

NOV 2014

**PAGES**  
PAST GLOBAL CHANGES

**cirques  
lakes**  
PN-II-RU-TE-2012-3-0386

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Late Pleistocene and Holocene climatic variability in the Carpathian-Balkan region. Abstracts volume



**Late Pleistocene and Holocene Climatic Variability  
in the Carpathian-Balkan Region**

ABSTRACTS VOLUME



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## Permafrost response to the post Little Ice Age climate variability in the Romanian Carpathians

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The geomorphological evidences along with the range of methods recently (since 2008) applied in the Romanian Carpathians indicate that most of the rock glaciers are relict or inactive in the present. Only a few cases of active or complex rock glaciers (active only across their upper parts) are supposed to exist in the highest granitic massifs of Southern Carpathians (Retezat and Parâng), but contemporary inactivation trends seem to take place as indicated by growth of vegetation (especially *Pinus mugo*) on their fronts. On the other hand, most of the inactive rock glaciers present distinct signs of activity in the recent past that followed the Little Ice Age colder period which in the Romanian Carpathians had its last maximum between 1820 and 1840 (Popa and Kern, 2008).

The present work aims at 1) finding the critical periods when the currently inactive rock glaciers stopped creeping by assessing the age of *Pinus mugo* installed on rock glaciers fronts from Retezat Massif through dendrogeomorphological investigations, 2) characterizing the alpine climate from the last 70 years based on temperature and precipitation data with a focus on aspects relevant for permafrost and 3) describing the thermal regime variations of the cold scree from Detunata Goală (Apuseni Mountains) based on dendrogeomorphological investigations. Old trees with ages greater than 200 years and very low tree rings widths were found in the area of the scree where a cold air discharge during summer was observed and permafrost cores were identified using thermal and geophysical methods. This chimney circulation is responsible for a great annual thermal anomaly of  $> 6$  °C which is characteristic to the basaltic cold screes. Additionally, we present the current creep rates of Judele rock glacier, one of the few with potential of being active from Romanian Carpathians, were assessed by three successive topographical surveys in 2012-2014 interval.