

Raster Tutorial



Copyright © 1995-2010 Esri All rights reserved.

Table of Contents

Introduction to the ArcGIS raster tutorial	3
Exercise 1: Creating a mosaic dataset	4
Exercise 2: Creating multiple mosaic datasets from a single mosaic dataset	8
Exercise 3: Creating and using a mosaic dataset with an altering viewpoint	13
Exercise 4: Creating a mosaic dataset using a raster type for orthorectification	18
Exercise 5: Color balancing a mosaic dataset	22
Exercise 6: Color balancing a raster catalog	27
Exercise 7: Adding a satellite sensor raster type to a mosaic dataset	32

Introduction to the ArcGIS raster tutorial

The exercises in this tutorial walk you through steps with sample data to build simple mosaic datasets, as well as slightly more complex ones, and help you understand some of the decisions you need to consider for your data and the uses of the mosaic dataset. There are also a few exercises that teach you about using a raster catalog and raster datasets.

Tutorial data

By default, the data is installed from the tutorial DVD in C:\arcgis\ArcTutor\Raster\Data.

Acknowledgments

The data provided in the Landsat_p114r75 folder comes from Landsat.org/Tropical Rain Forest Information Center, a member of NASA's Federation for Earth Science Information Partners (ESIP) at Michigan State University (<http://www.landsat.org/>).

The data provided in the Orthos folder comes from the Texas Geographic Information Council (<http://www.tnris.state.tx.us/>).

Exercises

- [Exercise 1](#): Creating a mosaic dataset
- [Exercise 2](#): Creating multiple mosaic datasets from a single mosaic dataset
- [Exercise 3](#): Creating and using a mosaic dataset with an altering viewpoint
- [Exercise 4](#): Creating a mosaic dataset using the MATCH-AT raster type for orthorectification
- [Exercise 5](#): Color balancing a mosaic dataset
- [Exercise 6](#): Color balancing a raster catalog
- [Exercise 7](#): Adding a satellite sensor raster type to a mosaic dataset

Exercise 1: Creating a mosaic dataset

In this exercise, you will be creating a mosaic dataset containing GeoTIFF raster dataset files using the geoprocessing framework in ArcMap.

This exercise does not rely on any previous exercises.

Before you begin, it is assumed that you have installed the tutorial at C:\arcgis\ArcTutor\Raster\Data. If not, make the appropriate path changes throughout this tutorial so it works properly for you.

Complexity:
Beginner

Data Requirement:
ArcGIS Tutorial Data Setup


Data Path:
C:\arcgis\ArcTutor\Raster\Data

Goal:
Create a basic mosaic dataset.

Start ArcMap

Steps:


1. Start ArcMap by clicking **Start > All Programs > ArcGIS > ArcMap 10.**
2. Click **Cancel** on the **ArcMap - Getting Started** window.
This window may not open if you've previously opted not to show it.

 **Note:** You will be setting the default map document's geodatabase later in this exercise.

Create a file geodatabase

If you have already created ImageGDB in another exercise, you can skip this section of steps.

Steps:

1. Click the Catalog window button  on the Standard toolbar.
This opens the **Catalog** window.
2. In the **Location** text box, type C:\arcgis\ArcTutor\Raster and press ENTER.
This location is added to the Catalog tree under the Folders Connection heading.
If your tutorial data was installed in a different location, alter the path according to your installation location.
3. Right-click the Raster folder and click **New > Folder**.
4. Name the folder `Exercises`.
5. Right-click the Exercises folder and click **New > File Geodatabase**.
6. Rename the new file geodatabase `ImageGDB`.

Set the default geodatabase

Each map document has a default geodatabase, which is the home location for the spatial content of your map. This location is used for adding datasets and saving resulting datasets created by various editing and geoprocessing operations.

[Learn about the default geodatabase](#)

Steps:

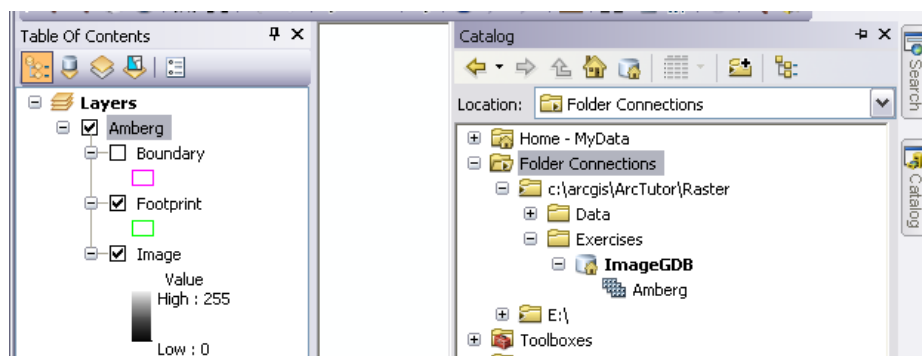
1. Right-click the ImageGDB geodatabase in the **Catalog** window and click **Make Default Geodatabase**.

Create a new mosaic dataset

Steps:

1. Right-click ImageGDB in the **Catalog** window, point to **New**, then click **Mosaic Dataset**. This opens the **Create Mosaic Dataset** tool dialog box.
2. Type *Amberg* in the **Mosaic Dataset Name** text box.
3. Click the **Coordinate System** browse button .
4. Click **Select**.
5. Double-click the Projected Coordinate Systems folder, double-click the National Grids folder, double-click the Germany folder, choose Germany Zone 4.prj, then click **Add**.
6. Click **OK** to close the **Spatial Reference Properties** dialog box.
7. Click **OK** on the **Create Mosaic Dataset** tool dialog box. The reporter window opens.
8. Once the process is complete, click **Close**. The *Amberg* mosaic dataset is created in the geodatabase and added to the ArcMap table of contents. This is an empty mosaic dataset. You will be adding raster datasets to it in the next steps.

When the mosaic dataset is added to the table of contents, it is added as a mosaic layer, which is essentially a special group layer. The top level has the name of the mosaic dataset--*Amberg*. There are also empty *Boundary*, *Footprint*, and *Image* layers.



Add rasters to the mosaic dataset

Steps:

1. Right-click the *Amberg* mosaic dataset in the **Catalog** window and click **Add Rasters**. This opens the Add Rasters To Mosaic Dataset tool.
2. In the **Raster Type** list, choose **Raster Dataset**.
3. Click the drop-down arrow and click **Workspace**.

4. Click the **Input** browse button.
5. Navigate to C:\arcgis\ArcTutor\Raster\Data\Amberg.tif and click **Add**.
6. Check **Update Overviews**.
7. Click **OK** to run the tool.
8. Once the process is complete, click **Close**.
The raster datasets are added to the mosaic dataset. The footprints are created for each raster dataset, and the boundary is generated for the entire mosaic dataset. The overviews are then generated for the entire mosaic dataset.
9. You may need to click the **Full Extent** button to view the mosaic dataset.

Modify the default properties

There are properties that can be set on the mosaic dataset. These properties affect how the mosaicked image will be presented to the user (or client) and how they might interact with it. They can also impact the performance of the server or image service if the mosaic dataset is served.

In these next steps, you will change the compression method for the mosaic dataset and set the allowable mosaic methods. The compression method can affect the transmission speed. It is recommended that you set a compression method to transmit the mosaicked image more quickly than without compression. If you serve the mosaic dataset as an image service, clients can modify this setting to decompress the mosaicked image if they prefer. The mosaic method defines the order in which the rasters are mosaicked together to create the image. You can choose one or more allowable mosaic methods and which one will be the default. The user is able to choose from the methods you select.

Steps:

1. Right-click the Amberg mosaic dataset in the **Catalog** window and click **Properties**.
This opens the Mosaic Dataset Properties dialog box.
2. Click the **Defaults** tab.
3. Click the **Allowed Compression Methods** ellipsis button .
4. Click the **Default Method** arrow and click **JPEG**.
5. Click **OK**.
6. Click the **Allowed Mosaic Methods** ellipsis button .
7. Uncheck **Closest To Viewpoint** and **Seamline**.
You are turning off Closest To Viewpoint because this mosaic dataset will not be used in that way. You are turning off Seamline because you are not creating any, so this method cannot be applied.
8. Click **OK**.
9. Click **OK** to close the **Mosaic Dataset Properties** dialog box.

