

Simultaneous, geochemically identical intraplate magmatism on conjugate South Atlantic margins

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Intraplate magmatism is enigmatic, with mantle plumes often invoked to explain distributed occurrences globally. Intraplate magmatic occurrences are geochemically diverse and have a diversity of forms from large igneous provinces to isolated seamounts. In this study we investigate Cenozoic volcanism generated on conjugate margins of the South Atlantic in Northeast Brazil and Cameroon. We present new ⁴⁰Ar/³⁹Ar ages together with major-, trace-element and isotopic data for samples from NE Brazil and compare them to published data from the Cameroon volcanic line [1,2]. New ⁴⁰Ar/³⁹Ar ages on groundmass and phenocryst phases from the continental sectors of Mecejana and the Macau-Queimadas volcanic lineament (MQVL) in NE Brazil range from 12.39 ± 0.24 Ma to 35.03 ± 0.28 Ma. These ages overlap in range with some of the oldest dated samples from Fernando de Noronha (12.5 ± 0.1 Ma) [3]. These ages suggest synchronous activity in these volcanic regions.

Magmatism along the continental sector of the Cameroon Line was essentially continuous from ~66 Ma to the present [1,2]. Cenozoic magmatism in NE Brazil is synchronous with activity along the Cameroon Line. The oldest available dates for either region postdate continental separation in the area (~100 Ma), and reflect magmatic processes acting on two different plates long after a significant portion of the Atlantic Ocean basin (> 2000 km) had formed.

The new suite of Cenozoic lavas investigated from NE Brazil are dominated by alkaline compositions ranging from nephelinite to phonolite. The major- and trace-element geochemistry is indistinguishable from samples from the Cameroon Line. A non-plume genetic relationship between these two provinces is proposed and has profound implications for the origin of intraplate magmatism.

[1] Fitton (1987) *Geological Society, London, Special Pub.* **30**, 273–291. [2] Njome & de Wit (2014) *Earth-Science Revs.* **139**, 168–194. [3] Perlingueiro *et al.* (2013) *Journal of Volcanology and Geothermal Research* **249**, 140–154.