The Paleoproterozoic Uatumã SLIP (Amazonian craton, Brazil): tectonic setting and epithermal gold and base metal mineralization

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The Uatumã SLIP is located west of the Archean terranes of the Amazonian craton. It is composed of andesites, dacites, rhyolites, ignimbrites, porphyries, granites, volcaniclastic rocks, and sedimentary continental units distributed in more than 1.500.000 km^2 in non-continuous areas. Previous studies interpreted the igneous rock of this SLIP as anorogenic and formed at ca. 1.88 Ga. However, several pulses of magmatism in ca. 2.0 Ga, 1.97 Ga, 1.95 Ga and 1.89-1.88 Ga have been recently recognized. The intrusive rocks crosscut a Paleoproterozoic (ca. 2.1 and ca. 1.9 Ga) basement generated in continental magmatic arcs. Inherited zircon and geophysical date have also shown evidences of Archean crust beneath theses magmatic arcs, precluding previous tectonic models that interpreted this region as a juvenile island arc. The volcanic and granitic rocks are mainly high-K calc-alkaline, as well alkaline A-type, specially the younger units. Intense Paleoproterozoic uplift and erosion are evidenced by the stratigraphic relationships of volcanic and plutonic units. Despite the very difficult access due to the rain forest, some large nested ash-flow calderas (up to 50 km in diameter) have been identified, as well large fissure-controlled volcanism with voluminous flares of ignimbrites with A-type affinity. In the intermediate to felsic volcanic and volcaniclastic rocks, more than thirty hydrothermal centers commonly with gold mineralization were identified with ages of ca. 2.0 Ga, 1.97 Ga and 1.88 Ga. These centers include high-sulfidation (quartz-alunite), intermediate-sulfidation (with Mn-calcite and base metals) and low-sulfidation (adularia-sericite) mineralization in ring volcanoes, rhyolitic domes, hydrothermal breccia pipes, dikes, and fault zones. Zones of propylitic, sericitic, argillic, and advanced argillic alteration, as well as silicification, silica caps (with vug silica) and carbonatization were also identified. Cu-Mo occurrences are relatively common in porphyries, which show large haloes of K-feldspar + biotite alteration, sericitization and propylitization, with less important zones of argillization and silicification. These magmatic units were generated during extensional episodes in a long lived subduction of an oceanic plate under a continental margin, with at least one phase of flat subduction event.