

 **GEO SOFT**
Geochemistry for ArcGIS



Geochemistry for ArcGIS

Exploratory Geochemical Data Analysis

"We remain focused on putting more power, flexibility and control into the hands of explorers. This focus is the foundation of our vision to help geoscientists recapture time lost in handling and working with data, so they are free to explore."

Louis Racic, Geosoft Product Management Director



Geochemistry for ArcGIS Extension

Extracting, evaluating and interpreting the wealth of information buried in the geochemistry of rocks, soils and sediments has always been an integral task of an exploration geologists' role. Whether engaged in regional target analysis, grassroots mineral exploration, advanced stage deposit delineation or environmental site characterization and remediation, understanding the geochemistry of your exploration area is essential for making informed decisions.

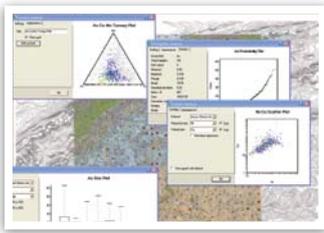
Geochemical investigations demand a software system that can process and analyze all components of geochemical

sampling in context with the geology and geophysics. The Geosoft Geochemistry for ArcGIS extension allows you to maximize the knowledge of your data set by examining multivariate relationships, uncovering underlying structures, identifying outliers and anomalies and presenting your results by creating informative, visually impactful maps.

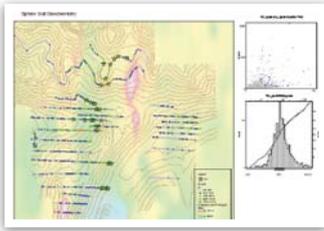
The Geosoft Geochemistry for ArcGIS extension enables geoscientists to effectively import, validate and analyze their surface or drillhole geochemical data within the ESRI ArcGIS environment.

Use Geochemistry for ArcGIS software to:

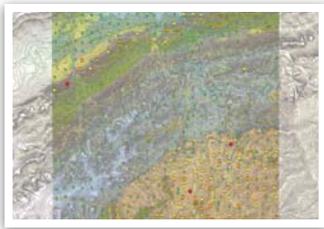
- Simplify the quality control process with easy to use standard and duplicate handling and graphing capabilities.
- Use the merge reports to identify samples that are missing location or assay information.
- Grid and contour your geochemical assay point data to enhance your data display.
- Import data from several different sources and file types.
- Maintain your data in an ESRI file geodatabase using a data model optimized for geochemical data.
- Analyze multi-element geochemistry using interactive multiple histogram plots, Pearson's correlation reports, scatter plots, probability plots, ternary plots and box plots, to identify outliers and define populations.
- Select and subset data interactively from maps based on rock codes, regions or map groups.



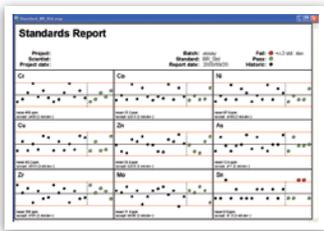
Statistical data analysis



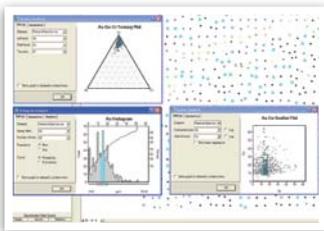
Soil geochemistry with magnetics



Symbol plots with geology and topographic contours



Standards report for QC of geochemistry data



Dynamic linking between samples, maps, graphs, and data

Key Features

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 geodatabase table. You also have the option to automatically convert negative assay results to a positive value (half detection limit). Formats that are easily imported include: ASCII, Microsoft Excel (.xls), Microsoft Access Database (.mdb), ESRI shapefile (.shp), personal and file geodatabases and acquire point data.

Quality control

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

Querying and selecting

Interactively select data from statistical tools (histogram, probability, scatter and ternary plots) by categories. You can split, subset and refine data for statistical analysis based on regional geological differences, analytical techniques or sampling types.

Surface mapping

Create grids and contour maps from point sample data (streams, soils, rocks, geophysical data). Point data can be easily colour coded based on user-defined population breaks.

Dynamic data linking

Instantly see the connection between all your sections, plans and database views using dynamic linking. Select a location on a map and the software highlights the corresponding data value in the database, profile, graph, and drillhole windows in real time.

