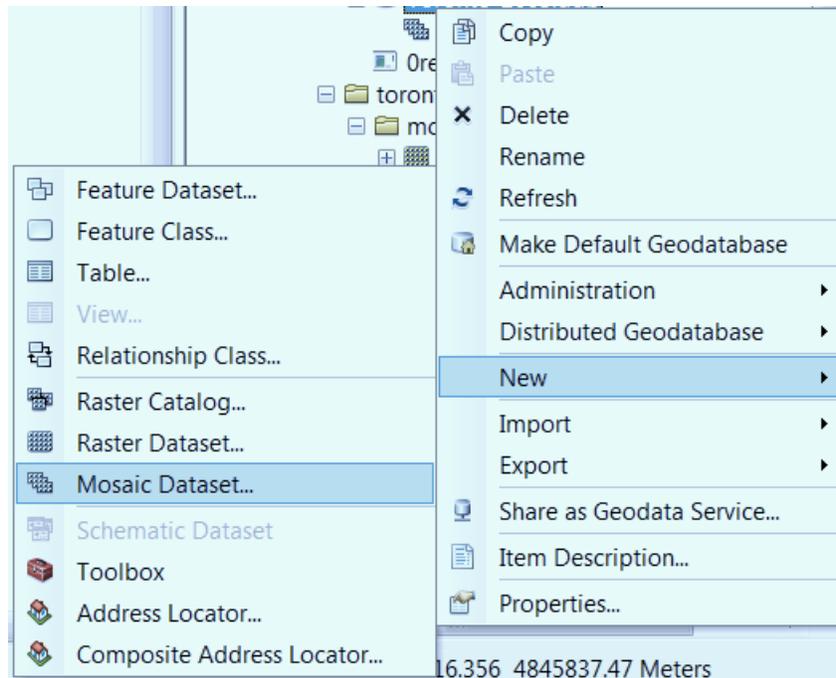


# Generating Orthoimagery Raster Mosaics

---



**UNIVERSITY OF WATERLOO**

**GEOSPATIAL CENTRE**

[uwaterloo.ca/library/geospatial](http://uwaterloo.ca/library/geospatial)

*This is a general purpose tutorial designed to show you how to stitch together any air photos. You can obtain digital orthoimagery tiles from the Geospatial centre to complete this tutorial by asking the staff during reference hours. This tutorial also references some slightly advanced ArcGIS tools – you may wish to look at some of our other tutorials or request assistance from a staff member for clarification on how to use these tools.*

## Determining your extent

Orthoimagery is stored in fixed tile size format, meaning that an area (Toronto for example) is comprised of hundreds, if not thousands of individual raster files. They all have very long, mostly numeric names which correspond to an index. The filename changes incrementally column-wise going north, starting at the left-most column and proceeding right.

ORTH0032010	ORTH0062010	ORTH0092010
ORTH0022010	ORTH0052010	ORTH0082010
ORTH0012010	ORTH0042010	ORTH0072010

Figure 1 - Simplified example of tile reference file

These tile references are a shapefile and can usually be found under a folder called Indexes located within the directory containing the ortho imagery, or as a shapefile with the imagery files.

To determine the extent of air photos that you wish to mosaic together, simply clip the index file to the extent you want to use and then use the attribute table of the newly created layer to import the necessary imagery. (To make your workflow slightly more efficient, identify the southernmost tile and the northernmost tile for each column and then mass select the tiles, making use of the filename pattern used). If prompted to generate pyramids when adding the raster files to your data frame, simply click 'OK'.

Once you have added the rasters you wish to mosaic to your data frame, the first step is to create a mosaic dataset.

## Creating a mosaic dataset object

A mosaic dataset is different from a raster data set in that it stitches together raster images on the fly, instead of having raster datasets permanently stitched together. As well, it can only be stored inside of a geodatabase, whereas a raster data set can be stored either in a regular folder or in a geodatabase.

- 1) Locate the geodatabase you wish to store your mosaic in. You can either store it in your default geodatabase, or create a new one in the folder of your choice by right clicking on a folder in Catalog, and selecting New > File Geodatabase.

- 2) Right click on the geodatabase and select New > Mosaic Dataset. Choose the name you want it to have, set the coordinate system to be representative of the area you are creating the mosaic of, and click OK. This may take a few seconds. The empty dataset should now appear in the Table of Contents.

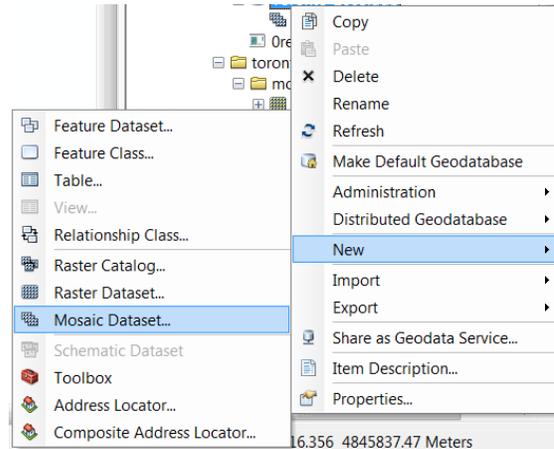


Figure 2 - Creating an empty mosaic

- 3) To populate the dataset with the rasters you have chosen, right click on the mosaic dataset in the Catalog pane and choose the Add Rasters option. If you have all the rasters you want in one folder (You either wish to mosaic an entire extent of orthoimagery or you have exported the section that you want to another folder), select Workspace from the dropdown menu for input data, and then click the folder icon and choose the folder of your choice. If you do not have your data all in one folder (Your data is a subset of a large folder of rasters), choose Dataset from the dropdown menu, select all the ortho layers from your Table of Contents and drag them into the window. Once you have your dataset loaded into the window, press OK and wait for the tool to finish running.

## Converting a mosaic dataset object to an actual raster

At this point, for your project you may be satisfied with the mosaic dataset for your purposes. However, you may want it to be one cohesive raster file. To do this, simply utilize the tool **Mosaic to New Raster (Data Management)**. Specify the output location as well as the file name (YourRasterNameHere.TIF), and set the number of bands to be 3 (Red band, green band, blue band in the case of aerial photography). Set the spatial reference to be the same as the input raster, and click OK.

*Warning – Converting a mosaic dataset to a raster takes a very long time with a large data set, so be sure to give yourself lots of time with this.*