Isotopic Evidence of ca 60 Ma Long Cryogenian to Ediacaran High-K Collisional Magmatism in the Pernambuco - Alagoas Domain, Borborema Province, NE Brazil

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The Pernambuco Alagoas (PEAL) domain shows the major occurrence of granitic batholiths of the Borborema Province, NE Brazil, with Archean to Neoproterozoic range of T_{DM} model ages, giving clues on the role of granites during the Brasiliano Orogeny. SHRIMP U/Pb zircon data for nine granitic intrusions of the PEAL domain, emplaced from early- to post-collision stages, divide the studied granitoids into three groups: 1) granitoids with crystallization ages ca 650-635 Ma, 2) granitoids with crystallization ages 610-625 Ma and 3) granitoids with ages of ca. 590 Ma. The intrusions of group 1 and 2, show Nd T_{DM} model ages ranging from 1.2 to 1.5 Ga, while the granitoids from group 3, have Nd T_{DM} model ages ranging from 1.7 to 2.2 Ga. The studied granitoids are in part high-K, calc-alkaline, shoshonitic, ultrapotassic and in part transitional high-K calc-alkaline to alkaline. The volcanic arc signatures associated with the Paleoproterozoic T_{DM} model ages are interpreted as inherited from the source rocks. The oldest ages and higher Nd T_{DM} model ages are recorded from granitoids intruded in the southern part of the PEAL domain. Zircon oxygen isotopic data in some of the studied plutons, together with the available Nd isotopic data suggest that the Brasiliano orogeny strongly reworked older crust. High-K granitoids with crystallization ages older than 630 Ma have not been recorded in the Sergipano and Transversal Zone domains, suggesting differences in the crustal evolution of these two areas during the early stage of the Brasiliano orogeny, when compared to the PEAL domain.

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