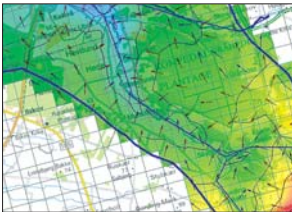
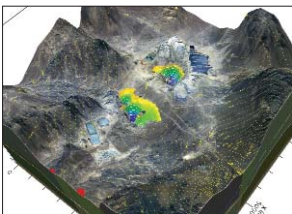


Visual MODFLOW Premium

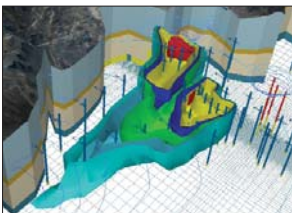
Three-dimensional groundwater flow, heat, and contaminant transport modeling software



Water Supply Management



Mine Dewatering



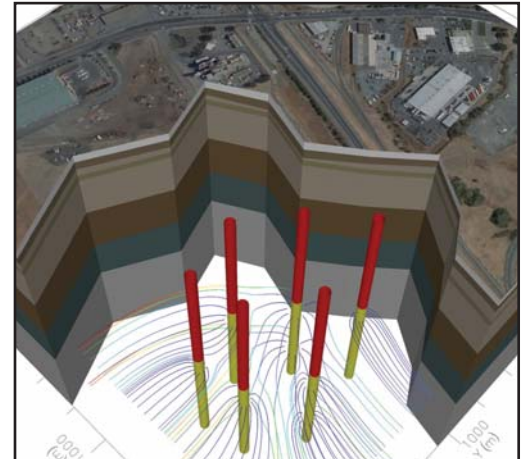
Geochemical Reactive Modeling

Visual MODFLOW Premium can be used with:

- Hydro GeoBuilder*
- Hydro GeoAnalyst*
- AquaChem*
- AquiferTest Pro*
- UnSat Suite Plus*
- Diver* dataloggers

Applications:

- Evaluate groundwater remediation systems
- Assess safe-yield for groundwater supplies
- Optimize well pumping rates for irrigation
- Delineate wellhead protection areas
- Determine exposure pathways for risk assessment
- Predict impacts of groundwater extraction on surface water flows
- Simulate natural attenuation processes
- Predict impacts from saltwater intrusion
- Identify the feasibility of aquifer storage and recovery
- Calculate the effects of mine dewatering



Three-dimensional particle tracking around pumping wells at a contaminated site

Overview

Effective, long-term management of groundwater requires calculating flow patterns and susceptibilities to contaminants, as well as assisting with risk assessment, and evaluating remediation alternatives. Today's water professional can now manage these challenges more effectively with Visual MODFLOW Premium*. Visual MODFLOW Premium is a sophisticated three-dimensional modeling program for building, calibrating, and evaluating groundwater flow, heat, and contaminant transport models, and is based on industry-standard codes such as USGS MODFLOW, MT3DMS, MODPATH, SEAWAT, RT3D, and PEST.

Visual MODFLOW Premium

Visual MODFLOW Premium seamlessly integrates several powerful numeric engines with a graphical user interface that increases modeling productivity and decreases the complexities typically associated with building, calibrating and evaluating three-dimensional groundwater flow and contaminant transport models.

Visual MODFLOW Premium automatically reads the output from each successful simulation and provides a comprehensive selection of graphical tools for displaying full-color results in plan and cross-sectional views. For more dramatic representations, use Visual MODFLOW Premium to generate views including contour and color maps, pathlines, three-dimensional contaminant plumes, water tables, surfaces, and animations.

Visual MODFLOW Premium

The complete solution for three-dimensional groundwater flow and contaminant transport modeling! Visual MODFLOW Premium now delivers enhanced performance with expanded capabilities. Demand more from your groundwater model and test the new features included with Visual MODFLOW Premium today.

Integrated simulation capabilities

- MODFLOW-2000, 2005 the standard for 3D groundwater flow
- SEAWAT v.4, for 3D variable-density groundwater and heat flow
- MODPATH, the standard package for particle tracking
- MT3DMS, the multi-species contaminant transport engine
- PHT3D, multi-component geochemical reactive transport
- MT3D99¹, for advanced multi-species reactive transport
- RT3D, for reactive transport simulations
- Zone Budget, for sub-regional water budget calculations
- LAK Package, for surface water/groundwater interactions **NEW**
- Multi-Note Well (MNW) package for advanced well simulations
- ETS1 Package, for accurate evapotranspiration modeling **NEW**
- WinPEST, automated calibration and predictive analysis
- VMOD 3D-Explorer, 3D visualization and animations
- SAMG Solver¹, for fast convergence of complex models
- GMG, the latest USGS Geometric Multi-Grid solver
- MGO, for advanced pumping well optimization

