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**TÍTULO: NEOPROTEROZOIC BACK-ARC BASIN IN SOUTHEASTERN BRAZIL: HIGH GRADE COSTEIRO COMPLEX, RIBEIRA FOLD BELT.**

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Geochronological, petrographic and lithochemical data have been used to characterize the crustal evolution and the thermochronology of the Costeiro Complex (central part of Neoproterozoic Ribeira Belt) in the southeastern Brazil. The Ribeira Belt system was active during the later stages of Brasiliano (Pan-African) orogeny and includes Archean, Paleoproterozoic and Mesoproterozoic rocks, reworked between 700-470 Ma, during the amalgamation of the Gondwana Supercontinent. The Costeiro Complex, is composed of para-derived rocks on the east and ortho-derived rocks on the west, which are organized in a ductile shear zone forming a positive flower structure, whose axis runs ENE-WSW. Mafic rocks (ortho-amphibolites) mainly occur within the axial zone of the regional structure and constitute (boudinaged) tabular intrusions into the predominant kinzigitic gneisses. The amphibolite igneous protoliths have been dated at 580 Ma (U-Pb SHRIMP) and display a range of basaltic compositions that preserve major and trace element geochemical signatures similar to those of continental tholeiites elsewhere.

Following the maximum orogenic compressive shortening in the Costeiro Complex, continental collision processes evolved into directional (predominantly dextral) shear movements with the development of the transpressive flower structures; associated tectonothermal activity followed a clockwise metamorphic P-T-time path that reach peak conditions (~ 800 °C at 5,5 kb) at 570 ± 10 Ma (U-Pb SHRIMP dating on metamorphic zircon overgrowths). Detailed (multi-system: U/Pb-zircon, Sm-Nd, Rb-Sr, K-Ar) thermochronological studies indicate that the Costeiro Complex crustal segment sustained relatively high heat flux between 580 Ma and 450 Ma, consistent with very slow cooling rates (~ 3 °C/Ma) determined for that period. Transpressional lithospheric delamination, that probably reflected the initial stages of (post-collision) gravitational recovering, induced asthenospheric upwelling and continental basaltic magmatism contemporaneous with high-grade metamorphic conditions in the area. The resulting transient tensional tectonics suggest that the tholeiitic basaltic magmatism in the Costeiro Complex may have occurred within (incipient) back-arc type sedimentary basins (filled with source rocks differentiated from the mantle between the Paleoproterozoic and Neoproterozoic) over a continental crust under a dominant compressive stress. After this transitional period (570 - 480 Ma), thermochronological data indicates rapid increasing cooling rates, related to uplift and generalized orogenic collapse. The penecontemporaneity and localization of the orogenic uplift, as well as the development of the Neoproterozoic-Eopaleozoic molassic basins followed by the sedimentary sequences of the Paraná Basin suggest that these geological processes are closely related.

The distribution of amphibolitic bodies along the axis of the Costeiro Complex flower structure, as well as the positioning of the Mesozoic magmatism in the area, imparts special significance to this structure, providing evidence for recurrent geologic events due to strong tectonic inheritance of an older master structure.