

MULTIPLE LATE-NEOPROTEROZOIC INTRUSIONS IN THE SERIDÓ DOMAIN, NE BRAZIL

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RESUMO: The Seridó Domain, North of the transcurrent Patos Lineament, is composed of an Archean (the São José de Campestre Massif) to Paleoproterozoic (the Caicó Complex) crystalline basement, late-Neoproterozoic metasediments (the Seridó Group) and voluminous granitoid intrusions. Few precise available U-Pb dates suggest an average age of 580-575 Ma for the main event of pluton intrusion, emplaced synchronously with high temperature shear zones, and late to post-tectonic granite pegmatites in the 530-500 Ma range. In this paper, we report laser ablation dating of four sites: i) an alkaline, aegirine-augite-bearing syenogranite from the Japi pluton (90 km SW of Natal, ES487), with emplacement controlled by a NW-SE sinistral shear zone; ii) a subalkaline olivine-bearing leuconorite, also affected by NE-SW dextral shear zone (70 km SW of Natal, LG130); iii) a syntectonically emplaced, decimeter-thick vertical granite dyke intrusive into micaschists of the Seridó Group, strongly folded by the regional D3 deformation event (130 km West of Natal, ES818B); iv) late-tectonic, medium-grained, pink granites, representing the Flores stock (180 km West of Natal) and a N-S directed dyke (70 km West of Natal, ES586), both showing no evidence of ductile deformation. Zircon U-Pb dating and trace element analyses were conducted synchronously by LA-ICP-MS at the State Key Laboratory of Geological Processes and Mineral Resources, China University of Geosciences, Wuhan (China). Sample ES487 presents 11 out of 14 zircons plotting very close to the lower intercept (LI), giving 597 \pm 4 Ma (MSWD=1.2); the other three zircons have corroded cores plotting close to the upper interception (UI) with 3233 \pm 130 Ma (MSWD=26). Sample LG130 have two zircon populations; they plotted close to the concordia, the older group with 630 \pm 7 Ma (8 points, MSWD=1.3, core of corroded igneous zircons) and the younger one with 574 \pm 5 Ma (7 points, MSW=0.95); the two populations averaging 600 \pm 17 Ma (MSWD=18). Zircons from sample ES818B are smaller, frequently with corroded cores, eighteen grains plotting along a discordia, six zircons marking the UI at 2263 \pm 38 Ma, the LI at 566 \pm 120 Ma (MSW=5.3). Sample ES586 give similar results for 12 zircons, which are distributed along a discordia with UI and LI of 2204 \pm 37 Ma and 561 \pm 97 Ma (MSWD=5), respectively. Finally, eight out of fifteen zircons from Flores granite are very close to the concordia, giving an age of 545 \pm 11 Ma (MSWD=4.6). The results presented here point out to at least four well defined late-Neoproterozoic plutonic events North of the Patos Lineament; an older one at 597 \pm 4 Ma (the strongly deformed Japi granite), and a younger one at 545 \pm 11 Ma (the Flores site, with no sign of ductile deformation). In between them, we have the main 580-575 Ma calc-alkaline intrusions described in the literature, and the granite dykes (ES818B and ES586), with intrusion age at 566-561 Ma. The results presented here indicate that both Archean (e.g. the alkaline Japi granite) and Paleoproterozoic (e.g. samples ES818B and ES576) orthogneisses acted as sources and/or contaminants for the Neoproterozoic granitoid magmas. It is also argued the existence of several discrete heating events along late-Neoproterozoic times in northeastern Brazil.

PALAVRAS-CHAVE: NEOPROTEROZÓICO; NE DO BRASIL; GEOCRONOLOGIA.