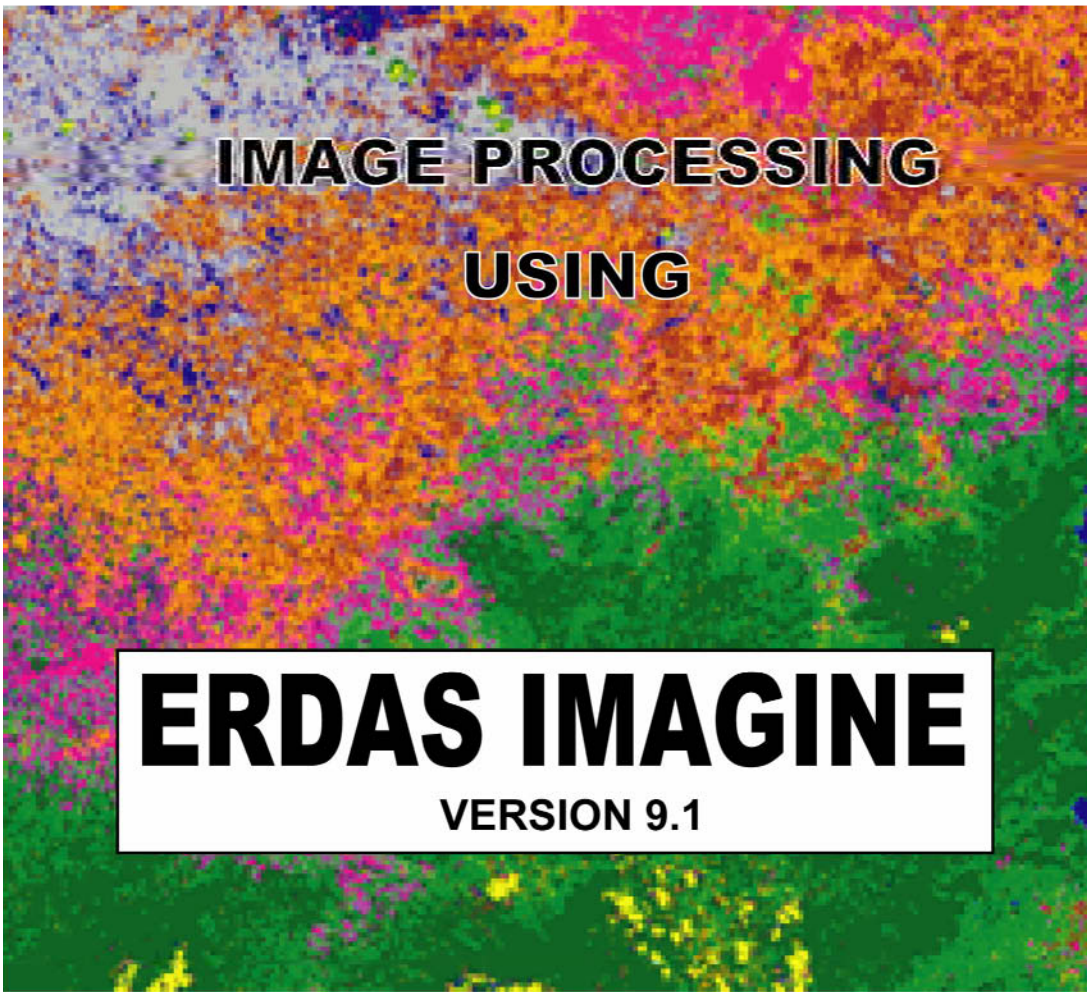
**THE STUDY ON MAPPING POLICY AND TOPOGRAPHIC MAPPING FOR THE INTEGRATED NATIONAL DEVELOPMENT PLAN OF THE PHILIPPINES**




**EDITION 1**

## Table of Contents

## 1. Introduction

For GIS professionals, imagery is more than a set of pretty pictures. Imagery is a valuable source of data that captures current reality to portray actual events and places. Whether you are studying changes in sensitive environments,mapping resources or assessing damage from natural disasters, an imagery archive enables you to reference and measure the amount of change that has taken place in a geographic area. Accurate and up-to-date imagery leads to better decision making and quicker updates for your vector GIS while providing current and complete information. ERDAS IMAGINE®, from Leica Geosystems Geospatial Imaging, is the leading imagery software package used by your peers in the geographic imaging community. It was designed specifically for image processing, and its easy-to-learn, easyto-use and comprehensive collection of tools will help you create accurate base imagery that enhances your GIS. For over 80 years, geospatial information professionals have looked to Leica Geosystems for the best in geographic imaging solutions. The ERDAS IMAGINE toolbox spans the Geospatial Imaging Chain, enabling you to transform your imagery into information you can use.

Orthorectification, mosaicking, reprojection and image interpretation. If these processes sound intimidating, you may be accustomed to image processing tools that dictate lengthy and complicated workflows — not to mention output that does not integrate well with your GIS. ERDAS IMAGINE simplifies all of these image processing functions while maintaining the integrity of the geospatial data you need to update your GIS and your ESRI Geodatabase. The clean and intuitive ERDAS IMAGINE interface was designed to streamline your workflow and save you time. Powerful algorithms and data processing functions work behind the scenes so you can concentrate on your analyses. The fast display and ability to work with multiple datasets in geographically-linked viewers in the IMAGINE Geospatial Light Table™ (GLT) dramatically reduce the time you would otherwise spend trying to manually relate information from various sources.

For organizations with extensive collections of geospatial data, ERDAS IMAGINE supports enterprise-enabled geospatial image processing that uses a centralized relational database to store geospatial information. This provides enormous benefit to an institution by making its data visible and accessible to end-users; thereby the investment in image and feature geospatial information is maximized by making it exploitable to the greatest number of users. ERDAS IMAGINE leverages these capabilities by providing client-side interaction with spatially aware databases such as ESRI ArcSDE or Oracle Spatial 10g. Capabilities also extend to connected and disconnected topological editing of the database for efficient feature updates and maintenance.

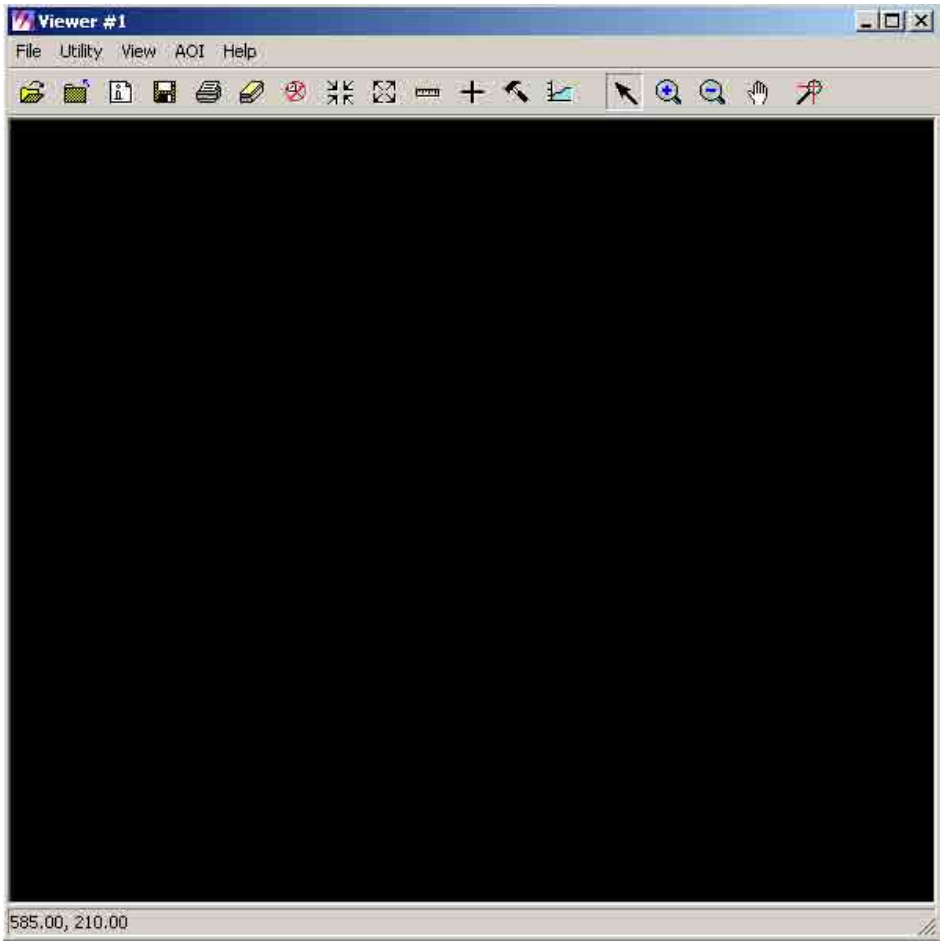
## 2. Viewer

The ERDAS IMAGINE Viewer is the "main window" for displaying raster, vector, and/or annotation data. You can open as many Viewers as your window manager supports. If you are interested in photo interpretation, the Geospatial Light Table is an enhanced version of the Viewer designed specifically for this task. Many of the functions in ERDAS IMAGINE are available via the Viewer menu bar, across the top of the window, and the Quick View menu, which displays when you right-click in a Viewer window.

A Viewer window automatically opens when you start IMAGINE. To start another Viewer window, click this button on the IMAGINE icon panel:

2.1 Open “Erdas Imagine 9.1”. A “Select Viewer Type” dialog box will appear. Click “Classic Viewer”. Then click “OK”.


2.2 The classic menu bar and a viewer window will appear.




**Overview**

An IMAGINE Overview Viewer opens automatically when the Geospatial Light Table (GLT) is selected as the viewer type. The Overview Viewer toolbar is similar to the Classic Viewer, but there are additional tools which link to Geospatial Tools. Use the Preference to turned off with option.

Click to open a raster layer. The File Selector dialog opens.

Click to close the top layer opened in the Viewer.

Click to display the ImageInfo dialog if the top layer in the Viewer is an .img file and the VectorInfo dialog if the top layer is a vector coverage.

Click to save the top layer in the Viewer.

Click to print the contents of the Viewer.

Click to clear the Viewer.

Click this icon to open the **Toggle Layer Tool Tree** dialog. This is an alternative to the Arrange Layers dialog. All the capabilities of the traditional Arrange Layers are provided, but there are new capabilities as well:
Any changes made in the Toggle Layer Tool Tree dialog are applied immediately, it is not necessary to click the **Apply** button first.
Allows you to put more layers in a small amount of space.

A preference can be used to embed the dialog within the GLT interface which prevents it from floating across your desktop.
Identifies a particular image from a group of images displayed into a single Viewer frame by highlighting the image currently under the cursor.

 Click to use the selection tool. This is the tool used to select other tools and objects in non-raster layers (such as annotation or vector).

 Click for zoom recenter, box zoom and real-time zoom features. For zoom recenter, left-click in the Viewer to indicate the center of the enlarged area. For Box zoom, left-hold and drag a box in the Viewer. For real-time zoom, middle-hold (or Ctrl-left-hold) and drag up and down in Viewer. See Zooming.

 Click for zoom recenter, box zoom and real-time zoom features. For zoom recenter, left-click in the Viewer to indicate the center of the reduced area. For Box zoom, left-hold and drag a box in the Viewer. For real-time zoom, middle-hold (or Ctrl-left-hold) and drag up and down in Viewer. See Zooming.

 Click to roam the image. Left-hold and drag the hand-shaped cursor over the image to pan up, down, left, and right. Middle-hold (or Ctrl-Left-hold) and drag to rotate the image in real-time.
**Geospatial Light Table:** An additional set of features is associated with the roaming tool when using the Geospatial Light Table. Click once in the active pane to toggle the cursor. When the cursor is a 4-way arrow  , moving the mouse in any direction begins panning across the image in that direction and the cursor changes to a pointer to indicate the direction in which the observer appears to be moving. The farther the mouse cursor is moved away from the original click point, the faster you pan. At anytime while panning, you can click again to return to the standard roam control as indicated by the hand cursor  .

 Click to reset rotation of the image. If you use the Zoom/Rotate thumbwheel control this option will allow you to reset the image.

 Click to align the image up.

 Click to align the image to true north.

 Click to lock or unlock the rotation of the image in the viewer.

 Click to zoom in by two from the center of the displayed portion of the image. See also Animated Zoom.

 Click to zoom out by two from the center of the displayed portion of the image. See also Animated Zoom.

 Click to fit the current image to the smallest viewer dimension. The aspect ratio of the data is always maintained, such that the longest dimension of the data is scaled to the corresponding Viewer window dimension. This is the same as the **Fit Image To Window** option found on the Quick View menu.

 Click to measure points, lines, and areas in the displayed layer. The Measurement Tool opens.

 Click to start/update the inquire cursor. The Inquire Cursor dialog opens if it is not already open.

 Click to display the tool palette for top layer.

 Click to start the Profile tools. The Select Profile Tool dialog opens.

 This tool records a snail trail. To use the snail trail recorder, Viewer #1 must be populated with imagery. Then select an empty view pane and then click this icon.

 This tool geographically links the current view pane to all unlinked view panes (and unlinked all linked panes) if possible. For example, with three view panes open, if Viewer #1 is the current view pane and it is linked to Viewer #3 and you click this icon, Viewer #1 is unlinked from Viewer #3 and linked to Viewer #2. In other words, view panes that are linked to the current view pane become unlinked, and those that are unlinked become linked. Clicking the tool again reverses the process. To change link box color, select **Utility > Selector Properties...** from the main Viewer menu.

 Click to enable the Toggle Footprint Layer. This option will show a footprint of every layer in the image which is defined with a bounding box around each layer.

 Click to enable Toggle Footprint Titles. This option is available if the Toggle Footprint Layer is enabled, and it identifies each layer in the image. Use the Footprint Properties dialog to make changes to the size and color of the footprints.

 Click to copy the contents of the GLT Viewer into the Overview Viewer. This may then be pasted into other applications using that applications paste command (for example, Edit | Paste or Ctrl-V for most Windows applications).

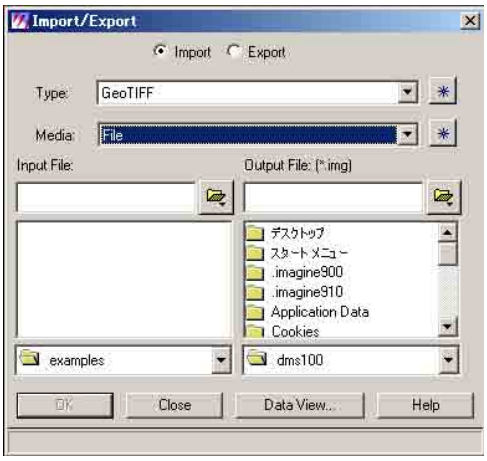
## 3. Importing data

When you use the many functions of ERDAS IMAGINE, image data allow changes to files which are in the native [.img format]

3.1 Open “Erdas Imagine 9.1”. A “Select Viewer Type” dialog box will appear. Click “Classic Viewer”. Then click “OK”.

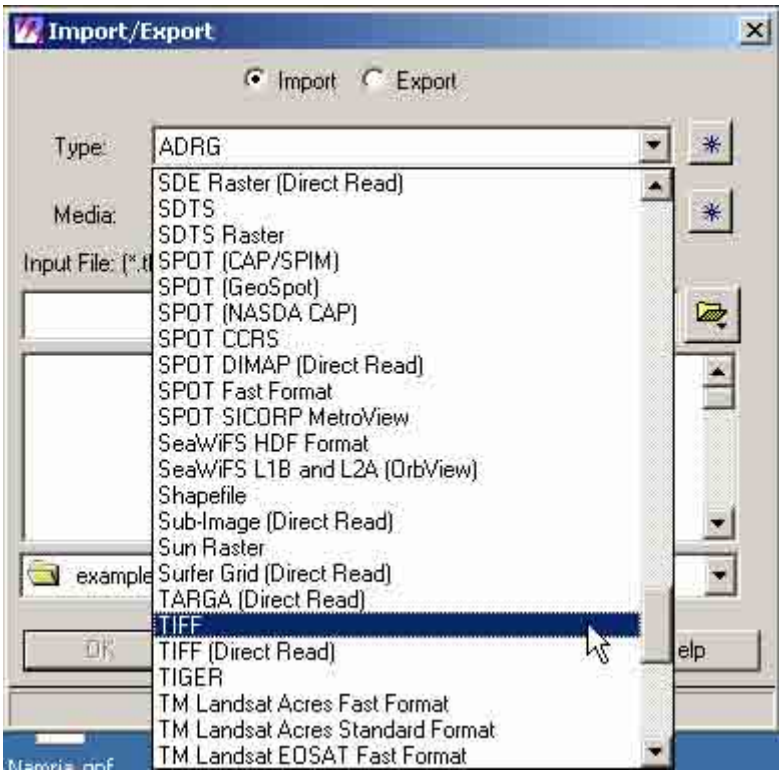

3.2 Click “Import” icon.

3.3 An “Import/Export” dialog box will appear.



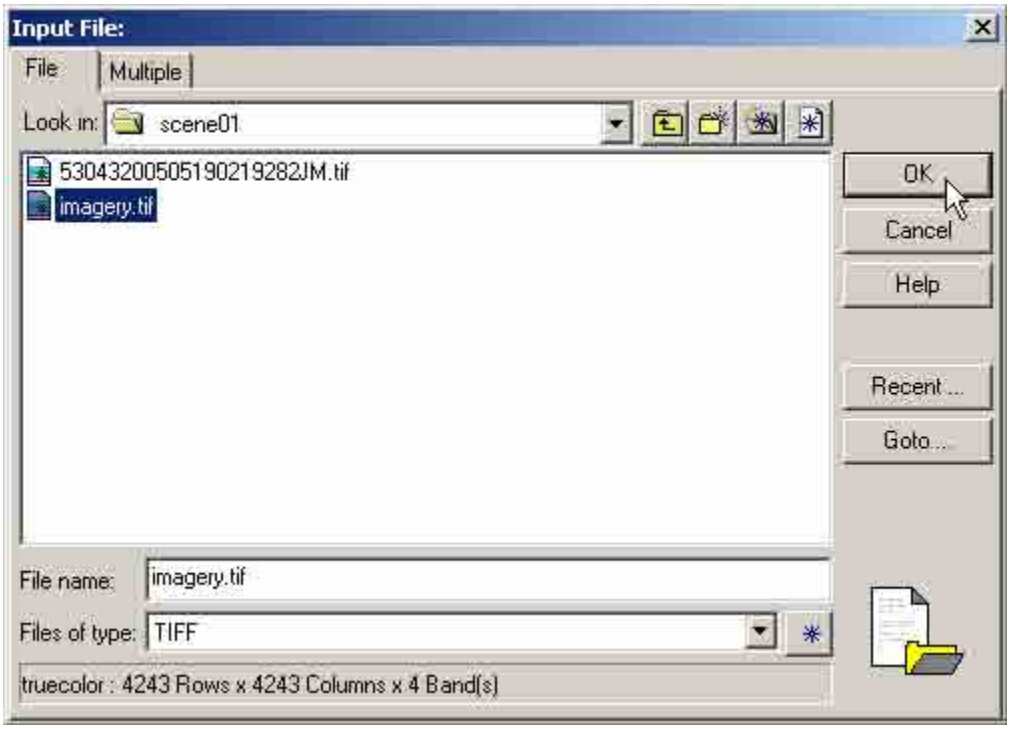

3.4 Click “Import” 

. Click down arrow in the “Type” box and select the type format (e.g. TIFF).

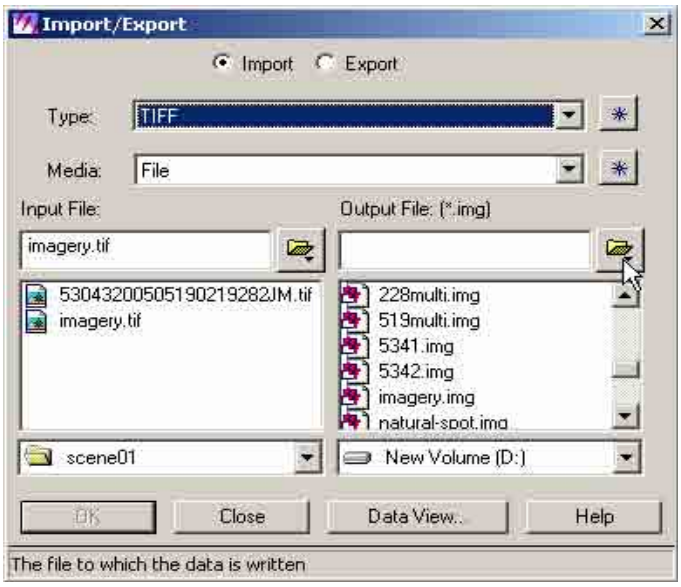


3.5 Click “Input File” button.

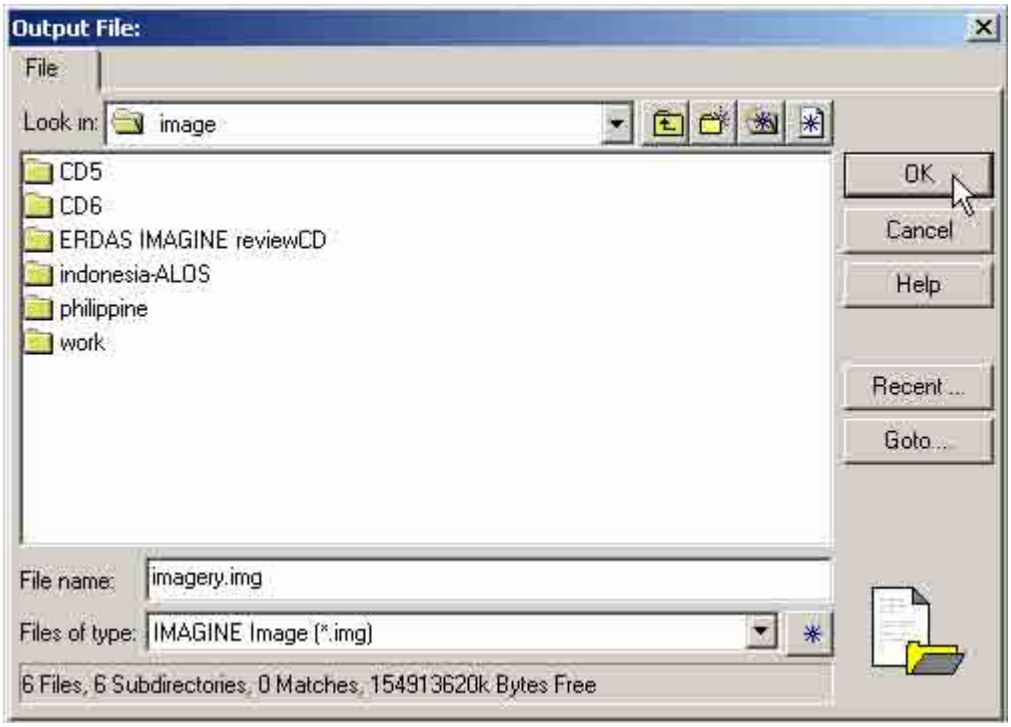

3.6 An “Input File” dialog box will appear. Browse and locate folder of the file (e.g. imagery.tif) to be imported. Select the input file. Then click “OK”.



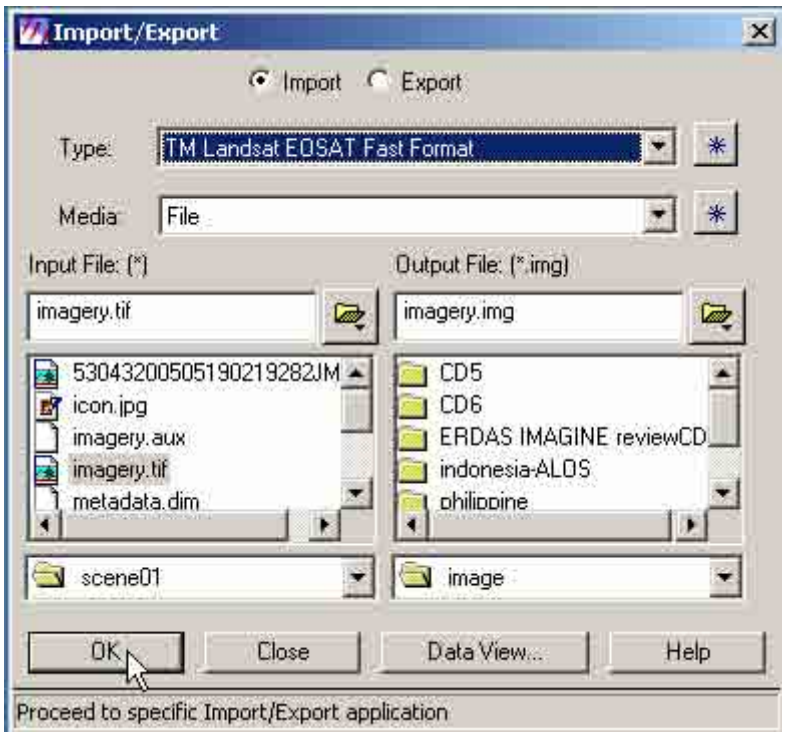
3.7 Click “Output File” button.



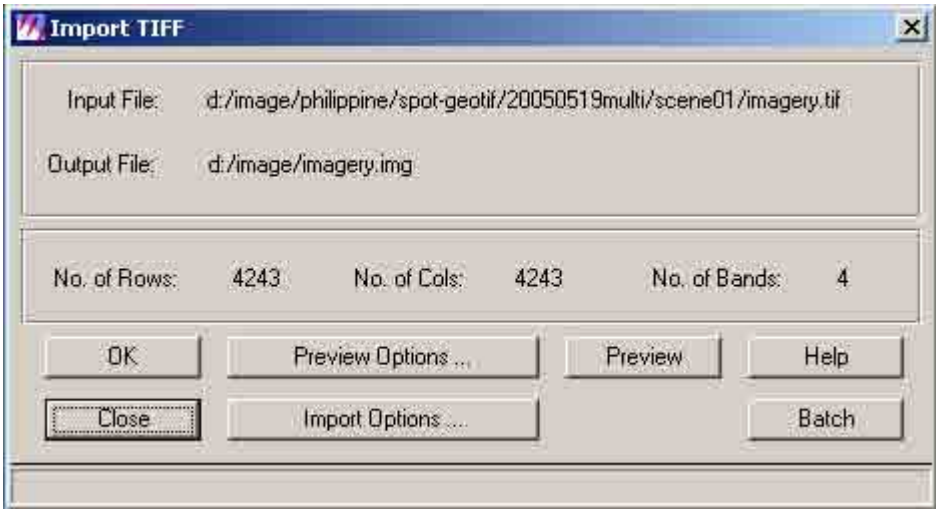

3.8 An “Output File” dialog box will appear. . Browse and locate the folder where the output image is to be saved. Type the output filename (e.g. imagery.img) in the “File name” box. Then click “OK”.



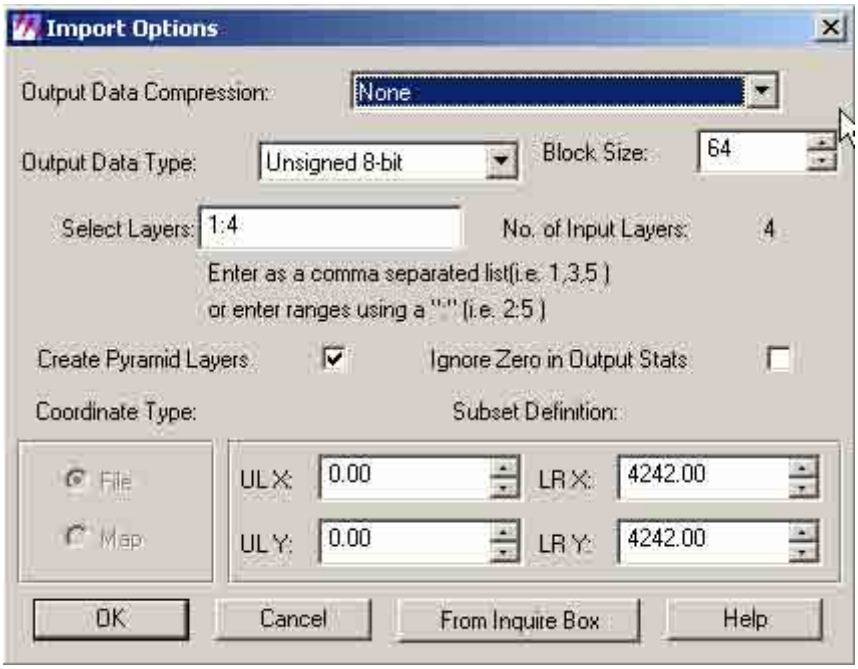
3.9 Click “OK” in the “Import/Export” dialog box.




