



## The Advantage of the Second Military Survey in Fluvial Measures

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The Second Military Survey of the Habsburg Empire, completed in the 19th century, can be very useful in different scientific investigations owing to its accuracy and data content. The fact, that the mapmakers used geodetic projection, and the high accuracy of the survey guarantee that scientists can use these maps and the represented objects can be evaluated in retrospective studies. Among others, the hydrological information of the map sheets is valuable. The streams were drawn with very thin lines that also ascertain the high accuracy of their location, provided that the geodetic position of the sheet can be constructed with high accuracy.

After geocoding these maps we faced the high accuracy of line elements. Not only the location of these lines but the form of the creeks are usually almost the same as recent shape.

The goal of our study was the neotectonic evaluation of the western part of the Pannonian Basin, bordered by Pinka, Rába and Répce Rivers. The watercourses, especially alluvial ones, react very sensitively to tectonic forcing. However, the present-day course of the creeks and rivers are mostly regulated, therefore they are unsuitable for such studies. Consequently, the watercourses should be reconstructed from maps surveyed prior to the main water control measures. The Second Military Survey is a perfect source for such studies because it is the first survey has drawn in geodetic projection but the creeks haven't been regulated yet.

The maps show intensive agricultural cultivation and silviculture in the study area. Especially grazing cultivation precincts of the streams is important for us. That phenomenon and data from other sources prove that the streams haven't been regulated in that time. The streams were able to meander, and flood its banks, and only natural levees are present.

The general morphology south from the Kőszegi Mountains shows typical SSE slopes with low relief cut off by 30–60 meter high scarps followed by streams. That suggested us to investigate the neotectonic features, what also indicated by the alternate meandering of surveyed streams. After geocoding the maps of the area, the streams were digitised, and their sinuosity values were calculated. At places significant difference of sinuosity has been observed along the streams, it can be considered as indicators of differential uplift or subsidence of the bedrock/alluvium.

This method can be useful in general, if the watercourses mapped in the historical map are assumed to be unaffected by human.