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Paleo-Mesoproterozoic arc-accretion along the southwestern margin of the Amazonian craton: the Juruena Accretionary Orogen and possible implications for Columbia supercontinent

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Abstract

The southwestern portion of the Amazonian craton, between the Ventuari-Tapajós province and the Andean chain, has been ascribed to a succession of orogenic events from 1.81 to 0.95 Ga, culminating with widespread anorogenic magmatism. Southwestward of the Serra do Cachimbo graben occurs the Juruena accretionary orogenic belt (ca. 1.81-1.51 Ga), previously included in the Rio Negro-Juruena and Rondonian/San Ignácio geocronological provinces or Rondônia-Juruena geologic province. The Juruena orogen proposed here includes the Jamari and Juruena tectonostratigraphic terranes, products of convergence which culminated in the soft collision of the Paraguá protocraton and the Tapajós-Parima arc system (Tapajós Province) ca. 1.69-1.63 Ga ago. Geophysical, geochemical, petrological and geochronological data and systematic geological mapping suggest that the convergent event resulted in a single orogenic system with two continental margin arcs, namely the Jamari and Juruena arcs. Modern geological and tectonic approaches, combined with aerogeophysics data, enable to interpreting this wide region of the Amazonian craton as a Paleoproterozoic orogen with well defined petrotectonic units and tectonoestructural framework. The Juruena orogen is an E-W trending belt, about 1100 km long and 350 km wide, inflecting to NW-SE, in Mato Grosso, Amazonas and Rondonia, Brazil. The general direction of the belt, its inflections and internal geometric and kinematic aspects of its macrostructures do not corroborate the general NW-SE trend of the originally proposed geocronological provinces.

The Juruena accretionary orogen has been the site of repeated reactivation with renewed basin formation, magmatism and orogeny during the Mesoproterozoic and the early Neoproterozoic. U-Pb