Geophysical Research Abstracts
Vol. 18, EGU2016-9975-1, 2016
EGU General Assembly 2016

Reconstructed glacier geometry and inferred Equilibrium Line Altitude changes during the Late Pleistocene deglaciation in the Retezat Mountains, Southern Carpathians

Balázs Madarász (1), Zsófia Ruszkiczay-Rüdiger (2), Zoltán Kern (2), and Petru Urdea (3)

(1) Hungarian Academy of Sciences, Research Centre for Astronomy and Earth Sciences, Geographical Institute, Budaörsi út 45., 1112 Budapest, Hungary (madarasz.balazs@csfk.mta.hu), (2) Hungarian Academy of Sciences, Research Centre for Astronomy and Earth Sciences, Institute for Geological and Geochemical Research, Budaörsi út 45., 1112 Budapest, Hungary (rrzsofi@geochem.hu, kern@geochem.hu), (3) Department of Geography, West University of Timisoara, Romania (petru.urdea@e-uvt.ro)

Quaternary glaciations had a major imprint on the landscape and topography of the Southern Carpathians. Their transitional position between continental and Mediterranean climate zones arouses special interest concerning the timing and pattern of glaciations in this area. Probably the Retezat Mts hosted the most extended glaciation during the Late Pleistocene within this range. The peak elevations of the study area reach 2500 m asl, and the most extended glaciers descended to 1040 m in the northern and to 1130 m on the southern valleys. Major cirque floors are typically situated at 2000-2100 m asl. Glacial landforms have been mapped in order to reconstruct the past ice bodies and the elevation shifts of the paleo equilibrium line altitudes (ELA) during several deglaciation phases of the Last Glacial Maximum (LGM) and Lateglacial in the Retezat Mts. On the basis of published 10Be exposure age data on the northern valleys of the study area, deglaciation of the Retezat Mts occurred at least in five phases between ∼21.0 ka and 13.5 ka [1].
Various methods (THAR, AAR, AABR) have been tested using a GIS tool to estimate the ELA of the reconstructed paleoglaciers [2] and paleo ELAs were calculated for each of the deglaciation phases. Preliminary estimates of regional LGM paleoELA employing the simplest THAR method (with a ratio of 0.5) ranged from ∼1670 m during the LGM to ∼2210 m for the smallest cirque glacier at 13.5 ka, respectively. The AAR and AABR methods provide somewhat higher ELAs for each phase. The obtained paleoELAs were compared to ELA reconstructions available from other Carpathian ranges and also to the Alps and Dinarides. Our data will contribute to a more accurate ELA distribution during the LGM, which may be indicative of the past state of the climate system (moisture gradient, circulation regimes).
Thanks to OTKA PD83610, PD104899; NKM-96/2014, NKM-31/2015; OMAA 90öu17; LP2012-27/2012.

References:
[1] Ruszkiczay-Rüdiger et al. 2016 Quat. Int. (in press) doi:10.1016/j.quaint.2015.10.085
[2] Pellitero et al. 2015 Computers & Geosciences 82: 55-62