3.10 An “Import TIFF” dialog box will appear. Click “Import Options”



3.11 An “Import Options” dialog box will appear. Check parameters settings. If no changes, click “OK”. Again click “OK” in the “Import TIFF” dialog box.

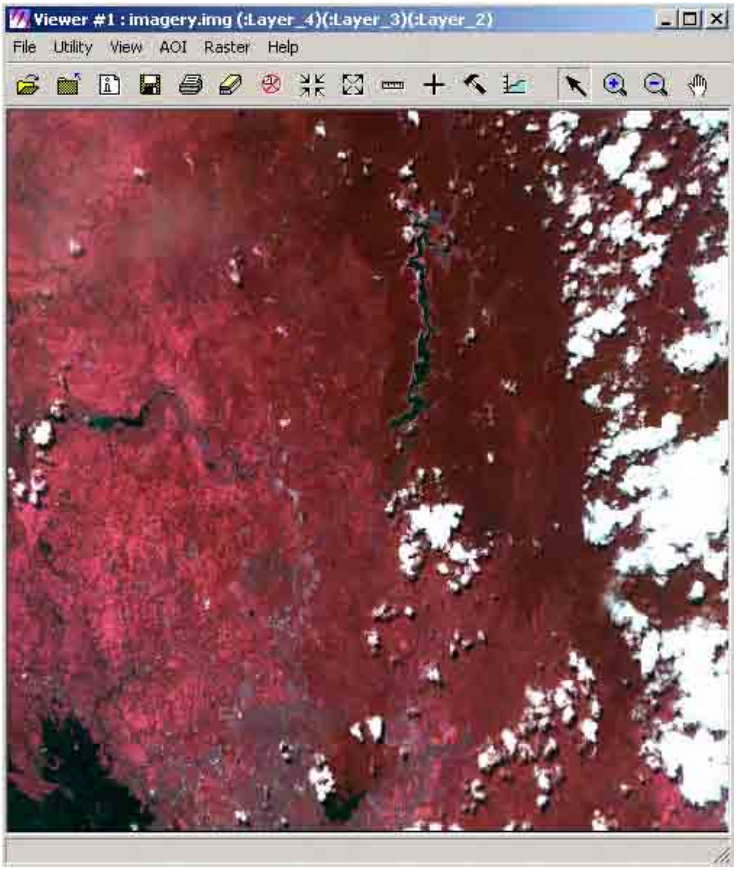



3.12 The system will process the data. Click “OK” when done


3.13 Click “Open Layer” icon  in the “Viewer” window.

3.14 A “Select Layer to Add” dialog box will appear. Browse and locate folder of the imported output file (e.g. imagery.img). Then click “OK”.

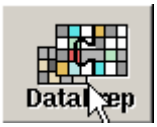

3.15 The image (e.g. imagery.img) will be shown in viewer window.

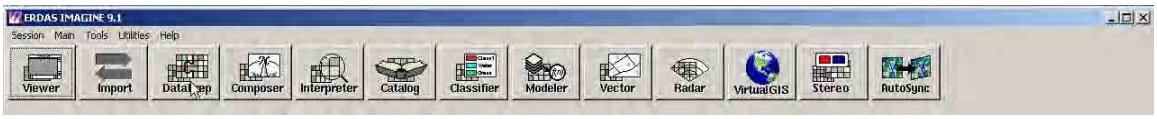


## 4. Mosaicking

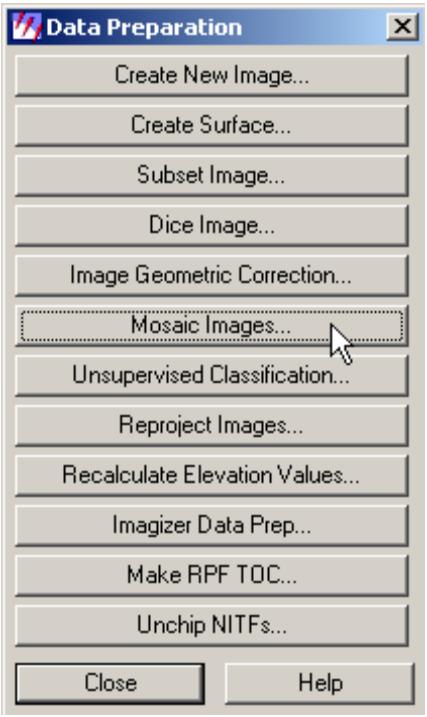
Mosaicking is the process of joining georeferenced images together to form a larger image or a set of images. The input images must all contain map and projection information, although they need not be in the same projection or have the same cell sizes. Calibrated input images are also supported. All input images must have the same number of layers.

4.1 Open “Erdas Imagine 9.1”. A “Select Viewer Type” dialog box will appear. Click “Classic Viewer”. Then click “OK”.

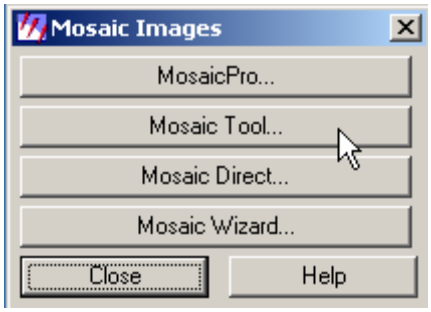

4.2 Click “DataPrep”  icon.



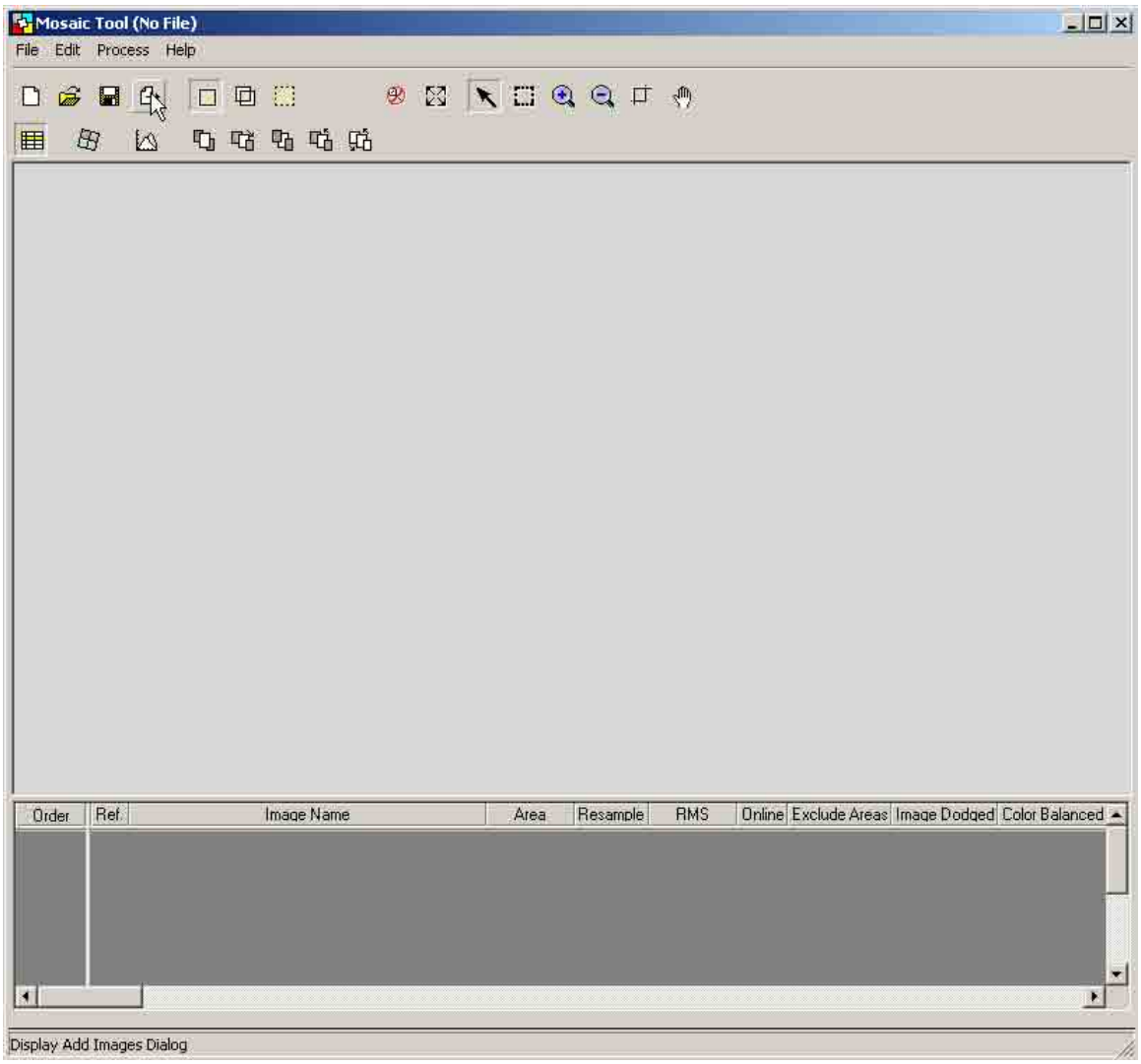
4.3 A “Data Preparation” button box will appear. Click “Mosaic Images” button.



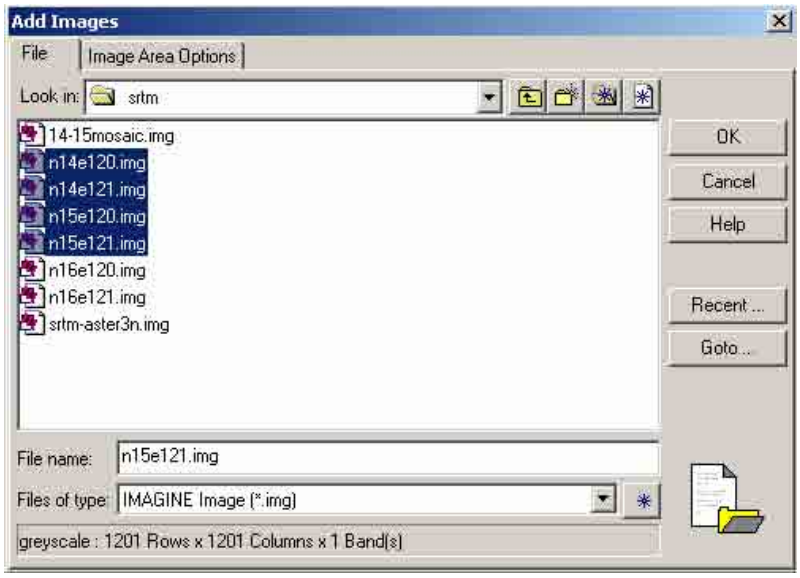

4.4 A “Mosaic Images” button box will appear. Click “Mosaic Tool” button.



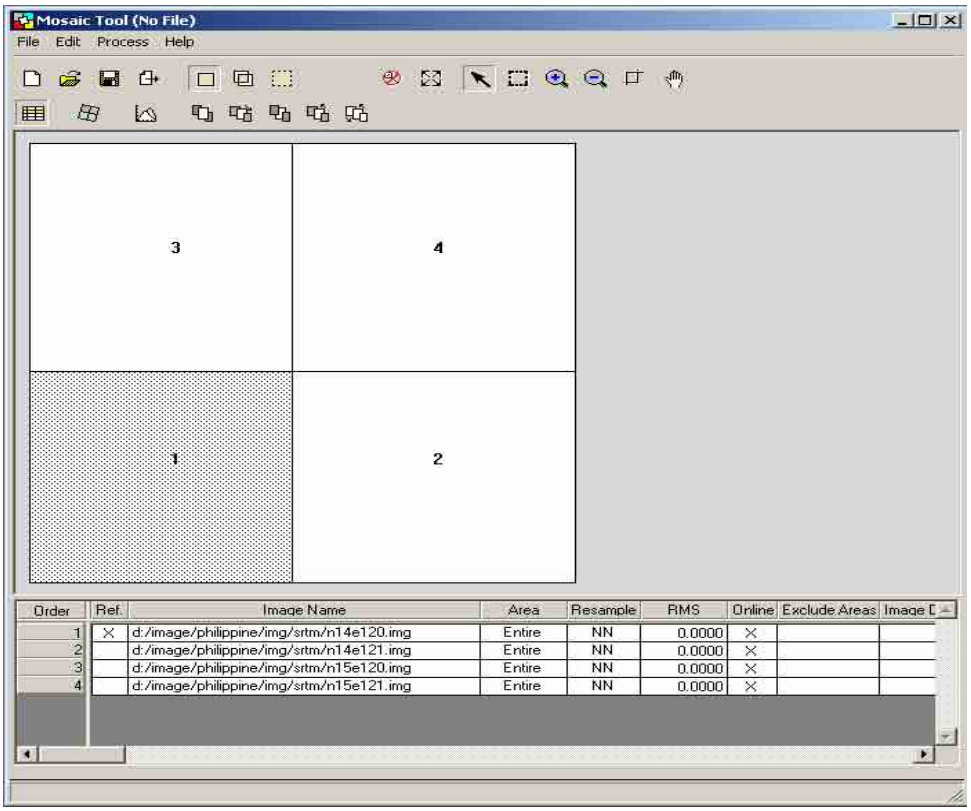
4.5 A ”Mosaic Tool” window will appear. Click “Display Add Images Dialog” icon.



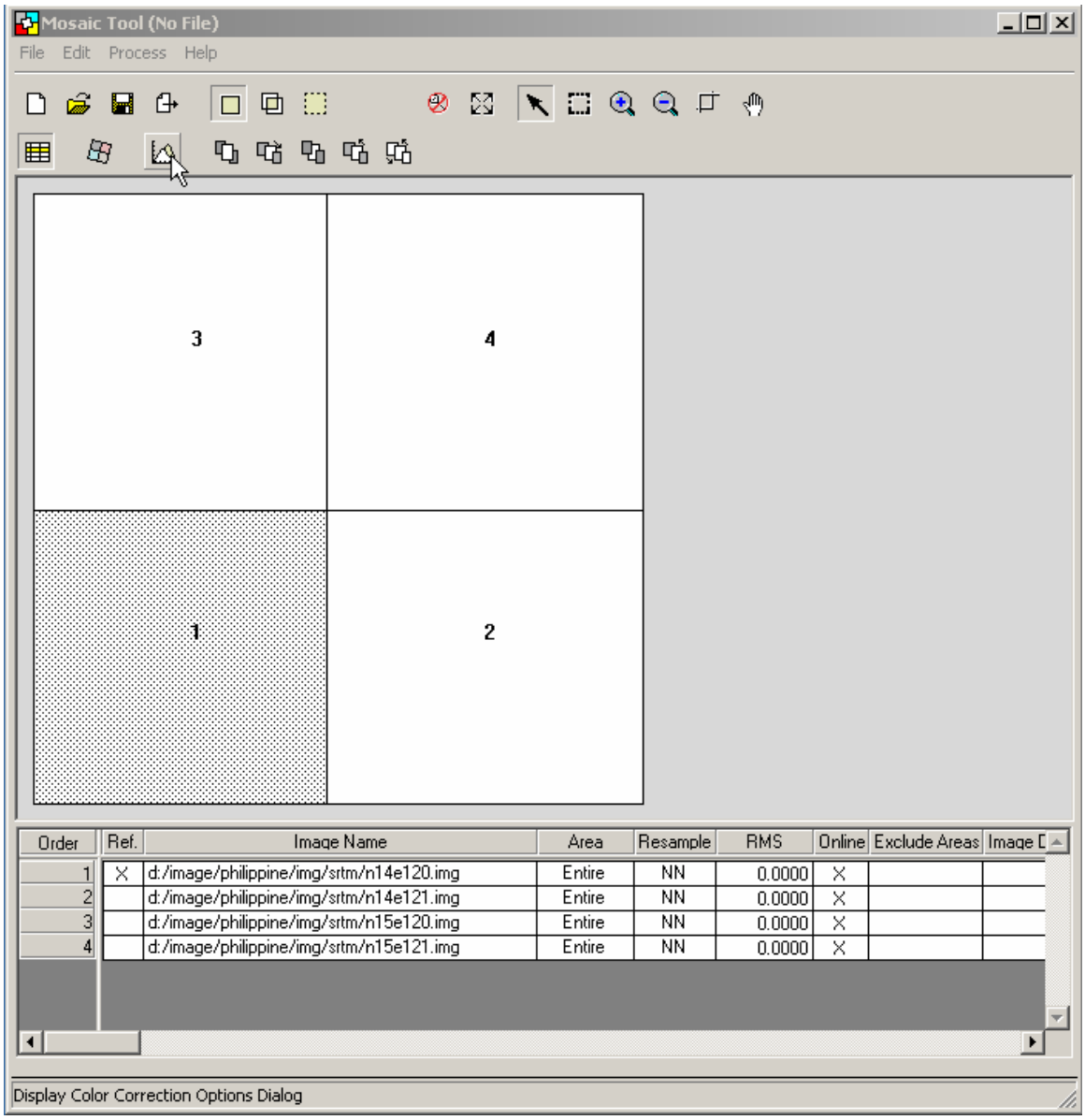
4.6 An “Add Images” dialog box will appear. Select all the necessary images ( e.g. n14e120.img, n14e121.img, n15e120.img, n15e121.img) to be used. Then click “OK”.




4.7 The limits of the images selected will be shown in the “Mosaic Tool” window. Click “Set Mode for Input Images” icon.

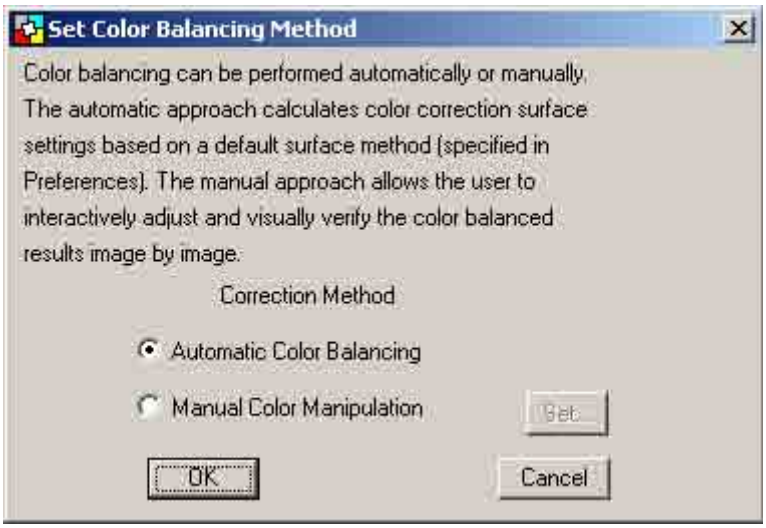


4.8 Click “Display Color Correction Options Dialog” icon.



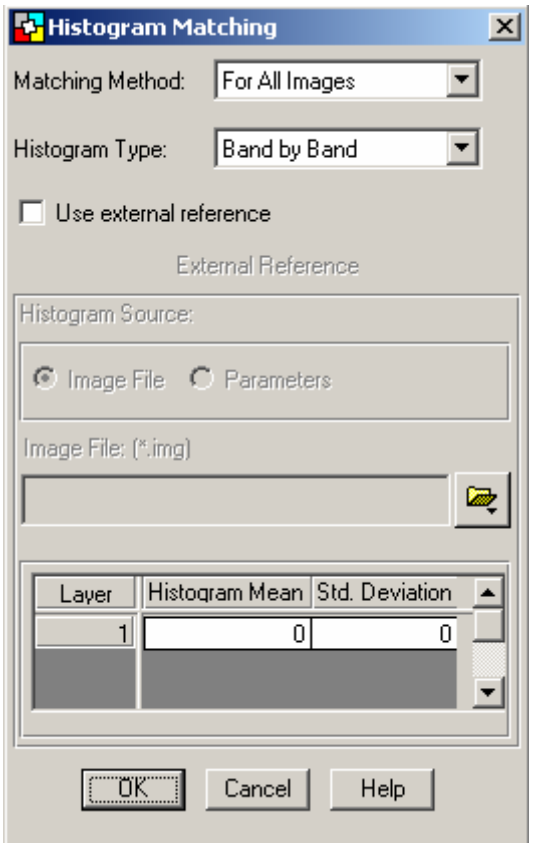
4.9 A “Color Corrections” dialog box will appear. Check “Use Color Balancing” box. Then click “Set…”.


4.10 A “Set Color Balancing Method” dialog box will appear. Check “Automatic Color Balancing”. Then click “OK”.

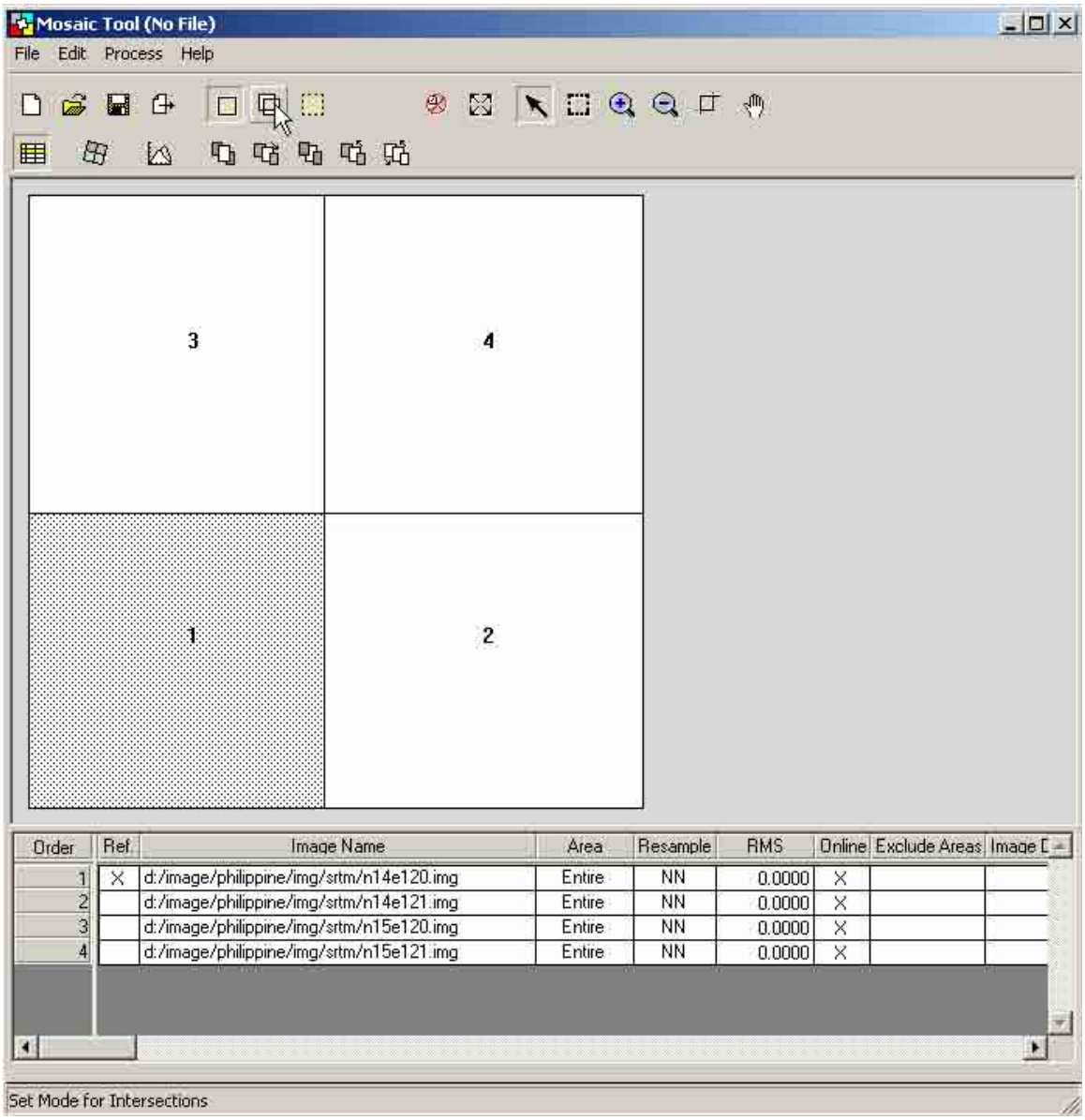


4.11 Check “Use Histogram Matching” box. Then click “Set…”.

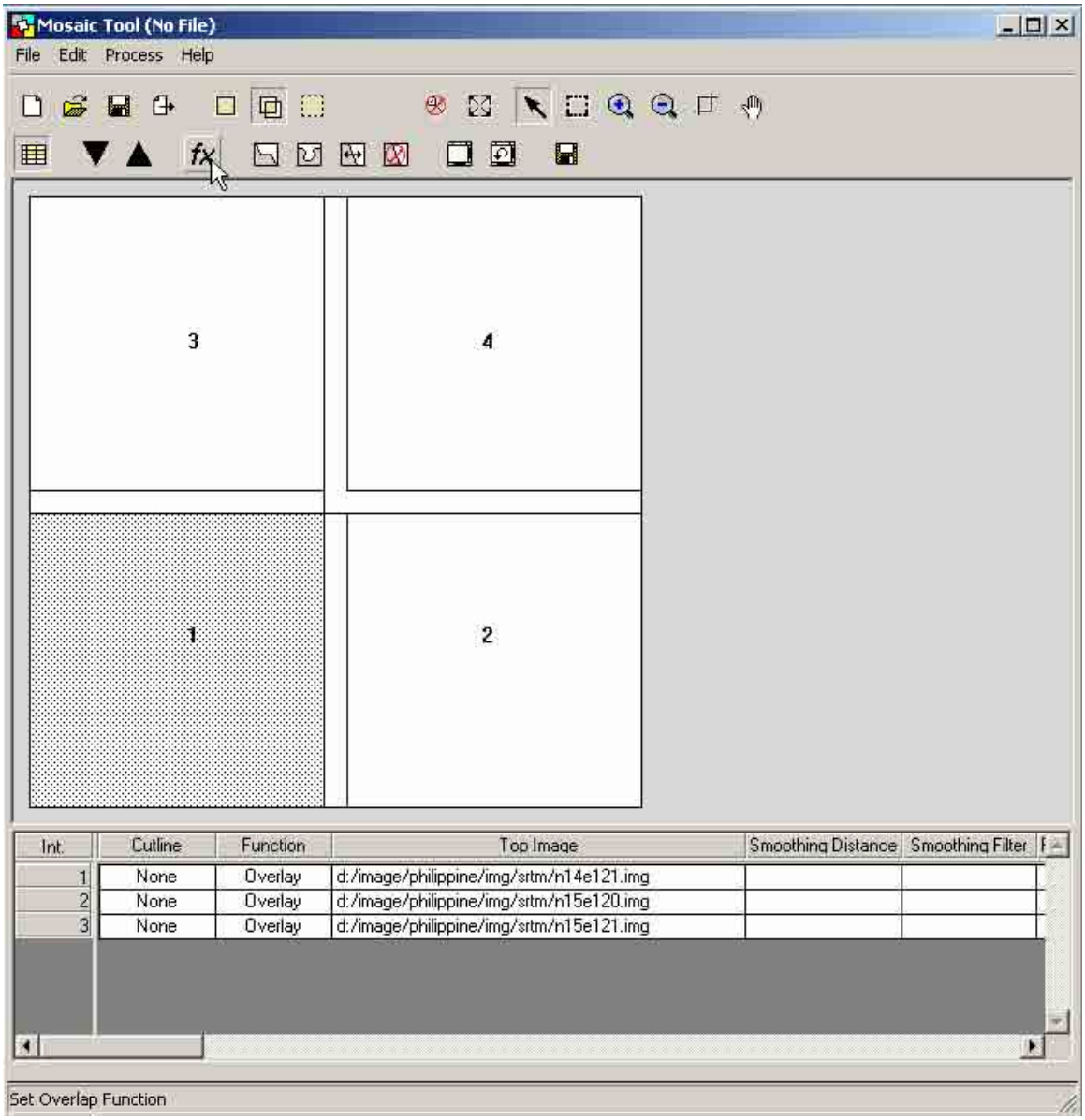

4.12 A “Histogram Matching” dialog box will appear. Then click “Ok”.



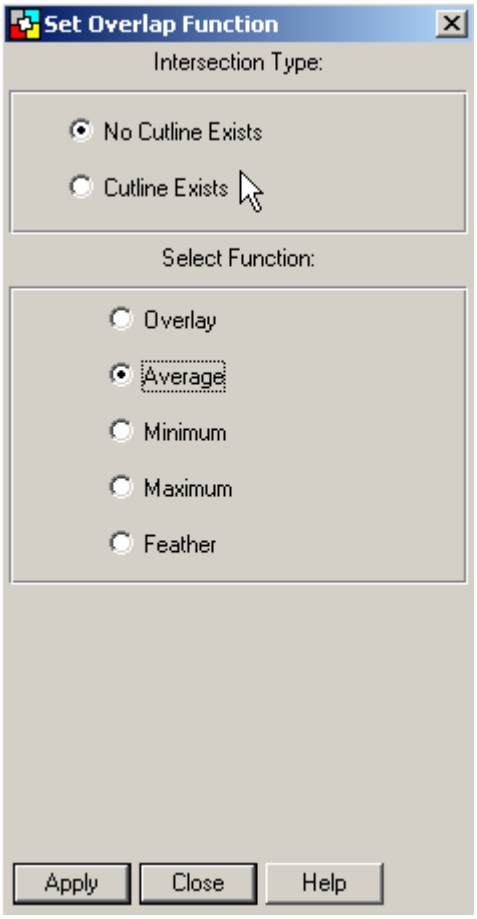
4.13 Click “Set Mode for Intersections” icon.