Adding metadata

Steps:

1. Right-click the Amberg mosaic dataset and click **Item Description**.
2. Click the **Edit** button at the top of the window.
3. In the **Summary** text box, type Imagery in Amberg, Germany.
4. In the **Description** text box, type A mosaic dataset containing several orthophoto TIFF images of Amberg, Germany.
5. Click the **Save** button at the top of the window.
6. Close the **Item Description - Amberg** window.
You have completed creating the mosaic dataset and defining metadata.

Explore the mosaic dataset as a user

Steps:

1. Use the tools on the **Tools** toolbar to pan and zoom around the mosaicked image.
2. Right-click the **Image** layer in the table of contents and click **Properties**.
The **Layer Properties** dialog box for the mosaicked image is opened. This is similar to the dialog box for any other raster layer.
3. Click the **Status** tab.
Here you can explore the properties of the mosaicked image, such as the number of rows and columns and the transmitted size.
4. Note the value for **Transmitted Size**.
5. Click the **Display** tab.
You can modify the compression method from JPEG, which you set earlier, to something else or change the quality value.
6. Click the **Transmission Compression** arrow and click **None**.
7. Click **Apply**.
8. Click the **Status** tab.
The transmitted size has increased, which means a larger mosaicked image is being displayed.
9. Click the **Mosaic** tab.
10. Click the **Mosaic Method** arrow and click **North-West**.
11. Click **OK** to close the **Layer Properties** dialog box.
12. Pan and zoom around your image. Notice that the images are ordering themselves differently due to the changed mosaic method.
13. Close ArcMap.

The mosaic dataset has been created and is ready to publish as an image service using ArcGIS Server. You can also use the mosaic dataset as a layer within ArcMap or ArcGlobe.

Exercise 2: Creating multiple mosaic datasets from a single mosaic dataset

In this exercise, you will be creating a mosaic dataset containing a single DEM. This mosaic dataset will be the source for two additional mosaic datasets that will be created to produce both a hillshade and a shaded relief product. This tutorial walks you through the steps using only one DEM file; however, you would typically create a mosaic dataset containing many DEMs and potentially DEMs with various spatial resolutions.

This exercise will show you how to create a referenced mosaic dataset and edit its function chain.

This exercise does not rely on any previous exercises.

Before you begin, it is assumed that you have installed the tutorial at C:\arcgis\ArcTutor\Raster\Data. If not, make the appropriate path changes throughout this tutorial so it works properly for you.

Complexity:
Beginner

Data Requirement:
ArcGIS Tutorial Data Setup


Data Path:
C:\arcgis\ArcTutor\Raster\Data

Goal:
Understand how to create a master mosaic dataset that can be used as the source from which to create multiple products.

Start ArcMap

Steps:


1. Start ArcMap by clicking **Start > All Programs > ArcGIS > ArcMap 10**.
2. Click **Cancel** on the **ArcMap - Getting Started** window.
This window may not open if you've previously opted not to show it.

 **Note:** You will be setting the default map document's geodatabase later in this exercise.

Create a file geodatabase

If you have already created the ImageGDB in another exercise, you can skip this section of steps.

Steps:

1. Click the Catalog window button  on the Standard toolbar.
This opens the **Catalog** window.
2. In the **Location** text box, type C:\arcgis\ArcTutor\Raster and press ENTER.
This location is added to the Catalog tree under the Folders Connection heading.

If your tutorial data was installed in a different location, alter the path according to your installation location.
3. Right-click the Raster folder and click **New > Folder**.
4. Name the folder `Exercises`.
5. Right-click the Exercises folder and click **New > File Geodatabase**.
6. Rename the new file geodatabase `ImageGDB`.

Set the default geodatabase

Each map document has a default geodatabase, which is the home location for the spatial content of your map. This location is used for adding datasets and saving resulting datasets created by various editing and geoprocessing operations.

[Learn about the default geodatabase](#)

Steps:

1. Right-click the ImageGDB geodatabase in the **Catalog** window and click **Make Default Geodatabase**.

Create a new mosaic dataset

You will be creating the main mosaic dataset, which the other mosaic datasets will reference.

Steps:

1. Right-click the ImageGDB in the **Catalog** window, point to **New**, then click **Mosaic Dataset**. This opens the **Create Mosaic Dataset** tool dialog box.
2. Type **DEM** in the **Mosaic Dataset Name** text box.
3. Click the **Coordinate System** browse button .
4. Click **Select**.
5. Double-click the Geographic Coordinate Systems folder, double-click the World folder, click WGS 1984.prj, then click **OK**.
6. Click **OK** to close the **Spatial Reference Properties** dialog box.
7. Click **OK** on the **Create Mosaic Dataset** tool window.
8. Once the process is complete, click **Close**.
The DEM mosaic dataset is created in the geodatabase and added to the ArcMap table of contents. This is an empty mosaic dataset. You will be adding raster datasets to it in the next steps.

When the mosaic dataset is added to the table of contents, it is added as a mosaic layer, which is essentially a special group layer. The top level has the name of the mosaic DEM. There are also empty Boundary, Footprint, and Image layers.

Add rasters to the mosaic dataset


Steps:

1. Click the **Catalog** tab to expand the window.
2. Click the Default Geodatabase button .
3. Right-click the DEM mosaic dataset and click **Add Rasters**.
This opens the Add Rasters To Mosaic Dataset tool dialog box.
4. From the **Raster Type** list, choose **Raster Dataset**.

5. Click the **Input** arrow and click **Workspace**.
6. Click the **Input** browse button , navigate to C:\arcgis\ArcTutor\Raster\Data\DEM, then click **Add**.
7. Check **Update Overviews**.
8. Click **OK**.
9. When the process is complete, click **Close**.
The raster datasets are added to the mosaic dataset. The footprints are created for each raster dataset, and the boundary is generated for the entire mosaic dataset. The overviews are then generated for the entire mosaic dataset.
10. Right-click the DEM in the table of contents and click **Zoom To Layer**.

Create a referenced mosaic dataset

Steps:

1. Click the Search window button .
2. Click **Tools** on the Search window.
3. Type `mosaic dataset` and press ENTER on the keyboard.
4. Click **Create Referenced Mosaic Dataset** from within the returned items.
This opens the Create Referenced Mosaic Dataset geoprocessing tool.
5. Click the **Input Raster Catalog Or Mosaic Dataset** arrow and click **DEM**.
6. Change the path in the **Output Mosaic Dataset** box to
C:\arcgis\ArcTutor\Raster\Exercises\ImageGDB.gdb\Hillshade.
7. Click **OK**.
8. When the process is complete, click **Close**.

The Hillshade mosaic dataset is added to the table of contents.

Add the Hillshade function to the mosaic dataset

Steps:

1. Click the **Catalog** tab to expand the window.
2. Right-click the Hillshade mosaic dataset and click **Properties**.
3. Click the **Functions** tab.
4. Right-click **Mosaic Function**, point to **Insert**, then click **Hillshade Function**.
You can alter the Azimuth, Altitude, and Z Factor values or leave the defaults.
5. Click **OK** to close the **Raster Functions Properties** dialog box.



6. Click **OK** to close the **Mosaic Dataset Properties** dialog box.

Calculate statistics


You may need to calculate statistics for your mosaic dataset so it will display better. Typically, you will be calculating statistics on a very large mosaic dataset. To reduce the time it takes to calculate the statistics, you can specify a large skip factor, such as 100. However, because this Hillshade mosaic dataset is so small, you will not need to specify a skip factor and can use the defaults.

Steps:

1. Click the **Catalog** tab to open the **Catalog** window.
2. Right-click the Hillshade mosaic dataset in the **Catalog** window and click **Calculate Statistics**.
3. Click **OK**.
4. Close the progress window when the process is complete.

Create another referenced mosaic dataset

Steps:

1. Click the Search window button .
2. Click **Create Referenced Mosaic Dataset** from within the returned items.
3. Click the **Input Raster Catalog Or Mosaic Dataset** arrow and click **DEM**.
4. Change the path in the **Output Mosaic Dataset** box to
C:\arcgis\ArcTutor\Raster\Exercises\ImageGDB.gdb\ShadedRelief.
5. Click **OK**.
6. When the process is complete, click **Close**.

The ShadedRelief mosaic dataset is added to the table of contents.

