

MODFLOWP

Model Uses	MODFLOWP is an improved version of MODFLOW which can be used to simulate steady and unsteady flow in irregularly shaped flow and channel systems while incorporating non-linear regression techniques.	
Major Categories	Hydrology and Water Use; Water Quality	<u>Subject Knowledge Level</u> Intermediate
Minor Categories	Ground Water; Flow; Transport	<u>Technical Difficulty Level</u> Intermediate
Model Type	Physical Model	<u>Geographic in Nature?</u> No

Abstract

This program is a new version of the U.S. Geological Survey modular, three-dimensional, finite-difference, ground-water flow model (MODFLOW), which, with the new Parameter-Estimation Package, can be used to estimate parameters by nonlinear regression. The new version of MODFLOW is called MODFLOWP and functions nearly identically to MODFLOW when the Parameter-Estimation Package is not used. Parameters used to compute the following MODFLOW model inputs can be estimated: layer transmissivity, storage, coefficient of storage, hydraulic conductivity, and specific yield; vertical leakage; horizontal and vertical anisotropy; hydraulic conductance of the River, Streamflow-Routing, General-Head Boundary, and Drain Packages; areal recharge; maximum evapotranspiration; pumpage; and the hydraulic head at constant-head boundaries. Nearly any spatial variation in parameters can be defined by the user. Data used to estimate parameters can include existing independent estimates of parameter values, observed hydraulic heads or temporal changes in hydraulic heads, and observed gains and losses along head-dependent boundaries (such as streams). Model output includes statistics for analyzing the parameter estimates and the model; these statistics can be used to quantify the reliability of the resulting model, to suggest changes in model construction, and to compare results of models constructed in different ways.

Future Developments
Unknown

Model Limitations
Unknown

Model Features

- Adds option of non-linear regression to the MODFLOW model
- Steady and Unsteady flow simulation
- Support of confined or unconfined shapes or combination of both
- Stress models including wells, recharge, evapotranspiration, drains and river beds

Required Data Types

MODFLOWP accepts input files from MODFLOW Packages, modified for compatibility with MODFLOWP, and an input file for the Parameter-Estimation Package that defines the estimated parameters and the observations used in the regression.

Model Outputs

Tabular summaries of descriptive statistics and data.

Hardware Requirements

At least 4mb of RAM

Supported Platforms			
DOS	<input checked="" type="checkbox"/>	UNIX	<input checked="" type="checkbox"/>

Software Requirements

None noted

Windows	<input type="checkbox"/>	Macintosh	<input type="checkbox"/>
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Cost, Licensing and Availability

Free - available from link below.

Source

US Geological Survey

Source URL

<http://water.usgs.gov/software/Modflowp.html>