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prof. Mgr. Natália Hudáčková, PhD.
RNDr. Ondrej Nemec, PhD.
Mgr. Andrej Ruman, PhD.
Editors

Environmental, Structural and Stratigraphical Evolution of the Western Carpathians

Abstract Book

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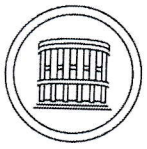

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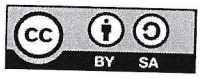

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Holocene high-energy event periodicity in the Tatra Mts. (Western Carpathians)

RADOVAN PIPÍK[1] and DUŠAN STAREK[2]

1 – Earth Science Institute, Slovak Academy of Sciences, Ďumbierska 1, 97411 Banská Bystrica, Slovakia

2 – Earth Science Institute, Slovak Academy of Sciences, Dúbravská cesta 9, 84005 Bratislava, Slovakia

The comprehensive paleolimnological investigation conducted on the southern (Slovak) side of the Tatra Mts. between 2016 and 2021 revealed organic sedimentation became dominant facies, dated back to 12.2 ka. Dark brown-grey gyttja can contain up to decimetre-thick intervals of lighter silty and sandy laminae. These intervals are also marked by a rapid increase in CT-number values and contain damaged chironomid head capsules. The silty (and rarely sandy) minerogenic laminae are interpreted as distal records of debris flows deposited during the final stage of flow, as turbulent flows initiated by subaquatic gravitational sorting of debris flow sediments, or as suspended loads of extreme fluvial inputs. However, only high-energy processes can transport clastic (mostly fine-grained) material to the distal part of the lake. These silty laminae concentrate to the periods of 10.6–7, 5.5–3.7, 2.8–2.3, and 0.6–0.3 cal kyr BP in the Nižné Temnosmrečinské pleso. The Popradské pleso reveals several periods of fine clastic input, with the most pronounced occurring during 8.9–7.6, 3.8–1.8, and 1.5–0.3 cal kyr BP. This comparison suggests that the distribution of laminae, as records of high-energy events, is specific to the valleys in which the lakes are located and the extreme floods are asynchronous events in individual valleys. However, if clastic input frequencies are compared among the valleys, it is possible to identify time periods of minimal and elevated activity of high-energy events. The high-energy events most often occurred during the dry periods in the Tatra Mts. with the dry conditions serving as preparatory factors for weathering and accumulation of clastics.

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