Add the Shaded Relief function to the mosaic dataset

Steps:

1. Click the **Catalog** tab to expand the window.
2. Right-click ShadedRelief mosaic dataset and click **Properties**.
3. Click the **Functions** tab.
4. Right-click **Mosaic Function**, point to **Insert**, then click **Shaded Relief Function**.
You can alter the Color Ramp, Azimuth, Altitude, and Z Factor values or leave the defaults.
5. Click **OK** to close the **Raster Functions Properties** dialog box.

6. Click **OK** to close the ***Mosaic Dataset Properties*** dialog box.

Calculate statistics

You may need to calculate statistics for your mosaic dataset so it will display better.

Steps:

1. Click the **Catalog** tab to open the ***Catalog*** window.
2. Right-click the ShadedRelief mosaic dataset in the ***Catalog*** window and click **Calculate Statistics**.
3. Click **OK**.
4. Close the progress window when the process is complete.

You've now created three mosaic dataset and used one as the source for the other two. If you were to move or delete the original DEM mosaic dataset, the other two will be affected because they reference the source mosaic dataset; they do not reference the source raster.

Exercise 3: Creating and using a mosaic dataset with an altering viewpoint

To create a mosaic dataset that can take advantage of the Viewpoint mosaicking method, you need to have multiple raster datasets that overlap a particular area of interest, taken at multiple points of view. In this case, there are eight overlapping raster datasets in the area of interest.

This exercise does not rely on any previous exercises.

Complexity:
Beginner

Data Requirement:
ArcGIS Tutorial Data Setup

Data Path:
C:\arcgis\ArcTutor\Raster\Data

Goal:
To create a mosaic dataset containing overlapping images that can be used with the Viewpoint window.

Start ArcMap

Steps:

1. Start ArcMap by clicking **Start > All Programs > ArcGIS > ArcMap 10**.
2. Click **Cancel** on the **ArcMap - Getting Started** window.
This window may not open if you've previously opted not to show it.




Note: You will be setting the default map document's geodatabase later in this exercise.

Create a file geodatabase

If you have already created the ImageGDB in another exercise, you can skip this section of steps.

Steps:

1. Click the Catalog window button  on the Standard toolbar.
This opens the **Catalog** window.
2. In the **Location** text box, type `C:\arcgis\ArcTutor\Raster` and press ENTER.
This location is added to the Catalog tree under the Folders Connection heading.

If your tutorial data was installed in a different location, alter the path according to your installation location.
3. Right-click the Raster folder and click **New > Folder**.
4. Name the folder `Exercises`.
5. Right-click the Exercises folder and click **New > File Geodatabase**.
6. Rename the new file geodatabase `ImageGDB`.

Set the default geodatabase

Each map document has a default geodatabase, which is the home location for the spatial content of your map. This location is used for adding datasets and saving resulting datasets created by various editing and geoprocessing operations.

[Learn about the default geodatabase](#)

Steps:

1. Right-click the ImageGDB geodatabase in the **Catalog** window and click **Make Default Geodatabase**.

Create a new mosaic dataset

Steps:

1. Right-click the ImageGDB in the **Catalog** window, point to **New**, then click **Mosaic Dataset**. This opens the Create Mosaic Dataset tool.
2. Type `Viewpoint` for the **Mosaic Dataset Name**.
3. Click the **Coordinate System** browse button .
4. Click **Select**.
5. Double-click the Projected Coordinate Systems folder, double-click the National Grids folder, then select Germany Zone 4.prj and click **OK**.
6. Click **OK** to close the **Spatial Reference Properties** dialog box.
7. Click **OK** on the Create Mosaic Dataset tool window. The reporter window opens.
8. Once the process is complete, click **Close**.
The Viewpoint mosaic dataset is created in the geodatabase and added to the ArcMap table of contents. This is an empty mosaic dataset. You will be adding raster datasets to it in the next steps.

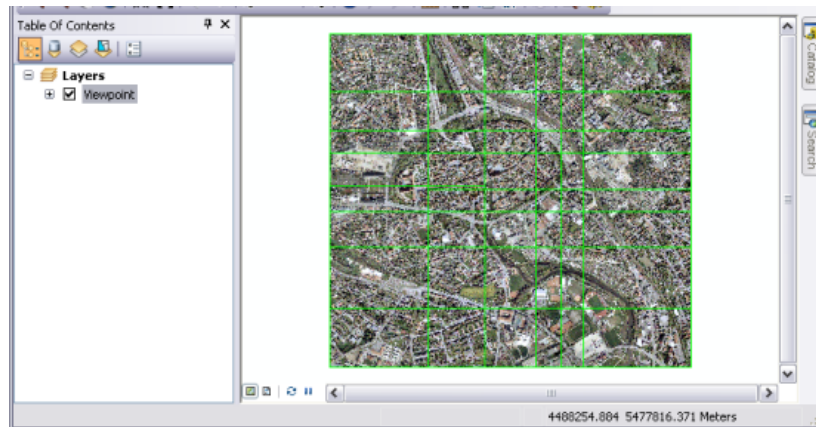
When the mosaic dataset is added to the table of contents, it is added as a group layer. The top level has the name of the mosaic dataset—Viewpoint. There are also empty Boundary, Footprint, and Image layers.

Add rasters to the mosaic dataset

Steps:

1. Click the **Catalog** tab to expand the window.
2. Right-click the Viewpoint mosaic dataset and click **Add Rasters**.
3. The **Raster Type** should be **Raster Dataset**.
4. Click the drop-down arrow and click **Workspace**.
5. Click the **Input** browse button.
6. Navigate to `C:\arcgis\ArcTutor\Raster\Data\Amberg.tif` and click **Add**.
7. Check **Update Overviews**.
8. Click **OK** to run the tool.
9. Once the process is complete, click **Close**.
The raster datasets are added to the mosaic dataset. The footprints are created for each raster dataset, and the boundary is generated for the entire mosaic dataset. The overviews are then generated for the entire mosaic dataset.

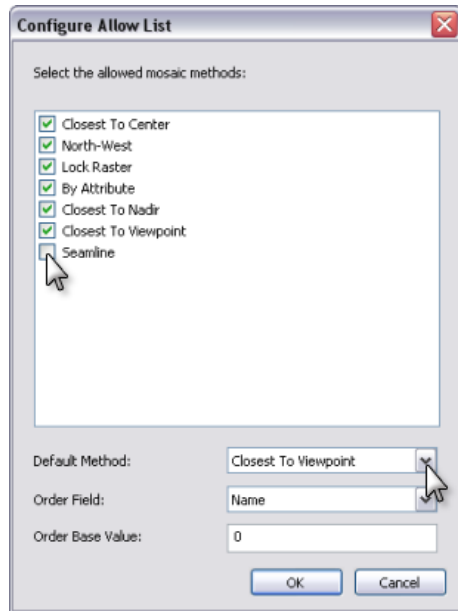
10. You may need to click the Full Extent button to view the mosaic dataset.



Set the mosaic methods

Steps:

1. Right-click the Viewpoint mosaic dataset and click **Properties**.
2. Click the **Defaults** tab.
3. Click the **Allowed Mosaic Methods** ellipse button .
This opens the **Configure Allow List** dialog box.
4. Uncheck **Seamline**.
5. Verify that **Closest To Viewpoint** is checked.
This is the mosaic method that will be used to view the multiple viewpoints in your mosaic dataset.
6. Click the **Default Method** drop-down arrow and click **Closest To Viewpoint**.
By setting this as the default, the user of the mosaic dataset does not have to change the properties so they can use the Closest To Viewpoint mosaic method.



7. Click **OK** to close the **Configure Allow List**.
8. Click **OK** to close the **Mosaic Dataset Properties** dialog box.

Set the mosaic method in the Image

The default mosaic method change is not reflected in the Image. You can either remove the mosaic dataset from the map document and re-add it, or you can modify the properties of the Image layer. In the steps below, you will edit the Image layer properties.

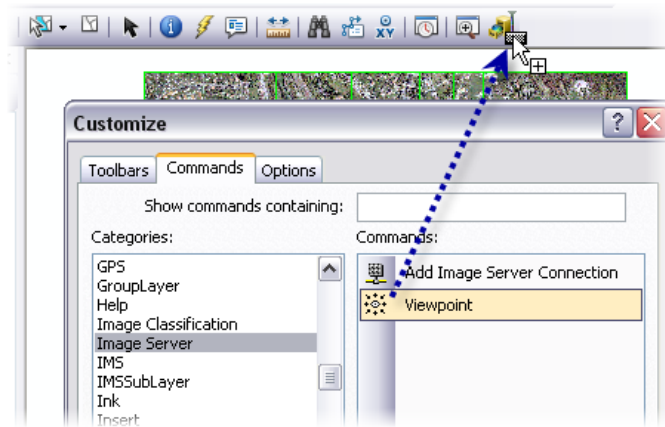
Steps:

1. Expand the **Viewpoint** layer in the table of contents.
2. Right-click **Image** and click **Properties**.
3. Click the **Mosaic** tab.
4. Click the **Mosaic Method** drop-down arrow and click **Closest To Viewpoint**.
5. Click **OK** to close the **Layer Properties** dialog box.

