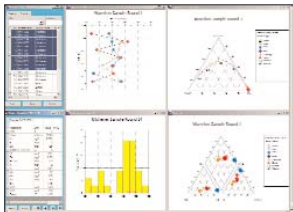


AquaChem

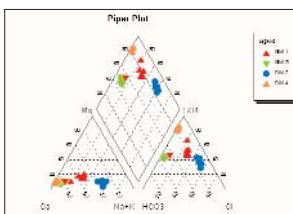
Aqueous Geochemical Analysis, Modeling, and Reporting



Multiplot views



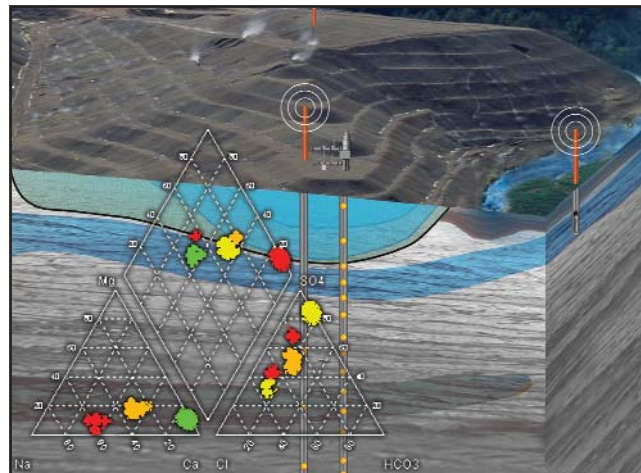
Exceedance highlighting



Piper plot

AquaChem is compatible with:

- Visual MODFLOW Premium*
- Hydro GeoAnalyst*
- Hydro GeoLogger*
- Hydro GeoBase*



Applications:

- Analyzing water sample data during Aquifer Storage and Recovery (ASR)
- Managing and reporting water quality data from municipal supply wells
- Identifying mineralization trends in groundwater during mining exploration
- Assessing aqueous geochemical interactions during acid mine drainage
- Compliance reporting of water quality data collected at sanitary landfills, industrial sites, reservoirs, etc.

Overview

Groundwater resources management, municipal water supply, and industrial projects require continuous monitoring and collection of water samples to ensure compliance with local regulatory guidelines. Numerous water samples are collected from the field and analyzed in the lab, providing water specialists the critical baseline data necessary for understanding overall water quality conditions at the site. The aqueous geochemistry and general water quality findings determine water uses, highlight areas of concerns, and provide support for mitigating risks to human health and the environment. However, making sense of the vast amounts of data produced by the analytical laboratories requires a comprehensive data management system.

AquaChem

AquaChem* is ideal for groundwater and surface water projects requiring management, analysis, and reporting of water quality data. AquaChem features a fully customizable database of physical and chemical parameters and a comprehensive selection of analysis, calculation, modeling, and graphing tools.

AquaChem's analysis capabilities cover a wide range of functions and calculations frequently used for analyzing, interpreting and comparing water quality data. These powerful analytical capabilities are complemented by a comprehensive selection of commonly used plotting techniques to represent the chemical characteristics of aqueous geochemical and water quality data.

For in-depth geochemical modeling, AquaChem provides powerful geochemical reaction modeling capabilities using the USGS engine PHREEQC. AquaChem is truly one of the most powerful tools available for interpretation, analysis and modeling of simple or complex water quality data sets.

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The complete solution for water quality data management! Now supporting Windows™ Vista and Windows™ XP 64-bit™, AquaChem is the most widely used software package specifically developed for graphical and numerical analysis and modeling of water quality data. It features a fully customizable database of physical and chemical parameters and provides a comprehensive selection of analysis tools, calculators and graphs for interpreting, plotting and modeling water quality data. AquaChem is the best choice for analyzing and reporting your water quality data!

