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The Western-Hungarian Gravel Cover (WHCG) is located between the Eastern Alps and the Danube Basin, surrounded by the Rába, Ikva, Pinka rivers, Kőszeg–Rechnitz and Sopron Mountains. The extension of the gravelly sediment coverage is approximately 3000 km2, the volume is ∼30 million cubicmeter. The layers thickness changes between 5-35 m.
My research area is limited to the Gyöngyös Plain which northern side belongs to the Kőszeghegyalja is also the part of the WHGC. The western boundary of this region is the wide, flat valley of the Gyöngyös stream, the northern is the Répce′s asimmetric, steep valley. The plain itself has a very low angle, even slope to southeastern direction. The elevation of the plain is 190-260 meter above sea level. The northern side is more fragmented, incised by asimmetric valleys. The hight of this area could form a contiguous flat tilted surface with a consistent slope. The slope conditions of the plain are changing nearby Acsád village, becoming slightly steeper and tilted to east immediately next to a narrow ridge extending northward. This ridge is the eastern boundary of a 2 km wide depression with a steeper northern side flattened to southward.
The purpose of my study is to explore the geometry of gravel layer and to infer the processes that could create it. Firstly I made a database from borehole descriptions collected from the research area. This database as basis for interpolated GIS models, show the gravels material properties, extension, distribution of thickness in a large scale depend on a borehole density. I compared these surfaces with Digital Terrain Models with SRTM– and a more detailed model, created from Hungarian National Grid map sheets (1:10 000). Golden Software Surfer and Global Mapper were used to interpolate, represent and interpret these surfaces. The models with the detailed borehole data show a 1-3 meter thick unsorted, unstratified gravel layer with reddish brown coloured clay or brown loam matrix. The gravel material is poorly rounded, 0.5-7 cm quartz, often with red coloured surface. The layer covers the total research area, follows the recent topography. The young alluvial sediment of Gyöngyös can easily be separated, because it has different presence both in geometry and material.
In further part of the study was a near-surface geoelectrical resistivity tomography with Wenner-Schlumberger array type. It was carried out on three survey region in order to find out the small-scale disturbances of the gravel layer. Two sections were measured on undisturbed field to compare the results with the borehole datas and the surface models. Based on resistivity the clayey gravel is clearly separated from its loam cover, even though it has relative low apparent resistivity (30-45 ohmm) caused by solid clayey matrix. Another two sections were located across and near the ridge was mentioned above. These sections show deformations affected by tectonic impacts or periglacial frost effects. The last survey region lies on the northern part of the area, the western side of V-shaped valley belongs toKozár-Borzó stream. Three sections run from the top of the plateau level down towards the stream. The resistivity distribution shows cascading sediments mantled by redeposited gravelly material refers to usually periglacial mass-movement as solifluction.
To sum the models, results of electrical tomograpy and compared with analogous formation environments, the studied gravel seems to be a periglacial pediment, affected by the freeze-thaw induced processes that produced a nearly flat surface, and the gravelly sediment with clay matrix.
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