DEFORMATION REGIME VARIATIONS IN THE CENTRAL PLUTONIC UNIT OF THE ARAÇUAÍ BELT: INSIGHTS FROM STRUCTURAL AND MAGNETIC FABRIC ANALYSES

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ABSTRACT: The central plutonic unit of the Neoproterozoic Araçuaí Belt comprises syn-collisional bodies emplaced during successive magmatic events in metasedimentary rocks that deformed coherently due to the parallelism between the fabric of the plutons and country rock. Microstructural observations support that the deformation on the plutonic bodies occurred in the magmatic to sub-magmatic state, while the host rocks were submitted to solid-state deformation. Field observations and the AMS fabrics obtained in the plutonic bodies and host metasediments allowed us to individualize four different structural regions. Region 1 is characterized by an orogen-parallel foliation gently dipping eastward bearing a predominantly horizontal lineation to the east (transitioning to the Central Plutonic unit) and a down-dip lineation to the west (in the Mylonitic unit). This region includes the transition from the Western Mylonitic Unit and the Central Plutonic Unit, marked by westward thrust tectonics. Transitioning from eastern portion of region 1 to region 2 in the Central Plutonic Unit, horizontal lineations associated with steeply dipping to vertical foliation planes predominate, suggesting a transpression tectonic regime. Fabric type of region 3 is mostly marked by gently dipping westward NS-trending foliation associated with shallow plunging lineations that frequently shifts to sub-vertical, interpreted also as a transpression-induced strain partitioning. The structural region 4 is represented by a flat-lying foliation, occasionally showing a concentration of gently dipping NE and NW-trending foliation planes bearing a mostly NS-trending orogen-parallel lineation, indicating horizontal flow parallel to the orogen. Magnetic mineralogy investigation suggests biotite as the main carrier of the magnetic susceptibility in the metasediments and São Vitor Tonalite, and ferromagnetic minerals in the other plutonic bodies (Guarataia, Caladão, and Padre Paraíso plutons). The composite observed fabric of the studied rocks results from the interplay of belt-normal thrusting and subsidiary belt-parallel transcurrent flow, induced by horizontal, orogen-normal shortening resulting from the convergence between the São Francisco and Congo Cratons. We hypothesize that this complex flow field represented by the variability of the tectonic fabrics at the scale of the studied area results from the combination of convergence and gravity-driven tectonics, influenced by the contribution of the high-temperature gradient and the low cooling rate that is described in this segment of the orogen.

KEYWORDS: Anisotropy of magnetic susceptibility; Araçuaí Belt