Mira Geoscience
...modelling the earth

eNewsletter Q2-2015

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In this issue:

Don't miss out!

Here is a quick glance at our Upcoming Events Calendar:

- **August 5** Say Goodbye to a 2D Earth (conference) in Crawley, Australia
- **August 21-23** SGA Biennial Meeting in Nancy, France
- **September 5-13** IAMG2015 in Freiberg, Germany
- **September 20-13** GRC Annual Meeting in Reno, USA
- **October 7-9** Bowen Basin Symposium in Brisbane, Australia

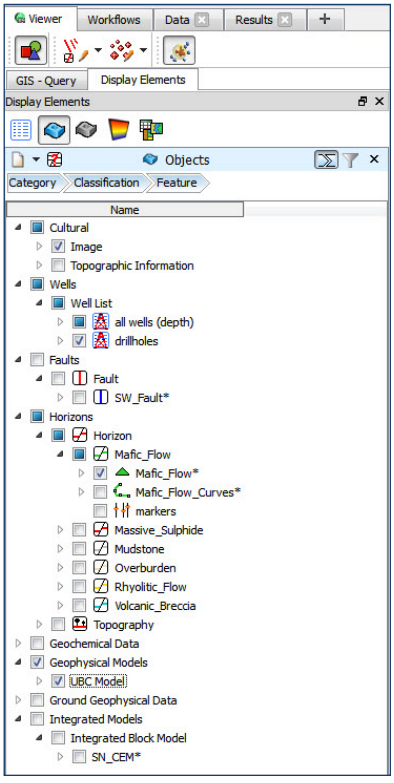
...more details on our Upcoming Events page

Welcome to the 2015, Q2 eNewsletter. We wanted to keep you in the loop of what we have been up to in the last few weeks and what's around the corner. Our software development team has continued its focus on our modelling platform for integrated interpretation, GOCAD® Mining Suite, and on our visualization and communication tool Geoscience ANALYST. We report on very successful trials with "predictive analytics" (HyperCube) technology for mineral prospectivity mapping. Also featured in this eNewsletter is a closer look at the Chisel Basin Common Earth Model. Finally, our team is growing — details on available openings.

Upcoming GOCAD® Mining Suite release – Version 14.1

This summer we will release the latest version of our fully integrated, multi-disciplinary modelling solution.

Enhancements include automatic classification of data on import. The Object tree can now be organized by modelling category (e.g., cultural data, geological contact, structural data, geophysical survey type, physical rock property data, geochemistry and drillhole data, etc.), which describes the data type, feature, and object type. You can create your own custom groupings and sort objects by category, types, user, date, and other filters.



A new default tab layout regroups tools to easily achieve any given task. It allows users to view, investigate data and store results, providing a more auditable process. Results such as images, notes, and reports are stored in tables, providing a database-like interface and enabling complete analytical functionality for understanding relationships between results and input parameters.

Within the 3D Camera you can now move and resize the colour map or transform it into a legend with labels for the discrete values. You can also show the current scale bar.

A new, more powerful Stereonet application is introduced to display structural data. The application includes Schmidt or Wulff projection and rose diagram plots. You can interactively select data in the stereonet by using multiple selection tools including predefined shapes and freehand selections to create different structural families.

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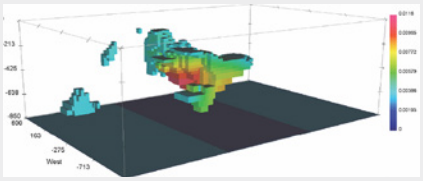
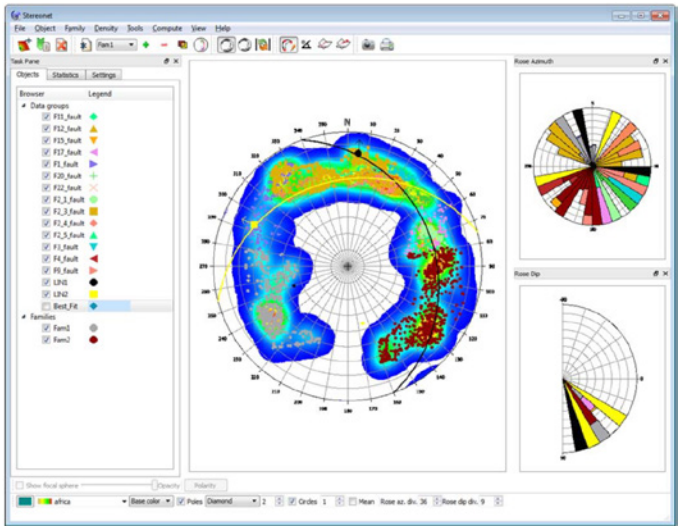
What's new:

UBC-GIF version 5 release

UBC-GIF recently released a substantial upgrade of its GRAV3D, MAG3D, DCIP3D and DCIP2D forward modelling and inversion programs. Enhancements allow users to save time and run efficiently on large-scale problems with multi-processor capability. The new versions provide increased capability to incorporate geologic information via a multicomponent regularization function, the reference model, petrophysical constraints, and use of active and inactive cells.



