

PETROGENESIS AND TECTONIC SIGNIFICANCE OF TWO BIMODAL VOLCANIC STAGES FROM THE EDIACARAN CAMPO ALEGRE-CORUPÁ BASIN (BRAZIL): RECORD OF METACRATONIZATION DURING THE CONSOLIDATION OF WESTERN GONDWANA

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The Ediacaran Campo Alegre-Corupá Basin in South Brazil developed in two stages, the passive rift *Basin Stage* (~605-590 Ma) and the post-collisional *Caldera Stage* (~583-577 Ma), respectively. Volcanic rocks from the Basin Stage show a bimodal compositional spectrum, with dominant basalt and subordinate silicic rocks. The basaltic rocks are transitional to mildly alkaline, exhibiting Ocean Island Basalt-like trace element enrichment patterns with depletion in Nb and Ta, however, and Sr-Nd isotopic signatures suggesting that they were derived from low degrees (~5%) of partial melting of an enriched lithospheric mantle source. Silicic rocks are transitional to mildly alkaline trachydacites and minor rhyolites, with trace element compositions typical of A₂-type granitoids, produced by fractional crystallization at the Moho of the coeval basalts. Volcanic rocks from the Caldera Stage are constituted mainly by alkaline trachytes and rhyolites. They occur primarily as pyroclastic sequences with minor effusive lava flows, exhibiting trace element compositions typical of A₂-type granitoids. They are associated with minor effusive Island Arc Basalt-like transitional to mildly alkaline basalts. The basalts result from a relatively greater degree (~15%) of partial melting of enriched lithospheric-mantle sources during lithospheric root collapse of a cratonic terrane. The silicic rocks are also derived from the coeval basalts by fractional crystallization at the Moho; however, an additional stage of differentiation in the upper crust is required to explain their compositions. Results from this study suggest a connection between the silicic volcanic rocks from the Caldera Stage and the plutonic bodies from the nearby A-type Graciosa Province. Lu-Hf isotopes from detrital zircon suggest an Andean arc-type tectonic setting during the Paleoproterozoic (~2,185 Ma) history of the Luis Alves Terrane (LAT) basement. This tectonic setting was responsible for the arc-like signatures of the intraplate lithospheric-derived rocks of the Campo Alegre-Corupá volcanic sequences. Crustal-like Sr-Nd-Hf isotopic characteristics result from a protracted isotope evolution of their mantle sources. Each tectono-magmatic stage results from a different extensional setting, which has implications for the metacratonization of the LAT.

Apoio: FAPESP: 2015/03737-0

Palavras-chave: Volcanism, Metacratonization, Gondwana