

GIS ANALYSIS AND THE GOLD MINERALIZATION IN TAPAJÓS MINERAL PROVINCE, AMAZON, BRAZIL

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Introduction. In Tapajós Mineral Province (TMP), Amazon, Brazil, primary gold deposits are widespread, hosted by different rock-types and the gold occurs as polymetallic quartz veins (lode-gold), stockworks/disseminated and rare breccia. The aim of this GIS study is to enhance mineral exploration strategies and promote the TMP as a prospective area.

Regional Geology. The TMP (90,000 km²) at the central-south of the Amazon Craton underwent a tectonic Proterozoic (Orosirian) orogenic belt evolution, comprising four volcano-plutonic events, which development took place during a time period of 140 Ma (Coutinho *et al*, 1997; Santos *et al*, 2000).

Gold Mineralization. The geological/genetic model suggests origin during compressional to transpressional deformation processes at convergent plate margins in accretionary orogens. The deposits represent a shallow crustal end-member of Proterozoic orogenic mesozonal/epizonal gold originated from a similar, but variously evolved, ore fluid at a variety of crustal depths (Coutinho *et al*, 2000 b)

GIS Analysis. In 2002, the Geological Survey of Brazil (GSB) produced the first Geological Map of TMP on the 1:250.000 scale (PROMIN-Tapajós Project). In 2001, GSB started producing a corporate GIS System, integrating all data of Brazil at: 1:2.500.000 scale (Bizzi *et al*.2001); 1:1.000.000 scale (Schobbenhaus *et al*. 2004); and Amazon region at 1:1.750.000 scale; Bizzi *et al*. 2002). These works were supported by database GIS methodology within a Web distributed

Oracle database management system (GEOBANK) and ESRI technology. The TMP Map at 1:250.00 scale now presented using the ESRI GIS/Oracle Database technology based on the standards of the GSB was designed in ArcView 3.2. The interpreted geology coverage was constructed in ArcInf 8 and ArcIMS.

Conclusion. The GIS Map of TMP shows the called favorability map predictions of the shallow gold deposits associated with the pluton-volcano system (quartz veins / disseminated to stockwork mineralization) and the gold deposits (quartz veins) related to the basement, where the erosion level has strong influence. The first type may constitute a valid exploration target in the Tapajós Mineral Province (TMP) with economic significance.

Key-words: GIS analysis, gold mineralization, orogenic-gold, Tapajós Mineral Province, Amazon.