

ARCHEAN CRUSTAL EVOLUTION OF THE SOUTHERN SÃO FRANCISCO CRATON REVIEWED

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The Southern São Francisco Craton contains a number of ancient granite-greenstone associations and medium- to high grade rocks (TTG type) encompassing migmatites which collectively address an isotopic record of sialic crust from ca. 3.8 to 2.5 Ga. We present an integrated interpretation based on new and compiled U-Pb ages and Nd-Sr-Pb isotope constraints, and trace element geochemistry, providing inferences for the Archean geodynamic processes through time and space. In addition, U-Pb detrital zircon dating of both the Rio das Velhas and Minas Supergroups is merged to infer main Archean sources as landmarks of the protracted, polycyclic history. Considering the geologic framework and ages, two crustal segments (Mesoarchean; Neoarchean) can be distinguished, although there is indirect isotopic evidence of Paleoarchean protholiths given by a small number of Pb inherited ages and some Sm-Nd T_{DM} ages. The Mesoarchean remnant (Campo Belo and Santa Bárbara metamorphic complexes) originated through juvenile accretion episodes (3.21-3.20 Ga; 3.0-2.90 Ga), herein termed the Campo Belo orogeny. Some occurrences of ancient greenstone belts within the Proterozoic framework marginal to the Craton suggest a larger extent of the Mesoarchean core. The Neoarchean segment, formed during the so-called Rio das Velhas orogeny, comprises two tectonic-magmatic episodes. The early episode (2.79-2.75 Ga), marking vigorous crustal growth by juvenile accretion, originated the granite-greenstone terrain comprised by the Belo Horizonte and Bonfim gneissic complexes and the coeval Rio das Velhas Supergroup. In contrast, the latest episode (2.75-2.69 Ga) included development of tholeiitic to calc-alkaline magmatism, high grade metamorphism having the fingerprint of polyphase deformation and sub-arc crustal anatexis, highlighted by mafic-ultramafic layered suites and the Passa Tempo granulitic complex - now exposed as roots of a continental collision that eventually assembled the landmass. This stage also generated granitic plutons and mafic dikes between 2.66 and 2.55 Ga, as post-tectonic to anorogenic activity.