THE ALKALINE OLIGOCENE-MIOCENE CABUGI MAGMATISM, NE BRAZIL

Zorano Sérgio Souza (1); Paulo Marco de Paula Vasconcelos (2); Barry Kohn (3); Kurt Michael Knesel (4); Hènio Santana Souza (5); Francisco Valdir Silveira (6).
(1) UFRN; (2) THE UNIVERSITY OF QUEENSLAND; (3) UNIVERSITY OF MELBOURNE; (4) THE UNIVERSITY OF QUEENSLAND; (5) THE UNIVERSITY OF QUEENSLAND; (6) CPRM.

Resumo: Cenozoic continental basaltic magmatism in NE Brazil is usually associated with oil-bearing basin and hotspot track during the westward migration of the South America plate. It is thus an important time marker for this period. The integration of geochronological with geochemical data allows us to characterize this magmatism during the Paleogene - Neogene transition since magma generation in the upper mantle until magma emplacement, cooling, uplift and denudation. Three geographically distinct volcanic bodies (Cabugi Peak, Serra Aguda and Serra Preta of Cerro Corá) gave very similar $^{40}Ar/^{39}Ar$ emplacement age of about 25 Ma (25.6±0.9 to 24.8±0.5 Ma, 25.9±1.1 Ma e 24.9±0.8 Ma, respectively). This is within the error of apatite (U-Th)/He and fission track dates of microgabbro dykes crosscutting earlier basalts in the Cabugi Peak (CP), indicating that less than 0.5 Ma after emplacement at high crustal level, they were uplifted and eroded, exposing the deepest portion of the volcanic buildings. The CP is the most prominent Cenozoic volcanic occurrence in continental Brazil. It occurs at the northern part of the Macau-Queimadas Alignement, and it is an impressive geomorphologic marker given its conical shape and significant elevation (590 m above sea level and about 440 m higher than the adjacent country rocks). The maximum depth of emplacement of the CP (300-500 m), estimated from (U-Th)/He and apatite fission track results, allows us to evaluate the volume of material eroded since the Paleogene - Neogene transition, and, consequently, the volcanic contribution to the offshore deposition during the middle to late Cenozoic. In the total alkali versus silica diagram, most analyses plot in the basanite / tephrite field, except some samples from the CP and microgabbros from the Serra Preta plug, which plot in the basalt field. The rocks are silica undersaturated and incompatible-enriched alkali basalts and basanites, which evolved by low pressure crystallization mechanism, with oxide, trace element and Nd isotope composition suggesting derivation from 1-5% partial melting of a metasomatically enriched peridotite.

Palavras-chave: cabugi magmatism; oligocene; ar/ar dating.