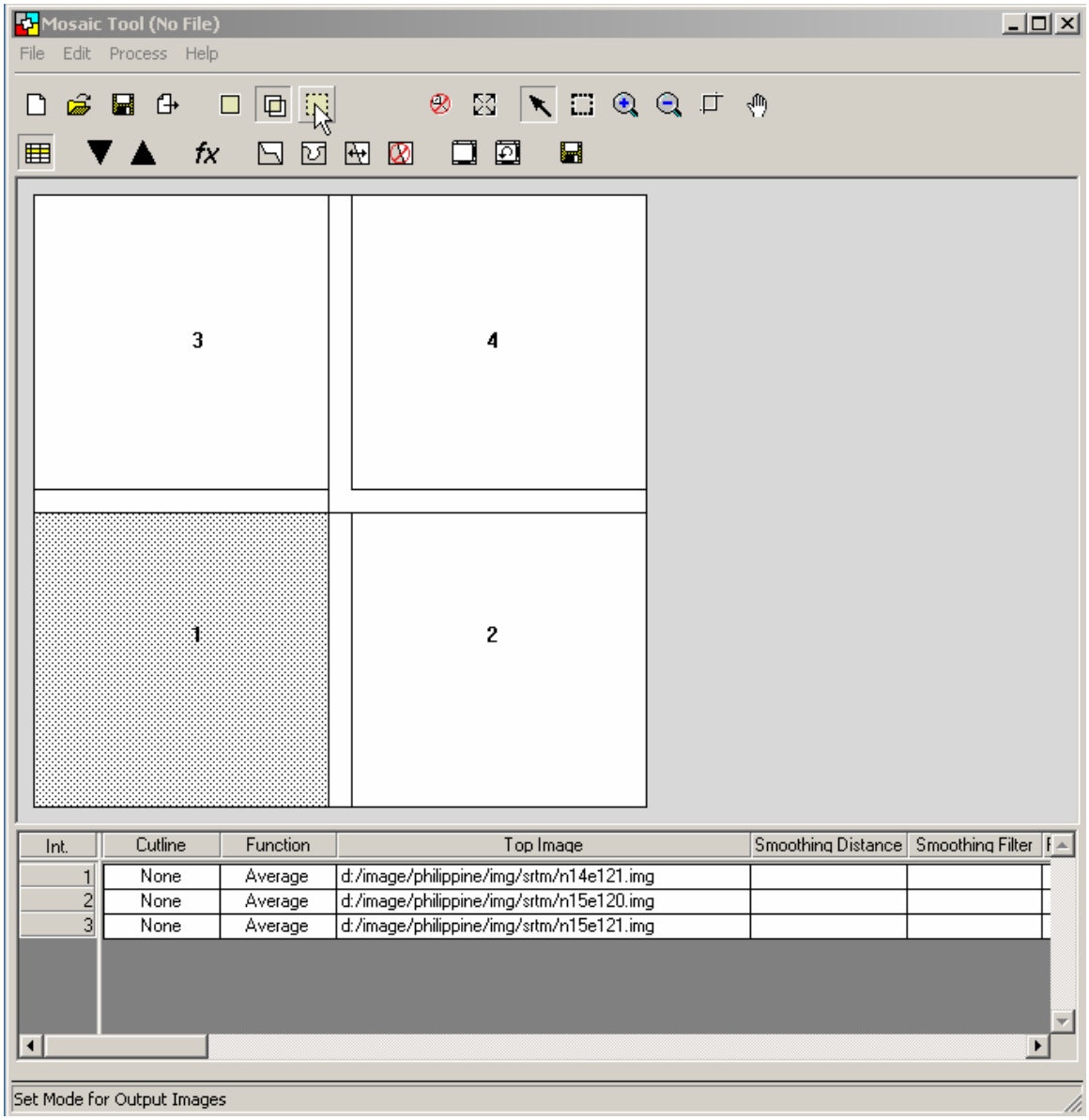
4.14 The overlap between images will be reflected. Click “Set Overlap Function” icon.



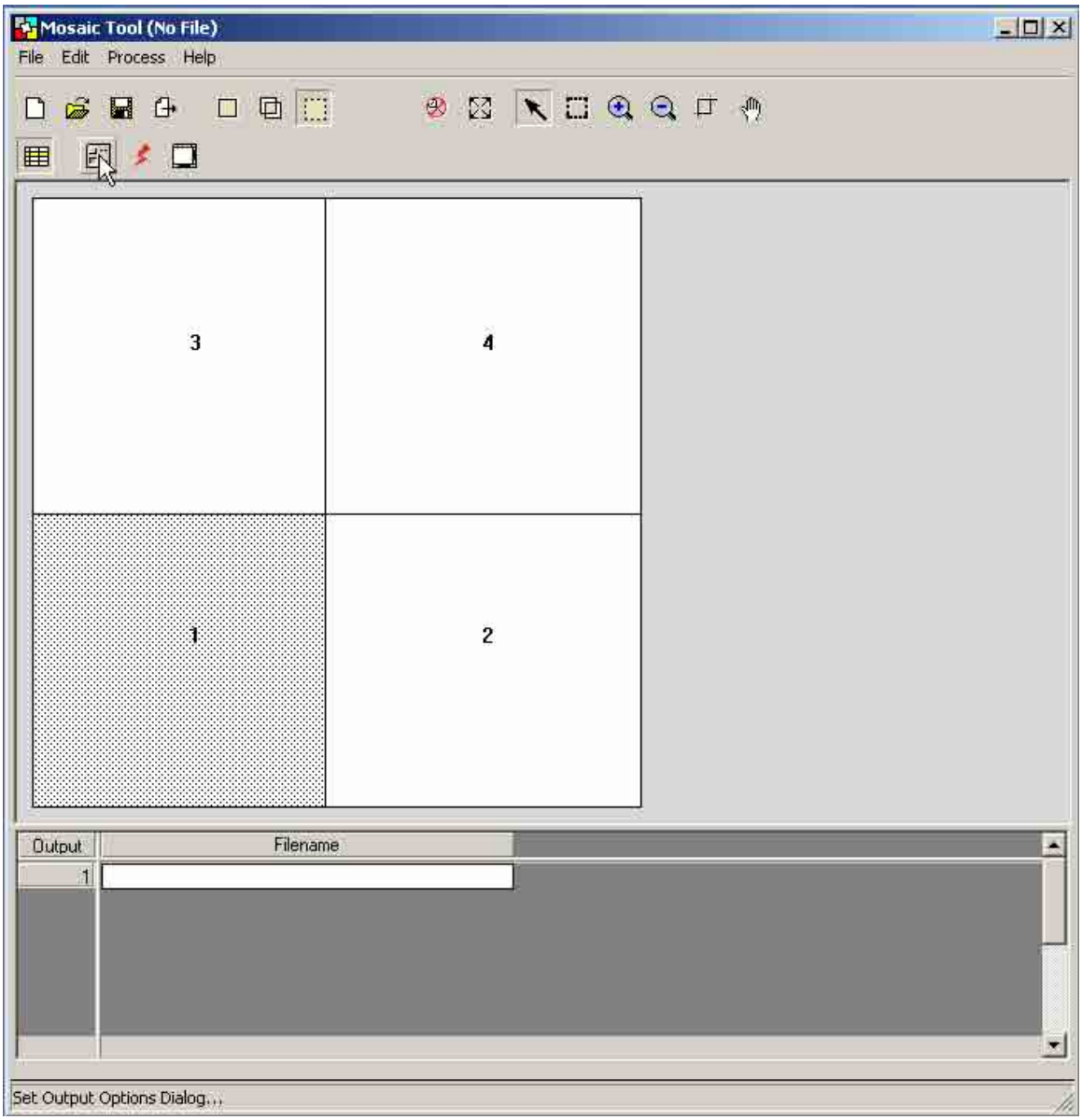
4.15 A “Set Overlap Function” dialog box will appear. Select ”Average”. Click “Apply”. Then click “Close”.



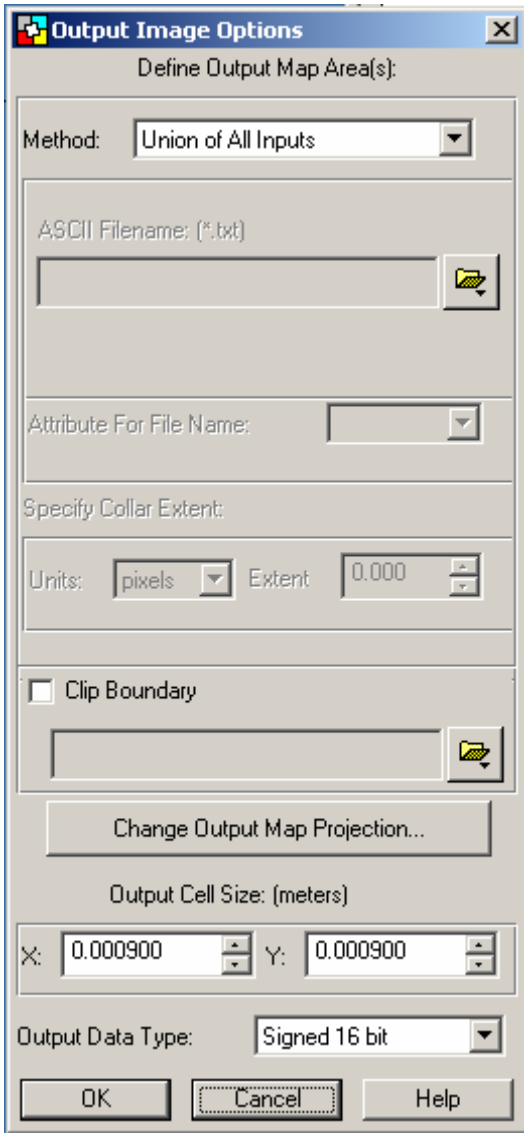
4.16 Click “Set Mode for Output Images” icon.



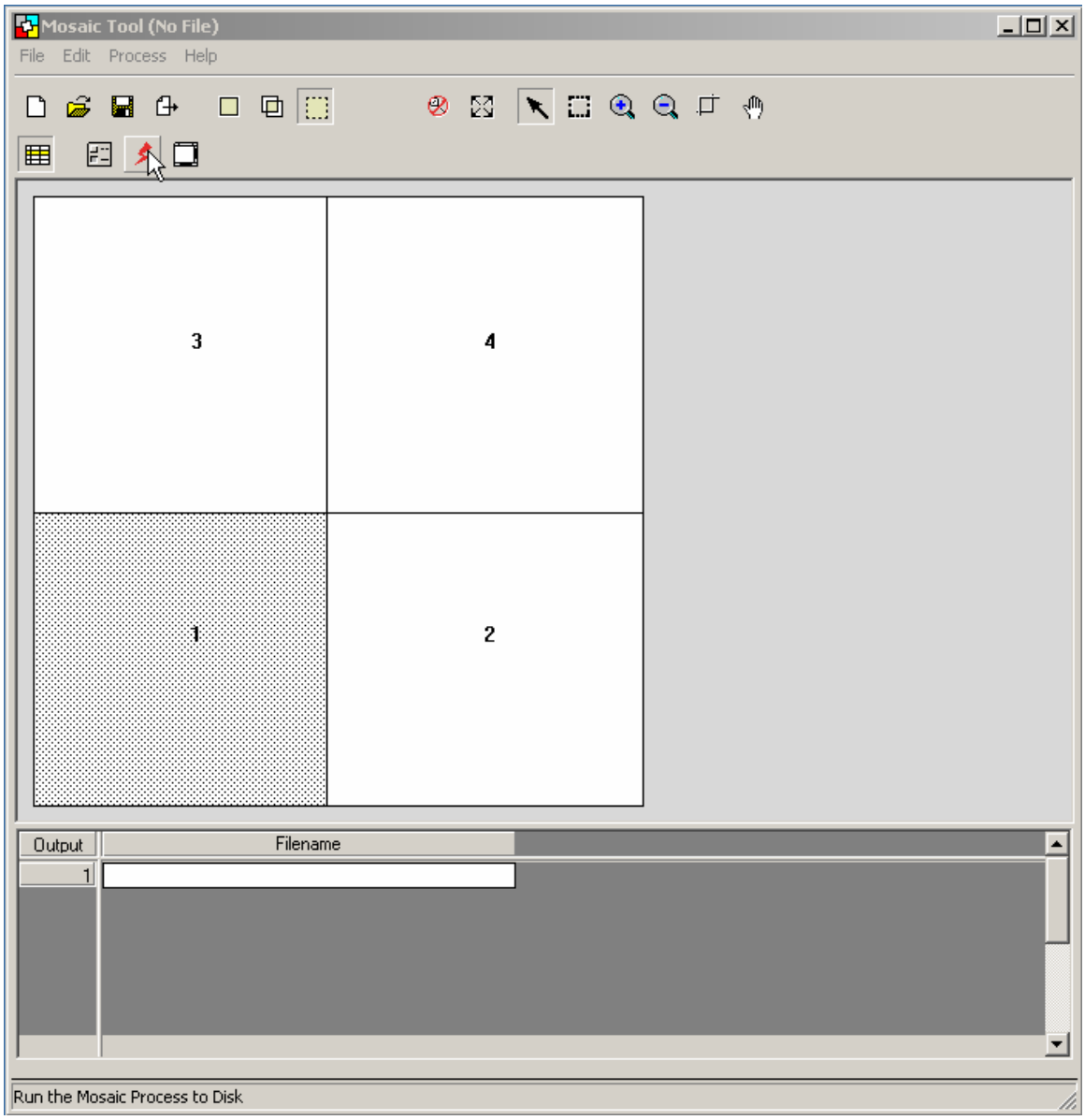
4.17 Click “Set Output Options Dialog” icon.



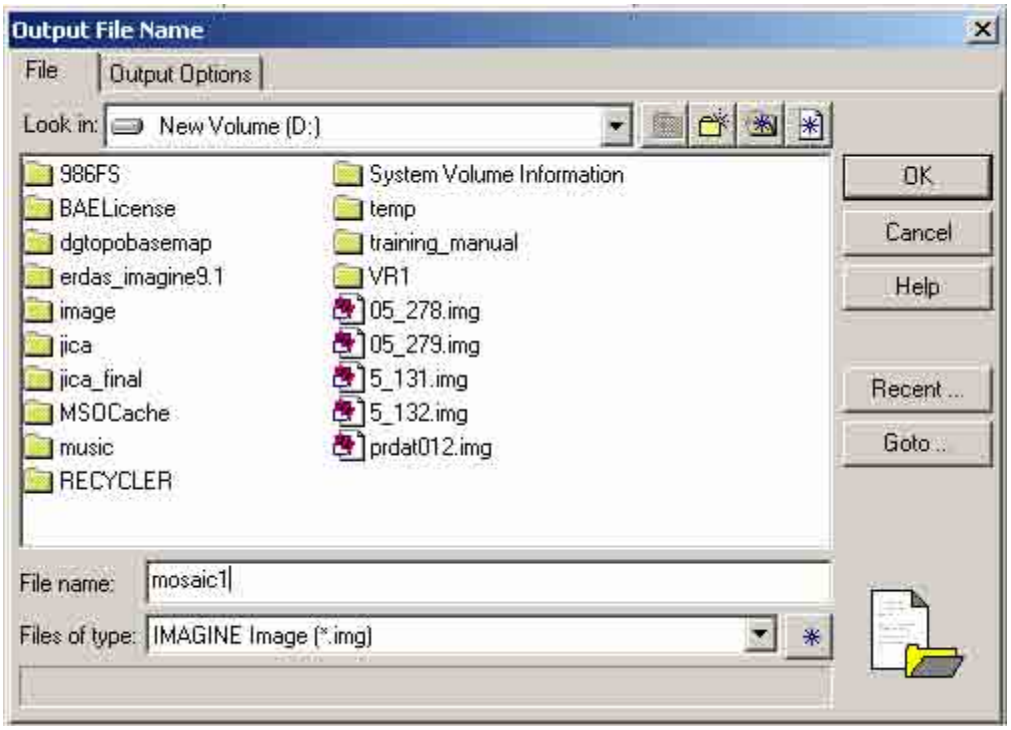
4.18 An “Output Image Options” dialog box will appear. Click “OK”.



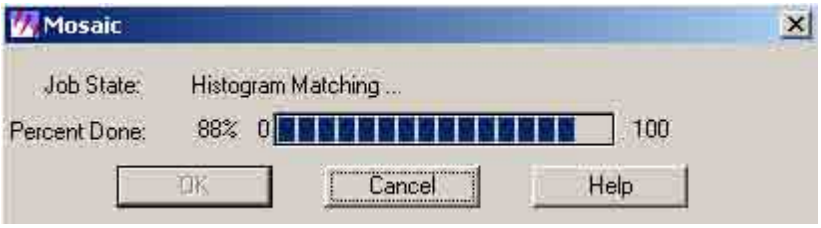
4.19 Click “Run the Mosaic Process to Disk” icon.



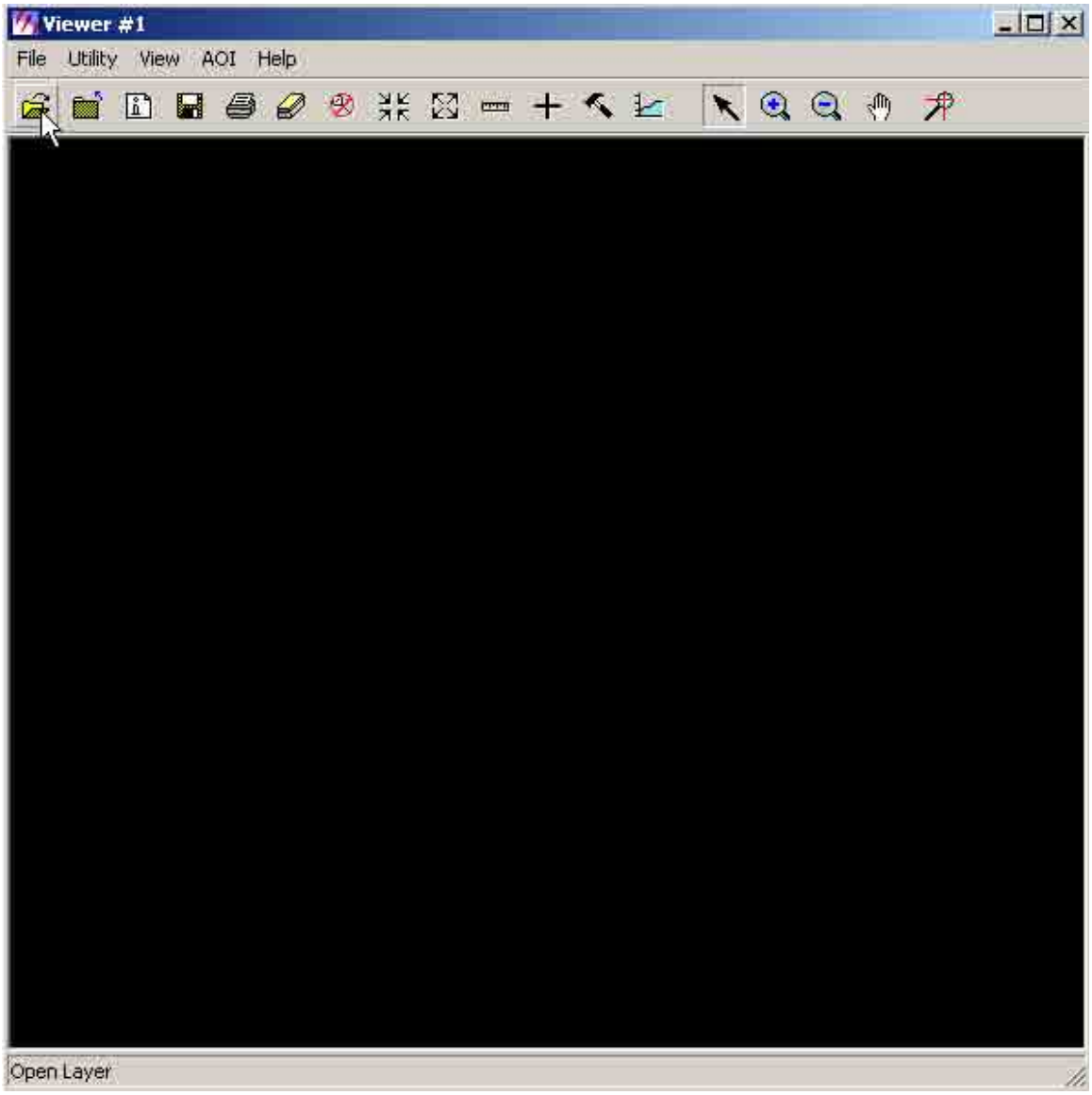
4.20 An “Output File Name” dialog box will appear. Browse and locate the folder where the output image file is to be saved. Type the output filename (e.g. mosaic1) in the “File name” box. Then click “OK”.




4.21 The system will process the data. Click “OK” when done.

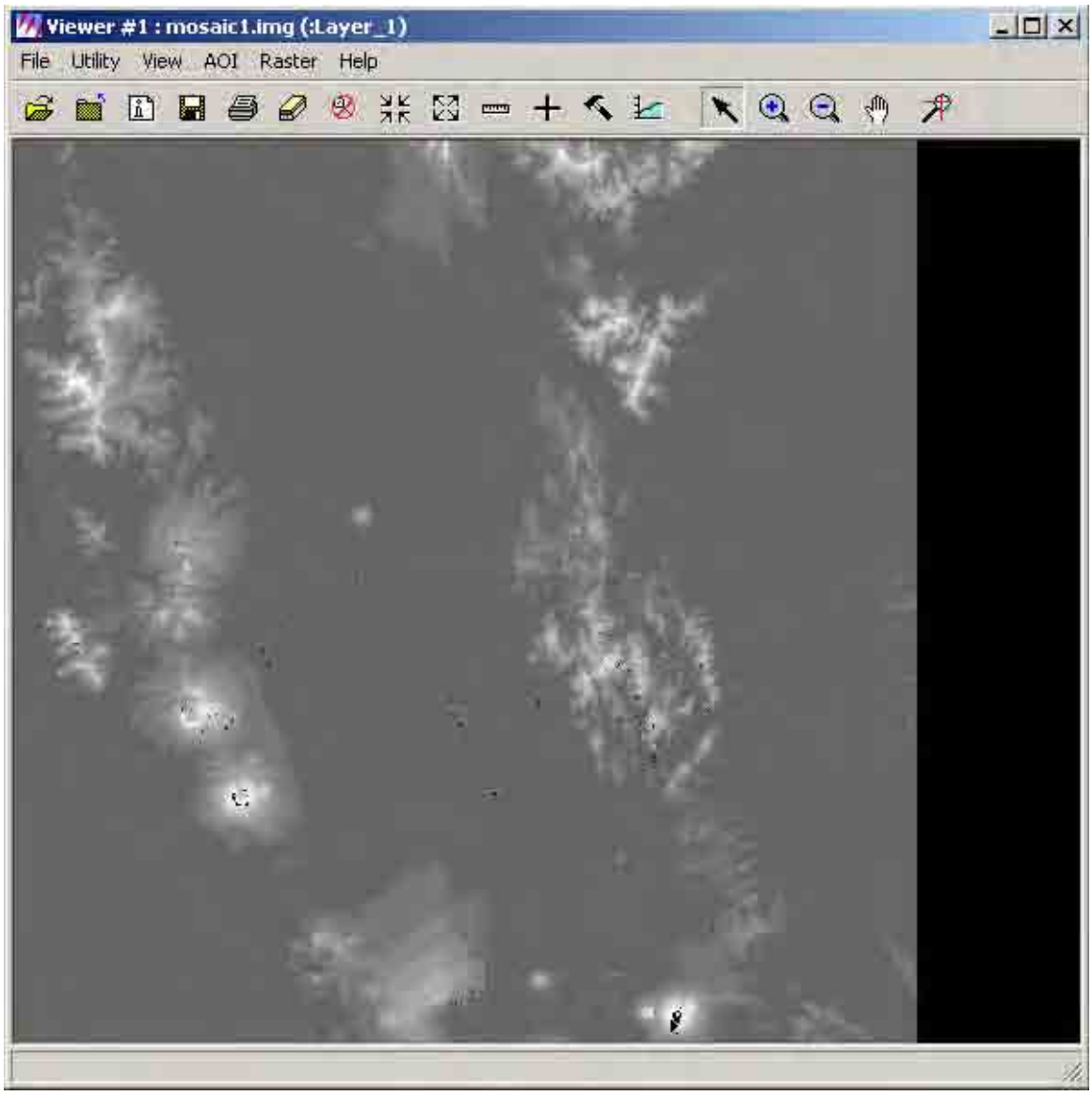


4.22 Click “Open Layer” in “Viewer window."



4.23 A “Select Layer To Add” dialog box will appear. Browse and locate the folder where the mosaic output file was saved. Select the output file (e.g. mosaic1.img). Then click “OK.

4.24 The mosaic image will be reflected in the viewer window.



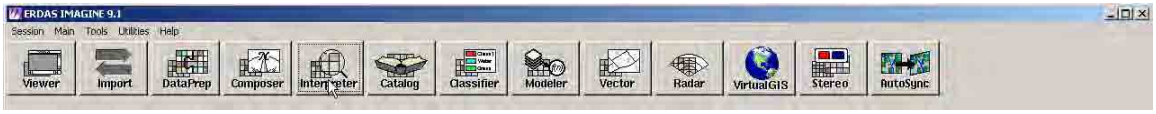
## 5. Image Enhancement

This procedure allows you to simulate natural color using SPOT Multispectral data as your input.

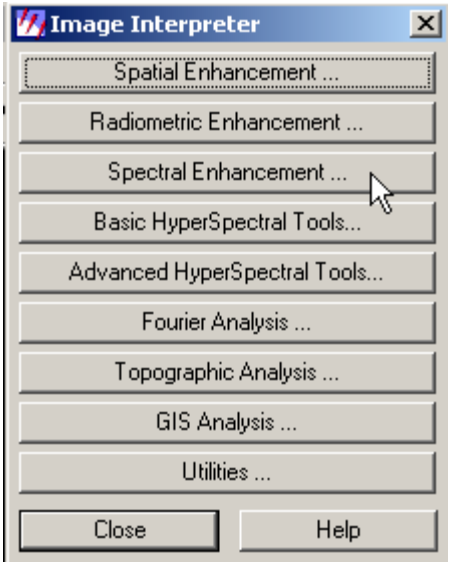
5.1 Open “Erdas Imagine 9.1”. A “Select Viewer Type” dialog box will appear. Click “Classic Viewer”. Then click “OK”.


5.2 Click “Interpreter” 

icon.

