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ABSTRACTS
BOOK

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LA-ICP-MS U-Pb zircon ages and geochemical-isotopic highlights of Mongaguá granitic rocks, Coastal Terrane, Southeastern Brazil

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The Mongaguá domain (MD) represents the Coastal Terrane in the State of São Paulo, characterized by gneisses and migmates of Itariri complex and Areado and Ribeirão do Óleo granitic associations. The Itariri complex (IC) comprises the oldest rocks of the MD, being composed of tonalitic-to-syenogranitic orthogneiss and granodiorite to monzogranite. LA-ICP-MS zircon analysis of the biotite tonalite orthogneiss yielded U-Pb ages around 745 Ma, with 790 Ma cores. These rocks represent the basement of the MD, with a peraluminous medium-to high-K calc-alkaline signature. Zircon crystals exhibit both nuclei and rims with oscillatory zoning representing successive zircon growths in a magmatic environment with the younger values indicating the age of the rock. The crustal influence is characterized by ϵ Nd of about -10 and initial $^{87}\text{Sr}/^{86}\text{Sr}$ of 0.720, unlike those of any other granite in the area.

In the coastal area, between the cities of Mongaguá and Itanhaém, orthogneiss and migmatites of the IC with monzogranitic to syenogranitic composition occurs. These rocks are transitional from meta- to per-aluminous and have high-K to shoshonitic signatures. U-Pb (TIMS) ages range between 612 and 618 Ma. $T_{\text{DM}}\text{Nd}$ ages are around 1.8 Ga, with ϵ Nd of about -7 and initial $^{87}\text{Sr}/^{86}\text{Sr}$ of 0.708 indicating a crustal contribution to their origin. Additionally, the syn-collisional peraluminous biotite monzogranites with high-K calc-alkaline signature yield LA-ICP-MS U-Pb zircon ages of 603 Ma. Zircon inheritance of 2.2, 1.8, 1.2 and 1.1 Ga is found. $T_{\text{DM}}\text{Nd}$ ages of 2.25 Ga, ϵ Nd of about -14 and initial $^{87}\text{Sr}/^{86}\text{Sr}$ of 0.718 characterize these granites.

The igneous overgrowths on zircons in granitic rocks of the Itariri complex suggest that these rocks crystallized in more than one magmatic pulse. Despite the 2.2 and 1.1 Ga zircon inheritance found in the IC granitoids, rocks with these ages are not observed in Mogaguá domain. Whole-rock Sr and Nd isotopic data and the presence of zircons with inherited cores confirm the various crustal contributions in the genesis of the igneous rocks of the Itariri complex.

The intrusive rocks in the Itariri complex is represented by the Areado and Ribeirão do Óleo granites that comprise a calc-alkaline, high-K metaluminous to peraluminous magmatism. The Areado granite has Paleoproterozoic zircon inheritance and a crystallization age of 576 ± 12 Ma. The 561 ± 8 Ma Ribeirão de Óleo granite, distinct from the others in the area, shows Paleoproterozoic (2.2 Ga) and Neoproterozoic (690 and 611 Ma) zircon cores. Initial $^{87}\text{Sr}/^{86}\text{Sr}$ is 0.715 in the Areado granite and around 0.708 in the Ribeirão do Óleo granite. The Nd isotopic data indicate for both granites gives T_{DM} of 1.7 Ga and ϵ Nd of about -10.

As is typical of other studies in southeastern Brazil, the Itariri, Areado and Ribeirão do Óleo granites have geochemical characteristics which point to the involvement of different crustal sources during the generation of the magmas.