

Practicals on Land Use/Cover & Change Detection

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Tutorial

Basics for image visualization and processing in ArcGIS

ArcGIS is a GIS software that contain some image processing tools. In this tutorial we will demonstrate how to use some of the basic image visualization and processing utilities of this software.

ArcGIS desktop has the following modules:

ArcMap  – it is an application for desktop geographic information systems (GIS) and mapping. ArcMap provides all the tools you need to put your data on a map and display it in an effective manner.

ArcCatalog  – after connecting to a folder, database, or geographic information system (GIS) server, you can browse through its contents with ArcCatalog. You can look for the map you want to print, draw a coverage, examine the values in a table, and find out which coordinate system a raster uses or read about why it was created.

ArcToolbox  – it provides a way to create new information by applying a pre-defined operation to existing data. Any alteration or information extraction you want to perform on your data involves a geoprocessing task. It can be a simple task, such as converting geographic data to a different format, or it can involve multiple tasks performed in sequence, such as those that clip, select, and then intersect datasets.

The visualization tools are mainly explored in the ArcMap module. Next, in this tutorial, we will be showing you how to:

1. Open an existent project in ArcMap
2. Import image data into ArcMap
3. Browse trough an image using ArcMap visualization tools
4. Browse trough an image using ArcMap Bookmarks
5. Basic image enhancements
6. Create an image stack

1. Open an existent project in ArcMap

a) *File* → *Open* (Figure 1); select the ArcMap project file (*.mxd);

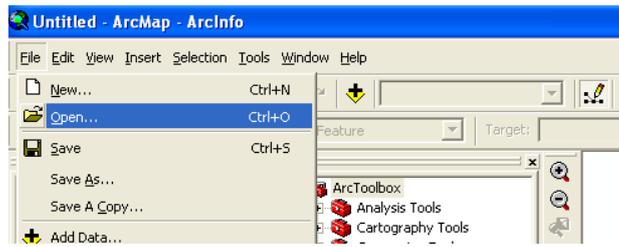


Figure 1

2. Import image data into ArcMap

a) *File* → *Add data* (Figure 2); select the stack file if importing multi-band images

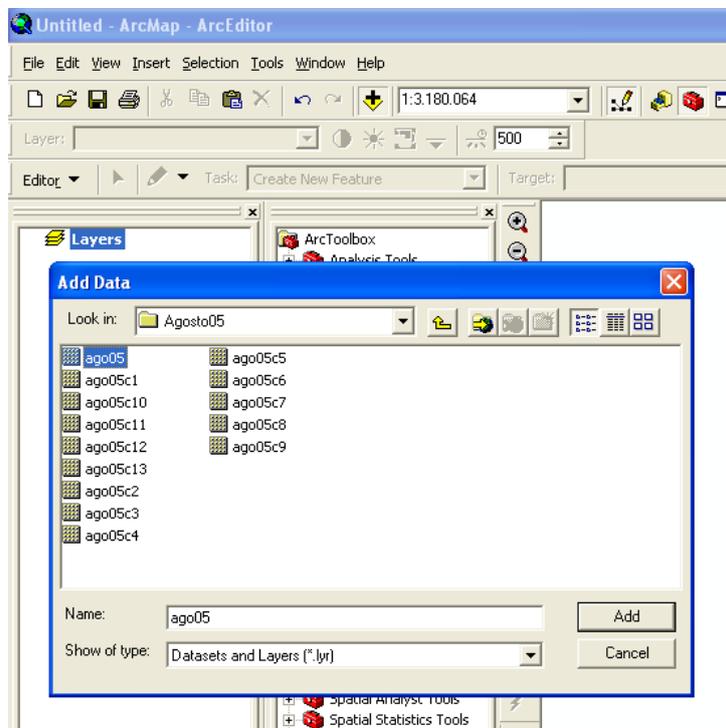


Figure 2

3. Browse through an image using ArcMap visualization tools

a) ArcMap visualization tools (Figure 3); with this set of tools one can zoom, pan, select, identify, etc, over a dataset.



Figure 3

4. Browse through an image using ArcMap Bookmarks

a) *View* → *Bookmarks* (Figure 4); by selecting existing bookmarks you can be orientated to specific predefined places on an image or data frame

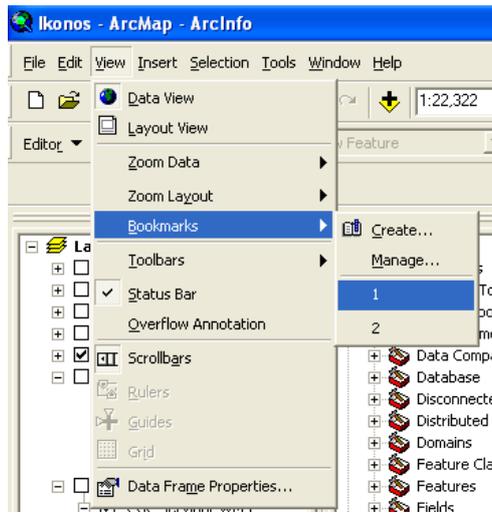


Figure 4

5. Basic image enhancements

- a) Right click image layer → *Properties* (Figure 5, 6)
 - i. Set different RGB compositions, in case of a multi-band (stack) image
 - ii. Set single band visualization
 - iii. Set different stretch types (pre-defined or user defined)
 - iv.

