

U-Pb, Lu-Hf and fission track in zircon of the basement orthogneisses of the Araguaia belt, Brazil

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The Araguaia belt (AB) is 1200 km long orogen limited to the west by the Amazonian craton. It was formed as a result of the Neoproterozoic collage of West Gondwana, and Archean and Paleoproterozoic basement inliers crop out in the core of dome-like structures [1,2]. U-Pb and Lu-Hf isotope data (LA-MC-ICPMS) and fission track data were obtained in zircon of basement orthogneisses. U-Pb dating identified Archean magmatic episodes at ~ 2.92 Ga and ~ 2.86 Ga. The Paleoproterozoic magmatic event took place at ~1.86 Ga.

The younger Archean (2.86 Ga) and Paleoproterozoic orthogneisses gave crustal Hf model age (T_{DM}^C) varying between 2.99 and 3.19 Ga. $\epsilon Hf_{(2.86Ga)}$ values are mainly positive (+3,19 to - 0,37) for the Archean gneiss, while the values of $\epsilon Hf_{(1.86Ga)}$ are negative (-12,74 to -15,75) for the Paleoproterozoic rocks. Partial melting of this Mesoproterozoic crust, recently extracted from the mantle, generated the igneous protolith of the younger Archean gneiss. The Paleoproterozoic rocks formed by partial melting of the Archean gneisses.

Fission track data permitted to identify two age populations around 190-210 Ma and 480-520 Ma. The older population is related to the exhumation of the AB and may record the final steps of West Gondwana assemblage. The younger fission track ages revealed a crustal heating, attributed here to the mafic magmatism associated with the breakup of Pangea. This magmatic event has been recognized in different regions of the South American platform and considered as an important source of heat for hydrocarbon generation in some Paleozoic intracratonic basins [3].

[1] Moura, C.A.V. & Gaudette H.E. (1999) *Basement Tectonics* 13, 155-178. Moura, C.A.V. et al. (2008) *Geological Society, London, Special Publications* 294, 173-196. [3] Wanderley Filho et al. (2006) *Bol. Geoc. Petrobras* 14, 177-184.