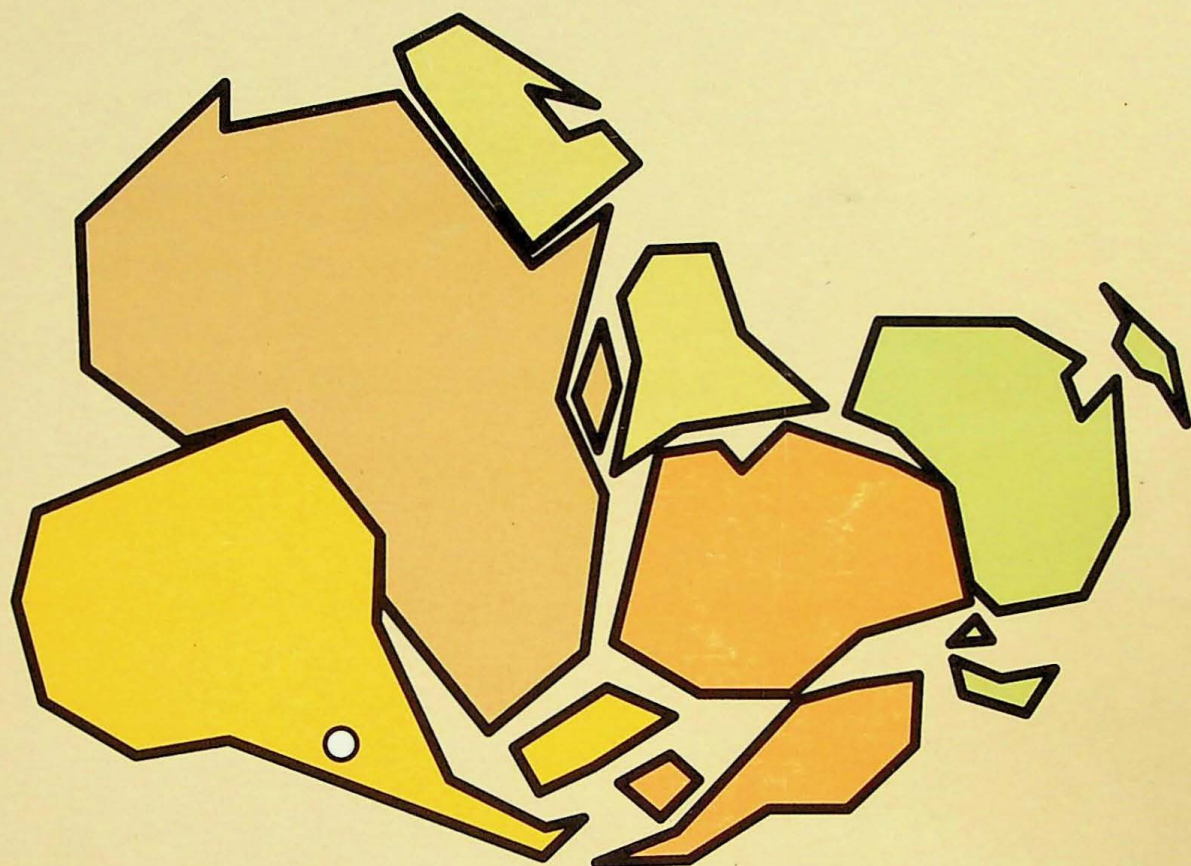


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ABSTRACTS

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U–Pb and ^{40}Ar – ^{39}Ar dating of the Jacutinga shear zone: exhumation and cooling of the Ribeira Belt, SE Brazil

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The southern margin of the São Francisco Craton is a zone of tectonic interference between the Brasília belt and the relatively younger Ribeira belt. U–Pb monazite and ^{40}Ar – ^{39}Ar age determinations carried out in migmatized paragneisses and late-stage pegmatites in the Socorro-Guaxupé Nappe System of the southern Brasília belt reveal the cooling histories and the timing of tectonic overprint, unraveling the final stages of the Brasiliano Orogeny in SE Brazil. Additional U–Pb monazite data show that the final phase of migmatization peaked between ca. 613 ± 1 and 607 ± 3 Ma ago. The ^{40}Ar – ^{39}Ar biotite and muscovite apparent ages indicate that the northern high-grade core (Guaxupé Domain) of the nappe system was uplifted and cooled through the 350°C isotherm between 599 ± 1 and 587 ± 1 Ma ago. In contrast, south of the Jacutinga shear zone, the nappe system within the Socorro Domain yields broader and younger spectra of ^{40}Ar – ^{39}Ar biotite ages: i) 580–560 Ma, ii) 545–535 Ma and iii) 530–510 Ma. This heterogeneous age pattern points to a progressive regional cooling of the crust, during exhumation of the southern Jacutinga shear zone (Hackspacher et al., submitted), and associated with the Ribeira Belt transpressional tectonics. Ebert (1971) considered the Jacutinga shear zone as the main limit between Araxaides and Paraibides, the equivalent terms to the current terminology of Brasília and Ribeira belts.

Small northeast/southwest, tectonically aligned basins with continental sedimentation between 570 and 540 Ma occur along the Jacutinga shear zone, near Eleutério-MG, and may also correlate with that exhumation process. The association of different small basins with similar character suggests a previous continuous basin (Teixeira and Gaucher, 2001) in a pull-apart environment (Teixeira and Petri, 1993). Zanardo and Oliveira (1990) suggest a southeastern provenance, based on the following inferences: i) fluvial sedimentation with pebbles of sediment in greenschist facies, probably from the São Roque Group, infer a higher physiography, for the provenance, toward the East; ii) formation of the basin was related to extensional tectonics, and iii) geochronological database supports a late amalgamation of the eastern Ribeira Belt relative to the Brasília belt. Considering this tectonic point of view, we believe that the Jacutinga shear zone constrains the western tectonic boundary of the Ribeira belt at 510 Ma ago, probably representing thermal exhumation in a rift setting. Finally some younger ^{40}Ar – ^{39}Ar mineral apparent ages between 510 ± 2 and 491 ± 1 Ma, distributed south of the Jacutinga shear zone, may be associated with the final uplift and cooling of the Ribeira belt.

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