Add the Viewpoint tool

Steps:

1. Click **Customize** on the main menu and click **Customize Mode**.
2. Click the **Commands** tab.
3. Scroll through the **Categories** list and click **Image Server**.
4. Drag the **Viewpoint** button and drop it onto a toolbar.



5. Click **Close** on the **Customize** dialog box.

Explore the different view points

Steps:

1. Click the **Viewpoint** button you added.
This opens the dockable **Viewpoint** window. You can move this window around your display to an appropriate location.
2. Zoom in to an area in the mosaicked image that appears to have lots of overlapping raster datasets. You will need to zoom in to a scale of approximately 1:1100.
3. Click one of the arrow buttons on the **Viewpoint** window and click **Apply**.
4. Continue clicking the arrow buttons and **Apply** to see the different viewpoints.
You may want to pan around the image to test this functionality in different areas using different overlapping images.

You have now learned how to create a mosaic dataset to use the Closest To Viewpoint mosaic method and how to modify the properties of a mosaic dataset to use the Closest To Viewpoint mosaic method. You have also learned how to access the Viewpoint window.

Exercise 4: Creating a mosaic dataset using a raster type for orthorectification

In this exercise, you will be setting up a mosaic dataset using raw aerial imagery, a DEM, and some parameter files. The imagery added to this mosaic dataset has been processed with MATCH-AT and will be added to the mosaic dataset using the MATCH-AT raster type.

This exercise does not rely on any previous exercises.

Before you begin, it is assumed that you have installed the tutorial on the C:\ drive. If not, you will need to edit the hard-coded paths to the data in the MATCH-AT project file (Amberg_MAT2.prj in

\arcgis\ArcTutor\Raster\Data\Amberg_scans\Match-AT Parameters). This is a text file and can be edited in any text editor. This project file is a text file you can open in any text editor program (such as Notepad or WordPad). Search for the string C:\ImageServerTutorial\Data\Amberg_scans\Scans and replace it with your path to the \Scans folder containing the .tif files. This path appears 16 times in this file.

For example, if your path is D:\mydata, you will likely replace text in the line:

\$PHOTO_FILE: C:\ImageServerTutorial\Data\Amberg_scans\Scans\110211.tif

with

\$PHOTO_FILE: D:\mydata\ImageServerTutorial\Data\Amberg_scans\Scans\110211.tif

Complexity:
Beginner

Data Requirement:
ArcGIS Tutorial Data Setup


Data Path:
C:\arcgis\ArcTutor\Raster\Data

Goal:
To create a mosaic dataset using the MATCH-AT raster type, which will create on-the-fly orthorectified mosaicked images

Start ArcMap

Steps:


1. Start ArcMap by clicking **Start > All Programs > ArcGIS > ArcMap 10.**
2. Click **Cancel** on the **ArcMap - Getting Started** window.
This window may not open if you've previously opted not to show it.

 **Note:** You will be setting the default map document's geodatabase later in this exercise.

Create a file geodatabase

If you have already created the ImageGDB in another exercise, you can skip this section of steps.

Steps:

1. Click the Catalog window button  on the Standard toolbar.
This opens the **Catalog** window.
2. In the **Location** text box, type C:\arcgis\ArcTutor\Raster and press ENTER.
This location is added to the Catalog tree under the Folders Connection heading.
If your tutorial data was installed in a different location, alter the path according to your installation location.

3. Right-click the Raster folder and click **New > Folder**.
4. Name the folder `Exercises`.
5. Right-click the Exercises folder and click **New > File Geodatabase**.
6. Rename the new file geodatabase `ImageGDB`.

Set the default geodatabase

Each map document has a default geodatabase, which is the home location for the spatial content of your map. This location is used for adding datasets and saving resulting datasets created by various editing and geoprocessing operations.

[Learn about the default geodatabase](#)

Steps:

1. Right-click the ImageGDB geodatabase in the **Catalog** window and click **Make Default Geodatabase**.

Create a new mosaic dataset

Steps:

1. Right-click the ImageGDB in the **Catalog** window and click **New > Mosaic Dataset**. This opens the [Create Mosaic Dataset tool](#).
2. Type `AmbergOrtho` in the **Mosaic Dataset Name** text box.
3. Click the **Coordinate System** browse button .
4. Click **Select**.
5. Double-click the **Projected Coordinate Systems** folder, double-click the **National Grids** folder, double-click the **Germany** folder, select **Germany Zone 4.prj**, then click **Add**.
6. Click **OK** to close the **Spatial Reference Properties** dialog box.
7. Click **OK** on the Create Mosaic Dataset tool window. The reporter window opens.
8. Once the process is complete, click **Close**.
The `AmbergOrtho` mosaic dataset is created in the geodatabase and added to the ArcMap table of contents. This is an empty mosaic dataset. You will be adding raster datasets to it in the next steps.

When the mosaic dataset is added to the table of contents, it is added as a group layer. The top level has the name of the mosaic dataset--`AmbergOrtho`. There are also empty `Boundary`, `Footprint`, and `Image` layers.

Add rasters to the mosaic dataset

Steps:


1. Right-click the `AmbergOrtho` mosaic dataset in the **Catalog** window and click **Add Rasters**.

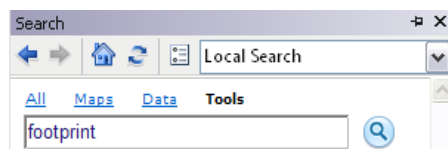
This opens the [Add Rasters To Mosaic Dataset tool](#).

2. In the **Raster Type** list, choose **Match-AT**.
3. Click the **Properties** button .
The **Raster Type Properties** dialog box is opened. Here, you will enter specific information about the DEM and the location of the camera file.
4. Click the **Properties** tab.
5. Click the **DEM** radio button.
6. Click the browse button and navigate to
C:\ArcGIS\ArcTutor\Raster\Data\Amberg_Scans\DEM.
7. Click the **Show of type** drop-down arrow and click **Raster datasets**.
8. Click the 01x01.flt file and click **Add**.
9. Click the **Auxiliary Inputs** tab.
10. Click the **Camera** browse button .
11. Navigate to C:\ArcGIS\ArcTutor\Raster\Data\Amberg_Scans\Match-AT Parameters, click the CAMERA file, then click **Open**.
12. Click **OK** to close the dialog box.
13. Click the **Input** browse button .
14. Navigate to C:\ArcGIS\ArcTutor\Raster\Data\Amberg_Scans\Match-AT Parameters\Amberg_MAT2.prj and click **Open**.
15. Click **OK** to run the tool.
16. Once the process is complete, click **Close**.
The raster datasets are added to the mosaic dataset. The footprints are created for each raster dataset, and the boundary is generated for the entire mosaic dataset.

Shrink the footprints

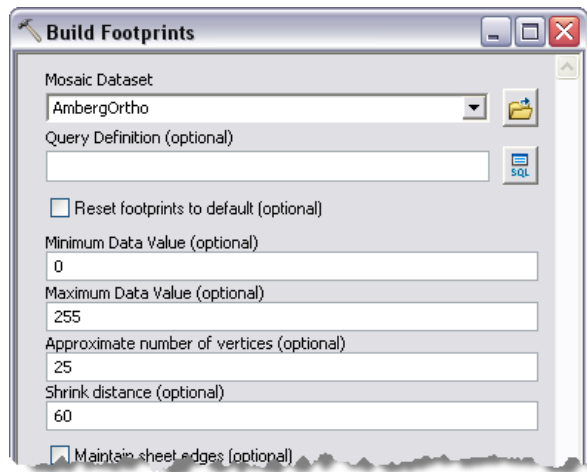
Steps:

1. Click the **Search window** button .
2. Click **Tools**.
3. Type `footprint` and click the **Search** button .

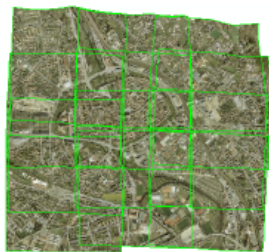


4. Click **Build Footprints** in the returned list.
The Build Footprints tool is opened.
5. Click the **Mosaic Dataset** drop-down arrow and click **AmbergOrtho**.

