

# The Grid Garage V3 (ArcGIS Toolbox) User Guide

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Office of  
Environment  
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## Versioning

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1.03	25/09/2015	Tom Barrett	Completed help for all tools and added the Basic Tutorial
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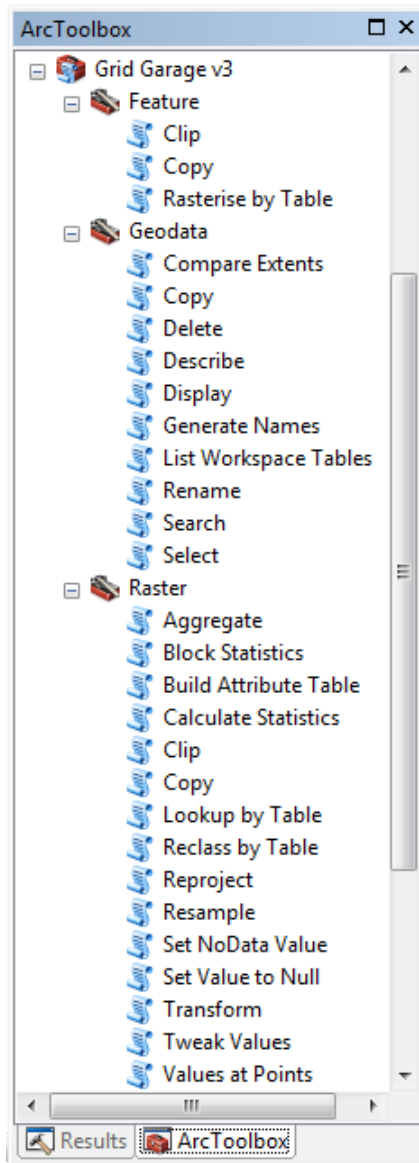


Figure 1 Grid Garage Toolbox

## 1 Why use the Grid Garage Toolbox?

The OEH ArcGIS Grid Garage Toolbox (Grid Garage) will help you undertake the Geographic Information System (GIS) tasks required to process GIS data (geodata) into a standard, spatially aligned format. This format is required by most, grid or raster, spatial modelling tools such as the [Multi-criteria Analysis Shell for Spatial Decision Support \(MCAS-S\)](#). Grid Garage contains 26 tools designed to save you time by batch processing repetitive GIS tasks as well diagnosing problems with data and capturing a record of processing step and any errors encountered.

Grid Garage provides tools that function using a list based approach to batch processing where both inputs and outputs are specified in tables to enable selective batch processing and detailed result reporting. In many cases the tools simply extend the functionality of standard ArcGIS tools, providing some or all of the inputs required by these tools via the input table to enable batch processing on a 'per item' basis. This approach differs slightly from normal batch processing in ArcGIS, instead of manually selecting single items or a folder on which to apply a tool or model you provide a table listing target datasets. In summary the Grid Garage allows you to:

- List, describe and manage very large volumes of geodata.
- Batch process repetitive GIS tasks such as managing (renaming, describing etc.) or processing (clipping, resampling, reprojecting etc.) many geodata inputs such as time-series geodata derived from satellite imagery or climate models.
- Record any errors when batch processing and diagnose errors by interrogating the input geodata that failed.
- Develop your own models in ArcGIS ModelBuilder that allow you to automate any GIS workflow utilising one or more of the Grid Garage tools that can process an unlimited number of inputs.

The Grid Garage is intended for use by anyone with an understanding of GIS principles and an intermediate to advanced level of GIS skills. Using the Grid Garage tools in ArcGIS ModelBuilder requires skills in the use of the ArcGIS ModelBuilder tool. In this manual we refer to all digital spatially referenced data as 'geodata', see Chapter 8 Glossary of terms, on page 74 for a full list of commonly used terms and their definitions.

## 2 Using the Grid Garage Tools

Grid Garage is written in Python programming language and tested in ArcGIS 10.4.0 and 10.4.1 for Desktop. The tools may not work in older versions (pre-10.1). Note that you will need the 'Spatial Analyst' extension for many of the tools to run.

### 2.1 Adding Grid Garage to the ArcMap ArcToolbox

To add the Grid Garage toolbox to the ArcMap Toolbox right-click the folder 'ArcToolbox' and select 'Add Toolbox' from the menu. You will then need to navigate to the folder where the Grid Garage toolbox is located on your hard drive and then add the tbx file.

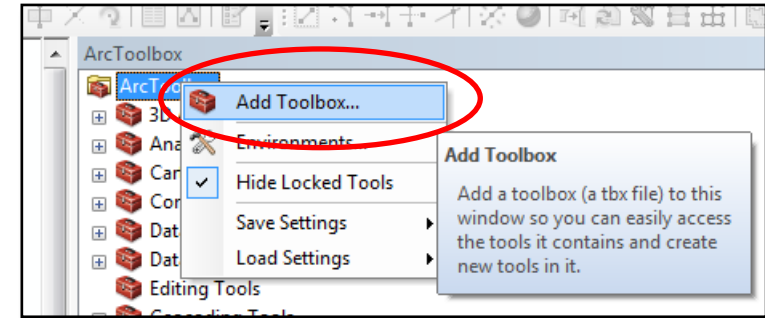


Figure 2 Adding the Grid Garage Toolbox

### 2.2 How does Grid Garage work?

All Grid Garage tools use the same method to batch process multiple geodata inputs. The geodata processing is undertaken by standard ESRI ArcGIS tools described in the ESRI online help. See Chapter 6 'Technical documentation for Grid Garage tools' for usage tips and a short description of the tool, including a link to the ESRI online help. The following features are common to all tools:

#### 2.2.1 Input and output tables

All tools require an input table that contains a list of file paths to each of the geodata items you want processed by the Grid Garage tool. You need to select the field from the input table that contains the geodata file path, as shown in Figure 3. The first input table is usually generated using the 'Geodata > Search' tool, described on page 42.

All the tools, with the exception of the 'Geodata > Display' tool, generate a 'Results Table' when they execute. This table contains a 'Geodata' field containing the output path of the data processed and other information depending on the tool. Any Results Table can be used as an input table for the other Grid Garage tools. Figure 3 shows where you specify the input table ('Table of Geodata') containing the inputs, or geodata, to be processed (copied in this case) and the location for the output files and Results Table ('Output Workspace') as well as the Results Table Name.

Figure 4 shows an example of a Results Table generated using the 'Geodata > Search' tool, and the Results Table shown in Figure 5 was generated by the 'Geodata > Copy' tool. When using the Results Table as input for another Grid Garage tool you can restrict the processing to only selected rows, as illustrated in Figure 4. You will need to specify the 'Output Workspace' as a file geodatabase (*name.gdb*) to use the highlight option, if you select a folder in the 'Output Workspace' then a CSV Results Table will be generated in that folder and you will not be able to use the highlight option when using the table as input for other tools.

If there is any errors encountered the tool will also generate a 'fail' table which has the same name as the Results Table with a '\_FAIL' suffix (see an example of a Fail Results Table in Figure 6). The Fail Results Table will list the geodata items that failed and the ArcGIS error message

to help you diagnose the problem. You can then use the Fail Results Table as input into other Grid Garage tools to diagnose the problem or try a different approach to processing the geodata.

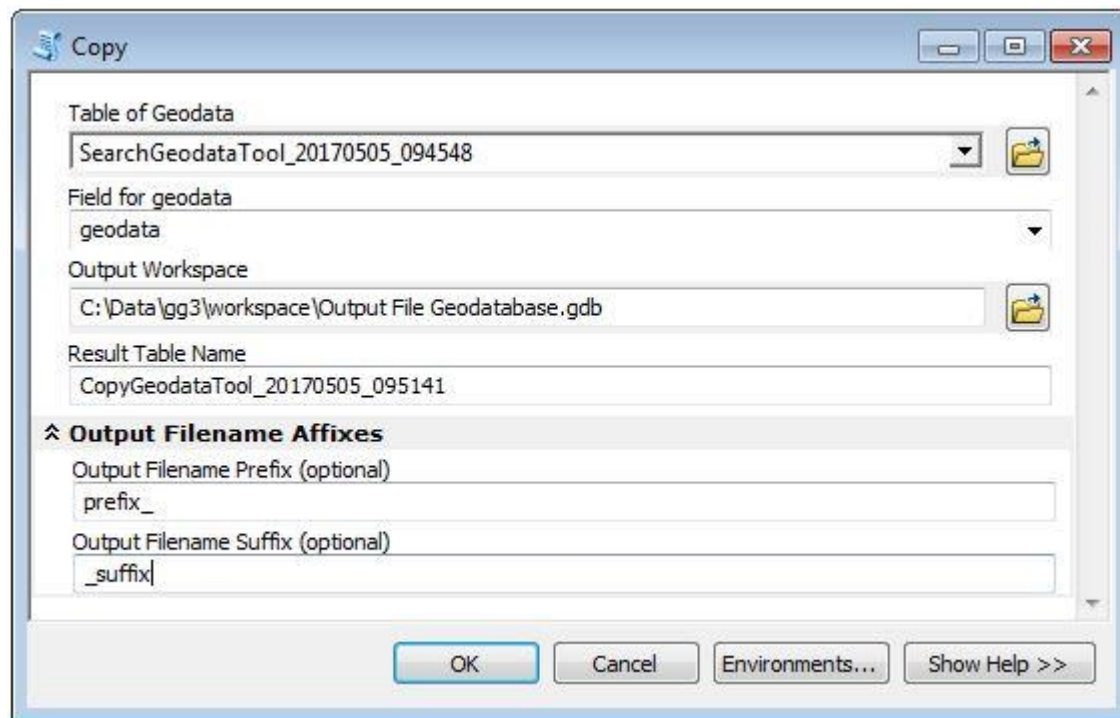


Figure 3 Specifying the input table ('Table of Geodata' in this case) and 'Results [table] location' which will list the outputs.



Table		
SearchGeodataTool_20170307_133205		
OBJECTID *	geodata	
1	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\demfill125m.tif	
2	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\MCASS_StudyAreaTemplate30m.tif	
3	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\MCASS_StudyAreaTemplate30m_sml.tif	
4	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\netvegkc100m_sml.tif	
5	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\rain_ann1km.tif	
6	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\rain_ann1km_int.tif	
7	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\sheep_dse1km.tif	
8	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\sheep_dse1km_int.tif	
9	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\SPOT5_WoodyExtent_Armidale_sml.TIF	
10	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\AggregateRasterTool_20161109_134102_FAIL.csv	
11	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\Armidale_Dumaresq_Council.shp	
12	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\Armidale_Dumaresq_Council_GDAz56.shp	
13	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\Extract_Test_Po3.shp	
14	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\HydroLine_All_Watercourses.shp	
15	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\HydroLine_Rivers.shp	
16	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\LargerAreaPolygon.shp	
17	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\mcass_studyareatemplate30m.shp	
18	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\mcass_studyareatemplate30m_GDAz56.shp	
19	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\mcass_studyareatemplate30m_sml.shp	
20	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\netvegkc100m_sml.shp	
21	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\Statewide_RiverConditionIndex.shp	
22	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\Test Points.shp	
23	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\Towns.shp	
24	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\VegBorderRiversGwydir_Comp09_VIS3801.shp	

SearchGeodataTool\_20170307\_133205

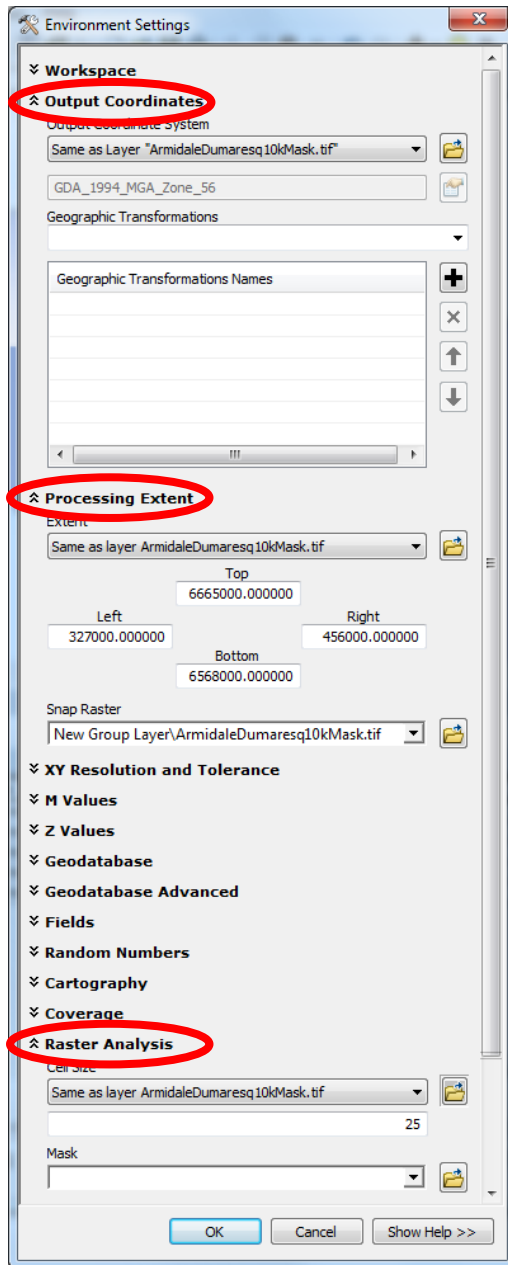
Figure 4 Example of an input table generated using the 'Geodata > Search' tool

Table			□ ×
CopyGeodataTool_20170307_133313			×
OBJECTID *	geodata	copied_from	
1	C:\Data\gg3\grid-garage-3-tests\geodata-copy\copy.gdb\demfill125m	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\demfill125m.tif	
2	C:\Data\gg3\grid-garage-3-tests\geodata-copy\copy.gdb\MCASS_StudyAreaTemplate30m	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\MCASS_StudyAreaTemplate30m.tif	
3	C:\Data\gg3\grid-garage-3-tests\geodata-copy\copy.gdb\MCASS_StudyAreaTemplate30m_sml	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\MCASS_StudyAreaTemplate30m_sml.tif	
4	C:\Data\gg3\grid-garage-3-tests\geodata-copy\copy.gdb\netvegkc100m_sml	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\netvegkc100m_sml.tif	
5	C:\Data\gg3\grid-garage-3-tests\geodata-copy\copy.gdb\rain_ann1km	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\rain_ann1km.tif	
6	C:\Data\gg3\grid-garage-3-tests\geodata-copy\copy.gdb\rain_ann1km_int	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\rain_ann1km_int.tif	
7	C:\Data\gg3\grid-garage-3-tests\geodata-copy\copy.gdb\sheep_dse1km	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\sheep_dse1km.tif	
8	C:\Data\gg3\grid-garage-3-tests\geodata-copy\copy.gdb\sheep_dse1km_int	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\sheep_dse1km_int.tif	
9	C:\Data\gg3\grid-garage-3-tests\geodata-copy\copy.gdb\SPOT5_WoodyExtent_Armidale_sml	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\SPOT5_WoodyExtent_Armidale_sml.TIF	
10	C:\Data\gg3\grid-garage-3-tests\geodata-copy\copy.gdb\AggregateRasterTool_20161109_134102_FAIL	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\AggregateRasterTool_20161109_134102_FAIL.csv	
1 2 3 4 5 6 7 8 9 10 (0 out of 10 Selected)			
SearchGeodataTool_20170307_133205 CopyGeodataTool_20170307_133313 TweakValuesRasterTool_20170307_140941			

Figure 5 Results Table generated from running the 'Geodata > Copy' tool

Table			□ ×
CopyGeodataTool_20170307_133313_FAIL			×
OBJECTID *	geodata	failure	
1	C:\Data\gg3\grid-garage-3-sample-d	FAIL: File "C:\Data\gg3\grid-garage-3\base\base_tool.py", line 50, in error_handler, yield, Failed to execute. Parameters are not valid., ERROR 000979: Cannot copy between different workspaces., Failed to execute (Copy).	
2	C:\Data\gg3\grid-garage-3-sample-d	FAIL: File "C:\Data\gg3\grid-garage-3\base\base_tool.py", line 50, in error_handler, yield, Failed to execute. Parameters are not valid., ERROR 000979: Cannot copy between different workspaces., Failed to execute (Copy).	
3	C:\Data\gg3\grid-garage-3-sample-d	FAIL: File "C:\Data\gg3\grid-garage-3\base\base_tool.py", line 50, in error_handler, yield, Failed to execute. Parameters are not valid., ERROR 000979: Cannot copy between different workspaces., Failed to execute (Copy).	
4	C:\Data\gg3\grid-garage-3-sample-d	FAIL: File "C:\Data\gg3\grid-garage-3\base\base_tool.py", line 50, in error_handler, yield, Failed to execute. Parameters are not valid., ERROR 000979: Cannot copy between different workspaces., Failed to execute (Copy).	
5	C:\Data\gg3\grid-garage-3-sample-d	FAIL: File "C:\Data\gg3\grid-garage-3\base\base_tool.py", line 50, in error_handler, yield, Failed to execute. Parameters are not valid., ERROR 000979: Cannot copy between different workspaces., Failed to execute (Copy).	
6	C:\Data\gg3\grid-garage-3-sample-d	FAIL: File "C:\Data\gg3\grid-garage-3\base\base_tool.py", line 50, in error_handler, yield, Failed to execute. Parameters are not valid., ERROR 000979: Cannot copy between different workspaces., Failed to execute (Copy).	
1 2 3 4 5 6 (0 out of 14 Selected)			
CopyGeodataTool_20170307_133313_FAIL			

Figure 6 Fail table generated when the 'Geodata > Copy' tool could not copy some of the input geodata items.



### 2.2.2 Geodata outputs

All spatial geodata outputs will be written to the 'Output Workspace'. The first time the tool is run the output geodata will be written to the Output Workspace using the same name as the input geodata. If the tool is run again the output geodata will be given the same name plus a number, starting at zero (0) and incrementing each time the tool is run, as shown in Figure 7.

### 2.2.3 Setting up the Geoprocessing Environment

If your output raster features are being used in a modelling program, you will probably need all the pixels in the raster feature classes to be spatially aligned. To achieve this we recommend you use a template grid to specify the output coordinates, processing extent, especially 'Snap Raster', and cell size using the ArcMap 'Geoprocessing > Environments..' tool, illustrated in Figure 9, before running any of the Grid Garage tools.

### 2.2.4 Dealing with errors and crashes

In the Results table generated by most tools there will be an 'error' field. This field can tell you if the tool failed for the input (item) in that row. We have also found that sometimes when a tool crashes or causes fatal errors one solution is to create a new ArcMap project (mxd) and try the operation again. Or just close ArcGIS down and re-open the project before trying again. If you are still having problems running the tools please report the issue to Tom Barrett ([tom.barrett@environment.nsw.gov.au](mailto:tom.barrett@environment.nsw.gov.au)). To help us diagnose and fix any bugs could you please send the 'gg3.log' file, the location of which is reported in the 'Results' window. Access the Results window by selecting the 'Geoprocessing > Results' menu item in ArcMap.

Figure 9 Example of ArcMap Environment Settings where a 'template' raster feature is used to define coordinates, extent and cell size

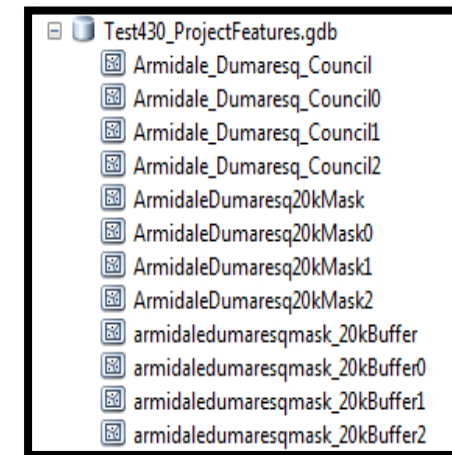


Figure 7 Example of a 'Result Workspace' (file geodatabase) where the 'Project Features' tool has been run four times on three input files

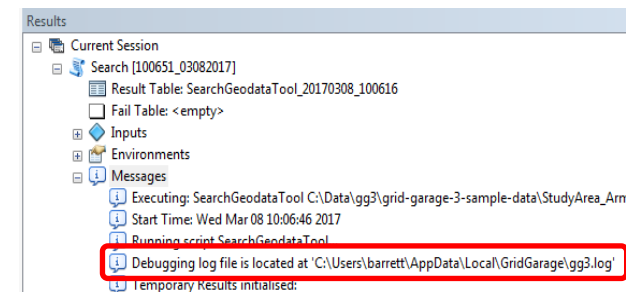


Figure 8 Location of the 'gg3.log' file is reported in the Results window.

