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Don't miss out!

Here is a quick glance at our Upcoming Events Calendar:

- » [April 9-11 Mining Geomechanical Risk 2019](#) in Perth, Australia
- » [May 28-30 Explo Abitibi 2019](#) in Val D'Or, Canada
- » [June 24-25 Deep Mining 2019](#) in Johannesburg, South Africa
- » [September 2-5 AEGC 2019](#) in Perth, Australia

[More details on our upcoming Events page »](#)

In the news:

[3-D Modeling of the Lisheen and Silvermines Deposits, County Tipperary, Ireland: Insights into Structural Controls on the Formation of Irish Zn-Pb Deposits](#)

Economic Geology, v. 114, no. 1, pp. 93–116

“...Paradigm’s SKUA-GoCAD modeling software, coupled with Mira Geoscience’s Mining Suite plugins to extrapolate between areas of dense data to create complete fault arrays and horizon surfaces. To best constrain the normal fault systems within both deposits...”



Welcome to our first eNewsletter of 2019.

2019 is a year of celebration for Mira Geoscience as we turn 20! There are lots of good things to remember and even more to look forward to. In this edition, we report on Red 5 Darlot Gold Mine Area in Australia. We give you more details about our upcoming workshop during AEGC2019. On the software side, we have been busy with upcoming releases of GOCAD® Mining Suite, Geoscience INTEGRATOR,



John McGaughey, President

Geoscience ANALYST, and VP Suite. We also provide more details on the upcoming launch of GIFtools—a significant software innovation for our clients. Finally, we talk about new staff and promotions, and we cover the tips of the month, news and upcoming events.

3D Interpretation of geological, 3D seismic, and conventional geophysical data for brownfields exploration targeting

On March 2, we presented the Darlot Gold Mine Area case study at the annual KEGS Symposium. The presentation summarized the results of an ongoing technical collaboration between Mira Geoscience, Red5 Limited, and HiSeis, and outlined workflows and interpretational considerations required to implement an integrated geological, petrophysical, seismic, and non-seismic geophysical program to effectively support brownfields targeting in hardrock environments.

See Case Study, following page.



In the news: (continued)

Declan Cobalt's Tisova Copper-Cobalt Project - Magnetics and 3D IP Survey and Geological Interpretation leads to Drill Targets

GlobeNewswire, January 21, 2019

Declan Cobalt Inc. ("Declan" or the "Company") (CSE:LAN) (FSE: DCR1) is pleased to announce that a compilation of its exploration efforts to date has resulted in the identification of both shallow (< 400 metre) and deeper (<700 metre) drill targets... Mira Geoscience will review the 3D model to determine the correlation between the geological model and 3D IP...

Le coin du prospecteur - Des données analytiques aux modèles de blocs : la boîte noire de l'interpolation.

By Jean-Philippe Paiement,
Ressources Mines et Industrie Vol 5 No 2, 2018, p 21-27

Application of an innovative AEM system for mapping hazards and water resources in oil and gas fields

By Scott Napier, et al

Fast Time, v 23, no. 1, pp. 48-51

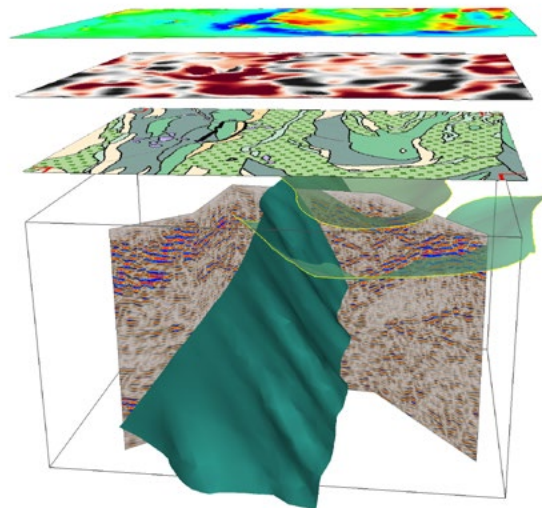
Approximately 2400 line km of SkyTEM Airborne Electromagnetic (AEM) data were flown over the Horn River basin in April 2011. The data was...