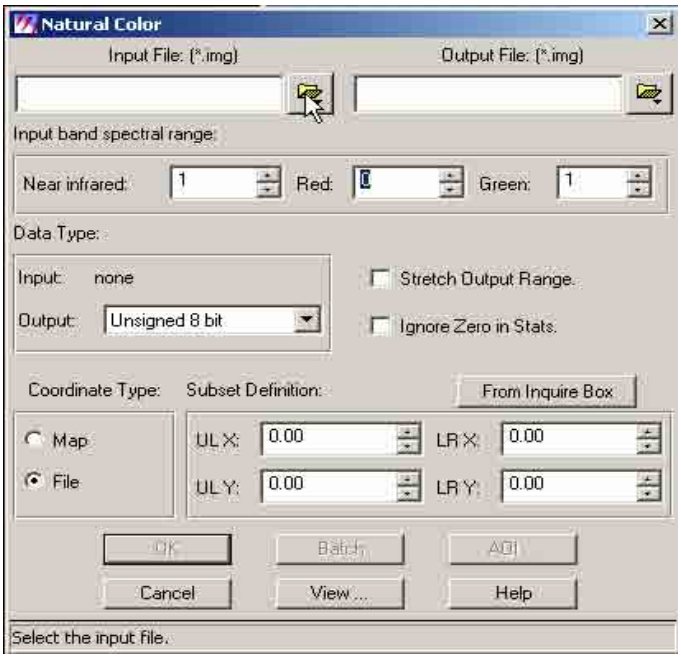


5.3 An “Image Interpreter” button box will appear. Click “Spectral Enhancement” button.

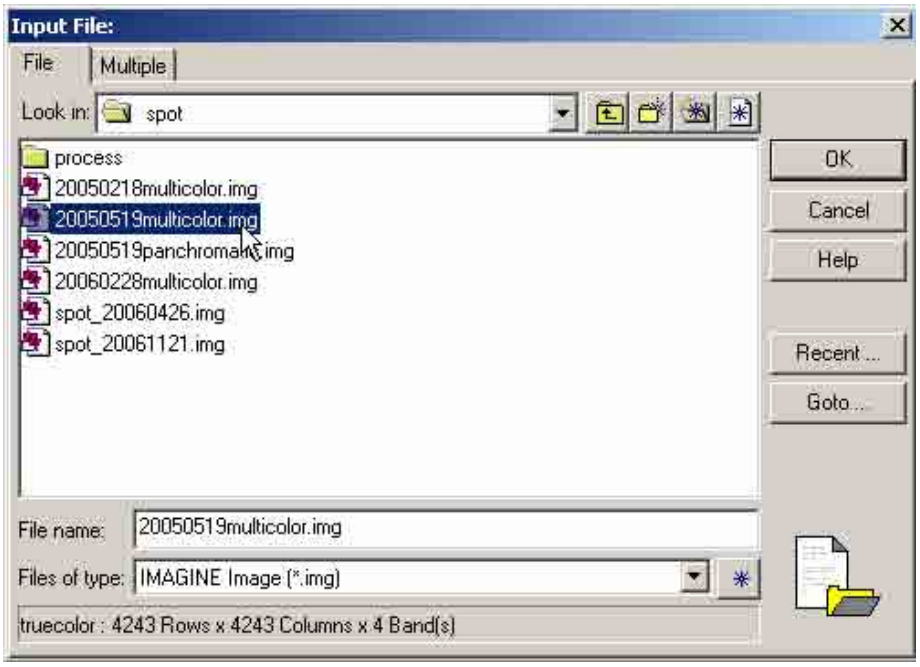



5.4 A “Spectral Enhancement” button box will appear. Click “Natural Color…” button.

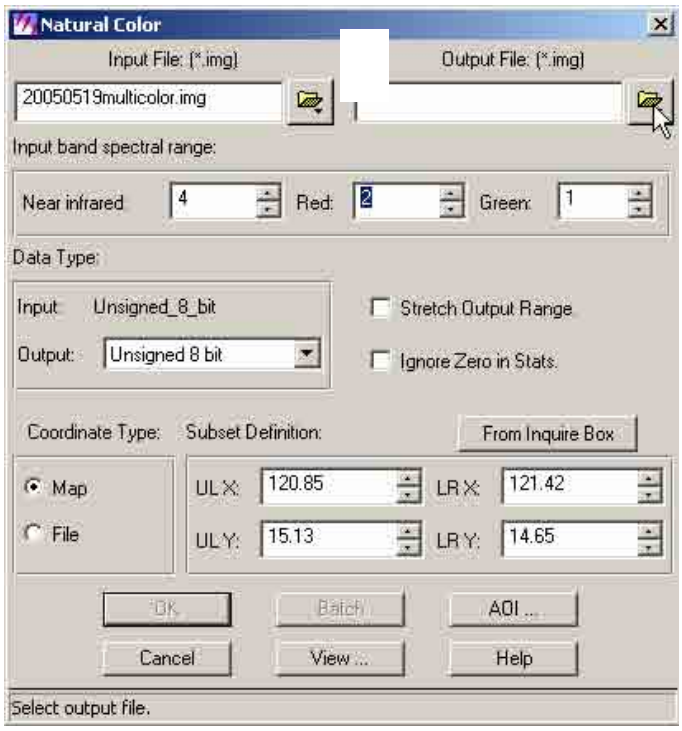
5.5 A “Natural Color…” dialog box will appear. Click the “Input File” button.



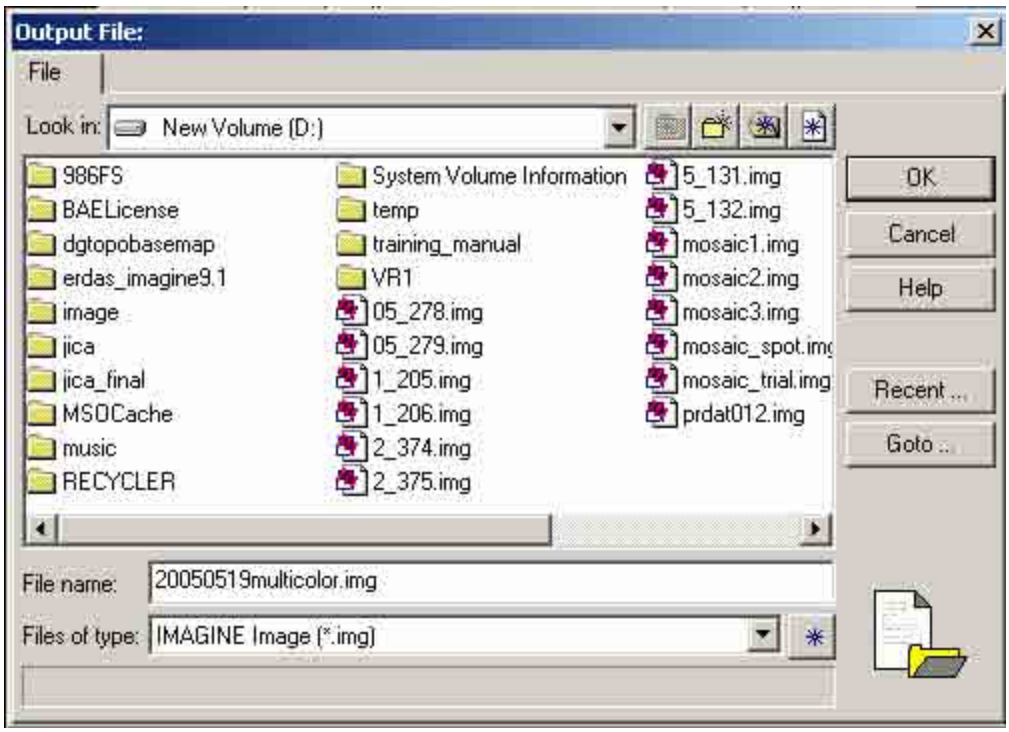

5.6 An “Input File” dialog box will appear. Browse and locate the folder of the input image file (e.g. 20005051multicolor.img). Select the input file. Then click “OK”.



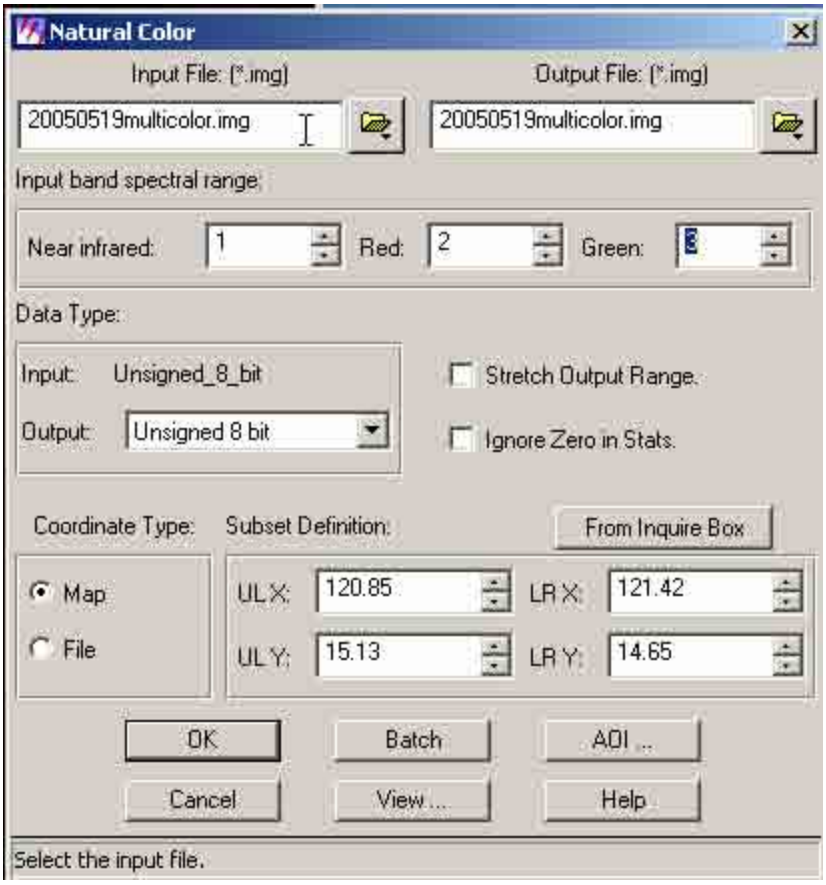
5.7 Click the “Output File” button.




5.8 An “Output File” dialog box will appear. Browse and locate the folder of the Output image file. Type the output file name (e.g. 20005051multicolor.img) in the “File name” box. Then click “OK”.



5.9 In the “Input band spectral range” set “Near Infrared” to 1, “Red” to 2, and “Green” to 3. Then click “OK”.



5.10 Wait till the system process the data. Click “OK” when done. Open a viewer and select the output file. The natural color of the image will be shown in the viewer window.

**6. Pan-Sharpen.**

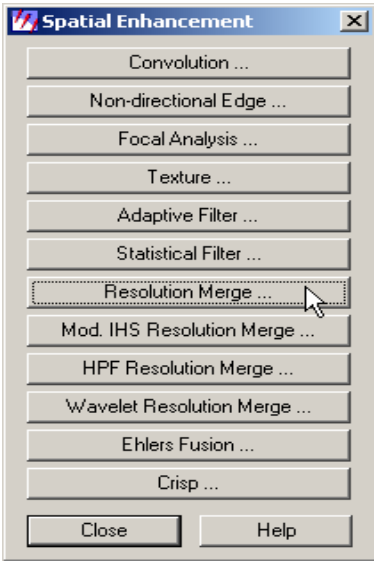
This procedure enables you to integrate imagery of different spatial resolutions (pixel size). Integrating high resolution imagery single band such as SPOT panchromatic (10m Resolution) and Multi-spectral which generally has a lower resolution produces a high resolution Multi-spectral imagery. This improves the interpretability of the data by having high resolution information of the colored image.

6.1 Click “Interpreter” 

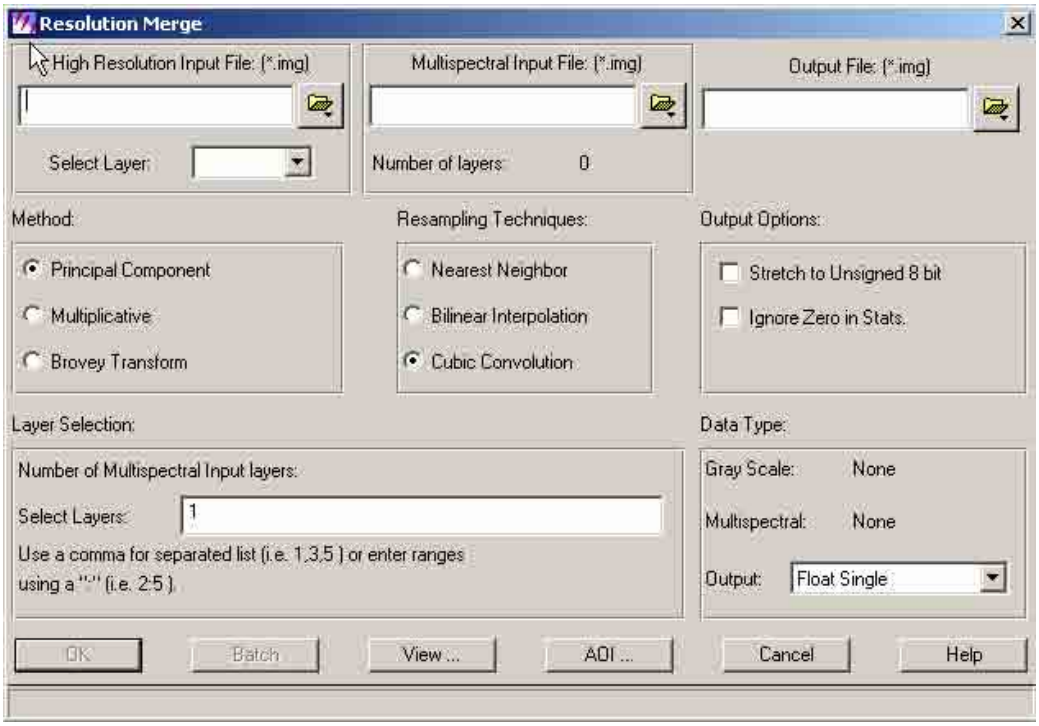
icon.

6.2 An “Image Interpreter” button box will appear. Click “Spatial Enhancement” button.

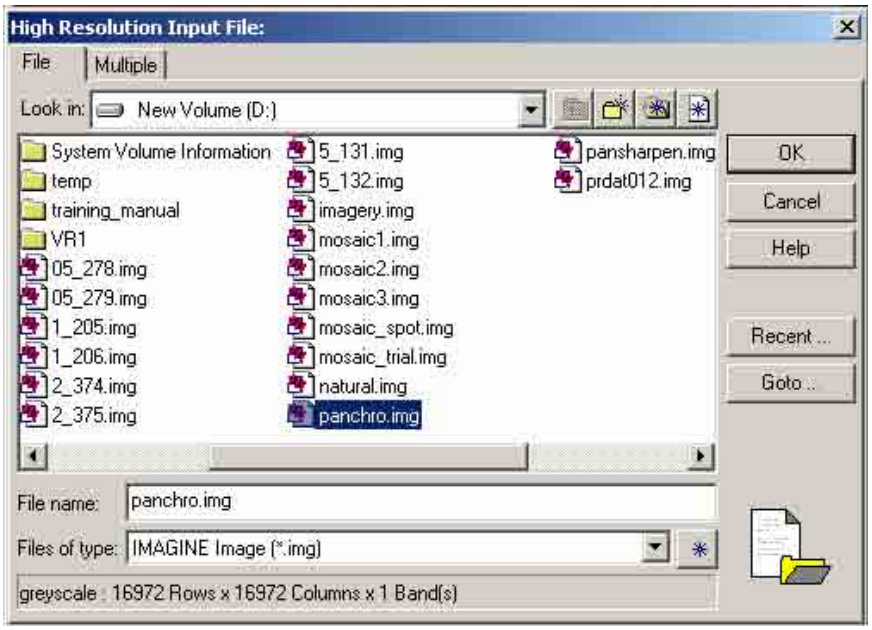
6.3 A “Spatial Enhancement” button box will appear. Click “Resolution Merge…”.



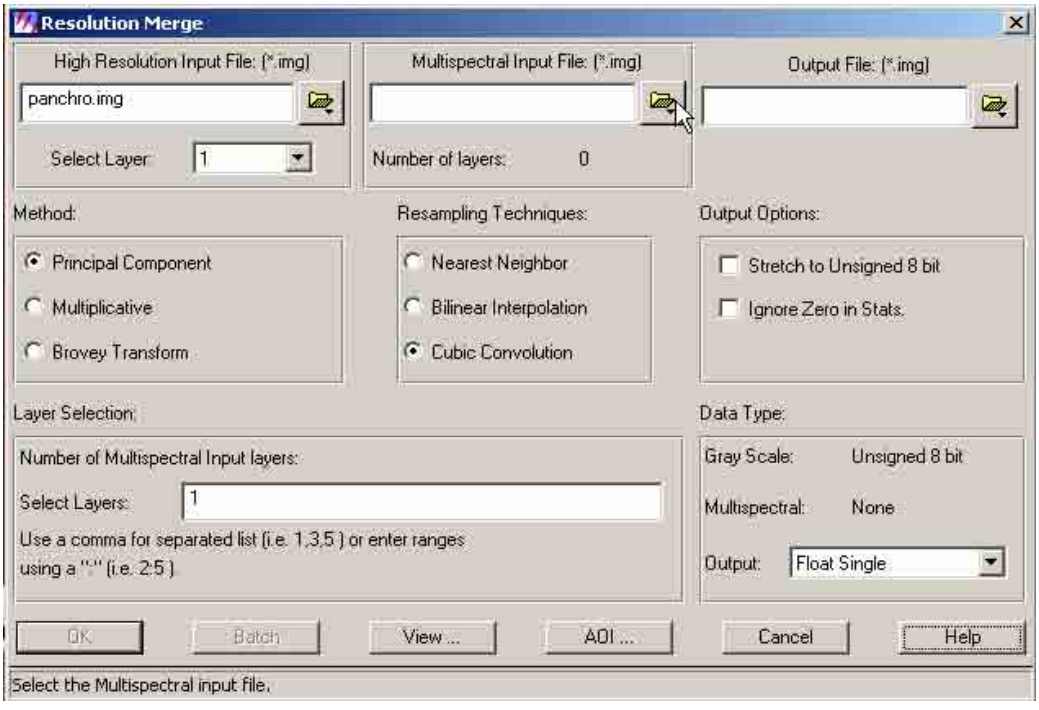

6.4 A “Resolution Merge” dialog box will appear. Click the “Input File” button in the “High Resolution Input File” box.



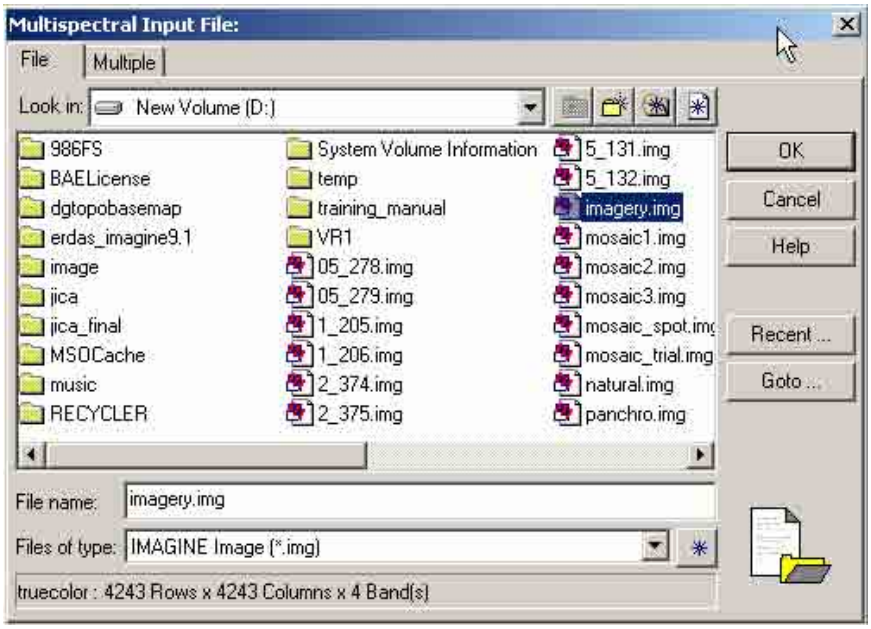
6.5 A “High Resolution Input File” dialog box will appear. Browse and locate the folder of the input image file (e.g. panchro.img). Select the input file. Then click “OK”.



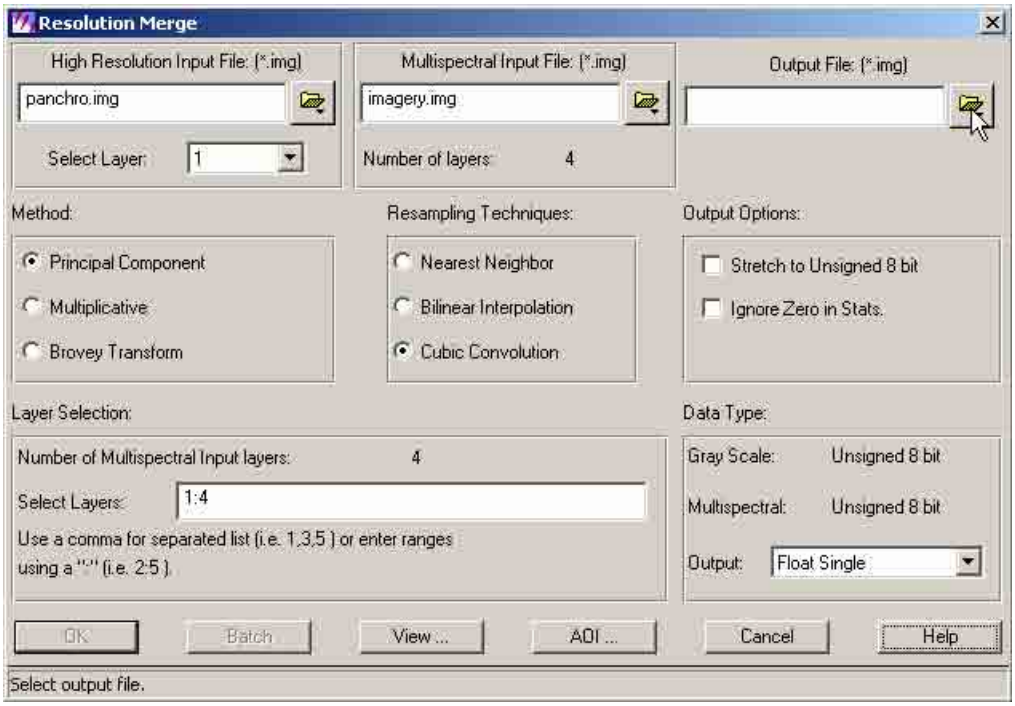

6.6 Click the “Input File” button in the “Multispectral Input File” box.



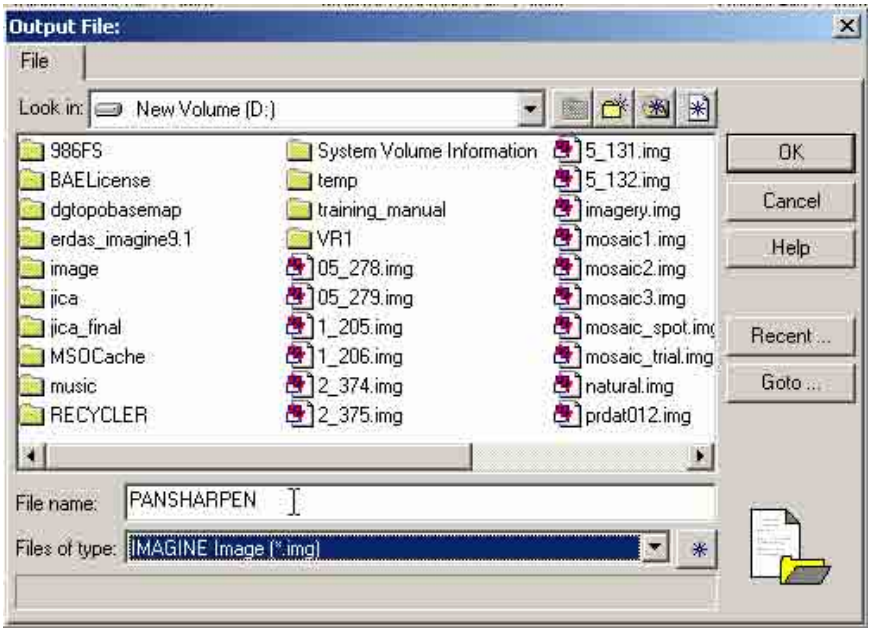
6.7 Click the “Input File” button in the “Multispectral Input File” box. Browse and locate the folder of the input image file (e.g. imagery.img). Select the input file. Then click “OK”.



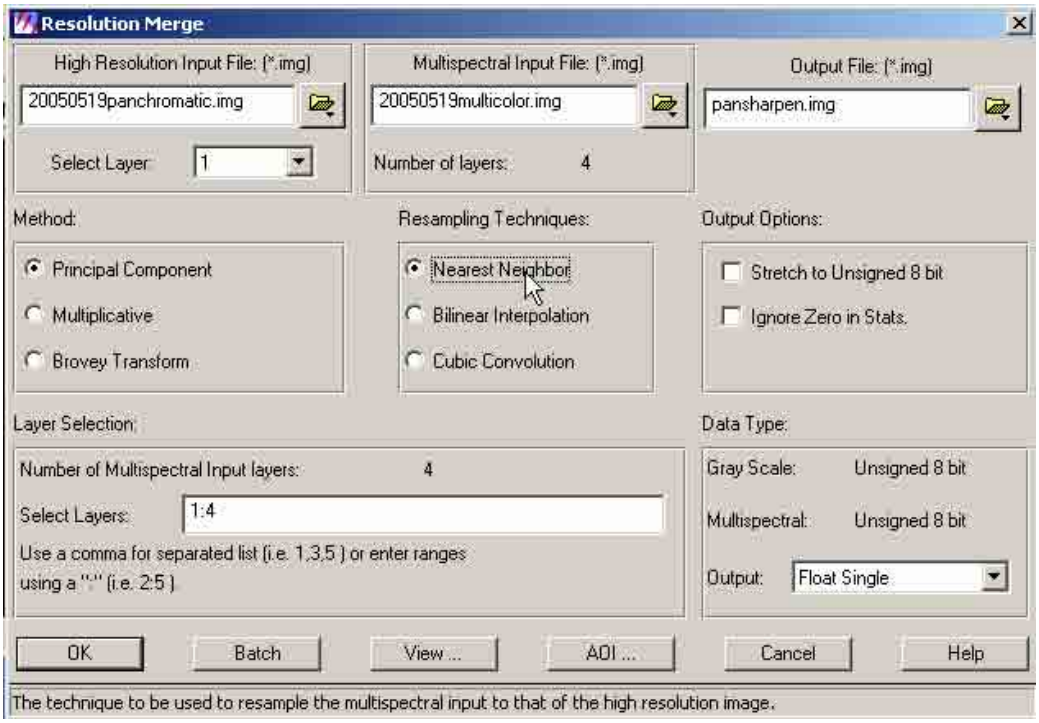

6.8 Click the “Output” button in the “Output File” box.



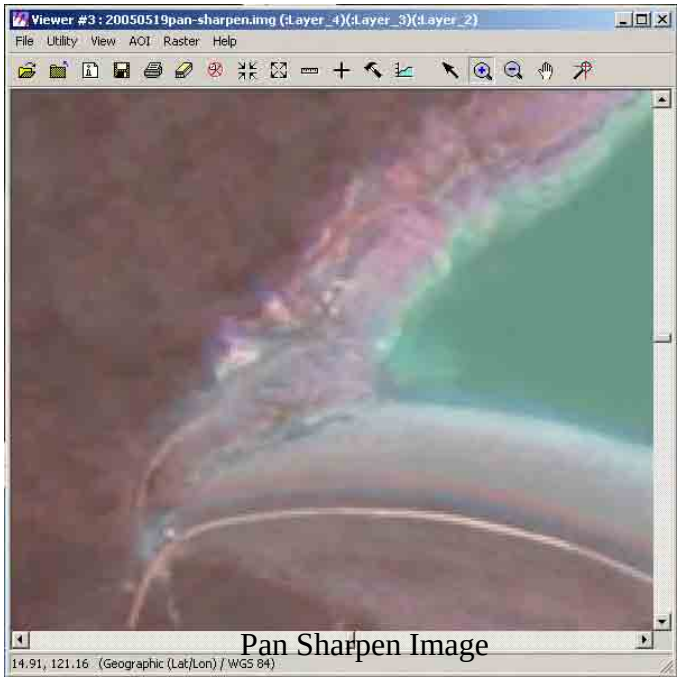
6.9 An “Output File” dialog box will appear. Browse and locate the folder where the output image is to be saved. Type the output filename (e.g. pansharpen.img) in the “File name” box. Then click “OK”



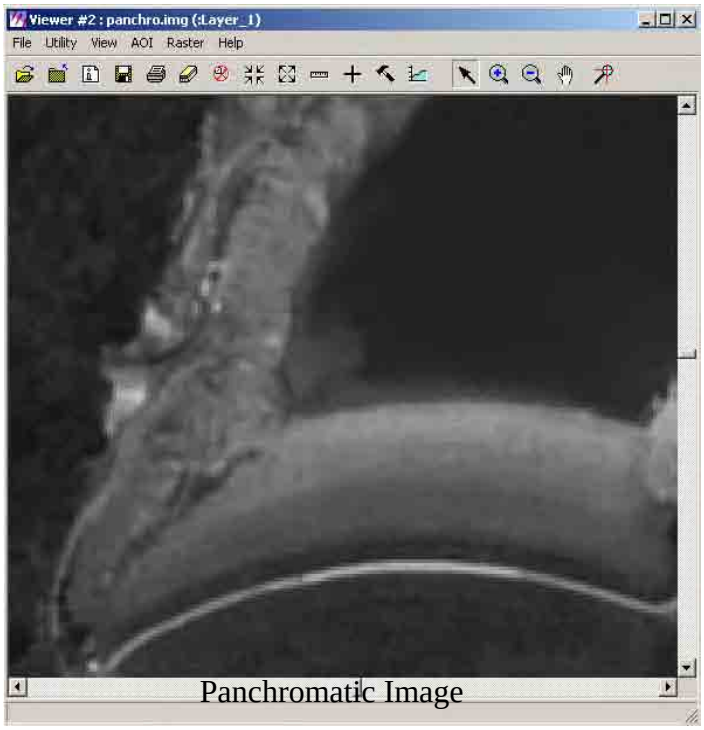

6.10 Click “Nearest Neighbor” in the “Resampling Techniques”. Then click “OK”



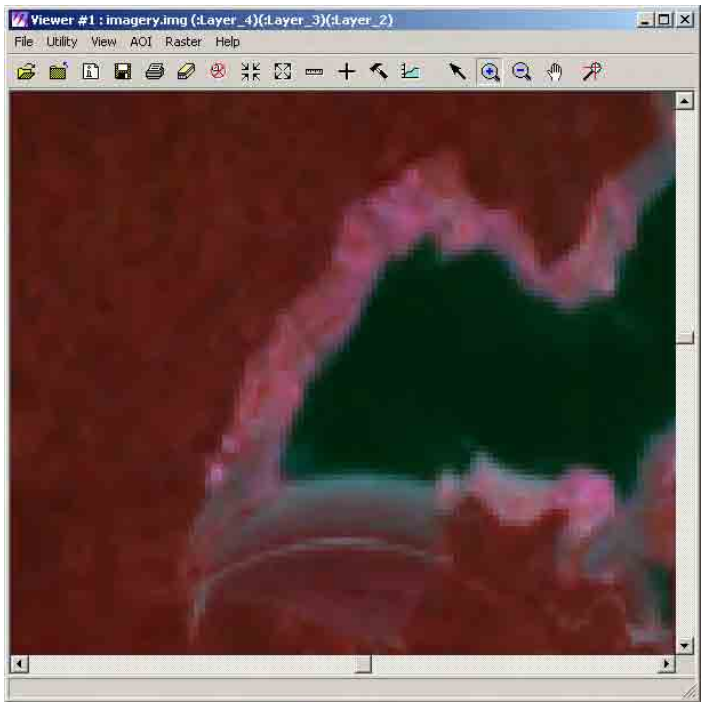
6.11 Wait till the system process the data. Click “OK” when done. Open a viewer and select the output file. The pan sharpened image will be shown in the viewer window.