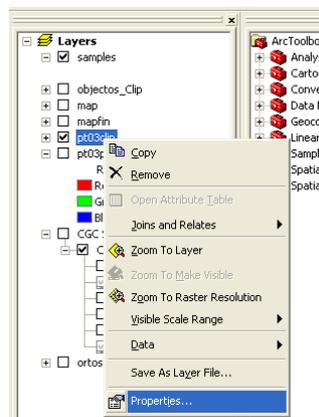


Figure 5

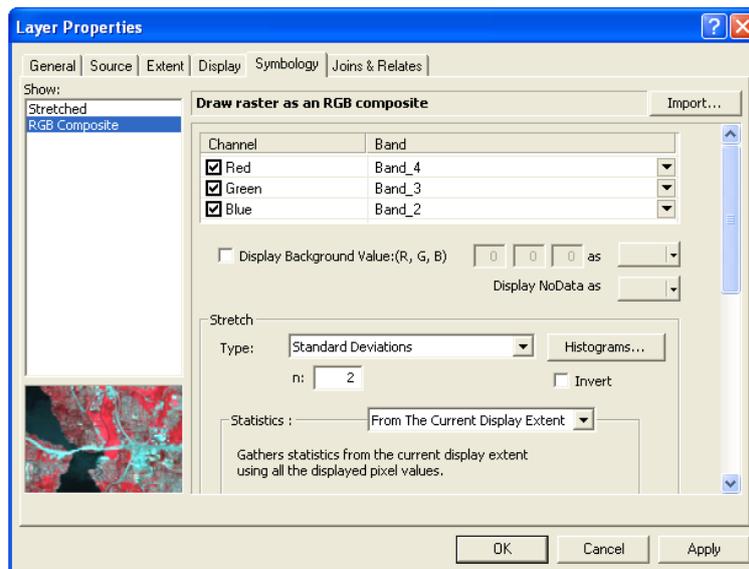


Figure 6

6. Create an image stack

- a) *ArcToolbox* → *Data Management Tools* → *Raster* → *Composite Bands* (Figure 7); this tool creates a single raster dataset from multiple bands. This is useful when you have many single-band rasters, covering the same spatial extent, and want to create a multiple-band raster dataset. Creating a multiple-band raster dataset allows you to display the bands together as an RGB composite.
- i. Select the input raster bands
 - ii. Set the name of the output stack file

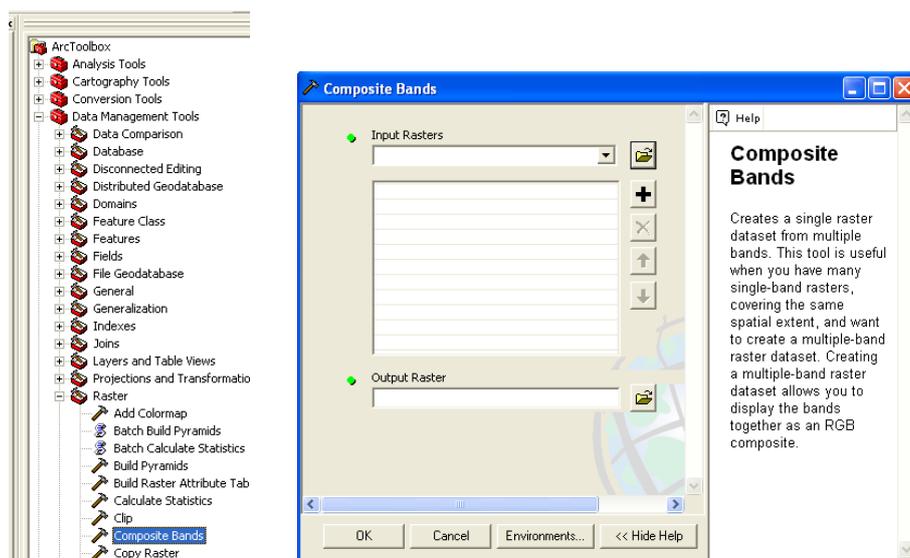


Figure 7