



Mira Geoscience
...modelling the earth

Magnetic Interpretation Consulting Services

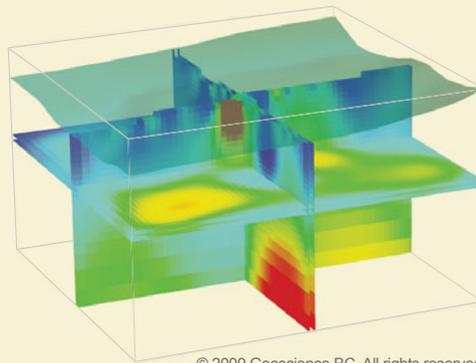
A comprehensive geophysical interpretation team

Summary

Magnetic data are best interpreted in tight integration with geological data. Our team of experienced geophysicists provide processing inversion and interpretation services at each step of utilizing magnetic data in your project.

Airborne, ground and down-hole magnetic data are modelled using magnetic susceptibility measurements, geological information, and other geophysical data to provide valuable and reliable exploration information to maximize targeting success.

3D geologically constrained magnetic forward modelling and inversion is carried out using an array of advanced cluster computing technology.



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Increase interpretational value by taking your magnetic data to the third dimension!

Magnetic inversion is performed either with or without constraining geological information depending on the stage of exploration.

Geological constraints range from simple assumptions, concepts, or maps, to detailed information provided by outcrop samples, drillhole physical rock property measurements, geological logs, structural measurements, and 3D geological models.

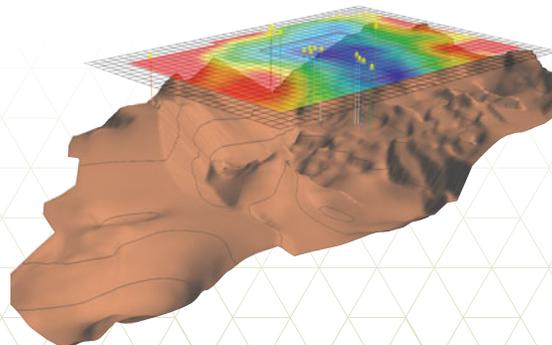
Constrained inversions create models consistent with multiple sources of data and offer better definition of the earth.

Constrained inversions provide a means for validation of 3D geological models and permit a quantitative analysis of any anomalies.

Several modelling solutions are available for different exploration applications including:

- » Finely discretized 3D heterogeneous distribution of magnetic susceptibility
- » Lithology-based homogeneous unit physical property inversion
- » Lithology-based geometry inversion
- » Surface modelling for irregularly shaped bodies

Geology is quantitatively related to geophysical data through physical rock properties (magnetic susceptibility). Physical properties are analyzed in relation to available geology including lithology, alteration, and mineralization prior to modelling. Physical property analysis is used in conjunction with modelling for determining sensitivity of data to mineralized features, optimizing survey design parameters, providing appropriate inversion constraints at the correct scale of investigation, and for quantitatively interpreting inversion results within a geological exploration context.



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Key Services

Core magnetic services

- » Data quality control and error analysis
- » Unconstrained or constrained inversion modelling
- » Interpretation of results within the exploration context
- » Target selection from all exploration data sets
- » Experienced team, well versed in the application of magnetic methods to different exploration environments

Modelling at different exploration stages

- » Large-scale regional inversions for target identification and ranking
- » Local exploration using basic constraining information
- » Detailed follow-up inversions integrated with available physical property and geological information
- » Constrained delineation modelling with drillhole geological logs and magnetic susceptibility measurements
- » Inversion of historical data for property evaluation

Data sources

- » Airborne magnetic
- » Ground magnetic
- » Down-hole magnetic
- » Gradiometry
- » Magnetic susceptibility measurements
- » Oriented remanent susceptibility measurements
- » Geological maps, logs, structural measurements, and interpretation for inversion constraints
- » Other geophysical data for inversion constraints

Magnetic modelling styles

- » Heterogeneous 3D magnetic susceptibility distribution inversion
- » Lithology-based geometry inversion
- » Lithology-based homogeneous unit inversion
- » Faceted surface modelling of magnetic charges for irregularly shaped bodies
- » Prismatic body modelling

3D-GIS analysis services

We have a team of experts in processing, analyzing, modelling and interpreting magnetic data. A key component of this service is the visualization and quantitative integration of geophysics, geochemistry, and geology. All pertinent exploration information is quantitatively represented in a consistent 3D framework. We work with you in applying true 3D-GIS functionality to generate targets based on your exploration criteria.

We provide results in common 3D formats and a Geoscience ANALYST workspace for easy communication of results and ideas, and will host meetings for project review, interpretation, or investment purposes.

Exploration application examples

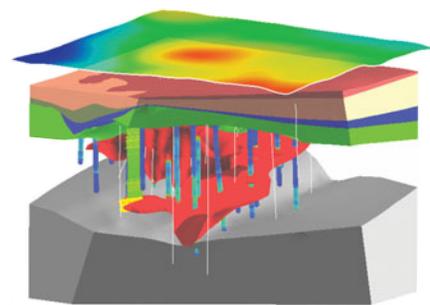
- » Massive Sulphide exploration – magnetite concentration
- » Copper Porphyry exploration – magnetite destruction
- » Magmatic Ni-Cu-PGE exploration – zonation
- » Iron Oxide Copper – Gold exploration
- » Iron formation targeting and delineation in highly magnetic environments
- » Kimberlite geometry and internal structure modelling for volume estimation, delineation drilling or maximizing bulk sampling drill program
- » Depth to magnetic basement for sedimentary basins

Specialized 3D modelling

- » Statistical information from down-hole physical property measurements honoured for each geological unit
- » Model-based regional separation modelling to focus on local geological features of interest
- » Detailed inversion of extensive data sets using model-based tiled inversions
- » Modelling of highly magnetic bodies with self-demagnetization
- » Remanent magnetization modelling
- » Magnetic gradiometry modelling
- » Modelling of magnetization vector

Magnetic property analysis

- » Magnetic susceptibility analysis in conjunction with lithologic, alteration, and mineralization information
- » Sensitivity analysis to determine the response of targets
- » Survey feasibility studies performed to optimize survey parameters to detect expected targets
- » 3D geostatistical analysis, interpolations and simulations
- » Construction of physical property inversion constraints
- » Remanent magnetization sample data analysis



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