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Front page: LiDAR image of the Maros: the southern floodplain section is divided into lower and higher floodplain areas. On the northern floodplain the natural levee is dissected by a crevasse system, which drains the flood water towards the distal part of the floodplain.
Geo-artistic interpretation of these fluvial forms: redish colours refer to actively forming areas: the channel, the low floodplain and the crevasse-system. Green colours indicate the less active high floodplain areas. (© T. Kiss)

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S1

QUANTITATIVE ANALYSIS OF SMALL CATCHMENTS IN THE MECSEK MOUNTAINS USING FORMULAE AND GIS TOOLS

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Quantitative analysis of mountainous catchments is primarily based on geometric, hydro-geomorphologic and morphometric approaches, which have become faster and more accurate with the help of GIS tools recently (Strahler, 1957; Masoner & March, 2006). Today, these studies are internationally accepted and have been supplemented by field exploration of small watercourses (Kamykowska et al., 1999). The fundamental question in this study is how these quantitative (GIS-based) and semi-quantitative (field-based) methods can be applied to a geomorphic environmentof low mountains.

Previous studies have failed to address this issue because of the general morphological character of Hungary. The essence of our study is to apply the previously published methods in an integrated way into a low-mountain area in Hungary. The results were obtained by GIS analyses (ArcGIS and Arc Hydro), mathematical calculations and field protocols. Our research can provide a best practice for other hydromorphological studies of similar Hungarian landscapes.

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S1

MORPHOMETRIC ANALYSIS OF THE PODTATRANSKÁ KOTLINA BASIN AND ITS NEOTECTONIC INTERPRETATION

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The Podtatranská kotlina Basin and adjacent mountains belong to the most neotectonically active morphostructures of the Western Carpathians (Halouzka 1993; Halouzka et al 1999). More detailed morphostructures were delineated in the Neotectonic map of Slovakia in scale1: 500 000 (Maglay et al 1999), which was later partiallyspecified for the territory of the Liptovská kotlina Basin a part of the Podtatranská kotlina Basin (Vitovič and Minár 2018; Vitovič 2019).

The morphometric analysis of the Podtatranská kotlina Basin and adjacent mountains was carried out toidentifyamore precise neotectonic structure of the area.Within the morphometric analysis,the normalized stream length-gradient index (SLK), mountain front sinuosity (Smf), drainage basin asymmetry factor (AF), analysis of faceted slopes as well as object-based image analysis (OBIA) were applied.To quantify the intensity of vertical neotectonic activity, vertical dissection of georelief together with local maximum elevations were

investigated too. Moreover, in order to interpret the morphometric results within the neotectonics framework, the tectonic faults and morpholineaments were analysed as well.

Based on results of partial analysis, potential neotectonically active faults were delineated for the study area. The neotectonic blocks of different hierarchy levels limited by the faults were identified as well.

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S1

THERMAL AND MORPHOLOGICAL CHARACTERISTICS OF ROCK GLACIERS IN THE RILA AND PIRIN MOUNTAINS

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Rock glaciers are considered the most visible morphological expression of mountain permafrost occurence (Barsch, 1996). These outstanding landforms are widespread in the alpine environment of Rila and Pirin Mountains, but received limited attention in the scientific literature. Altough, they were previously reported sixty years ago (Glovina, 1959), scientific evidences concerning their genesis, evolution, morphological characteristics and present-day activity is sparse.

Based on field activity and analysis of remote sensing available data we inventoried 122 rock glaciers, accounting for 4.81 km^2.Most of the rock glaciers are tongue-shaped and occur betweeen 2100 and 2700 m. The mean elevation of the front is a valuable morphological proxy for the lower limit of discontinuous permafrost and lies at 2343 m, much higher than in Southern Carpathians, Tatra Mountains, Dinaric Alps or Pindus Mountains. Based on the analogy between present climate and rock glacier activity we were able to reconstruct their genesis and evolution since the Lateglacial and to interpret the evolution of discontinuous permafrost in the highest mountains of Bulgaria.

To gain insights into rock glaciers present-day activity we started systemathic measurements of their thermal characteristics, internal structure and kinematics. The thermal measurements were used to examine the near-surface energy exchange fluxesand if the microclimatic conditions at the rock glacier surface are suitable for permafrost preservation. Miniature thermistorswere scattered at the surface of rock glaciers and recorded temperature variations for two consecutive seasons (2016-2018). In addition, measurements of the temperature at the bottom of snow cover (BTS) were conducted in late winters and measurements of temperature of springs