Tectonic evolution of the Alfenas Granulite Belt – SE Brazil

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Alfenas Granulite Belt represents a typical granulite to granulite-transitional-to-amphibolite Precambrian terrain. Lithologies include acid to basic granulites, granitic gneisses with biotite and/or amphibole, quartzites, calc-silicate gneisses, marbles and kinzigitic gneisses, migmatizated at varied intensities. The rocks present a pervasive low angle foliation striking WNW-ESE dipping 20° to 40° to SSW bearing a NW-SE stretching lineation. Asymmetric fabric and shear sense indicators point tectonic transport towards NW. This framework is associated to the continental collision of São Paulo Block towards North to Northwest overthrusting the São Francisco Plate that built up the Alfenas Granulite Belt by uplift of the lower crust. This deformation in a quasi-frontal ramp originated the Alterosa Paleosuture Zone, bearing fragments of an ophiolite sequence and magmatic arc along its traces. Towards North the foliation reaches steep to vertical dips accompanied by rotation of the stretching lineation until an EW subhorizontal position. This geometry results from the superposed EW left-lateral transcurrent deformation of the Campo do Meio Shear Belt in a late lateral ramp. Brittle tectonics are marked by cataclastic rocks along several fault planes associated to greenschists facies of Late Proterozoic. Late deformation may be recognised elsewhere on sedimentary covers, pointing to fault reactivation during Cenozoic times.

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