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· IX SIMPÓSIO DE VULCANISMO E AMBIENTES ASSOCIADOS
· I CONFERÊNCIA DE GEOLOGIA E MINERAÇÃO DO MERCOSUL
· II WORKSHOP ARMAZENAMENTO DE CO_2 POR MINERALIZAÇÃO EM BASALTOS
· I EXPOGEOMINE

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Petrology, geochronology, and provinciality of magma plumbing systems in northern Paraná Province

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The Transminas, Pirenópolis, and Vitória dike swarms are composed of tholeiitic microgabbros hosted in the northern Paraná-Etendeka Magmatic Province (PEMP). The Transminas dikes form two distinct lineaments crossing Minas Gerais: Az-125 (1,100 km long) and Az-170 (800 km long). The Pirenópolis dikes consist of two NNW-oriented subswarms, each approximately 50 km long, in Goiás. In Espírito Santo, the Vitória dikes form a 260 km long NW-SE oriented swarm. Most of these intrusions are high-Ti types (TiO_2 > 3.0 wt.%), except for the Vitória dikes and one subswarm in Pirenópolis (TiO_2 < 2.0 wt.%). The tholeiitic compositions are enriched in large ion lithophile elements, exhibiting negative Nb(-Ta) anomalies (more pronounced in the low-Ti types). In high-Ti dikes, isotopic data shows $^{87}Sr/^{86}Sr_{(i)}$ and εNd values ranging from 0.71157 to 0.70549 and from -0.9 to -6.0, respectively. The Pirenópolis low-Ti dikes show $^{87}Sr/^{86}Sr_{(i)}$ values ranging from 0.70651 to 0.70615, with εNd values ranging from +0.24 to +1.03. The Pb isotopic data for the high-Ti dikes are more homogeneous ($^{206}Pb/^{204}Pb$ 18.40-18.12; $^{207}Pb/^{204}Pb$ 15.64-15.54; $^{208}Pb/^{204}Pb$ 38.44-38.76). The low-Ti Pirenópolis dikes are slightly more radiogenic in Pb (e.g., $^{206}Pb/^{204}Pb$ = 18.61-18.5). For the Vitória dikes, the $^{87}Sr/^{86}Sr_{(i)}$ values range from 0.70994 to 0.70575, and $\varepsilon Nd_{(i)}$ varies from -0.95 to -11.4, with heterogeneous Pb isotopic values ($^{206}Pb/^{204}Pb$ 18.2-16.7; $^{207}Pb/^{204}Pb$ 15.6-15.4; $^{208}Pb/^{204}Pb$ 38.9-37.6). The K-Ar analysis yielded Cretaceous ages for the Transminas (~136.3-130.1 Ma), Pirenópolis (~138.3 Ma), and Vitória (~133.5 Ma) swarms. However, Pirenópolis low-Ti dikes yielded a Triassic age (~202.3 Ma). Zircon populations of the Vitória dikes yielded Proterozoic/Paleozoic dates (U-Pb; LA-ICP-MS), while high-Ti dikes yielded Early Cretaceous dates. The $^{40}Ar/^{39}Ar$ results support the K-Ar ages. Thus some degree of crustal contamination occurred in Vitória dikes. The new results confirm that the Transminas, Pirenópolis, and Vitória dikes are part of the PEMP. Similar magmas have been reported in the Equatorial Atlantic Magmatic Province (EQUAMP). Therefore, both LIPs can be considered as components of a greater single LIP associated with the evolution of the South Atlantic Rift: the South Atlantic Magmatic Province. In contrast, the low-Ti tholeiites from Pirenópolis show affinities with the Central Atlantic Magmatic Province (CAMP), thereby extending its domain into SE South America.

Keywords: Early Cretaceous, Continental breakup, PEMP, CAMP, South Atlantic

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