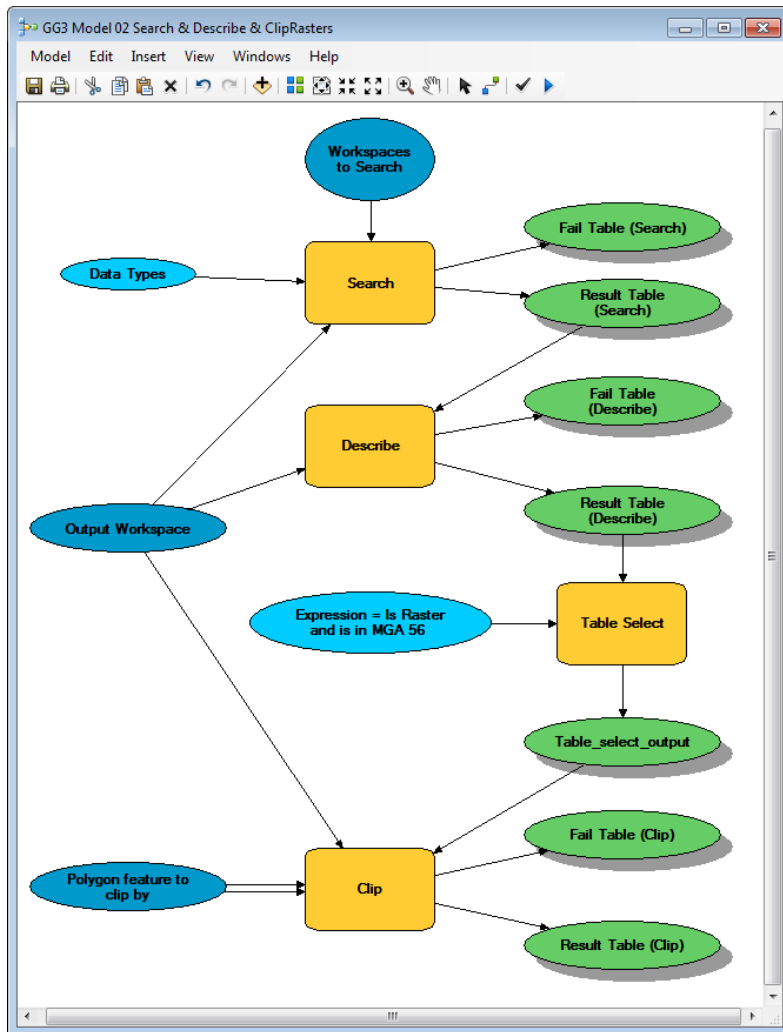


Figure 10 An example of a custom model built in ArcGIS ModelBuilder that utilises three of the Grid Garage tools. The first tool 'Geodata > Search' creates the Results Table listing all the geodata found in the 'Workspace to Search' path. This table then feeds straight into the 'Geodata > Describe' tool which generates a Results Table reporting on many of the geodata attributes including projection type. The ArcGIS 'Table Select' tool (a standard ArcGIS tool) then selects only those geodata items that are 'raster' data and are in 'MGA Z56' projection. These selected data items are then fed into the 'Raster > Clip' Grid Garage tool which clips out a subset of the data based on the 'Polygon feature to clip by' which is a polygon feature class defining the project study area.

### 3 Using Grid Garage tools in ArcGIS ModelBuilder

#### 3.1 Overview

You can drag-and-drop any of the Grid Garage (GG) tools into an ArcGIS model when it is in 'Edit' mode. You need to know how to build models using ArcGIS ModelBuilder before attempting this. Search for 'ModelBuilder' in the ArcGIS Online Help for instructions and tutorials on this topic.

##### 3.1.1 Linking multiple Grid Garage tools

Each Grid Garage tool requires an input table containing a field (called 'geodata' by default) that contains the full path of all the input geodata to be processed. Each tool also generates a 'Results Table' that also contains an 'geodata' field listing the paths of all the output data. This allows the tools to be daisy chained together where the output of the previous tool can become the input for the next, as shown in Figure 10.

Other standard ArcGIS tools can also be used in combination with the Grid Garage tools. The 'Table Select' ArcGIS tool is used in this example model to select a subset of the geodata items, based on their data type and projection, before being fed into the 'Raster > Clip' Grid Garage tool.

We recommend that if you're generating multiple (intermediate) geodata outputs in your model, e.g. a 'Raster > Clip' output followed by a 'Raster > Resample' output, then you should specify a different 'Result Workspace' for each one. This also makes it easier to validate the outputs from each tool and de-bug if things go wrong. See 'Model 04', in the '6 Templates' toolset, for an example.

## 4 Tutorials

At present there is only one tutorial that introduces you to the basic operation of Grid Garage tools. We intend adding more tutorials in the near future. All tutorials will use the sample geodata provided with Grid Garage. Table 1 below lists the different geodata provided. In order to test the different tools the geodata are in different projections and the raster geodata provide examples of different pixel types and cell sizes.

### 4.1 Sample geodata

*Table 1 List of sample geodata provided with the Grid Garage Toolbox. Note that the raster geodata sets have different cell sizes, spatial reference and pixel type.*

File Name	Type	Spatial Reference	NoData Value	Pixel Type	Is Integer	Cell Size	Fields in Attribute Table
demfill25m.tif	RasterDataset	GDA_1994_MGA_Zone_56	-1	U16	TRUE	25	OID, VALUE, COUNT, CLASS_50M, CLASS_100M, COUNT_PCNT
MCASS_StudyAreaTemplate30m_sml.tif	RasterDataset	GDA_1994_MGA_Zone_56	255	U8	TRUE	30	OID, Value, Count
netvegkc100m_sml.tif	RasterDataset	GDA_1994_MGA_Zone_56	-2147483648	S32	TRUE	100	OID, Value, Count, OID_1, VALUE_1, COUNT_1, CLASS_COD, CLASS_NAM, FORM_NUM, FORMATION, KFORMNO_K, LABEL_KF_, OID_12, VALUE_12, COUNT_12, CLASS_CO_1, CLASS_NA_1, FORM_NUM_1, FORMATIO_1, KFORMNO__1, LABEL_KF1
rain_ann1km.tif	RasterDataset	GDA_1994_Australia_Albers	-1	F32	FALSE	1000	NA
sheep_dse1km.tif	RasterDataset	GDA_1994_Australia_Albers	-1.797693e+308	F64	FALSE	1000	NA
SPOT5_WoodyExtent_Armidale_sml.TIF	RasterDataset	GDA_1994_MGA_Zone_56	255	U8	TRUE	5	OID, Value, Count
HydroLine_All_Watercourses.shp	FeatureClass	GCS_GDA_1994	NA	NA	NA	NA	FID, Shape, TopoID, ObjectModD, FeatureMod, ClassSubty, FeatureRel, AttributeR, CaptureSou, CaptureMet, Planimetri, VerticalAc, Relevance, HydroName, HydroNameT, Perennial, HydroType, NamedWater, Hierarchy, lastupdate, LoadDate, Length_M, Label, Shape_Leng
mcass_studyareatemplate30m_sml.shp	FeatureClass	GDA_1994_MGA_Zone_56	NA	NA	NA	NA	FID, Shape, ID, GRIDCODE
Place_Names.shp	FeatureClass	GDA_1994_MGA_Zone_56	NA	NA	NA	NA	FID, Shape, OBJECTID, TopoID, ObjectModD, FeatureMod, ClassSubty, FeatureRel, AttributeR, CaptureSou, CaptureMet, Planimetri, VerticalAc, Relevance, Operationa, GeneralNam, Alternativ, PlaceType, Population, PopSourceD, lastupdate, LoadDate, Label_UC
Statewide_RiverConditionIndex.shp	FeatureClass	NSW_Lambert_Conformal_Conic	NA	NA	NA	NA	FID, Shape, OBJECTID, Catchment_, WSP, WaterSourc, RCI_HS, RCI_RSC, RCI_RVC, RCI_RBCI, RCI_CDI, RCI, Shape_Leng, Shape_Area
VegBorderRiversGwydir_Comp09_VIS3801.shp	FeatureClass	GCS_GDA_1994	NA	NA	NA	NA	FID, Shape, Veg1, Veg2, Veg3, Comments, Cover_perc, Veg_Clear, Poly_ID, Source, Scale, Date_, Keith_Clas, RVC_Name, RVC_, Hectares, Keith_No_, Shape_Leng, Shape_Area



## 4.2 Tutorial 1: Basic use of Grid Garage tools

This tutorial will teach you how to find and describe geodata. This produces a single table as an output which makes selecting data for subsequent processing by other Grid Garage tools (and tutorials) much easier.

**Step 1:** Download and unzip the Grid Garage Toolbox and sample data by following the links on the GitHub home page: <https://nsw-oeh-ems-kst.github.io/>

### Sample GIS data (v1.0.0) for use with Grid Garage v3 tutorials

TomWaterat released this an hour ago

You will need this sample data to undertake the short tutorials in the use of Grid Garage Tools which are included in the Grid Garage User Manual.

Follow this link to return to the KST GitHub Home Page

#### Downloads

Source code (zip)

Source code (tar.gz)

### Grid Garage 3.0.0

byezzy released this 6 hours ago · 3 commits to master since this release

The first formal release of the Grid Garage ArcGIS Toolbox on GitHub.

Work on 3.1.0, which brings some metadata tools to the toolset is already underway...

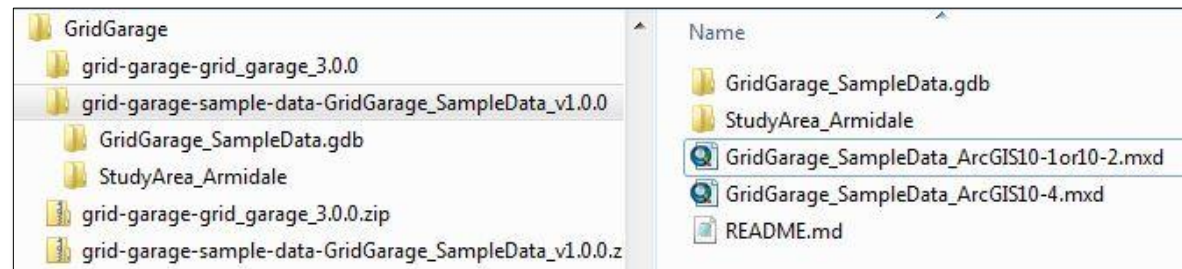
Follow this link to return to the KST GitHub Home Page

#### Downloads

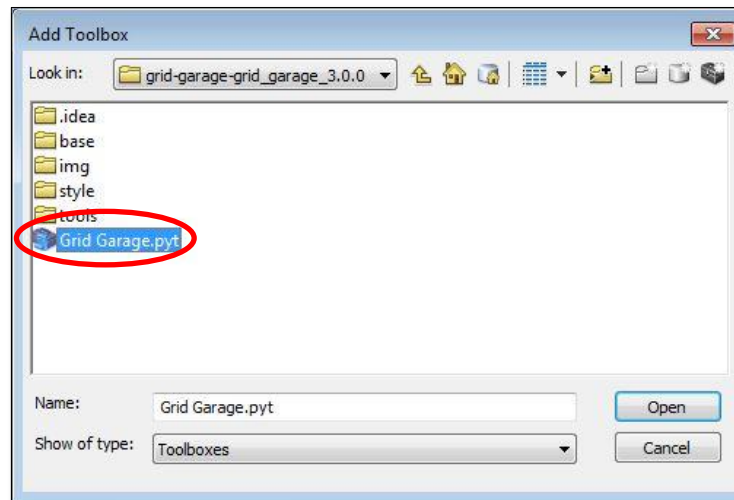
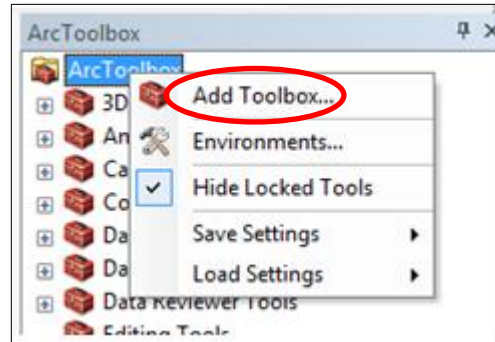
Source code (zip)

Source code (tar.gz)

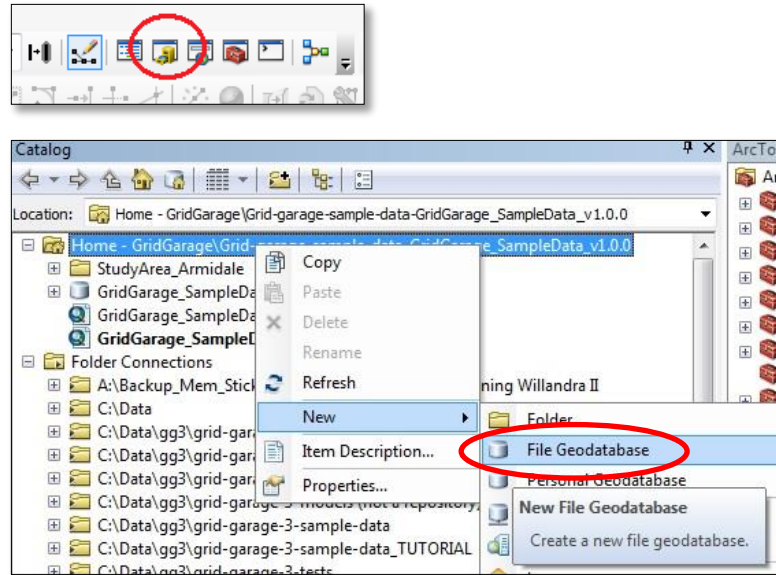
**Step 2:** Open the ArcMap project (for ArcGIS 10.4 or 10.1/2) in the sample data folder. You can view the sample data in the map window.



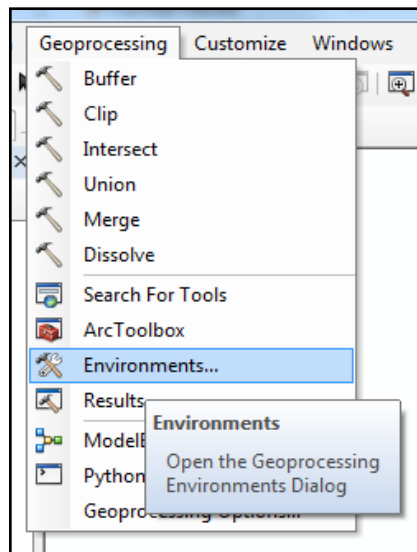
**Step 3:** Open the ArcToolbox window in ArcMap, then right- click on the 'ArcToolbox' entry and select 'Add Toolbox...' You will need to navigate to the location of your 'Grid\_Garage' folder and select the Grid Garage toolbox (highlight and click [Open]).



**Step 4:** In ArcMap open an ArcCatalog window (see red circle) then right-click on the 'Home – Sample Data' folder, select 'New' and then 'File Geodatabase'. Rename the new file geodatabase to 'Tutorial01'.



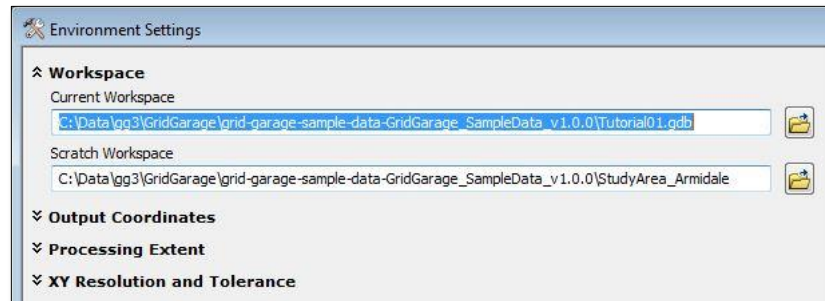
**Step 5:** Select 'Geoprocessing > Environments..' from the ArcMap menu.



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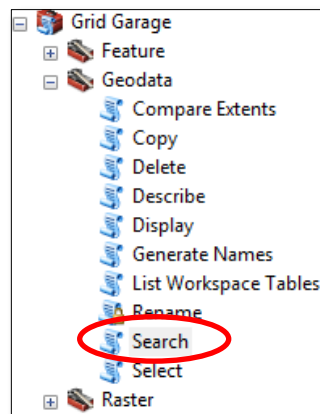
**Step 6:** Select the 'Tutorial01.gdb' file geodatabase for both the 'Current Workspace'.

Now is a good time to save your ArcMap project.



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**Step 7:** Open the ArcToolbox window and double-click on the 'Grid Garage >Geodata>Search' Grid Garage tool.

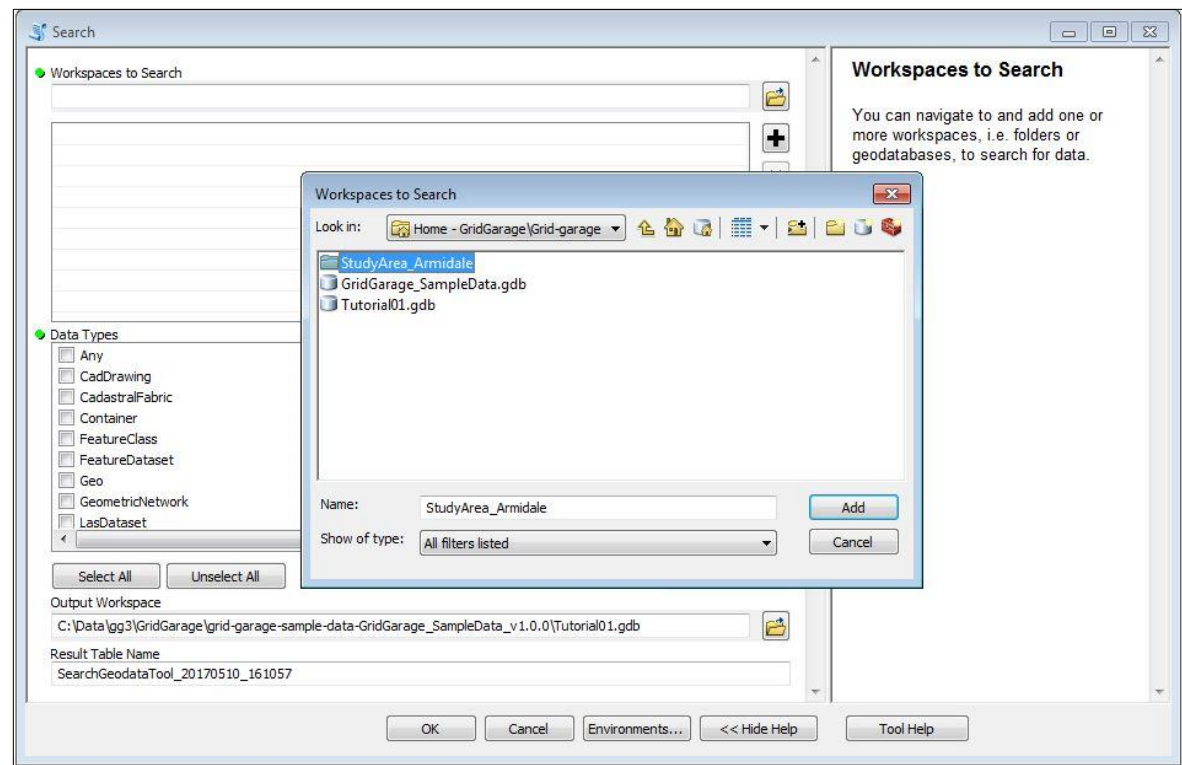


**Step 8:** In the 'Workspaces to Search' input navigate to the folder 'StudyArea\_Armidale' in the sample data folder you unzipped.

The 'Output Workspace' will default to your 'AcrGIS Current Workspace' which you set to be 'Tutorial01.gdb' file geodatabase in Step 5.

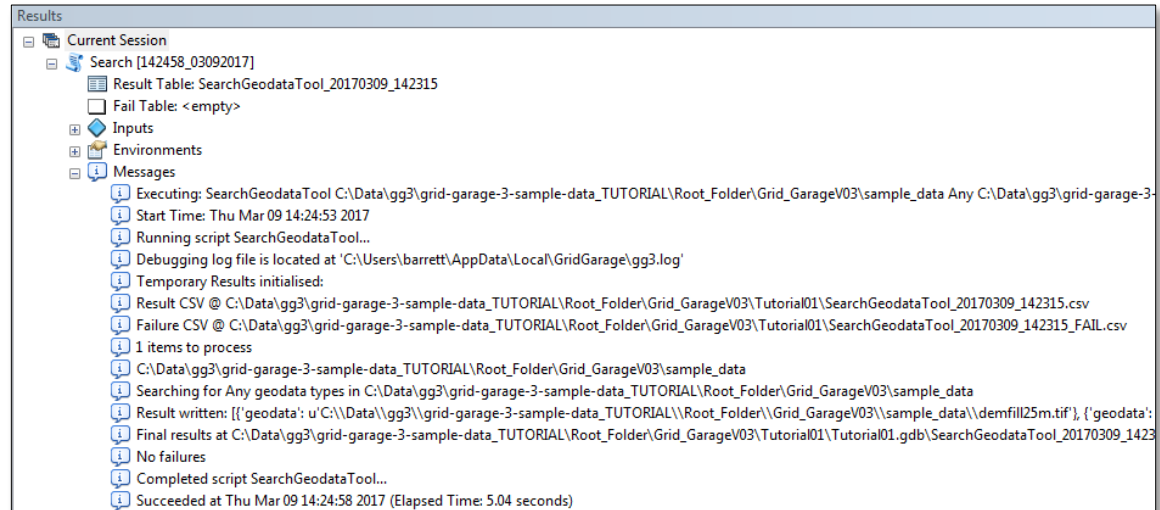
Unless you click '<<Hide Help' the help panel to the right will provide instructions for each of the tool parameters.

Click OK.





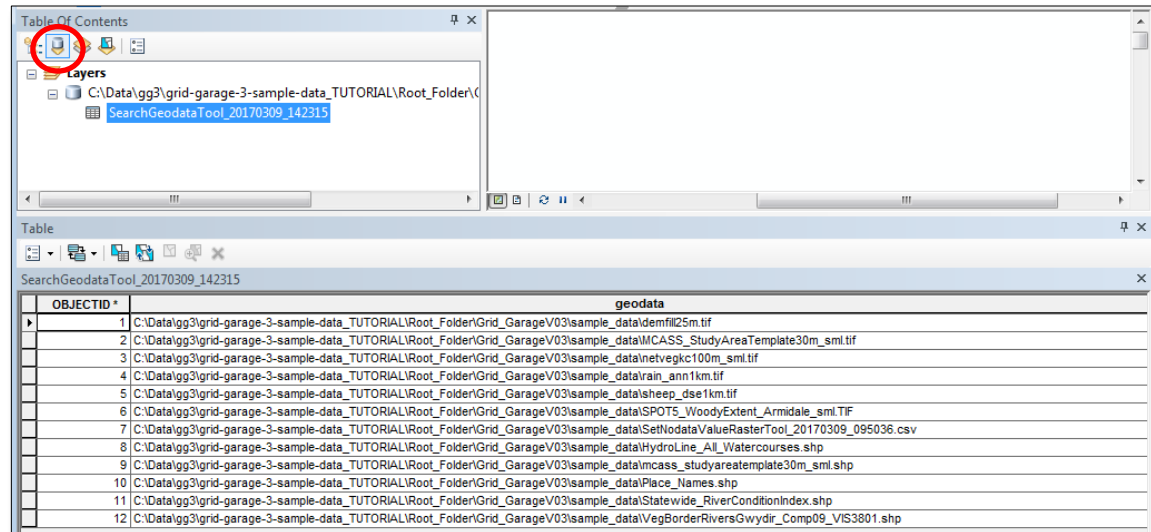
**Step 8 cont..** You can view the tool processing progress by selecting ‘Geoprocessing > Results’ from the ArcMap menu, then expanding ‘Current Session’ and ‘Messages’.



