Taquarembó Plateau: a well-preserved Neoproterozoic-Cambrian plutono-volcanic association in southern Brazil

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Post-collision magmatism in southern Brazil encompasses the following magmatic associations: (i) high-K calc-alkaline granite magmatism with minor dioritic components; (ii)) plutono-volcanic magmatic association of shonshonitic affinity; and (iii) plutono-volcanic silica saturated magmatism of sodic-alkaline affinity, and peraluminous granites. The Taquarembó Plateau Plutono-Volcanic Association represents part of this post-collisional magmatism, related to the end of the Brasiliano/Pan-African orogenic cycle in southern Brazil, situated outside the major Brasiliano shear belts and lying over older Paleoproterozoic granulite terranes. It is part of the Camaquã Basin and corresponds to a Cambrian well-preserved unmetamorphosed volcano-sedimentary sequence that is the Brazilian counterpart of the Gariep belt in South Africa. The Plateau is a sequence of volcanic flows, volcanoclastic and volcanogenic sedimentary deposits intruded by hipabissal associated plugs. Two sequences of magmatic liquids were detected, evolved dominantly by mineral fractionation, from low Ti-P and high Ti-P basaltic magmas. The former includes mildly alkaline silica saturated basalts, metaluminous monzodioritic intrusions and rhyolitic flows, whilst the second includes hawaiites, mugearites, syenitic intrusions and peralkaline intermediate and acid rocks of comendiitic affinity. Trace element and isotope data (Pb/Pb, U/Pb and Sm/Nd) indicate that both parental magmas were produced from the same EM1-type mantle sources, representing different melt fractions, which preserved the trace-element signature inherited from metasomatism caused by a previous (ca 780-700Ma) crustal subduction. Isotope data indicate that this alkaline post-collisional magmatism has ages in the range of 580-537Ma.