



## **Lithochemochemistry and volcanostratigraphy of metabasites from the Moura Phyllonitic Complex (Ossa Morena Zone, SW Portugal)**

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The Moura Phyllonitic Complex (MPC) is a major geological feature of the Évora-Beja Domain (Ossa Morena Zone, SW Portugal), interpreted as a tectonic *mélange* that extends along the Montemor - Ficalho sector to the Sto. Aleixo da Restauração shear zone, overlaying the Relative Autochthone Iberian Terrain [1, 2, 3]. Generally, the MPC comprises several sericitic-chloritic and siliceous metasedimentary/volcanic formations in a sheared matrix that range from ante-Ordovician to lower Devonian ages [1, 2]. Frequent imbrications of basic suites with tholeiitic affinities are known within the MPC, namely obduction-related sequences and dismembered parautochthonous units, variably metamorphosed to lower-medium grade greenschist to amphibolite facies, e.g. the Alqueva, Moinho de Vilares and Ribeira de Odearce units [2, 3]. Several of these metabasites were sampled for major and trace element ICP-OES analysis (prepared with alkaline fusion, acid digestion and cation-exchange chromatography), in order to characterize their geochemical variability and attempt to correlate with other autochthonous volcanic rocks, thus inferring their geodynamic setting.

The metabasites express basic compositions with tholeiitic affinities and transitional features ( $\text{SiO}_2 = 43\text{--}52\text{wt}\%$ ;  $\text{Na}_2\text{O}+\text{K}_2\text{O} = 2.7\text{--}5.12\text{wt}\%$ ;  $\text{Mg}\# = 29\text{--}47$ ), and are divided in two groups according to their trace element content and chondrite-normalized REE patterns. The rocks from the first group are depleted in  $\text{TiO}_2$  ( $0.74\text{--}1.7\text{wt}\%$ ;  $\text{Ti}/\text{V} = 22\text{--}36$ ), have higher Zr/Hf ratio (26-87), and are slightly enriched in LREE ( $\text{La}_{\text{CN}}/\text{Lu}_{\text{CN}} = 1.4\text{--}2.2$ ;  $\text{La}_{\text{CN}}/\text{Sm}_{\text{CN}} = 1.5\text{--}2$ ;  $\text{La}_{\text{CN}}/\text{Yb}_{\text{CN}} = 1.5\text{--}2.3$ ), with negative  $\text{Eu}/\text{Eu}^*$  (0.88-0.92), while the second group contrasts with higher  $\text{TiO}_2$  content ( $1.69\text{--}2.1\text{wt}\%$ ;  $\text{Ti}/\text{V} 25\text{--}45$ ) and Zr/Hf ratio (18-42), and display a considerable enrichment in LREE ( $\text{La}_{\text{CN}}/\text{Lu}_{\text{CN}} = 2.8\text{--}3.7$ ;  $\text{La}_{\text{CN}}/\text{Sm}_{\text{CN}} = 1.6\text{--}2.2$ ;  $\text{La}_{\text{CN}}/\text{Yb}_{\text{CN}} = 2.7\text{--}3.8$ ), with little  $\text{Eu}/\text{Eu}^*$  (0.92-1.04),

All these multi-elemental variations suggest i) a transitional MOR- to within-plate eruptive environment, which is consistent with the lower Cambrian volcanism event recorded in several intrusions throughout the OMZ [e.g. 4], ii) both groups possibly developed from the same igneous event, though representative of different stages of the intrusion, and iii) an apparent stratigraphic correlation can be inferred to the Moinho de Vilares parautochthonous unit also found within the MPC.

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