Pan Sharpen Image




Panchromatic Image


Viewer #1 : imagery.img (:Layer_4)(:Layer_3)(:Layer_2)
File Utility View AOI Raster Help

## 7. Image (supervised / unsupervised) Classification

Classification is the process of sorting pixels into a finite number of individual classes, or categories of data, based on their data file values. If a pixel satisfies a certain set of criteria, then the pixel is assigned to the class that corresponds to that criteria.
For the first part of the classification process, the computer system must be trained to recognize patterns in the data. Training is the process of defining the criteria by which these patterns are recognized. The result of training is a set of signatures, which are criteria for a set of proposed classes.
There are two ways to classify pixels into different categories:

- supervised
- unsupervised

### 7.1 Supervised classification

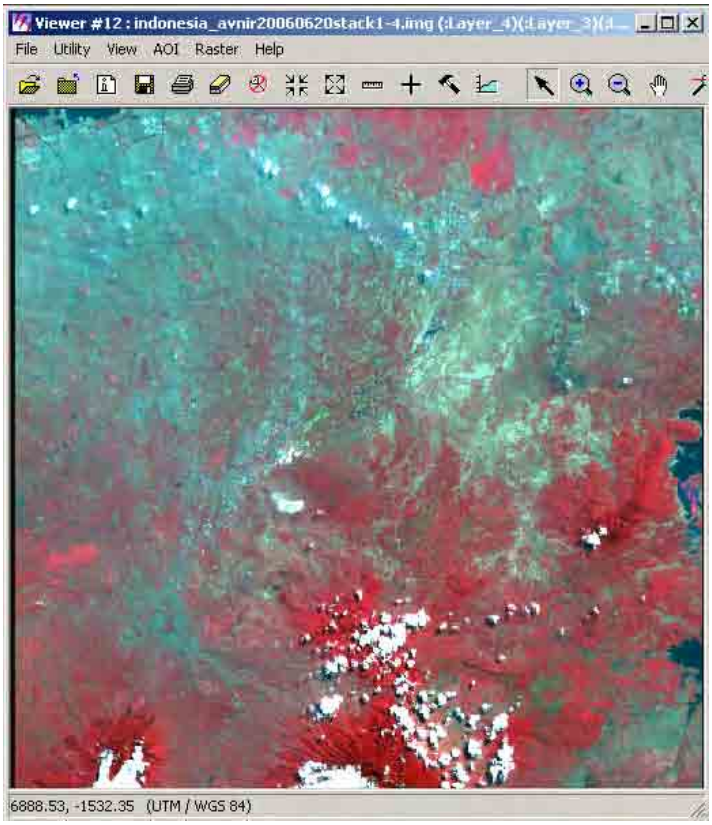
Many of the Classification tools can also be accessed through the Signature Editor This utility allows you to perform a supervised classification on an [.img format] using various decision rules. This utility can also be accessed from the Signature Editor. Select Supervised Classification from the Classification menu to open this Supervised Classification dialog.

In order to create signatures, you must have the image you are classifying opened in a Viewer.

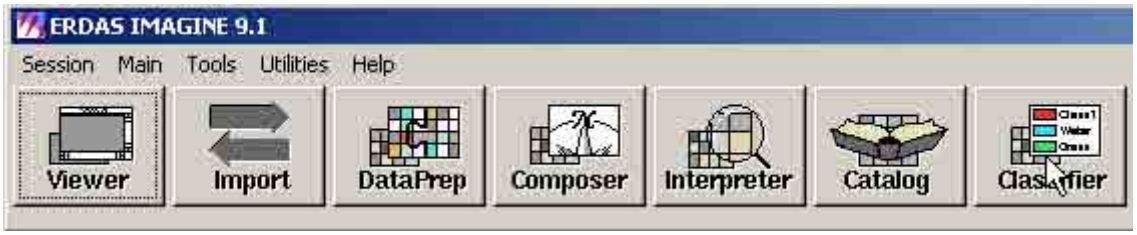
7.1.1 Open “Erdas Imagine 9.1”. A “Select Viewer Type” dialog box will appear. Click “Classic Viewer”. Then click “OK”.


7.1.2 The classic menu bar and a viewer window will appear.

7.1.3 On the viewer window click the “Open Layer” icon. Browse and locate folder of the file (e.g. Indonesia_AVNIR20060620stack1-4.img) to be classified. Select the input file. Then click “OK”.

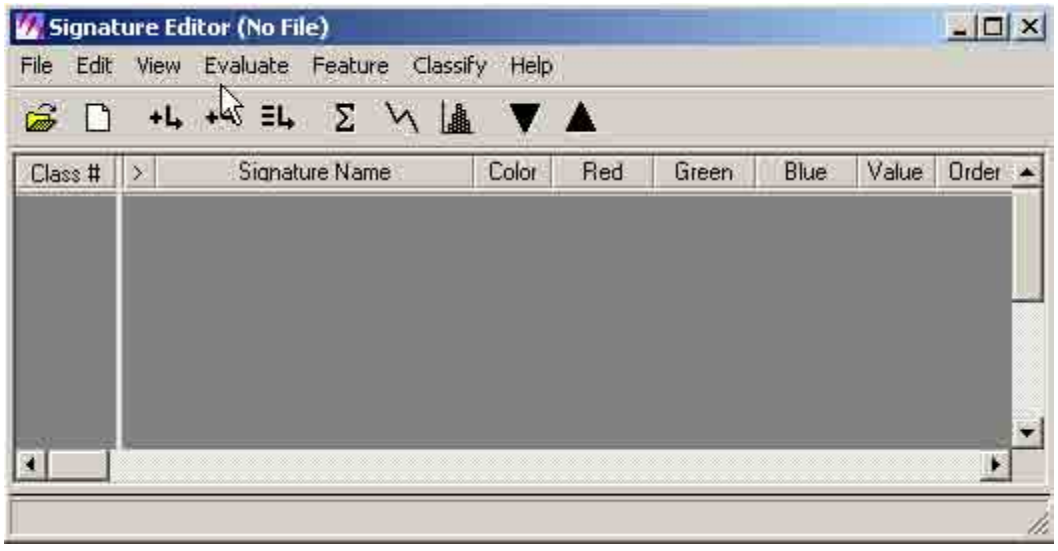



7.1.4 Click “Classifier” in the main menu icon.



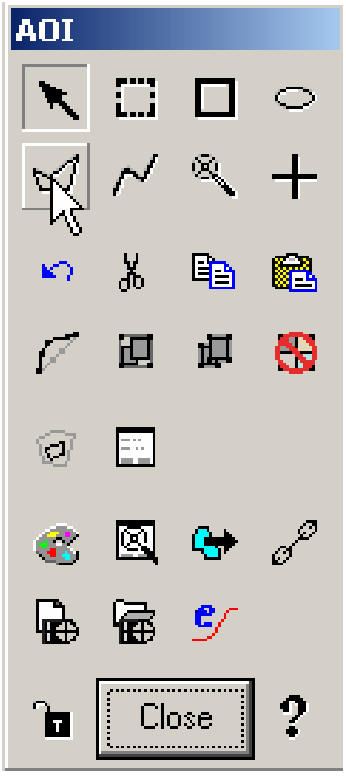
7.1.5 A “Classification” button box will appear. Click “Signature Editor”


7.1.6 A “Signature Editor” dialog box will appear.

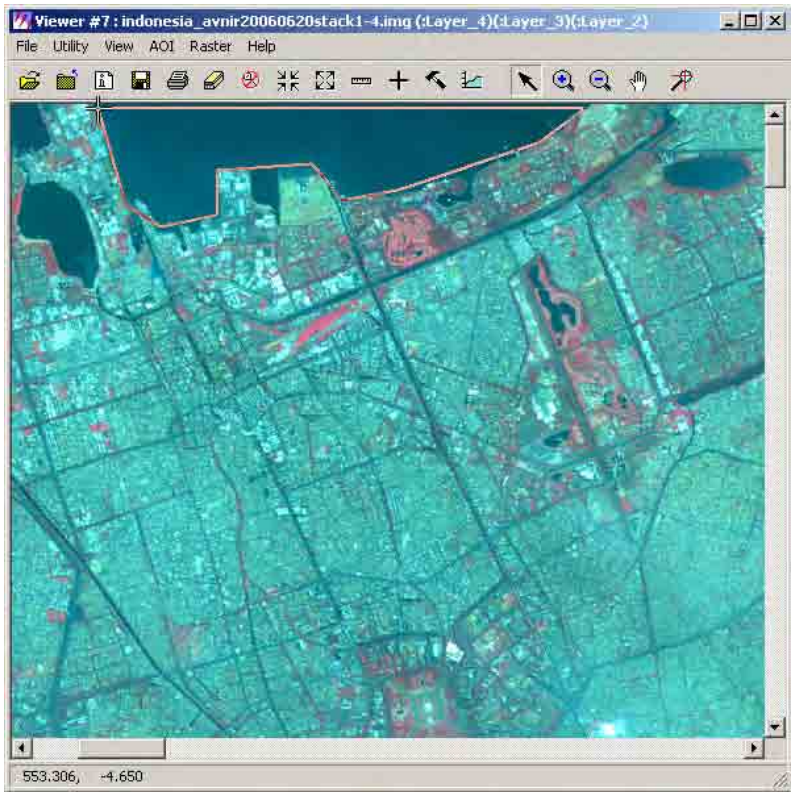


7.1.7 Click “AOI” and select “Tools”.

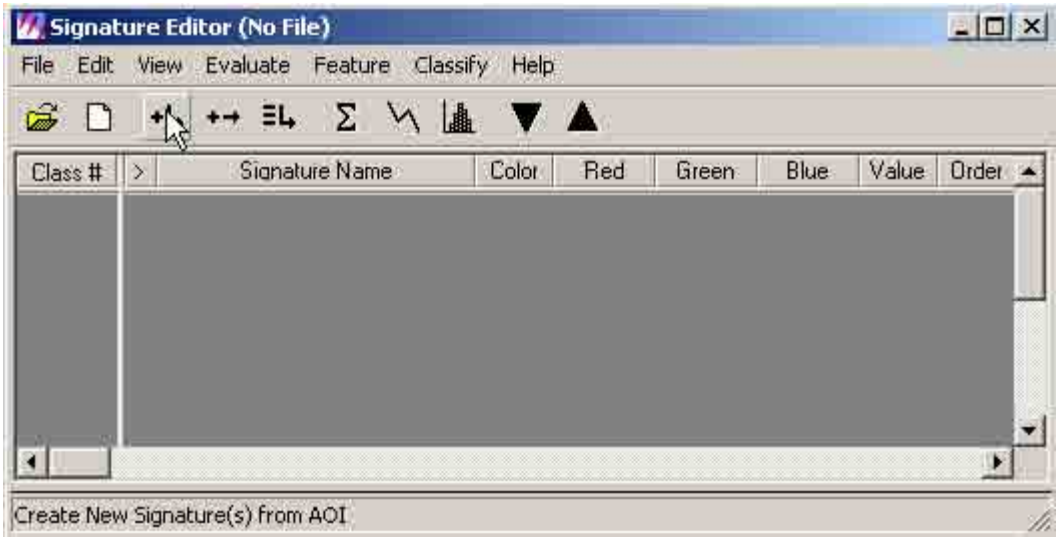

7.1.8 An “AOI” Icon menu will appear. Click the “Create Polygon” (manual digitizing of sample classification area limit).



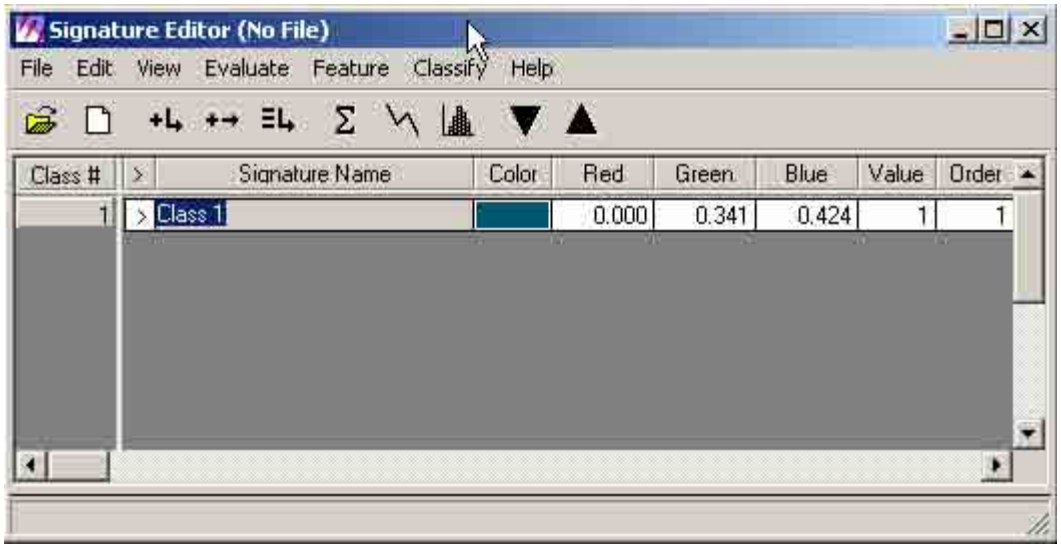
7.1.9 On the viewer window, digitize a particular area feature and double click at the end of the selection to create a polygon.




7.1.10 Click “Create New Signature” in the “Signature Editor” dialog box.

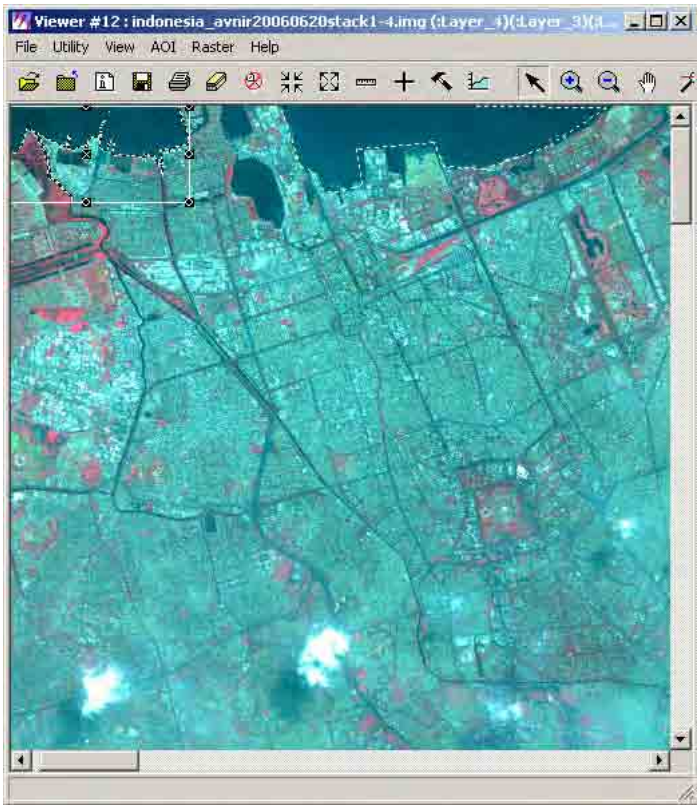


7.1.11 A signature name will be added.



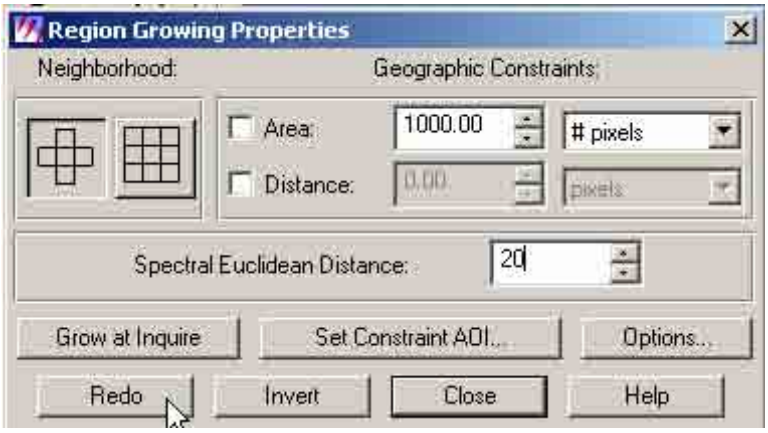

7.1.12 Click “Region Grow” icon.

7.1.13 Select a particular area, click left mouse button and a sample region (polygon) limit area will automatically be created.

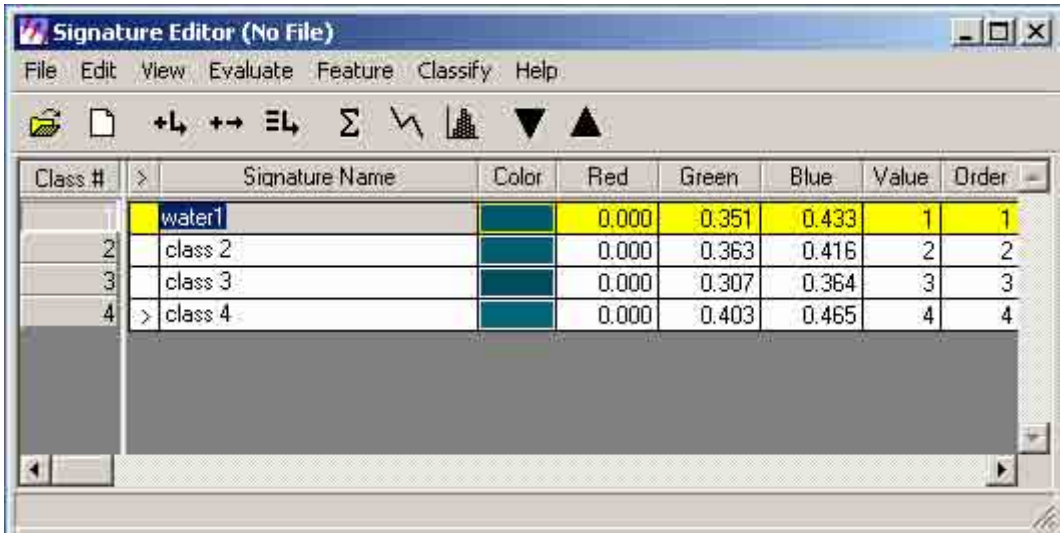



7.1.14 Click "Region Growing Properties" icon.

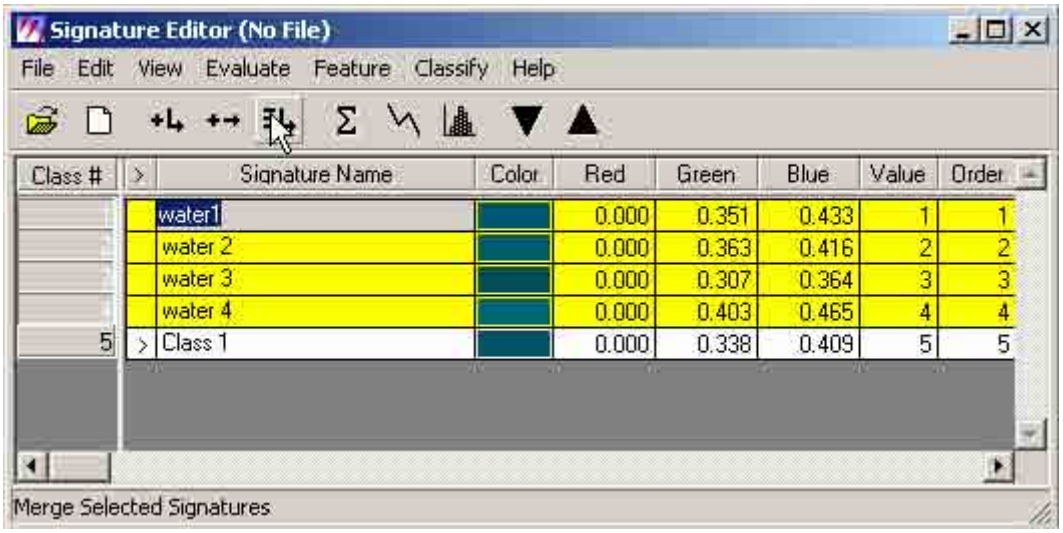
7.1.15 A “Region Growing Properties” dialog box will appear. Adjust “Spectral Euclidean Distance” value. Then click “Redo”.



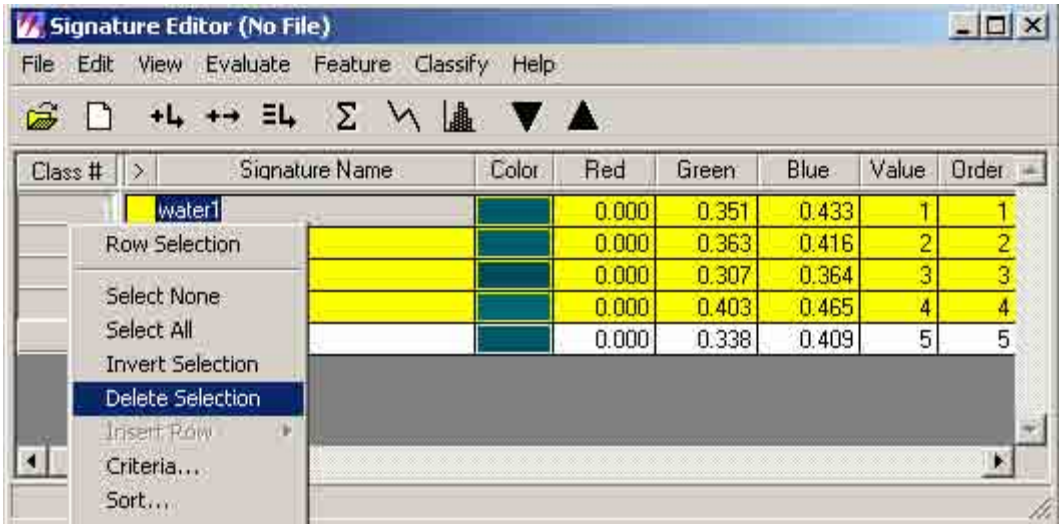

7.1.16 Select and create at least four sample classification area limit of the same feature class (e.g. water area). Then create each signature. Edit signature name (e.g. water 1)



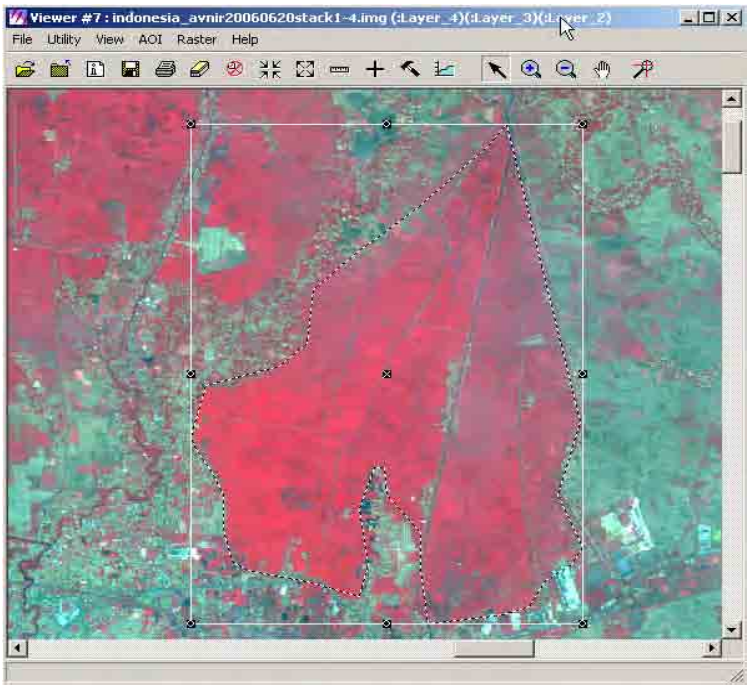
7.1.17 Select all the signature name created and click “Merge Selected Signatures.