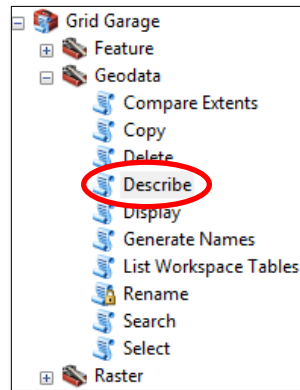
**Step 8 cont..** When the tool has finished processing you will get a temporary message in the bottom right hand corner. If the message contains a green tick then it completed successfully without any errors.

In your ‘Table of Contents’ window you will see a new Table in the ‘List By Source’ ArcMap display tab where the Results table will be automatically loaded. Right-click on this table and click ‘Open’ to view it.

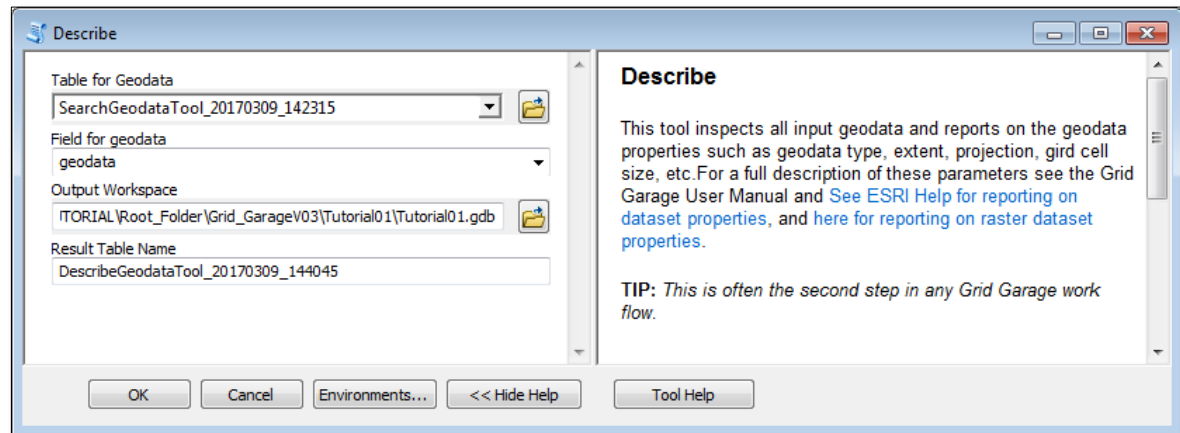
The Results table will contain a ‘geodata’ field listing all the geodata found in the search folder and its sub-folders.



**Step 9:** Run the 'Geodata>Describe' tool by double-clicking on it.



**Step 9 cont..** In the 'Table for Geodata' click the drop-down menu and select the Results Table generated in the previous step.



**Step 9 cont..** Scroll to the right end of the Results table to look at the ‘dataset\_spatialReference’ field. This field reports on the spatial reference coordinate system of each geodata file. You can also see details of the geodata by looking at the ‘dataset\_datasetType’ field and many other types of data attributes.

DescribeGeodataTool_20170309_1440452										
OBJECTID *	geodata	datas	data	data	data	dataset_datasetType	dataset_extent	dataset	dataset_spatialReference	
1	C:\Data\gg3\grid-garage-3-sample-data_TUTORIAL\Root_Folder\Grid_GarageV03\sample_data\MCCASS_StudyAreaTemplate30m_sml.tif	-1	1.#Q	1.#Q	False	RasterDataset	330070 6637900 360	False	GDA_1994_MGA_Zone_56	<
2	C:\Data\gg3\grid-garage-3-sample-data_TUTORIAL\Root_Folder\Grid_GarageV03\sample_data\netvegkc100m_sml.tif	-1	1.#Q	1.#Q	False	RasterDataset	326979.753168176 6	False	GDA_1994_MGA_Zone_56	<
3	C:\Data\gg3\grid-garage-3-sample-data_TUTORIAL\Root_Folder\Grid_GarageV03\sample_data\rain_ann1km.tif	-1	1.#Q	1.#Q	False	RasterDataset	1781566.45949697 -	False	GDA_1994_Australia_Albers	<
4	C:\Data\gg3\grid-garage-3-sample-data_TUTORIAL\Root_Folder\Grid_GarageV03\sample_data\sheep_dse1km.tif	-1	1.#Q	1.#Q	False	RasterDataset	1781566.45949697 -	False	GDA_1994_Australia_Albers	<
5	C:\Data\gg3\grid-garage-3-sample-data_TUTORIAL\Root_Folder\Grid_GarageV03\sample_data\SPOT5_WoodyExtent_Armidale_sml.TIF	-1	1.#Q	1.#Q	False	RasterDataset	326975.777791467 6	False	GDA_1994_MGA_Zone_56	<
6	C:\Data\gg3\grid-garage-3-sample-data_TUTORIAL\Root_Folder\Grid_GarageV03\sample_data\HydroLine_All_Watercourses.shp	-1	1.#Q	1.#Q	False	FeatureClass	151.187819722143 -	False	GCS_GDA_1994	<
7	C:\Data\gg3\grid-garage-3-sample-data_TUTORIAL\Root_Folder\Grid_GarageV03\sample_data\mccass_studyareatemplate30m_sml.shp	-1	1.#Q	1.#Q	False	FeatureClass	330070 6637900 360	False	GDA_1994_MGA_Zone_56	<
8	C:\Data\gg3\grid-garage-3-sample-data_TUTORIAL\Root_Folder\Grid_GarageV03\sample_data\Place_Names.shp	-1	1.#Q	1.#Q	False	FeatureClass	328197.382041023 6	False	GDA_1994_MGA_Zone_56	<
9	C:\Data\gg3\grid-garage-3-sample-data_TUTORIAL\Root_Folder\Grid_GarageV03\sample_data\Statewide_RiverConditionIndex.shp	-1	1.#Q	1.#Q	False	FeatureClass	384874.939300001 7	False	NSW_Lambert_Conformal_Conic	<
10	C:\Data\gg3\grid-garage-3-sample-data_TUTORIAL\Root_Folder\Grid_GarageV03\sample_data\VegBorderRiversGwydir_Comp09_VIS3801.shp	-1	1.#Q	1.#Q	False	FeatureClass	151.194255882554 -	False	GCS_GDA_1994	<

If you select a subset of files then only these selected files will be processed by any of the Grid Garage tools, if this table is selected for the ‘Table for Geodata’ input table. For example in the example below only shapefiles that have geographic spatial reference of GCS\_GDA\_1994 have been selected for processing.

Table										
DescribeGeodataTool_20170309_1440452										
OBJECTID *	geodata	datas	data	data	data	dataset_datasetType	dataset_extent	dataset	dataset_spatialReference	
6	C:\Data\gg3\grid-garage-3-sample-data_TUTORIAL\Root_Folder\Grid_GarageV03\sample_data\HydroLine_All_Watercourses.shp	-1	1.#Q	1.#Q	False	FeatureClass	151.187819722143 -	False	GCS_GDA_1994	<
10	C:\Data\gg3\grid-garage-3-sample-data_TUTORIAL\Root_Folder\Grid_GarageV03\sample_data\VegBorderRiversGwydir_Comp09_VIS3801.shp	-1	1.#Q	1.#Q	False	FeatureClass	151.194255882554 -	False	GCS_GDA_1994	<
3	C:\Data\gg3\grid-garage-3-sample-data_TUTORIAL\Root_Folder\Grid_GarageV03\sample_data\rain_ann1km.tif	-1	1.#Q	1.#Q	False	RasterDataset	1781566.45949697 -	False	GDA_1994_Australia_Albers	<
4	C:\Data\gg3\grid-garage-3-sample-data_TUTORIAL\Root_Folder\Grid_GarageV03\sample_data\sheep_dse1km.tif	-1	1.#Q	1.#Q	False	RasterDataset	1781566.45949697 -	False	GDA_1994_Australia_Albers	<
1	C:\Data\gg3\grid-garage-3-sample-data_TUTORIAL\Root_Folder\Grid_GarageV03\sample_data\MCCASS_StudyAreaTemplate30m_sml.tif	-1	1.#Q	1.#Q	False	RasterDataset	330070 6637900 360	False	GDA_1994_MGA_Zone_56	<
2	C:\Data\gg3\grid-garage-3-sample-data_TUTORIAL\Root_Folder\Grid_GarageV03\sample_data\netvegkc100m_sml.tif	-1	1.#Q	1.#Q	False	RasterDataset	326979.753168176 6	False	GDA_1994_MGA_Zone_56	<
5	C:\Data\gg3\grid-garage-3-sample-data_TUTORIAL\Root_Folder\Grid_GarageV03\sample_data\SPOT5_WoodyExtent_Armidale_sml.TIF	-1	1.#Q	1.#Q	False	RasterDataset	326975.777791467 6	False	GDA_1994_MGA_Zone_56	<
7	C:\Data\gg3\grid-garage-3-sample-data_TUTORIAL\Root_Folder\Grid_GarageV03\sample_data\mccass_studyareatemplate30m_sml.shp	-1	1.#Q	1.#Q	False	FeatureClass	330070 6637900 360	False	GDA_1994_MGA_Zone_56	<
8	C:\Data\gg3\grid-garage-3-sample-data_TUTORIAL\Root_Folder\Grid_GarageV03\sample_data\Place_Names.shp	-1	1.#Q	1.#Q	False	FeatureClass	328197.382041023 6	False	GDA_1994_MGA_Zone_56	<
9	C:\Data\gg3\grid-garage-3-sample-data_TUTORIAL\Root_Folder\Grid_GarageV03\sample_data\Statewide_RiverConditionIndex.shp	-1	1.#Q	1.#Q	False	FeatureClass	384874.939300001 7	False	NSW_Lambert_Conformal_Conic	<

## 5 Summary of Grid Garage Tools

Tool (with link to technical documentation)	Summary of Tool function
<b>Feature Tools</b>	
<a href="#">Feature &gt; Clip</a>	This tool cuts out a piece of one feature class using one or more of the features in another feature class as a cookie cutter. This is particularly useful for creating a new feature class, also referred to as study area or area of interest (AOI), which contains a geographic subset of another, larger feature class. For more detailed help see <a href="#">ESRI Help for the 'Clip (Analysis)' tool</a> .
<a href="#">Feature &gt; Copy</a>	Copies features from the input feature class or layer to a new feature class. If the input is a layer which has a selection, only the selected features will be copied. If the input is a geodatabase feature class or shapefile, all features will be copied. See <a href="#">ESRI Help for the 'Copy (Analysis)' tool</a> .
<a href="#">Feature &gt; Rasterise by Table</a>	This tool converts fields within vector feature classes into raster feature classes based on a list of fields stored in the Items table. In addition to the 'item' field the items table must have a field that contains a list of fields, for each input feature class that you want converted into raster features. The Grid Garage 'Geodata > Describe' tool can be used to generate a list of all the fields present in each input feature attribute table. For more detailed help see <a href="#">ESRI Help for the 'Feature to Raster (Conversion)' tool</a> .
<b>Geodata Tools</b>	
<a href="#">Geodata &gt; Compare Extents</a>	<p>This tool compares the extent of each of the geodata items listed in the input table with the extent of a specified geodata item or area of interest (aoi). In the output table the tool reports on the following:</p> <ol style="list-style-type: none"> <li>1) contains aoi (the aoi is completely within the input geodata)</li> <li>2) within aoi (the input geodata is completely within the aoi)</li> <li>3) disjoint aoi (there is no overlap between the input geodata and the aoi)</li> <li>4) overlaps aoi (the input geodata overlaps the aoi)</li> <li>5) equals aoi (the extent of the input geodata is exactly the same as the aoi)</li> <li>5) touches aoi (the input geodata and the aoi share one boundary)</li> </ol> <p>Note that this tool compares the extent, or the bounding rectangle, of the two geodata items, not their actual geometry.</p>
<a href="#">Geodata &gt; Copy</a>	This tool copies geodata into a single workspace defined by the 'Output Workspace'. The tool uses the standard ArcGIS 'Copy' tool from the Data Management Toolbox. For more detailed help see <a href="#">ESRI Help for the 'Copy' tool in the Data Management Toolbox (ArcGIS 10.4)</a> .
<a href="#">Geodata &gt; Delete</a>	This tool permanently deletes listed geodata from the disk. The tool uses the standard ArcGIS 'Delete (Data Management)' tool. For more detailed help see <a href="#">ESRI Help for the 'Delete (Data Management)' tool (ArcGIS 10.4)</a> .

Tool (with link to technical documentation)	Summary of Tool function
<a href="#">Geodata &gt; Describe</a>	This tool inspects all input geodata and reports on the geodata properties such as geodata type, extent, projection, grid cell size, etc.. For a full description of these parameters see the Grid Garage User Manual and <a href="#">ESRI Help for reporting on dataset properties</a> , and <a href="#">here for reporting on raster dataset properties</a> .
<a href="#">Geodata &gt; Display</a>	This tool will load all the geodata, listed in the input table selected in 'Table for Geodata', into your ArcMap display frame.
<a href="#">Geodata &gt; Generate Names</a>	This tool provides a first stage in safely renaming datasets according to a set pattern. The tool generates candidate names for geodata listed in the items table, which can then be applied using the 'Geodata > Rename' tool.
<a href="#">Geodata &gt; List Workspace Tables</a>	This tool searches through the input workspaces that you select and generates a list of all the table items it finds. For all the Grid Garage results tables it also reports on the data and time they were generated. This tool can be useful for generating a chronological list of all the GIS operations undertaken using the Grid Garage tools, which is sometimes referred to as 'lineage' in dataset metadata statements.
<a href="#">Geodata &gt; Rename</a>	This tool renames the input geodata by applying the new file names (to the original geodata) generated by the 'Geodata > Generate Names' tool.
<a href="#">Geodata &gt; Search</a>	This tool returns a table listing all the geodata found in the given workspace(s) in a 'results table' illustrated in the example below. The results table stores the path to each of the geodata items in the 'geodata' field. This table can then be used as an input into any of the other Grid Garage batching tools. If you want to restrict the processing to only selected rows (geodata items) then you need to ensure the 'Output Workspace' is a 'file geodatabase', or GDB. If you choose a folder for the Output Workspace then the output table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for Grid Garage tools.
<a href="#">Geodata &gt; Select</a>	This tool allows you to build a new geodata input table by browsing to and manually selecting individual geodata items to include in the table. The tool will not search sub-folders like the 'Geodata > Search' tool does.
<b>Raster Tools</b>	
<a href="#">Raster &gt; Aggregate</a>	This tool is used to generate reduced-resolution versions of rasters, that is, from small to larger pixels. Each output cell contains the Sum, Minimum, Maximum, Mean, or Median of the input cells that are encompassed by the extent of that cell. The tool uses the standard ArcGIS 'Aggregate (Spatial Analysis)' tool. For more detailed help see <a href="#">ESRI Help for the 'Aggregate (Spatial Analyst)' tool (ArcGIS 10.4)</a> .



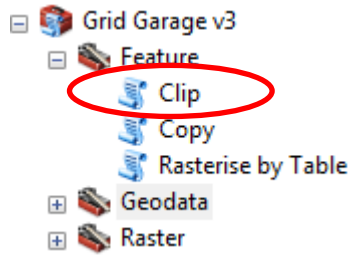
Tool (with link to technical documentation)	Summary of Tool function
<a href="#">Raster &gt; Block Statistics</a>	This tool Partitions the input into non-overlapping blocks and calculates the statistic of the values within each block. The value is assigned to all of the cells in each block in the output. This is illustrated in Figure 13 below. If the data type of the input raster is floating point then only a subset of the statistics will be available (MEAN, MAXIMUM, MINIMUM, RANGE, STD and SUM. For more detailed help see <a href="#">ESRI Help for the 'Block Statistics (Spatial Analyst)' tool.</a>
<a href="#">Raster &gt; Build Attribute Table</a>	This tool builds the raster attribute table (RAT) for raster feature classes that do not have one. The tool uses the standard ArcGIS 'Build Raster Attribute Table (Data Management)' tool. For more detailed help see <a href="#">ESRI Help for the 'Build Raster Attribute Table' Tool in the Data Management Toolbox (ArcGIS 10.4).</a>
<a href="#">Raster &gt; Calculate Statistics</a>	This tool calculates statistics for raster geodata which allows ArcMap to properly stretch and symbolize raster geodata for display. The tool uses the standard ArcGIS 'Calculate Statistics (Raster)' tool. For more detailed help see <a href="#">ESRI Help for the 'Calculate Statistics' in the Raster Toolbox (ArcGIS 10.4).</a>
<a href="#">Raster &gt; Clip</a>	This tool clips out a subset of a larger raster geodata based on either a bounding extent or a polygon feature. The tool uses the standard ArcGIS 'Clip (Raster)' tool. For more detailed help see <a href="#">ESRI Help for the 'Clip (Raster)' tool (10.4).</a>
<a href="#">Raster &gt; Copy</a>	This tool copies raster geodata to a new location. It also allows you to change some of the format/attributes of the raster geodata when copying. For more detailed help see <a href="#">ESRI Help for the 'Copy Raster (Data Management)' tool.</a>
<a href="#">Raster &gt; Lookup by Table</a>	Creates multiple rasters by looking up values found in another field in the table of the input raster. For more detailed help see <a href="#">ESRI Help for the 'Lookup (Raster)' tool (10.4).</a>
<a href="#">Raster &gt; Reclass by Table</a>	This tool Reclassifies (or changes) the values of the input cells of a raster using a remap table. The tool uses the standard ArcGIS 'Reclass by Table (Spatial Analyst)' tool. For more detailed help see <a href="#">ESRI Help for the 'Reclass by Table (Spatial Analyst)' tool (ArcGIS 10.4).</a>
<a href="#">Raster &gt; Reproject</a>	This tool transforms raster geodata from one projection to another. The tool uses the standard ArcGIS 'Project Rasters (Data Management)' tool. For more detailed help see <a href="#">ESRI Help for the 'Project Rasters (Data Management)' tool.</a>
<a href="#">Raster &gt; Resample</a>	This tool alters the raster geodata by changing the cell size and resampling method. The tool uses the standard ArcGIS Resample (Data Management) tool. For more detailed help see <a href="#">ESRI Help for the 'Resample (Data Management)' tool (ArcGIS 10.4).</a>
<a href="#">Raster &gt; Set NoData Value</a>	This tool replaces all 'NoData' pixels with a user-defined value. The tool uses the standard ArcGIS 'Copy (Data Management)' tool. For more detailed help see <a href="#">ESRI Help for the 'Change NoData cells to a value'.</a>
<a href="#">Raster &gt; Set Value to Null</a>	This tool replaces a user defined value to Null or 'NoData'. The tool uses the standard ArcGIS 'Copy Raster (Data Management)' tool. For more detailed help see <a href="#">ESRI Help for the 'Setting Values to NoData with Set Null'.</a>
<a href="#">Raster &gt; Transform</a>	This tool applies simple transformations to the raster geodata values. Options include: Standardise, Stretch, Normalise, Log, Square root and Invert. For more detailed help see <a href="#">ESRI Help for the 'Extract Values To Table'.</a>

Tool (with link to technical documentation)	Summary of Tool function
<a href="#">Raster &gt; Tweak Values</a>	This tool is used to tweak, or change, raster values. The changes can be restricted to a smaller range of values by applying a floor and ceiling, be scaled, translated and also converted to integer data type. The changes to the pixel values are undertaken in the order they're presented in the tool, ie. 1) Rescaling between a floor and ceiling, 2) Scale Factor, 3) Constant Shift and 4) Integerise.
<a href="#">Raster &gt; Values at Points</a>	This tool reports on the values of pixels under each point in the Feature Dataset for each raster grid in the 'Table of Rasters' table. The values are written to the output results table. For more detailed ESRI Help see <a href="#">'Extract Values To Table'</a> .

