

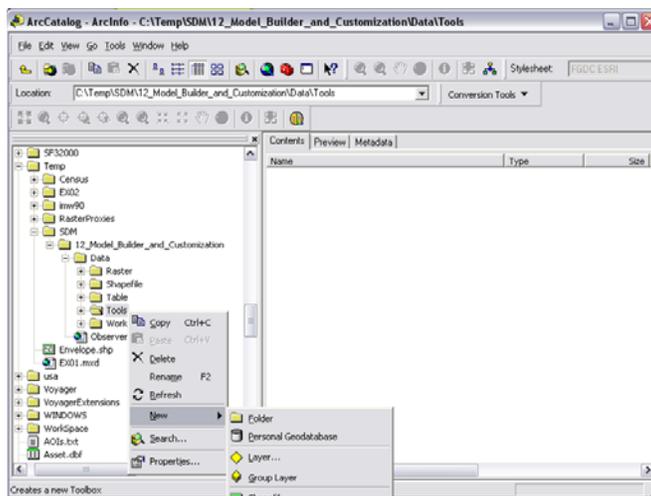
# Workshop #12

## Using ModelBuilder and Customizing the ArcMap Interface

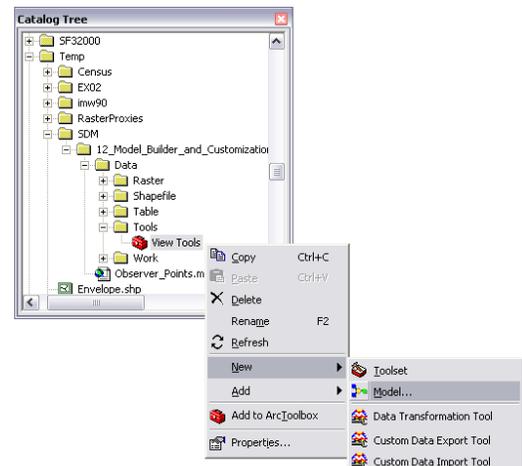
Toolboxes can be created in ArcToolbox, in folders or within geodatabases. In this tutorial you will place the toolbox in your project folder.

### Creating a new Toolbox & Model

1. **Open ArcToolbox.**
2. In the **TreeView** of **ArcCatalog**, **navigate** to the **C:\Temp\SDM\12\_Model\_Builder\_and\_Customization\Data\Tools** folder.
3. **Right-click** on the **Tools** folder and **go to New>Toolbox.**



4. A new toolbox is added to the folder. **Change** the default name to “**View Tools.**”
5. **Right-click** on the **View Tools** toolbox you just created and **go to New>Model....** The **Model Editor** window will open.
6. In the **Main Menu**, **go to Model>Model**