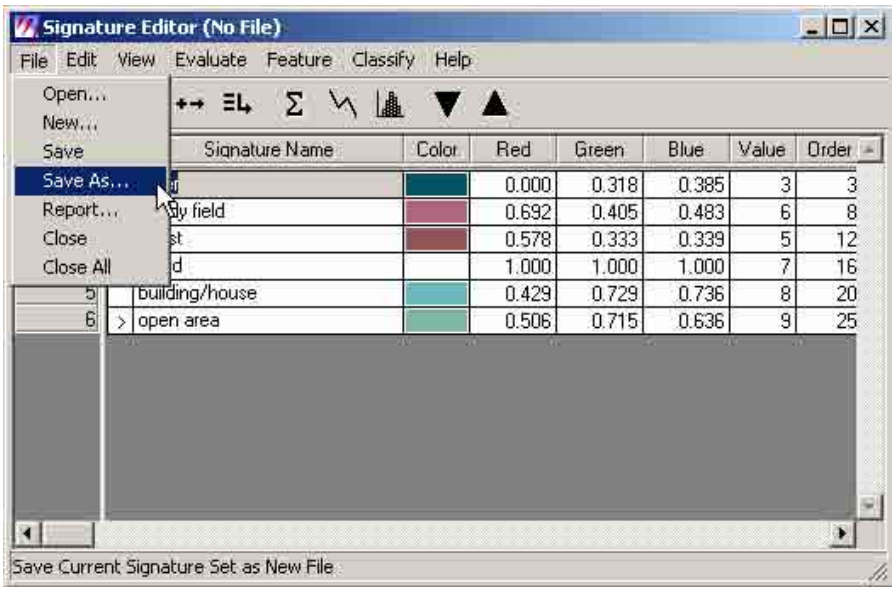

7.1.18 Edit the created signature name from the merge command. Select the previous created signatures. Put pointer arrow on the “Class #” and click right mouse button. Select “Delete Selection”



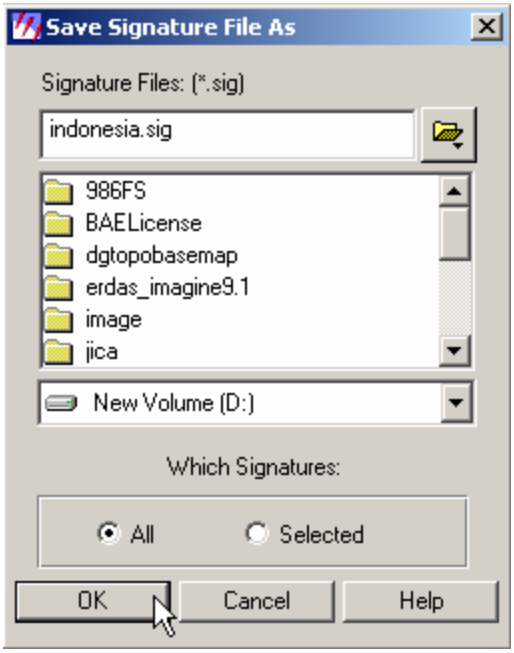
7.1.19 Zoom in to another area and select another feature class using the create polygon icon or the “Region Grow” icon. At least four sample classification area limit of the same feature class ( e.g. paddy field). Then repeat steps 7.1.15 to 7.1.18.




7.1.20 When all the signature name of feature classes have all been created, click “File” and select “Save As”

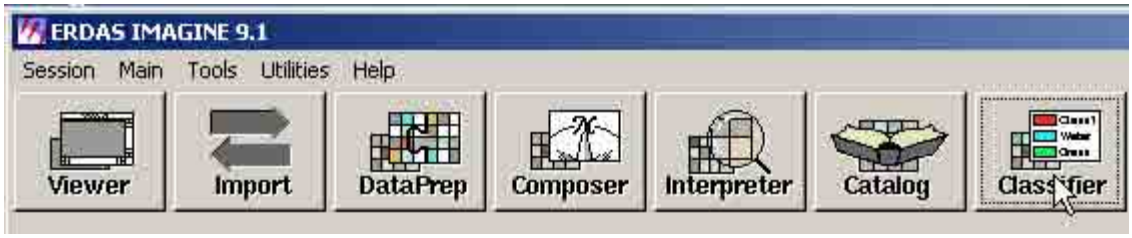


7.1.21 A “Save Signature File As” dialog box will appear. Click the ”Signature Files” output button.



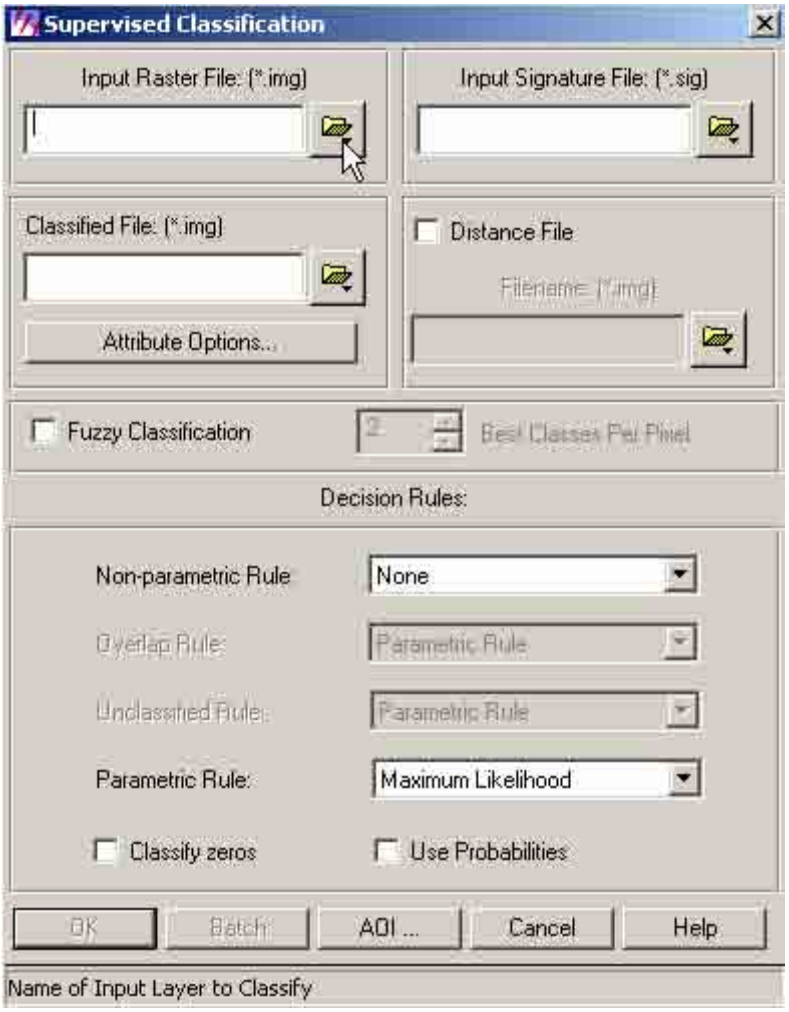

7.1.22 A “Signature Files” dialog box will appear. Browse and locate the folder where the output image is to be saved. Type the output filename (e.g. Indonesia.sig) in the “File name” box. Click “OK”. Then click “OK” in the “Save Signature File As” dialog box.

7.1.23 Click “Classifier” in the main menu icon.

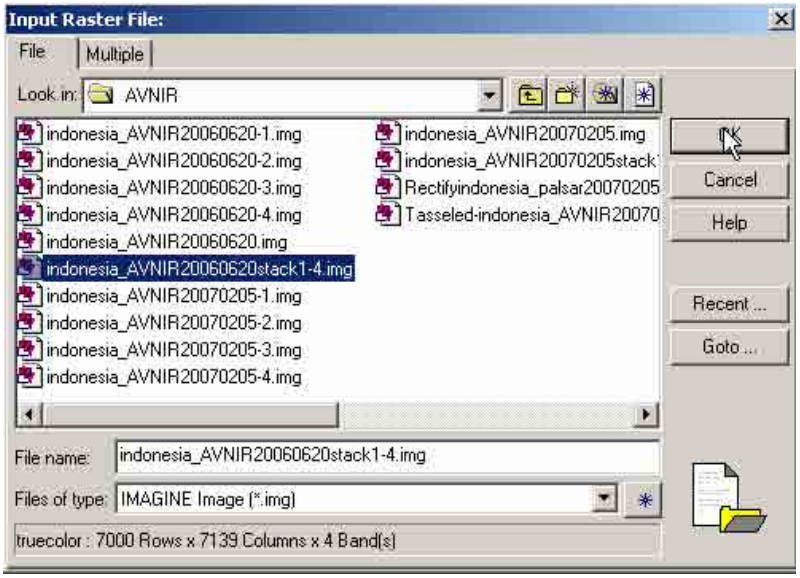



7.1.24 “Classification” button box will appear. Click “Supervised Classification”.

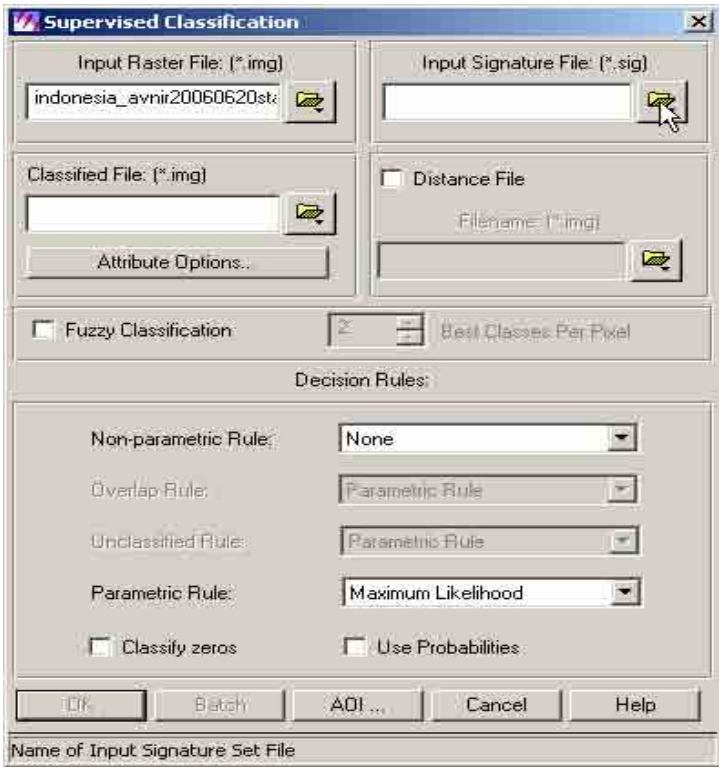
7.1.25 A “Supervised Classification” dialog box will appear. Click the “Input Layer” button.



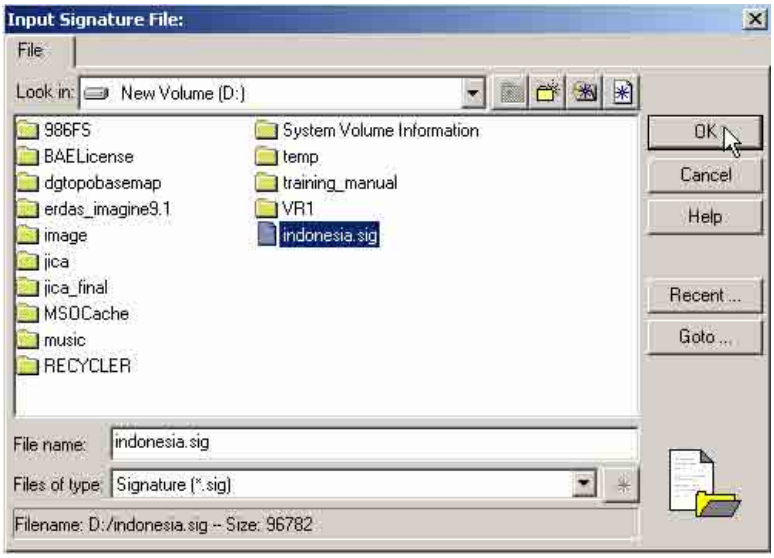
7.1.26 An “Input Raster File” dialog box will appear. Browse and locate folder of the raster file (e.g. Indonesia_AVNIR20060620stack1-4.img) to be supervised. Select the input file. Then click “OK”.



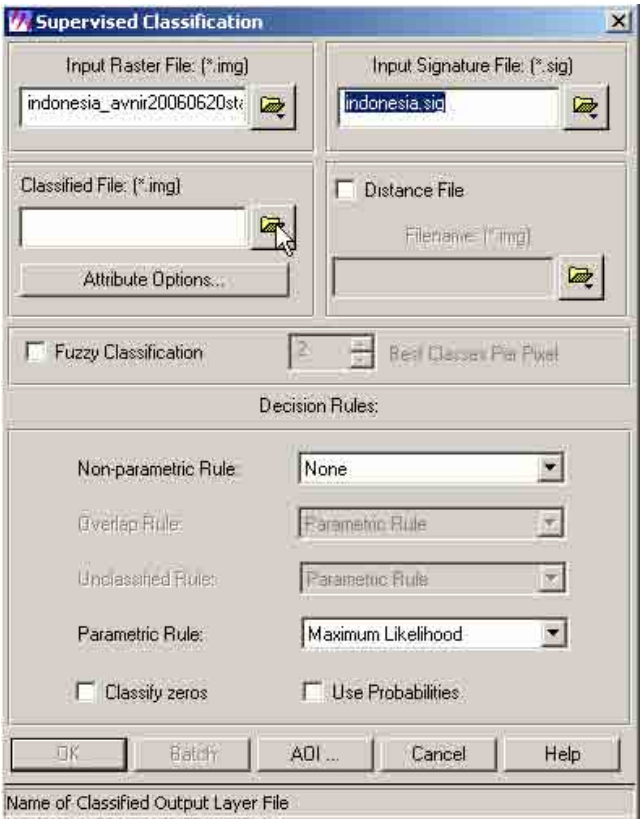

7.1
.27 Click the “Input Signature File” button.



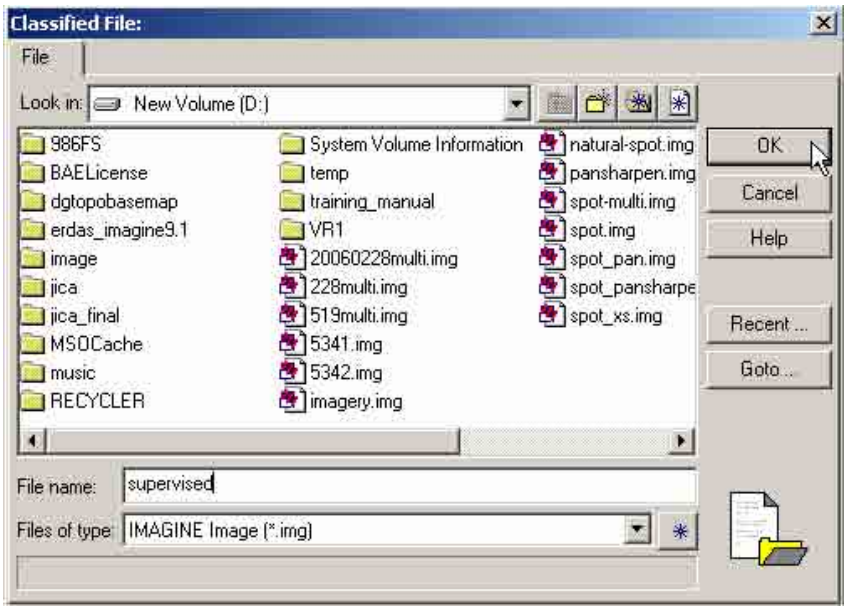
7.1.28 An “Input Signature File” dialog box will appear. Navigate thru the directory and locate folder of the signature file (e.g. Indonesia.sig) that was created. Select the input file. Then click “OK”.



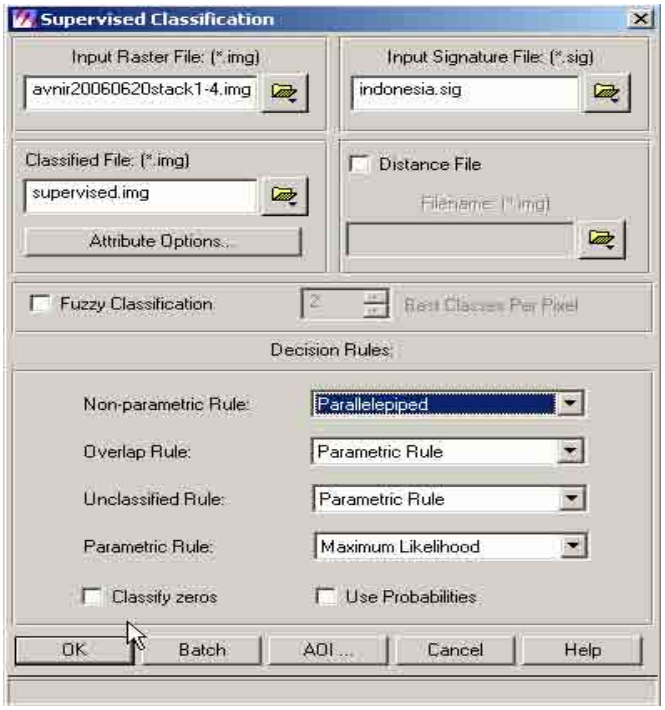

7.1.29 Click the “Classified Output File” button.



7.1.30 A “Classified Output File” dialog box will appear. Browse and locate the folder where the output classified image is to be saved. Type the output filename (e.g. supervised.img) in the “File name” box. Then click “OK”.

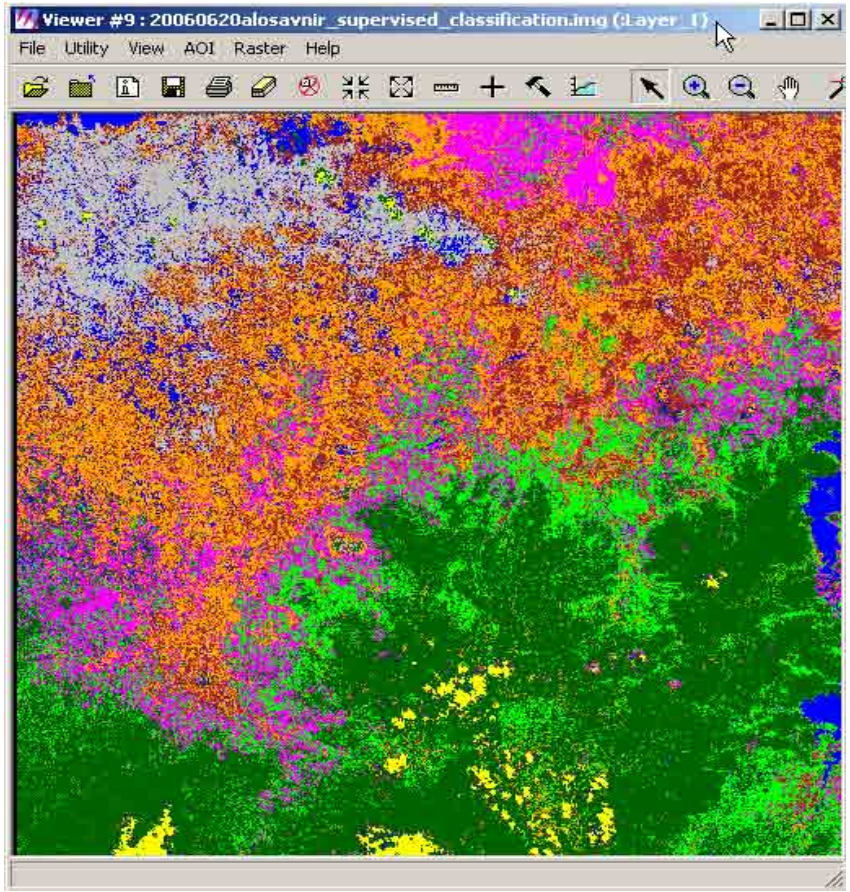



7.1.31 Set “Parallelepiped” in the “Non-parametric Rule”. Then click “OK”.



7.1.32 The system will process the data. Click “OK” when done.


7.1.33 Open a viewer and open the created image (e.g. supervised.img)

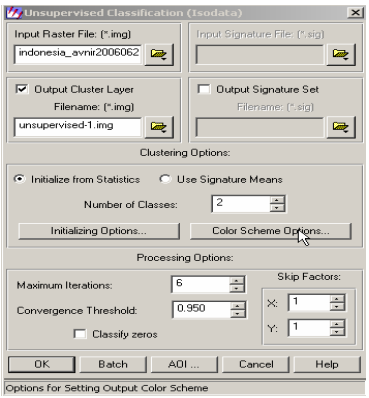


7.2 Unsupervised classification

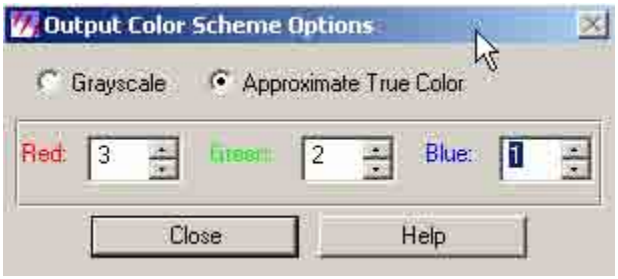
This section shows you how to create a thematic raster layer by letting the software identify statistical patterns in the data without using any ground truth data.

7.2.1 Open a viewer and open the created image (e.g. supervised.img)

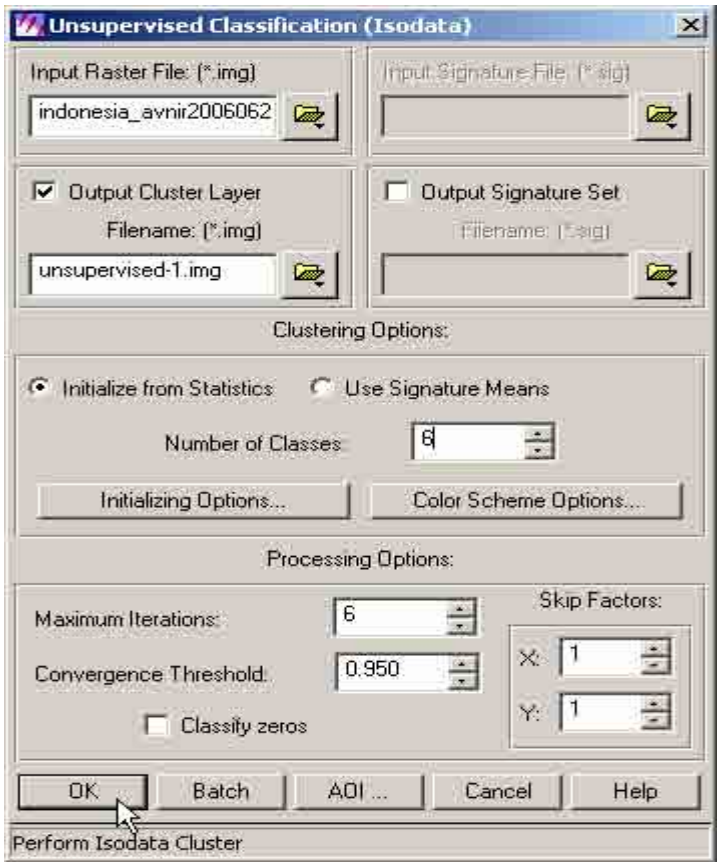

7.2.2 An “Unsupervised Classification (Isodata)” dialog box will appear. Click the “Input Raster File” button  . Navigate thru the directory and select the image file (e.g. Indonesia_AVNIR20060620stack1-4.img). Click the “Output Cluster Layer” button  . Navigate to the directory where you want to store your output image, and type the name of the new file (e.g. unsupervised-1.img). Uncheck “Output Signature Set”. Then click “Color Scheme Options” button.



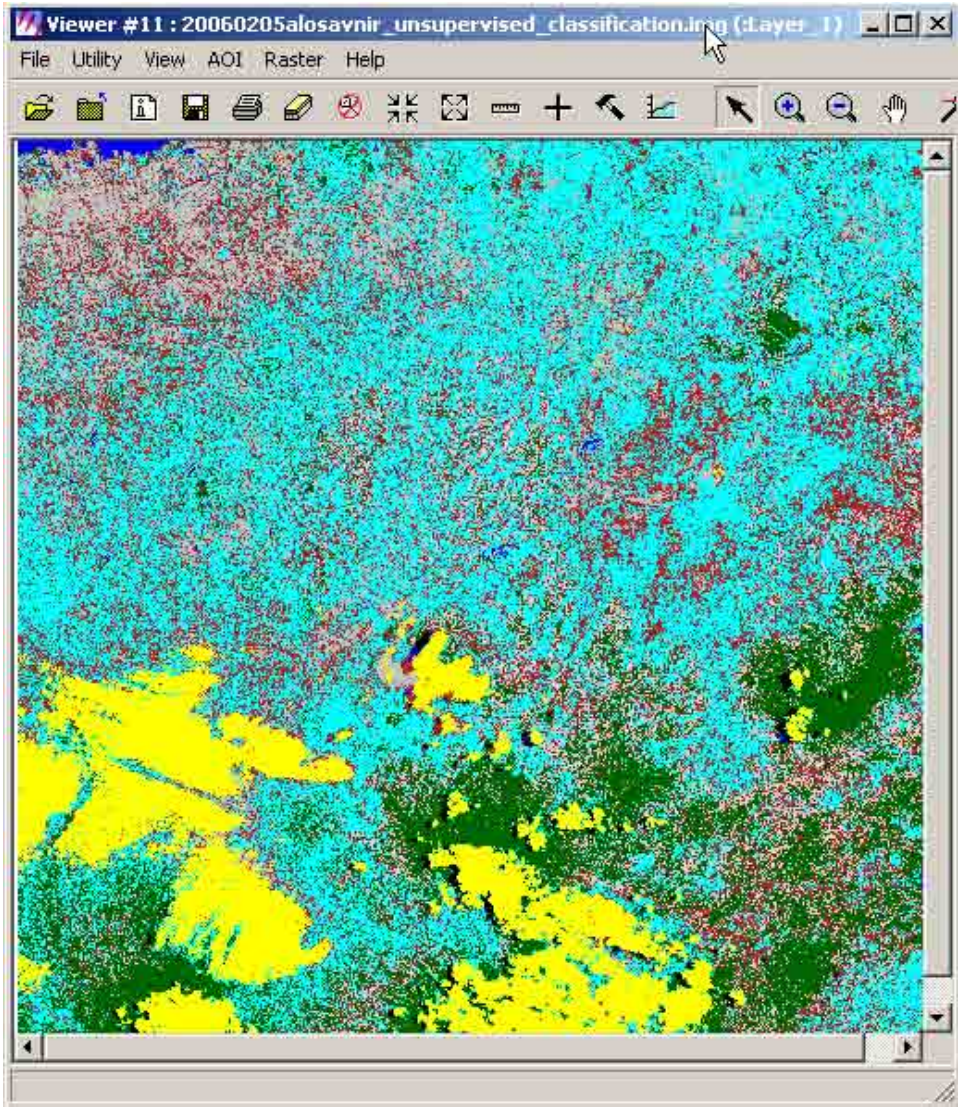
7.2.3 A “Output Color Scheme Options” dialog box will appear. Click “Approximate True Color”. Set “Red” to 3, “Green” to 2, and “Blue” to 1. Then click “Close”.




7.2.4 Set “Number of Classes” to 6 (depends on how many classes you want to generate). Click “OK” in the “Unsupervised Classification (Isodata)” dialog box.



7.2.5 Open a viewer and open the created image (e.g. unsupervised-1.img)



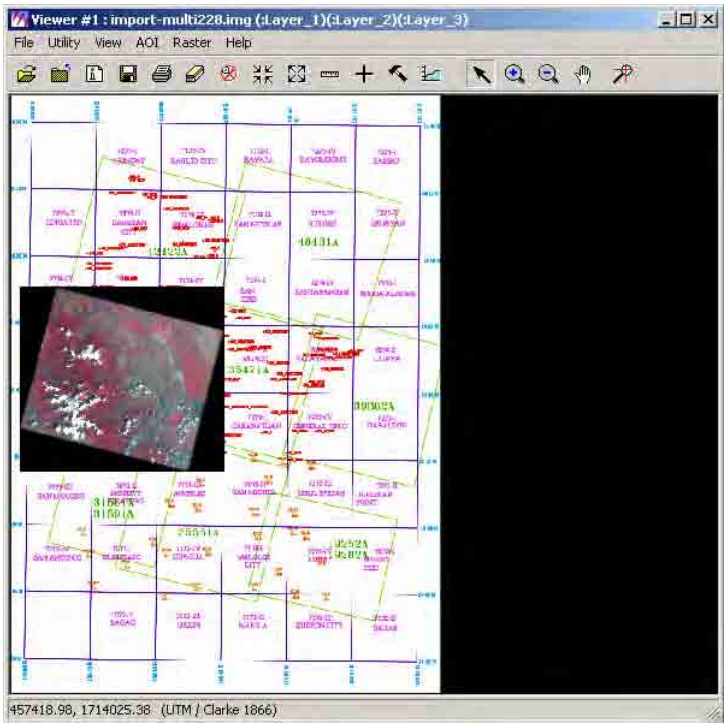
## 8. Geometric Correction

Rectification is the process of projecting the data onto a plane and making it conform to a map projection system. Assigning map coordinates to the image data is called georeferencing. Since all map projection systems are associated with map coordinates, rectification involves georeferencing. The orthorectification process removes the geometric distortion inherent in imagery caused by camera/sensor orientation, topographic relief displacement, and systematic errors associated with imagery.

