COURSE: GROUNDWATER MODELLING USING MODFLOW

SESSION 1: Introduction to MODFLOW and Model Muse

Objective:

The objective of this session is learning to install MODFLOW software and describe the main window of ModelMuse.

Download and installation of MODFLOW

ModelMuse is a graphical user interface (GUI) for MODFLOW-2005, MODFLOW-LGR, MODFLOW- NWT, MODFLOW-UFZ, MT3DMS, PHAST, MODPATH, and ZONEBUDGET.

Link to install software: https://water.usgs.gov/nrp/gwsoftware/ModelMuse/ModelMuse.html

SCIENCE

this case, to install Model Muse for Windows, the file In **ModelMuseSetup64 4 2** will be installed. This software has been approved for release by the U.S. Geological Survey (USGS).

PRODUCTS

usgs.gov/software/modelmuse-a-graphical-user-interface-g



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ModelMuse: A Graphical User Interface for Groundwater Models

Release Date: FEBRUARY 25, 2020

≈USGS

Overview of ModelMuse

ModelMuse is a graphical user interface (GUI) for the U.S. Geological Survey (USGS) models MODFLOW 6, MODFLOW-2005, MODFLOW-LGR, MODFLOW-LGR2, MODFLOW-NWT, MODFLOW-CFP, MODFLOW-OWHM, MODPATH ZONEBUDGET PHAST SUTRA 2.2 SUTRA 3.0 MT3D-USGS and WellFootprint and the non-USGS model MT3DMS. This software package provides a GUI for creating the flow and transport input file for PHAST and the input files for the other models. In ModelMuse, the spatial data for the model are independent of the grid, and the temporal data are independent of the stress periods. Being able to input these data independently allows the user to redefine the spatial and temporal discretization at will.

Download Current Version of ModelMuse

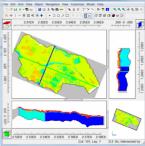
The current release is ModelMuse v 4 2 0 0

ModelMuse for Microsoft Windows Operating Systems

Users are encouraged to read the documents that are provided in the 'doc' Users are encouraged to read the occuments that are provided in the 'ooc directory of his software distribution, including the 'Release. Arm' file. The recommended method of installing ModelMuse is with the installer. However, if there is difficultly in using the installer, ModelMuse can be installed by unzipping the zp file. The installer associates the extensions gpt. gpb and .mmZLIb with ModelMuse. If the zip file is used instead of the installer, the us er, the user may wish to make those associations manually.

- · Summary of ModelMuse
- ModelMuse Release History

- For 32- and 64-bit operating systems: Installer | 2 p archive
- ModelMuse Videos



Screenshot from ModelMuse showing example model parameters

Contacts

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Explore More Science MODELOW MT3D-USGS SUTRA WellFootprint Water

ModelMuse is distributed as either an installer or a zip file. Either version may be used for installing ModelMuse. Both contain the same version of ModelMuse for use on personal computers:

For 32 or 64-bit operating systems: ModelMuseSetup32_4_2.exe ModelMuse32_4_2.zip

For 64-bit operating systems: ModelMuseSetup64_4_2.exe ModelMuse64_4_2.zip

In this case, select **Installer "For 64-bit operating systems".** When the installer finish to download, you can follow this instruction:

- Go to GroundwaterModellingMODFLOW\Installers
- Select ModelMuseSetup64_4_2
- Click in **Run**
- Activate Create a desktop shortcut and click in Next
- Then click **Install**. After the finished click in **Next**.
- Now click in **ModelMuse** on the desktop short cut.



Presentation of MODFLOW environment

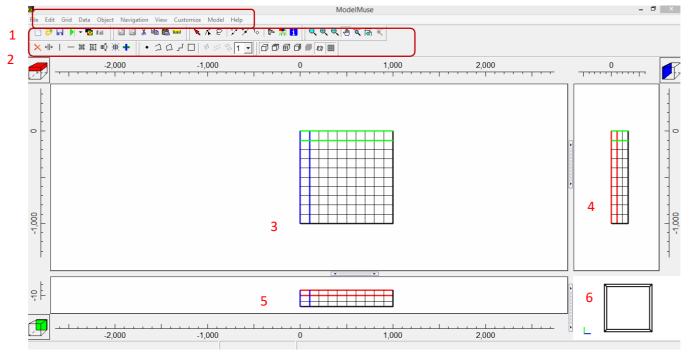
Once the user has already installed MODFLOW, a general view of the main MODFLOW window will be done.

When MODFLOW starts, the next window will appear. Here, a new project can be created or an already existing one can be opened. Click on **Create MODFLOW model**, then click on **Next**.

