

The geological interpretation of aeromagnetic data: A geologist's perspective

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Aeromagnetic surveys are a widely recognized exploration technique in mineral exploration especially in covered terranes. They are often not used to their full potential, with lineament analyses conducted but little else. The real value in aeromagnetic data can be unlocked integrating multiple datasets into the interpretation of the data with the aim to produce a coherent geological map which outlines the structural and geological history. Geological models are a primary component of the interpretation process; in order to present an interpretation of the geology of the region there needs to be a coherent framework of stratigraphic and structural principles that form the basis of the interpretation. Individual rock unit and structural elements identified on the aeromagnetic images can then be related to components of the geological models. Individual structures can be interpreted in both a time and space context, with an outline of when and how faults moved. In turn, the spatial distribution of mineral deposits in relation to structures becomes evident and can be related to the geological evolution of the region, not just the geometry.

Advanced aeromagnetic interpretations should produce structural/geological maps showing the relative timing of structural events with a focus on commodity specific exploration targeting. This talk will outline an interpretation method with examples of final products for a series of geological terranes.