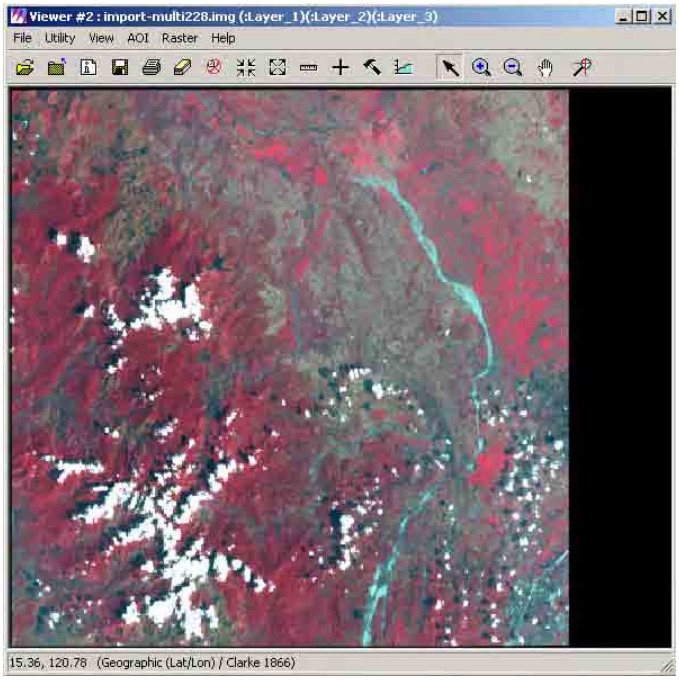
Orthorectified images are planimetrically true images that represent ground objects in their true "real-world" X and Y positions. For these reasons, orthorectified imagery has become accepted as the ideal reference image backdrop necessary for the creation and maintenance of vector data contained within a GIS.

By performing space resection, the effects of camera/sensor orientation have been considered and removed. By defining a DEM or constant elevation value (ideal for use in areas containing minimal relief variation), the effects of topographic relief displacement can be considered and removed.

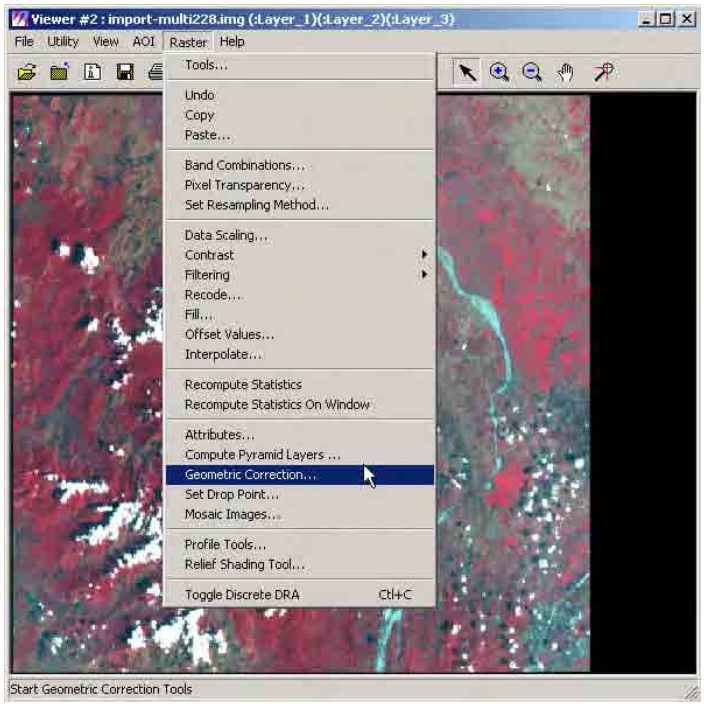
8.1 Open "Erdas Imagine 9.1". A "Select Viewer Type" dialog box will appear. Click "Classic Viewer". Then click "OK". Open index file (e.g. 50000index_alls.img) and the image (e.g. import-multi228.img).



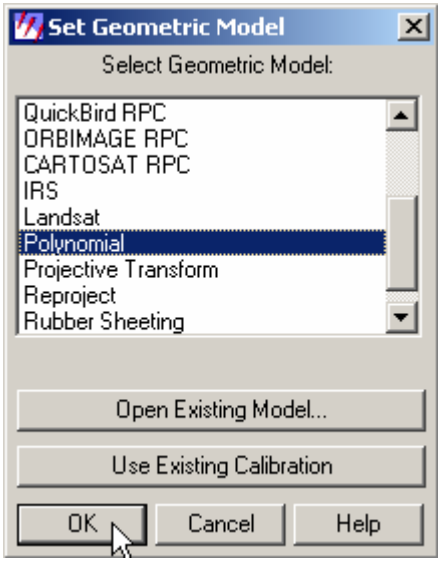
8.2 Open another viewer window and open the image to be rectified.



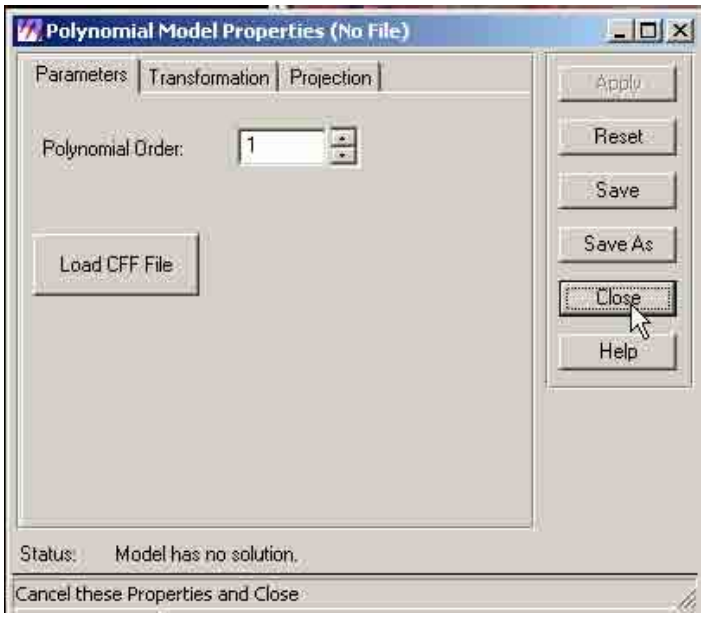

8.3 In the image to be rectified window, click “Raster” and select “Geometric Correction…”.



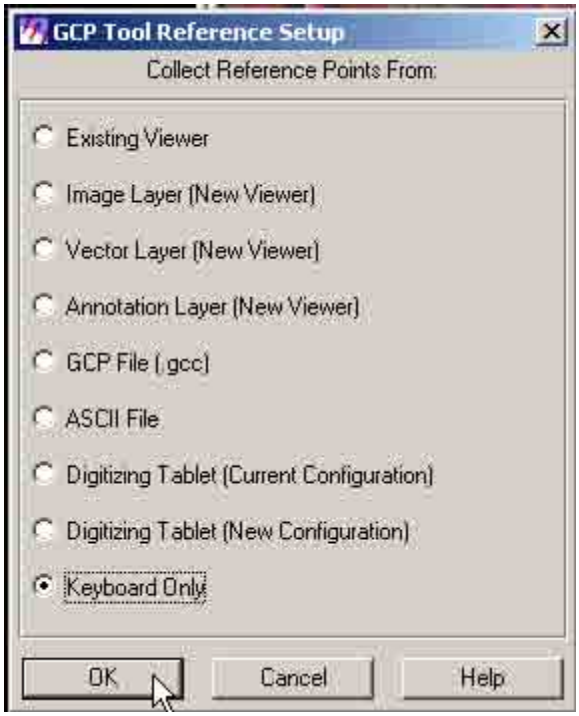
8.4 A “Set Geometric Model” dialog box will appear. Select “Polynomial”. Then click “OK”.




8.5 A “Polynomial Model Properties” dialog box will appear. Then click “Close”.

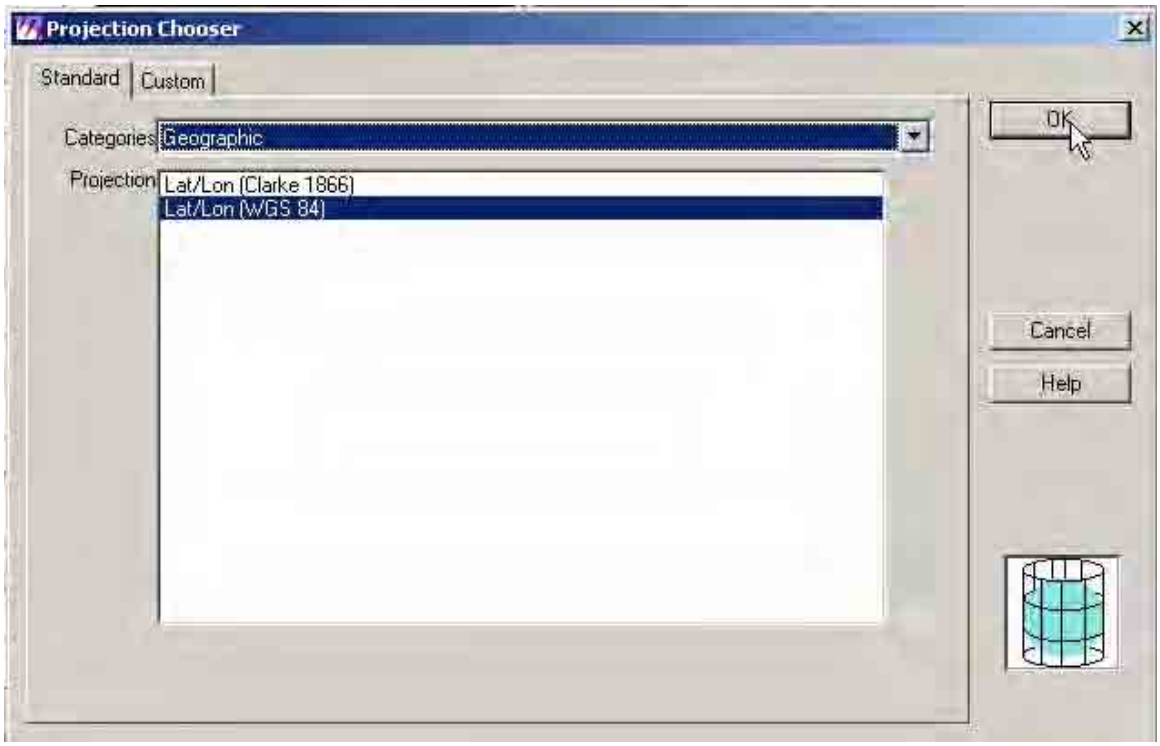


8.6 A “GCP Tool Reference Setup” dialog box will appear. Click “Keyboard Only”. Then click “OK”.

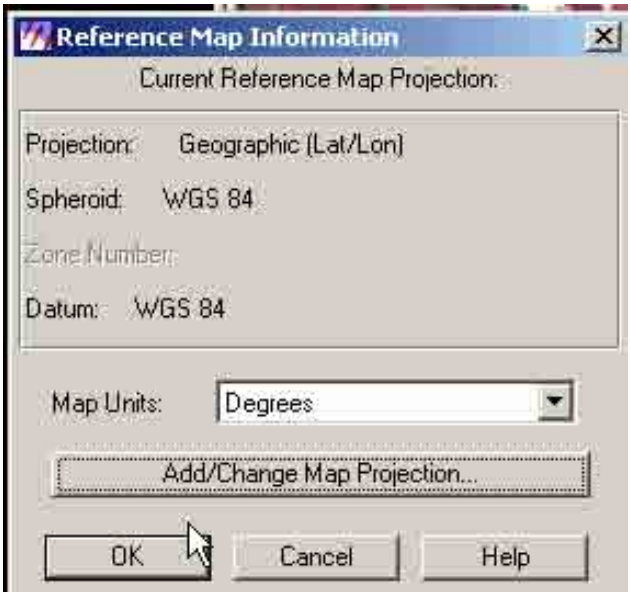



8.7 A “Reference Map Information” dialog box will appear. Click “Add/Change Map Projection”.

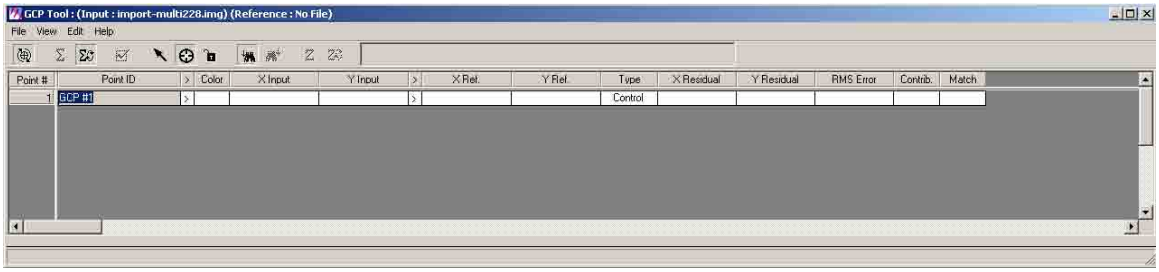
8.8 A “Projection Chooser” dialog box will appear. Set “Geographic” in “Categories”. Select “Lat/Lon[WGS 84] in “Projection”. Then click “OK”.



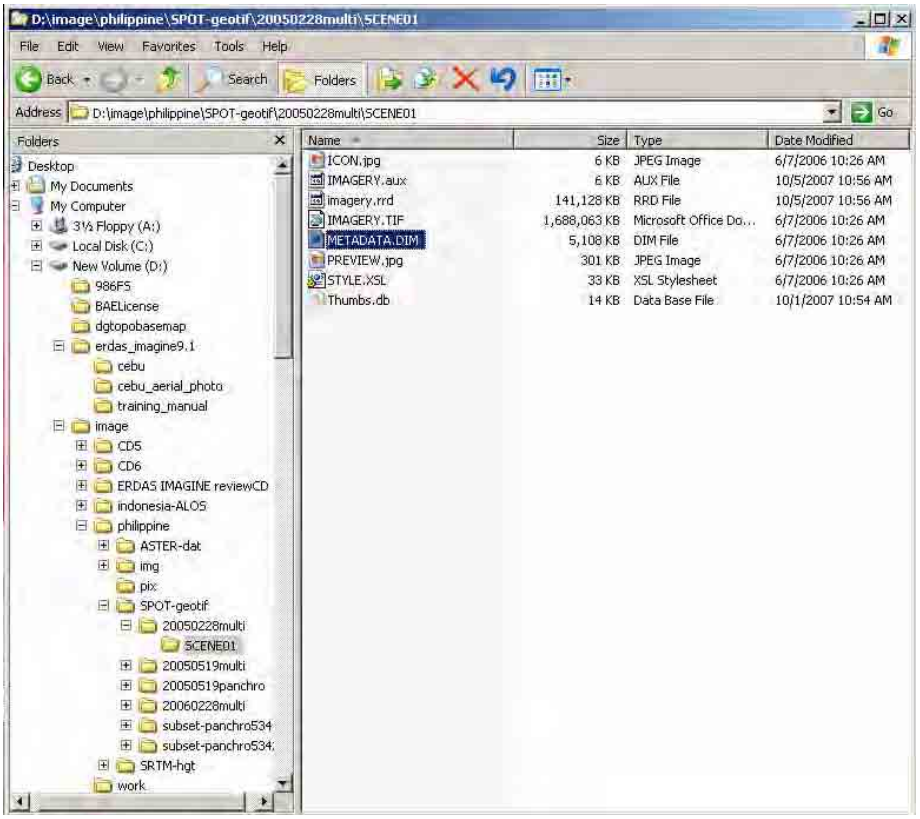

8.9 Click “OK” in the “Reference Map Information”.



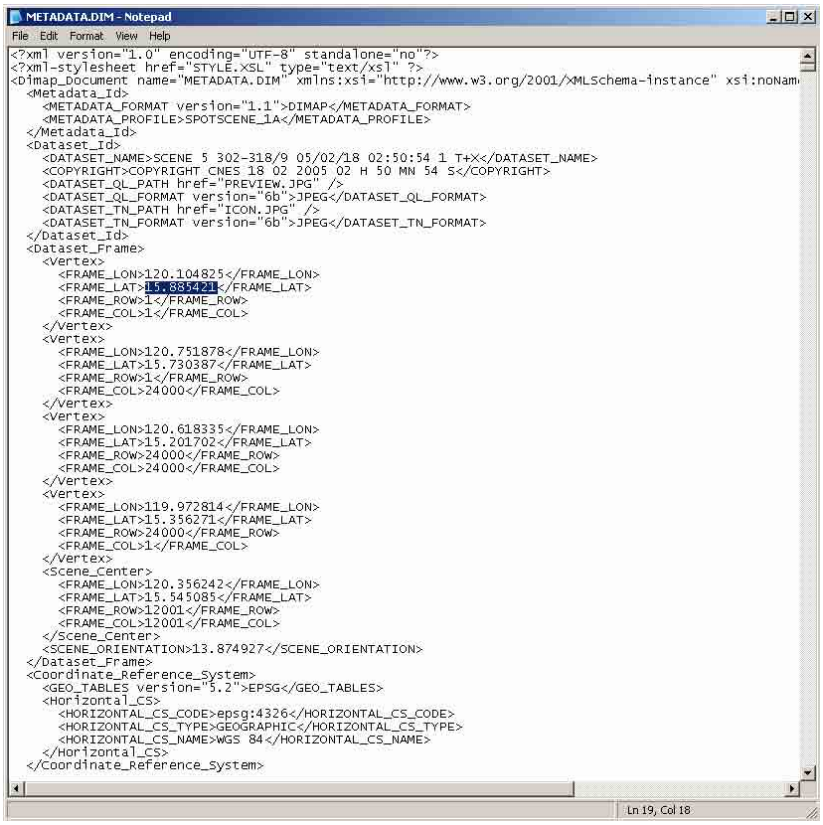
8.10 A “GCP Tool” dialog box will open.



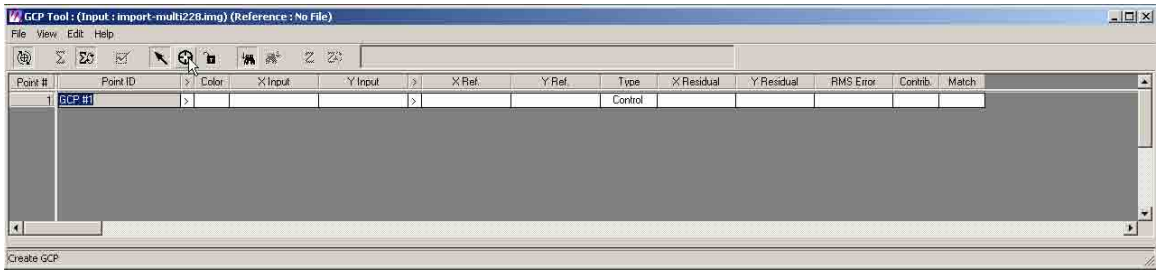

8.11 Using the explorer navigate thru the directory and access “Metadata.Dim” file which contains the metadata of the image (2005022mlti).



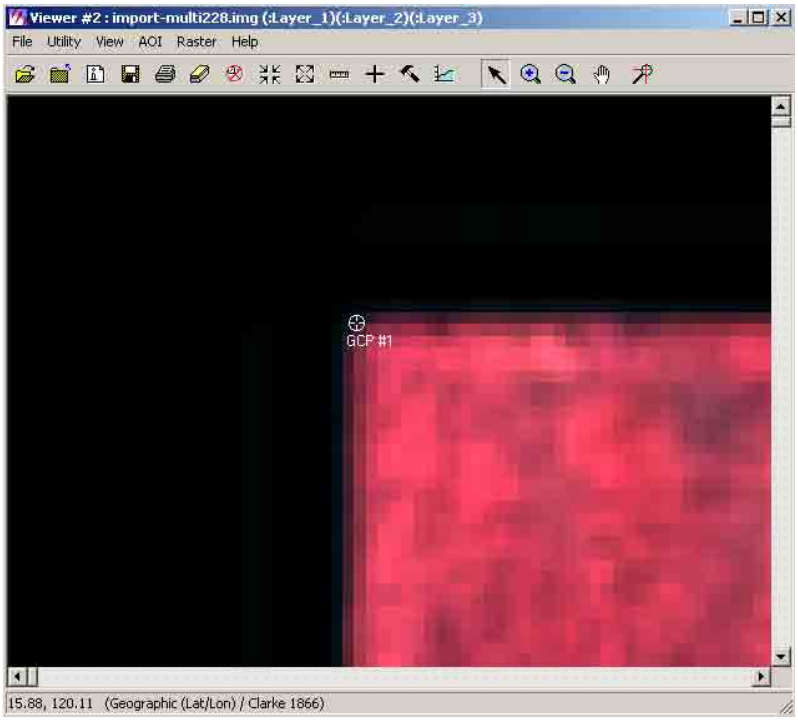
8.12 Open “Metadata.DIM” with notepad.



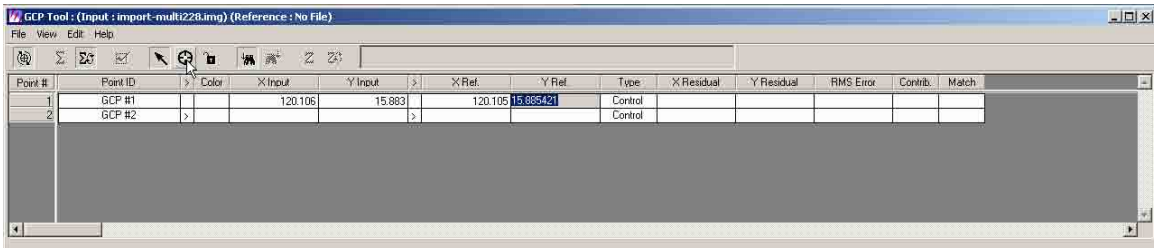

8.13 Click “Create GCP” icon.



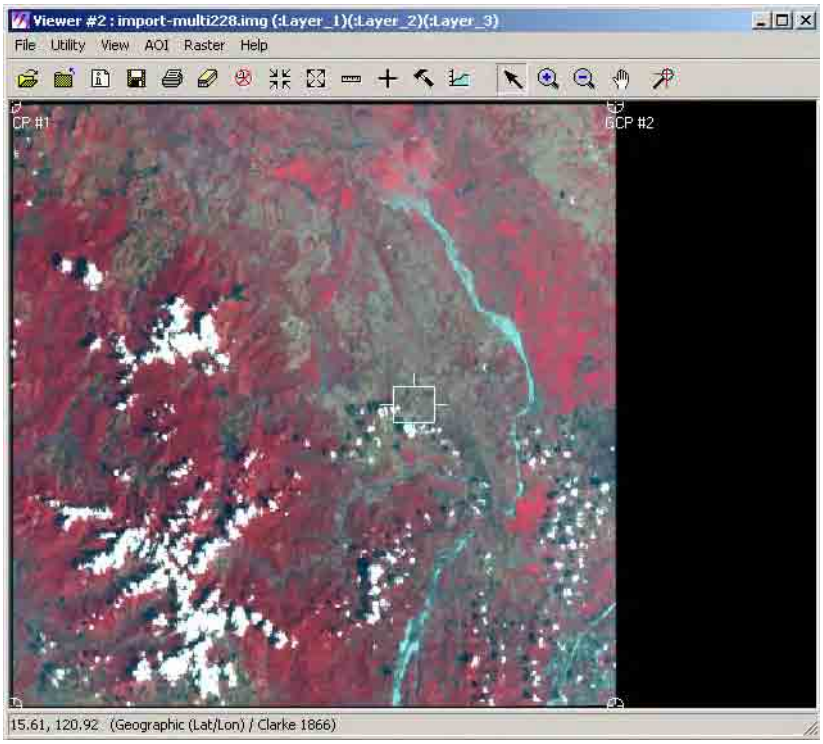
8.14 Zoom in on the upper left corner of the image and click on the corner.

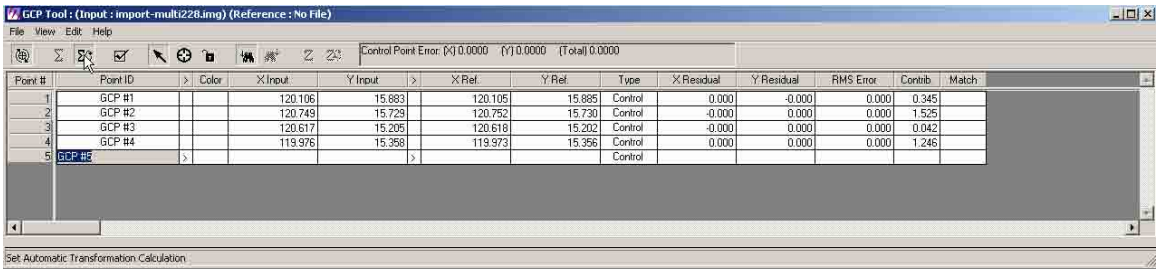



8.15 Copy value of the Lon (e.g. 120.104825) and Lat (e.g. 15.885421). Paste it inside the XRef and YRef column respectively of the “GCP Tool” dialog box.

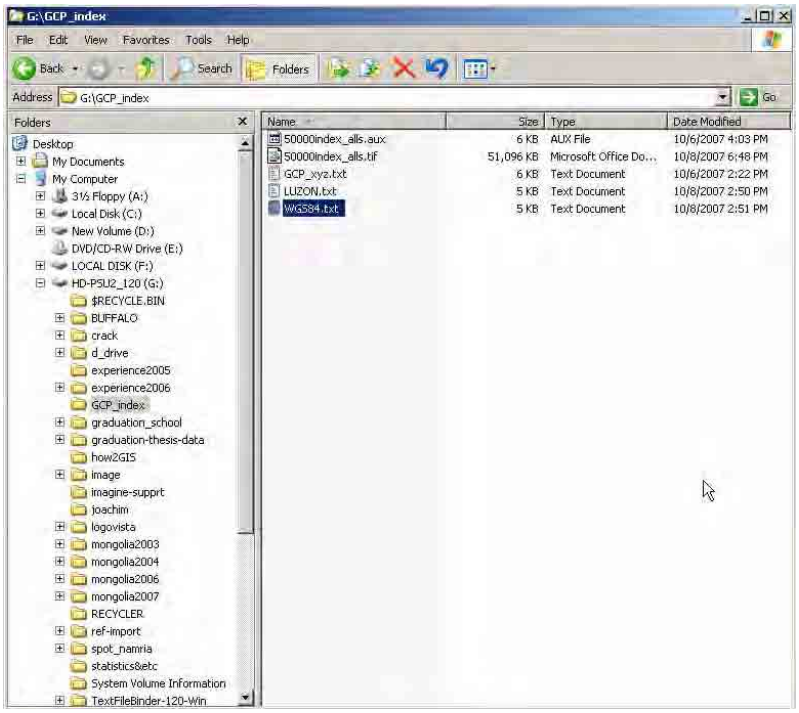


8.16 Click one at a time the next three corners of the image in clockwise selection and copy value of each Lon (e.g. 120.104825) and Lat (e.g. 15.885421) corners from the metadata file. Paste it inside the XRef and YRef column respectively of the “GCP Tool” dialog box.

