## Accepted Manuscript

Coexistence of alkaline-carbonatite complexes and high-MgO CFB in the Paranà-Etendeka province: Insights on plume-lithosphere interactions in the Gondwana realm

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PII: S0024-4937(17)30376-6

DOI: doi:10.1016/j.lithos.2017.11.001

Reference: LITHOS 4462

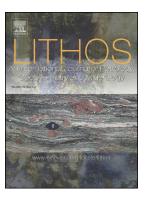
To appear in:

Received date: 9 June 2017

Accepted date: 2 November 2017

Please cite this article as: Claudio Natali, Luigi Beccaluva, Gianluca Bianchini, Franca Siena, Coexistence of alkaline-carbonatite complexes and high-MgO CFB in the Paranà-Etendeka province: Insights on plume-lithosphere interactions in the Gondwana realm. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Lithos(2017), doi:10.1016/j.lithos.2017.11.001

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Coexistence of alkaline-carbonatite complexes and high-MgO CFB in the

Paranà-Etendeka province: Insights on plume-lithosphere interactions in the

Gondwana realm

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Abstract

A careful review of petrological and geochemical data on the Paranà-Etendeka igneous province is

reported, with particular attention being devoted to the relationships between high-MgO CFB

(tholeiitic basalts-picrites) and nearly coeval alkaline-carbonatite complexes linked to the same

extensional tectonics on a regional scale. At 135-130 Ma, the tectonomagmatic activity was focused

in Etendeka, the centre of the restored province, and characterised by an exclusive occurrence of the

hottest and deepest high-MgO CFB (potential temperature  $T_p$  up to 1590°C and pressure up to 5

GPa) possessing the same Sr-Nd-Pb isotopic composition of the "Gough" geochemical component,

a marker of the initial Tristan plume activity. Etendeka high-MgO CFB thus represent the most

genuine proxies of sublithospheric melts generated at the plume axis and are relatively unaffected

by lithospheric contamination. Nearly coeval (133-128 Ma) alkaline-carbonatite complexes cluster

around the extensional structures of the Ponta Grossa Arch (e.g., Jacupiranga and Juquia in Brazil)

and the Damara Belt (e.g., Erongo, Okurusu, Okenyenya and Paresis in Namibia), both of which

intersect the early track of the south Atlantic opening. Compared to high-MgO CFB, alkaline

magmas display distinctive isotopic signatures and an incompatible element distribution consistent

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