6. Type 0 in the **Minimum Data Value** text box.
7. Type 255 in the **Maximum Data Value** text box.
8. Type 60 in the **Shrink Distance** text box.



9. Click **OK**.
10. Once the process is complete, click **Close**.
The footprints will be updated in the display view.



Build the overviews

Steps:

1. Right-click the AmbergOrtho mosaic dataset in the **Catalog** window and click **Build Overviews**.
This opens the Build Overviews tool.
2. Accept the defaults and click **OK**.
3. Once the process is complete, click **Close**.

The mosaic dataset has been created and is ready to publish as an image service using ArcGIS Server. You can also use the mosaic dataset as a layer within ArcMap or ArcGlobe.

Exercise 5: Color balancing a mosaic dataset

In this exercise, you will create a mosaic dataset wherein all the raster datasets will be color balanced using geoprocessing tools in ArcMap.

This exercise does not rely on any previous exercises.

Before you begin, it is assumed that you have installed the tutorial at C:\arcgis\ArcTutor\Raster\Data. If not, make the appropriate path changes throughout this tutorial so it works properly for you.

Complexity:
Beginner

Data Requirement:
ArcGIS Tutorial Data Setup


Data Path:
C:\arcgis\ArcTutor\Raster\Data

Goal:
Create a mosaic dataset and apply a color correction to balance the mosaicked image.

Start ArcMap

Steps:


1. Start ArcMap by clicking **Start > All Programs > ArcGIS > ArcMap 10.**
2. Click **Cancel** on the **ArcMap - Getting Started** window.
This window may not open if you've previously opted not to show it.

 **Note:** You will be setting the default map document's geodatabase later in this exercise.

Create a file geodatabase

If you have already created ImageGDB in another exercise, you can skip this section of steps.

Steps:

1. Click the Catalog window button  on the Standard toolbar.
This opens the **Catalog** window.
2. In the **Location** text box, type C:\arcgis\ArcTutor\Raster and press ENTER.
This location is added to the Catalog tree under the Folders Connection heading.
If your tutorial data was installed in a different location, alter the path according to your installation location.
3. Right-click the Raster folder and click **New > Folder**.
4. Name the folder `Exercises`.
5. Right-click the Exercises folder and click **New > File Geodatabase**.
6. Rename the new file geodatabase `ImageGDB`.

Set the default geodatabase

Each map document has a default geodatabase, which is the home location for the spatial content of your map. This location is used for adding datasets and saving resulting datasets created by various editing and geoprocessing operations.

[Learn about the default geodatabase](#)

Steps:

1. Right-click the ImageGDB geodatabase in the **Catalog** window and click **Make Default Geodatabase**.

Create a new mosaic dataset

Steps:

1. Right-click ImageGDB in the **Catalog** window and click **New > Mosaic Dataset**. This opens the **Create Mosaic Dataset** tool dialog box.
2. Type `ColorCorrected` in the **Mosaic Dataset Name** text box.
3. Click the **Coordinate System** browse button .
4. Click **Import**.
5. Navigate to `C:\ArcGIS\ArcTutor\Raster\Data\Orthos`, click the first file listed, then click **Add**.
6. Click **OK** to close the **Spatial Reference Properties** dialog box.
7. Click **OK** on the **Create Mosaic Dataset** tool dialog box.
If the reporter window opens, click **Close** once the process is complete.

The `ColorCorrected` mosaic dataset is created in the geodatabase and added to the ArcMap table of contents. This is an empty mosaic dataset. You will be adding raster datasets to it in the next steps.

When the mosaic dataset is added to the table of contents, it is added as a mosaic layer, which is essentially a special group layer. The top level has the name of the mosaic dataset—`ColorCorrected`. There are also empty `Boundary`, `Footprint`, and `Image` layers.

Add rasters to the mosaic dataset

Steps:

1. Right-click the `ColorCorrected` mosaic dataset in the **Catalog** window and click **Add Rasters**. This opens the **Add Rasters To Mosaic Dataset** tool dialog box.
2. **Raster Type** should be set to **Raster Dataset**.
3. Click the drop-down arrow and click **Workspace**.
4. Click the **Input** browse button .
5. Navigate to `C:\arcgis\ArcTutor\Raster\Data\Orthos` and click **Add**.
6. Expand **Advanced Options**.
Normally, you would also check the options **Build Raster Pyramids** and **Calculate Statistics**; however, these input files are MrSIDs and already have this information stored within their format, so you do not need to check these options.
7. Click **OK** to run the tool.
If the reporter window opens, click **Close** once the process is complete.

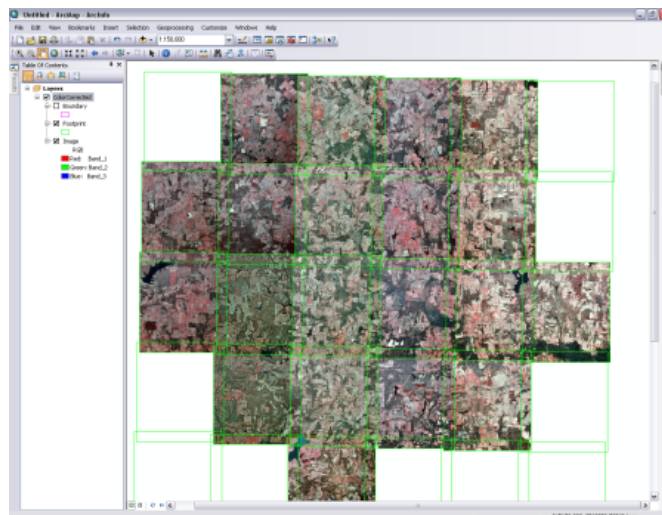
The raster datasets are added to the mosaic dataset. The footprints are created for each raster dataset, and the boundary is generated for the entire mosaic dataset.

- You may need to click the **Full Extent** button to view the mosaic dataset.

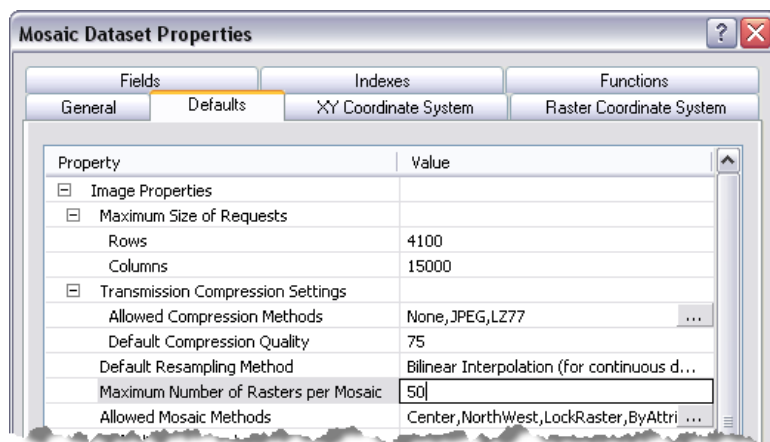
Color balance the mosaic dataset

Steps:

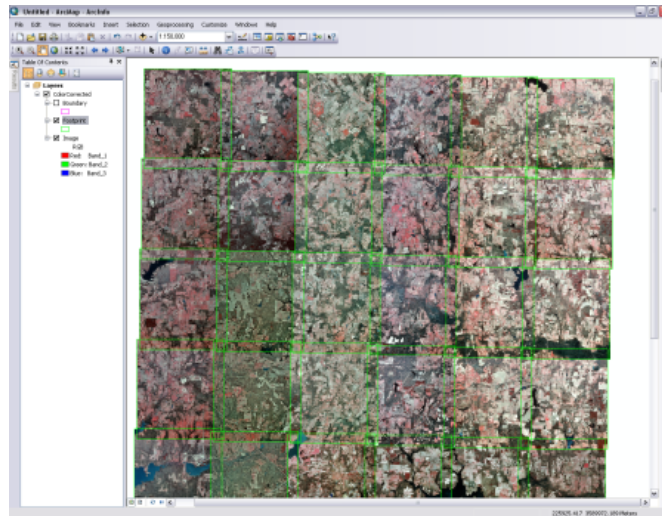
- In the scale box on the **Standard** toolbar, type 150,000 and press ENTER. At this scale, you should see the images in the mosaic dataset. They may not all be drawn because, by default, there is a display limit of 20 rasters.




