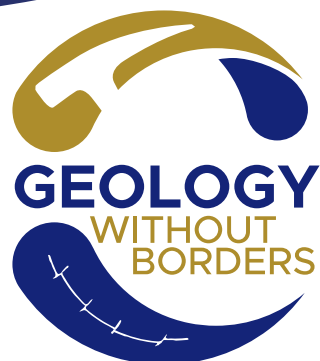




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ABSTRACT BOOK

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East Vardar Ophiolite from North Macedonia revised within the GECCOSPARK know-how exchange programme (KEP) project funded by the Central European Initiative (CEI)

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This contribution is part of a CEI-KEP project (Ref. No. 1206.006-19) titled “*Promoting geological, ecological and cultural heritage through sustainable development and creation of geo-parks*”. It includes the study of Mesozoic ophiolite rocks, which are interpreted as the remnants of the Vardar Tethys Ocean. The East Vardar ophiolites are composed of basic magmatic sequences (pillow basalts, sheeted dykes, and gabbros), associated with intermediate and acid magmatic intrusions having subduction-related affinity and locally bearing an adakitic signature (Božović et al., 2013; Boev et al., 2018). To give new insights on these ophiolites, new samples were collected from the Lipkovo and Demir Kapija localities, in the northern and southern part of North Macedonia, respectively.

Three groups of rocks are distinguished on the basis of whole-rock major and trace element composition and major element composition of clinopyroxene. Group 1 is characterized by tholeiitic basalts from Demir Kapija that exhibit slight enrichments in light-Rare Earth Element (L-REE) and slight negative Nb anomaly. These features are comparable with those of back-arc basin basalts. Groups 2 and 3 are represented by calc-alkaline rocks, showing typical subduction-related chemical affinity, as exemplified by N-MORB normalized spider diagrams showing typical Nb and Ta and, locally, P and Ti, negative anomalies along with Th-U positive anomalies. Group 2 rocks, which are from Demir Kapija, exhibit a weak adakitic affinity, as they are characterized by high LREE/HREE fractionation, high Sr/Y and La/Yb ratios.

Additional insights were provided by $\delta^{13}\text{C}$ and $\delta^{34}\text{S}$ analyses. Group 2 and 3 rocks show more pronounced negative $\delta^{13}\text{C}$ (-22‰ to -18‰) and positive $\delta^{34}\text{S}$ (+2.3‰ to +4.9‰) values compared to those of Group 1 rocks ($\delta^{13}\text{C}$: -16‰ to -10‰; $\delta^{34}\text{S}$: +0.7‰ to +2.4‰), suggesting that Group 2 and 3 rocks record comparatively higher metasomatic interaction of their mantle sources with slab-derived components.

On the whole, the results show that magmatic rocks from ophiolites of East Vardar in the North Macedonia display a widespread supra-subduction chemical signature, indicating the formation of these ophiolites in an arc - back-arc ensialic setting. The data provide information about the geological evolution and setting of this area, which should be disseminated using a didactic approach and simple concepts appealing for “non-experts”, emphasizing that such studies are crucial to understand a unique geological system, which has no analogues in the present.

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