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# Reconstruction of gravel coverage on an Eastern Alps foothill

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The Pinka plateau is located at the western border of Hungary, enclosed by Pinka (W), Arany (N) and Perint (S) streams. The area is mostly covered by Pannonian clay, sandy and gravel sediment, which has been deposited during the Pleistocene, when Pinka has drained Eastern Alps and has built gravel terraces. Previous studies declared that the river originally flow from E to W, then the northern border of the plateau has faulted and gradually tilted . The river followed the changes of the surface aspect, therefore changed to southern direction, and finally took the recent flow. Nowadays, loess and clay are mainly on the surface, which are often covered by gravel forming prolonged spots. The geological maps (scaled 1:100 000) represent the gravel occurrence mostly with N–S axis, thin, elongated patches, what often do not follow the general slope direction and the morphology of the area. Field observations strengthened the theory that the kilometer wide, low gradient plateaus are mostly covered by gravel contrary to the narrow patches shown on geological map.
The aim of our research is the analysis of the Pleistocene gravel occurrence on the Pinka plateau, focusing on the location and erosion. The content of the geological map is not correspond to the borehole data, what can be found in the Eötvös Loránd Geophysical Institute repository.

Densely – 3-400 meters – spaced wells provide information about gravel occurrence. It is follows more accurately the wide plateaus than the geological map indicated, but in many cases borehole data reveal the discontinuity of the gravel where we would except the occurrence. Our primary objective is (1) the more precise delineation of the gravel coverage. Secondary we would (2) is define the relationship of the gravel layers to the surface morphology. Where the layer reaches the surface, there subsequent erosion removed them, however in other cases the gravel just disappear. The next question is (3) if terraces can be separated to different levels. Further analysis would help to determine (4) the Pleistocene flow direction, the slope direction and the slope angle of the plateau.

Using the borehole data (gravel content, altitude, coordinates etc.) we created digital surface models to reconstruct the gravels plain, to get information about the layers thickness and the relationship between the reconstructed gravel cover and the recent surface.

(1) In this paper we clarified the gravel occurrences more accurate than it is shown on the geological map. (2) The gravel occurrence in advance what about we expected that follows the typical morphology, appears the form of flat-backs. But this trend is broken along the incised stream. In the case of Pornóapáti stream erosion border can be seen. In the case of Pinka stream, the gravel cover is continuous. (3) After the digital surface models and cross-sections for further study it has been calculated that on the Pinka plateau borders can not find different terrace levels, so the area is a single unit. (4) The surface model was used to determine the slope of gravel cover, with the support described in the literature.

The abstracts titled "Pleistocene alterations of drainage network between the Alps and the Pannonian Basin" (EGU2012-403) and "Pleistocene alterations of drainage network and diverse surface morphology forced by basement structure in the foreland of the Eastern Alps" (EGU2012-400) provide more detailed information about the study area related to this paper.

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