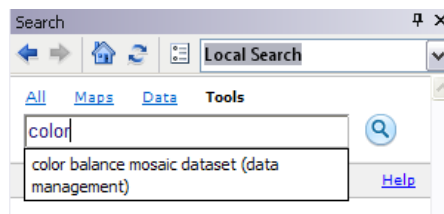
- In the **Catalog** window, right-click the ColorCorrected mosaic dataset and click **Properties**. This opens the **Mosaic Dataset Properties** dialog box.
- Click the **Defaults** tab.
- Click in the **Maximum Number of Rasters per Mosaic** text box and type 50.



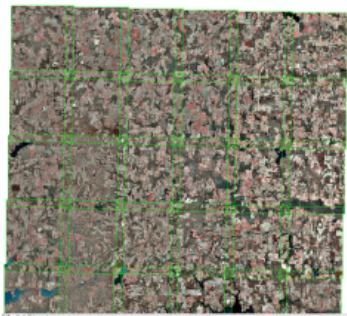
- Click **OK** to close the **Mosaic Dataset Properties** dialog box.
- Click the **Refresh** button at the bottom of the window.



7. Click the **Search Window** button .
8. Click **Tools**.
9. Type **Color** in the Search window and click the text that appears.



10. Click **Color Balance Mosaic Dataset** in the returned list to open the tool.
11. Click the **Mosaic Dataset** drop-down arrow and choose the **ColorCorrected** mosaic dataset.
12. Click the **Color Surface Type** drop-down arrow and click **FIRST_ORDER**.
13. Click **OK** to run the tool.
If the reporter window opens, click **Close** once the process is complete.
The display view is updated with a color balanced image.



Generate the overviews

Steps:

1. In the **Catalog** window, right-click the ColorCorrected mosaic dataset and click **Build Overviews**.
This opens the Build Overviews tool dialog box.
2. Click **OK** to run the tool.
If the reporter window opens, click **Close** once the process is complete.

The mosaic dataset is created and is ready to publish as an image service using ArcGIS Server. You can also use the mosaic dataset as a layer within ArcMap or ArcGlobe.

Exercise 6: Color balancing a raster catalog

In this exercise, you will color balance the raster datasets within a raster catalog and create a single raster dataset from the color-balanced raster catalog. This exercise takes you through three color correction options to show you how you can experiment with the options to define the correct color correction for your data.

This exercise does not rely on any previous exercises.

Before you begin, it is assumed that you have installed the tutorial at C:\arcgis\ArcTutor\Raster\Data. If not, make the appropriate path changes throughout this tutorial so it works properly for you.

Complexity:
Beginner

Data Requirement:
ArcGIS Tutorial Data Setup


Data Path:
C:\arcgis\ArcTutor\Raster\Data

Goal:
Color balance the raster datasets within a raster catalog and export to a mosaicked raster dataset.

Start ArcMap

Steps:


1. Start ArcMap by clicking **Start > All Programs > ArcGIS > ArcMap 10.**
2. Click **Cancel** on the **ArcMap - Getting Started** window.
This window may not open if you've previously opted not to show it.

 **Note:** You will be setting the default map document's geodatabase later in this exercise.

Create a file geodatabase

If you have already created the ImageGDB in another exercise, you can skip this section of steps.

Steps:

1. Click the Catalog window button  on the Standard toolbar.
This opens the **Catalog** window.
2. In the **Location** text box, type C:\arcgis\ArcTutor\Raster and press ENTER.
This location is added to the Catalog tree under the Folders Connection heading.
If your tutorial data was installed in a different location, alter the path according to your installation location.
3. Right-click the Raster folder and click **New > Folder.**
4. Name the folder `Exercises`.
5. Right-click the Exercises folder and click **New > File Geodatabase.**
6. Rename the new file geodatabase `ImageGDB`.

Set the default geodatabase

Each map document has a default geodatabase, which is the home location for the spatial content of your map. This location is used for adding datasets and saving resulting datasets created by various editing and geoprocessing operations.

[Learn about the default geodatabase](#)

Steps:

1. Right-click the ImageGDB geodatabase in the **Catalog** window and click **Make Default Geodatabase**.

Create a new raster catalog

You will be creating an unmanaged raster catalog. This is a raster catalog that contains pointers to the source data instead of loading the raster datasets within.

Steps:

1. Right-click the ImageGDB in the **Catalog** window and click **New > Raster Catalog**. This opens the Create Raster Catalog tool.
2. Type `ColorBalanced` in the **Raster Catalog Name** text box.
3. Click the **Coordinate System for Geometry Column** button .
4. Click **Import**.
5. Navigate to C:\ArcGIS\ArcTutor\Raster\Data\Orthos, click the first MrSID file, then click **Add**.
6. Click **OK** to close the **Spatial Reference Properties** dialog box.
7. Click the **Raster Management Type** drop-down arrow and click **UNMANAGED**.
8. Click **OK** on the Create Raster Catalog tool window.

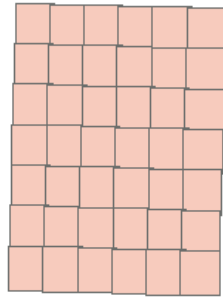
If the reporter window opens, click **Close** once the process is complete.

The ColorBalanced raster catalog is created in the geodatabase and added to the ArcMap table of contents. This is an empty raster catalog. You will be adding raster datasets to it in the next steps.

Add raster datasets to the raster catalog

Steps:

1. Right-click the ColorBalanced raster catalog in the **Catalog** window and click **Load > Load From Workspace**. This opens the Workspace To Raster Catalog tool.
2. Click the Input Workspace browse button .
3. Navigate to C:\ArcGIS\ArcTutor\Raster\Data\Orthos and click **Add**.
4. Click **OK** on the Create Raster Catalog tool window.
If the reporter window opens, click **Close** once the process is complete.
5. You may need to click the **Full Extent** button to view the mosaic dataset.



Color correcting the raster catalog

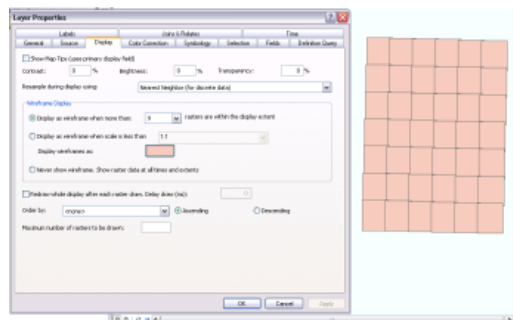
The color correction is stored within the Layer Properties; therefore, from within that dialog box, you can interactively modify and view the results.

In the following steps, you will try several color correction methods.

Turn off the wireframe

Steps:

1. Set up your display so you can see the raster catalog and the Layer Properties dialog box. It is recommended that you modify the scale of the display to 1:500,000 and pan the display so that the raster catalog is to one side. This way, the Layer Properties dialog box does not cover the raster catalog.
2. Right-click **ColorBalanced** in the table of contents and click **Properties**.
3. Click the **Display** tab.



- Click the **Never show wireframe** radio button and click **OK**.
The raster catalog will redraw by rendering the rasters and not the wireframe. Now you can see each raster dataset in the raster catalog.

Color matching

Color matching matches the overlapping areas between the reference raster and the source rasters. Color matching is not recommended for this dataset because there is not much overlap. However, you can go through the steps to see how this process is done and see the results.

Steps:

1. Click the **Select Features By Geometry** button on the **Tools** toolbar.
2. Click a raster dataset within the raster catalog.
The selected footprint will be highlighted.



3. Right-click **ColorBalanced** in the table of contents and click **Properties**.
4. Click the **Color Correction** tab.
5. Check **Color Matching**.
6. Click the **Define From Selection** radio button.
7. Click **Apply**.
You will see this result is very poor. This is because there are almost no overlapping pixels within this raster catalog. Therefore, this method should not be used.
8. Uncheck **Color Matching** and click **Apply**.
9. Click **OK** to close the dialog box.
10. Click the **Clear Selected Features** button on the Tools toolbar.

Histogram balancing

Histogram balancing changes each of the pixel's values toward the target histogram. Histogram balancing works best when each raster catalog items have similar histogram distributions.

