

3.64 - 2.80 Ga crustal differentiation in the northern São Francisco Craton, Brazil.

**MR. RAFAEL GORDILHO BARBOSA¹, ALANIELSON C
D FERREIRA², FELIPE P. LEITZKE³ AND ROMMULO
VIEIRA CONCEICAO⁴**

¹Federal University of Rio Grande do Sul

²Stellenbosch University

³Universidade Federal do Rio Grande do Sul

⁴UFRGS-PPGGEO-LAGEPE

Presenting Author: rafab.geologia@gmail.com

The Archean crustal evolution of the northern São Francisco Craton (SFC) reveals significant similarity with Kaapvaal-Zimbabwe and Pilbara cratons. Compiled geochronological and Nd-Sr-Hf isotope data suggest that the Archean blocks of the northern part of SFC (e.g., Gavião, Uauá and Serrinha) had similar crustal evolution since 3.15 Ga. The 3.42-3.35 Ga TTGs of the southern and western Gavião Block, have negative and slightly positive $\epsilon\text{Nd}(t)$ and $\epsilon\text{Hf}(t)$ values and TDM ages between 3.5 and 3.9 Ga indicating that they were produced by partial melting of Eoarchean to Paleoarchean crust, with minor mantle sources contributions. The ca. 3.30 Ga high-silica plutonic-volcanic system, which is related to intraplate magmatism and intracrustal differentiation processes would represent processes of continental rifting and break-up within the craton. In the northern Gavião Block, the 3.64 Ga gneisses of the Mairi Complex, which are the oldest dated rocks in the SFC, have negative $\epsilon\text{Nd}(t)$ and $\epsilon\text{Hf}(t)$ and TDM ages between 3.9 and 4.3 Ga. It suggests late Hadean and Eoarchean sources during 3.64 Ga crustal anatexis. The 3.15 and 3.0 Ga rocks of the Serrinha Block have positive $\epsilon\text{Nd}(t)$ values, suggesting a predominant mantle source. Likewise, coeval 3.15 and 3.0 Ga Uauá Block rock assemblage has slightly positive to negative $\epsilon\text{Nd}(t)$ values, which indicate mixing of crustal and mantle sources. The 2.9 to 2.8 Ga period in the SFC is characterized by pervasive crustal anatexis with high-K granites generation. Therefore, Archean migmatite-gneiss terrains recorded four crustal differentiation intervals (e.g. 3.64-3.50, 3.45-3.30, 3.20-3.00 Ga and 2.90-2.80 Ga) in the São Francisco Craton.