

Late Pleistocene preliminary glacial extent in Bucegi Massif, Southern Carpathians (Romania)

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The knowledge about the last glaciations from Romanian Carpathians experienced a surge in the late years regarding absolute age dating and identification of glacial features. The Southern Carpathians, which are the highest in Romania, aroused interest mainly in the western and central part and good connections have been established with other mountain ranges in Europe, but the eastern side where Bucegi Massif stands remained undated due to the apparent lack of trimline evidence and to the lithology which is composed mainly from conglomerates which are more difficult to be directly dated.

Cosmic ray exposure (CRE) dating and field mapping have been used and the age of some glacial deposits have been determined via ¹⁰Be and ³⁶Cl from conglomerates, for the first time in these mountains.

Based on samples taken from moraine deposits and erratic boulders, after being processed and measured at CEREGE laboratory (France), absolute ages have been determined for two valleys: Ialomița and Gaura, south and west oriented, respectively, thus indicating a correspondence with Late Pleistocene glacial advances, as well as local differences generated by cosmic ray inheritance. Moreover, based on the use of GlaRe toolbox (operates in ArcGis) we propose a first reconstruction of the glaciers from Last Glacial Maximum using the basal moraines position and the transversal profile of the valleys. This toolbox generates the ice thickness from the bed topography along a set flowline, applying the standard flow law for ice, and generates the 3D surface of the palaeoglacier using interpolation methods (Pellitero et al., 2016). Glacier equilibrium-line altitudes was determined using an automatic GIS tool developed by Pellitero et al. (2015) and uses the Accumulation Area Ratio, Area-Altitude Balance Ratio, and Area-Altitude methods.