Steps:

1. Click the **Color Correction** tab.
2. Check **Color Balancing**.
3. Click the **Balancing Method** drop-down and click **Histogram Balancing**.
4. Click **Apply**.
Once the raster catalog redraws, you will see that these results are better than the previous result, but still not correct.

Dodging balancing

When you use dodging, each of the pixel values are changed toward the target color. These values are used to determine the output value for each pixel. When using this method, you must also choose the type of target color surface to use, which will affect what the target color is. Dodging balancing tends to give the best result in most cases.


This final method will be one that provides the best correction for this dataset.

Steps:

1. Click the **Balancing Method** drop-down arrow and click **Dodging Balancing**.
2. Click the **Target Color Surface Type** drop-down arrow and select **First Order Surface**.
3. Check **Apply Contrast Adjustment**.
4. Click **Apply**.
First the target color surface statistics are calculated, then the color balancing is applied.
5. When the correction is complete, click **OK** to close the dialog box.

Create a color balanced raster dataset

You can export the raster catalog layer to a raster dataset from the table of contents (as described in the steps below) or you can use the [Raster Catalog To Raster Dataset tool](#) and check the **Color Balancing** check box.

 **Note:** The process to export to a raster dataset may take some time and can be skipped as part of this exercise.

Steps:

1. Right-click **ColorBalanced** in the table of contents and click **Data > Mosaic Raster Catalog**.
2. Click the **Location** browse button .
3. Navigate to and select the ImageGDB and click **Add**.
4. Type `BalancedImage` in the **Name** text box.
5. Click **Save**.
6. Click **Yes** to add the exported raster dataset to **ArcMap**.

You've now created a single color-balanced raster dataset from many raster datasets using a raster catalog. You can close ArcMap without saving the map document.

Exercise 7: Adding a satellite sensor raster type to a mosaic dataset

In this exercise, you will create a mosaic dataset containing a Landsat 7 ETM+ scene using geoprocessing tools within ArcMap. This will be a multiband, pan-sharpened mosaic dataset. You will edit the raster type's properties to modify some default parameters that are applied when adding this data to the mosaic dataset.

This exercise does not rely on any previous exercises.

Before you begin, it is assumed that you have installed the tutorial at C:\arcgis\ArcTutor\Raster\Data. If not, make the appropriate path changes throughout this tutorial so it works properly for you.

The data provided in the Landsat_p114r75 folder comes from Landsat.org/Tropical Rain Forest Information Center, a member of NASA's Federation for Earth Science Information Partners (ESIP) at Michigan State University (<http://www Landsat.org/>).

Complexity:
Intermediate

Data Requirement:
ArcGIS Tutorial Data Setup


Data Path:
C:\arcgis\ArcTutor\Raster\Data

Goal:
Learn how to add the Landsat 7 ETM+ raster type to a mosaic dataset.

Start ArcMap

Steps:


1. Start ArcMap by clicking **Start > All Programs > ArcGIS > ArcMap 10**.
2. Click **Cancel** on the **ArcMap - Getting Started** window.
This window may not open if you've previously opted not to show it.

 **Note:** You will be setting the default map document's geodatabase later in this exercise.

Create a file geodatabase

If you have already created ImageGDB in another exercise, you can skip this section of steps.

Steps:

1. Click the Catalog window button  on the Standard toolbar.
This opens the **Catalog** window.
2. In the **Location** text box, type C:\arcgis\ArcTutor\Raster and press ENTER.
This location is added to the Catalog tree under the Folders Connection heading.
If your tutorial data was installed in a different location, alter the path according to your installation location.
3. Right-click the Raster folder and click **New > Folder**.
4. Name the folder `Exercises`.
5. Right-click the Exercises folder and click **New > File Geodatabase**.
6. Rename the new file geodatabase `ImageGDB`.

Set the default geodatabase

Each map document has a default geodatabase, which is the home location for the spatial content of your map. This location is used for adding datasets and saving resulting datasets created by various editing and geoprocessing operations.

[Learn about the default geodatabase](#)

Steps:

1. Right-click the ImageGDB geodatabase in the **Catalog** window and click **Make Default Geodatabase**.

Create a new mosaic dataset

Create a mosaic dataset to add the Landsat imagery that will be pan-sharpened.

Steps:

1. Right-click the ImageGDB in the **Catalog** window and click **New > Mosaic Dataset**. This opens the **Create Mosaic Dataset** tool dialog box.
2. Type `LandsatPS` in the **Mosaic Dataset Name** text box.
3. Click the **Coordinate System** browse button .
4. Click **Select**.
Do not click **Import** as the internal spatial reference of the files you will be adding are referenced to the wrong hemisphere.
5. Double-click the Projected Coordinate Systems folder, double-click the UTM folder, double-click the WGS 1984 folder, double-click the Southern Hemisphere folder, choose WGS 1984 UTM Zone 50S.prj, then click **Add**.
6. Click **OK** to close the **Spatial Reference Properties** dialog box.
7. Click **OK** on the **Create Mosaic Dataset** tool dialog box.
If the reporter window opens, click **Close** once the process is complete.

The LandsatPS mosaic dataset is created in the geodatabase and added to the ArcMap table of contents. This is an empty mosaic dataset. It is added as a mosaic layer, which is a special group layer. The top level has the name of the mosaic dataset—LandsatPS. There are also empty Boundary, Footprint, and Image layers. You will add the Landsat imagery to it in the next steps.

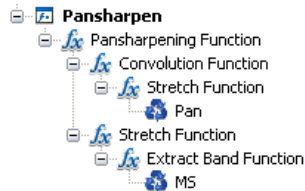
Add rasters to the mosaic dataset

Steps:

1. Right-click the LandsatPS mosaic dataset in the **Catalog** window and click **Add Rasters**. This opens the **Add Rasters To Mosaic Dataset** tool dialog box.
2. In the **Raster Type** list, choose **Landsat 7 ETM+**.
3. Click the **Properties** button .

The **Raster Type Properties** dialog box opens. Here you will enter information to define how the data will be added and any processing that will be applied, such as the bands that will be added and the enhancement that will be applied to the data.

4. Click the **General** tab.
5. Click the **Processing Templates** drop-down arrow and click **Pansharpen**.
The processing templates define how the data will be added to the mosaic dataset; for example, the template you select creates a multiband image that is pan-sharpened once you zoom in to the pixel level of the higher-resolution panchromatic band.
6. Click the **Properties** tab.
Here you can modify some of the defaults. For example, you can modify the band combination by changing the order or removing some of the bands. The band combination is defined by a space-delimited list. You can also modify the type of histogram stretch you want applied and the type of pan-sharpening.
7. Type 1.5 in the **Percent Clip Minimum** and **Percent Clip Maximum** text boxes.
8. Check the **4th-band as infrared image** check box.
This ensures that the fourth band is calculated in the pan-sharpening algorithm.
9. Click **Apply**.
10. Click the **Functions** tab.
This tab displays the functions that are applied based on the processing template that you chose on the General tab. You chose the Pansharpen template.



The functions are applied to the imagery from the bottom of the chain to the top. You can see that the Pansharpen template creates a MS (multispectral) image, then uses the Extract Bands function to define the four bands used in the pan-sharpening algorithm. Both MS and Pan (panchromatic) images are enhanced using the Stretch function. A Convolution function, which is sharpening the Pan image, is applied, then the Pan and MS images are combined using the Pansharpening function.

You can add or edit the functions in the function chain prior to adding the data to the mosaic dataset. You won't be doing it in this exercise; however, if you do make modifications to the function chain or any of the properties on this dialog box, you can save the changes to a new raster type so you can use it again and be sure to apply the same settings. To save the changes, click the Save As button on the General tab.

11. Click **OK**.
12. Click the drop-down arrow and click **Workspace**.
You only have one image scene to add, so you could point to the single file needed; however, if you're adding multiple images organized into a folder, you want to use the Workspace option.

13. Click the **Input** browse button .
14. Navigate to C:\arcgis\ArcTutor\Raster\Data, click Landsat_p114r75, then click **Add**.
15. Check **Update Overviews**.
16. Click **Advanced Options** to expand the list of parameters.
17. Check **Build Raster Pyramids**.
18. Check **Calculate Statistics**.
It is generally recommended that you build pyramids and calculate statistics on the data that is added to a mosaic dataset. Statistics improve the display, and pyramids reduce the number of overviews that are generated. By checking these check boxes, the operations are run prior to calculating the cell sizes or overviews. If pyramids or statistics exist for a raster dataset, they are not regenerated.
19. Check **Build Thumbnails**.
20. Type `Pan-sharpening Landsat imagery` in the **Operation Description** text box.
This parameter allows you to add descriptive text to the log that is maintained by the mosaic dataset.
21. Click **OK** to run the tool.
If the reporter window opens, click **Close** once the process is complete.

