

GOIÁS GREENSTONE BELTS: ARCHEAN OR PALEOPROTEROZOIC EVENTS?

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RESUMO: The northern portion of the Goiás Archean block consists of three allochthonous, greenschist facies greenstone belts (Crixás, Guarinos and Pilar de Goiás) separated by orthogneisses of 2.9 to 2.7 Ga. They consist of lower volcanic (komatiites and basalts) and upper metasedimentary sequences. The volcanic rocks of Crixás yielding an isochronic Sm-Nd and whole-rock Pb-Pb ages of $2,825 \pm 98$ Ma and $2,728 \pm 140$ Ma, respectively (Arndt et al. 1989), and a Sm-Nd age of 3.00 ± 0.07 Ga (Fortes et al. 2003). The sedimentary section of Crixás comprises carbonaceous shales in gradational contact with graywacke turbidites, intruded by a mafic dyke swarm. In Guarinos, the sequence begins with basalt-derived turbidites (São Patricinho Formation) followed by an iron formation (Aimbé Formation) that grades into carbonaceous shales (Cabaçal Formation), which is laterally interdigitated with graywackes (Mata Preta Formation). In Pilar de Goiás, the sedimentary section is a nappe with a shelf sequence of sandstones, marls and dolomites (Boqueirão Formation) intruded by thrust-fault controlled albite-granite sills, and is overthrust by graywackes (Serra do Moinho Formation). The volcanic and sedimentary sections of the three greenstone belts have been interpreted as a continuum depositional sequence and attributed to the Archean. However, the youngest detrital zircon grains from graywacke samples of Crixás yielded U-Pb ages in the range between $2,209 \pm 24$ Ma and $2,222 \pm 30$ Ma. In Guarinos, the youngest zircon grains from the basalt-derived turbidites of the São Patricinho Formation, the BIF of the Aimbé Formation and of the graywackes of the Mata Preta Formation yielded ages of $2,180 \pm 30$ Ma, $2,232 \pm 36$ Ma and $2,176 \pm 11$ Ma, respectively. In Pilar de Goiás, whole-rock Sm-Nd data from the calcsilicate sequence yielded an isochronic age of $2,189 \pm 36$ Ma, and the U-Pb age of the youngest zircon grains of the overridden graywackes is $2,178 \pm 19$ Ma. These data indicate that the maximum depositional age of the sedimentary sequences of the three greenstone is Paleoproterozoic (Rhyacian) and not Archean as previously interpreted, but are older than the $2,145 \pm 12$ Ma U/Pb SHRIMP zircon age of the granitic sills that intrude the Pilar de Goiás calcsilicate rocks and the $2,170 \pm 17$ Ma U-Pb age of mafic dykes of Crixás (Jost et al. 2010). We suggest that the sedimentary package of the three greenstone belts are coeval, represent different, but coeval paleogeographic settings, adjacent to a rising dominantly Rhyacian mountain range in Crixás and Guarinos and a shelf in Pilar de Goiás, onto an Archean crust. These data raise the question whether the underlying metavolcanic rocks are in effect Archean. References Arndt N. et al. 1989. Contributions to Mineralogy and Petrology, 101:187-197. Fortes P.T.F.O et al. 2003. Journal of South American Earth Sciences 16:503-512 Queiroz, C.L. 2000. Tese de Doutorado, Ig/UnB, 209 p. Jost et al. 2010. Ore Geology Reviews 37 (2010) 127-139

PALAVRAS-CHAVE: GREENSTONE BELTS; GOIÁS; IDADE DE SEDIMENTAÇÃO.