The new version has a powerful macro programming environment. You can now interactively create your own macros from a series of recorded commands or commands retrieved from the session or object history. You can tag command parameters as variables and then run your macro using different values for the variables. You can also run macros from the new Macro Player Workflow, which prompts you to provide a range of potential values for each variable and then run the resulting scenarios. You can view and analyse the macro results in the Analytics browser.



More details about GOCAD Mining Suite available here »

Earth Modelling 2015 Forum – October 19-21, 2015 - Vancouver, Canada

This October, our 15th annual Earth Modelling Forum will once again bring together some of the greatest people and technology involved in multi-disciplinary earth modelling. It will be three days of knowledge sharing with a positive, friendly vibe, at an extremely well-run venue. Here is a quick glance at what will happen.

October 19, day one: Under the theme of **Integrated Interpretation – Management, Modelling and Validation**, we will kick off with reviews of the state of the art in multi-disciplinary earth modelling followed by a series of great case studies. The rest of the day will be devoted to technology innovation, in which participants will get to watch, learn, and interact. Our evening reception offers a great chance to network.

October 20-21: These two days will be devoted to GOCAD® Mining Suite training courses. On each day you can choose between two courses: **Getting started with Version 14 or Advanced commands in Version 14.**

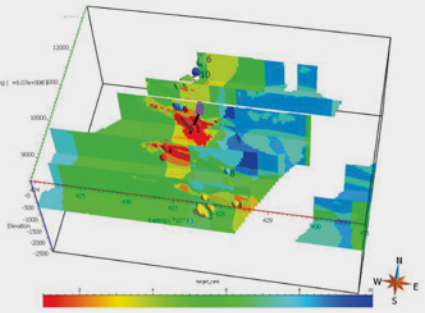
The preliminary program will be published soon — you will not want to miss this year's edition.

If you could not be with us last year, have a look at 2014 program and abstracts.

An example of successful exploration targeting

Hudbay Minerals Inc. has been successfully exploring the Snow Lake Greenstone belt for the past 50 years with numerous discoveries, including the Au-rich Lalor VMS deposit hosted within the Chisel Basin. Over the history of this district, a tremendous amount of geoscientific data has been generated, including a large volume of geophysical data. New geophysical exploration techniques are frequently tested in this district. In 2014, the Geological Survey of Canada chose the Lalor deposit as a test site to conduct a 3D-3C seismic survey as it provided a case study with an intact, well-characterized, large, deep ore deposit. A rich catalogue of geological and geophysical data, as well as extensive drill core and downhole geophysical and geological logs were available.

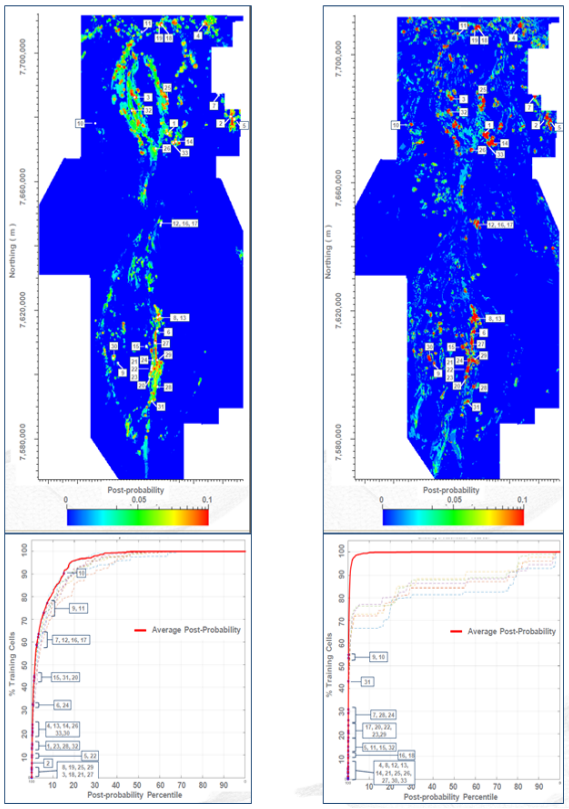
Using GOCAD® Mining Suite, consultants at Mira Geoscience, together with Hudbay geoscientists and consultants, created a Common Earth Model of the Chisel Basin. The model successfully integrated geological, geophysical and geochemical data to create an internally consistent, integrated model. The model became the foundation for 3D mineral potential modelling, driven by an exploration model and exploration criteria developed based at existing VMS deposits in the district.



HyperCube – Using predictive modelling in mineral exploration. Mt Dore case study

As mentioned in our last eNewsletter, we have been applying Bearing Point's predictive analytics approach ("HyperCube") to exploration targeting. This approach can be applied wherever conventional Weights-of-Evidence, logistic regression, neural networks, or other data-driven approaches would be appropriate. Hypercube analyzes relationships amongst many variables simultaneously in multi-dimensional data space rather than criteria by criteria. It removes the difficulties of determining "cut-offs" or thresholds for individual exploration criteria by replacing them with more interpretively useful multi-parameter "rules" driven by geological reasoning.

