



Post-collisional Ediacaran volcanism in oriental Ramada Plateau, southern Brazil



Vinícius Matté ^{a,*}, Carlos Augusto Sommer ^b, Evandro Fernandes de Lima ^b,
Ruy Paulo Philipp ^b, Miguel Angelo Stipp Basei ^c

^a Programa de Pós-Graduação em Geociências, UFRGS, Brazil

^b Instituto de Geociências, UFRGS, Brazil

^c Centro de Pesquisas em Geocronologia (CPGEO), Instituto de Geociências, USP, Brazil

ARTICLE INFO

Article history:

Received 15 February 2016

Received in revised form

19 July 2016

Accepted 20 July 2016

Available online 22 July 2016

Keywords:

Volcanic rocks

Post-collisional

Ediacaran

Petrology

Geochronology

ABSTRACT

Ediacaran volcanic sequences in southernmost Brazil are related to intense post-collisional magmatism of the Brasiliano Orogeny. A portion of this volcanism occurs in the oriental Ramada Plateau located in the center part of the Rio Grande Sul State and is correlated with Hilário and Acampamento Velho formations. The first one is represented dominantly by lava flows and dikes of shoshonitic andesitic composition, besides of volcanogenic sedimentary deposits. The acid rocks of the Acampamento Velho Formation are expressive in the area, comprising high-silica ignimbrites, usually densely welded. Dikes and domes are common too and rhyolitic lava flows occur at the top and intercalated to ignimbrites in the middle of the sequence. The acid rock association has a sodic alkaline affinity. In this unit we mapped a subvolcanic sill of trachyte showing evidence for magma mixing with the rhyolitic magma. It has sodic alkaline affinity, and FeO_t/FeO + MgO ratios and apgaitic index lower than those recorded in the rhyolites/ignimbrites. The Acampamento Velho Formation includes in this area, subordinately, basalts as à flows and dikes intercalated with acid rocks. They have sodic alkaline nature and characteristics of intraplate basic rocks. New zircon U-Pb dating indicates crystallization age of 560 ± 2 Ma in a densely welded ignimbrite, 560 ± 14 Ma for a mafic trachyte and 562 ± 2 Ma for a subvolcanic rhyolite. The sodic alkaline rocks in this region evolved by fractional crystallization processes and magma mixing with major crustal contribution at approximately 560 Ma. The chemical characteristics are similar to those of A-type granites associated with Neoproterozoic post-collision magmatism in the Sul-rio-grandense Shield.

© 2016 Elsevier Ltd. All rights reserved.

1. Introduction

The Sul-rio-grandense Shield, which is located in the southern portion of Mantiqueira Province (Fig. 1A), evolved largely during the Brasiliano Orogeny, between ~900 and 500 Ma, leading to consolidation of the Gondwana supercontinent. The oldest rocks in the shield (2.55–2.0 Ga) are those of the Paleoproterozoic Taquarém Terrane and are characterized by fragments of the Rio de La Plata Craton (Hartmann et al., 2000, 2007; Soliani et al., 2000). This unit was reworked during the Neoproterozoic, when the region became an important zone of tectonic accretion, the Dom Feliciano Belt (Soliani, 1986; Fragoso-Cesar, 1991; Hartmann

et al., 2007). This is represented by: i) São Gabriel Terrane (880–680 Ma), with a juvenile signature and petrotectonic associations of magmatic arcs, ophiolites, and passive margin and retroarc environments; ii) Tijucas Terrane (800–620 Ma), with metavolcanic and metasedimentary rocks resulting from deposition in extended continental crust and continental magmatic arc, with continental Paleoproterozoic crustal reworking (2.2–1.9 Ga, e.g., Encantadas Gneiss). The main collision was followed by a post-collisional period, which involved the generation of voluminous granitic magmatism as the Pelotas Batholith and other granitic intrusions between 650 and 550 Ma, mainly along strike-slip faults and shear zones (Soliani, 1986; Chemale, 2000; Bitencourt and Nardi, 2000; Philipp and Machado, 2002; Hartmann et al., 2007; Philipp et al., 2007). Simultaneously (630–535 Ma), lithospheric delamination prompted the development of a depositional locus in which the Camaquã Basin formed (e.g. Fragoso-Cesar et al., 1984; Chemale

* Corresponding author.

E-mail address: viniciusmatte@unipampa.edu.br (V. Matté).