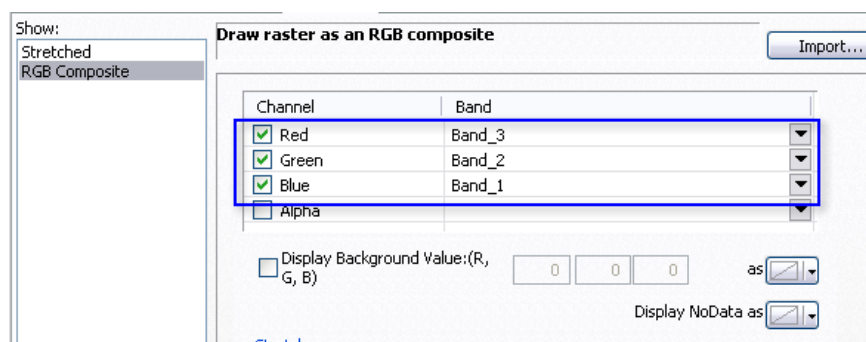
The Landsat 7 ETM+ satellite image is added to the mosaic dataset. The footprints are created for each raster dataset, and the boundary is generated for the entire mosaic dataset. The overviews are then generated for the entire mosaic dataset.
22. You may need to click the **Full Extent** button to view the mosaic dataset.

Change the band combination

By default, the bands are displayed in the order they were added to the mosaic dataset. Therefore, the default band combination is 1, 2, 3 for red, green, and blue.

Steps:

1. Right-click **Image** in the table of contents and click **Properties**.
The **Layer Properties** dialog box for the mosaic dataset image is opened.
2. Click the **Symbology** tab.
3. Click the drop-down arrows to change the band combination to 3, 2, 1.



- Click **OK**.

A natural or true-color image is displayed.

Examine the tables

There are three main tables that are maintained with all mosaic datasets: the Attribute table, Logs table, and Raster Type table. The Attribute table contains specific metadata information for each raster dataset in the mosaic dataset. You can also add and populate fields. These fields can be used when defining a query on the mosaic dataset (or image service). If you don't want all the fields exposed to those using the mosaic dataset, you can edit Allowed Fields on the Mosaic Dataset Properties dialog box. The Logs table maintains a list of every action that was performed on the mosaic dataset, such as adding data, creating service overviews, and removing data. The Raster Type table maintains a list of all the raster types used to create the mosaic dataset.

Steps:

- Right-click LandsatPS in the ArcMap table of contents and click **Open > Raster Type Table**. There are two rows in this table. The first row (OBJECTID = 1) identifies the Landsat 7 ETM+ raster type that you used to add the data to the mosaic dataset. The operation description you added is displayed in the Description column. The second row (OBJECTID = 2) identifies that there are overviews generated for this mosaic dataset and the time at which they were created.
- Close the table.
- Zoom in to your mosaic dataset so you're viewing it at approximately a 1:200,000 scale.
- Right-click LandsatPS in the ArcMap table of contents and click **Open > Attribute Table**. You should see four rows in the table. The name of the rasters or their source datasets are listed in the Name column. If you scroll across the table, you will see the Tag column. The Tag column is associated with the sources identified in the Pansharpen function chain. The MS tag represents the multispectral image, and the Pansharpened tag represents the pan-sharpened image.

Name	MinPS *	MaxPS *	LowPS *	HighPS *	Category	Tag
p114r075_7x20000501.met	28.5	342	28.5	114	1	MS
p114r075_7x20000501.met;p114r075_7x20000501.met	0	28.5	14.25	114	1	Pansharpened
Ov_i02_L01_R00000004_C00000003.tif	0	1026	342	342	2	Dataset
Ov_i02_L02_R00000001_C00000001.tif	1026	51300	1026	1026	2	Dataset

MinPS and MaxPS indicate the pixel resolutions where the images will be displayed. There are only two overview images. These can be identified by the Ov_ prefix in their name. When you view the image at its full extent, the bottom overview image is displayed, and as you zoom in, requiring a higher pixel size, you see the image above it in the table. Next you see the source imagery identified by the MS tag. This is displayed when you are viewing an image at a pixel resolution between 28.5 meters to 342 meters. When you zoom in to a pixel resolution smaller than 28.5 meters, you view the pan-sharpened image.

- Type 80000 into the scale box on the **Standard** toolbar. You are viewing the pan-sharpened image.

You can see some artifacts in the pan-sharpened image that were not present before. This is because the panchromatic image has some artifacts that the convolution filter is enhancing.

- Click the row under the **Raster** column representing the pan-sharpened image.
A gray button appears.

LandsatPS\Footprint			
	OBJECTID *	Raster	Name
	1	<Raster>	p114r075_7x20000501.met
	2	<Raster>	p114r075_7x20000501.met;p114r075_7x20000501.met
	3	<Raster>	Sw_i02_L01_R00000004_C00000003.tif

- Click the gray button.
This opens a window allowing you to preview the raster image, its properties and metadata, and the function chain used to generate the image.
- Click the **Functions** tab.
You see the same function chain that was displayed when you were adding imagery to the mosaic dataset. The only difference is there are specific files listed where earlier you saw MS and Pan.
- Right-click **Convolution Function** and click **Properties**.
- Click the **Convolution** tab.
- Click the **Type** drop-down arrow and click **Smooth Arithmetic Mean**.
This filter removes the artifacts that the Sharpen type was enhancing.
- Click **OK** to close the **Raster Function Properties** dialog box.
- Click **Apply**.
The display is updated and the artifacts are removed, resulting in a much nicer image.
- Close the table window.

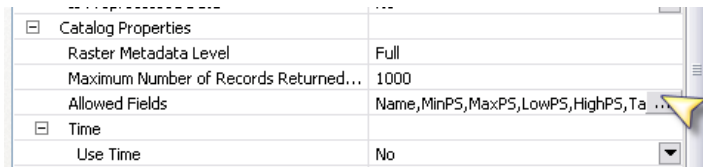
Properties and metadata

Steps:

- In the **Catalog** window, right-click the LandsatPS mosaic dataset and click **Properties**.
The **Mosaic Dataset Properties** dialog box opens. Here you can view the properties for the entire mosaic dataset, including the setting that will affect how users interact with the dataset. You can also edit functions that will be applied to the entire mosaic dataset.
- Click the **Defaults** tab.
- Click the ellipsis button next to the **Allowed Mosaic Methods** row.

Transmission Compression Settings	
Allowed Compression Methods	None, JPEG, LZ77
Default Compression Quality	75
Default Resampling Method	Bilinear Interpolation (for continuous d...
Maximum Number of Rasters per Mosaic	20
Allowed Mosaic Methods	Center, NorthWest, LockRaster, ByAttri...
Default Sorting Order	Ascending
Default Mosaic Operator	First

4. Uncheck **Seamline**, as no seamline is created as part of this exercise.
5. Click **OK**.
6. Click the ellipsis button next to the **Allowed Fields** row.



7. Uncheck the following: Name, LowPS, HighPS, GroupName, ProductName, ZOrder, SOrder, StereoID, Shape_Length, and Shape_Area.
If you serve this dataset as an image service, only the fields checked will be accessible.
8. Click **OK** to close the **Mosaic Dataset Properties** dialog box.
9. In the Catalog window, right-click the LandsatPS mosaic dataset and click **Item Description**.
The **Item Description** dialog box is opened. Here you can view or edit metadata information for the mosaic dataset.
10. Click the **Preview** tab.
11. Click the **Create Thumbnail** button .
12. Click the **Description** tab.
The thumbnail you created is displayed on this tab.
13. Click the **Edit** button .
14. Type `Landsat image` in the **Title** text box.
15. Type `Landsat 7 ETM+ image within Australia` in the **Summary** text box.
16. Type your name in the **Credits** text box.
17. Click the **Save** button .
18. Close the window.

You have completed creating a mosaic dataset, adding data, and modifying the properties and metadata. You can share the ImageGDB location to make this mosaic dataset available within your organization, or serve this mosaic dataset as an image service using ArcGIS Server.