## 6 Technical documentation for Grid Garage tools

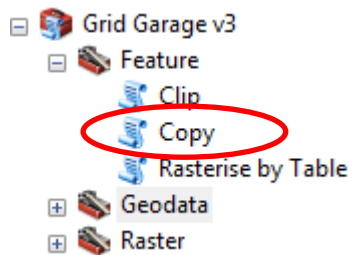
### 6.1 Feature Tools

#### 6.1.1 Feature > Clip

Tool	Description
	<p>This tool cuts out a piece of one feature class using one or more of the features in another feature class as a cookie cutter. This is particularly useful for creating a new feature class, also referred to as study area or area of interest (AOI), which contains a geographic subset of another, larger feature class. For more detailed help see <a href="#">ESRI Help for the 'Clip (Analysis)' tool</a>.</p> <p><b>Table for Features:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Search' tool, but it can be any table with a field containing the full path to the geodata you want to process with this tool. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.</p> <p><b>Field for Geodata:</b> Select the field from the 'Table for Features' that contains the full path to the geodata items you want to copy.</p> <p><b>Clip Features:</b> Polygon feature used to clip the input features. The boundary of the polygon feature will define the area clipped out.</p> <p><b>TIP #1:</b> The clip feature and the input feature must be in the same spatial projection.</p> <p><b>TIP #2:</b> Note that each time this tool is run the output will overwrite any output from a previous run.</p> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table containing the list of geodata processed by the tool as well as any data outputs. If the tool encounters any errors when processing the input geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages.</p> <p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p> <p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table reports on a range of different properties for each of the geodata items in the 'Table for Geodata' input table. See the Grid Garage User Manual for a description of all the properties reported on.</p> <p>If the tool encounters any errors when processing any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><b>Result Table file name:</b> The default name will always take the form of "ClipFeatureTool_date_time", where 'date' and 'time' are the date and time that the tool was run.</p>

	<p>&lt;&lt;Options&gt;&gt;</p> <p><b>XY Tolerance:</b> The minimum distance separating all feature coordinates as well as the distance a coordinate can move in X or Y (or both). Set the value to be higher for data with less coordinate accuracy and lower for data with extremely high accuracy.</p> <p>&lt;&lt;Output Filename Affixes&gt;&gt;</p> <p><b>Output Filename Prefix (optional):</b> Any text you enter in this input box will be added as a prefix (at the beginning) for all output file names.</p> <p><b>Output Filename Suffix (optional):</b> Any text you enter in this input box will be added as a suffix (at the end) for all output file names.</p> <p style="text-align: right;"><a href="#">Link back to Summary of Grid Garage Tools</a></p>
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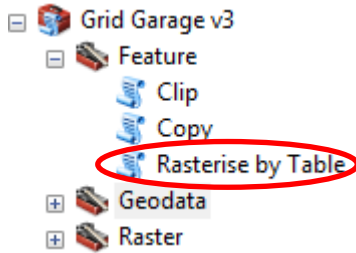
### 6.1.2 Feature > Copy

Tool	Description
	<p>Copies features from the input feature class or layer to a new feature class. If the input is a layer which has a selection, only the selected features will be copied. If the input is a geodatabase feature class or shapefile, all features will be copied. Both the geometry and attributes of the Input Features will be copied to the output feature class. This tool can be used for data conversion as it can read many feature formats (any you can add to ArcMap) and write these to shapefile or geodatabase (File, Personal, or ArcSDE). See <a href="#">ESRI Help for the 'Copy (Analysis)' tool</a>.</p> <p><b>TIP:</b> Note that this tool allows you to copy from one feature format to a different format, for example a shapefile can be copied to a feature class in a File Geodatabase. The 'Geodata &gt; Copy' tool does not allow this.</p> <p><b>Table for Features:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Search' tool, but it can be any table with a field containing the full path to the geodata you want to process with this tool. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.</p> <p><b>Field for Geodata:</b> Select the field from the 'Table for Features' that contains the full path to the geodata items you want to copy.</p> <p><b>Config Keyword:</b> Geodatabase configuration keyword to be applied if the output is an ArcSDE geodatabase or file geodatabase.</p> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table containing the list of geodata processed by the tool as well as any data outputs. If the tool encounters any errors when processing the input geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages.</p> <p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p>

	<p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table reports on a range of different properties for each of the geodata items in the 'Table for Geodata' input table. See the Grid Garage User Manual for a description of all the properties reported on.</p> <p>If the tool encounters any errors when processing any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><u>Result Table file name:</u> The default name will always take the form of “<b>CopyFeatureTool_date_time</b>”, where ‘date’ and ‘time’ are the date and time that the tool was run.</p> <p>&lt;&lt;<b>Options</b>&gt;&gt;</p> <p><b>Spatial Grid 1 (optional):</b> The Spatial Grid 1, 2, and 3 parameters apply only to file geodatabases and certain workgroup and enterprise geodatabase feature classes. If you are unfamiliar with setting grid sizes, leave these options as 0,0,0 and ArcGIS will compute optimal sizes for you. For more information about this parameter, refer to the <a href="#">Add Spatial Index</a> tool documentation.</p> <p><b>Spatial Grid 2 (optional):</b> Cell size of the second spatial grid. Leave the size at 0 if you only want one grid. Otherwise, set the size to at least three times larger than Spatial Grid 1.</p> <p><b>Spatial Grid 3 (optional):</b> Cell size of the third spatial grid. Leave the size at 0 if you only want two grids. Otherwise, set the size to at least three times larger than Spatial Grid 2.</p> <p>&lt;&lt;<b>Output Filename Affixes</b>&gt;&gt;</p> <p><b>Output Filename Prefix (optional):</b> Any text you enter in this input box will be added as a prefix (at the beginning) for all output file names.</p> <p><b>Output Filename Suffix (optional):</b> Any text you enter in this input box will be added as a suffix (at the end) for all output file names.</p> <p style="text-align: right;"><a href="#">Link back to Summary of Grid Garage Tools</a></p>
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### 6.1.3 Feature > Rasterise by Table

Tool	Description									
	<p>This tool converts fields within vector feature classes into raster feature classes based on a list of fields stored in the Items table. In addition to the 'item' field the items table must have a field that contains a list of fields, for each input feature class that you want converted into raster features. The Grid Garage 'Geodata &gt; Describe' tool can be used to generate a list of all the fields present in each input feature attribute table. For more detailed help see <a href="#">ESRI Help for the 'Feature to Raster (Conversion)' tool</a>.</p> <p><b>TIP #1:</b> Make sure you set the Geoprocessing &gt; Environments.. defaults before running this tool. See 2.2.2 on page 11, for instructions.</p> <p><b>Table for Features and Fields:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Search' tool, but it can be any table with a field containing the full path to the geodata you want to process with this tool. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.. This table must have a field that contains list the fields (separated by commas), that you want converted into raster features for each input feature class (item). The list of fields must have the following syntax: ['field1','field2',field3',....,'fieldn'] as illustrated in Figure 11 below. Use 'Geodata &gt; Describe' tool to generate a list of all fields and then remove the fields you don't want converted into raster data sets.</p> <table><tr><th>item</th><th>metadata</th><th>ta_fields</th></tr><tr><td>C:\Data\GIS\Grid_Garage_Test_Data\tests\Test450_RasteriseByTable\MGA_Z56\Armidale_Dumaresq_Council.shp</td><td>&lt;Null&gt;</td><td>[LGAName]</td></tr><tr><td>C:\Data\GIS\Grid_Garage_Test_Data\tests\Test450_RasteriseByTable\MGA_Z56\Statewide_RiverConditionIndex.shp</td><td>&lt;Null&gt;</td><td>[RCI_HS','RCI_RSC','RCI_RVC','RCI_RBCI','RCI_CDI','RCI]</td></tr></table> <p><i>Figure 11 Example of an Items table containing a field that lists the fields to use when creating raster features from the polygon input features (shapefiles in this case).</i></p> <p><b>Field for fields:</b> Select the field from the 'Table for Features and Fields' that contains the list of fields you want converted into raster datasets.</p> <p><b>TIP #2:</b> Note that date fields cannot be converted to raster datasets and will trigger an error (documented in the '_Fail' table).</p> <p><b>Field for feature:</b> Select the field from the 'Table for Features and Fields' that contains the full path to the geodata items you want to have processed by the tool.</p> <p><b>Cell Size:</b> This is the cell size of the output rasters generated from the feature fields. You can base this on existing datasets (from the drop-down menu) or specify a value in the input box below.</p> <p><b>Format for output rasters:</b> Raster format for output geodata. You can choose from: Esri Grid, img (ERDAS IMAGINE) or tif (GeoTIFF). If you select a file geodatabase for the Result Workspace then the output format will default to 'Esri Grid'. When storing your raster geodata to a JPEG file, a JPEG 2000 file, a TIFF file, or a geodatabase, you can specify a compression type and compression quality within 'Geoprocessing &gt; Environments'.</p> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table containing the list of geodata processed by the tool as well as any data outputs. If the tool encounters any errors when processing the input geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages.</p>	item	metadata	ta_fields	C:\Data\GIS\Grid_Garage_Test_Data\tests\Test450_RasteriseByTable\MGA_Z56\Armidale_Dumaresq_Council.shp	<Null>	[LGAName]	C:\Data\GIS\Grid_Garage_Test_Data\tests\Test450_RasteriseByTable\MGA_Z56\Statewide_RiverConditionIndex.shp	<Null>	[RCI_HS','RCI_RSC','RCI_RVC','RCI_RBCI','RCI_CDI','RCI]
item	metadata	ta_fields								
C:\Data\GIS\Grid_Garage_Test_Data\tests\Test450_RasteriseByTable\MGA_Z56\Armidale_Dumaresq_Council.shp	<Null>	[LGAName]								
C:\Data\GIS\Grid_Garage_Test_Data\tests\Test450_RasteriseByTable\MGA_Z56\Statewide_RiverConditionIndex.shp	<Null>	[RCI_HS','RCI_RSC','RCI_RVC','RCI_RBCI','RCI_CDI','RCI]								

Tool	Description
	<p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p> <p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table reports on a range of different properties for each of the geodata items in the 'Table for Geodata' input table. See the Grid Garage User Manual for a description of all the properties reported on.</p> <p>If the tool encounters any errors when processing any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><u>Result Table file name:</u> The default name will always take the form of "<b>RasteriseByTableFeatureTool_date_time</b>", where '<b>date</b>' and '<b>time</b>' are the date and time that the tool was run.</p> <p><b>&lt;&lt;Output Filename Affixes&gt;&gt;</b></p> <p><b>Output Filename Prefix (optional):</b> Any text you enter in this input box will be added as a prefix (at the beginning) for all output file names.</p> <p><b>Output Filename Suffix (optional):</b> Any text you enter in this input box will be added as a suffix (at the end) for all output file names.</p> <p style="text-align: right;"><a href="#">Link back to Summary of Grid Garage Tools</a></p>

## 6.2 Geodata

### 6.2.1 Geodata > Compare Extents

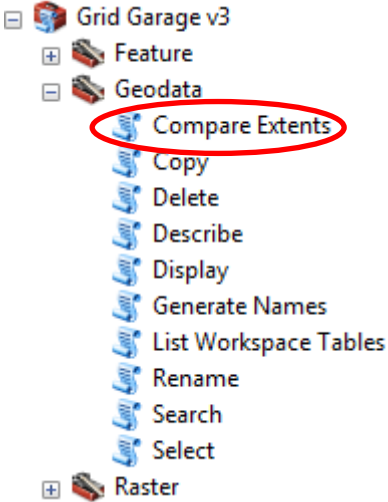
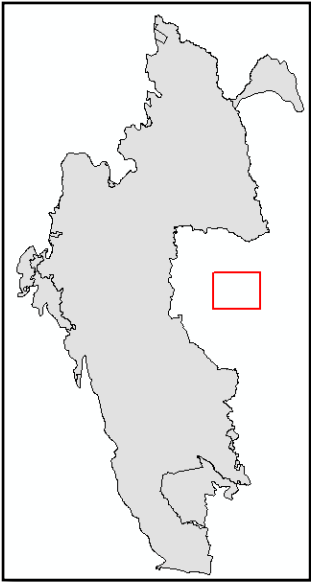
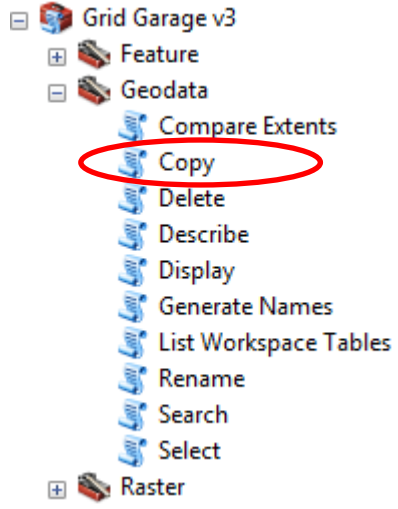
Tool	Description
<div data-bbox="203 331 589 834">  <p>Grid Garage v3</p> <ul style="list-style-type: none"> <li>Feature</li> <li>Geodata <ul style="list-style-type: none"> <li><b>Compare Extents</b></li> <li>Copy</li> <li>Delete</li> <li>Describe</li> <li>Display</li> <li>Generate Names</li> <li>List Workspace Tables</li> <li>Rename</li> <li>Search</li> <li>Select</li> </ul> </li> <li>Raster</li> </ul> </div>	<p>This tool compares the extent of each of the geodata items listed in the input table with the extent of a specified geodata item or area of interest (aoi). In the output table the tool reports on the following:</p> <div data-bbox="645 395 954 979">  </div> <ol style="list-style-type: none"> <li>1) contains aoi (the aoi is completely within the input geodata)</li> <li>2) within aoi (the input geodata is completely within the aoi)</li> <li>3) disjoint aoi (there is no overlap between the input geodata and the aoi)</li> <li>4) overlaps aoi (the input geodata overlaps the aoi)</li> <li>5) equals aoi (the extent of the input geodata is exactly the same as the aoi)</li> <li>5) touches aoi (the input geodata and the aoi share one boundary)</li> </ol> <p>Note that this tool compares the extent, or the bounding rectangle, of the two geodata items, not their actual geometry. Figure 12 illustrates an example where the input data set geometry does not overlap with the aoi (red box) even though the 'contains aoi' test will return 'true'.</p> <p><b>Table for Geodata:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Search' tool, but it can be any table with a field containing the full path to the geodata you want to compare with the aoi data set. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.</p> <p><b>Field for Geodata:</b> Select the field from the 'Table for Geodata' that contains the full path to the geodata items you want to delete.</p> <p><b>Dataset (Area of Interest) to compare with:</b> The geodata item that defines the area of interest (aoi) that you want to compare the extent of your input geodata with.</p> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table containing the list of geodata processed by the tool as well as the comparison results. If the tool encounters any errors when processing the input geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages.</p> <p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p> <p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table reports on a range of different properties for each of the geodata items in the 'Table for Geodata' input table. See the Grid Garage User Manual for a description of all the properties reported on.</p>

Figure 12 Example of where 'contains aoi' will = 'true'

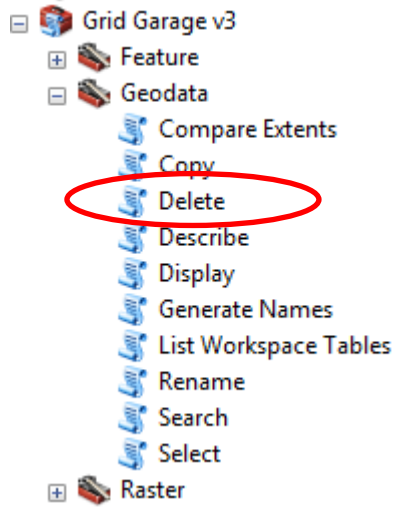
Tool	Description
	<p>If the tool encounters any errors when processing any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><u>Result Table file name:</u> The default name will always take the form of "CompareExtentsGeodataTool_date_time", where 'date' and 'time' are the date and time that the tool was run.</p> <p><a href="#">Link back to Summary of Grid Garage Tools</a></p>

## 6.2.2 Geodata > Copy

Tool	Description
 <p>The screenshot shows the 'Grid Garage v3' toolbox with the 'Geodata' folder expanded. The 'Copy' tool is highlighted with a red circle. Other tools visible include 'Compare Extents', 'Delete', 'Describe', 'Display', 'Generate Names', 'List Workspace Tables', 'Rename', 'Search', 'Select', and 'Raster'.</p>	<p>This tool copies geodata into a single workspace defined by the 'Output Workspace'. The tool uses the standard ArcGIS 'Copy' tool from the Data Management Toolbox. For more detailed help see <a href="#">ESRI Help for the 'Copy' tool in the Data Management Toolbox (ArcGIS 10.4)</a>.</p> <p><b>TIP #1:</b> If you are copying raster geodata and you want the option of changing the geodata format then use the 'Raster &gt; Copy' tool.</p> <p><b>TIP #2:</b> Note that you cannot copy from one GIS file type to another, for example you cannot copy a Shapefile into a feature class in a Geodatabase.</p> <p><b>Table for Geodata:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Search' tool, but it can be any table with a field containing the full path to the geodata you want to copy. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.</p> <p><b>Field for Geodata:</b> Select the field from the 'Table for Geodata' that contains the full path to the geodata items you want to copy.</p> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table containing the list of geodata processed by the tool as well as any data outputs. If the tool encounters any errors when processing the input geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages.</p> <p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p> <p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table reports on a range of different properties for each of the geodata items in the 'Table for Geodata' input table. See the Grid Garage User Manual for a description of all the properties reported on.</p>

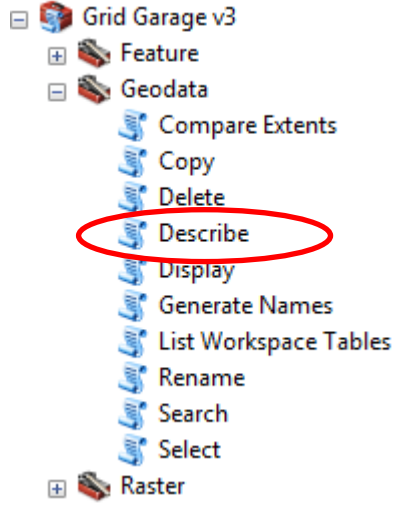
Tool	Description
	<p>If the tool encounters any errors when processing any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><u>Result Table file name:</u> The default name will always take the form of "CopyGeodataTool_date_time", where 'date' and 'time' are the date and time that the tool was run.</p> <p>&lt;&lt;Output Filename Affixes&gt;&gt;</p> <p><b>Output Filename Prefix (optional):</b> Any text you enter in this input box will be added as a prefix (at the beginning) for all output file names.</p> <p><b>Output Filename Suffix (optional):</b> Any text you enter in this input box will be added as a suffix (at the end) for all output file names.</p> <p style="text-align: right;"><a href="#">Link back to Summary of Grid Garage Tools</a></p>

### 6.2.3 Geodata > Delete

Tool	Description
	<p>This tool permanently deletes listed geodata from the disk. The tool uses the standard ArcGIS 'Delete (Data Management)' tool. For more detailed help see <a href="#">ESRI Help for the 'Delete (Data Management)' tool (ArcGIS 10.4)</a>.</p> <p><b>Table for Geodata:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Search' tool, but it can be any table with a field containing the full path to the geodata you want to delete. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.</p> <p><b>TIP #1:</b> <i>If your 'Table for Geodata' is not a DBF or in a File Geodatabase then all the data sets in the table will be deleted, highlighted or selected rows will be ignored.</i></p> <p><b>Field for Geodata:</b> Select the field from the 'Table for Geodata' that contains the full path to the geodata items you want to delete.</p> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table containing the list of geodata processed by the tool as well as any data outputs. If the tool encounters any errors when processing the input geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages.</p> <p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p>

Tool	Description
	<p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table reports on a range of different properties for each of the geodata items in the 'Table for Geodata' input table. See the Grid Garage User Manual for a description of all the properties reported on.</p> <p>If the tool encounters any errors when processing any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><u>Result Table file name:</u> The default name will always take the form of "DeleteGeodataTool_date_time", where 'date' and 'time' are the date and time that the tool was run.</p> <p style="text-align: right;"><a href="#">Link back to Summary of Grid Garage Tools</a></p>

#### 6.2.4 Geodata > Describe

Tool	Description
	<p>This tool inspects all input geodata and reports on the geodata properties such as geodata type, extent, projection, grid cell size, etc.. For a full description of these parameters see the Grid Garage User Manual and <a href="#">ESRI Help for reporting on dataset properties</a>, and <a href="#">here for reporting on raster dataset properties</a> and <a href="#">here for a list of properties reported on</a>.</p> <p><b>TIP:</b> This is often the second step in any Grid Garage work flow.</p> <p><b>Table for Geodata:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Search' tool, but it can be any table with a field containing the full path to the geodata you want to process with this tool. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.</p> <p><b>Field for Geodata:</b> Select the field from the 'Table for Geodata' that contains the full path to the geodata items you want to have processed by the tool.</p> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table containing the list of geodata processed by the tool as well as any data outputs. If the tool encounters any errors when processing the input geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages.</p> <p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p>

















Tool	Description
	<p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table reports on a range of different properties for each of the geodata items in the 'Table for Geodata' input table. See the Grid Garage User Manual for a description of all the properties reported on.</p> <p>If the tool encounters any errors when processing any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><u>Result Table file name:</u> The default name will always take the form of “<b>DescribeGeodataTool_date_time</b>”, where ‘<b>date</b>’ and ‘<b>time</b>’ are the date and time that the tool was run.</p> <p style="text-align: right;"><a href="#">Link back to Summary of Grid Garage Tools</a></p>

Table 2 List of fields reported on using 'Geodata > Describe'

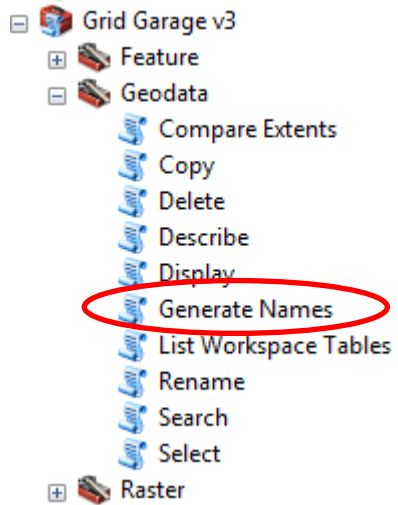
Field in results table	Property type	Property Description
OBJECTID	System	System identifier
geodata	System	Full path to the Input geodata.
dataset_DSID	Dataset	The ID of the dataset
dataset_MExtent	Dataset	A space-delimited string (MMin, MMax) defining a user-defined scalar measure.
dataset_ZExtent	Dataset	A space-delimited string (ZMin, ZMax) defining the height.
dataset_canVersion	Dataset	Indicates whether the dataset can be versioned.
dataset_datasetType	Dataset	Description of the geodata type i.e. ShapeFile, RasterDataset etc.
dataset_extent	Dataset	Extent of the geodata i.e. Top, Bottom, Left, Right coordinates
dataset_isVersioned	Dataset	Indicates whether the dataset is versioned.
dataset_spatialReference	Dataset	This is either Geographic (Lat/Long) or a projected spatial reference such as Lamberts, Albers, Map Grid of Australia etc.
file_FileModified	File	Date file was last modified.
file_FileSizeKB	File	Size of file.
general_baseName	General	Name of geodata set minus the path and file extension.
general_catalogPath	General	Full path of the geodata.
general_children	General	List of sub elements. For example a raster geodata with more than one band of data.
general_childrenExpanded	General	Indicates whether the children have been expanded.
general_dataElementType	General	Description of the geodata type i.e. ShapeFile, RasterDataset etc.
general_dataType	General	Description of the geodata type i.e. ShapeFile, RasterDataset etc.
general_extension	General	Geodata file extension.
general_file	General	File name with extension.
general_fullPropsRetrieved	General	Indicates whether full properties have been retrieved.
general_metadataRetrieved	General	Indicates whether the metadata has been retrieved.
general_name	General	File name with extension.
general_path	General	Path to geodata file, minus the file name.
raster_bandCount	Raster Band	Number of bands in raster geodata.
raster_band_height	Raster Band	Number of rows in each raster band
raster_band_isInteger	Raster Band	Is the band of type 'Integer'?
raster_band_meanCellHeight	Raster Band	Mean raster grid cell height.
raster_band_meanCellWidth	Raster Band	Mean raster grid cell width.
raster_band_noDataValue	Raster Band	No raster grid data value.
raster_band_pixelType	Raster Band	Data type for raster geodata band.
raster_band_primaryField	Raster Band	Primary raster grid field.
raster_band_stats_ACQUISITIONDATE	Raster Band	Raster statistics.
raster_band_stats_ALLNODATA	Raster Band	Raster statistics.
raster_band_stats_ANYNODATA	Raster Band	Raster statistics.
raster_band_stats_BANDCOUNT	Raster Band	Raster statistics.

