

3.30 Ga intraplate rhyolites of the Gavião block, São Francisco Craton, Brazil

STEFANO ZINCONI¹ AND ELSON P. OLIVEIRA²

^{1,2}Department of Geology and Natural Resources, Institute of Geosciences – UNICAMP, Brazil.

¹teozincone@gmail.com; ²elson@ige.unicamp.br

Felsic volcanic rocks occur along the eastern border of Gavião Block associated with the Contendas-Mirante and Mundo Novo supracrustal belts, which are 200 km far from each other. The 3304 ± 10 Ma zircon U-Pb age of the two rhyolites was obtained on oscillatory zoned grains. They were previously interpreted as part of a Paleoproterozoic greenstone belt with chemical and clastic sediments. However, unconformably overlain sediments indicate deposition in the range 2.16-2.08 Ga. The rhyolite units represent highly fractionated melts of a magmatic system where coeval, less differentiated intermediate to mafic rocks have not been recognized. Superimposed Paleoproterozoic deformation has not affected significantly the volcanics, preserving magma flow texture and euhedral alkali feldspar, plagioclase and β -quartz phenocrysts. Dacitic to anorthositic micro enclaves were found and are characterized by basic selvage, indicating disequilibrium texture. The rhyolites are metaluminous to slight peraluminous, and ferroan calcic. Some samples are sheared and their chemistry is peraluminous, magnesian calcic. Similar abundances of incompatible trace element ratios in both rhyolite units suggest derivation from similar parental magmas. The zircon negative $\epsilon\text{Hf}_{(t)}$ values (0 to -6) and Hf model ages (3.6 to 4.0 Ga) coupled with whole-rock intraplate-like geochemical signature suggest melting of pre-existing crust. However, zircon xenocrystal and overgrowth was not identified. We suggest the rhyolites originated by intraplate extension of a heterogeneous crust extracted from the mantle about 3.6-4.0 Ga. No rocks with this age range were found so far in the São Francisco Craton.