Sedimentological dynamics of the Orlovat loess-paleosol sequence (northern Serbia) show both local and regional paleoenvironmental fluctuations

Loess-paleosol sequences represent one of the most widespread sedimentary archives during the - uncharacteristic: MIS 3 soil misssing, magnetic susceptibility, amount Quaternary. Loess units were deposited during cold glacial periods and these units are usually of sand within soil layers \rightarrow redeposition or different climatic evolution? characterized by coarse silt fractions, while the paleosol units were formed during interglacials and - possible source of sand: Deliblato Sands (transported by the Košava wind) are characterized by higher fine silt and clay contributions. The Last Glacial cycle as recorded in the - geochemistry shows different source of material (see also Figure 4.) Orlovat loess section (Northern Serbia) is a unique archive in the Carpathian Basin and it is characterized by irregularities in sedimentology, magnetic susceptibility, geochemistry and other - possible explanation \rightarrow changes in river systems from the Danube and paleoenvironmental proxies. Therefore the local conditions need to be understood before making Tisa Rivers ralated with far distance transport to Tamiš (and Begej) claims on a regional scale. Especially the grain size distribution indicates that the Orlovat site was River(s) related to the close source areas. influenced by specific paleoenvironmental conditions. Relatively coarse grained sand was delivered during interglacials. A commonly detectable paleosol corresponding to MIS 3 is not present; commonly Gradual transition Observed hiauts, Small lowland river(s) applied methods such as grain size and rock magnetic investigations could not explain the unique established new close probably indicated to the new source by fluvial erosion material situation during the MIS 3. Therefore, for the first time in the studies of the region, we applied high by source area resolution X-ray fluorescence analysis to trace the changing source areas of sediment material during 2-22 μm the Last Glacial. These changes in the provenance of the sediment might be associated with stronger 5 10 15 20 25 30 river activities and erosion. This study highlights the importance of a sedimentological understanding 10.1+/- 0.8 ka 🔶 for a reliable paleoenvironmental evaluation. 12.7 +/- 1.1 ka 🔶

