

Similar fabrics in plutons with distinct compositions (Borborema Province, Northeast Brazil): tectonic implications

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In order to characterize the magmatic fabric of plutons with contrasting compositions, field and magnetic fabric studies were conducted in a shoshonitic body (Bom Jardim Complex), a high-K calc-alkalic granitoid batholith (Caruaru-Arcoverde) and a peraluminous pluton (Cabanas granite) in the eastern portion of the Brasiliano Borborema Province, Northeast Brazil. The first two have U/Pb zircon ages of 590 Ma. The latter is undated but likely related to the same tectonic event once all three bodies are locally affected by high-T, solid-state shear zones. The Bom Jardim Complex and the Caruaru-Arcoverde batholith are ferromagnetic (bulk susceptibility from 10^{-3} to $5 \cdot 10^{-2}$) while the Cabanas granite is paramagnetic (bulk susceptibility $< 10^{-4}$). All plutons show similar fabric patterns defined by two preferential orientations: NE-SW to EW and NS to NW-SE. The first one is characterized by steeply dipping foliations and gently to moderately plunging lineations, recording pre-full crystallization deformation in a transcurrent regime. The other may represent a syn-emplacement fabric formed prior to strike-slip deformation, or results either from synmagmatic folding or from strain partitioning between coaxial and non-coaxial components during transpression. Similar fabrics in plutons of distinct geochemical characteristics attest that (a) magnetic fabrics developed under the same strain regime are independent of the para- or ferromagnetic character of the rock, and (b) chemical composition is not a clear guide to infer relative chronology of emplacement in orogenic belts.