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The composition of soils developed on different lithological units of the Medvednica Mt.

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Statement of the Problem: Six pedological profiles were analyzed overlying the five typical lithological units on the Medvednica Mountain to determine the effect of aeolian additions to the soil composition, as well as the possible influence of relief, vegetation cover, and anthropogenic input on the dynamics of pedogenesis.

Methodology: Bedrock composition was defined using petrographic (thin sections) and chemical (major and trace element contents) analyses, whereas pedological, sedimentological and geochemical characteristics of six cross-sections were determined by chemical (major and trace element contents), mineralogical (modal analysis), and grain size analyses.

Findings: Soils developed on sedimentary bedrock (Mollic Rendzic Leptosols (Calcaric) and Albic Luvisol (Sceletic)) mostly originate from weathering of siliciclastic detritus that was exposed to oxidization before diagenesis. Furthermore, soils on metasiltstone, marble and lithothamnium limestone exhibit similar modal and geochemical composition and element distribution across the soil profile. In contrast, soils developed on igneous bedrock originate mostly from weathering of minerals of the first weathering cycle and thus abound with chemically less resistant minerals and less mobile elements. However, all profiles contain higher concentrations of lead with respect to bedrock, indicating airborne contamination.

Conclusion: Soils developed on the sedimentary rocks mostly originate from weathering of siliciclastic detritus that was exposed to oxidization before diagenesis of the bedrock. Thus, the soil was depleted in all chemical components that were unstable in subaerial conditions. After diagenesis, chemical composition of the soil did not alter substantially, or the changes were reversible. Therefore, soils on metasiltstone, marble and bioclastic calcarenite have similar modal and geochemical composition and element distribution in the soil profiles. As a contrast, soils developed on orthometamorphite bedrock originate mostly from the weathering of minerals of the first weathering cycle, which is why these contain chemically less resistant minerals and mobile elements.

Recent Publications

1. Galovic L and Peh Z (2014) Aeolian contribution to geochemical and mineralogical characteristics of some soil types in the Medvednica Mountain, Croatia. *Catena* 117:145-156.
2. Halamic J, Peh Z, Bukovec D, Miko S and Galovic L (2001) A factor model of the relationship between stream sediment geochemistry and adjacent drainage basin lithology, Medvednica Mt., Croatia. *Geologia Croatica* 54(1):37-51.
3. Miko S, Halamic J, Peh Z and Galovic L (2001) Geochemical Baseline Mapping of Soils Developed on Diverse Bedrock from Two Regions in Croatia. *Geologia Croatica* 54(1):53-118.
4. Slovenec D and Lugovic B (2012) Evidence of the spreading culmination in the Eastern Tethyan Repno oceanic domain assessed by the petrology and geochemistry of N-MORB extrusive rocks from the Mt. Medvednica ophiolite melange (NW Croatia). *Geologia Croatica* 65(3):435-446.
5. Sollitto D, Romić M, Castrignanò A, Romić D and Bakic H (2010) Assessing heavy metal contamination in soils of the Zagreb region (Northwest Croatia) using multivariate geostatistics. *Catena* 80:182-194.

Biography

Lidija Galovic is an Geologist who started her scientific carrier as a Geochemist dealing with Environmental Geochemistry. She mainly focused on Mineralogy and Geochemistry of recent soils, she developed as a Paleosol Investigator with expertise in Geochemistry and Mineralogy of quaternary loess/paleosol sections in the Danubius area. Her interest spreads on studying other quaternary sediments as a PI of the Project "4425 Standardization and Applied Investigation of Quaternary Sediments in Croatia" funded by Croatian Science Foundation and as a team member of the project on the Review and Harmonization of the International Quaternary Map, scale 1:2.5 Million (IQUAME 2500), coordinated by BGR under the auspices of the CGMW (Commission of the Geological Map of the World, Sub-Commission Europe) and with support of the International Association for Quaternary Research INQUA-SACCOM (Commission for Stratigraphy and Geochronology). Nowadays her focus is on lacustrine sediments/soils in the Dinaric karstic part of Croatia.

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