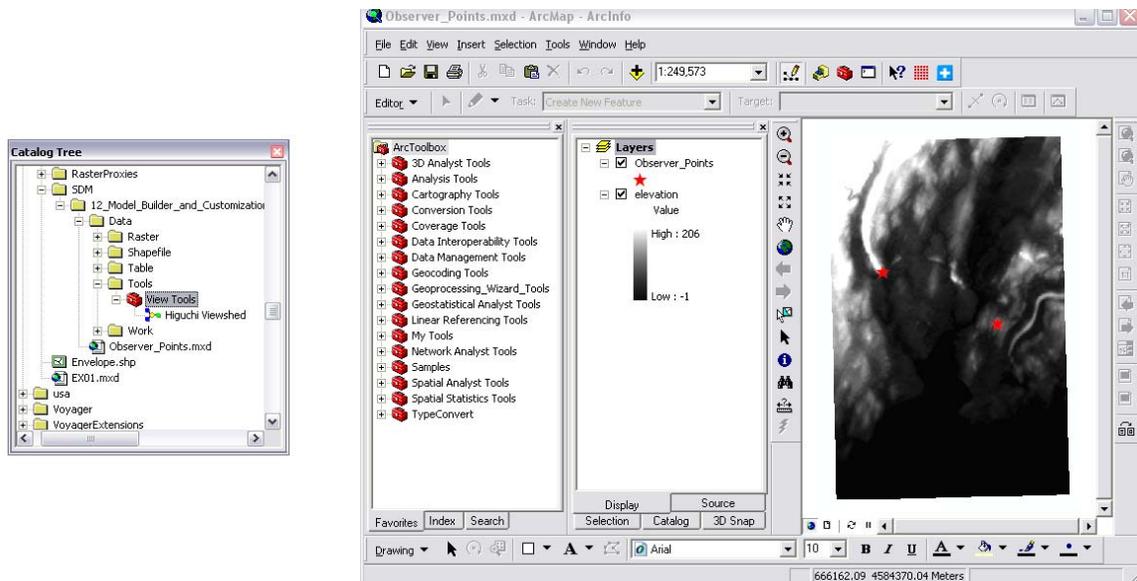


## Properties...

7. In the **Name:** text box, **change** the **default model name** from **Model** to **“Higuchi Viewshed.”** **Click OK** to **close** the **Model Properties** window.
8. **Click** on the **Save Button**  to save your changes to the model.

## Adding the New Toolbox to ArcMap and the ArcToolbox

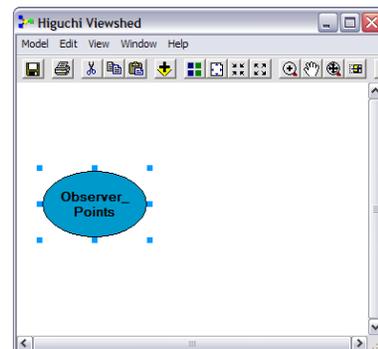
1. In the **TreeView** of **ArcCatalog**, **double-click** the **Observer\_Points.mxd** **Map Document** to open it.
2. **Open** the **ArcToolbox** Panel in **ArcMap**.
3. In the **ArcCatalog TreeView**, **click-and-hold** the **View Tools** **Toolbox** and **drag** it to the **ArcToolbox** icon at the top of the **ArcToolbox** panel. The **View Tools** will be added to the **ArcToolbox**, in alphabetical order.



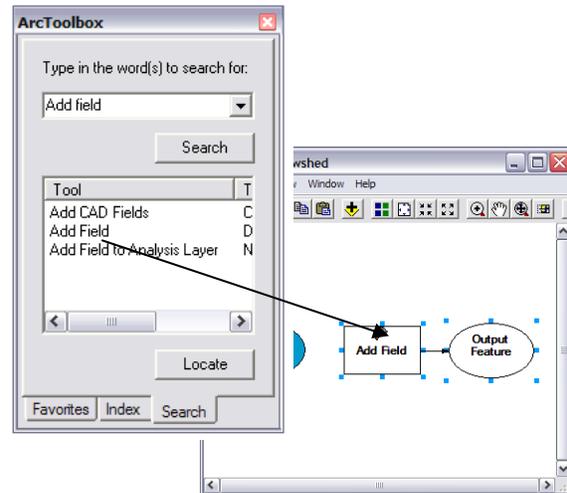
4. **Click** on the **Save Button**  in **ArcMap**.

## Building the Model

1. From the **Table of Contents** in **ArcMap**, **click-and-drag** the **Observer\_Points** layer from **ArcMap** into the **Model Builder** window.

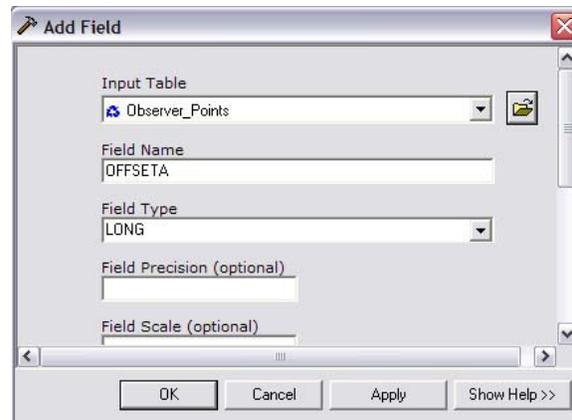


2. **Activate** the **ArcToolbox Search Tab** and **search** on the term “**add field.**”
3. From the **Search Results**, **click-and-drag** the **Add Field tool** into the **Model Window**, just as you did the **Observer\_Points** layer.
4. While the two **Add Field** objects are still selected, in the main menu **go to Edit>Copy**.
5. Again in the **Main Menu**, **go to Edit>Paste**. A second copy of the **Add Field Object** pair will be added.



