MODEL BUILDER

A SMARTER WAY TO PROCESS DATA

WHAT IS MODEL BUILDER?

Graphic design tool developed by ESRI for authoring and automating geoprocessing work flows.

- Single process
- Multiple process strung together

Models can be used to

- Organize tools into an automated sequence or process
- Chain together tools, using the output of one tool as the input to another tool
- Build repeatable workflows
- Document your methodology
- Export your script

WHY BUILD MODELS?

Automate geoprocessing workflow
- Analysis
- Data management
- Data conversion, etc
- Re-run same model with different parameters or inputs

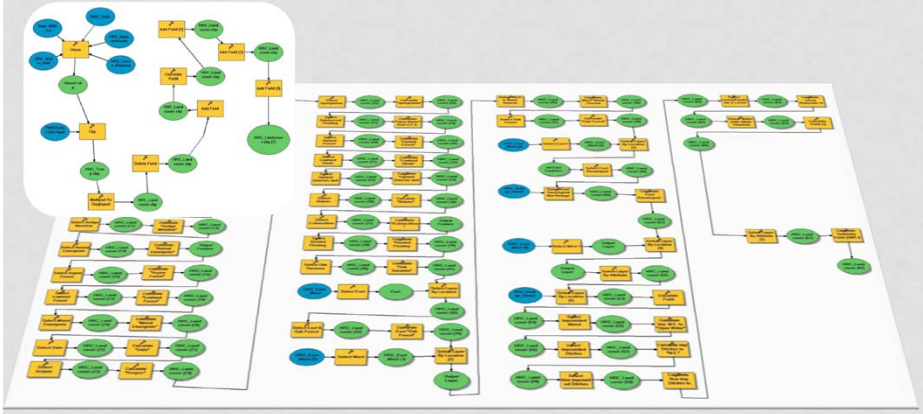
Record & document methodology
- How to create specific geodatabase schema
- Process steps metadata record
- Graphical documentation of your work
- Transparent!

Share geoprocessing knowledge
- Easily communicates what is being done
- Provides standardize process

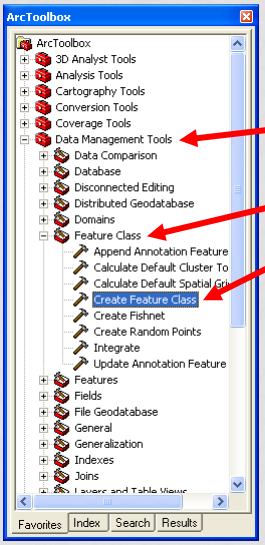
Create custom tools
- Aggregate common operations into one tool

WHY BUILD MODELS?

Minor Changes = No Big Deal!



ARCTOOLBOX



ArcToolbox window - tree view interface

- Toolboxes – a collection of toolsets and tools
- Toolsets – a collection of tools
- Tools – perform a specific geoprocessing task

Tools must be contained in a toolbox

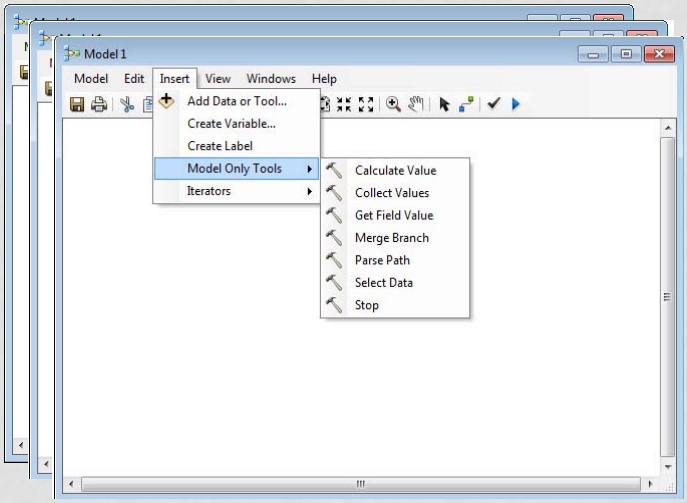
Cannot edit ESRI toolboxes, must create new toolboxes to add models

MODELS ARE TOOLS

Models are stored as tools in toolboxes

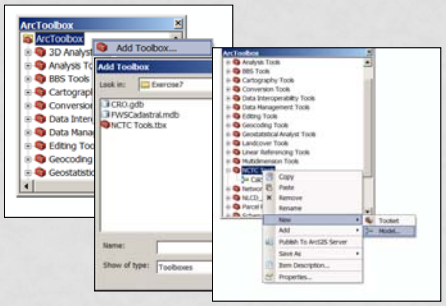
- Toolboxes may be stored in a folder as a .tbx file or in a geodatabase
- Toolboxes may be easily shared by distributing the .tbx or geodatabase
- All tools in Toolbox may be used in model building

