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Geomorphometry of piping forms in Bieszczady Mts. (Eastern Carpathians) – similarities and differences in comparison with other landscape zones

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In the recent years piping has been increasingly recognized as a significant hillslope process in a wide range of climatic regions (Verachtert et al. 2011). As a process of mechanical removal of soil particles piping leads to the formation of subsurface channels, called pipes (Boucher 1990). Pipes are visible on the surface when a pipe roof collapses. In this paper the typology and the geomorphometry of piping forms in Bieszczady Mts. (Eastern Carpathians) are presented. Piping forms are developed in the silty slope covers formed from the flysch. The results of this study were prepared through the detailed geomorphological mapping of 586 forms and related piping features in four selected catchments. I identified subsurface forms (pipes), surface forms (closed depressions, sinkholes, discontinuous gullies, accumulation fan) and related piping features (pipe inlet and outlet). The morphometric parameters such as depth, length, width are presented. This study aims at a comparison of these forms with other landscape zones, such as loess-derived regions (e.g. in Belgium, Germany, Poland, China) and badlands (e.g. in Spain, Italy), where piping has been widely observed. Piping forms in Bieszczady Mts. are similar to the forms that occurred in loess-derived areas, such as Flemish Ardennes, Belgium (Verachtert et al. 2010) or Bergisches Land, Germany (Botschek et al. 2002). The average depth of pipes is similar, but the maximum depth is greater in loess-derived regions, where slope covers achieve a greater thickness than silty slope cover in the Carpathians. Moreover, the pipes in badlands also developed in the greater thickness covers and the geomorphometry of them is different. The type of materials determined the geomorphometry of forms. In addition, the accumulation piping forms are rarely identified. There are noticed only in the Bieszczady Mts. and in Lublin Highlands, Poland (Rodzik et al. 2009), whereas they provide the evidences of accumulation aspect of piping as a geomorphological process. It is worth to emphasize the similarities and differences among piping forms in different landscape zones, as well as underline both side of piping – erosion and accumulation. It is another proof of the geodiversity of landscape zones.

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