Statistical data analysis

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

- Histogram analysis
- Scatter plots
- Ternary plots
- Probability (or Q-Q) plots
- Statistical reporting
- Pearson's correlations
- Box plot diagrams

Process any type of surface or subsurface geochemical data in ArcGIS. All these tools allow you to create data selections and to include or exclude selected points from the data. These statistical analysis graphs and diagrams can be saved with your project and be plotted to your map layout.

Histogram analysis reports

An interactive histogram tool displays the selected field data, along with field 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 reports

Plot one assay element against another assay element in a scatter plot. You can interactively interrogate the data contained within your database and plot to a map. The scatter plot tool supports 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.

Ternary analysis reports

The Triplot tool is similar to the scatter plot tool, but plots a ternary plot using three assay fields. 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 feature class, and through it with any other Ternary or scatter plot tool open in the project.

Probability analysis reports

This interactive tool displays the selected assay, assay 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.

Statistical reporting

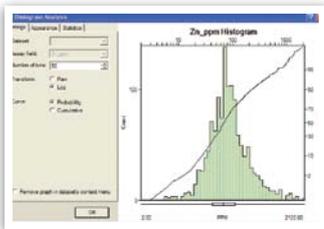
Easily calculate basic and advanced statistical parameters for a single assay element. Basic (summary) statistics include: assay element, total number of samples, number of nulls, minimum, maximum, range, mean and standard deviation. The advanced statistics include: geometric mean, median, mode, sum of squares, variance, skewness, and kurtosis.

Correlations report

Calculate the Pearson's correlation between all or a selection of assay data channels and plot the results in a correlation table which can be placed on a map. This gives a quick and easy view of which elements or assay results are strongly correlated to each other, allowing you to pick out trends in the data. Double clicking on any of the scatter plots opens a more detailed view (the scatter plot tool).

Box plot analysis reports

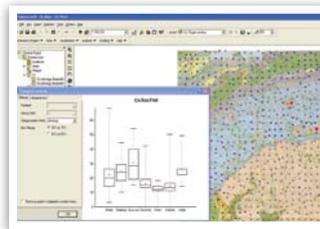
Box plots divide the data from a single assay based on a user-selected categorization channel, such as lithology, soil type, year or sampling method. Plot a figure which summarizes the data distribution for each category. The data minimum and maximum values, as well as the 25%, 50% (median) and 75% break points are shown.



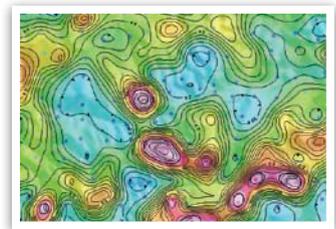
Histogram analysis



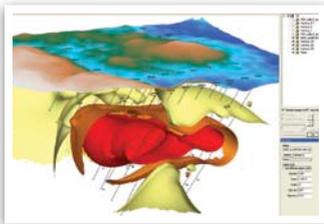
Pearson's correlation



Box plot analysis

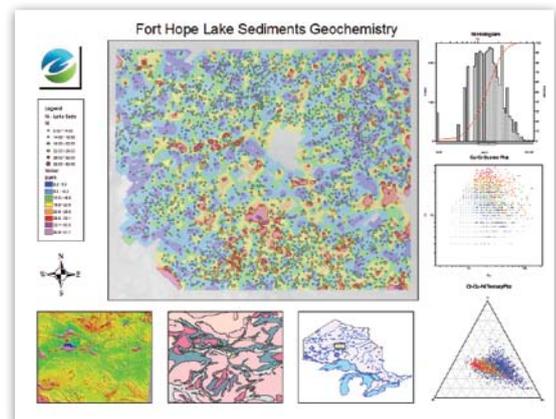


Point sample data grid with contours



Integration with Target for ArcGIS

Analyze your geochemical drillhole data. Geochemical drilling data from Geosoft Target for ArcGIS is supported via a direct import from the drillhole project. Drillhole assay results can be analyzed using all the same tools available for surface geochemical results. Import filtering options allow you to select all drillholes or a selection of holes.



Final maps integrating all data types

The Geochemistry for ArcGIS extension requires ArcGIS 9.3.1 (SP2) or ArcGIS 10 (SP1 or SP2).



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