Data input

- Intuitive work-flow, easy-to-use graphical user interface
- Streamlined Project Wizard for quick and easy project setup
- Point-and-click functionality for assigning model properties
- Interactive model display (view in plan, cross-section, or in 3D)
- Flexible raster image import with georeferencing
- Quick creation and optimization of model grids
- Import and interpolate elevation data directly to the grid
- Interpolate using Kriging, Natural Neighbor, or Inverse Distance
- Import distributed properties: initial heads, concentrations, dispersivities in XYZ: .TXT, (.MDB, .XLS, .XLSX, .SHP
- Import MODFLOW Packages (.RIV, .WEL, .CHD, .DRN, .LAK) **NEW**
- Import transient time schedules for boundary conditions
- Import PHT3D concentrations generated in AquaChem
- Import MODFLOW-2000, 2005, MODFLOW -96, data sets
- Import layers, properties, or boundary conditions from matrices in Layer, Row, Column format (.TXT) **NEW**

GIS integration

Visual MODFLOW Premium fully integrates standard GIS formats for convenient design of the model input and analysis of the results.

- Import shapefile or DXF files as map overlays
- Georeference raster images (air photos, topographic maps)
- Import model layers from .DEM or ESRI .ASC grids
- Import flow properties from polygon shapefiles
- Import boundary conditions from line or polygon shapefiles **NEW**
- Import and interpolate point shapefiles for designing model layers or distributed flow properties (conductivities, initial heads, etc.)
- Export the model grid to points shapefile; useful for pre-processing model layers and flow properties **NEW**
- Export the model grid with parameters to polygon shapefile; useful for post-processing and reporting **NEW**

Predictive analysis using PEST-ASP

Predictive Analysis is an analysis technique used to minimize or maximize a specific system response by adjusting selected model parameters within given bounds, while still maintaining the obligation of a calibrated model. Predictive Analysis is effective in removing the traditional trial-and-error sensitivity analysis. Scenarios where you would use predictive analysis include:

- Determining the maximum contaminant concentration possible at a selected location in 50 years
- Determining the maximum seepage from a section of the river due to nearby pumping
- Determining the maximum rise in the water table at a selected location due to irrigation

Enviro-Base Pro

- Integrated Enviro-Base program allows for on-the-fly referencing of aquifer properties, chemical information, EPA standards, and other useful modeling information, ideal for citing facts in groundwater modeling reports
- Create a new database for project-specific information
- Soil Properties: Hydraulic Conductivity, Porosity, Specific Yield, and Specific Storage
- Chemical Properties: Viscosity, Henry's Coefficient, Vapor Pressure, Log Kow, Density, and Solubility

Graphics and reporting

- Export to a variety of common graphical formats (GIF, JPG, TIF, PNG, BMP, EMF, DXF) for use in reports/presentations
- Adjustable map transparency settings allow for viewing of multiple layers (e.g. conductivity zones over a site map)
- Adjust background color, image height/width, axis color, etc.
- Enhanced color management and color shading with rich RGB color schemes and smoother color transitions
- Develop customized reports with your company logo and project descriptions using the Image Editor

Exporting gridded model data

Export virtually any model property value or simulation result to a variety of ASCII and binary data formats including:

- ASCII XYZV (.TXT) Four or more columns containing X, Y, Z, coordinate location of the model grid cell and one or more selected model parameters. The cell coordinates can be in either world coordinates, model coordinates, or IJK cell indexes.
- ASCII Array (.TXT) NR x NC array of values for each selected parameter, for each selected model layer. Export data with multiple layers in a single file, or as separate files for each selected model layer.
- Surfer Grid (ASCII, Binary) (.GRD) A single file for each selected parameter, for each selected layer with a user-defined grid density. Some averaging of parameter values occurs where the model grid is different than the Surfer Grid, and any inactive or dry cell values may be excluded.
- Layer, Row, Column format (.TXT) - Export layer elevations, flow properties, and boundary conditions to matrices (Layer, Row, Column) format for post-processing in Excel or Notepad **NEW**

Related products

(sold separately)

- Hydro GeoBuilder - Grid-independent conceptual model development
- Hydro GeoAnalyst - Groundwater and borehole data management
- Visual HELP - Estimate groundwater recharge through the vadose zone
- UnSat Suite Plus - Estimate contaminant loading rates
- MODFLOW-SURFACT - Variably-saturated flow or soil vapor flow
- AquiferTest Pro - Analyze pumping test or slug test data to estimate hydraulic conductivity and storativity
- AquaChem - Water quality analysis and pre-process data for PHT3D

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