International scientific conference of the Carpatho-Balkan-Dinaric Geomorphological Commission

Programme

Abstracts

Field trip guides

June 24-27, 2019
Szeged

Edited by:
Kiss, Tímea

Organised by:
Geomorphological Committee of the Hungarian Academy of Sciences
Department of Physical Geography and Geoinformatics, University of Szeged
Carpatho-Balkan-Dinaric Geomorphological Commission

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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Abstracts

S1

INTERPRETATION OF RESULTS OF PHYSICALLY-BASED MORPHOSTRUCTURAL SEGMENTATION OF THE WESTERN CARPATHIANS

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The physically-based land surface segmentation builds on the general geomorphological theory that is directly incorporated in the segmentation algorithm through input variables. The multiscale object-based land surface segmentation (Drăguţ& Eisank, 2011) adapted for the morphostructural segmentation (Bandura et al., 2017, 2018) was used for the segmentation of the Western Carpathians. Unit endogenous and exogenous geomorphic work (EnW, ExW) and relief brake force (RBF) were used in the following form as input variables:

$EnW = EES.g.\rho / 2;$ $ExW = (EES\text{-}Em).g.\rho / 2;$ $RBF = GAR.g / 4DS_{mean};$

where EES is envelope surface of maximum altitudes, g is gravitational acceleration, ρ is core rock density, Em is mean altitude, GAR is Glock's available relief and DS_{mean} is mean distance of points to the stream.

A closeness of resultant automatic segmentation to the traditional geomorphological division of the territory points to the interpretational value of results. Even the differences can by meaningfully interpreted as an alternative view on morphostructural division that point to important aspects of morphotectonic evolution. The physically based input variables can be used for typification of the territory, e.g. by originally derived index of steady state (Minár et al., 2018). Comparison with distribution of planation surfaces, geophysical and thermochronological data, elevation and age of river terraces and cave levels help to reveal mechanisms, stages and regional differences in neotectonic (postcollisional) development of the Western Carpathians.The hypothesisconnecting the idea ofdistributed delamination and convective removal of over-thickened lithosphere, Quaternary climatic changes and related isostatic response fitswell with segmentation results and supplementary data.

Acknowledgement: This work was supported by the Slovak Research and Development Agency under the contract No. APVV-15-0054 and by the Scientific Grant Agency of the Ministry of Education, science, research and sport of the Slovak Republic and the Slovak Academy of Sciences (VEGA) under the contract No. 1/0602/16.

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