Field in results table	Property type	Property Description
raster_band_stats_BOTTOM	Raster Band	Raster statistics.
raster_band_stats_CELLSIZEEX	Raster Band	Raster statistics.
raster_band_stats_CELLSIZEY	Raster Band	Raster statistics.
raster_band_stats_CLOUDCOVER	Raster Band	Raster statistics.
raster_band_stats_COLUMNCOUNT	Raster Band	Raster statistics.
raster_band_stats_LEFT	Raster Band	Raster statistics.
raster_band_stats_MAXIMUM	Raster Band	Raster statistics.
raster_band_stats_MEAN	Raster Band	Raster statistics.
raster_band_stats_MINIMUM	Raster Band	Raster statistics.
raster_band_stats_OFFNADIR	Raster Band	Raster statistics.
raster_band_stats_PRODUCTNAME	Raster Band	Raster statistics.
raster_band_stats_RIGHT	Raster Band	Raster statistics.
raster_band_stats_ROWCOUNT	Raster Band	Raster statistics.
raster_band_stats_SENSORAZIMUTH	Raster Band	Raster statistics.
raster_band_stats_SENSORELEVATION	Raster Band	Raster statistics.
raster_band_stats_SENSORNAME	Raster Band	Raster statistics.
raster_band_stats_SOURCETYPE	Raster Band	Raster statistics.
raster_band_stats_STD	Raster Band	Raster statistics.
raster_band_stats_SUNAZIMUTH	Raster Band	Raster statistics.
raster_band_stats_SUNELEVATION	Raster Band	Raster statistics.
raster_band_stats_TOP	Raster Band	Raster statistics.
raster_band_stats_UNIQUEVALUECOUNT	Raster Band	Raster statistics.
raster_band_stats_VALUETYPE	Raster Band	Raster statistics.
raster_band_stats_WAVELENGTH	Raster Band	Raster statistics.
raster_band_tableType	Raster Band	Data type for raster geodata band.
raster_band_width	Raster Band	The number of columns in each band.
raster_compressionType	Raster	Compression type.
raster_format	Raster	Raster format.
raster_permanent	Raster	Indicates the permanent state of the raster: False if the raster is temporary and True if the raster is permanent.
raster_sensorType	Raster	The sensor type used to capture the image.
table_OIDFieldName	Table	The name of the OID field if it exists.
table_fields	Table	A Python list of Field objects for this table. This is the same as using the ListFields function.
table_hasOID	Table	Indicates whether the table has an ObjectID field.
table_indexes	Table	A Python list of Index objects for this table. This is the same as using the ListIndexes function.

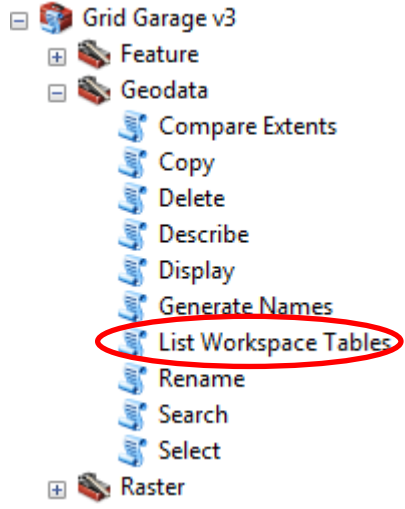
### 6.2.5 Geodata > Display

Tool	Description
 Grid Garage v3 <ul style="list-style-type: none"><li> Feature</li><li> Geodata<ul style="list-style-type: none"><li> Compare Extents</li><li> Copy</li><li> Delete</li><li> Describe</li><li> Display</li><li> Generate Names</li><li> List Workspace Tables</li><li> Rename</li><li> Search</li><li> Select</li></ul></li><li> Raster</li></ul>	<p>This tool will load all the geodata, listed in the input table selected in 'Table for Geodata', into your ArcMap display frame.</p> <p><b>Table for Geodata:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Search' tool, but it can be any table with a field containing the full path to the geodata you want to load into ArcMap. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.</p> <p><b>Field for Geodata:</b> Select the field from the 'Table for Geodata' that contains the full path to the geodata items you want to have processed by the tool.</p> <p><a href="#">Link back to Summary of Grid Garage Tools</a></p>

## 6.2.6 Geodata > Generate Names

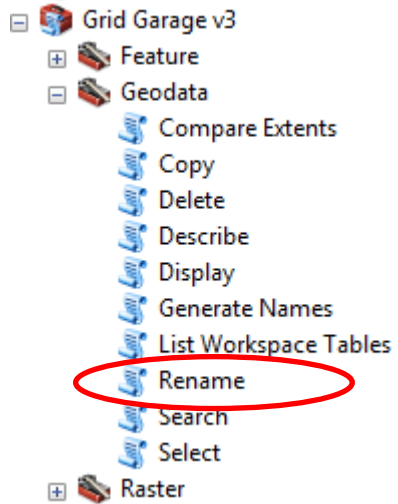
Tool	Description
	<p>This tool provides a first stage in safely renaming datasets according to a set pattern. The tool generates candidate names for geodata listed in the items table, which can then be applied using the 'Geodata &gt; Rename' tool.</p> <p><b>TIP:</b> If you want to create new names yourself, then add a new field called 'candidate_name' to your results table, then copy the 'item' values into this field so you can edit them manually before feeding into the 'Geodata &gt; Rename' tool.</p> <p><b>Table for Geodata:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Search' tool, but it can be any table with a field containing the full path to the geodata you want to load into ArcMap. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.</p> <p><b>Field for Geodata:</b> Select the field from the 'Table for Geodata' that contains the full path to the geodata items you want to have processed by the tool.</p> <p><b>Replacements (Optional):</b> Character replacements in the form of FIND,REPLACE. e.g. '001,1' will change 'file_001' to 'file_1'. Replacements are applied in order, starting from the first rule and working top-down, and are case-sensitive. You can also do multiple replacements by separating each one by a semi-colon e.g. '001,1;2017,17;abc,xyz'. Remember that this tool is not applying the names so if unsatisfactory names are generated just re-run with different replacements until you are happy.</p> <p><b>Prefix (Optional):</b> Prefix to be applied. e.g. a value of 'myprefix_' will generate 'myprefix_filename' from an input of 'filename'.</p> <p><b>Suffix (Optional):</b> Suffix to be applied. e.g. a value of '_mysuffix' will generate 'filename_mysuffix' from an input of 'filename'.</p> <p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table contains the list of geodata found in the workspace(s) you have selected. If the tool encounters any errors when querying any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><u>Result Table file name:</u> The default name will always take the form of "GenerateNamesGeodataTool_date_time", where 'date' and 'time' are the date and time that the tool was run.</p> <p><b>&lt;&lt;Output Filename Affixes&gt;&gt;</b></p> <p><b>Output Filename Prefix (optional):</b> Any text you enter in this input box will be added as a prefix (at the beginning) for all output file names.</p> <p><b>Output Filename Suffix (optional):</b> Any text you enter in this input box will be added as a suffix (at the end) for all output file names.</p> <p style="text-align: right;"><a href="#">Link back to Summary of Grid Garage Tools</a></p>

## 6.2.7 Geodata > List Workspace Tables

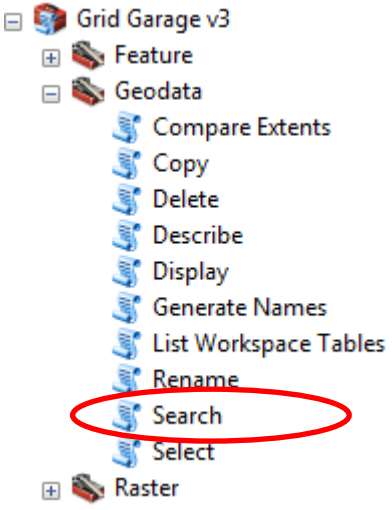
Tool	Description
 <p>The screenshot shows the 'Grid Garage v3' tool group expanded. Under the 'Geodata' sub-group, the 'List Workspace Tables' tool is circled in red. Other tools visible include 'Compare Extents', 'Copy', 'Delete', 'Describe', 'Display', 'Generate Names', 'Rename', 'Search', 'Select', and 'Raster'.</p>	<p>This tool searches through the input workspaces that you select and generates a list of all the table items it finds. For all the Grid Garage results tables it also reports on the data and time they were generated. This tool can be useful for generating a chronological list of all the GIS operations undertaken using the Grid Garage tools, which is sometimes referred to as 'lineage' in dataset metadata statements.</p> <p><b>Workspaces:</b> You can navigate to and add one or more workspaces, i.e. folders or geodatabases, to search for tables.</p> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table containing the list of geodata processed by the tool as well as the comparison results. If the tool encounters any errors when processing the input geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages.</p> <p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p> <p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table reports on a range of different properties for each of the geodata items in the 'Table for Geodata' input table. See the Grid Garage User Manual for a description of all the properties reported on.</p> <p>If the tool encounters any errors when processing any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><u>Result Table file name:</u> The default name will always take the form of "<b>CompareExtentsGeodataTool_date_time</b>", where '<b>date</b>' and '<b>time</b>' are the date and time that the tool was run.</p> <p><a href="#">Link back to Summary of Grid Garage Tools</a></p>



## 6.2.8 Geodata > Rename

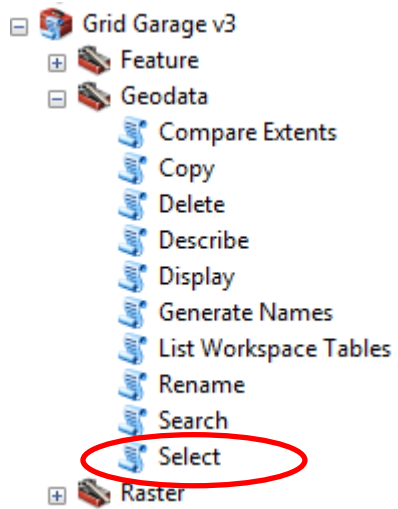
Tool	Description
 <p>Grid Garage v3</p> <ul style="list-style-type: none"> <li>Feature</li> <li>Geodata <ul style="list-style-type: none"> <li>Compare Extents</li> <li>Copy</li> <li>Delete</li> <li>Describe</li> <li>Display</li> <li>Generate Names</li> <li>List Workspace Tables</li> <li><b>Rename</b></li> <li>Search</li> <li>Select</li> </ul> </li> <li>Raster</li> </ul>	<p>This tool renames the input geodata by applying the new file names (to the original geodata) generated by the 'Geodata &gt; Generate Names' tool. For more detailed help see <a href="#">ESRI Help for the 'Rename' tool (in the Data Management Toolbox) (ArcGIS 10.4)</a></p> <p><b>Table for Geodata:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Generate Names' tool, but it can be any table with a field containing the full path to the geodata you want to process with this tool. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.</p> <p><b>Field for Geodata:</b> Select the field from the 'Table for Geodata' that contains the full path to the geodata items you want to have processed by the tool.</p> <p><b>Field for New Name:</b> Select the field containing the new geodata name.</p> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table containing the list of geodata processed by the tool as well as any data outputs. If the tool encounters any errors when processing the input geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages.</p> <p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p> <p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table reports on a range of different properties for each of the geodata items in the 'Table for Geodata' input table. See the Grid Garage User Manual for a description of all the properties reported on.</p> <p>If the tool encounters any errors when processing any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><b>Result Table file name:</b> The default name will always take the form of "RenameGeodataTool_date_time", where 'date' and 'time' are the date and time that the tool was run.</p> <p style="text-align: right;"><a href="#">Link back to Summary of Grid Garage Tools</a></p>

## 6.2.9 Geodata > Search

Tool	Description
 <p>Grid Garage v3</p> <ul style="list-style-type: none"> <li>Feature</li> <li>Geodata <ul style="list-style-type: none"> <li>Compare Extents</li> <li>Copy</li> <li>Delete</li> <li>Describe</li> <li>Display</li> <li>Generate Names</li> <li>List Workspace Tables</li> <li>Rename</li> <li><b>Search</b></li> <li>Select</li> </ul> </li> <li>Raster</li> </ul>	<p>This tool returns a table listing all the geodata found in the given workspace(s) in a 'results table' illustrated in the example below. The results table stores the path to each of the geodata items in the 'geodata' field. This table can then be used as an input into any of the other Grid Garage batching tools. If you want to restrict the processing to only selected rows (geodata items) then you need to ensure the 'Output Workspace' is a 'file geodatabase', or GDB. If you choose a folder for the Output Workspace then the output table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for Grid Garage tools.</p> <p><b>TIP #1:</b> This is the first step for any Grid Garage work flow.</p> <p><b>TIP #2:</b> Be aware that different computers may map network folders to different drive letters. This would mean that the path to the geodata reported in the results table would not work in a GG tool run on a different computer where the folders are mapped to a different drive letter.</p> <p><b>Workspaces to Search:</b> You can navigate to and add one or more workspaces, i.e. folders or geodatabases, to search for data.</p> <p><b>Data Types:</b> You can restrict the search to just find and list a specific type of data by selecting one or more of the tick boxes in this list. If you want to return a list of all types of geodata select 'Any'.</p> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table that contains the list of geodata found in the locations you specified in 'Workspaces to Search'.</p> <p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p> <p><b>TIP #3:</b> If you choose a folder then the output table will be written to a CSV text file and will not allow you to select rows for processing when using the table as input for other Grid Garage Tools. Geodatabase Tables do allow you to select rows for processing by other Grid Garage Tools.</p> <p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table contains the list of geodata found in the workspace(s) you have selected. If the tool encounters any errors when querying any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><u>Result Table file name:</u> The default name will always take the form of "SearchGeodataTool_date_time", where 'date' and 'time' are the date and time that the tool was run.</p>

Tool	Description														
	<table border="1"> <thead> <tr> <th>OBJECTID *</th><th>geodata</th></tr> </thead> <tbody> <tr> <td>1</td><td>C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\demfill25m.tif</td></tr> <tr> <td>2</td><td>C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\MCASS_StudyAreaTemplate30m.tif</td></tr> <tr> <td>3</td><td>C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\MCASS_StudyAreaTemplate30m_sml.tif</td></tr> <tr> <td>4</td><td>C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\netvegkc100m_sml.tif</td></tr> <tr> <td>5</td><td>C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\rain_ann1km.tif</td></tr> <tr> <td>6</td><td>C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\rain_ann1km_int.tif</td></tr> </tbody> </table> <p><a href="#">Link back to Summary of Grid Garage Tools</a></p>	OBJECTID *	geodata	1	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\demfill25m.tif	2	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\MCASS_StudyAreaTemplate30m.tif	3	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\MCASS_StudyAreaTemplate30m_sml.tif	4	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\netvegkc100m_sml.tif	5	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\rain_ann1km.tif	6	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\rain_ann1km_int.tif
OBJECTID *	geodata														
1	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\demfill25m.tif														
2	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\MCASS_StudyAreaTemplate30m.tif														
3	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\MCASS_StudyAreaTemplate30m_sml.tif														
4	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\netvegkc100m_sml.tif														
5	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\rain_ann1km.tif														
6	C:\Data\gg3\grid-garage-3-sample-data\StudyArea_Armidale\rain_ann1km_int.tif														




















### 6.2.10 Geodata > Select

Tool	Description
 <p>Grid Garage v3</p> <ul style="list-style-type: none"> <li>Feature</li> <li>Geodata <ul style="list-style-type: none"> <li>Compare Extents</li> <li>Copy</li> <li>Delete</li> <li>Describe</li> <li>Display</li> <li>Generate Names</li> <li>List Workspace Tables</li> <li>Rename</li> <li>Search</li> <li><b>Select</b></li> </ul> </li> <li>Raster</li> </ul>	<p>This tool allows you to build a new geodata input table by browsing to and manually selecting individual geodata items to include in the table. The tool will not search sub-folders like the 'Geodata &gt; Search' tool does.</p> <p>This tool returns a table listing all the geodata found in the given workspace(s) in a 'results table' illustrated in the example below. The results table stores the path to each of the geodata items in the 'geodata' field. This table can then be used as an input into any of the other Grid Garage batching tools. If you want to restrict the processing to only selected rows (geodata items) then you need to ensure the 'Output Workspace' is a 'file geodatabase', or GDB. If you choose a folder for the Output Workspace then the output table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for Grid Garage tools.</p> <p><b>Select Geodata:</b> Use the folder icon to browse to the geodata you want to include in the new items table.</p> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table that contains the list of geodata found in the locations you specified in 'Workspaces to Search'.</p> <p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p> <p><i>If you choose a folder then the output table will be written to a CSV text file and will not allow you to select rows for processing when using the table as input for other Grid Garage Tools. Geodatabase Tables do allow you to select rows for processing by other Grid Garage Tools.</i></p> <p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table contains the list of geodata found in the workspace(s) you have selected. If the tool encounters any errors when querying any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the result table will be</p>

Tool	Description
	<p>written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><u>Result Table file name</u>: The default name will always take the form of “<b>SelectGeodataTool_date_time</b>”, where ‘<b>date</b>’ and ‘<b>time</b>’ are the date and time that the tool was run.</p> <p><a href="#">Link back to Summary of Grid Garage Tools</a></p>

## 6.3 Raster Operations

### 6.3.1 Raster > Aggregate

Tool	Description
<div>  Grid Garage v3         <ul style="list-style-type: none"> <li> Feature</li> <li> Geodata</li> <li> Raster             <ul style="list-style-type: none"> <li> <b>Aggregate</b></li> <li> Block Statistics</li> <li> Build Attribute Table</li> <li> Calculate Statistics</li> <li> Clip</li> <li> Copy</li> <li> Lookup by Table</li> <li> Reclass by Table</li> <li> Reproject</li> <li> Resample</li> <li> Set NoData Value</li> <li> Set Value to Null</li> <li> Transform</li> <li> Tweak Values</li> <li> Values at Points</li> </ul> </li> </ul> </div>	<p>This tool is used to generate reduced-resolution versions of rasters, that is, from small to larger pixels. Each output cell contains the Sum, Minimum, Maximum, Mean, or Median of the input cells that are encompassed by the extent of that cell. The tool uses the standard ArcGIS 'Aggregate (Spatial Analysis)' tool. For more detailed help see <a href="#">ESRI Help for the 'Aggregate (Spatial Analyst)' tool (ArcGIS 10.4)</a>.</p> <p><b>Table for Rasters:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Search' tool, but it can be any table with a field containing the full path to the rasters you want to clip. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.</p> <p><b>Field for Raster:</b> Select the field from the 'Table for Rasters' that contains the full path to the raster items you want to clip.</p> <p><b>Cell Aggregation Factor:</b> The factor by which to multiply the cell size of the input raster to obtain the desired resolution for the output raster. For example, a cell factor value of three would result in an output cell size three times larger than that of the input raster. The value must be an integer greater than 1.</p> <p><b>Format for output rasters:</b> Raster format for output geodata. You can choose from: Esri Grid, img (ERDAS IMAGINE) or tif (GeoTIFF). If you select a file geodatabase for the Result Workspace then the output format will default to 'Esri Grid'. When storing your raster geodata to a JPEG file, a JPEG 2000 file, a TIFF file, or a geodatabase, you can specify a compression type and compression quality within the 'Environment Settings'. Select from:</p> <ul style="list-style-type: none"> <li>Esri Grid</li> <li>tif (GeoTiff file)</li> <li>img (Image file)</li> </ul> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table containing the list of geodata processed by the tool as well as any data outputs. If the tool encounters any errors when processing the input geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages.</p> <p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p> <p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table reports on a range of different properties for each of the geodata items in the 'Table for Geodata' input table. See the Grid Garage User Manual for a description of all the properties reported on.</p> <p>If the tool encounters any errors when processing any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the</p>

