

Metallogeny of the Paleoproterozoic volcanic centers in the Vila Mandi region, Uatumã SLIP, southernmost Amazonian Craton, Brazil

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In the south of the Amazonian Craton (North of Brazil), west of Santana do Araguaia city, at Vila Mandi district, there are extensive effusive and explosive Paleoproterozoic volcanic centers. The basal Cinco Estrelas Formation is a volcanic center with flat topography. It comprises intermediate massive lava flows facies materialized by porphyritic or aphyric andesite, dacite, and subordinate basalt with horizontal magmatic flow foliation. A genetically related volcanoclastic facies has mafic crystal tuff and lapilli-tuff. The upper Vila Mandi Formation is a fissure-controlled volcanic center composed of NW-SE massive vertical lava flow facies with porphyritic or aphanitic rhyolite and dacite; and volcanoclastic facies with ignimbrite, felsic crystal tuff, lapilli-tuff, and massive polymictic breccia. Associated granitic stocks and porphyries dikes also occur. This system hosts several circular structures with possible presence of ash flow calderas remains, suggesting a multiphase evolution history. Centimetric lithophysae and spherulites, convolute folding, and zones with pyrite are common. Propylitic, potassic, and sericitic hydrothermal alteration zones occur in pervasive, selective, and fracture-controlled styles. These units are truncated by a mafic-carbonatitic complex with pyroxenite, ijolite, alkali basalt, syenite and alaskitic carbonatite. Unexpected preserved flows of pyroclastic carbonatitic units, including accretionary lapilli tuffs, surge, proximal breccias and epiclastic deposits are also present around the carbonatite intrusion. This association produced the supergene Serra da Capivara phosphate mineralization. The available data allow to compare the studied sequences with others regions of the Amazonian Craton and suggest metallogenetic potential for epithermal and porphyry-type mineralization within andesitic e rhyolitic rocks. Although absence of geochronological data, the stratigraphic relationships indicates that the carbonatite is Paleoproterozoic in age. This opens new exploration frontiers for the mineral exploration in the Amazonian craton, specially for phosphate and REE.