

Occurrences of heavy minerals and REEs in the Pan-African formations of the Mounio Massif, southern extension of the Trans-Saharan Range (Gouré, East Niger)

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The Mounio Massif is located between the Air Massif in the North and the Benino-Nigerian Shield in the South, belonging to the Trans-Saharan Range (Fig. 1). It consists of neoproterozoic terrane (575 ± 12 Ma) dealing with metasedimentary rocks. These rocks are intruded during the Pan-African Orogeny, by calc-alkaline granitoids, then, in the Devonian, by an alkaline ring complex (Black and Liégeois, 1991). This complex, namely Gouré Complex, consists of volcanic terrane represented by rhyolites, cinerites, ignimbrites, breccias and tuffs intruded by plutonic bodies including microgranites, syenites and granites (Black and Liégeois, 1991).

Given to their setting context, the granites of the Mounio Massif could contain porphyry-copper-gold-molybdenum, base metals and rare earths deposits (PRDSM, 2013).

The objective of this study is to highlight the anomalies in heavy minerals and rare earth elements (REE) in the Mounio. The method used consisted of a petrostructural study of the outcrops, a systematic sampling of rocks and weathering zones, a microscopic study and a geochemical analysis.

This analysis shows that mineralization indices in heavy minerals (gold, cassiterite, manganese, Tungsten, tin) and in REE are mostly disseminated in the weathering zones. The bearing facies is the granite. This study is consistent with the work of PAMME (1997-2004) in the Mounio Massif which revealed gold, tin and manganese anomalies in aegyrine and hornblende granites and in granite sodium facies.

Key words: Pan-African mobile zone, Mounio Massif, heavy minerals, REE, anomalies.

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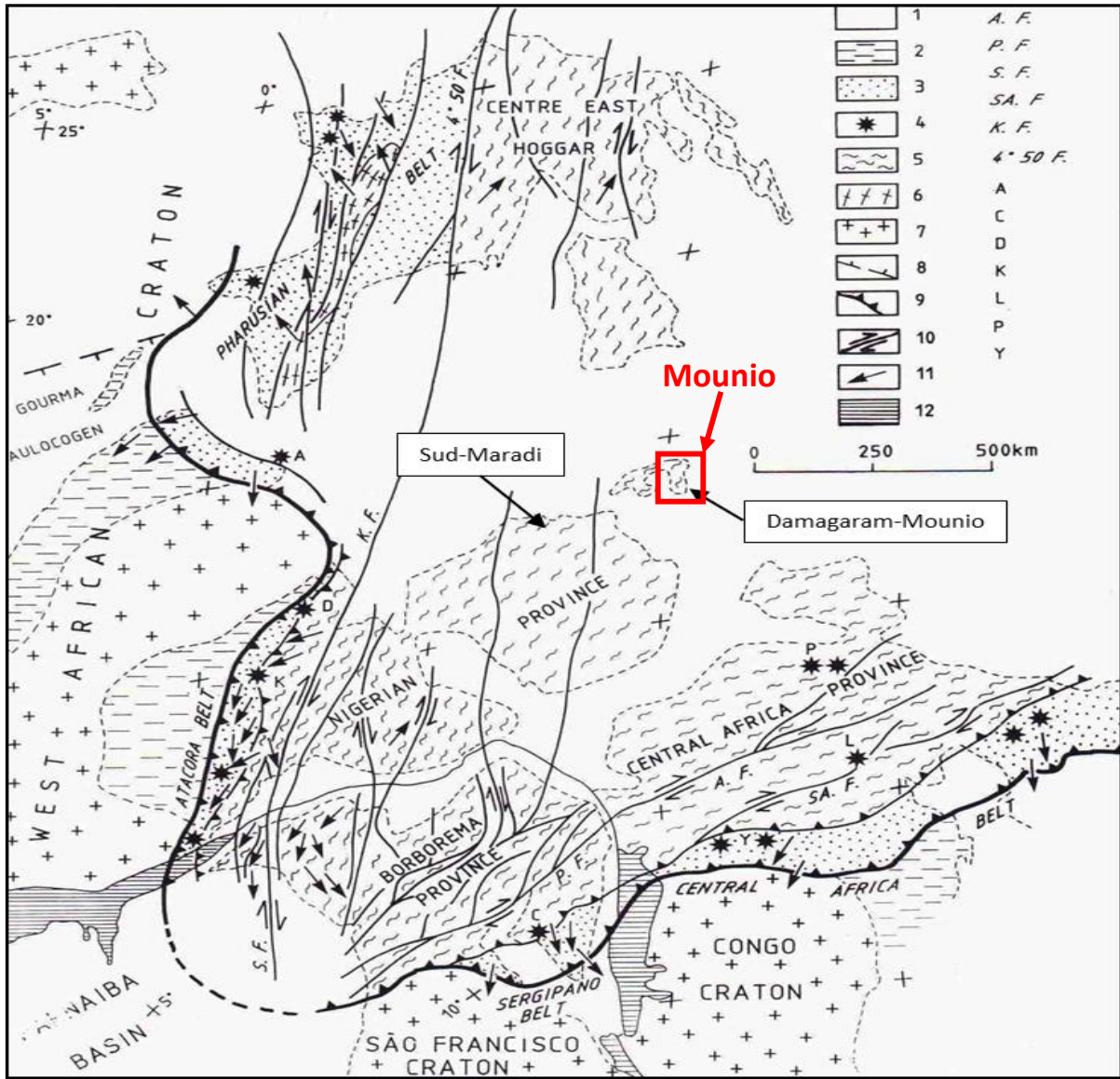


Fig. 1. The Mounio massif in his geodynamic Pan-African context (Castaing *et al.*, 1993).

1-Phanerozoic cover ; 2- Proterozoic cover ; 3- Pan-Africa volcano-sedimentary belts ; 4- Main mafic and ultramafic massifs highlighting the suture zone ; 5- Gneiss, metasediments, migmatites and mono- or polycyclicgranitoids ; 6- Ouzzal and Iforas Eburnean granulites ; 7- Cratons at 2 Ga ; 8- Aulacogene of Gourma ; 9- Major external thrusts ; 10- Main shear zones ; 11- Tectonic transport direction of nappes ; 12- Sea ; AF : Anaga-Adamaoua Fault; PF : Pernambuco Fault; SF : Sobral Fault; SAF : Sanaga Fault ; K.F : Kandi Fault ; A, C, D, K, L, P, Y : Metamafic complexes of Amalaoulaou , Canindé, Dérouvarou, Kabyé, Lom, Poli, Yaoundé.