuously sampled at a 2 cm resolution resulting in 1340 bulk-samples. We present herein first rock magnetic results suggesting that the site archives aeolian deposition and soil formation over the last 850 kyrs. Room temperature bulk mineral magnetic parameters including magnetic susceptibility, hysteresis loop derived parameters, IRM, and ARM (underway) were acquired on all samples. Variations in mineral magnetic data clearly show the alternation of strongly developed paleosols overlying loess units indicative of interglacial and glacial climate cycles. We created a correlative age model by comparing  $X_{\text{ferri}}/M_s$  to inverted LR04 benthic oxygen isotope ratios and adjustments undertaken by the Imbrie & Imbrie ice model. This initial correlative age model leads to an assumed continuous dust accumulation for the last 850 kyrs, from MIS 19 to present. In addition to the regionally widely observed L2-tephra, which is observed outcropping along the Pleven LPS, several other sharp spikes in concentration dependent magnetic characteristics suggest that the sedimentary record had preserved also other tephra layers, clearly identified in the magnetic record due to the accomplished high-resolution sampling design. Additional geochemical and mineralogical data are however necessary for an unequivocal source (age) identification of these events. A tentative scheme of a possible correspondence with well dated tephra layers from sedimentary core at Fucino Basin is established. It implies the occurrence of westerly wind directions during the last 850 kyrs in SE Europe. In summary, the Pleven LPS provides new insights into late-Pleistocene climatic regimes, prevailing wind directions and preservation of tephra layers, essential for further correlative terrestrial-aeolian-coupled age models, regional stratigraphic correlations and paleoclimate reconstructions.