Data Management	<ul style="list-style-type: none"> AquaChem utilizes the MS Access™ relational database system for maximum performance and flexibility Easy-to-use query interface allows you to create and execute simple or complex data queries Export data, reports, or spreadsheets directly to MS Excel™ 	<ul style="list-style-type: none"> Direct link to a customizable lookup table containing more than 560 common inorganic and organic chemicals Customizable pick lists with filters allow for easy isolation and retrieval of samples, including all ions, cations, anions, and elements
Data Entry/Export	<ul style="list-style-type: none"> Import from a wide range of data configurations Save all import settings for re-use with other similar data sets Export station location & attribute data to ESRI™ .SHP for use in GIS Automatic importing and matching of data to CAS Registry #s 	<ul style="list-style-type: none"> Fast, flexible, and easy data entry using tabular views of multiple samples, or form views of individual samples Import water quality data directly from MS Excel™ Worksheets, MS Access database tables and Text File formats (PRN, TXT, CSV)
Water Quality Standards	<ul style="list-style-type: none"> Built-in standards from WHO, U.S. EPA, and CCME Import/customize virtually any set of water quality standards Check values against a mix of active levels, ex. ODWS and PQWO Quick generation of Water Quality Exceedance Reports 	<ul style="list-style-type: none"> Water quality exceedance values are automatically highlighted when viewing individual sample results, or tabular summaries of selected samples using color identifiers Summary statistics display standards for all applicable parameters
QA/QC	<ul style="list-style-type: none"> Rigorous management of non-detect values now follow official U.S. EPA's "Guidance for Data Quality Assessment, Practical Methods for Data Analysis" EPA QA/G-9, QA00 Compare duplicate samples 	<ul style="list-style-type: none"> Identify samples with concentrations that fall outside defined natural occurrence interval, or that exceed solubly Define non-existent database parameters as standards Graphically highlight levels of exceedance for each sample
Statistical Analysis	<ul style="list-style-type: none"> Statistical trends analysis: Linear Regression, Sen's Test, Mann Kendall Test, now with enhanced output features Mann Kendall statistics are now included in the summary statistics and may be calculated for multiple parameters at once Statistical Outlier Tests: Dixon's Test (Extreme Value Test), Discordance Test, Rosner's Test, Walsh's Test Test for Normality: Studentized Range Test, Geary's Test, 	<ul style="list-style-type: none"> Shapiro Wilk Test, Variance Coefficient, D'Agostino's Statistical Functions: Quantiles, Confidence Intervals, T-Statistics, Skewness, Kurtosis, Tolerance Intervals Statistics report supports multiple units allowing the user to select and calculate several parameter units simultaneously Identify number/percentage of non-detect values, or number/percentage of non-detects above or below standard
Plotting/Graphing	<ul style="list-style-type: none"> Correlation Plots: X-Y Scatter, Ludwig-Langelier, Depth Profile Wilcox, Geothermometer, Meteoric Water Line Summary Plots: Box and Whisker (Time Series), Box and Whisker (Multiple parameters), Box & Whisker (Multiple stations), Frequency Histograms, Quantile, Detection Summary Multiple Parameter Plots: Piper (HCO³⁻ or Alkalinity), Durov, Ternary, Schoeller, Giggenbach Triangle Time-Series Plots: Multiple Parameters, Multiple Stations, Statistical Summary Single Sample Plots: Radial, Stiff, Pie Thematic Map Plots: Pie, Radial, Stiff, Plain Symbol, Proportionate Symbol, Proportionate Grayscale Symbol Streamlined GUI facilitates quick and accurate plot designs 	<ul style="list-style-type: none"> All plots are dynamically linked to the Sample List and are updated on-the-fly as samples are added or modified All plots may display data for all samples in the Sample List, or only for selected samples Data aggregation for multiple samples at the same location Data inspection tool displays parameter values for any point on any plot simply by clicking on the point of interest All plots include customizable options Advanced symbol labeling options with annotation Save multiple plot configurations for easy recall and analysis Load multiple plots from stored configuration Place plots on one or more pages Automatically generate water standard limit line
Reporting & Printing	<ul style="list-style-type: none"> A custom Report Designer allows you to create sample reports containing any set of selected parameters and to format the design and presentation of the results QA/QC Report compares sample to its duplicate to determine margins of error Reports in spreadsheet format can be saved to MS Excel™ 	<ul style="list-style-type: none"> The improved Template Designer makes it easier to create customized page layouts for printing Reports or plots Advanced symbol labeling with options to position sample labels anywhere on the plot (with connecting lines) Increased flexibility when printing plots
Water Quality Modeling	<ul style="list-style-type: none"> Direct link to USGS PHREEQC to calculate the saturation indices, activities or pH for selected water quality samples and seamlessly save the results back into AquaChem Support for PHREEQC v.2.14 including Pitzer equations for saline waters or brines Built-in link to the USGS GUI PHREEQC for water quality modeling 	<ul style="list-style-type: none"> Generate PH3TD input for Visual MODFLOW Premium Easily retrieve thermodynamic database settings Includes new modeling feature "Equilibrate with Minerals" which calculates the number of minerals that were precipitated as the solution is evaporated or heated Preview generated input data before exporting to text files
Built-In Tools	<ul style="list-style-type: none"> Decay Calculator: Calculates the concentration of a chemical after a period of time subject to a specified decay rate, calculates the time required for a chemical to reach a specified concentration subject to specified decay rate (degradation rates for air, soil, groundwater and surface water), or estimate half-life from two concentration/time pairs Species Converter: Converts any species into a different form. This is useful to express a measured parameter as a different aqueous species when expressed in mg/L Volume Concentration Converter: Converts volume concentration (ppm) of a specified chemical formula to mass concentration (mg/m³) Special Units Converter: Converts values from one measurement unit to another for measurements such as Alkalinity - HCO³⁻, and Conductivity (us) - Resistivity (Ohm/cm) 	<ul style="list-style-type: none"> Unit Calculator: Converts values for most common unit categories, new unit conversion can be added Formula Weight Calculator: Calculates the formula weight of virtually any organic or inorganic chemical Alk > HCO³⁻, CO³⁻, calculates the concentrations of the species HCO³⁻ and CO³⁻ based on a given pH and alkalinity - e.g. reporting HCO³⁻ and/or CO³⁻ concentrations when only alkalinity values are available Various scaling and corrosion indexes (Langelier, Ryznar, Puckorius, Larson Skold) Search for stations and samples that are located at a given distance from another station Dissolved Oxygen Calculator: Estimates oxygen concentrations as a function of temperature and elevation Easy Ctrl+C copy feature stores most grids on the clipboard