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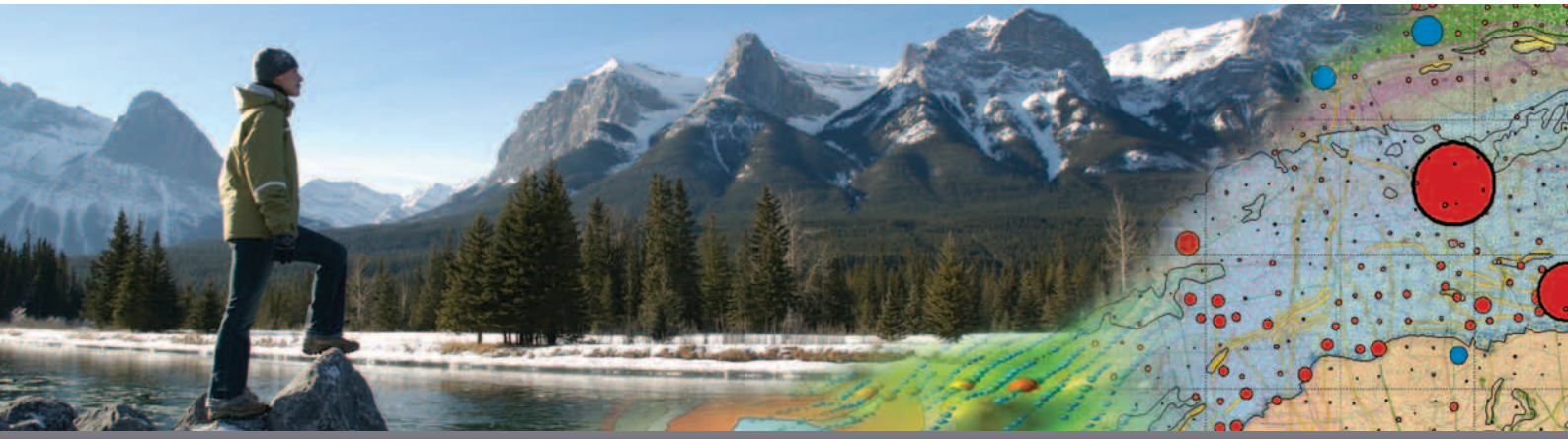
GEOSOFT®

An extension for Oasis montaj and Target

Geochemistry



Advanced Geochemical Data Analysis

Now includes SEMplot workflow for Diamond Exploration

"We remain focused on usability and productivity advances within the Geosoft environment, allowing us to put more power, flexibility and control into the hands of our clients. This focus is the foundation of our vision to help geoscientists recapture time lost to handling and working with data, so they are free to explore."

Louis Racic, Geosoft Product Management Director

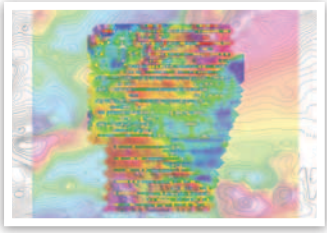
Geochemistry Extension

There is a wealth of information buried in the geochemistry of rocks, soils and sediments. Extracting and interpreting this information is an essential requirement of exploration geologists. Whether they are engaged in grassroots mineral exploration, advanced stage deposit delineation or environmental site characterization and remediation, understanding geochemistry is integral for making informed decisions.

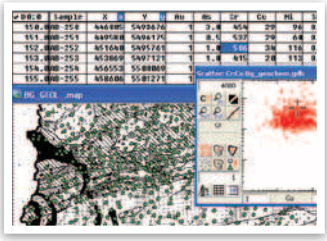
More rigorous geochemical investigations demand a software system that can process large data sets and analyze all components of geochemical sampling in context with the geology and geophysics. Geosoft's Geochemistry software, available as an extension for Oasis montaj and Target, provides geoscientists with the tools needed to generate multivariate analysis of assay data, within a fully integrated mapping environment.

