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# 6<sup>TH</sup> INTERNATIONAL MAAR CONFERENCE - ABSTRACTS

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## Maar structures in Perșani Volcanic Field, SE Transylvania, Romania: A Revised Volcanological Study

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The Perșani Mountains' basaltic field is a NNE-SSW elongated area (ca.  $22 \times 8$  km) and consists of 21 monogenetic volcanic centers (cinder cones, tuff-rings, and maars) (Seghedi and Szakács, 1994). The eruptions took place in six episodes between 1220 and 683 ka (Seghedi et al., submitted). Most of the volcanoes are clustered along and at the intersection of faults, so it may be presumed that tectonics closely controls the space-time evolution of volcanic activity. The monogenetic volcanoes were rapidly constructed on hard basement formations represented mainly by Miocene rhyolitic tuffs and by Mesozoic sedimentary rocks. Most of them started with a phreatomagmatic explosive phase. The hydromagmatic processes resulted from the interaction of ascending magma with the aquifers hosted by older tuffs, sandstones, conglomerates, and limestone generating several maars and tuff-ring edifices. The Bârc volcano is the largest one and it was generated during the third episode (1060 ka). It is a 2.25 km wide tuff ring that evolved into a maar. The subsequent effusive phase filled the maar with a lava lake. Finally, the lavas breached the NE side of the tuff ring and flowed northward for ~1.5 km (Figure 1).

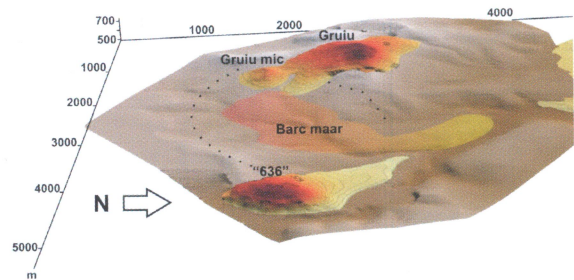


Figure 1. 3D view of Bârc maar generated in the third episode, showing the crater lava lake breaching the edifice toward N. The volcano is bordered by the Gruiu and Gruiu mic volcanoes (fourth episode) to the west and "636" volcano (fifth episode) to the east.



Figure 2. Base surge and fall-out phreatomagmatic deposits at the rim of Fântâna maar, including ejected limestones.

Fântâna maar volcano has also erupted in the third episode in a pure phreatomagmatic event (Figure 2). Based on the lithology of the ejected clasts, it suggests that the fuel-coolant interaction occurred at a depth of ca. 150 m. The two maars generated in the third episode expelled the largest volume of mantle xenoliths, including spinel lherzolites and (garnet) pyroxenites.

The other maar volcanoes, Dîlma West and Pietrele, erupted in the sixth episode (683 ka). Both maars were filled by scoria cones and by subsequent lava flows. Pietrele volcano has one lava flow that extends from a sill injection, while Dîlma West erupted three lava flows. There is a connection between the erupted volumes and the ages of maar structures: the largest volume of Bârc maar and the smallest Fântâna maar are recorded in the third episode and intermediate volume-maars (Dîlma West and Pietrele) in the sixth episode.

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