

Petrogenesis of two Grenvillian tin-bearing rapakivi granite suites, southwestern Amazonian craton, Rondônia, Brazil.

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Grenville age granitic rocks along southwestern margin of the Amazonian craton were identified in the 1960's in the Rondônia tin province. More recently these granites have been characterized as rapakivi granites comprising two distinct suites: (1) 1.08-1.07 Ga Santa Clara Intrusive Suite; and (2) 1.00-0.97 Ga Younger Granites of Rondônia. Both suites comprise two compositional rock associations sharing A-type and within-plate granites geochemical characteristics: (1) an older and dominant one is subalkaline and marginally peraluminous in character; and (2) a younger and volumetrically minor exhibits alkaline to subalkaline features, and metaluminous, peraluminous and peralkaline compositions. The older rock association in both suites is composed mainly of biotite and/or Ca-amphibole monzogranites and syenogranites whereas the younger ones include syenites, trachytes, rhyolites, ongonites, peraluminous and peralkaline granites, and rare basic rocks. Na-amphiboles are found only in peralkaline granites, and biotite or Li-mica (\pm topaz) occur in peraluminous granites. Limited Nd, Sr, and O isotopic data and major and trace elements suggest different petrogenesis for the two rock associations. The older granites were mainly formed from a parent magma of crustal origin underwent fractional crystallization. The younger rocks may be products of two processes: (1) partial melting of crustal sources and mixing with basaltic magma (peralkaline granites); and (2) limited partial melting of crustal sources with minor mantle input (peraluminous granites). Sn-polymetallic deposits are closely associated with the peraluminous granites of the younger rocks in both suites.