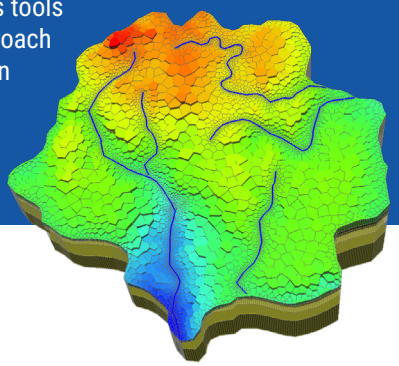
Visual MODFLOW Flex

3D Groundwater Flow And Transport Modeling And Analysis Software

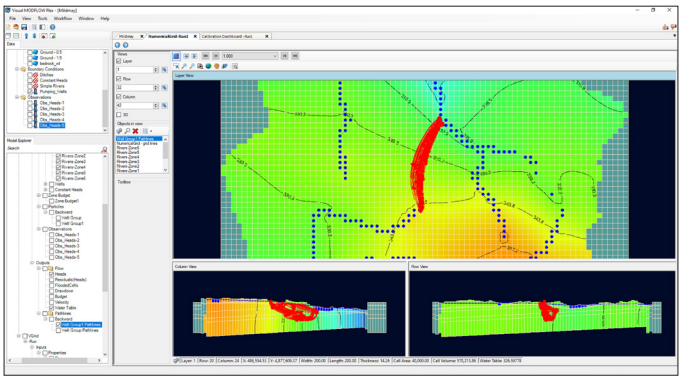
Visual MODFLOW Flex uniquely integrates the power of industry-standard codes for groundwater flow and contaminant transport with essential analysis tools and stunning 3D visualizations. Its exclusive conceptual modeling approach redefines efficiency and usability, offering groundwater professionals an unmatched edge in model development.



Why Visual MODFLOW Flex?

Benefits:

- **Build a fully grid-independent 3D conceptual model** - Geologic formation structures, hydrogeologic properties, and boundary conditions are all designed outside the model grid or mesh and can be visualized in full 3D; this allows the flexibility to adjust your interpretation of the groundwater system before applying a discretization method and converting to a numerical model.
- **Build the model with minimal data pre-processing required** - Working with grid-independent data allows you to maximize the use of your existing GIS data and incorporate physical geology and geographic conditions before designing a grid or mesh.
- **Generate and simulate regional and local-scaled models** – With support for unstructured Voronoi and Quadtree grids and local grid refinement (LGR), you can design localized/refined grids around areas of interest, directly within the conceptual model environment. With the ability to easily extract subgrids, calculated heads from a regional model can also be used as boundary conditions for local-scaled models.
- **Design the right model faster** - The grid-independent input data is left intact and is not defined by grid cells or mesh elements when modifying the data and project objective. This allows you to generate multiple numerical models from the same conceptual model.
- **Make changes to the model data and immediately see results** - The conceptual model environment provides simultaneous 2D and 3D views which are updated whenever changes to the data are made.



Applications:

- Delineate well capture zones for domestic and regional water supplies.
- Design and optimize pumping well locations for mine and construction dewatering.
- Watershed scale/regional groundwater modeling and budgeting.
- Simulate surface water/groundwater interactions.
- Managed Aquifer Recharge (MAR) and Aquifer Storage and Recovery (ASR).
- Determine contaminant fate and exposure pathways for risk assessment.
- Evaluation groundwater remediation systems (pump and treat, monitored natural attenuation, funnel and gate).

Supported Modeling Engines & Utilities

GROUNDWATER FLOW

- **MODFLOW 2000/2005/NWT:** The worldwide industry standard for 3D groundwater flow simulations.
- **MODFLOW-LGR:** Regional-local scale simulations.
- **MODFLOW-USG:** Unstructured grids and regional-local scale simulations.
- **MODFLOW-6:** The latest in groundwater flow simulation, combining the best features of its predecessors.
- **MODFLOW-SURFACT*:** Advanced proprietary flow and transport model.

SOLUTE TRANSPORT

- **MT3D-USGS:** Multi-species solute transport.
- **RT3D:** Advanced reactive transport.
- **SEAWAT:** Variable density flow and solute and head transport.
- **MODFLOW-6:** Unstructured grids and regional-local scale simulations.
- **MODFLOW-USG:** Advanced reative transport on unstructured grids.

