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New surface exposure age data using cosmogenic radionuclides ^{10}Be and ^{14}C to constrain the age of the last deglaciation in the Retezat Mts, Southern Carpathians, Romania

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The presence of cosmogenic radionuclide concentrations inherited from previous exposure(s) of glacially transported boulders and moulded bedrock surfaces may hinder the determination of the surface exposure age (SED) of the last phase of (de)glaciation.

A previous study revealed that glacial landforms of the cirque area in the southern side of the Retezat Mountains (Southern Carpathians, Romania) hold significant amount inherited ^{10}Be ($t_{1/2}$=1.4 My), which was used for a tentative estimation of the amount of glacial erosion, assuming that the lowest ^{10}Be concentration was representative of the true age of deglaciation (Ruszkiczay-Rüdiger et al., 2021, Geomorphology 384, 107719).

In this study, a western valley, the Zlătuia-Dobrunu valley of the Retezat Mts was sampled for ^{10}Be SED. The novel data are in agreement with the previous datasets suggesting that the most extended glaciers belonged to the Last Glacial Maximum. However, the old apparent exposure durations based on ^{10}Be analysis of samples from the cirque area provided firm evidence for the presence of excessive abundances of cosmogenic ^{10}Be in this valley as well.

The use of the short-lived in situ produced ^{14}C ($t_{1/2}$= 5.7 ky) provides an independent age constraint for the timing of the last deglaciation, because all ^{14}C inventories that might be inherited from a previous exposure would have already been decayed. As a consequence, the ^{14}C concentrations are not biased by inheritance, thus i) enable the age determination of the landforms belonging to the last phases of deglaciation and ii) the ^{14}C exposure ages compared to the ^{10}Be data will allow an assessment of the inherited amount of ^{10}Be and thus a more precise determination of the amount of glacial erosion.

In this study the new ^{10}Be and ^{14}C SED ages will be presented together with the mapped glacial landforms, reconstructed paleoglaciers and their Equilibrium Line Altitudes.

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