The Paraíba do Sul shear belt, SE Brazil

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The SE bound of the Brazilian territory exhibits an elongate pattern of fault network (1600 km long) running parallel to its coastline. The Paraíba do Sul river has nearly 150km of its course (060°-240°) controlled by vertical, anastomotic and 4 km thick, mylonitic lenses cutting through rocks of early Proterozoic age that exhibit Trans-Amazonico orogenic cycle ages (2.07 Ga) and were reworked during the 0.62 Ga Braziliano orogeny. The regional rock assemblage comprise migmatites, ortho and paragneisses. A sequence of granulites, charnockites and meta-enderbites exhibit retrogressive metamorphism to upper amphibolite facies. Intrusions of syn-kinematic granitic plutons in bends are clearly observed. Shape fabric analysis reveals prominent highly oblate s-tectonites with very low values of Flinn's k. A conspicuous and subhorizontal stretching direction lineation, which coupled with kinematic indicators (porphyroclasts of feldspars, asymmetry of contemporary folds and boudin-trails) are clearly indicative of stretching in the horizontal direction. Quartz c-axis crystallographic fabric from ribbons in mylonites of different deformation intensities, show type I crossed girdles and type II single girdles with distinct dextral symmetry. Evidences of vertical stretching (parallel to the mylonitic foliation) were also observed as boudin-trails calcsilicates and mafic rocks and from the boudinage of the mylonitic foliation. A model of transpression coupled with the right lateral movements of blocks, in a positive flower structure model, could well account for the observed flattening structures and vertical movements within the mylonitic rocks of this shear belt.