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MAFIC-ULTRAMAFIC SEQUENCES OF THE ARAÇUAÍ FOLD BELT, BRAZIL: RECORDS OF CONTINENTAL RIFT AND NEOPROTEROZOIC OCEAN

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Abstract

Two mafic-ultramafic sequences on the Araçuaí fold belt, located in the State of Minas Gerais, eastern Brazil, are described. They trend NNE, parallel to the regional foliation of the enclosing high-to medium grade metamorphic rocks. These sequences show tectonic contacts with the country rocks, generally marked by expressive thrust faults, and stratigraphic inversions occur at several places. The eastern one, the Ipanema sequence, encompassed by Juiz de Fora Complex (Paleoproterozoic high grade terrane), comprises dominantly layered massifs. Their lithologies, from the base to the top, comprise dunites, harzburgites, pyroxenites, gabbros and anorthosites. Cataclastic contact zones with chlorite schists, talc-chlorite schists, and tremolite-talc-chlorite schists are frequent. Cumulatic texture with olivine cumulus and orthopyroxene intercumulus are common in both, outcrops and drill holes samples. These massifs was emplaced at ca. 1.1 Ga. (zircon U-Pb and Sm-Nd whole-rock isochronic ages). The Ipanema sequence is the first solid evidence of the lower section of the continental rift in the Araçuaí belt. In fact, mafic dykes and the bimodal magmatism related to that continental rift have yielded ages from ca. 1.1 Ga to 0.9 Ga. Conversely, the western sequence, called Ribeirão da Folha sequence, comprises a metamorphosed oceanic rock assemblage: composed of mafic rocks, chemical sediments and deep-sea pelites, associated with tectonic slabs of metaultramafic rocks. These mafic rocks show geochemical signature comparable to modern oceanic basalts and similar to other Neoproterozoic oceanic remnants. The mafic and ultramafic rocks yielded whole-rock isochronic Sm-Nd ages around 0.8 Ga. ($\epsilon_{Nd} = +4$ to $+6$), indicating magmatic crystallization, and T_{dm} ages of ca. 1.1 - 1.0 Ga. The Ribeirão da Folha sequence records the oceanic lithosphere of the Araçuaí belt. In conclusion, the described mafic-ultramafic sequences are records of the continental rifting stage (Ipanema sequence) to the spreading phase (Ribeirão da Folha sequence) in the Araçuaí fold belt.

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