Tool	Description
<b>Aggregate <i>cont.</i></b>	<p>result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><u>Result Table file name</u>: The default name will always take the form of “<b>AggregateRasterTool_date_time</b>”, where ‘<b>date</b>’ and ‘<b>time</b>’ are the date and time that the tool was run.</p> <p>&lt;&lt;<b>Options</b>&gt;&gt;</p> <p><b>Aggregation Method (optional)</b>: Establishes how the value for each output cell will be determined. The values of the input cells encompassed by the coarser output cell are aggregated by one of the following statistics:</p> <ul style="list-style-type: none"> <li>• SUM — The sum (total) of the input cell values. This is the default.</li> <li>• MAXIMUM — The largest value of the input cells.</li> <li>• MEAN — The average value of the input cells.</li> <li>• MEDIAN — The median value of the input cells.</li> <li>• MINIMUM — The smallest value of the input cells.</li> </ul> <p><b>Extent Boundary (optional)</b>: Defines how to handle the boundaries of the input raster when its rows or columns are not a multiple of the cell factor. Select from:</p> <ul style="list-style-type: none"> <li>• EXPAND — Expands the bottom or right boundaries of the input raster so the total number of cells in a row or column is a multiple of the cell factor. Expanded cells are given a value of NoData. With this option, the output raster can cover a larger spatial extent than the input raster. This is the default.</li> <li>• TRUNCATE — Reduces the number of rows or columns in the output raster by 1. This will truncate the remaining cells on the bottom or right boundaries of the input raster, making the number of rows or columns in the input raster a multiple of the cell factor. With this option, the output raster can cover a smaller spatial extent than the input raster.</li> </ul> <p>If the number of rows and columns in the input raster is a multiple of the cell_factor, these keywords are not used.</p> <p><b>NoData Treatment (optional)</b>: Denotes whether NoData values are ignored by the aggregation calculation. Select from:</p> <ul style="list-style-type: none"> <li>• DATA — Specifies that if NoData values exist for any of the cells that fall within the spatial extent of a larger cell on the output raster, the NoData values will be ignored when determining the value for output cell locations. Only input cells within the extent of the output cell that have data values will be used in determining the value of the output cell. This is the default.</li> <li>• NODATA — Specifies that if any cell that falls within the spatial extent of a larger cell on the output raster has a value of NoData, the value for that output cell location will be NoData. When the NODATA keyword is used, it is implied that when cells within an aggregation contain the NoData value, there is insufficient information to perform the specified calculations necessary to determine an output value.</li> </ul> <p>&lt;&lt;<b>Output Filename Affixes</b>&gt;&gt;</p> <p><b>Output Filename Prefix (optional)</b>: Any text you enter in this input box will be added as a prefix (at the beginning) for all output file names.</p> <p><b>Output Filename Suffix (optional)</b>: Any text you enter in this input box will be added as a suffix (at the end) for all output file names.</p> <p style="text-align: right;"><a href="#">Link back to Summary of Grid Garage Tools</a></p>



### 6.3.2 Raster > Block Statistics

Tool	Description
<div> <div>Grid Garage v3</div> <div> <div>Feature</div> <div>Geodata</div> <div>Raster</div> <div>Aggregate</div> <div><b>Block Statistics</b></div> <div>Build Attribute Table</div> <div>Calculate Statistics</div> <div>Clip</div> <div>Copy</div> <div>Lookup by Table</div> <div>Reclass by Table</div> <div>Reproject</div> <div>Resample</div> <div>Set NoData Value</div> <div>Set Value to Null</div> <div>Transform</div> <div>Tweak Values</div> <div>Values at Points</div> </div> </div>	<p>This tool Partitions the input into non-overlapping blocks and calculates the statistic of the values within each block. The value is assigned to all of the cells in each block in the output. This is illustrated in Figure 13 below. If the data type of the input raster is floating point then only a subset of the statistics will be available (MEAN, MAXIMUM, MINIMUM, RANGE, STD and SUM. For more detailed help see <a href="#">ESRI Help for the 'Block Statistics (Spatial Analyst)' tool</a>.</p> <div> <p style="text-align: center;">InRas1                      OutRas</p> <p style="text-align: center;"> <code>OutRas = BlockStatistics(InRas1, NbrRectangle(3,3,MAP), "MAXIMUM", "")</code> </p> <p style="text-align: right;">Value = NoData</p> </div> <p style="text-align: center;"><i>Figure 13 Illustration of how Block Statistics works</i></p> <p><b>Table for Rasters:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Search' tool, but it can be any table with a field containing the full path to the rasters you want to clip. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.</p> <p><b>Field for Raster:</b> Select the field from the 'Table for Rasters' that contains the full path to the raster items you want to clip.</p> <p><b>Neighborhood:</b> The Neighborhood class dictates the shape of the area around each cell used to calculate the statistic. The different types of neighborhood available are NbrAnnulus, NbrCircle, NbrRectangle, NbrWedge, NbrIrregular, and NbrWeight. The following are the forms of the neighborhoods:</p>

## Block Statistics *cont..*

- NbrAnnulus({innerRadius}, {outerRadius}, {CELL | MAP})
- NbrCircle({radius}, {CELL | MAP})
- NbrRectangle({width}, {height}, {CELL | MAP})
- NbrWedge({radius}, {start\_angle}, {end\_angle}, {CELL | MAP})
- NbrIrregular(kernel\_file)
- NbrWeight(kernel\_file)

The {CELL | MAP} parameter defines the distance units as either being Cell units or Map units. The default neighborhood is a square NbrRectangle with a width and height of 3 cells.

**Neighborhood Settings:** Defines the dimensions of neighbourhood class selected.

**Format for output rasters:** Raster format for output geodata. You can choose from: Esri Grid, img (ERDAS IMAGINE) or tif (GeoTIFF). If you select a file geodatabase for the Result Workspace then the output format will default to 'Esri Grid'. When storing your raster geodata to a JPEG file, a JPEG 2000 file, a TIFF file, or a geodatabase, you can specify a compression type and compression quality within the 'Environment Settings'. Select from:

- Esri Grid
- tif (GeoTiff file)
- img (Image file)

**Output Workspace:** This is the location for the Grid Garage results table containing the list of geodata processed by the tool as well as any data outputs. If the tool encounters any errors when processing the input geodata then a second results table will be generated, with a "\_FAIL" suffix, listing the input geodata that failed and any ESRI error messages.

If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing > Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.




















**Result Table Name:** You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table reports on a range of different properties for each of the geodata items in the 'Table for Geodata' input table. See the Grid Garage User Manual for a description of all the properties reported on.

If the tool encounters any errors when processing any of the geodata then a second results table will be generated, with a "\_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.




















Results Table file name: Each time this tool is run the results table file is given the name **"BlockStatisticsRasterTool\_date\_time"**, where 'date' and 'time' are the date and time that the tool was run.

	<p>&lt;&lt;Options&gt;&gt;</p> <p><b>Statistics type (optional):</b> The statistic type to be calculated, the default statistic type is MEAN. Select from the following:</p> <ul style="list-style-type: none"> <li>• MEAN — Calculates the mean (average value) of the cells in the neighborhood.</li> <li>• MAJORITY — Calculates the majority (value that occurs most often) of the cells in the neighborhood.</li> <li>• MAXIMUM — Calculates the maximum (largest value) of the cells in the neighborhood.</li> <li>• MEDIAN — Calculates the median of the cells in the neighborhood.</li> <li>• MINIMUM — Calculates the minimum (smallest value) of the cells in the neighborhood.</li> <li>• MINORITY — Calculates the minority (value that occurs least often) of the cells in the neighborhood.</li> <li>• RANGE — Calculates the range (difference between largest and smallest value) of the cells in the neighborhood.</li> <li>• STD — Calculates the standard deviation of the cells in the neighborhood.</li> <li>• SUM — Calculates the sum (total of all values) of the cells in the neighborhood.</li> <li>• VARIETY — Calculates the variety (the number of unique values) of the cells in the neighborhood.</li> </ul> <p><b>Ignore NoData (optional):</b> Denotes whether NoData values are ignored by the statistic calculation. Select from:</p> <ul style="list-style-type: none"> <li>• DATA — Specifies that if a NoData value exists within a block neighborhood, the NoData value will be ignored. Only cells within the neighborhood that have data values will be used in determining the output value. This is the default.</li> <li>• NODATA — Specifies that if any cell in a neighborhood has a value of NoData, the output for each cell in the corresponding block will receive NoData. With this option, the presence of a NoData value implies that there is insufficient information to determine the statistic value for the neighborhood.</li> </ul> <p>&lt;&lt;Output Filename Affixes&gt;&gt;</p> <p><b>Output Filename Prefix (optional):</b> Any text you enter in this input box will be added as a prefix (at the beginning) for all output file names.</p> <p><b>Output Filename Suffix (optional):</b> Any text you enter in this input box will be added as a suffix (at the end) for all output file names.</p> <p style="text-align: right;"><a href="#">Link back to Summary of Grid Garage Tools</a></p>
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### 6.3.3 Raster > Build Attribute Table




















Tool	Description
<div>  Grid Garage v3 <ul style="list-style-type: none"> <li> Feature</li> <li> Geodata</li> <li> Raster <ul style="list-style-type: none"> <li> Aggregate</li> <li> Block Statistics</li> <li> <b>Build Attribute Table</b></li> <li> Calculate Statistics</li> <li> Clip</li> <li> Copy</li> <li> Lookup by Table</li> <li> Reclass by Table</li> <li> Reproject</li> <li> Resample</li> <li> Set NoData Value</li> <li> Set Value to Null</li> <li> Transform</li> <li> Tweak Values</li> <li> Values at Points</li> </ul> </li> </ul> </div>	<p>This tool builds the raster attribute table (RAT) for raster feature classes that do not have one. The tool uses the standard ArcGIS 'Build Raster Attribute Table (Data Management)' tool. For more detailed help see <a href="#">ESRI Help for the 'Build Raster Attribute Table' Tool in the Data Management Toolbox (ArcGIS 10.4)</a>.</p> <p><b>TIP:</b> <i>If you build the RAT for a raster that is being displayed in ArcMap you will need to remove and then re-add the geodata layer to view the RAT after it has been built using this tool.</i></p> <p><b>Table for Geodata:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Search' tool, but it can be any table with a field containing the full path to the geodata you want to copy. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.</p> <p><b>Field for Geodata:</b> Select the field from the 'Table for Geodata' that contains the full path to the geodata items you want to copy.</p> <p><b>Overwrite existing table (tick box):</b> Tick this box if you want to overwrite the existing RAT and all fields in the old RAT will be lost.</p> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table containing the list of geodata processed by the tool as well as any data outputs. If the tool encounters any errors when processing the input geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages.</p> <p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p> <p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table reports on a range of different properties for each of the geodata items in the 'Table for Geodata' input table. See the Grid Garage User Manual for a description of all the properties reported on.</p> <p>If the tool encounters any errors when processing any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><u>Result Table file name:</u> The default name will always take the form of "<b>BuildRasterTableRasterTool_date_time</b>", where 'date' and 'time' are the date and time that the tool was run.</p> <p><b>Overwrite existing:</b> Select 'OVERWRITE' if you want to overwrite the existing RAT.</p> <p style="text-align: right;"><a href="#">Link back to Summary of Grid Garage Tools</a></p>

### 6.3.4 Raster > Calculate Statistics

Tool	Description
<div>  Grid Garage v3 <ul style="list-style-type: none"> <li> Feature</li> <li> Geodata</li> <li> Raster <ul style="list-style-type: none"> <li> Aggregate</li> <li> Block Statistics</li> <li> Build Attribute Table</li> <li> Calculate Statistics</li> <li> Clip</li> <li> Copy</li> <li> Lookup by Table</li> <li> Reclass by Table</li> <li> Reproject</li> <li> Resample</li> <li> Set NoData Value</li> <li> Set Value to Null</li> <li> Transform</li> <li> Tweak Values</li> <li> Values at Points</li> </ul> </li> </ul> </div>	<p>This tool calculates statistics for raster geodata which allows ArcMap to properly stretch and symbolize raster geodata for display. The tool uses the standard ArcGIS 'Calculate Statistics (Raster)' tool. For more detailed help see <a href="#">ESRI Help for the 'Calculate Statistics' in the Raster Toolbox (ArcGIS 10.4)</a>.</p> <p><b>TIP:</b> If you calculate statistics for a raster that is being displayed in ArcMap you will need to remove and then re-add the geodata layer to view the statistics after it has been built using this tool.</p> <p><b>Table for Rasters:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Search' tool, but it can be any table with a field containing the full path to the geodata you want to copy. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.</p> <p><b>Field for raster:</b> Select the field from the 'Table for Geodata' that contains the full path to the geodata items you want to copy.</p> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table containing the list of geodata processed by the tool as well as any data outputs. If the tool encounters any errors when processing the input geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages.</p> <p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p> <p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table reports on a range of different properties for each of the geodata items in the 'Table for Geodata' input table. See the Grid Garage User Manual for a description of all the properties reported on.</p> <p>If the tool encounters any errors when processing any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><b>Result Table file name:</b> The default name will always take the form of "CalculateStatisticsRasterTool_date_time", where 'date' and 'time' are the date and time that the tool was run.</p> <p>&lt;&lt;Options&gt;&gt;</p> <p><b>X Skip Factor (optional):</b> The number of horizontal pixels between samples. The value must be greater than zero and less than or equal to the number of columns in the raster dataset. The default is 1 or the last skip factor used. The skip factors for raster datasets stored in a file geodatabase or an ArcSDE geodatabase are different. First, if the x and y skip factors are different, the smaller skip factor will be used for both the x and y skip factors. Second, the skip factor is related to the pyramid level that most closely fits the skip factor chosen. If the skip factor value is not equal to the number of pixels in a pyramid layer, the number is rounded down to the next pyramid level, and those statistics are used.</p>

Tool	Description
	<p><b>Y Skip Factor (optional):</b> The number of vertical pixels between samples. The value must be greater than zero and less than or equal to the number of rows in the raster. The default is 1 or the last y skip factor used. The skip factors for raster datasets stored in a file geodatabase or an ArcSDE geodatabase are different. First, if the x and y skip factors are different, the smaller skip factor will be used for both the x and y skip factors. Second, the skip factor is related to the pyramid level that most closely fits the skip factor chosen. If the skip factor value is not equal to the number of pixels in a pyramid layer, the number is rounded down to the next pyramid level, and those statistics are used.</p> <p><b>Ignore Values (optional):</b> The pixel values that are not to be included in the statistics calculation. The default is no value, or the last ignore values used.</p> <p><b>Existing Statistics (optional):</b> Specify whether to calculate statistics only where they are missing or regenerate them even if they exist. Options include:</p> <p>OVERWRITE — Statistics will be calculated even if they already exist; therefore, existing statistics will be overwritten. This is the default.</p> <p>SKIP_EXISTING — Statistics will only be calculated if they do not already exist.</p> <p><b>Area of Interest (optional):</b> Specify a feature class that represents area in the geodata from where you want the statistics to be calculated, so they are not generated from the entire dataset.</p> <p style="text-align: right;"><a href="#">Link back to Summary of Grid Garage Tools</a></p>




















### 6.3.5 Raster > Clip

Tool	Description
<div>  Grid Garage v3 <ul style="list-style-type: none"> <li> Feature</li> <li> Geodata</li> <li> Raster <ul style="list-style-type: none"> <li> Aggregate</li> <li> Block Statistics</li> <li> Build Attribute Table</li> <li> Calculate Statistics</li> <li> <b>Clip</b></li> <li> Copy</li> <li> Lookup by Table</li> <li> Reclass by Table</li> <li> Reproject</li> <li> Resample</li> <li> Set NoData Value</li> <li> Set Value to Null</li> <li> Transform</li> <li> Tweak Values</li> <li> Values at Points</li> </ul> </li> </ul> </div>	<p>This tool clips out a subset of a larger raster geodata based on either a bounding extent or a polygon feature. The tool uses the standard ArcGIS 'Clip (Raster)' tool. For more detailed help see <a href="#">ESRI Help for the 'Clip (Raster)' tool (10.4)</a>.</p> <p><b>TIP #1:</b> Note that the output raster alignment and cell size will always be the same as the input data and If the 'Output Extent' or 'Clipping Feature' do not align with the input raster geodata then the clipped raster will have a slightly different extent (usually one cell larger).</p> <p><b>Table for Rasters:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Search' tool, but it can be any table with a field containing the full path to the rasters you want to clip. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.</p> <p><b>Field for Raster:</b> Select the field from the 'Table for Rasters' that contains the full path to the raster items you want to clip.</p> <p><b>TIP #2:</b> You will need to ensure that the clipping feature is in the same spatial projection as all of the input raster geodata listed in the 'Table for Geodata'. The best method to check the projection of the raster geodata in the Raster List is to use the 'Geodata &gt; Describe' tool.</p> <p><b>Rectangle:</b> You need to define the coordinates that define the area to be clipped out. This can be based on an existing layer, such as a mask or template raster, a feature, or you can manually enter the extent coordinates into the 'Top, Bottom, Left &amp; Right' input boxes.</p> <p><b>Format for output rasters:</b> Raster format for output geodata. You can choose from: Esri Grid, img (ERDAS IMAGINE) or tif (GeoTIFF). If you select a file geodatabase for the Result Workspace then the output format will default to 'Esri Grid'. When storing your raster geodata to a JPEG file, a JPEG 2000 file, a TIFF file, or a geodatabase, you can specify a compression type and compression quality within the 'Environment Settings'.</p> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table containing the list of geodata processed by the tool as well as any data outputs. If the tool encounters any errors when processing the input geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages.</p> <p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p> <p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table reports on a range of different properties for each of the geodata items in the 'Table for Geodata' input table. See the Grid Garage User Manual for a description of all the properties reported on.</p> <p>If the tool encounters any errors when processing any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the</p>



Tool	Description
	<p>result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><u>Result Table file name</u>: The default name will always take the form of “<b>ClipRasterTool_date_time</b>”, where ‘<b>date</b>’ and ‘<b>time</b>’ are the date and time that the tool was run.</p> <p>&lt;&lt;<b>Options</b>&gt;&gt;</p> <p><b>Polygon feature dataset to clip by (optional)</b>: You also have the option of clipping out areas based on a polygon feature. The boundary of the polygons will define the area clipped out.</p> <p><b>Value for ‘NoData’ (optional)</b>: You can assign a different value to ‘NoData’, instead of the default ‘NoData’.</p> <p><b>Maintain clipping extent (optional)</b>: Options include:</p> <p>MAINTAIN_EXTENT — Adjust the number of columns and rows, then resample pixels so as to exactly match the clipping extent specified.</p> <p>NO_MAINTAIN_EXTENT — Maintain the cell alignment as the input raster and adjust the output extent accordingly.</p> <p><b>TIP #3</b>: <i>We recommend that you select ‘MAINTAIN_EXTENT’ if you want the output raster to align with your ‘Geoprocessing &gt; Environment Settings’.</i></p> <p>&lt;&lt;<b>Output Filename Affixes</b>&gt;&gt;</p> <p><b>Output Filename Prefix (optional)</b>: Any text you enter in this input box will be added as a prefix (at the beginning) for all output file names.</p> <p><b>Output Filename Suffix (optional)</b>: Any text you enter in this input box will be added as a suffix (at the end) for all output file names.</p> <p style="text-align: right;"><a href="#">Link back to Summary of Grid Garage Tools</a></p>




















### 6.3.6 Raster > Copy

Tool	Description
<div>  Grid Garage v3 <ul style="list-style-type: none"> <li> Feature</li> <li> Geodata</li> <li> Raster <ul style="list-style-type: none"> <li> Aggregate</li> <li> Block Statistics</li> <li> Build Attribute Table</li> <li> Calculate Statistics</li> <li> Clip</li> <li> <b>Copy</b></li> <li> Lookup by Table</li> <li> Reclass by Table</li> <li> Reproject</li> <li> Resample</li> <li> Set NoData Value</li> <li> Set Value to Null</li> <li> Transform</li> <li> Tweak Values</li> <li> Values at Points</li> </ul> </li> </ul> </div>	<p>This tool copies raster geodata to a new location. It also allows you to change some of the format/attributes of the raster geodata when copying. For more detailed help see <a href="#">ESRI Help for the 'Copy Raster (Data Management)' tool</a>.</p> <p><b>Table for Rasters:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Search' tool, but it can be any table with a field containing the full path to the rasters you want to clip. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.</p> <p><b>Field for Raster:</b> Select the field from the 'Table for Rasters' that contains the full path to the raster items you want to clip.</p> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table containing the list of geodata processed by the tool as well as any data outputs. If the tool encounters any errors when processing the input geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages.</p> <p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p> <p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table reports on a range of different properties for each of the geodata items in the 'Table for Geodata' input table. See the Grid Garage User Manual for a description of all the properties reported on.</p> <p>If the tool encounters any errors when processing any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><b>Result Table file name:</b> The default name will always take the form of "<b>CopyRasterTool_date_time</b>", where 'date' and 'time' are the date and time that the tool was run.</p> <p><b>&lt;&lt;Options&gt;&gt;</b></p> <p><b>Config Keyword (optional):</b> Specifies the storage parameters (configuration) for a file or enterprise geodatabase. Configuration keywords are set up by your database administrator.</p> <p><b>Background Value (optional):</b> Use this option to remove the unwanted values created around the raster data. The value specified will be distinguished from other valuable data in the raster dataset. For example, a value of zero along the raster dataset's borders will be distinguished from zero values within the raster dataset. The pixel value specified will be set to NoData in the output raster dataset. For file-based rasters and geodatabase rasters, the Ignore Background Value must be set to the same value as NoData in order for the background value to be ignored. Enterprise and geodatabase rasters will work without this extra step.</p>

