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New data from Făgăraș and Retezat Massifs set the timeframe of the last glacial activity in Southern Carpathians during Younger Dryas and Early Holocene

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Past glaciations extent and chronology in the Romanian Carpathians have been disputed along most of the 20th century. Despite the recent studies presenting numerical age datings of the glacial deposits and erosion surfaces, the view on the latest glacial activity remained in debate due to results from Retezat Massif (one of the high and best studied massifs from Southern Carpathians), where authors found no evidences of Younger Dryas glaciers. In this context, we bring in the discussion new data from Retezat but even more from the Făgăraș Massif, which is the highest and largest massif from Southern Carpathians but less studied in relation to the Pleistocene glaciations with only a handful of numerical ages obtained so far. The new ¹⁰Be exposure ages collected from the highest moraines, fit the Younger Dryas - Early Holocene interval, in good agreement with European records, suggesting the glaciers reformation and advance during the Younger Dryas. It appears that some of the Younger Dryas glaciers survived in the first two millenia of the Early Holocene or reformed during Pre-Boreal Oscillation when cool and humid conditions have been present over Europe. Finally, we modeled the presence of Younger Dryas glaciers for the whole Făgăraș massif using the topographic and microclimatic characteristics of the glacial cirques which hosted new glaciers (proven by numerical ages) and found that ca 90 glaciers restricted to cirques formed during Younger Dryas in the Făgăraș massif. Samples were chemically processed at LN₂C at CEREGE, France and at RoAMS Laboratory - IFIN HH, Romania. Targets of purified BeO were prepared for AMS measurements and measured at ASTER, the French National AMS Facility (CEREGE, Aix en Provence).