Use Geosoft Geochemistry software to:

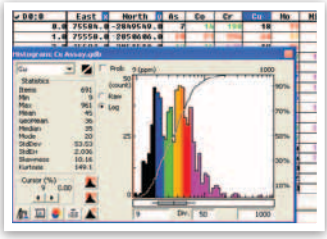
- Simplify the quality control process with easy to use standard and duplicate handling capabilities.
- Analyze multi-element geochemistry with interactive histograms, scatter plots, probability and ternary plots, to identify outliers and populations.
- Select and subset data interactively from maps based on rock codes, regions or map groups.
- In diamond exploration, effectively discriminate samples of interest based on their indicator mineral grain geochemistry.
- Identify geochemical trends and anomalies quickly and efficiently.
- Enhance your maps with advanced symbol plotting and data gridding techniques.
- Combine surface geophysics, geology and geochemistry data into dynamically linked maps.



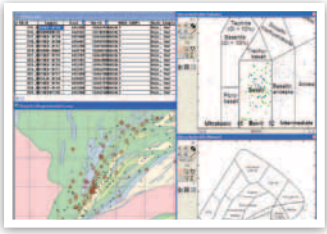
Scatter tools link data within a 3D environment



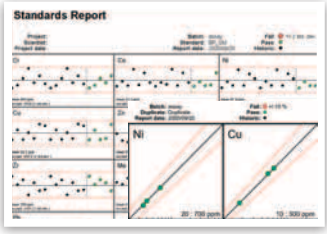
Dynamic data linking between .gdb, maps, sections and profiles



Data is colour coded based on population breaks



Use overlays on scatterplots and triplots to discriminate your samples



Use standards and duplicate reports for QC of geochemistry data

Key Features

Quality Control

Use the quality control and quality assurance functionality to effectively validate and analyze your standards and duplicates data, to ensure that all results fall within statistical limits.

Multi-Parameter Symbol Plotting

There are several kinds of Multi-Element symbol plots, including Pie, Rose (or Sector), and Bar Plots in addition to the standard proportional sized and colour varying symbol plots. Each can plot up to eight channels simultaneously on a single map. Scaling of the individual channels may be specified, and defaults are taken from the symbol-scaling attribute for each channel. For ease of use, all three plots use a common interface and share parameters.

Querying and Subsetting

Interactively select data from statistical tools (histogram, probability, scatter and ternary), code fields in datasets or individual map groups. Split and refine data for statistical analysis in regional geological differences, analytical techniques or sampling types.

3D Mapping

Create 3D views of geochemical data combined with other surface and sub-surface datasets, including vector data, DTMs, grids, images and voxels. Zoom, pan and rotate objects in the 3D environment, using an interactive 3D dialog. Use vertical exaggeration for visualizing larger regional datasets. Print and export 3D views to include them in your report.

Surface Mapping

Create grids and contour maps of point sample data (streams, soils, rocks, geophysical data). Interpret your results on any map with CAD drawing tools, which allow you to annotate and define areas of interest onto new map layers. Enhance your maps by adding data from other sources such as MapInfo TAB files, ArcView SHP files, AutoCAD DXF files, Surpac STR files and Microstation DGN files.

Dynamic Data Linking

Dynamically link between and among samples, maps, graphs and data to ensure maintenance of the spatial context between grain graphs, databases and maps, and make anomaly location and target selection quicker and more efficient.

Import Data

It is easy to import Survey (X, Y location information) and Assay (geochemical lab results) files as separate data sets and then merge them together into one database file. You also have the option to automatically convert negative assay results to a positive value (half your detection limit). Import formats: ASCII, Microsoft Excel (.xls), Microsoft Access Database (.mdb), acQuire point data and clipboards.

Histogram Analysis

An interactive histogram tool displays the selected channel, along with channel statistics, histogram width, current cursor position and corresponding data value and percentile values. Its dynamic dialog box updates data values whenever you make a change to a corresponding value in the database.

Scatter Plot Analysis

Plot one Assay channel against another Assay channel in a scatter plot. You can interactively interrogate the data contained within your database and plot to a map. The Scatter Plot Tool implements dynamic linking between itself and the current database, the current map, as well as with any other Scatter or Triplot tool open in the project.

Statistical Data Analysis

Its range of statistical tools for working with large volumes of geochemical data includes:

- Histogram analysis
- Probability analysis
- Principal component analysis
- Interactive scattergrams (XY plots)
- Ternary plots
- Statistical reporting
- Correlations

Process any type of surface or subsurface geochemical data. All these tools allow you to create data masks to include or exclude selected points from the data. Tools are saved in the project when you close your project.

