

Orosirian bimodal volcanism of the Uatumã SLIP in the Tapajós Mineral Province, Amazon Craton, Brazil

Vasquez, M. L.¹, Silva, C. M. G.¹, Oliveira, J. K. M.¹

¹ Serviço Geológico do Brasil-SGB, Belém-PA, Brasil, marcelo.vasquez@sgb.gov.br; cintia.gaia@sgb.gov.br; junny.oliveira@sgb.gov.br

The Uatumã SLIP (Silicic Large Igneous Province) was an extensive silicic volcanism that covered the central portion of the Amazon Craton at ca.1880 Ma. Several volcanic calderas associated with this volcanism have been preserved in the Tapajós Mineral Province (TMP). These calderas were filled by rhyolitic, dacitic and andesitic volcanic and pyroclastic deposits which were resedimeted (syn-volcanism), reworked (postvolcanism) and deposited in magmatic arc basins and continental rifts. The field and geochronological data indicate that felsic volcanic eruption of high-K calc-alkaline (HKCA or I-type) and alkaline (ALK or A-type) magmas were coeval with the eruption of the intermediate to basic volcanism of HKCA magma. The bimodal volcanism from the Urubuquara caldera is represented by ignimbrites flows and coherent lavas of HKCA dacites to rhyolites (Salustiano Formation), which are predominant in the bottom of the caldera and overlain by flows of lavas and ignimbrites of ALK rhyolites (Moraes Almeida Formation) intercalated with HKCA andesites (Bom Jardim Formation). Lapilliand ash-tuffs, volcanic breccias, volcanogenic sandstones and subordinate conglomerates outcrop intercalated with the juvenile volcanic deposits. However, these volcanoclastic and epiclastic rocks (Aruri Formation) are predominant at the top of the caldera. Both volcanic sequences were cut by dykes of andesites to rhyolites, granophyric and porphyry granites. The ALK rhyolites contain fayalite, clinopyroxene, green amphibole and biotite as mafic magmatic minerals, while blue alkaline amphibole and chlorite occur as subsolidus mineral phases. This mineral assemblage indicates peralkaline rhyolitic magma that was erupted at 1888 ± 2 Ma (Pb-evaporation in zircon) with coeval HKCA dacitic ignimbrite of 1888 ± 11 Ma (U-Pb in zircon). Futhermore, the Nd-isotope data of ALK rhyolites (ENd -2.83 and -2.47, TDM 2.37 and 2.34 Ga) indicate few crustal contributions to the Paleoproterozoic (ca. 2.1 Ga) juvenile accretion of the peralkaline magma in the TMP. Nd-isotope data of others A-type granite and rhyolites of ca. 1880 Ma from Amazon Craton show a strong interaction with an Archean crust. Previous metalogenetic studies indicate that Urubuquara volcanic caldera hosts epithermal Au-Ag-Cu-Mo high-sulphidation and porphyry-like deposits (V3 target) formed ca. 1860 Ma (Ar-Ar in alunite). Other bimodal volcanic calderas of ca. 1880 Ma host Au-Ag-Cu-Zn intermediate- to low-sulphidation deposit (eg. V6 target from Chapéu do Sol caldera). The magmatic-hydrothermal system of the gold and base metals mineralizations from TMP have been associated with bimodal I-type magmatism. However the role of the A-type magmas in these gold mineralizations remains unclear, possibly serving only as source of halogenic-rich fluids and heat for metal mobilization, as well as local Sn and Nb-Ta mineralizations.

Palavras-chave/Keywords: bimodal volcanism, A-type, I-type, Orosirian, SLIP



IX SIMPÓSIO SUCEBRASILEIRO DE GEOLOGIA
IX SIMPÓSIO DE VULCANISMO E AMBIENTES ASSOCIADOS
I CONFERÊNCIA DE GEOLOGIA E MINERAÇÃO DO MERCOSUL
EXPOGEOMINE

Financial Support: Serviço Geológico do Brasil - SGB