6. **Activate** the **Add Connection Button**  and use it to **create a connection** between the **Observer\_Points** layer and the first **Add Field Object**.

7. **Double-click** on the **Add Field Object** you just created to open the **ArcToolbox Dialog**.



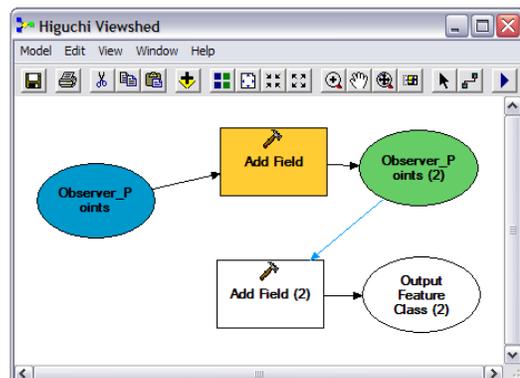
8. Your **Observer\_Points** layer should already be **assigned** as the **Input Table**.

9. **Assign** a **Field Name** as “**OFFSETA**” taking care to use all caps.

10. **Leave** the **Field Type** as **Long**. **Click OK**.

11. **Select** the **Add Connection Tool**  again and **connect** the **Observer\_Points (2)** Object to the second **Add Field Object**.

12. **Double-click** on the second **Add Field Object** to **open** the **dialog box**.

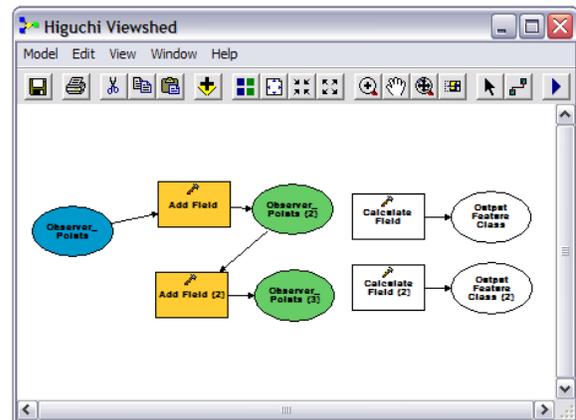


13. **Assign** a **Field Name** of VERT1 and **accept** the **defaults** for the rest of the **settings**. **Click OK**.

14. **Return** to the **ArcToolbox Search Tab** and **search** on the term “**calculate field**.”

15. **Click-and-drag** the **Calculate Field Tool** to your **Model Builder window**.

16. While the **new objects** are still selected, **Copy-and-Paste** a **second set** to the **model**.

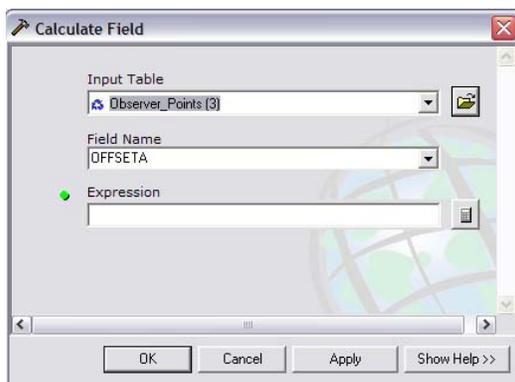


17. **Activate** the **Add Connection Tool** and **add** a **connection** between the **Observer\_Points (3)** object and the first **Calculate Field Object**.

**Tool** and **add** a **connection** between the **Observer\_Points (3)** object and the first **Calculate Field Object**.

18. **Double-click** on the **Calculate Field Object** you just created the connection to to open the dialog.

19. **Use** the **drop-down** to **select OFFSETA** as the **Field Name**.

