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Textures, petrology and geochronology of Paleoproterozoic volcanic rocks in the Southern Amazon Craton

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Paleoproterozoic Amazonian rocks record one of the best-preserved ancient magmatic episodes on Earth. All these volcanic/plutonic rocks are attributed to the Uatumã Supergroup that covers an area of more than 1,200,000 km². The present contribution documents the extremely well preserved architecture of a series of felsic and intermediate rocks found in the Southern part of the Amazon Craton. Two areas are considered here: a) the Southern part of the Tapajós Mineral Province (STMP) and the Xingu region. The STMP is poorly known and difficult to access mainly due to the dense forest cover. Our fieldwork founds that granitoid felsic bodies are the prevailing lithotypes, although several felsic volcanic (lavas) and volcaniclastic deposits and intermediate effusive rocks occur. Textural studies on felsic volcaniclastic rocks of STMP allowed to identify three main facies characterized as 1) chaotic ("breccia" group), 2) eutaxitic ("eutax" group) and 3) parataxitic ("paratax" group) vitrophyric textures. The rocks are grouped based on their grade of welding which, given the superb preservation of our samples, allowed to recognize a wide variety of lithofacies ranging from very low-grade to high-grade and rheomorphic ignimbrites. In the "paratax group" strong similarities with banding in lava flows are observed. The Xingu region is divided into two distinct formations by previous works: the basal andesitic Sobreiro and the upper felsic Santa Rosa. The Sobreiro formation is composed of massive andesitic to dacitic flows and volcaniclastic deposits, while the Santa Rosa formation is mainly composed of porphyritic felsic rocks, massive and bedded rhyolitic lava flows, and rheomorphic ignimbrites. We highlight here the variability in textural facies of andesitic volcaniclastic deposits of the Sobreiro formation recognized during the last fieldwork. New petrological and geochronological data are provided. We found, for both studied areas, that andesitic rocks are characterized by high-K calc-alkaline signature, while felsic rocks are mainly alkali-rhyolite to rhyolite in compositions with a metaluminous to peraluminous A-type signature. U-Pb SHRIMP-II zircon data on felsic rocks show ages of ca. 1.99 Ga for the STMP and ca. 1.87 Ga for the Xingu region.

Key words: Paleoproterozoic volcanism, volcaniclastic, Amazonian craton

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