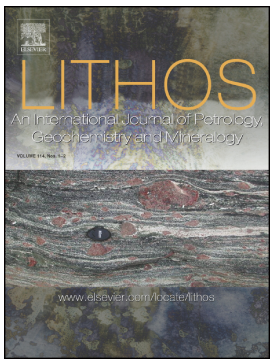

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PII: S0024-4937(18)30129-4
DOI: doi:10.1016/j.lithos.2018.04.008
Reference: LITHOS 4624

To appear in:

Received date: 5 December 2017
Accepted date: 12 April 2018

Please cite this article as: Tommaso Giovanardi, Maurizio Mazzucchelli, Federico Lugli, Vicente A.V. Girardi, Ciro T. Correia, Colombo C.G. Tassinari, Anna Cipriani , Isotopic constraints on contamination processes in the Tonian Goiás Stratiform Complex. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Lithos(2018), doi:10.1016/j.lithos.2018.04.008

Isotopic constraints on contamination processes in the Tonian Goiás Stratiform Complex

Tommaso Giovanardi[1,2], Maurizio Mazzucchelli[2], Federico Lugli[2], Vicente A.V. Girardi[1], Ciro T. Correia[1], Colombo C.G. Tassinari[1], Anna Cipriani[2,3].

1 Instituto de Geociências, Universidade de São Paulo, Rua do Lago 562, Cidade Universitária, B-05508-900, São Paulo, Brasil; c.a.: maurizio.mazzucchelli@unimore.it

2 Dipartimento di Scienze Chimiche e Geologiche, Università di Modena e Reggio Emilia, Via Campi 103, I-41125 Modena, Italy;

3 Lamont Doherty Earth Observatory of Columbia University, Palisades, New York, 10964, USA.

Abstract

The Tonian Goiás Stratiform Complex (TGSC, Goiás, central Brazil), is one of the largest mafic-ultramafic 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 $^{87}Sr/^{86}Sr$ 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 (εHf(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 (εHf(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