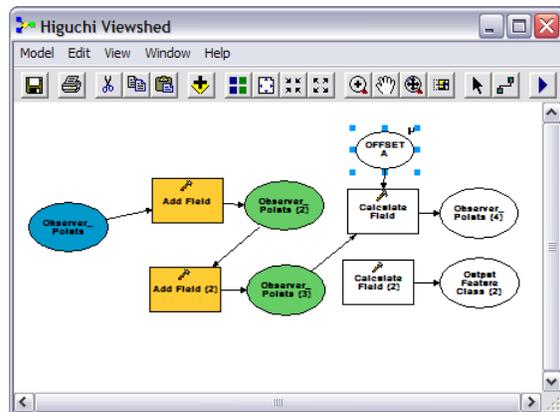


20. **Leave** the **Expression Field** blank. **Click OK**.

21. **Right-click** on the **Calculate Field Object** and **go to Make Variable>From Parameter>Expression**.

22. **Right-click** on the **Expression Object** and **select Model Parameter**.

23. **Right-click** on the **Expression Object** and **select Rename**. **Rename** the **Object OFFSETA**.



24. Use the **Add Connection Tool**  to **connect** the **Observer\_Points (4)** Object to the **Calculate Field (2)** Object.

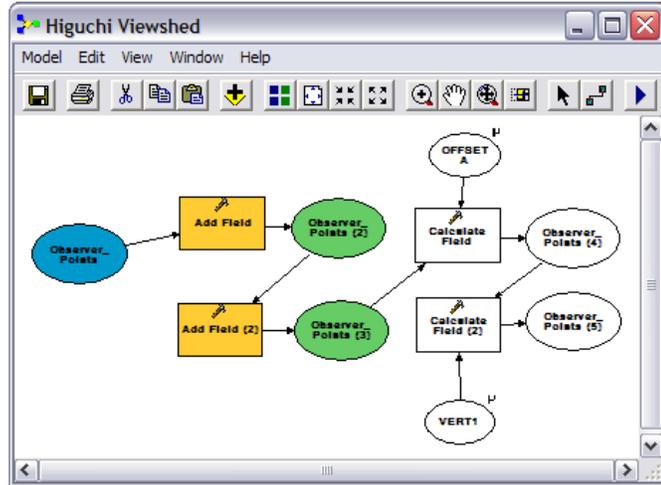
25. **Double-click** on the **Calculate Field (2)** Object to **open** the dialog.

26. Use the **drop-down** to **select VERT1** as the **Field Name**. **Click OK**.

27. **Right-click** on the **Calculate Field (2)** Object and **go to Make Variable>From Parameter>Expression**.

28. **Right-click** on the **Expression Object** and **select Model Parameter**.

29. **Right-click** on the **Expression Object** and **select Rename**. **Rename** the **Object VERT1**.



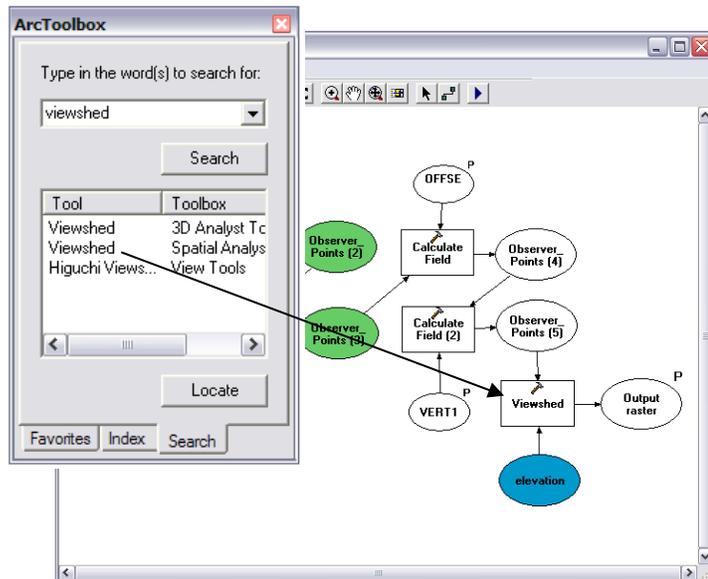
### Adding the Viewshed Analysis Tool

1. **Return** to the **ArcToolbox Search Tab** and **search** on the term **“viewshed.”**

2. **Click-and-drag** the **Viewshed Tool** from the **ArcToolbox Search Tab** into your **Model Builder window**.