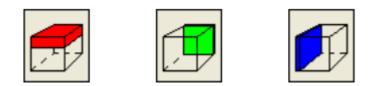
🐉 ModelMuse	-		×
What do you want to do?			
Create new MODFLOW model			
C Create new PHAST model			
C Create new SUTRA model			
C Create new WellFootprint project			
C Open an existing ModelMuse project			
C Import MODFLOW-2005 or MODFLOW-NWT model			
C Zarumilla.gpt (C:\Users\Computer\Downloads\GPTs Zarumilla (1)\GPT\Zarumilla\Za	rumilla	.gpt)	
C Zarumilla.gpt (C:\Users\Computer\Documents\Gidanas\Zarumilla\Reporte\GPTs Za	rumilla	GPT\Z	arumi
C Model1.gpt (C:\Users\Computer\Documents\Gidanas\Zarumilla\model4\Model1.gpt	t)		
C NAV_MAYO_NWT_pits.gpt (C:\Users\Computer\Documents\Gidanas\Navidad\Mod	del\mo	dPitsv2	mod
C modPath.gpt (C:\Users\Computer\Documents\Gidanas\Navidad\Model\1_modelNV	VT_pits	s\modF	Path.g
? !	<u>-l</u> elp	Next	•

Then, MODFLOW will present the graphical user interface, as shown below:

- 1. Menu toolbar
- 2. Tools toolbar
- 3. View from the top
- 4. View from the right side
- 5. View from the front
- 6. 3D view



Also the user can see the icon **"Selection Cube"** that show the selected column, row, or layer. It can also be used to change the selected column, row or layer.



To working models is common to use the Ruler that show the position of the model.

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To navigate in the working area, exist different button as The Zoom $^{\mathbf{Q}}$, Zoom In $^{\mathbf{Q}}$, Zoom Out $^{\mathbf{Q}}$ and Pan $^{\textcircled{}}$.

Modflow Program Location

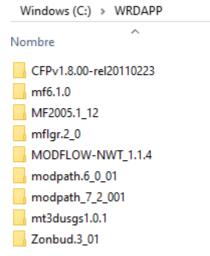
This tool specifies the location where several programs related to MODFLOW. In this exercise, open **Model1.gpt** located in the folder:

Course_GroundwaterModellingMODFLOW\Week_1\Practice\Models

Copy the folder **WRDAPP** located in:

Course_GroundwaterModellingMODFLOW\Installers\WRDAPP

Then paste inside the local disk **"C:"** You get a list of folders similar like the following image:



The next step is select **Model/MODFLOW Program Location**. The data in the MODFLOW Program Locations dialog box is stored in **C:\Users\<username>\AppData\Roaming\WRDAPP**. The program will be described below:

	🐉 MODFLOW Program Locations	_		×
 MODFLOW 6 	Modflow 6			
 MODFLOW-2005 	Modflow 2005			
	MODFLOW-LGR			
 MODFLOW-LGR 	MODFLOW-LGR V2			
 MODFLOW-NWT 	MODFLOW-NWT			
 MODFLOW-CFP 	MF2005-OWHM			
 MT3D-USGS 	■ MODPATH v6 ■			
	ZONEBUDGET 3			
 MT3DMS 	ZONEBUDGET 6			
 MODPATH 	■ MT3DMS ■			
DULACT				
• PHAST	ModelMate			
 ZONEBUDGET 	Text editor			
MadalMata	ModelMonitor			
ModelMate				
	<u>? H</u> el	р 🗸 ОК	X C	ancel

For include each program define the program location as the image:

∃ Modflow 6			
https://www.usgs.gov/software/modflow-6-usgs-modular-hydrologic-model			
C:\WRDAPP\mf6.1.0\bin\mf6.exe			ã
Modflow 2005			
https://www.usgs.gov/software/modflow-2005-usgs-three-dimensional-finite-difference-ground-water-	model		
C:\WRDAPP\MF2005.1_12\bin\mf2005.exe			ã
B MODFLOW-LGR			
B MODFLOW-LGR V2			
https://water.usgs.gov/ogw/modflow-lgr/			
C:\WRDAPP\mflgr.2_0\bin\mflgr.exe			ŝ
MODFLOW-NWT			
https://www.usgs.gov/software/modflow-nwt-a-newton-formulation-modflow-2005			
C:\WRDAPP\MODFLOW-NWT_1.1.4\MODFLOW-NWT_1.1.4\bin\MODFLOW-NWT_64.exe			ã
■ MF2005-CFP			
https://www.usgs.gov/software/conduit-flow-process-cfp-a-program-simulate-turbulent-or-laminar-group	undwater-flow		
C:\WRDAPP\CFPv1.8.00-rel20110223\mf2005cfp.exe			ŝ
■ MF2005-OWHM			
DI MODPATH v6			
https://www.usgs.gov/software/modpath-a-particle-tracking-model-modflow			
C:\WRDAPP\modpath.6_0_01\modpath.6_0\bin\mp6.exe			ĩ
E ZONEBUDGET 3			
https://www.usgs.gov/software/zonebudget-a-program-computing-subregional-water-budgets-modflow	w-groundwater-flow	<i>i-</i> models	5
C:\WRDAPP\Zonbud.3_01\Bin\zonbud.exe			ŝ
DI ZONEBUDGET 6			
https://www.usgs.gov/software/modflow-6-usgs-modular-hydrologic-model			
C:\WRDAPP\mf6.1.0\bin\zbud6.exe			ã
MT3DMS			
I MT3D-USGS			
https://www.usgs.gov/software/mt3d-usgs-groundwater-solute-transport-simulator-modflow			
"C:\Program Files\WRDAPP\mt3dusgs1.0.1\mt3dusgs1.0.1\bin\mt3d-usgs_1.0.1_64.exe"			ê
ModelMate			_
Text editor			

Once the paths are located, click on "OK".