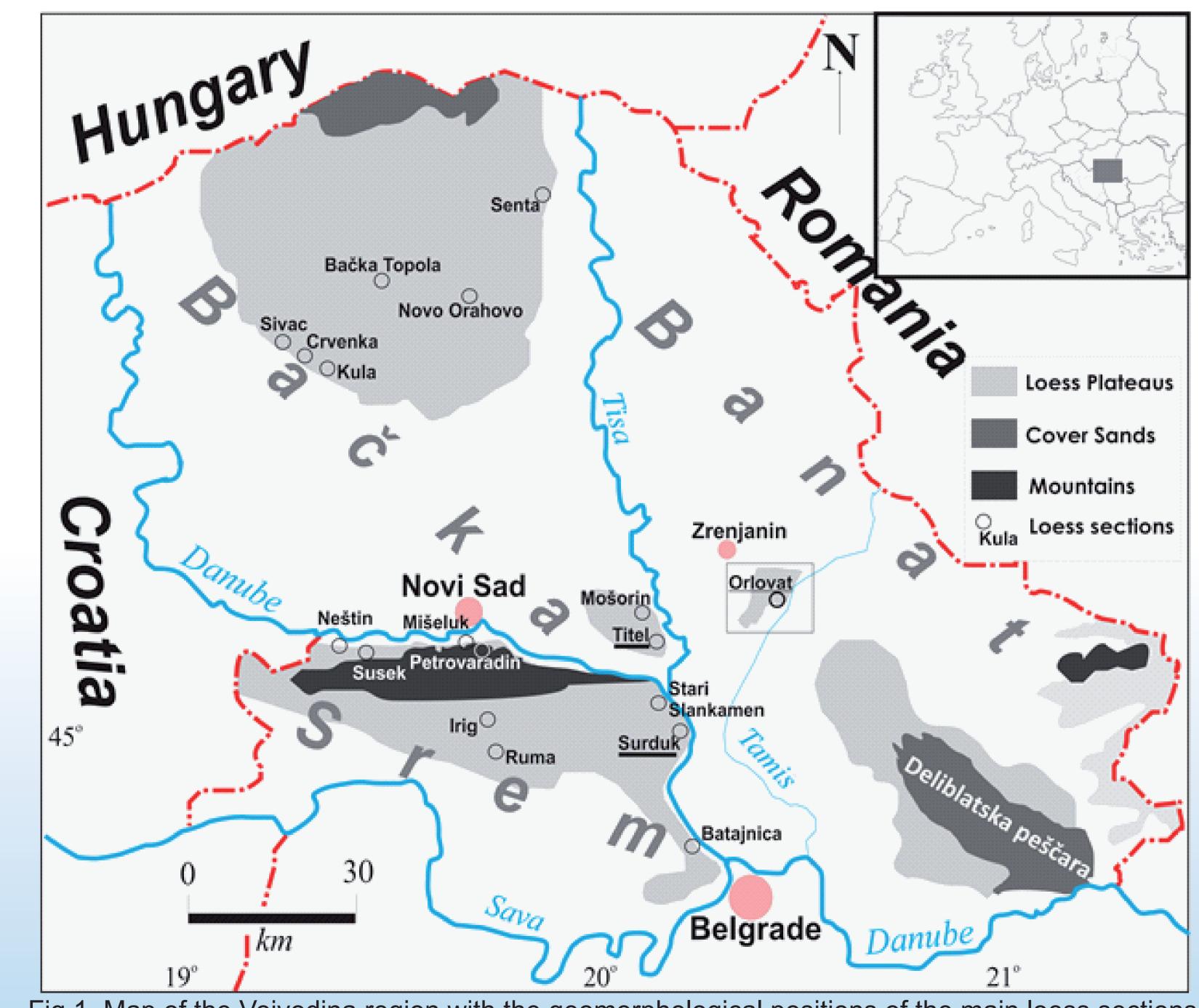
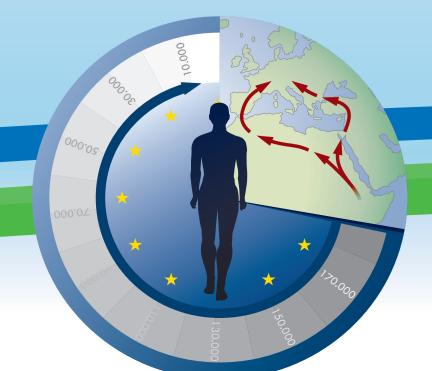


Fig 1. Map of the Vojvodina region with the geomorphological positions of the main loess sections (Marković et al., 2014). The Tamiš loess plateau is surrounded with the gray square, the Orlovat section is underlined by gray line, whereas the sections on Figure 5 are underlined with black line