3. **Click-and-drag** the **elevation layer** from **ArcMap’s Table of Contents** to the **Model Builder window**.

4. **Activate** the **Add Connection Tool** and connect the last **Observer\_Points (5)** object to the **Viewshed** Object.



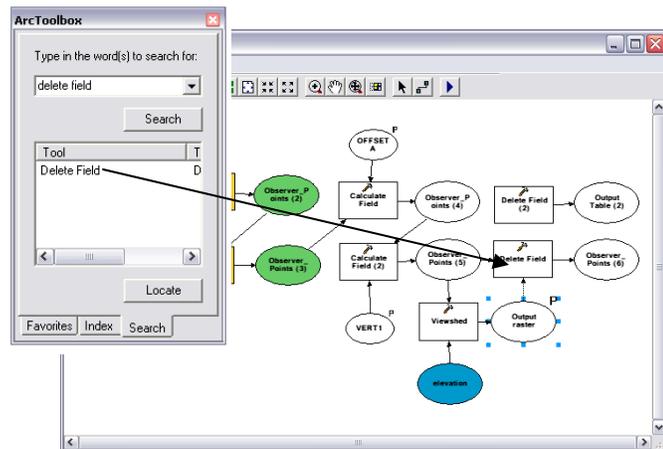
5. Use the **Add Connection Tool** to connect the **elevation Object** to the **Viewshed Object**.
6. **Right-click** on the **Output Raster Object** and **select Model Parameter**.
7. **Save** your work  in the **Model Builder Window**.

## Final Touches

1. **Return** to the **ArcToolBox Search Tab** and **search** on the term “**delete field.**”

2. **Copy-and-Paste** a **second copy** of the **Delete Field Objects** to the **Model Window**.

3. Use the **Add Connection Tool**  to **connect** the final **Observer\_Points (5)** Object to the first **Delete Field** Object.



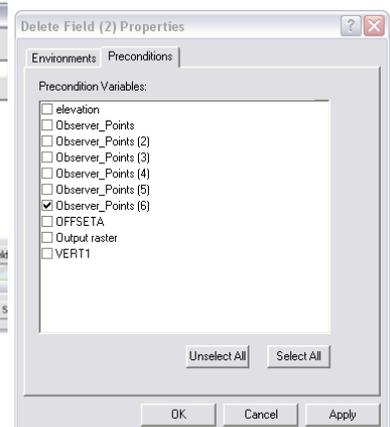
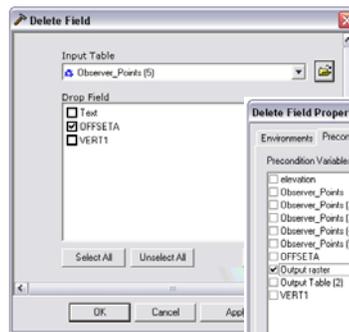
4. **Double-click** on the **Delete Field Object** to **open** its **dialog** and **select OFFSETA** as the field to **delete**.

5. **Right-click** on the **Delete Field Object** you just altered and **select Properties**.

6. **Click** on the **Preconditions Tab** and **select Output Raster**. **Click OK**.

7. Use the **Add Connection Tool**  to **connect** the **Observer\_Points (6)** Object to the **second Delete Field (2)** Object.

8. **Double-click** on the **Delete Field (2) Object** to **open** its **dialog**, and **select VERT1** as the field to be deleted. **Click**