WofE HyperCube



A few years ago we carried out targeting work for IOCG-style mineralisation in the Mt Dore area of QLD, Australia. We produced a 3D model and predictive exploration map using the WofE approach for this regional scale project. Using the same data sets, we tested the power of predictive analytics. The results were much more useful. In the Hypercube result, at least one cell immediately proximal to all of the known mineral deposits were identified within the upper 2nd percentile of the ranked prospectivity score. HyperCube ranks criteria by creating rules, which are sets of related criteria that define a phenomenon or event. The rules generated for the Mt. Dore model revealed clearly that training cells cluster into different groups which can be tied to subtle variations in geological settings.

Image note: On the left side is the WofE predictive exploration map and on the right side the HyperCube map. Numbers correspond to training data (known IOCG deposits), and red zones correspond to high prospectivity target selection areas. Note that fewer training sites are identified as high prospectivity zones in the WofE result (e.g. training sites 1, 7, 11). Other case studies we have looked at demonstrate that HyperCube presents fewer false positives. The HyperCube map is simply a much more focused prospectivity map.

In the news:

Mining Magazine
April 2015

"Exploring new options "From the moment the exploration process starts to the operation of a mine, a vast amount of multidisciplinary data is gathered to use, share and interpret. Dr John McGaughey, president of Mira Geoscience, says: "The notion of 'data integration' has become broadly accepted as essential to effective interpretation. In recent years, it has become a common theme of exploration technical conferences. However, for practical reasons, coherently managing disparate and complex data streams remains a daunting challenge." … "

Contributions:

SAGEEP
Austin, USA – March 25

Application of an Innovative AEM System for Mapping Hazards and Water Resources in Oil and Gas Fields
– Scott Napier

World Geothermal Conference
Melbourne, Australia - April 24

GOCAD® Mining Suite Software as a Tool for Improved Geothermal Exploration
– Jeff Witter

CIM Convention
Montreal, Canada – May 11

4D Multidisciplinary Data Management for Mineral Exploration and Mining
– John McGaughey

GSN Symposium
Reno, USA – May 18

3D Inversion of Natural Source Geophysical Methods for Mineral Exploration in the Western Cordillera of North America with Case History Examples
– Scott Napier

We are looking to grow our technical team!

Geologist in Perth, Australia
We are looking for an experienced Mineral Exploration Geoscientist to join our team in Perth. This individual will work in an integrated geology-geophysics team to provide understanding of ore systems, geological interpretation, 3D multi-disciplinary integrated models and exploration targets, and to provide mineral exploration project management consulting.

Geophysicist in Brisbane, Australia
We are seeking an enthusiastic Geophysicist who is keen to increase their skills in quantitative geophysical modelling and inversion to deliver geological outcomes in support of our clients' mineral exploration activities. Experience with geological modelling is critical for this hire.

Sales Professionals in Perth, Australia and in **Vancouver**, Canada
We are also expanding our global sales team and have new opportunities for sales professionals to join our teams in Vancouver and in Perth. Our sales professionals will play key roles, working with our consulting geologists and geophysicists to deliver 3D multi-disciplinary, integrated modelling service and software solutions. The ideal candidate will have a minimum of 5 years of experience within the minerals exploration and mining sector.

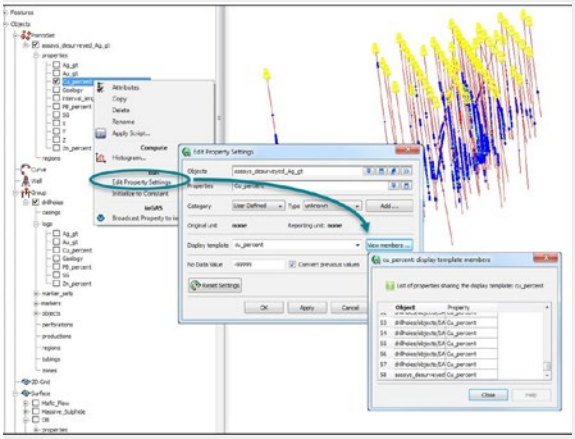
If you're interested in finding out more let us know »

GOCAD® Mining Suite: June's tip of the month

Editing property settings: Display template

The display template groups properties that share the same display attributes such as colormap, high/low clip, transparency, etc.

When a property is created, a default display template is generated from the property name. Any subsequent property created with the same name will have the same display template. Changes made to the property attributes will be reflected on all the properties sharing the display template.



- To view or edit display attributes, right-click on the property and select Attributes.
- To view the objects sharing the same display template, right-click on the property, select Edit Property Settings then View Members.
- To remove a property from a display template, simply enter a new display template name in the Edit Property Settings dialog box.

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