Tool	Description																																			
Copy Rasters cont..	<b>No Data Value (optional):</b> All the pixels with the specified value will be set to NoData in the output raster dataset.																																			
	<b>1 Bit to 8 Bit (optional):</b> Choose whether the input 1-bit raster dataset will be converted to an 8-bit raster dataset. In this conversion the value 1 in the input raster dataset will be changed to 255 in the output raster dataset. This is useful when importing a 1-bit raster dataset to a geodatabase. One-bit raster datasets have 8-bit pyramid layers when stored in a file system, but in a geodatabase, 1-bit raster datasets can only have 1-bit pyramid layers, which makes the display unpleasant. By converting the data to 8 bit in a geodatabase, the pyramid layers are built as 8 bit instead of 1 bit, resulting in a proper raster dataset in the display. <ul style="list-style-type: none"><li>NONE —No conversion will be done. This is the default.</li><li>OneBitTo8Bit —The input raster will be converted.</li></ul>																																			
	<b>Colour Map to RGB (optional):</b> If the input raster geodata has a colour map, the output raster geodata can be converted to a three-band output raster dataset. This is useful when mosaicking rasters with different colour maps. Select from: <ul style="list-style-type: none"><li>NONE — No conversion will occur. This is the default.</li><li>ColormapToRGB — The input geodata will be converted.</li></ul>																																			
	<b>Pixel Type (optional):</b> Determines the bit depth of the output raster dataset. If left unspecified, the output bit depth will be the same as the input. There will be no rescaling of the raster values when a different pixel type is chosen. If the pixel type is demoted (lowered), the raster values outside the valid range for that pixel depth will be truncated and lost. Select from:																																			
	<table><tr><th>Pixel type</th><th>Description</th><th>Value range allowed</th></tr><tr><td>1_BIT</td><td>A 1-bit unsigned integer</td><td>The values can be 0 or 1</td></tr><tr><td>2_BIT</td><td>A 2-bit unsigned integer</td><td>The values supported can be from 0 to 3</td></tr><tr><td>4_BIT</td><td>A 4-bit unsigned integer</td><td>The values supported can be from 0 to 15</td></tr><tr><td>8_BIT_UNSIGNED</td><td>An unsigned 8-bit data type</td><td>The values supported can be from 0 to 255</td></tr><tr><td>8_BIT_SIGNED</td><td>A signed 8-bit data type</td><td>The values supported can be from -128To 127</td></tr><tr><td>16_BIT_UNSIGNED</td><td>A 16-bit unsigned data type</td><td>The values can range from 0 to 65,535</td></tr><tr><td>16_BIT_SIGNED</td><td>A 16-bit signed data type</td><td>The values can range from -32,768To 32,767</td></tr><tr><td>32_BIT_UNSIGNED</td><td>A 32-bit unsigned data type</td><td>The values can range from 0 to 4,294,967,295</td></tr><tr><td>32_BIT_SIGNED</td><td>A 32-bit signed data type</td><td>The values can range from -2,147,483,648 to 2,147,483,647</td></tr><tr><td>32_BIT_FLOAT</td><td>A 32-bit data type supporting decimals</td><td>Floating point (decimals) with large range</td></tr><tr><td>64_BIT</td><td>A 64-bit data type supporting decimals</td><td>Floating point (decimals) with very large range</td></tr></table>	Pixel type	Description	Value range allowed	1_BIT	A 1-bit unsigned integer	The values can be 0 or 1	2_BIT	A 2-bit unsigned integer	The values supported can be from 0 to 3	4_BIT	A 4-bit unsigned integer	The values supported can be from 0 to 15	8_BIT_UNSIGNED	An unsigned 8-bit data type	The values supported can be from 0 to 255	8_BIT_SIGNED	A signed 8-bit data type	The values supported can be from -128To 127	16_BIT_UNSIGNED	A 16-bit unsigned data type	The values can range from 0 to 65,535	16_BIT_SIGNED	A 16-bit signed data type	The values can range from -32,768To 32,767	32_BIT_UNSIGNED	A 32-bit unsigned data type	The values can range from 0 to 4,294,967,295	32_BIT_SIGNED	A 32-bit signed data type	The values can range from -2,147,483,648 to 2,147,483,647	32_BIT_FLOAT	A 32-bit data type supporting decimals	Floating point (decimals) with large range	64_BIT	A 64-bit data type supporting decimals
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64_BIT	A 64-bit data type supporting decimals	Floating point (decimals) with very large range																																		
	<b>TIP:</b> The size of the output raster data, on your hard drive, will be determined by the pixel type. The pixel types outlined above are listed in order from smallest file size to largest. We recommend you use the smallest pixel type possible to avoid using up more space on your storage device than is necessary.																																			




















Tool	Description
Copy Rasters <i>cont..</i>	<p><b>Scale Pixel Value (optional):</b> When the output is a different pixel type than the input (such as 16-bit to 8-bit) you can choose to have the values scaled to fit into the new range; otherwise, the values that do not fit into the new pixel range will be discarded. If scaling up, such as 8-bit to 16-bit, the minimum and maximum of the 8-bit values will be scaled to the minimum and maximum in the 16-bit range. If scaling down, such as 16-bit to 8-bit, the minimum and maximum of the 16-bit values will be scaled to the minimum and maximum in the 8-bit range. Select from:</p> <ul style="list-style-type: none"> <li>NONE — The pixel values will remain the same and will not be scaled. Any values that do not fit within the value range will be discarded. This is the default.</li> <li>ScalePixelValue — The pixel values will be scaled to the new pixel type. When you scale your pixel depth, your raster will display the same, but the values will be scaled to the new bit depth that was specified.</li> </ul> <p><b>RGB to Colour Map (optional):</b> You can convert an 8-bit, 3-band (RGB) raster dataset, to a single-band raster geodata with a colour map. This operation will suppress colour noise that is often found in scanned images by examining the statistics for the raster geodata and classifying the values into 255 quantiles. This is ideal for screen captures, scanned maps, or scanned documents. This is not recommended for satellite or aerial imagery or thematic raster data. Select from:</p> <ul style="list-style-type: none"> <li>NONE — The output will remain as a 3-band (RGB) raster dataset. No conversion to a colour map will occur. This is the default.</li> <li>RGBToColormap — A single-band raster dataset, with a colour map using 255 colours will be created.</li> </ul> <p><b>Format:</b> The output raster format. Select from:</p> <ul style="list-style-type: none"> <li>TIFF —TIFF format</li> <li>IMAGINE Image —ERDAS IMAGINE</li> <li>BMP —BMP format</li> <li>GIF —GIF format</li> <li>PNG —PNG format</li> <li>JPEG —JPEG format</li> <li>JPEG2000 —JPEG 2000 format</li> <li>DTED —DTED format</li> <li>Esri Grid —Esri Grid format</li> <li>Esri BIL —Esri BIL format</li> <li>Esri BSQ —Esri BSQ format</li> <li>Esri BIP —ESRI BIP format</li> <li>ENVI —ENVI format</li> <li>CRF —CRF format</li> <li>MRF —MRF format</li> </ul> <p><b>Transform:</b> Choose whether to apply the transformation, associated with the raster, to the output.</p> <ul style="list-style-type: none"> <li>NONE —Do not apply any associated transformations to the output.</li> <li>Transform —Apply the associated transformation to the output.</li> </ul> <p><b>&lt;&lt;Output Filename Affixes&gt;&gt;</b></p> <p><b>Output Filename Prefix (optional):</b> Any text you enter in this input box will be added as a prefix (at the beginning) for all output file names.</p> <p><b>Output Filename Suffix (optional):</b> Any text you enter in this input box will be added as a suffix (at the end) for all output file names.</p> <p style="text-align: right;"><a href="#">Link back to Summary of Grid Garage Tools</a></p>

### 6.3.7 Raster > Lookup by Table

Tool	Description
<div>  Grid Garage v3 <ul style="list-style-type: none"> <li> Feature</li> <li> Geodata</li> <li> Raster <ul style="list-style-type: none"> <li> Aggregate</li> <li> Block Statistics</li> <li> Build Attribute Table</li> <li> Calculate Statistics</li> <li> Clip</li> <li> Copy</li> <li> <b>Lookup by Table</b></li> <li> Reclass by Table</li> <li> Reproject</li> <li> Resample</li> <li> Set NoData Value</li> <li> Set Value to Null</li> <li> Transform</li> <li> Tweak Values</li> <li> Values at Points</li> </ul> </li> </ul> </div>	<p>Creates multiple rasters by looking up values found in another field in the table of the input raster. For more detailed help see <a href="#">ESRI Help for the 'Lookup (Raster)' tool (10.4)</a>.</p> <p><b>TIP:</b> Note that you will need to use the 'Raster &gt; Build Attribute Table' tool to generate Raster Attribute Tables for the output (integer) raster datasets.</p> <p><b>Table for Rasters:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Search' tool, but it can be any table with a field containing the full path to the rasters you want to clip. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.</p> <p><b>Field for Raster:</b> Select the field from the 'Table for Rasters' that contains the full path to the raster items you want to clip.</p> <p><b>Field for lookup fields:</b> For each raster dataset this is the field in the 'Table for Rasters' input table that contains a list of fields you want to use to convert into new raster datasets. This list can be created by running the 'Geodata &gt; Describe' tool. The result table from the 'Describe' tool generates list of all fields in the 'table_fields' column. You can create the desired list by editing the 'table_fields' column in the describe results table. Fields used in this way, to create new raster datasets, can be a numeric or string type.</p> <p><b>Format for output rasters:</b> Raster format for output geodata. You can choose from: Esri Grid, img (ERDAS IMAGINE) or tif (GeoTIFF). If you select a file geodatabase for the Result Workspace then the output format will default to 'Esri Grid'. When storing your raster geodata to a JPEG file, a JPEG 2000 file, a TIFF file, or a geodatabase, you can specify a compression type and compression quality within the 'Environment Settings'.</p> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table containing the list of geodata processed by the tool as well as any data outputs. If the tool encounters any errors when processing the input geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages.</p> <p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p> <p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table reports on a range of different properties for each of the geodata items in the 'Table for Geodata' input table. See the Grid Garage User Manual for a description of all the properties reported on.</p> <p>If the tool encounters any errors when processing any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the</p>

Tool	Description
	<p>result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><u>Result Table file name</u>: The default name will always take the form of “<b>LookupByTableRasterTool_date_time</b>”, where ‘<b>date</b>’ and ‘<b>time</b>’ are the date and time that the tool was run.</p> <p>&lt;&lt;<b>Output Filename Affixes</b>&gt;&gt;</p> <p><b>Output Filename Prefix (optional)</b>: Any text you enter in this input box will be added as a prefix (at the beginning) for all output file names.</p> <p><b>Output Filename Suffix (optional)</b>: Any text you enter in this input box will be added as a suffix (at the end) for all output file names.</p> <p style="text-align: right;"><a href="#">Link back to Summary of Grid Garage Tools</a></p>




















### 6.3.8 Raster > Reclass by Table

Tool	Description															
<div><div><div><div><div></div><div>Grid Garage v3</div></div><div><div></div><div>Feature</div></div><div><div></div><div>Geodata</div></div><div><div></div><div>Raster</div><div><div><div></div><div>Aggregate</div></div><div><div></div><div>Block Statistics</div></div><div><div></div><div>Build Attribute Table</div></div><div><div></div><div>Calculate Statistics</div></div><div><div></div><div>Clip</div></div><div><div></div><div>Copy</div></div><div><div></div><div>Lookup by Table</div></div><div><div></div><div>Reclass by Table</div></div><div><div></div><div>Reproject</div></div><div><div></div><div>Resample</div></div><div><div></div><div>Set NoData Value</div></div><div><div></div><div>Set Value to Null</div></div><div><div></div><div>Transform</div></div><div><div></div><div>Tweak Values</div></div><div><div></div><div>Values at Points</div></div></div></div></div></div></div>	<p>This tool Reclassifies (or changes) the values of the input cells of a raster using a remap table. The tool uses the standard ArcGIS 'Reclass by Table (Spatial Analyst)' tool. For more detailed help see <a href="#">ESRI Help for the 'Reclass by Table (Spatial Analyst)' tool (ArcGIS 10.4)</a>.</p> <p><b>Table for Rasters:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Search' tool, but it can be any table with a field containing the full path to the rasters you want to clip. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.</p> <p><b>Field for Raster:</b> Select the field from the 'Table for Rasters' that contains the full path to the raster items you want to clip.</p> <p><b>Remap table:</b> Table holding fields defining value ranges to be reclassified and the values they will become. See Table 3 below for an example.</p> <p><b>TIP #1:</b> <i>You need to create this table. The most common method to do this is to copy the raster attribute table and add extra fields to it, i.e. add the 'From', 'To' and 'Output' fields.</i></p> <p><b>Field for From Value:</b> Field holding the beginning value for each value range to be reclassified. This is a numeric field of the input remap table</p> <p><b>Field for To Value:</b> Field holding the ending value for each value range to be reclassified. This is a numeric field of the input remap table.</p> <p><b>Field for Output Value:</b> Field holding the integer values to which each range should be changed. This is an integer field of the input remap table.</p> <p style="text-align: center;"><i>Table 3 Example of a 'Remap table' that reclassifies a raster dataset from 0-100 range to integer classes 1-4.</i></p> <table><tr><th>From</th><th>To</th><th>Output</th></tr><tr><td>0</td><td>25</td><td>1</td></tr><tr><td>26</td><td>50</td><td>2</td></tr><tr><td>51</td><td>75</td><td>3</td></tr><tr><td>76</td><td>100</td><td>4</td></tr></table> <p><b>TIP #2:</b> <i>To reclassify individual values, use a simple remap table of two fields. The first field identifies the value to reclassify, and the other field identifies the value to assign to it. Set the 'To' field value the same as the 'From' field value. The value to assign to the output is 'Output' field value.</i></p> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table containing the list of geodata processed by the tool as well as any data outputs. If the tool encounters any errors when processing the input geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages.</p>	From	To	Output	0	25	1	26	50	2	51	75	3	76	100	4
From	To	Output														
0	25	1														
26	50	2														
51	75	3														
76	100	4														






















Tool	Description
	<p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p> <p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table reports on a range of different properties for each of the geodata items in the 'Table for Geodata' input table. See the Grid Garage User Manual for a description of all the properties reported on.</p> <p>If the tool encounters any errors when processing any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><u>Result Table file name:</u> The default name will always take the form of "<b>ReclassRasterTool_date_time</b>", where '<b>date</b>' and '<b>time</b>' are the date and time that the tool was run.</p> <p>&lt;&lt;<b>Output Filename Affixes</b>&gt;&gt;</p> <p><b>Missing Values:</b> Denotes whether missing values in the reclass table retain their value or get mapped to NoData. Select from:</p> <ul style="list-style-type: none"> <li>• DATA — Signifies that if any cell location on the input raster contains a value not present or reclassified in a remap table, the value should remain intact and be written for that location to the output raster. This is the default.</li> <li>• NODATA — Signifies that if any cell location on the input raster contains a value not present or reclassified in a remap table, the value will be reclassified to NoData for that location on the output raster.</li> </ul> <p>&lt;&lt;<b>Output Filename Affixes</b>&gt;&gt;</p> <p><b>Output Filename Prefix (optional):</b> Any text you enter in this input box will be added as a prefix (at the beginning) for all output file names.</p> <p><b>Output Filename Suffix (optional):</b> Any text you enter in this input box will be added as a suffix (at the end) for all output file names.</p> <p style="text-align: right;"><a href="#">Link back to Summary of Grid Garage Tools</a></p>

### 6.3.9 Raster > Reproject

Tool	Description
<div>  Grid Garage v3         <ul style="list-style-type: none"> <li> Feature</li> <li> Geodata</li> <li> Raster             <ul style="list-style-type: none"> <li> Aggregate</li> <li> Block Statistics</li> <li> Build Attribute Table</li> <li> Calculate Statistics</li> <li> Clip</li> <li> Copy</li> <li> Lookup by Table</li> <li> Reclass by Table</li> <li> <b>Reproject</b></li> <li> Resample</li> <li> Set NoData Value</li> <li> Set Value to Null</li> <li> Transform</li> <li> Tweak Values</li> <li> Values at Points</li> </ul> </li> </ul> </div>	<p>This tool transforms raster geodata from one projection to another. The tool uses the standard ArcGIS 'Project Rasters (Data Management)' tool. For more detailed help see <a href="#">ESRI Help for the 'Project Rasters (Data Management)' tool</a>.</p> <p><b>Table for Rasters:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Search' tool, but it can be any table with a field containing the full path to the rasters you want to project. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.</p> <p><b>Field for Raster:</b> Select the field from the 'Table for Rasters' that contains the full path to the raster items you want to project.</p> <p><b>Output Spatial Reference:</b> The coordinate system to which the input raster will be projected. The default value is set based on the Output Coordinate System environment setting. If you want to select a coordinate system that differs from the default then click on the list icon to the right and select a new one.</p> <p><b>Output Cell Size (optional):</b> The cell size for the new raster dataset. The default cell size is the cell size of the selected raster dataset. Or you can specify the 'minimum' or 'maximum' of inputs or a user defined cell size based on the values entered in the input box.</p> <p><b>Resampling Method:</b> The resampling algorithm to be used. The default is NEAREST. Select from:</p> <ul style="list-style-type: none"> <li>• NEAREST—Nearest neighbour assignment</li> <li>• BILINEAR—Bilinear interpolation</li> <li>• CUBIC—Cubic convolution</li> <li>• MAJORITY—Majority resampling</li> </ul> <p>The NEAREST and MAJORITY options are used for categorical data, such as a land-use classification. The NEAREST option is the default since it is the quickest and also because it will not change the cell values. Do not use NEAREST or MAJORITY for continuous data, such as elevation surfaces. The BILINEAR option and the CUBIC option are most appropriate for continuous data. It is not recommended that BILINEAR or CUBIC be used with categorical geodata because the cell values may be altered</p> <p><b>Format for output rasters:</b> Raster format for output geodata. You can choose from: Esri Grid, img (ERDAS IMAGINE) or tif (GeoTIFF). If you select a file geodatabase for the Result Workspace then the output format will default to 'Esri Grid'. When storing your raster geodata to a JPEG file, a JPEG 2000 file, a TIFF file, or a geodatabase, you can specify a compression type and compression quality within 'Geoprocessing &gt; Environments'.</p> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table containing the list of geodata processed by the tool as well as any data outputs. If the tool encounters any errors when processing the input geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages.</p> <p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p>




















	<p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table reports on a range of different properties for each of the geodata items in the 'Table for Geodata' input table. See the Grid Garage User Manual for a description of all the properties reported on.</p> <p>If the tool encounters any errors when processing any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><u>Result Table file name:</u> The default name will always take the form of “<b>ReprojectRasterTool_date_time</b>”, where ‘date’ and ‘time’ are the date and time that the tool was run.</p> <p>&lt;&lt;<b>Options</b>&gt;&gt;</p> <p><b>Registration Point (optional):</b> The x and y coordinates (in the output space) used for pixel alignment. The registration point works similar to the concept of snap raster. Instead of snapping the output to an existing raster cell alignment, the registration point allows you to specify the origin point for anchoring the output cells. All output cells will be an interval of the cell size away from this point. This point does not have to be a corner coordinate or fall within the raster dataset. The Snap Raster environment setting will take priority over the Registration Point parameter. Therefore, if you want to set the registration point, make sure that Snap Raster is not set.</p> <p><b>Transformation Overrides (optional):</b> The transformation method used between two geographic systems or datums. The geographic transformation is optional when the input and output coordinate systems have the same datum. If the input and output datum are different, a geographic transformation needs to be specified. For information on each supported geographic (datum) transformations, see the geographic_transformations.pdf file to be found in the \Documentation folder of your ArcGIS installation.</p> <p>&lt;&lt;<b>Output Filename Affixes</b>&gt;&gt;</p> <p><b>Output Filename Prefix (optional):</b> Any text you enter in this input box will be added as a prefix (at the beginning) for all output file names.</p> <p><b>Output Filename Suffix (optional):</b> Any text you enter in this input box will be added as a suffix (at the end) for all output file names.</p> <p><a href="#">Link back to Summary of Grid Garage Tools</a></p>
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### 6.3.10 Raster > Resample




















Tool	Description
<div>  Grid Garage v3 <ul style="list-style-type: none"> <li> Feature</li> <li> Geodata</li> <li> Raster <ul style="list-style-type: none"> <li> Aggregate</li> <li> Block Statistics</li> <li> Build Attribute Table</li> <li> Calculate Statistics</li> <li> Clip</li> <li> Copy</li> <li> Lookup by Table</li> <li> Reclass by Table</li> <li> Reproject</li> <li> <b>Resample</b></li> <li> Set NoData Value</li> <li> Set Value to Null</li> <li> Transform</li> <li> Tweak Values</li> <li> Values at Points</li> </ul> </li> </ul> </div>	<p>This tool alters the raster geodata by changing the cell size and resampling method. The tool uses the standard ArcGIS Resample (Data Management) tool. For more detailed help see <a href="#">ESRI Help for the 'Resample (Data Management)' tool (ArcGIS 10.4)</a>.</p> <p><b>TIP#1:</b> The output data set will remain in the same projection as the input.</p> <p><b>TIP#2:</b> Note that output grid will not be clipped to the 'Processing Extent' set in 'Geoprocessing &gt; Environment'. If the input grid is in the same projection as that set in the Geoprocessing &gt; Environment then the grid will 'snap to raster' and the lower right corner of the output raster dataset will be the same as the lower right corner of the Processing Extent, but the left and top extents may be larger, but the grid will be aligned to the 'snap raster' setting</p> <p><b>Table for Rasters:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Search' tool, but it can be any table with a field containing the full path to the rasters you want to clip. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.</p> <p><b>Field for Raster:</b> Select the field from the 'Table for Rasters' that contains the full path to the raster items you want to clip.</p> <p><b>Resampling Method (optional):</b> The resampling algorithm to be used. The default is NEAREST. Select from:</p> <ul style="list-style-type: none"> <li>• NEAREST — Nearest neighbour assignment</li> <li>• BILINEAR — Bilinear interpolation</li> <li>• CUBIC — Cubic convolution</li> <li>• MAJORITY — Majority resampling</li> </ul> <p><b>Cell Size (optional):</b> The cell size of the new raster using an existing raster dataset or specify its width (x) and height (y). You can specify the cell size in 3 different ways:</p> <ul style="list-style-type: none"> <li>• Using a single number specifying a square cell size.</li> <li>• Using two numbers that specify the X and Y cell size, which is space delimited.</li> <li>• Using the path of a raster dataset from which the square cell size will be imported.</li> </ul> <p><b>Format for output rasters:</b> Raster format for output geodata. You can choose from: Esri Grid, img (ERDAS IMAGE) or tif (GeoTIFF). If you select a file geodatabase for the Result Workspace then the output format will default to 'Esri Grid'. When storing your raster geodata to a JPEG file, a JPEG 2000 file, a TIFF file, or a geodatabase, you can specify a compression type and compression quality within the 'Environment Settings'.</p> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table containing the list of geodata processed by the tool as well as any data outputs. If the tool encounters any errors when processing the input geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages.</p> <p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p>