CASE STUDY:

Darlot Gold Mine Area, Australia

The modern capability of 3D seismic surveys to image formational contacts and structures in hardrock environments can have a game-changing impact on the effectiveness of brownfields exploration programs because the geometry of mineralized systems can be directly imaged over large volumes of ground. Furthermore, the formational and structural geometry revealed by 3D seismic also provides primary control on the physical property variations that magnetic, gravity, and electrical or EM methods respond to. Seismic interpretation thus provides ideal constraints and guidance on the interpretation of other geophysical data. This is particularly valuable when an objective of geophysical interpretation is imaging of second-order controls on physical property variation, such as the effects of alteration.

Darlot is an Archean orogenic gold deposit located in the world-class gold and nickel terrain of the Yandal granite-greenstone belt, part of the Yilgarn Craton in Western Australia. A 3D seismic survey was acquired with the objective of improving lithological and structural interpretation, and to generally extend understanding of the 3D mineralized system to support targeting. The processed seismic volume shows numerous interpretable contacts and structures. Seismic interpretation tools in [GOCAD Mining Suite](#) have been used to create an initial wireframe formational and structural model. We used the 3D model interpreted from drilling and seismic interpretation as a geometrical constraint on the interpretation of other geophysical data. This provides a means to validate and refine seismic interpretation of geometry, interpret parts of the volume that are too shallow to be effectively resolved from the seismic survey, and image physical property variations within formations that may have a bearing on targeting decisions.



The figure illustrates the Darlot 3D seismic cube with a selected fence section used to cross-check the geological interpretation. Geological wireframes interpreted from the seismic cube (partially transparent light blue) represent a dolerite sill (host to the mineralization), and a major structure offsetting the dolerite sill. Positioned above the seismic cube is the measured magnetic response (reduced to pole), measured gravity (first vertical derivative) and the geological map (hashed green domain corresponds to the wireframes). The correlations between the mapped geology, synclines inferred from the seismic, and measured potential field responses are evident.

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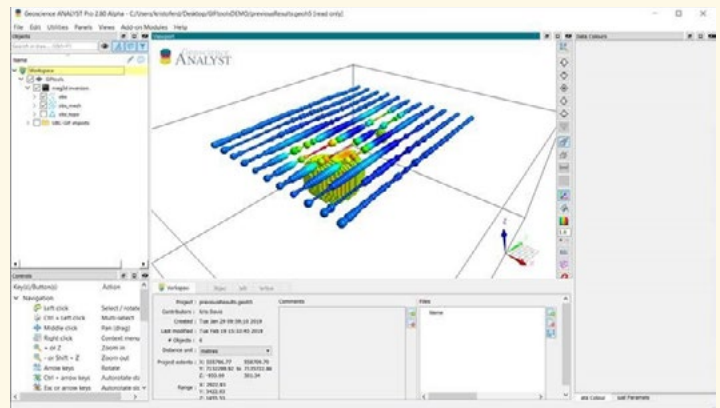




What's new in software

GIFtools through Geoscience ANALYST

Coming up later in 2019 is the launch of GIFtools, an easy-to-use user interface for the industry-standard [UBC-GIF](#) forward modelling and inversion codes, with a [Geoscience ANALYST](#) interface. This is a game-changing advance, bringing the power of the advanced geophysical codes developed at the University of British Columbia to everyday industry users. GIFtools is the product of a multi-year, industry-supported R&D project at UBC to facilitate the use of UBC-Geophysical Inversion Facility (GIF) 3D forward modelling and inversion programs for gravity and magnetic gradient, resistivity and induced polarization, and electromagnetic data. This new interface will allow the user to take full advantage of the UBC-GIF suite by being able to prepare data, create meshes, incorporate constraining geologic information, run inversions, and visualize results. Data and inversions, along with inversion histories and all relevant contextual data and geological models can be shared as open-format Geoscience ANALYST workspaces accessible through the free visualizer.

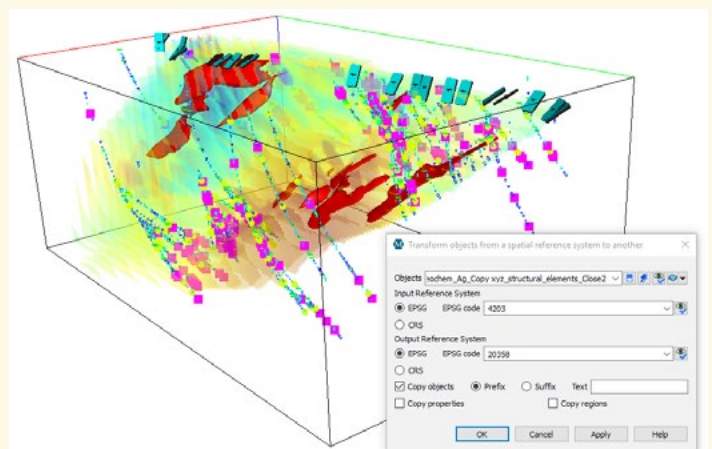


MAG3D inversion in Geoscience ANALYST.