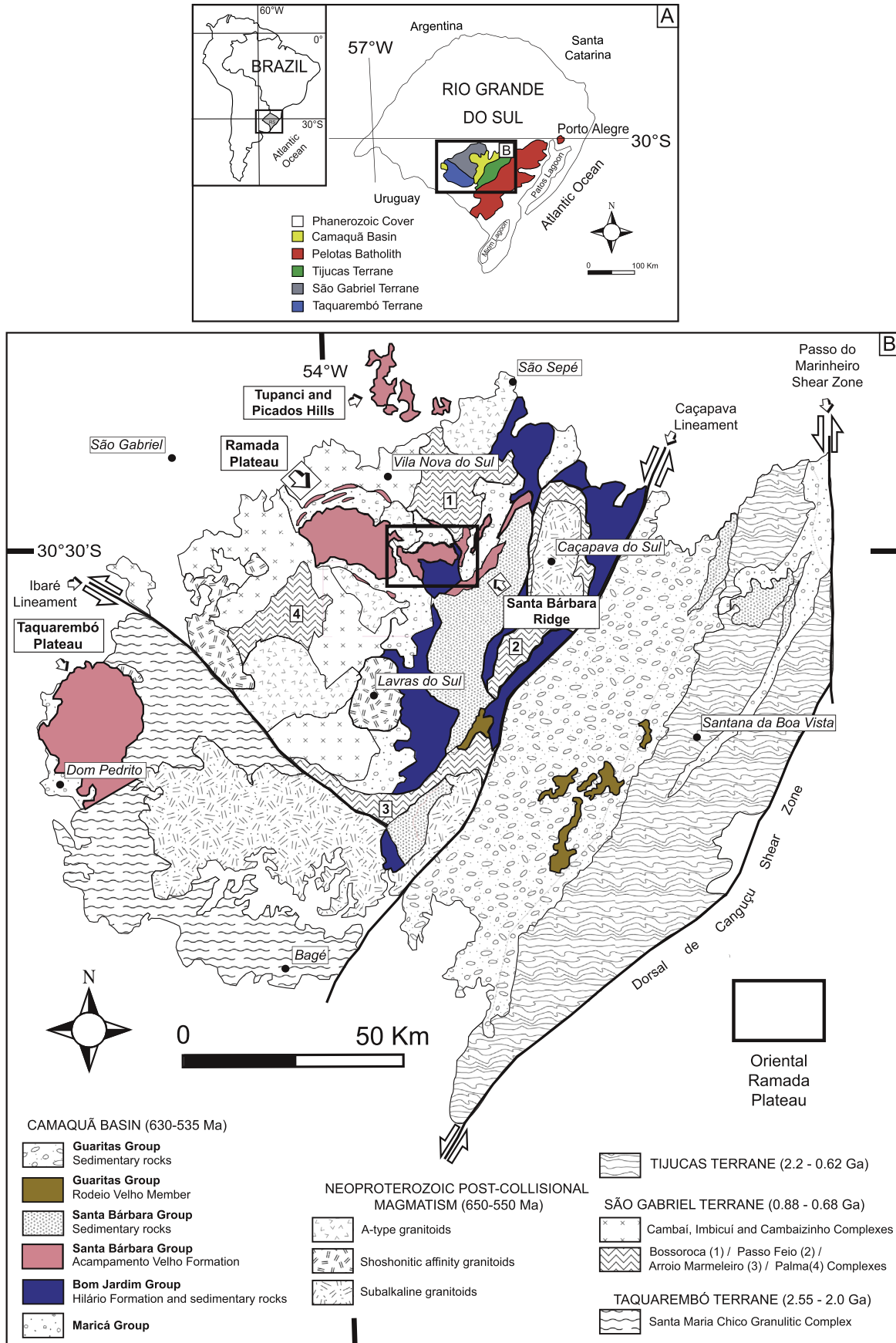


Fig. 1. A) Sul-rio-grandense Shield location and tectonic setting (modified from Hartmann et al., 2007); B) Oriental Ramada Plateau location and regional geological setting (modified from Lima et al., 2007; Paim et al., 2000; Wildner et al., 2002).

Download English Version:

<https://daneshyari.com/en/article/6431315>

Download Persian Version:

<https://daneshyari.com/article/6431315>

[Daneshyari.com](https://daneshyari.com)