UTILITIES

- **SAMG:** The most advanced solver available.
- **MODPATH:** Particle tracking.
- **MOD-PATH3DU*:** Advanced particle tracking for structured and unstructured grids.
- **ZONE BUDGET:** Subregional water balance.
- **PEST/PEST_HP:** Automated model calibration and sensitivity analyses

** available separately (see our website for more details)*

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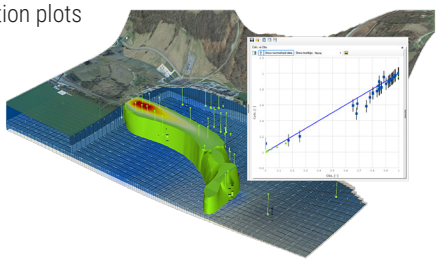
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3D Groundwater Flow And Transport Modeling And Analysis Software

Superior Data Visualization – Visual MODFLOW Flex allows you to effectively display impressive renderings of your hydrogeologic models so you can more easily understand your model and communicate your work with stakeholders at all levels of expertise:

- Visualize data in state-of-the-art 2D (plan and cross-section), 3D, and multi-view displays
- Display isolines, contours, color shadings, velocity vectors, pathlines, and plumes
- Create isometric, cut-away, plan, and cross-section views
- Generate 3D animations and movies
- Drape raster images over 3D surfaces
- Calibration plots

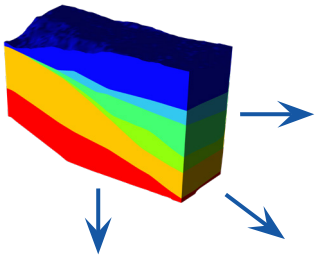


Complete GIS Integration – Easily construct your 3D grid-independent hydrogeologic conceptual model from existing GIS datasets. Define geologic layers, model boundaries, property zones (including distributed values), and boundary conditions from a wide range of common GIS data types and formats. All data is automatically checked for errors, and coordinates and units are converted on import.

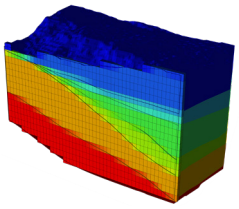
Regional-Local Scale Modeling – With support for MODFLOW-USG and MODFLOW-6, you can design unstructured grids for regional models that efficiently represent high resolution local features without being forced to include unnecessary detail in zones outside of the area(s) of interest. This approach results in faster model run times and more accurate/stable solutions than traditional structured approaches.

Flexible Grid Types – Visual MODFLOW Flex offers a unique selection of grid types, allowing you to choose the one(s) that best accommodate your objectives and the geologic conditions of your site. Choosing the right type of grid ensures numerical stability, reduces convergence problems and results in the most accurate simulation at the chosen resolution. Supported Grid Types:

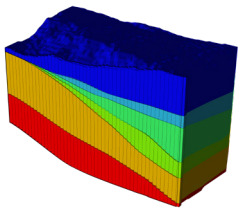
Conceptual Model
Grid Independant



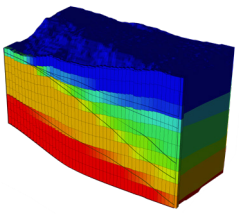
Uniform Grid
All cells have uniform thickness; properties blended by vertical postion



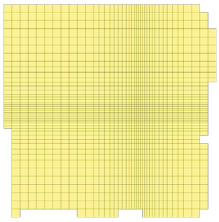
Deformed Grid
Grid layers are defined by horizons; properties are assigned by structual zone



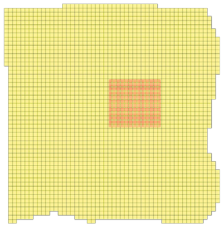
Semi-Uniform Grid
Top and bottom of model is defined by surfaces and divided into a specified numbert of even thickness cells; properties are blended blended by vertical postion



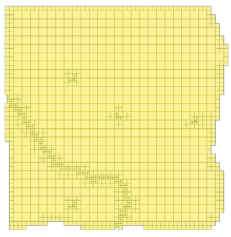
Finite Difference Grids
Uniform and Refined



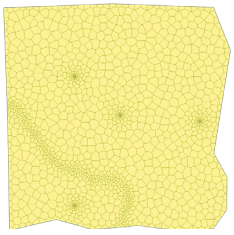
Local Grid Refinement
Nested Child Grids



Unstructured Q-Grid
Quadtree Refinement



Unstructured V-Grid
Voronoi Cells



Easily Evaluate Multiple Scenarios - Most modeling projects involve multiple scenarios to be evaluated, such as: steady state vs transient; different property distributions and boundary conditions; different grids types/scales; antecedent, current, future, and potential condition scenarios, etc. Flex is the only MODFLOW user interface that allows you to easily generate and manage multiple models in parallel in a single project to easily compare alternative modeling scenarios, grid types, or hydrogeologic interpretations. The best model(s) can be selected for improved credibility.

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