

GEOLOGICAL EVOLUTION OF MAFIC AND ULTRAMAFIC ROCKS IN THE BARBACENA GREENSTONE  
BELT, NAZARENO REGION, MG

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The Nazareno area is located at the southern border of the São Francisco Craton and shows plutonic, volcanic and sedimentary rocks, of Archean to Mesoproterozoic age, reworked by later thermo-tectonic events. Two different groups of mafic and ultramafic rocks occur in this region. The first one is a komatiite-tholeiite sequence belonging to the Barbacena Greenstone Belt, and the second one consists of differentiated mafic-ultramafic bodies intruded in this volcanic-sedimentary sequence.

The rocks of the volcanic-sedimentary sequence are distributed in two irregular NE-SW belts, named Nazareno and Rio das Mortes belts, surrounded by intrusive Paleoproterozoic granitoids. The Al-depleted komatiites ( $ADK, Al_2O_3/TiO_2 < 20$ ) present Ti, Zr and Sc ratios different from the chondritic patterns and are HREE depleted. They are interpreted as the result of plume related magmatism generated at depths of 450 to 600 km. The tholeiite succession presents transitional characteristic between E-MORB and N-MORB, similar to basalts of oceanic plateau, and is best interpreted as the result of a mantle plume related intra-oceanic plate.

Four different mafic-ultramafic layered bodies are distributed in the volcanic sedimentary belts with different proportions of mafic (metagabbros and amphibolites) and ultramafic (metaperidotite and metapiroxenite) components. In spite of the metamorphism and deformation, the original textural features such as cumulate textures and magmatic layering, indicative of

differentiated magmatic plutonic protholiths, are still preserved in some of them. The REE patterns of these bodies are similar to the classical layered complex suggesting an anorogenic setting.

The region was affected by at least three thermo-tectonic events,  $D_{n-1}$ ,  $D_n$  e  $D_{n+1}$ . The oldest one, probably of Archean age, developed at lower amphibolite conditions is recognizable in the volcanic sedimentary rocks. Pervasive tectonic features recorded also in the volcanic sucession and in the mafic-ultramafic layered bodies, characterize the main deformation event  $D_n$ . This event occurs in lower to middle amphibolite facies and represents the first register of the Transamazonian Event in the region. The  $D_{n+1}$  phase is printed in all rocks of the study area and developed at upper greenschist facies, representing either the second manifestation of the Transamazonian Event or an event related to the Brasiliano Orogenic Cycle.

The geological evolution proposed for these rocks involves the deposition of volcano-sedimentary succession in an oceanic plateau setting; collage and accretion of oceanic plateau at a continental margin, represented by the Campo Belo Complex; intrusion of mafic-ultramafic layered bodies in an anorogenic setting; deformation and metamorphism of these sequences during the Transamazonian event, followed by the intrusion of several granitoid bodies and diorites associated to magmatism of the Mineiro Belt. Probably, the reactivation of the oldest structures in greenschist facies occurred during the Brasiliano Event. The age of the beginning of this evolution is still poorly known. However, the minimum age is marked by the Cassiterite Trondhjemite body ( $2.162 \pm 10$  Ma) intrusive in the mafic-ultramafic bodies and their host rocks.