

## NEW U-Pb GEOCHRONOLOGICAL DATA FOR ARCHEAN GRANITOIDS FROM THE SÃO JOSÉ DE CAMPESTRE MASSIF, NE BRAZIL

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**RESUMO:** The São José de Campestre Massif (SJCM) is one of the oldest Archean terrain of the South American Platform. A number of papers in the literature show a sequence of plutonic bodies apparently predominating over metasedimentary units, the plutons having zircon U-Pb intrusion ages of 3.41, 3.26, 3.18, 3.03, and 2.66 Ga (Dantas et al., 2004, Precambrian Research 130, 113-137). In this paper, we report new laser ablation ICP-MS dating of two bodies: the one referred above to the 3.26 Ga pluton (Serra Caiada monzogranite, sample ES450, 80 km East of Natal, Brazil) and the other one not dated so far (Serra Branca hill, São Pedro do Potengi village, sample ES387, 120 km East of Natal, Brazil). 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. The Serra Caiada body is a biotite-bearing medium-grained, equigranular, hololeucocratic monzogranite gneiss, displaying a weak flat lying foliation. It is a relatively evolved alkali-rich granite ( $\text{SiO}_2=74\text{wt.}\%$ ,  $\text{Mg\#}=15$ ,  $\text{Na}_2\text{O}+\text{K}_2\text{O}=7.2$ ), in which sodium predominates over potassium ( $\text{Na}_2\text{O}/\text{K}_2\text{O}=2.6$ ). Zircons range in size from 50-150  $\mu\text{m}$  wide and 100-500  $\mu\text{m}$  long, they usually have igneous-like zoning, sometimes with a fine, discontinuous recrystallized rim. Laser ablation data show concordant zircons with  $3350\pm 27$  Ma (MSWD=16), with a lower interception at  $1183\pm 130$  Ma. The Serra Branca pluton is a biotite-(hornblende)-bearing, medium-grained, slightly inequigranular granite to granodiorite gneiss. It shows a flat lying foliation affected by discrete vertical high-temperature shear zones tentatively related to late-Neoproterozoic reactivation. It is a moderately evolved alkali-rich granite ( $\text{SiO}_2=68.5\text{wt.}\%$ ,  $\text{Mg\#}=41$ ,  $\text{Na}_2\text{O}+\text{K}_2\text{O}=7.2$ ) with  $\text{Na}_2\text{O}/\text{K}_2\text{O}=1.5$ . Zircons are smaller than the ones found in the Serra Caiada granite. They range in size from 30-100  $\mu\text{m}$  wide and 90-450  $\mu\text{m}$  long, they also have igneous-like zoning, sometimes with a fine, sinuous, discontinuous recrystallized rim. Laser ablation data show concordant zircons with  $3120\pm 22$  Ma (MSWD=6.9) and a lower intercept at  $609\pm 130$  Ma. The geochronological results presented here point out to a more precise age of the Serra Caiada pluton (3.35 Ga) and a new magmatic event at 3.12 Ga, the Serra Branca site. This may led to several (at least 6) discrete events of crust formation from 3.40 to 2.70 Ga and should be taken in account in any model of evolution of the SJCM. Paleoproterozoic and Meso- to Neoproterozoic tectonometamorphic events apparently did not modify the geological history of the Archean nucleus. Hence, the SJCM is a good candidate to study mantle and crust contributions leading to the formation of continental crust during Meso- and Neoarchean times.

**PALAVRAS-CHAVE:** ARQUEANO; NE DO BRASIL; GEOCRONOLOGIA.