MODEL BUILDER INTERFACE

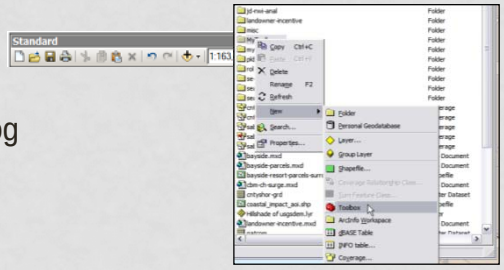


CREATE NEW MODEL – 3 WAYS

Directly in ArcToolbox
- ArcMap/ArcCatalog
- Select/Create Toolbox
- Select New > Model

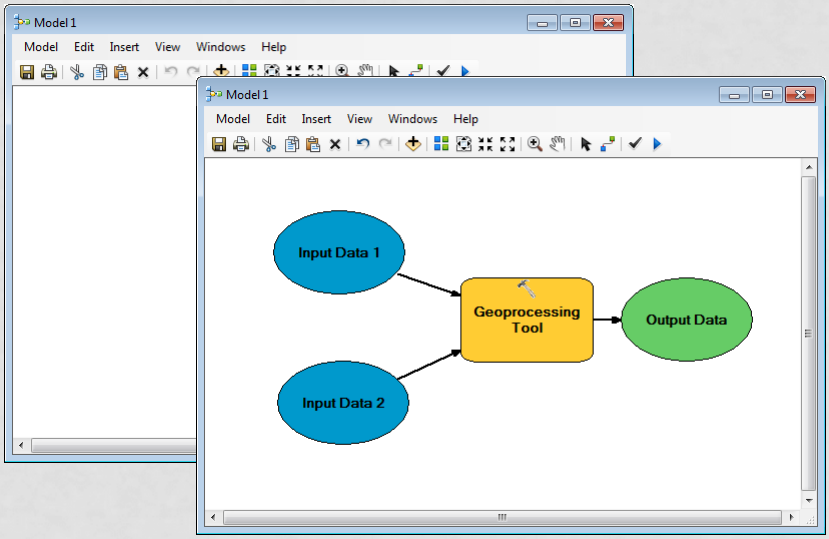


Using ArcMap Standard Toolbar
- Click button
- Edit model, save later



Create Toolbox in ArcCatalog

MODEL BUILDER INTERFACE

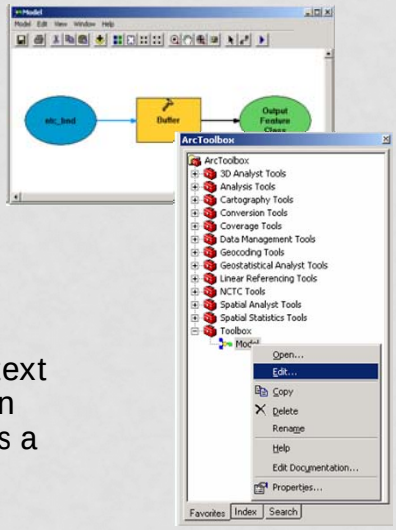


EDITING A MODEL

Right click on model

Select "Edit…"

- This opens the ModelBuilder window
- Places in edit mode



Double clicking on the model or selecting "Open…" from the context menu does not place the model in edit mode. It opens the model as a tool.

CREATING THE PROCESS

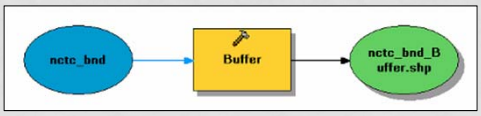
- Drag input datasets to ModelBuilder screen from ArcCatalog, ArcMap, or ArcGlobe (or use Add Data tool)
- Drag tools to screen from ArcToolbox or ArcCatalog
- Variables can be added using the context menu
- Connect inputs (variables) and tools with arrows
- Set up process options and settings
- Run model

MODEL STATES

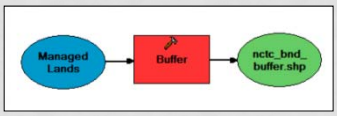
Not ready to run

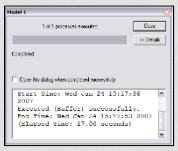
Ready to run

Already run



During Processing

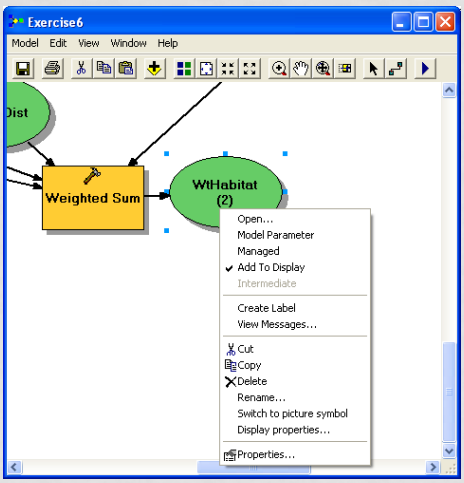




MODEL PROPERTIES

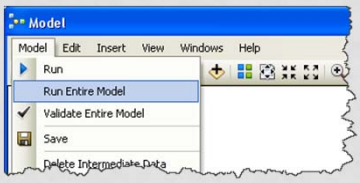
Model Properties can be set for Model and ArcMap interaction

