

## **The Relationship Between the Structural Orientation and Copper-Gold Mineralisation in the Alta Floresta Mineral Province, Brazil**

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The Alta Floresta Mineral Province is in the southern part of the Amazonas craton, Brazil, where studies are encouraged due to its productive artisanal gold mining history. However, the spatial relationships between the mineralisations and their structural framework still need to be better understood once the available research focuses mainly on the deposit scale. Therefore, data integration is necessary to construct robust exploratory models that make discovery and mining feasible, responsible, and dynamic. Considering the flat topography and the tropical weathering, the preliminary structural analysis was made by integrating field mapping, aerogeophysics, and SRTM data. With the map data geostatistical analysis, it's also possible to establish the relationship between the number of copper-gold mineral occurrences and their main controlling structures and interpret the possible principal channels and traps that the mineralisation fluid used to percolate and allow precipitation and mineralisation. As a result, it's possible to recognise WNW continuous linear features, in the literature related to first-order shear zones, in correlation with continuous NE structures and discontinuous features with NS and NE trends. The mineralisation's host rocks are 2.04–1.98 Ga granitoids, quartz-feldspathic gneiss, and mafic amphibolites, with at least two deformation episodes. The first developed an S<sub>n</sub> foliation trending 0°–50° and dips 70°–90° WNW, defined by feldspar-quartz-rich and phyllosilicate-rich domains in orthogneiss, and a well-developed spaced foliation in metagranitoids and metamafic rocks. The second deformation episode developed several WNW first-order shear zones. They are transpressional to strike-slip, mostly with dextral movements, with mylonite foliations, N20°–40°W dipping 50°–70°SW. Parallel to this first-order shear zone occur high-grade and low-tonnage deposits such as the Serrinha de Guarantã, the thickest copper-gold quartz vein at the area. The most concentration of copper-gold-quartz veins is at subsidiary shear zones. The subsidiaries are N-trending, controlling the Paraíba mine, or E-trending Peteca deposit.