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Tectonic geomorphologic investigation of a transition zone in the Pannonian Basin

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The recent tectonic settings of the Pannonian Basin are partly characterized by uplifting and subsiding areas. Our study area is situated on the transition zone between westernmost part of the currently uplifting Bakony Mountains (1 mm/yr) and the subsiding Little Hungarian Plain (-2 mm/yr). The contact zone of these two domains can be outlined only from seismic profiles and borehole data.
The first step was the designation of the study area by streams are seems to be available to provide some information about the development and tectonic geomorphology of the Marcal Basin. Due to the asymmetric structure of the study area, there are much and longer tributaries on the right side of Marcal River, that are worth to be examined.
The surface morphology is influenced by the subsurface vertical movements. Because of that, the surface slope can be changed, and slope steepness can be increased.
The sinuosity analyses of the stream network may show higher detailed indications of subsiding and uplifting zones. Historical maps of the second military survey of the Habsburg Empire (1806-1869) were used for sinuosity analyses of the river courses. The map sheets were recorded using triangulation and geodetic base before the regulation works of the river courses that mean the nearly natural, unmodified state.
Using that method is not enough to determine the tectonic statement of the study area.
We reviewed earthquake data recorded in the region to prove the recent activity and get information about the deepness of that. The earthquakes of the study area have shallow depth (7-13km) and intensity 3-5 EMS (European Macroseismic Scale) values has observed.
We evaluated four seismic profiles to investigate if near-surface faults are present. Our interpretation is, that lot of reverse faults seems in the triassic layers, and lot of flower structure are related to these reverse faults. We think that these structures are related to previously determined Telegdi-Roth strike-slip fault zone.
Due to the detected indications (sinuosity-analysis, seismic interpretation, earthquakes) we supposed to prove the recent activity and exact line of that, using surface geophysical measurements (VES survey). One of VES profiles crossed a well defined normal fault.
Using geomorphologic and geophysical methods, we determined the possible boundary between uplifting and subsiding areas and the recent activity of that fault zone.