



The search for tectonic signatures in river profiles in the Styrian Basin

S. Hergarten, C. Roffeis and K. Stüwe

Institute of Earth Sciences, Karl-Franzens-University Graz

The surface morphology of the Styrian Basin between Raab and Mur is dominated by nearly parallel valleys with asymmetric profiles indicating a strong tectonic control. In this study, several river profiles in this region were analyzed in order to figure out whether these profiles reveal some information on tectonic processes. Despite the strong anisotropy arising from the nearly parallel valleys, the relationship between drainage areas and river lengths shows no peculiarities with respect to Hack's law. In a second step, longitudinal river profiles were analyzed with focus on the relationship between slope and drainage area. Observed profiles were compared to reference profiles which were numerically computed assuming a power-law relationship between slope and drainage which should be valid for equilibrium landforms under homogeneous tectonic conditions. Some profiles apparently show systematic deviations, but they can be neither uniquely attributed to tectonic nor to lithologic features yet.