Triplot Analysis

The Triplot Tool is similar to the Scatter Plot Tool, but plots a ternary plot using three channels. The values for any point are summed, and then normalized to give fractions from 0 to 100 percent. It implements dynamic linking between itself and the current database, and through it with any other Triplot or Scatter plot tool open in the project.

Probability Analysis

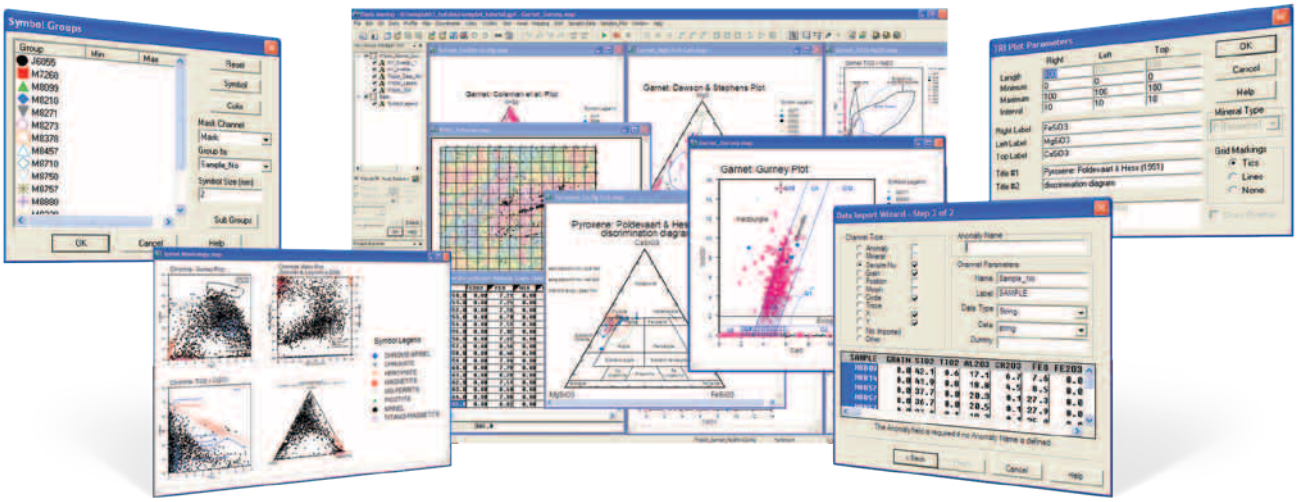
This interactive tool displays the selected channel, channel statistics, sigma range, current cursor position and corresponding data value and percentile values. Its dynamic dialog box updates data values whenever you make a change to a corresponding value in the database. In addition to providing a quality control tool for analyzing your data, the probability tool enables you to create classified symbol plots with symbol legends for your maps.

Included in the Geochemistry extension:

SEMplot Workflow for Diamond Exploration

The SEMplot workflow provides proven technology for analyzing indicator grain geochemistry

SEMplot is a powerful tool for analyzing kimberlite indicator minerals and is the newest addition to Geosoft's montaj Geochemistry software. SEMPlot's simple to use workflow enables effective interpretation of large volumes of indicator mineral geochemistry data, thereby accelerating potential target definition. It's an innovative technology available with the Geosoft Geochemistry extension of Geosoft's Oasis montaj and Target environment.



Refining target selection for diamond exploration

It is standard practice in diamond exploration to determine the diamond potential of a region by analyzing the type, abundance and composition of kimberlite indicator minerals found in the surface sediment or kimberlite rock samples. Whether you have just a few samples or many, SEMPlot displays your mineral grains, allowing efficient visualization and discrimination of the scatter electron microprobe data.

The power of SEMPlot

SEMPlot can take very large volumes of microprobe data, analyze that data, and then quickly produce spatial maps, graphical maps and plots. Among its features, SEMPlot allows efficient determination of mineral identification of grains, based on their geochemical stoichiometry. Once the grain has been identified, it can be analyzed correctly. Choose to display selected mineral grains on standard published discriminating graphs, or graphs and overlays you have created, and interactively select and reclassify the samples.

Proven technology for analyzing indicator grain geochemistry

Rio Tinto Exploration, a world leader in finding, mining and processing the earth's mineral resources, originally developed SEMPlot workflow in-house, to refine target selection for its diamond exploration. Subsequently, Rio Tinto's SEMPlot workflow evolved into SEMPlot.

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