Abstract

The PhD. thesis deals with the morphostructural evolution of the valley network of the Biala Lądecka river, (further refer as BL) during the Late Cenozoic. In this work, the selected methods as geomorphological research (morphostructural analysis, geomorphological mapping), structural-geological research (paleostres analysis) and geophysical survey on selected sites were used, to answer the questions of river basin development and its relationship with predicted tectonic activity within the area, as well as with anticipated or already known paleohydrographic changes.

The BL basin is situated within the Rychlebské hory Mts. / Góry Złote (northern and eastern parts of the basin), Králický Sněžník (southern part) and the Krowiarki Mts. (western part) in Poland. The Marginal Sudetic fault zone, which represents one of the most important tectonic zones in the Central Europe, passes in vicinity of the study area as well as the regionally important Bělský fault, which passes directly through the BL basin. The results of the analysis indicate that the BL basin has undergone very complex development due to tectonic movements since Miocene up-to-day. Based on the results of the paleostress analysis, which was performed on the dated volcanites in Lutynia – Lądek Zdrój area, the parameters of the palaostress fields (refer as paleostress phases) were determined. Similarly, the parameters of the recent stress field have also been determined based on fault micro-displacements detected by the TM-71 extensometers. Geomorphological mapping and morphostructural analysis revealed orientations and traces of previously unknown faults (morpholineaments). Their activity, together with already known faults, were further evaluated by morphometric indexes (e.g., SL-index) as well as by their orientations towards the acting tectonic stresses fields during individual paleostress phases. The conclusion of this work is a model of the space distribution and time-evolution of the BL basin, which shows the evolution of the BL basin evolved during the Late Cenozoic. The model also includes and discusses 11 possible sites, where paleohydrographic changes could have occured. It can be concluded that the (paleo-)stress field have been changing since Upper Miocene up-to-day. These phenomena have caused the rapid morphological changes not only within the BL basin, but, within the entire European Alpine foreland.