

## **Spatial and temporal evolution of arc-like post-subduction magmas: Apuseni, Romania**

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In the Metaliferi Mountains, Romania, tellurium-rich porphyry and epithermal Cu-Au deposits are hosted in Neogene magmatic rocks emplaced along graben structures in an extensional regime generated by the rotation of the underlying crustal blocks [1]. The majority of rocks are andesitic, calc-alkaline and exhibit subduction-like features such as enrichments in LREE, LILE or Pb and negative Nb-Ta anomalies. Rocks with high Sr/Y values, named adakitic-like, are present throughout the region. The main phenocrysts are plagioclase, amphibole, clinopyroxene, biotite and quartz. Feldspars record a complex evolution of the magmas with multiple sieve zones or sieved cores with fresh rims. The current understanding is that magmatism was generated through the melting of subcontinental lithospheric mantle metasomatized during subduction in Mesozoic times [2]; however, melting of cumulates formed in previous magmatic events as a source for magmas cannot be ruled out.

New U-Pb zircon data obtained using LA-ICP-MS, represent emplacement ages and xenocrystic populations which have been used to decipher the spatial and temporal evolution of the Neogene magmas and their sources. Samples show emplacement ages between 12.9 and 8.2 Ma for the Neogene magmatism, younging towards the North-Eastern volcanic centres, consistent with previous dating. The xenocrystic populations differ between individual volcanic centres potentially due to their emplacement in crustal blocks with different geological histories. One notable difference is the lack of xenocrystic zircons or cores older than 700 Ma in the Southern parts of the Metaliferi Mountains. The Cretaceous and Jurassic magmatic events are poorly represented in the xenocrystic populations. The exception is the Uroi alkaline body, dated at 1.45 Ma, which contains an extensive population of Late Cretaceous-Early Paleogene (70–52 Ma) zircon xenocrysts.

[1] Rosu et al (2004) SBMP, [2] Harris (2013) EPSL 366, 122-136