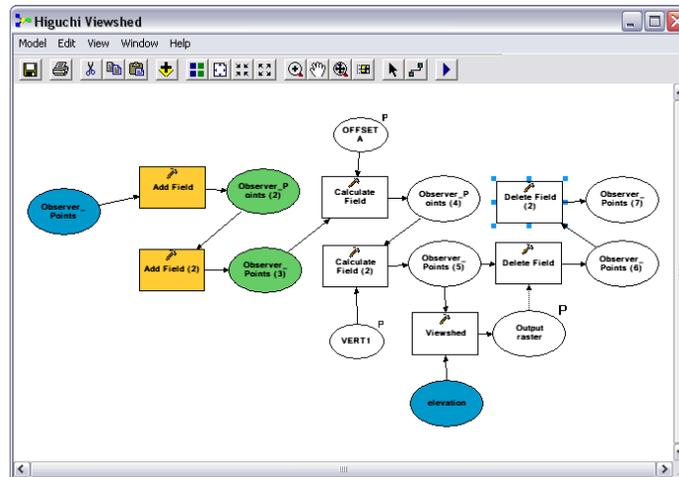


OK.

9. **Right-click** on the **Delete Field (2) Object** and **open** the **Properties**.

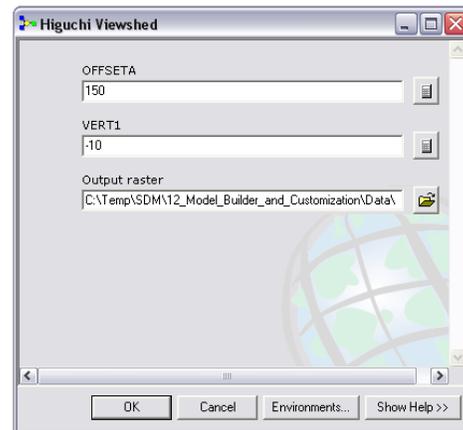
10. **Select** the **Preconditions Tab** and **check** the **Observer\_Points (6)** checkbox. **Click OK**.

11. **Save** your work  in the **Model Builder Window**.



## Using the Model

1. **Return to ArcMap** and find the **Higuchi Viewshed Model** in the **ArcToolbox Panel**.
2. **Double-click** on the **Higuchi Viewshed Tool** to **open** its dialog box.
3. **Assign** an **OFFSETA** value of **150**.
4. **Assign** a **VERT1** value of **-10**
5. **Browse** to your **C:\Temp\initials\12\_Model\_Builder\_and\_Customization\Data\Work** Folder and give the **Output Raster** an appropriate name.
6. **Cross your fingers & Click OK**.



7. You should be presented with a new raster layer of the Viewshed resulting from the parameters you have set.

## ArcGIS Weirdness

For some reason, even though you have inserted a Delete Field routine in your model, if you try to run the model again from ArcToolbox you will get a message that OFFSETA and VERT1 already exist. Of course, they don't, and this is a bug. The workaround would be to eliminate the Add Field Objects and simply use an Observer Points layer that already had the appropriate fields. This would allow you to recalculate (the model will overwrite each previous iteration of the field values) the parameter values without having to delete the fields. Or, you can simply leave the Model Builder Window open and use the File>Validate Entire Model routine before running the model each time (which is still faster than running all these routines manually each time).

The use of a model with this type of weirdness is intentional, so that you can see that sometimes problems require that you come at them from several directions in ArcMap.

## How to create custom toolbars

1. On the **Main Menu**, *go to Tools>Customize*.
2. *Click* the **Toolbars** tab.
3. *Click* **New**.
4. *Name* the **new toolbar** “**Workshop.**”
5. *Click* the **dropdown arrow** of the **Save in** **combo box** and choose the **Normal.mxt**.

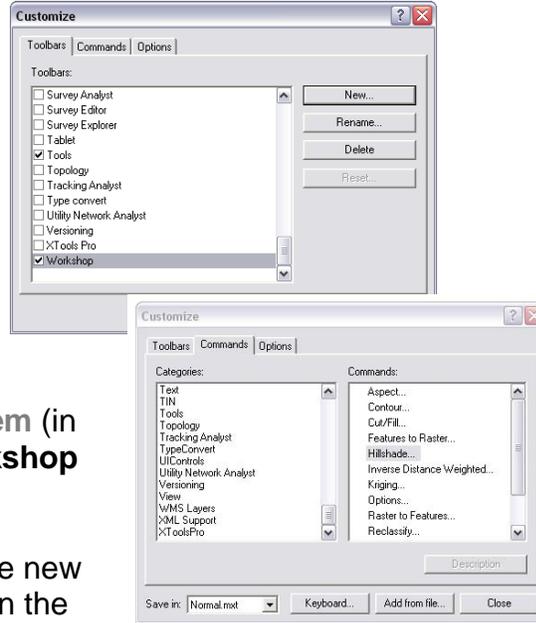
This choice will save the new toolbar to the default view of ArcMap every time the program is opened on this machine. Saving the toolbar to the current document will cause the toolbar to be available only when this document is opened.

