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EVIDENCE FOR PALEOPROTEROZOIC CONTINENTAL CRUST GENERATION EVENTS AT 2.15 AND 2.08 GA IN THE BASEMENT OF THE SOUTHERN BRASÍLIA OROGEN, SE BRAZIL.

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Juvenile crust additions from the mantle can provide important clues about crust generation processes and continental crustal growth. Juvenile rocks generated near the Archean-Proterozoic boundary are of particular interest as this period marks important changes in the crustal growth processes. In this contribution, Paleoproterozoic juvenile rocks of the Pouso Alegre Complex in the basement of the Neoproterozoic southern Brasília Orogen are investigated by a combination of field relationships, petrography, U-Pb geochronology, Nd-Hf isotopes and whole-rock geochemistry. The Pouso Alegre Complex comprises mainly metatexitic tonalitic to granodioritic orthogneisses, with metamafic lenses and boudins. Compositional layering is mostly parallel to the main foliation and is interpreted as a result of reorientation and parallelization of original igneous cross-cutting relationships during later deformation and foliation development. A coarse-grained porphyroclastic granite body is recognized in the northern portion of the study area.

New U-Pb zircon LA-ICP-MS data of eleven samples divide into two main crystallization age groups at 2078.9 ± 6.5 Ma and 2146.7 ± 6.7 Ma (weighted averages for the groups). Older zircon inheritance is almost completely absent. Whole-rock Nd data of fourteen samples show juvenile signatures with T_{DM} ages between 2.16 and 2.37 Ga associated to positive $\epsilon Nd_{(t)}$ values up to +2.85. Zircon Hf LA-ICP-MS data of three analyzed samples are in good agreement with the Nd whole-rock data and all analyzed spots yield positive $\epsilon Hf_{(t)}$ values from +1.87 to +8.66. The Nd and Hf isotopic data together with the absence of inheritance of older zircons are strong evidence of the juvenile character of the Pouso Alegre Complex. The whole-rock geochemical data show arc-related signatures mostly with continental arc affinities. An active continental margin or an evolved accreted oceanic arc are favored as the tectonic setting of the Pouso Alegre Complex because of predominance of felsic rock types. The Pouso Alegre Complex is therefore the southernmost and youngest recognized part of an arc complex emplaced at the southern edge of the São Francisco paleo-continent during the Paleoproterozoic. This was completely reworked by the Neoproterozoic collisional event related to the southern Brasília Orogen. The cratonic counterpart of this arc complex is the Mineiro Belt at the southern portion of the São Francisco craton. The Pouso Alegre Complex and the juvenile suites of the Mineiro belt represent a major continental crust generation event at the southern edge of the São Francisco paleo-continent during the Paleoproterozoic between 2.35 and 2.08 Ga. This study supports the importance of the recognition of reworked juvenile rocks to better constrain models of continental crust generation and preservation.