Open Government Licence – Canada

GOCAD Mining Suite version 17 update3 release

Our next release will include two long-awaited features – Coordinate Reference System re-projection for atomic objects (PointsSets, Curves and Surfaces), drillholes, and grid objects (Voxets and SGrids). Both CRS and EPSG codes can be applied, in addition to providing for a custom user-defined CRS. Translated objects can be copied with user-defined prefixes or suffixes. A new drillhole query tool to connect to the Imago drillhole imagery light table is also included. The user must have a login and password to connect to their Imago account. AcQuire drillhole imports are now added to a list with the same name as the selection. SKUA-GOCAD 17 support packs 1, 2, 3, 4, and 5 have been included in our installer, along with other updates and upgrades.



Transfer objects from a spatial reference system to another.

Open Government Licence – Canada

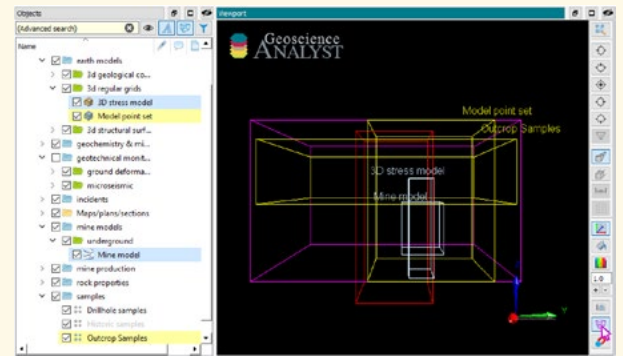
[Details about the product available here »](#)



What's new in software (continued)

Geoscience INTEGRATOR version 3.1 release

This version is an update to the version 3.0 release that featured the ability to create your own metadata fields and search for data sets using keywords, dates, tags, file names, metadata values, or even draw a 3D box in Geoscience ANALYST to see all the data sets belonging to an area or volume of interest. Additionally, 2D map views are supported to facilitate analysis on topographic and geological maps, or other required map-based visualizations of models and data. Enhancements were made to the creation of input files for machine learning. Other updates included access to layer names within DXF and DWG files. With version 3.1 comes new geophysics themes for exploration data sets: airborne, borehole, and ground along with other general updates and upgrades.



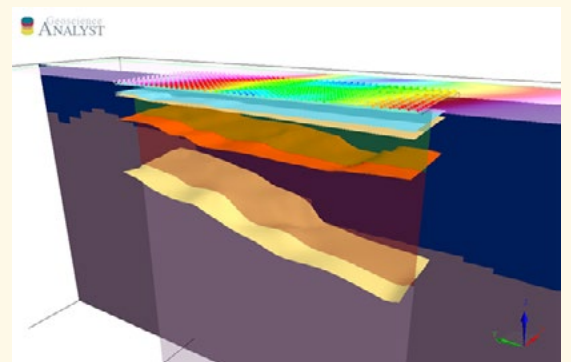
Data set search.

Open Government Licence – Canada

[Details about the product available here »](#)

VP Suite's VPmg version 9.3, VPem1D version 4.3 and VPutility version 1.2 releases

The next release of VP Suite significantly improves the performance of inverting data with VP products. VPmg will now greatly reduce the size of the derivative matrices during heterogeneous inversion. Inactive prisms will only be forward-modelled once, also increasing the overall speed of the inversion. In this version, polygonal areas can be auto-padded for integration into existing models. VPem1D now takes a single control file and has had minor bug fixes applied. VPutility stays up to date with the latest VP enhancements as well as some fixes that were made to improve your user experience.



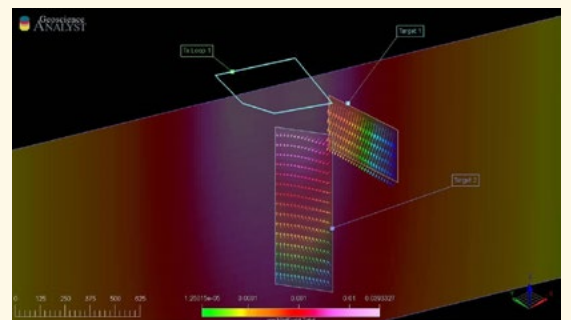
Defining geological layers from ground-based geophysics.