6. *Click* **OK**.



The new, empty toolbar appears in the Toolbars list; it is displayed in the application as a floating toolbar.

7. **Click** on the **Commands Tab** in the **Customize Dialog**.
8. **Scroll** down the list of **Categories** and **select Surface**.
9. **Click-and-drag** the **Slope...** item (in the **Commands** list), to the **Workshop Toolbar**.
10. **Click-and-drag** the **Hillshade** item (in the **Commands** list), to the **Workshop Toolbar**.
11. **Click Close**. You can **“dock”** the new toolbar in a place of your choice in the **ArcMap application window**.



## Adding an ArcScript to ArcMap

1. **Open** your **web browser** and go to <http://arcscripts.esri.com/>
2. **Register** for an **account** (if you don't have one).
3. **Return** to the **ArcScript Search** page.
4. **Change** the **ESRI Software** drop-down to **ArcGIS Desktop** and **search** on the term **“fishnet.”**
5. The first result should be the **Create a grid polygon shapefile (FINSHNET)** tool.
6. **Click** through the pages required to download the tool and **download** it to your computer.
7. **Browse** to the **folder** you have **downloaded** the tool to and **unzip** its contents.



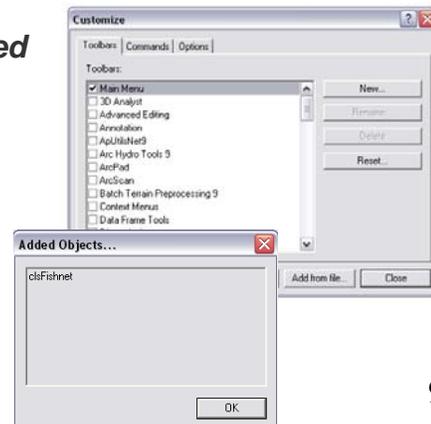
Scripts for: All languages AND ArcGIS Desktop AND fishnet  
scripts 1-2 of 2

Resort by	Title	Software	Language	Author	Modified	Downloads
	<a href="#">Create a grid polygon shapefile (FINSHNET)</a>	ArcGIS Desktop	Visual Basic	robert nicholas	Apr 19 2003	7410

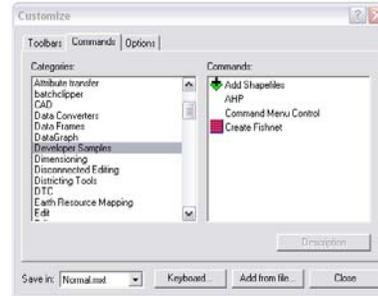
**Summary:** This command allows you to create a new shapefile that is composed of many identical sized cells. The shapefile will look like a fishnet of square or rectangular cells. One common use is to create an index grid. You can download the zip file to any location, but make sure you unzip it to a safe folder that will not be deleted. Readme.txt has...

## Installing the Tool in ArcMap

1. **Return** to **ArcMap** and, in the **Main Menu**, go to **Tools>Customize**.



2. **Click** on the **Add from file... Button**.
3. **Browse** to the location of the files you extracted from the zipped file and **select** the **Fishnet.dll** file. **Click Open**.
4. You should receive a dialog box that indicates that the **clsFishnet Object** has been added. **Click OK**.



5. **Click** on the **Commands Tab** and scroll down the **Categories List** to find the **Developer Samples**. **Highlight** the **Developer Samples** item and **click-and-drag** the **Create Fishnet** tool to the **Workshop Toolbar** you created earlier.

6. **Close** the **Customize Window**.



7. **Click** on the **Fishnet Button**  you dragged to the **Workshop Toolbar** to make sure that it launches the tool.

