

Aerogeophysical structural signature in the Amazon Region: example of the Creporizão target, Tapajós Gold Province

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Aerogeophysical surveying, more specifically aeromagnetic and aerogammaspectrometric, has for some time been an indispensable tool in geological surveying of the Amazon Region. These methods were used extensively by the CPRM from the end of the 1970's and throughout the 1980's as a support to regional mapping. In the 1990's these methods were also used with success to detail areas (scale 1: 50 000) as for example in the region of Creporizão in the Tapajós Gold Province.

The refinement of the aerial surveying parameters, with flight altitude of 100 m, and line-spacing at 250 m permitted improved resolution, mainly of structural features, bringing out trends that are difficult, or impossible, to observe with other sensors. Thus the contour map of the vertical gradient of the total magnetic field was found to reflect, preferentially, the sinuosity and interruptions in the deeper strongly anisotropic features, that showed a preferential trend ENE-WSW. On the other hand, the radiometric contour map (total count) revealed a more continuous rectilinear structural plot, the principal strike of which was found to be NW-SE, and secondarily NE-SW.

Field work showed that these features could be related to ductile, ductile-brittle structures as well as brittle structures, generally occurring as foliation and fractures. These consist of joints and more or less continuous systems of shear zones and faults, the product of the entire tectono-litho-structural evolution of the area, that in turn is a major controlling of the gold distribution in Tapajós Mineral Province.