Open Government Licence – Canada

[Details about the product available here »](#)

Geoscience ANALYST version 2.80 release

Many new features and improvements will be introduced in this release. Loading and saving of the Workspace as well as saving over network drives is much faster. This version also improves drill-hole display. Users can now copy-paste objects from the current Workspace to different instances of the application. 2D grids with a dip angle and surfaces from contours that fit to control points can be created. Surfaces can be saved to Datamine binary files. Geometry transformations between custom coordinate systems, or through simple rotation, translation, and scaling can be applied. Objects can be reconnected to a running Maxwell instance, and Maxwell plates can be converted into simple triangulated surfaces.



Maxwell in Geoscience ANALYST.

Open Government Licence – Canada

[Details about the product available here »](#)



Software:

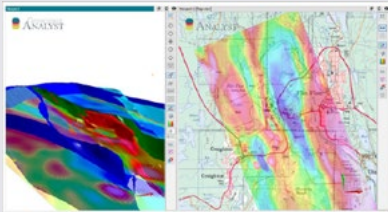
March's tip

In case you missed them, our monthly software tips delivered to you.

GOCAD Mining Suite – Creates a multi-dimensional array property from scalar properties.

Geoscience ANALYST – Viewing 2D with or alongside 3D data.

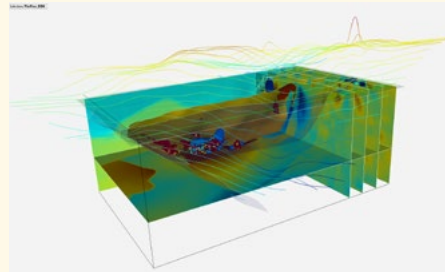
Geoscience INTEGRATOR – Data set search tools.



[Complete tips available here. »](#)

AEGC 2019 – Mira Geoscience Workshop

3D Modelling and Inversion using VP Suite, UBC-GIF and GIFtools



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On September 2, Kristofer Davis, Glenn Pears and James Reid will host a workshop at AEGC2019 conference. It will cover practical modelling and inversion for mineral exploration through a series of tutorial style 'How to' presentations and detailed case studies.

The workshop will focus on the importance of risk management within geological models right from the get-go. Learn to identify how geophysical responses impact your primary model by developing a better understanding of the shape and geometry of specific

geological domains through geological-based forward modelling and inversion of the geophysical data. Get practical tips and rules of thumb from experienced modellers and interpreters.

Practical inversion will be demonstrated using a variety of geophysics programs.

- VP Geophysics Suite - for potential field and time-domain electromagnetic data interpretation.
- UBC-GIF - for potential field, resistivity/ induced polarization, and electromagnetic data.

Learn how to use these programs within GOCAD Mining Suite and Geoscience ANALYST. Be among the first to see GIFtools, a GUI based on Mira Geoscience's Geoscience ANALYST interface which streamlines inversion using UBC-GIF software.

[Details about the conference available here »](#)

New team members!

Marcus Apel



[Marcus](#) joined our team as a Senior Geoscientist who oversees our business development for both software and consulting throughout Europe. He has broad experience in 3D earth modelling and data integration. Marcus has designed and implemented novel technology solutions in geological modelling and geostatistics for the mining industry and geological surveys. He has worked internationally in the modelling of large, complex oil and gas fields. He obtained a PhD in geoscience from Ecole Nationale Supérieure de Géologie Nancy and Technische Universität Freiberg. Marcus is based in Stavanger, Norway.

Carla Gonzalez



[Carla](#) joined our Montreal team as our new Trainer for SKUA-GOCAD and Geoscience ANALYST. In this role Carla will also be participating in testing, documentation, and support. She has previous experience with Apex Geoscience, Maple Gold Mines, and Pretium Resources where she was primarily involved with geological field work. Carla has a BSc in Earth and Planetary Sciences from McGill University.

Promotion!

Scott Napier



Last January we were thrilled to appoint [Scott](#) as Principal Geophysicist, acknowledging his superb technical leadership and interpretational insight across a broad range of geophysical methods. He will continue to lead projects using his specialized expertise in 3D geophysical modelling and inversion, along with his extensive borehole, ground and airborne EM processing and interpretation experience. In addition to his excellence in consulting for a wide range of clients, Scott has worked in Canada and internationally on uranium and base metal exploration teams, with a track record of proven discovery. Three rounds of cheers!