

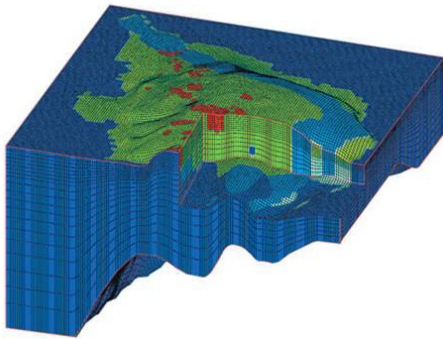


# MODFLOW-SURFACT™

...Management Strategies for a Sustainable Future

## MODFLOW-SURFACT™ Version 4 Overview

MODFLOW-SURFACT™ is a powerful 3D finite-difference flow and transport modeling code that offers substantial advancements over public-domain versions of MODFLOW. For example, MODFLOW-SURFACT™ addresses rewetting of drained cell, handling of pumping wells, solute transport problems, numerical dispersion and oscillations, and impacts of transient flow storage effects on transport. What's more, highly efficient, mass-conserving algorithms enable MODFLOW-SURFACT™ Version 4 to deliver accurate solutions faster than ever before.

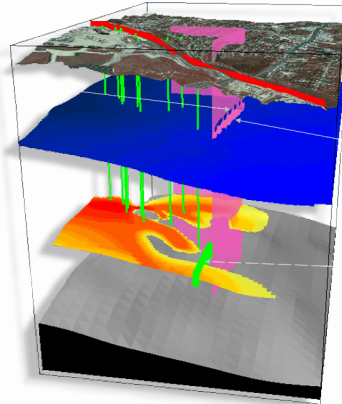


## NEW Features in Version 4

- ▶ Density-dependent flow and transport.
- ▶ Energy transport. (To be released late 2011)
- ▶ Time-varying material properties.
- ▶ Multi-core solver. (To be released late 2011)



HGL Software Systems is pleased to offer special pricing to our educational and government customers. Please contact us by phone (703) 478-5186 or via e-mail at [info@hglsoftware.com](mailto:info@hglsoftware.com) for a consult and quote or training information.



## Advanced Capabilities

- ▶ Robust PCG5 Module up to 20 times faster than PCG4 solver. (Developed by Dr. Peter Forsyth at the University of Waterloo.)
- ▶ Reaction Module incorporates user-defined reactions of mobile and immobile chemical component species— invaluable for modeling biodegradation of industrial contaminants.
- ▶ Curvilinear Grid option for non-rectangular grids in the areal plane.
- ▶ Fully and variably saturated flow and transport modeling
- ▶ Prescribed-ponding recharge and seepage face conditions, as well as delayed yield
- ▶ Adaptive time-stepping to promote stability and convergence for flow and transport simulations
- ▶ Recharge package overcomes unphysical predictions for unconfined systems
- ▶ Total Variation Diminishing (TVD) schemes for physically correct solutions with adaptive temporal weighting
- ▶ Vapor flow for SVE and air sparging simulations
- ▶ Multiphase, multicomponent contaminant transport modeling with biodegradation
- ▶ Robust and efficient Newton-Raphson solver for nonlinear problems
- ▶ Fractured porous media simulation with dual porosity

## Graphical User Interface (GUI)

MODFLOW-SURFACT™ is compatible with all available MODFLOW-based GUIs, including Groundwater Vistas, Visual MODFLOW, GMS, Tecplot, and Argus ONE. Two-dimensional visualization is utilized in both plan and cross-sectional views for contour plots, pathlines, and velocity vectors. Three-dimensional animation is the most effective way to observe changes in parameters, head and contaminant concentrations in a transient simulation, piezometric surfaces, pathlines, velocity vectors, and isosurfaces of contaminant plumes.



## Pricing and Packaging

MODFLOW-SURFACT™ Version 4 comes with complete documentation including a User's Manual and step-by-step tutorials to get you up and running right away. System requirements are: a Pentium PC, 1GHz, and 1GB RAM.

|   |                               |
|---|-------------------------------|
| MODFLOW-SURFACT™ Ver. 4.0.....                                    | <b>\$4,400</b> <sup>USD</sup> |
| MODFLOW-SURFACT™ Ver 4.0.....<br>(FLOW ONLY)                      | <b>\$2,200</b> <sup>USD</sup> |
| PCG5 MODULE.....  | <b>\$450</b> <sup>USD</sup>   |
| DENSITY DEPENDENT MODULE*.....                                    | <b>\$1,500</b> <sup>USD</sup> |
| TIME-VARYING PROPERTY MODULE*.....<br>(HYDRAULIC PROPERTIES ONLY) | <b>\$900</b> <sup>USD</sup>   |

\*Upgrade to Version 4 of MODFLOW-SURFACT™ from Version 3..... **\$400**<sup>USD</sup>

(ASK FOR OUR BUNDLED PRICES)

Applicable sales tax, shipping, and handling fees for all prices listed