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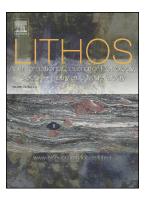
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ACCEPTED MANUSCRIPT

Isotopic constraints on contamination processes in the Tonian Goiás Stratiform Complex

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Abstract

The Tonian Goiás Stratiform Complex (TGSC, Goiás, central Brazil), is one of the largest maficultramafic layered complexes in the world, emplaced during the geotectonic events that led to the Gondwana accretion. In this study, we present trace elements and in-situ U/Pb - Lu-Hf analyses of zircons and ⁸⁷Sr/⁸⁶Sr ratios of plagioclases from anorthosites and gabbros of the TGSC. Although formed by three isolated bodies (Cana Brava, Niquelândia and Barro Alto), and characterized by a Lower and an Upper Sequence (LS and US), our new U/Pb zircon data confirm recent geochemical, geochronological, and structural evidences that the TGSC has originated from a single intrusive body in the Neoproterozoic.

New Hf and Sr isotope ratios construe a complex contamination history for the TGSC, with different geochemical signatures in the two sequences. The low Hf and high Sr isotope ratios of the Lower Sequence (ε Hf(t) from -4.2 down to -27.5; 87 Sr/ 86 Sr = 0.706605-0.729226), suggest the presence of a crustal component and are consistent with contamination from meta-pelitic and calc-silicate rocks found as xenoliths within the Sequence. The more radiogenic Hf isotope ratios and low Sr isotope composition of the Upper Sequence (ε Hf(t) from 11.3 down to -8.4; 87 Sr/ 86 Sr = 0.702368-0.702452), suggest a contamination from mantle-derived metabasalts in agreement with

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