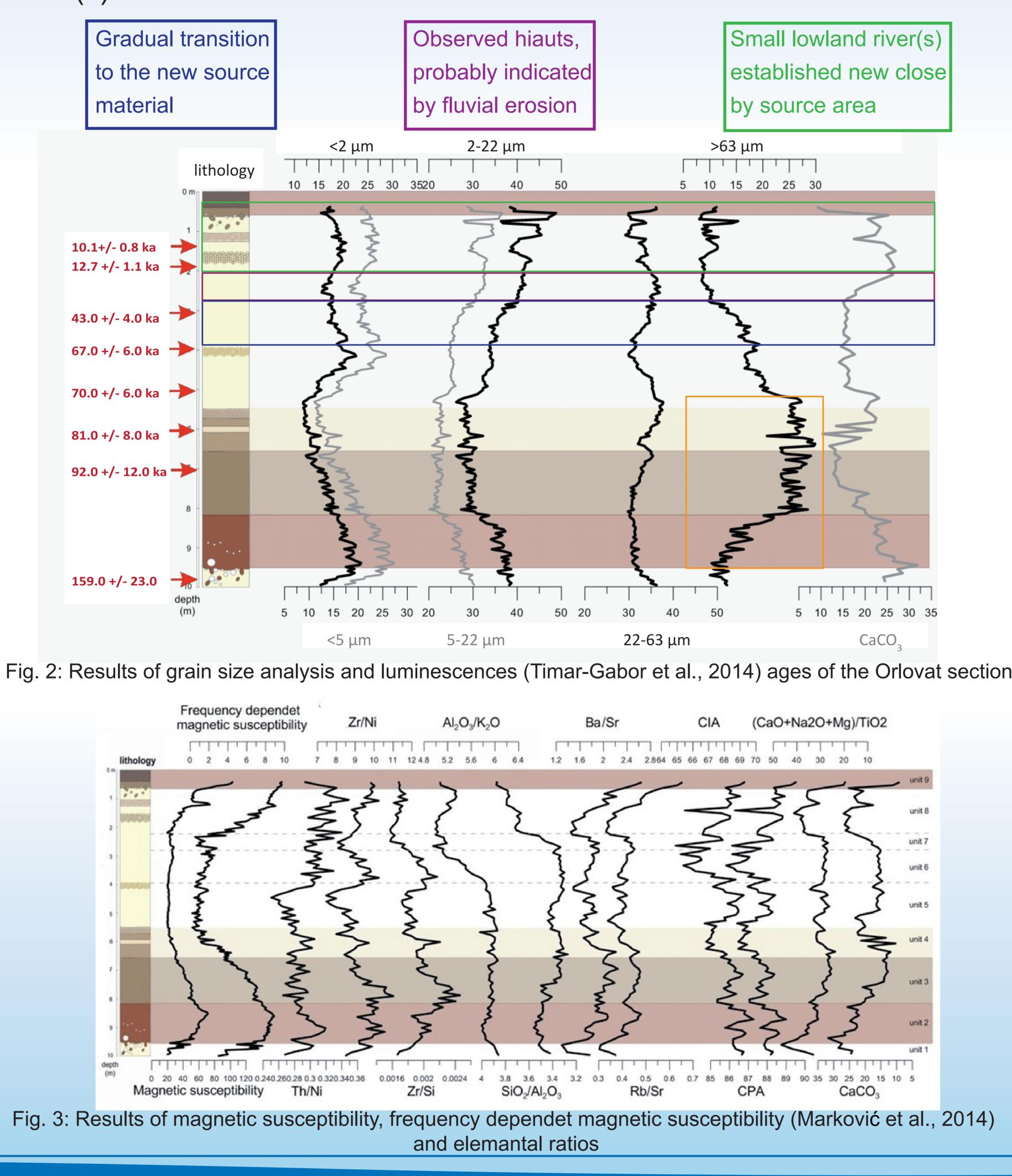
corresponding author

lgor Obreht Physical Geography and Geoecology

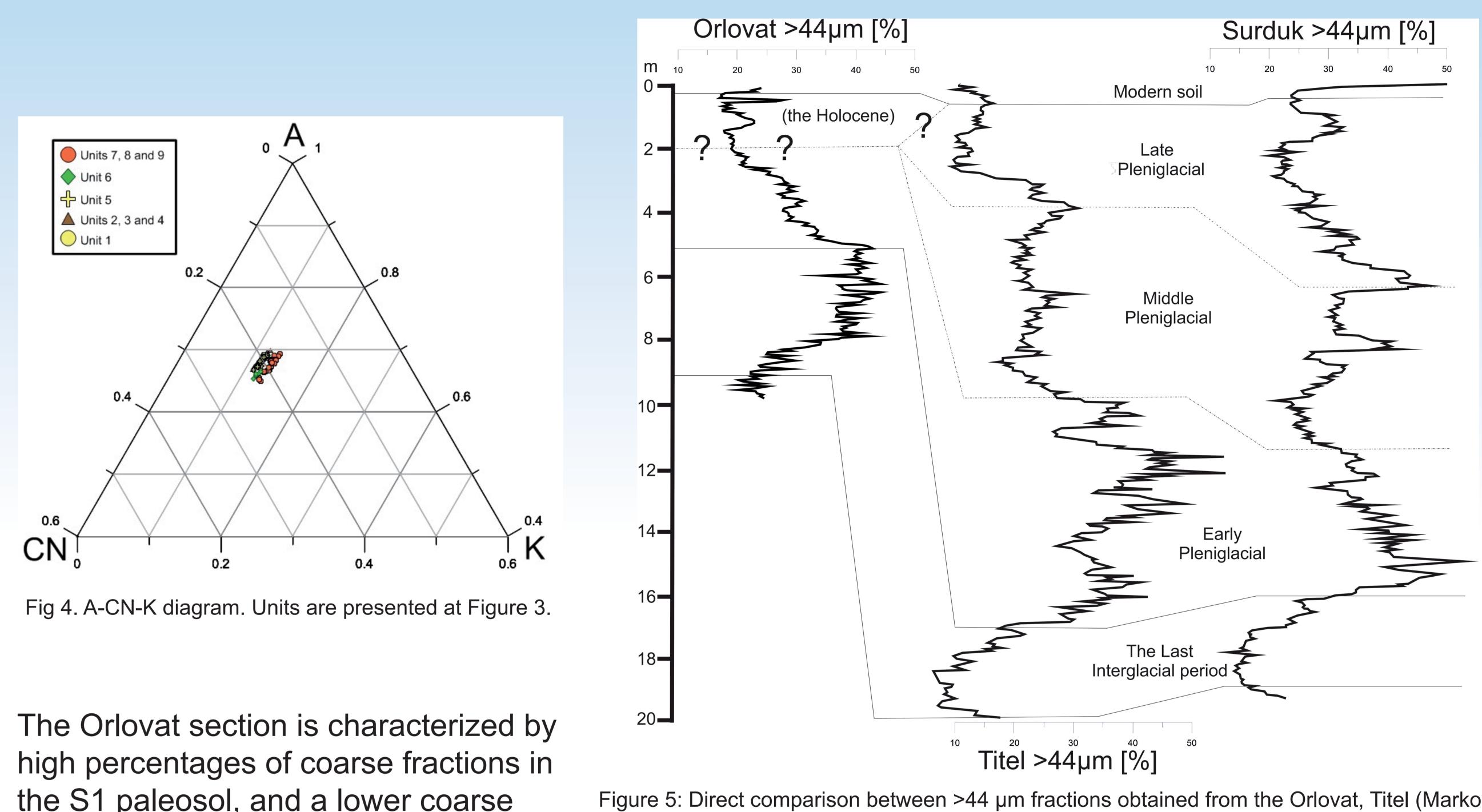
☐ igorobreht@geo.rwth-aachen.de RG researchgate.net/profile/Igor_Obreht

Department of Geography, RWTH Aachen University Tel: +49 241 80 96052

HIGHLIGHTS:



1 Department of Geography, RWTH Aachen, Templergraben 55, 52062 Aachen, Germany 2 Chair of Geomorphology, Laboratory for Palaeo- and Environmental- Magnetism, University of Bayreuth, D-94450 Bayreuth, Germany 3 Faculty of Environmental Science, Babe s-Bolyai University, Fântânele 30, 400294 Cluj-Napoca, Romania, and Interdisciplinary Research Institute on Bio-Nano-Science of Babe s-Bolyai University, Treboniu Laurean 42 400271, Cluj-Napoca, Romania



the S1 paleosol, and a lower coarse Figure 5: Direct comparison between >44 µm fractions obtained from the Orlovat, Titel (Marković et al., 2008) and Surduk (Antoine et al., 2009). The profiles are plotted on their depth scales. fraction contribution in the L1 loess unit compared to the other sections in the Carpathian Basin (Figure 5). The high coarse fraction contribution in the S1 paleosol may be caused by wind transport from particles of the Deliblato Sands (Figure 1). The low contribution of the coarser particles in the L1 loess may be explained by two scenarios: 1) during MIS 5 the southeast wind was dominant, while during MIS 4 northery winds dominated. This would lead to a change of source area towards the north, where no close source area for coarse material is present.

2) The south Carpathian Basin was permanently under the influence of a southeastern wind, but during glacials a stabile vegetation cover consolidated the Deliblatska peščara, which would indicate a termination of the Deliblato Sands as source area. It is suggested here that southeasterly winds prevailed in the Southern Banat region during the Last Interglacial, we here cannot prove or rule out their effect during glacials. Hence, the Orlovat section may give insight into both local and regional paleoenvironmental conditions.

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