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New approaches regarding the geodynamic constraints of Late Cretaceous magmatism in Carpathian area

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During the Meso-Cretaceous compressive tectonic event (marked by the subduction of the East European Platform under Gondwana, and the initiation of the creation of accretionary prism in front of the orogen) the absence of related magmatism, and implicitly, the lack of an "arc" is similar to that of the Alps (McCarthy et al., 2018). Afterward, in the Upper Cretaceous, the Carpathian area has evolved in an extensional geodynamic context, specific to post-collisional periods, marked by the appearance of sedimentary basins with complex evolution and Gosau type molasses (Schuller, 2004; Schuller et al., 2009). In connection to the above, or not, it has evolved a complex magmatism, from a compositional point of view and as manifestation, largely calc-alkaline, known in the geological literature as banatitic (von Cotta, 1864). Banatitic magmatism is the first such manifestation in the Carpathians, post-subduction and post-collision and the most reliable age data (using U-Pb on zircon and Re-Os on molybdenite methods) suggest a very narrow range of evolution (70.2 - 83.98 Ma, Nicolescu et al., 1999; Galhofer, 2015; 72.36 - 80.63 Ma, Ciobanu et al., 2002; Zimmerman et al., 2008), that is characteristic to short-lived magmatism. Comparatively, in Serbia (Bor-Madjanpek district), the same magmatism occurs between 86-84 Ma, in Bulgaria in the Srednogorie massif between 92-86 Ma and Rhodope massif at 67-70 Ma (von Quadt et al., 2007). The geodynamic models discussed for this type of magmatism suggest, almost all without exception, the existence of subductions that would have extended as activity from the Middle Cretaceous to the Paleogene. Or, the realities of the terrain show that this magmatism seals the mesocretacic compressive structures (napes), as Nicolescu et al. (1999) exposed for the first time in Banat region. The situation is similar in the Apuseni Mountains. From the presumption of the generation of subductions for this magmatism, the idea of an "L" form magmatic belt ("arc"), from the Apuseni Mountains to Bulgaria, was forced. If we look closely at the spatial distribution of intrusive and effusive bodies, aspect also revealed by gravimetry studies (Andrei et al. 1989), we observe that they occupy areas with specific geometries, linked to or close to the Gosau-type basins, but strictly controlled by strike-slip fractures, similar to those that have controlled the appearance of Gosau basins (Drew, 2006). The metallogenesis associated with this magmatism is represented by metalliferous accumulations of Fe, Cu, Pb, Zn, with Au, Ag and W, Mo, B, Mg, Te, Bi, Sb, with a great typological variety, spatially controlled by the same type of fractures. It is evident that the transpressive-transtensive regime worked throughout the entire range of magmatic and metallogenetic activity, controlling it. In Banat region, as well as in the Apuseni Mountains, the end of the magmatic activity ceases with mineralizing and/or bearing mineralization lamprophyres. Being so, probably the lamprophyres attend or announce the metallogenetic event.

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