	<p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table reports on a range of different properties for each of the geodata items in the 'Table for Geodata' input table. See the Grid Garage User Manual for a description of all the properties reported on.</p> <p>If the tool encounters any errors when processing any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><u>Result Table file name:</u> The default name will always take the form of “<b>ResampleRasterTool_date_time</b>”, where ‘date’ and ‘time’ are the date and time that the tool was run.</p> <p>&lt;&lt;<b>Output Filename Affixes</b>&gt;&gt;</p> <p><b>Output Filename Prefix (optional):</b> Any text you enter in this input box will be added as a prefix (at the beginning) for all output file names.</p> <p><b>Output Filename Suffix (optional):</b> Any text you enter in this input box will be added as a suffix (at the end) for all output file names.</p> <p><a href="#">Link back to Summary of Grid Garage Tools</a></p>
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### 6.3.11 Raster > Set NoData Value

Tool	Description
<div>  Grid Garage v3 <ul style="list-style-type: none"> <li> Feature</li> <li> Geodata</li> <li> Raster <ul style="list-style-type: none"> <li> Aggregate</li> <li> Block Statistics</li> <li> Build Attribute Table</li> <li> Calculate Statistics</li> <li> Clip</li> <li> Copy</li> <li> Lookup by Table</li> <li> Reclass by Table</li> <li> Reproject</li> <li> Resample</li> <li> <b>Set NoData Value</b></li> <li> Set Value to Null</li> <li> Transform</li> <li> Tweak Values</li> <li> Values at Points</li> </ul> </li> </ul> </div>	<p>This tool replaces all 'NoData' pixels with a user-defined value. The tool uses the standard ArcGIS 'Copy (Data Management)' tool. For more detailed help see <a href="#">ESRI Help for the 'Change NoData cells to a value'</a>.</p> <p><b>Table for Rasters:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Search' tool, but it can be any table with a field containing the full path to the rasters you want to clip. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.</p> <p><b>NoData Value to Set:</b> Replace 'NoData' with this value.</p> <p><b>Format for output rasters:</b> Raster format for output geodata. You can choose from: Esri Grid, img (ERDAS IMAGE) or tif (GeoTIFF). If you select a file geodatabase for the Result Workspace then the output format will default to 'Esri Grid'. When storing your raster geodata to a JPEG file, a JPEG 2000 file, a TIFF file, or a geodatabase, you can specify a compression type and compression quality within 'Geoprocessing &gt; Environments'.</p> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table containing the list of geodata processed by the tool as well as any data outputs. If the tool encounters any errors when processing the input geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages.</p> <p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p> <p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table reports on a range of different properties for each of the geodata items in the 'Table for Geodata' input table. See the Grid Garage User Manual for a description of all the properties reported on.</p> <p>If the tool encounters any errors when processing any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><b>Result Table file name:</b> The default name will always take the form of "SetNoDataValueRasterTool_date_time", where 'date' and 'time' are the date and time that the tool was run.</p> <p>&lt;&lt;Output Filename Affixes&gt;&gt;</p> <p><b>Output Filename Prefix (optional):</b> Any text you enter in this input box will be added as a prefix (at the beginning) for all output file names.</p> <p><b>Output Filename Suffix (optional):</b> Any text you enter in this input box will be added as a suffix (at the end) for all output file names.</p> <p><a href="#">Link back to Summary of Grid Garage Tools</a></p>




















### 6.3.12 Raster > Set Value to Null

Tool	Description
<div>  Grid Garage v3 <ul style="list-style-type: none"> <li> Feature</li> <li> Geodata</li> <li> Raster <ul style="list-style-type: none"> <li> Aggregate</li> <li> Block Statistics</li> <li> Build Attribute Table</li> <li> Calculate Statistics</li> <li> Clip</li> <li> Copy</li> <li> Lookup by Table</li> <li> Reclass by Table</li> <li> Reproject</li> <li> Resample</li> <li> Set NoData Value</li> <li> Set Value to Null</li> <li> Transform</li> <li> Tweak Values</li> <li> Values at Points</li> </ul> </li> </ul> </div>	<p>This tool replaces a user defined value to Null or 'NoData'. The tool uses the standard ArcGIS 'Copy Raster (Data Management)' tool. For more detailed help see <a href="#">ESRI Help for the 'Setting Values to NoData with Set Null'</a>.</p> <p><b>Table for Rasters:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Search' tool, but it can be any table with a field containing the full path to the rasters you want to project. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.</p> <p><b>Field for Raster:</b> Select the field from the 'Table for Rasters' that contains the full path to the raster items you want to project.</p> <p><b>Value to Set Null:</b> Replace this value with Null or 'NoData'.</p> <p><b>Format for output rasters:</b> Raster format for output geodata. You can choose from: Esri Grid, img (ERDAS IMAGINE) or tif (GeoTIFF). If you select a file geodatabase for the Result Workspace then the output format will default to 'Esri Grid'. When storing your raster geodata to a JPEG file, a JPEG 2000 file, a TIFF file, or a geodatabase, you can specify a compression type and compression quality within 'Geoprocessing &gt; Environments'.</p> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table containing the list of geodata processed by the tool as well as any data outputs. If the tool encounters any errors when processing the input geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages.</p> <p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p> <p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table reports on a range of different properties for each of the geodata items in the 'Table for Geodata' input table. See the Grid Garage User Manual for a description of all the properties reported on.</p> <p>If the tool encounters any errors when processing any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><b>Result Table file name:</b> The default name will always take the form of "ReprojectRasterTool_date_time", where 'date' and 'time' are the date and time that the tool was run.</p> <p><b>&lt;&lt;Output Filename Affixes&gt;&gt;</b>  <b>Output Filename Prefix (optional):</b> Any text you enter in this input box will be added as a prefix (at the beginning) for all output file names.</p>






















	<p><b>Output Filename Suffix (optional):</b> Any text you enter in this input box will be added as a suffix (at the end) for all output file names.</p> <p><a href="#">Link back to Summary of Grid Garage Tools</a></p>
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### 6.3.13 Raster > Transform

Tool	Description
<div>  Grid Garage v3 <ul style="list-style-type: none"> <li> Feature</li> <li> Geodata</li> <li> Raster <ul style="list-style-type: none"> <li> Aggregate</li> <li> Block Statistics</li> <li> Build Attribute Table</li> <li> Calculate Statistics</li> <li> Clip</li> <li> Copy</li> <li> Lookup by Table</li> <li> Reclass by Table</li> <li> Reproject</li> <li> Resample</li> <li> Set NoData Value</li> <li> Set Value to Null</li> <li> Transform</li> <li> Tweak Values</li> <li> Values at Points</li> </ul> </li> </ul> </div>	<p>This tool applies simple transformations to the raster geodata values. Options include: Standardise, Stretch, Normalise, Log, Square root and Invert. For more detailed help see <a href="#">ESRI Help for the 'Extract Values To Table'</a>.</p> <p><b>Table for Rasters:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Search' tool, but it can be any table with a field containing the full path to the rasters you want to project. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.</p> <p><b>Field for Raster:</b> Select the field from the 'Table for Rasters' that contains the full path to the raster items you want to project.</p> <p><b>Method:</b> Select a transform method from:</p> <ul style="list-style-type: none"> <li>STANDARDISE - This is a 'Standard score', also called 'Z-score' where each pixel value is expressed in terms of standard deviations from the mean of all pixel values. Resultantly, these z-scores have a distribution with a mean of 0 and a standard deviation of 1. The formula used = (pixel value – dataset mean) / dataset standard deviation</li> <li>STRETCH - Stretches data between a range specified by the '<b>Max Stretch Value (optional)</b>' and '<b>Min Stretch Value (optional)</b>' input boxes.</li> <li>NORMALISE - Normalises to a scale 0-1 while retaining distribution shape. The formula used = (pixel value – dataset min) / (dataset max – dataset min).</li> <li>LOG - Returns natural logarithmic of raster.</li> <li>SQUAREROOT - Returns square root of raster.</li> <li>INVERT - Inverts the range of cell values. The formula used = (dataset min + dataset max) – pixel value</li> </ul> <p><b>Format for output rasters:</b> Raster format for output geodata. You can choose from: Esri Grid, img (ERDAS IMAGINE) or tif (GeoTIFF). If you select a file geodatabase for the Result Workspace then the output format will default to 'Esri Grid'. When storing your raster geodata to a JPEG file, a JPEG 2000 file, a TIFF file, or a geodatabase, you can specify a compression type and compression quality within 'Geoprocessing &gt; Environments'.</p> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table containing the list of geodata processed by the tool as well as any data outputs. If the tool encounters any errors when processing the input geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages.</p> <p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p>




















Tool	Description
	<p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table reports on a range of different properties for each of the geodata items in the 'Table for Geodata' input table. See the Grid Garage User Manual for a description of all the properties reported on.</p> <p>If the tool encounters any errors when processing any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><u>Result Table file name:</u> The default name will always take the form of "<b>TransformRasterTool_date_time</b>", where '<b>date</b>' and '<b>time</b>' are the date and time that the tool was run.</p> <p><b>&lt;&lt;Options&gt;&gt;</b></p> <p><b>Max Stretch Value (optional):</b> When the Transform Method = 'STRETCH' this value defines the upper limit of the stretched value.</p> <p><b>Min Stretch Value (optional):</b> When the Transform Method = 'STRETCH' this value defines the lower limit of the stretched value.</p> <p><b>&lt;&lt;Output Filename Affixes&gt;&gt;</b></p> <p><b>Output Filename Prefix (optional):</b> Any text you enter in this input box will be added as a prefix (at the beginning) for all output file names.</p> <p><b>Output Filename Suffix (optional):</b> Any text you enter in this input box will be added as a suffix (at the end) for all output file names.</p> <p style="text-align: right;"><a href="#">Link back to Summary of Grid Garage Tools</a></p>

### 6.3.14 Raster > Tweak Values

Tool	Description
<div>  Grid Garage v3 <ul style="list-style-type: none"> <li> Feature</li> <li> Geodata</li> <li> Raster <ul style="list-style-type: none"> <li> Aggregate</li> <li> Block Statistics</li> <li> Build Attribute Table</li> <li> Calculate Statistics</li> <li> Clip</li> <li> Copy</li> <li> Lookup by Table</li> <li> Reclass by Table</li> <li> Reproject</li> <li> Resample</li> <li> Set NoData Value</li> <li> Set Value to Null</li> <li> Transform</li> <li> <b>Tweak Values</b></li> <li> Values at Points</li> </ul> </li> </ul> </div>	<p>This tool is used to tweak, or change, raster values. The changes can be restricted to a smaller range of values by applying a floor and ceiling, be scaled, translated and also converted to integer data type. The changes to the pixel values are undertaken in the order they're presented in the tool, ie. 1) Rescaling between a floor and ceiling, 2) Scale Factor, 3) Constant Shift and 4) Integerise.</p> <p><b>Table for Rasters:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Search' tool, but it can be any table with a field containing the full path to the rasters you want to project. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.</p> <p><b>Field for Raster:</b> Select the field from the 'Table for Rasters' that contains the full path to the raster items you want to project.</p> <p><b>Format for output rasters:</b> Raster format for output geodata. You can choose from: Esri Grid, img (ERDAS IMAGINE) or tif (GeoTIFF). If you select a file geodatabase for the Result Workspace then the output format will default to 'Esri Grid'. When storing your raster geodata to a JPEG file, a JPEG 2000 file, a TIFF file, or a geodatabase, you can specify a compression type and compression quality within 'Geoprocessing &gt; Environments'.</p> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table containing the list of geodata processed by the tool as well as any data outputs. If the tool encounters any errors when processing the input geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages.</p> <p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p> <p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table reports on a range of different properties for each of the geodata items in the 'Table for Geodata' input table. See the Grid Garage User Manual for a description of all the properties reported on.</p> <p>If the tool encounters any errors when processing any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><u>Result Table file name:</u> The default name will always take the form of "TweakValuesRasterTool_date_time", where 'date' and 'time' are the date and time that the tool was run.</p> <p>&lt;&lt;Options&gt;&gt;</p> <p><b>Scale Factor (optional):</b> All pixel values will be multiplied by this number.</p> <p><b>Constant Shift (optional):</b> This value is added to all values.</p>

	<p><b>Minimum value (optional):</b> This is the lower or 'floor' value you want to restrict the data range to. Any value <math>\leq</math> this value will be reclassified using the value specified in the '<b>Values &lt; Minimum (optional)</b>' user input box.</p> <p><b>Values Under Minimum (optional):</b> This is the value assigned to pixels with values <math>\leq</math> the value specified in the '<b>Minimum Value (optional)</b>' input box.</p> <p><b>Maximum Value (optional):</b> This is the upper or 'ceiling' value you want to restrict the data range to. Any value <math>\geq</math> this value will be reclassified using the value specified in the '<b>Values &gt; Maximum (optional)</b>' user input box.</p> <p><b>Values Over Maximum (optional):</b> This is the value assigned to pixels with values <math>\geq</math> the value specified in the '<b>Maximum Value (optional)</b>' input box.</p> <p><b>Integerise Result (optional):</b> Converts the data type to integer by 'truncation'. .</p> <p><b>TIP:</b> The '<b>Integerise Result (optional)</b>' function truncates floating point numbers eg. 1.9 becomes 1.0. To convert floating point values to integer by 'rounding' you will need to add 0.5, ie. <b>Constant Shift Value (optional)</b> = 0.5.</p> <p>&lt;&lt;<b>Output Filename Affixes</b>&gt;&gt;</p> <p><b>Output Filename Prefix (optional):</b> Any text you enter in this input box will be added as a prefix (at the beginning) for all output file names.</p> <p><b>Output Filename Suffix (optional):</b> Any text you enter in this input box will be added as a suffix (at the end) for all output file names.</p> <p style="text-align: right;"><a href="#">Link back to Summary of Grid Garage Tools</a></p>
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### 6.3.15 Raster > Values at Points

Tool	Description
<div>  Grid Garage v3 <ul style="list-style-type: none"> <li> Feature</li> <li> Geodata</li> <li> Raster <ul style="list-style-type: none"> <li> Aggregate</li> <li> Block Statistics</li> <li> Build Attribute Table</li> <li> Calculate Statistics</li> <li> Clip</li> <li> Copy</li> <li> Lookup by Table</li> <li> Reclass by Table</li> <li> Reproject</li> <li> Resample</li> <li> Set NoData Value</li> <li> Set Value to Null</li> <li> Transform</li> <li> Tweak Values</li> <li> Values at Points</li> </ul> </li> </ul> </div>	<p>This tool reports on the values of pixels under each point in the Feature Dataset for each raster grid in the 'Table of Rasters' table. The values are written to the output results table. For more detailed ESRI Help see <a href="#">'Extract Values To Table'</a>.</p> <p><b>Table for Rasters:</b> This is the input table, usually the results table generated by the 'Geodata &gt; Search' tool, but it can be any table with a field containing the full path to the rasters you want to process with this tool. If the Items Table is a DBF, or a table in an ESRI File Geodatabase, then you can select a subset of rows in ArcMap and only those rows will be processed by the tool.</p> <p><b>Field for Raster:</b> Select the field from the 'Table for Rasters' that contains the full path to the raster items you want to process.</p> <p><b>Select Point Feature Dataset:</b> Select the folder icon to select the feature point dataset that contains the points you want to use for reporting on the raster pixel values.</p> <p><b>TIP #1:</b> <i>This tool will only work if all the raster and the feature point datasets are in the same projection.</i></p> <p><b>Output Workspace:</b> This is the location for the Grid Garage results table containing the list of geodata processed by the tool as well as any data outputs. If the tool encounters any errors when processing the input geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages.</p> <p>If you have set the ArcGIS 'Workspace' parameter in the 'Geoprocessing &gt; Environment' Settings then this path will be used as the default. You can use this default path or click the folder button to select a new output location which can be a folder or File Geodatabase. If you specify a folder then the Results Table will be written to a comma-delimited (CSV) text file, if you specify a File Geodatabase it will be written as a Geodatabase Table.</p> <p><b>Result Table Name:</b> You can choose to use the default table name or specify a different name for the Grid Garage results table. The Grid Garage results table reports on a range of different properties for each of the geodata items in the 'Table for Geodata' input table. See the Grid Garage User Manual for a description of all the properties reported on.</p> <p>If the tool encounters any errors when processing any of the geodata then a second results table will be generated, with a "_FAIL" suffix, listing the input geodata that failed and any ESRI error messages. If you choose a folder for the Output Workspace then the result table will be written to a comma-delimited (CSV) text file which will not allow you to select rows for processing when using the table as input for other Grid Garage Tools.</p> <p><b>Result Table file name:</b> The default name will always take the form of "ValuesAtPointsRasterTool_date_time", where 'date' and 'time' are the date and time that the tool was run.</p> <p style="text-align: right;"><a href="#">Link back to Summary of Grid Garage Tools</a></p>

## 7 Other tips – Generating a metadata file from ArcGIS geodata

ArcCatalog in ArcGIS 10 automatically generates an HTML file from metadata when you click on the "Description" tab. Right click the document and go to properties, the URL given is an HTML file. In the Description 'Properties' it has a path to the htm file, as shown in Figure 14.

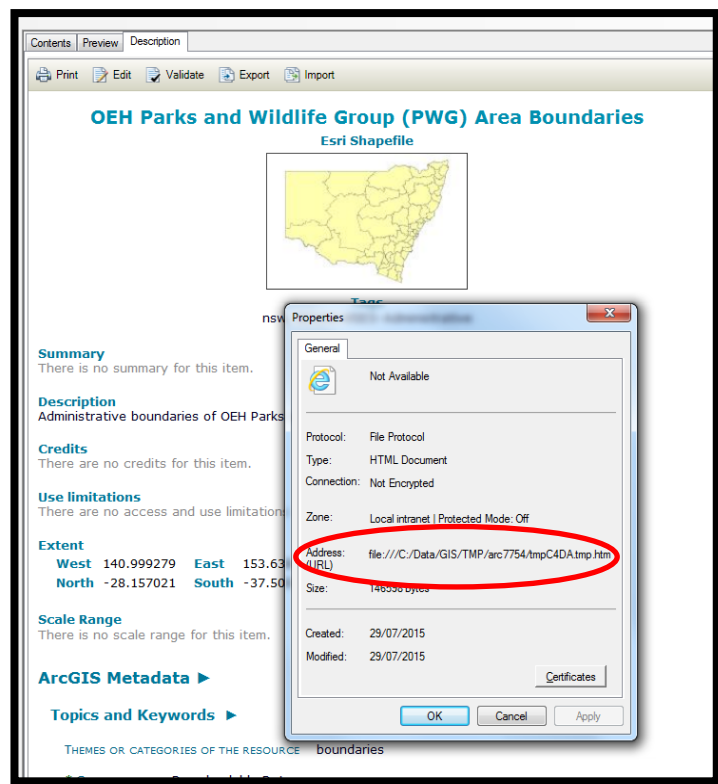


Figure 14 Screenshot from ArcCatalog showing the path to the HTML metadata file.

## 8 Glossary of terms

Term	Meaning
ArcGIS 10.4	GIS software developed by ESRI. Grid Garage is written and tested in ArcGIS Desktop version 10.4
Geodata	The Collins Dictionary describes ‘geodata’ as “information about geographic location held in a digital format” and we use this term to describe all types of digital, spatially referenced data stored and manipulated by GIS systems.
GIS	Geographic Information System
File geodatabase (GDB)	ArcGIS file format for storing geodata sometimes abbreviated to ‘GDB’ which is also the file extension ( <i>name.gdb</i> ).
Raster or grid	Raster or grid geodata is a format for storing spatial information using pixels or grid cells that cover an area of the earth. The resolution of the raster geodata is determined by the size of the pixels or grid cells.
Shapefile	ArcGIS polygon vector geodata.

## 9 Known issues and bugs

Tool (with link to technical documentation)	Issue	Comments	Version fixed in
<b>Feature Tools</b>			
<a href="#">Feature &gt; Clip</a>			
<a href="#">Feature &gt; Copy</a>			
<a href="#">Feature &gt; Rasterise by Table</a>			
<b>Geodata Tools</b>			
<a href="#">Geodata &gt; Compare Extents</a>			
<a href="#">Geodata &gt; Copy</a>			
<a href="#">Geodata &gt; Delete</a>			



Tool (with link to technical documentation)	Issue	Comments	Version fixed in
<a href="#">Geodata &gt; Describe</a>			
<a href="#">Geodata &gt; Display</a>			
<a href="#">Geodata &gt; Generate Names</a>			
<a href="#">Geodata &gt; List Workspace Tables</a>			
<a href="#">Geodata &gt; Rename</a>			
<a href="#">Geodata &gt; Search</a>			
<a href="#">Geodata &gt; Select</a>			
<b>Raster Tools</b>			
<a href="#">Raster &gt; Aggregate</a>			
<a href="#">Raster &gt; Block Statistics</a>			
<a href="#">Raster &gt; Build Attribute Table</a>			
<a href="#">Raster &gt; Calculate Statistics</a>			
<a href="#">Raster &gt; Clip</a>			
<a href="#">Raster &gt; Copy</a>			
<a href="#">Raster &gt; Lookup by Table</a>			
<a href="#">Raster &gt; Reclass by Table</a>			
<a href="#">Raster &gt; Reproject</a>			
<a href="#">Raster &gt; Resample</a>			
<a href="#">Raster &gt; Set NoData Value</a>			
<a href="#">Raster &gt; Set Value to Null</a>			
<a href="#">Raster &gt; Transform</a>			
<a href="#">Raster &gt; Tweak Values</a>			
<a href="#">Raster &gt; Values at Points</a>			