- Add to Display
- Intermediate
- Model Parameter
- Properties

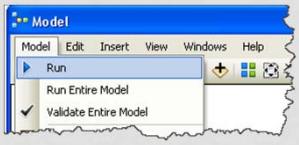


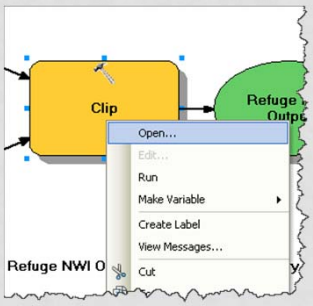
THREE WAYS TO RUN A MODEL

Run all processes regardless of state (Run Entire Model)



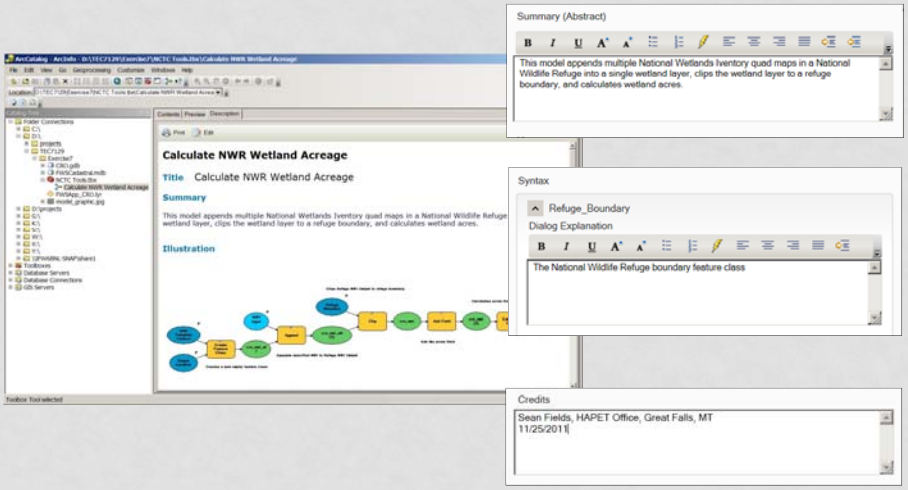
Run the ready-to-run processes





Run a single process (Right click and select RUN)

MODEL DOCUMENTATION



SAVING MODELS FOR FUTURE USE

- Add model output to display in ArcMap
- Models are saved in custom toolbox within current MXD or MyToolboxes folder (default)
- Your custom toolbox is also saved in your ArcMap settings, can be reused
- Save model documentation
- Save model to script
- Python, JScript, VBScript

ADVANCED TOPICS

Iterations

- Conditional Looping
- Feedback
- Lists/Series
- Count

Variables/Parameters

- In-line variable substitution

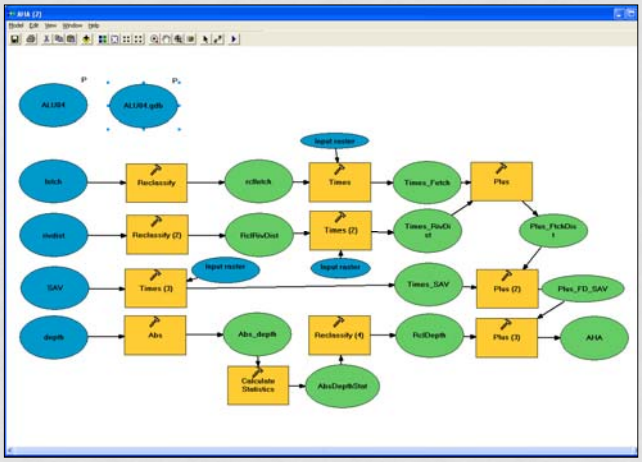
Merge Branch

Scripting

Conditional Processing

Interactive Inputs

QUESTIONS



EXERCISE OBJECTIVES

- Use ModelBuilder to create a model to perform processes
- Create new toolbox and create model
- Load data and tools into model, create outputs
- Use Reclassify, Focal Statistics, and Combine Tools
- Copy and modify pieces of model to increase efficiency