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U-Pb zircon geochronology from the Late Cretaceous calc-alkaline system in the Timok Magmatic Complex (TMC) basin of the Serbian Carpathians

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The Timok Magmatic Complex (TMC) represents part of the wider Late Cretaceous Apuseni-Banat-Timok-Srednogorie (ABTS) belt of calc-alkaline magmatics. The ABTS magmatic belt was formed due to the retreat and steepening of the NE-dipping Neotethys slab located beneath the Carpatho-Balkanides orogen of SE Europe [1]. The basin hosting the TMC, situated in the back-arc domain of the upper plate, was formed on the Getic Unit of the Serbian Carpathians, which belongs to the Dacia tectonic Mega-Unit with European continental affinity [2]. The opening of the TMC basin, associated with an extensional/transtensional regional tectonic regime, occurred since Cenomanian times. The subsequent Turonian to Santonian peak of the extension was characterized by the interplay between magmatic and sedimentary processes resulting in the emplacement of numerous (sub)volcanic bodies and mixed volcano-sedimentary deposits. In addition, the calc-alkaline system of the TMC basin was instrumental in generating world-class porphyry copper-gold deposits, which have been actively exploited in this region for more than a century [3].

However, high-resolution geochronology of (sub)volcanics in a large part of the basin is still missing. Within the scope of the TMCmod project, supported by the Science Fund of the Republic of Serbia (GRANT No TFC1389-YF/PROJECT No 7461), we conducted U-Pb zircon geochronological analyses at the key locations of this calc-alkaline magmatic system, which mainly consists of andesites and basaltic andesites. The new results yielded important inferences on the emplacement age and geochemical affinity of the several major (sub)volcanic bodies in the TMC basin.

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