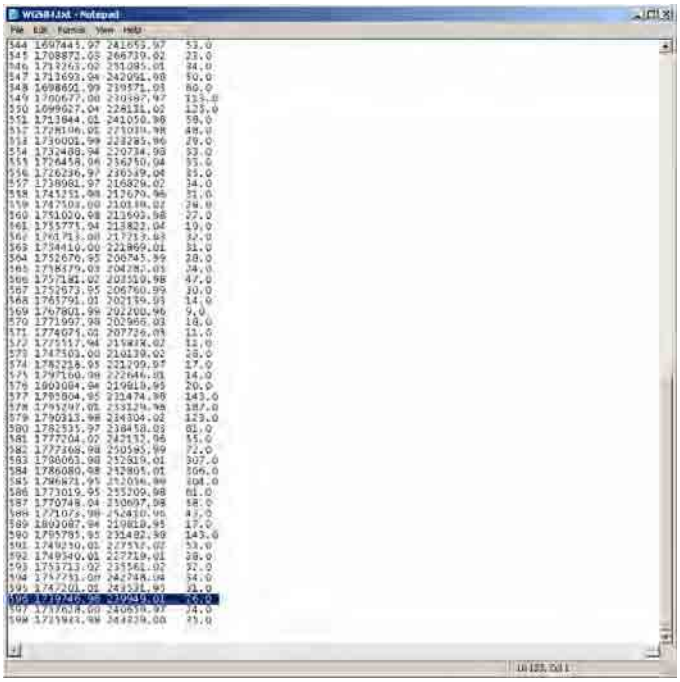


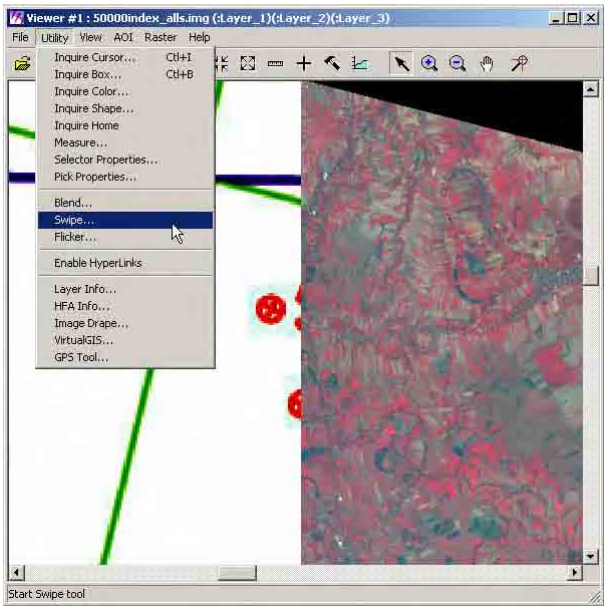
8.17 Using the window explorer, navigate thru the directory and access “WGS84.txt” file which contains coordinates of the GCP’s.



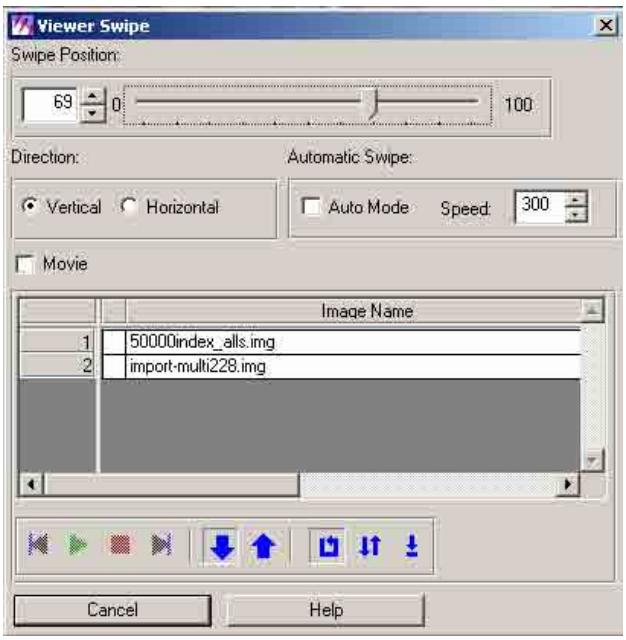

8.18 Open “WGS84.txt” with notepad.



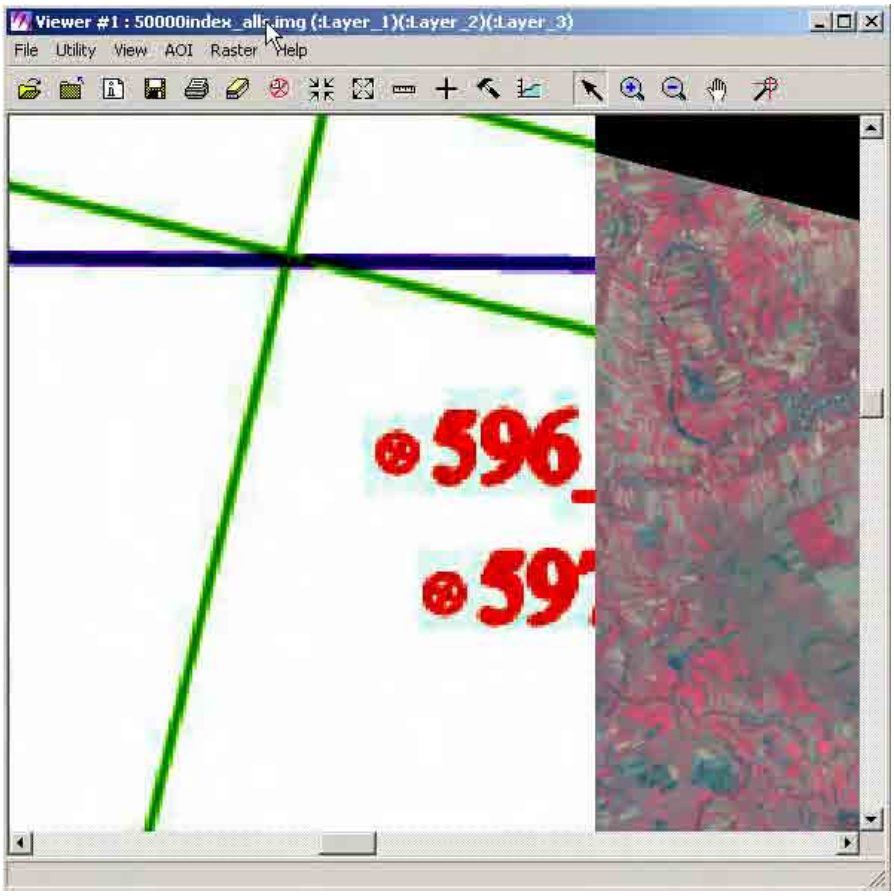
8.19 Set active viewer #1 where images of index file and satellite are shown. Click “Utility” and select “Swipe”.




8.20 A “Viewer Swipe” dialog box will appear. Adjust swipe handle to view the number of the GCP which is being covered by the satellite image.

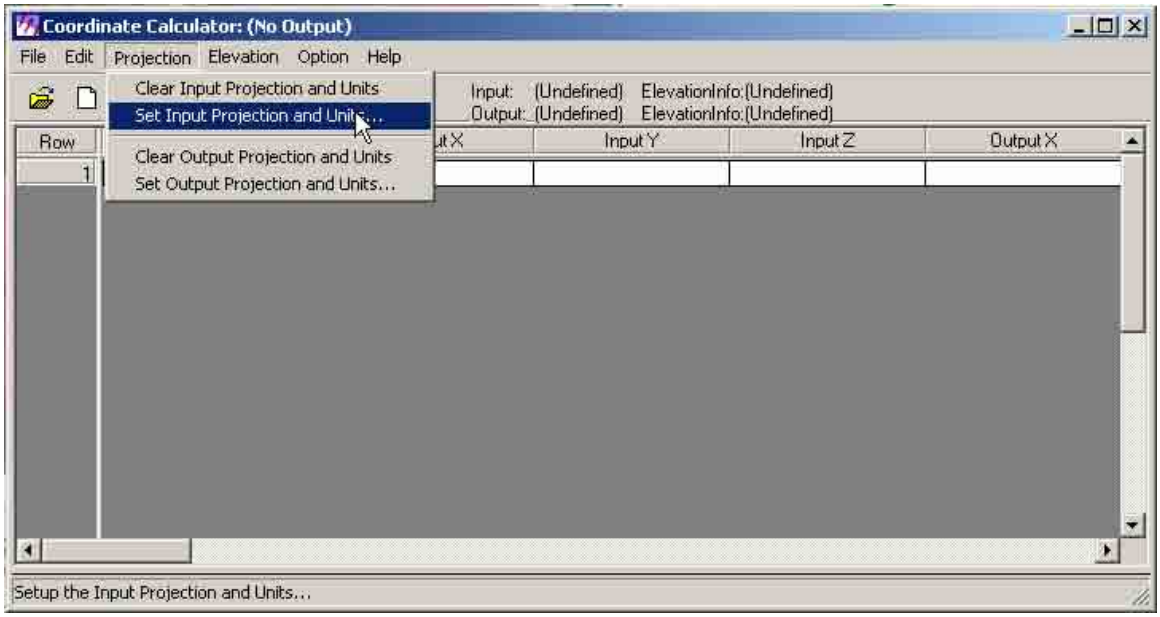


8.21 The GCP number (e.g. 596) can be seen after adjusting the swipe.



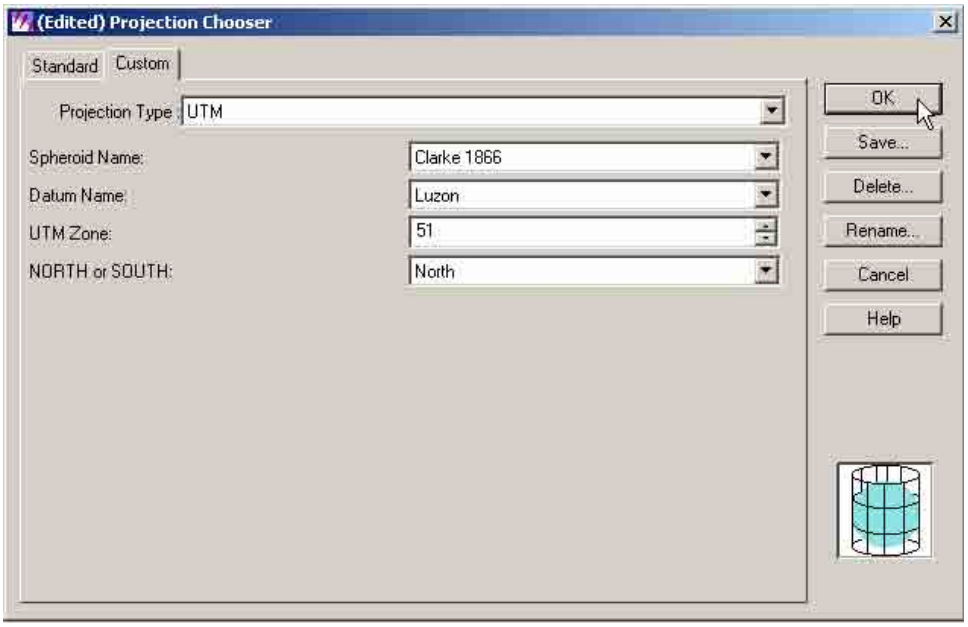

8.22 Click “Tools” in the Erdas main menu bar. Select “Coordinate Calculator…”.

8.23 A “Coordinate Calculator…” dialog box will appear. Click “”Projection”. Select “Set Input Projection and Units….”

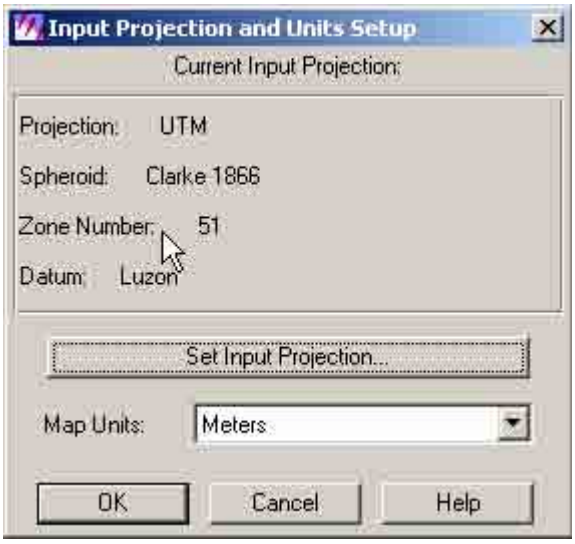



8.24 A “Input Projection and Units Setup” dialog box will appear. Click “Set Input Projection”.

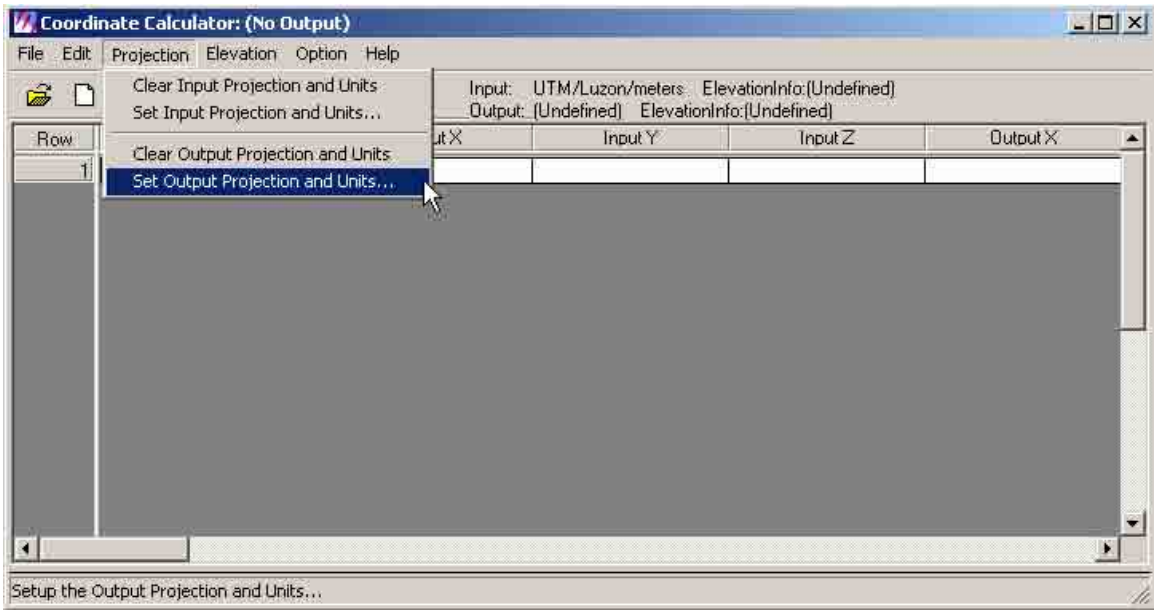
8.25 A “Projection Chooser” dialog box will appear. Click the “Custom” tab. Set “UTM” in “Projection”, “Clarke 1866” in “Spheroid Name”, “Luzon” in “Datum Name”, “51” in “UTM Zone” , and “North” in “North or South”. Then click “OK”.



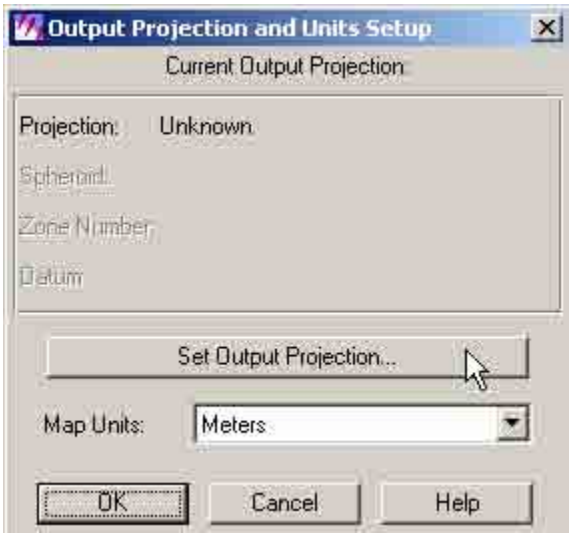

8.26 The parameters of the Current input Projection” will be reflected in the “Input Projection and Units Setup” dialog box. Click “OK”.



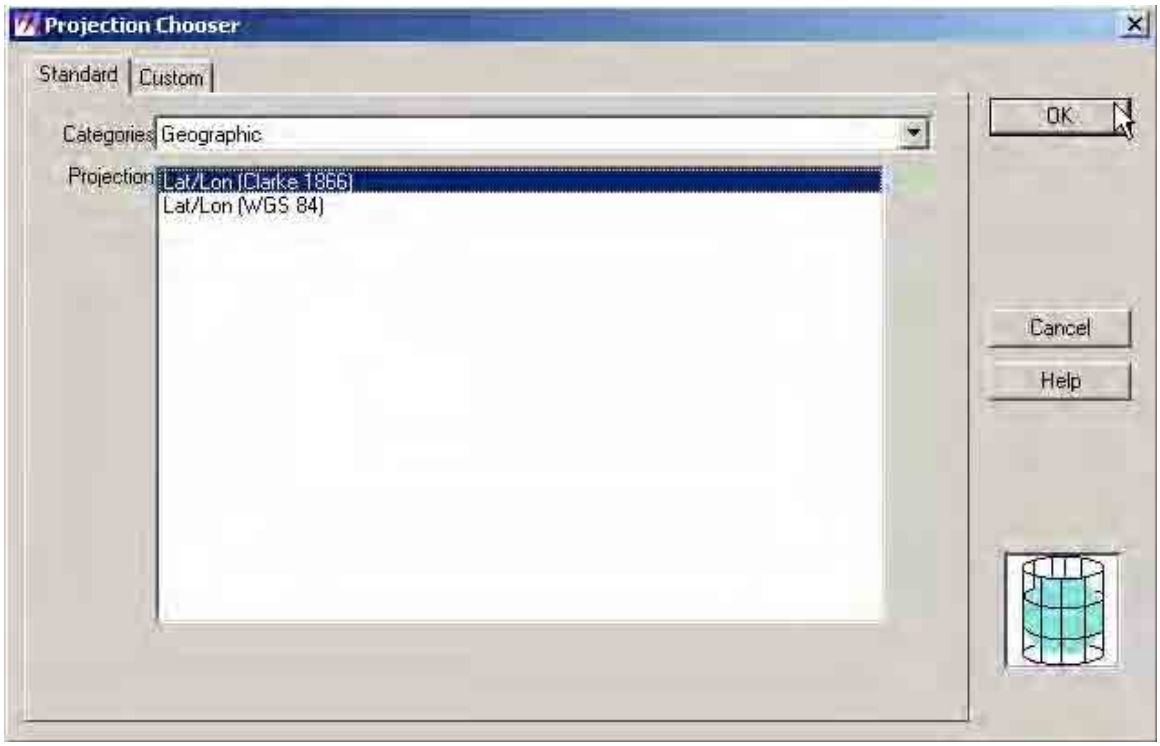
8.27 Click “Projection” and select “Set Output Projection and Units”.




8.28 A “Output Projection and Units Setup” dialog box will appear. Click “Set Output Projection”.

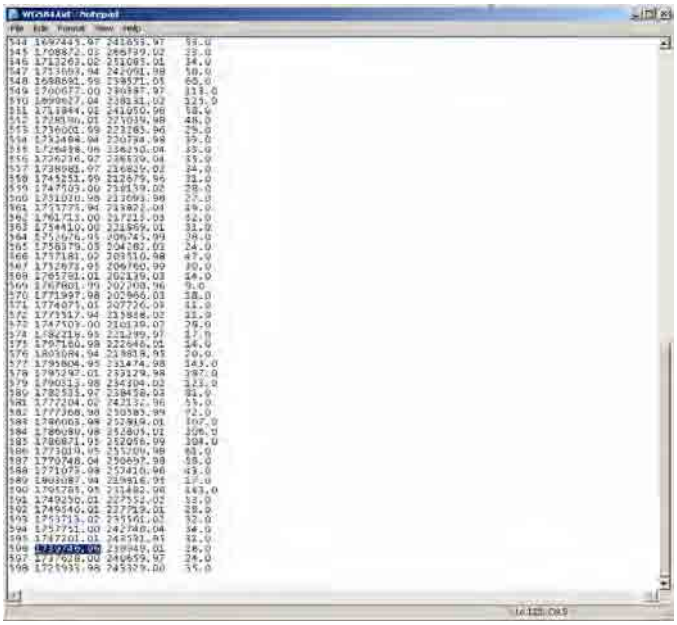


8.29 A “Projection Chooser” dialog box will appear. In the “Standard” tab, Set “Geographic” in “Categories” and “Lat/Lon [Clarke 1866] in “Projection’. Then click “OK”.

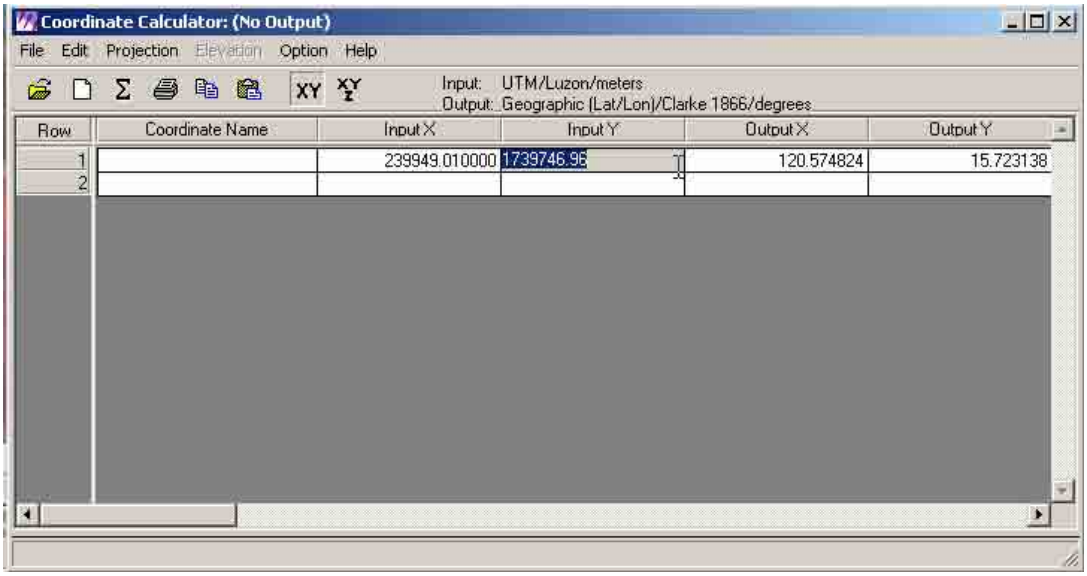



8.30 The parameters of the “Current Output Projection” will be reflected in the “Output Projection and Units Setup” dialog box. Click “OK”.

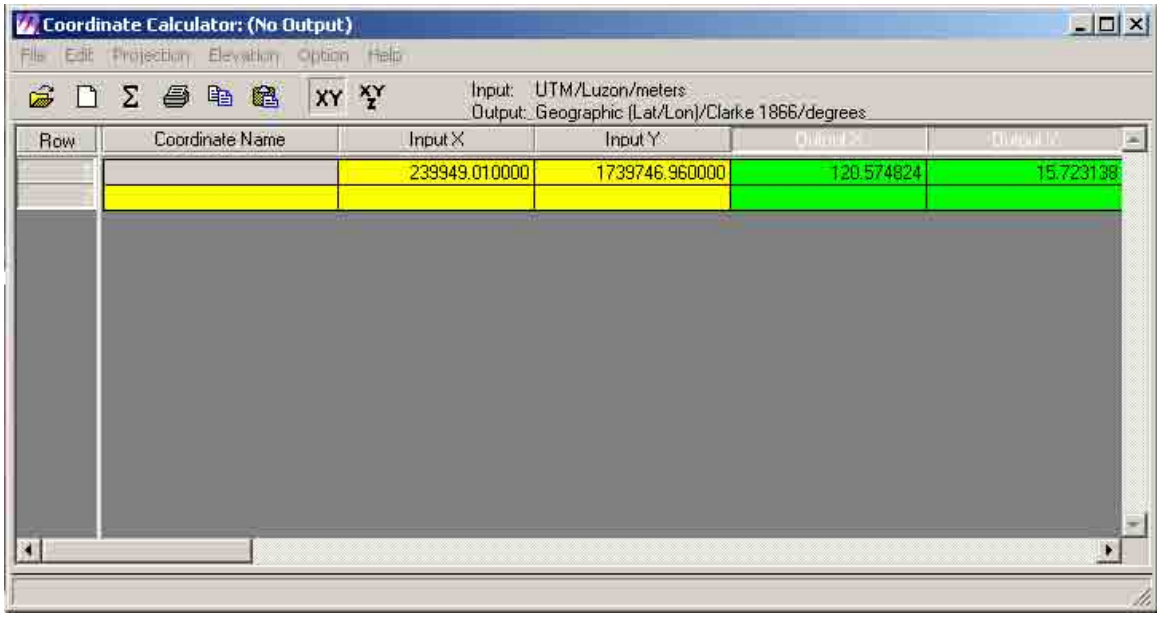
8.31 Copy X and Y coordinates of the GCP number (e.g. 596) from the WGS84.txt file.



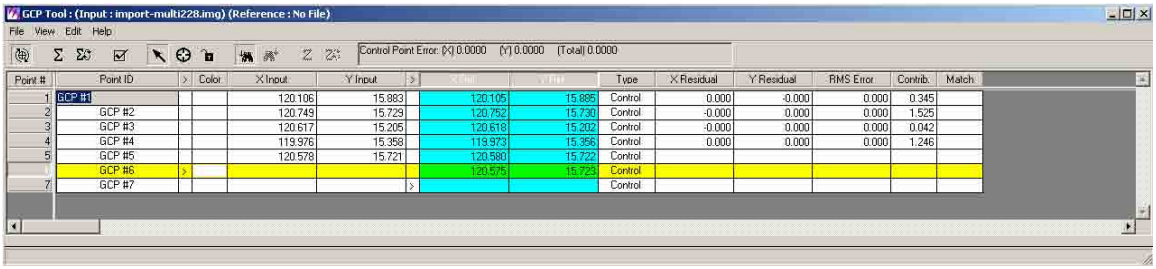
8.32 Paste the X and Y coordinates of the GCP (e.g. 596) in the Input X and Input Y column respectively of the "Coordinate Calculator". The resulting Output X and Output Y will be reflected in each column.



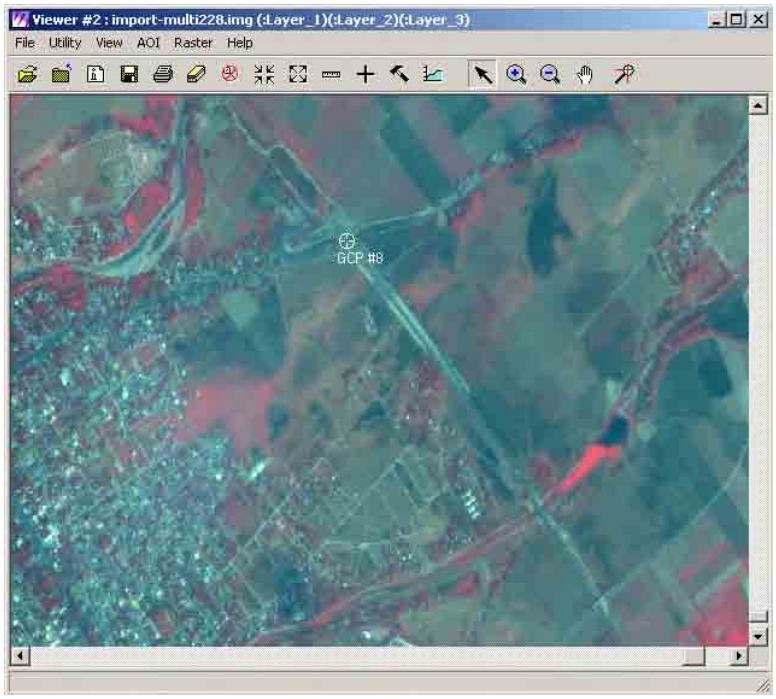
8.33 Copy Output X and Output Y coordinates of the GCP number (e.g. 596) from the "Coordinate Calculator".



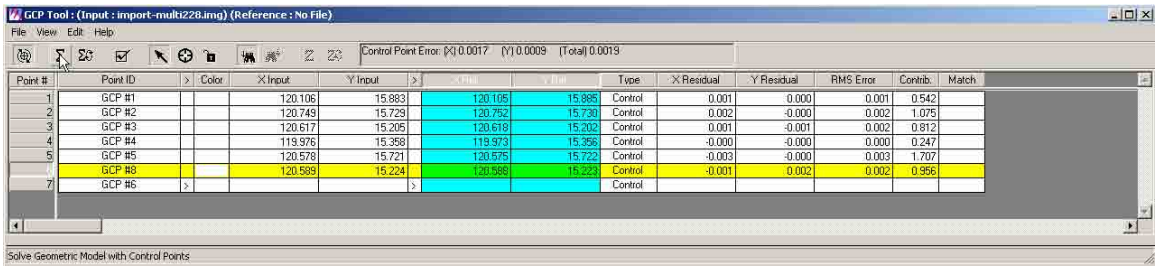

8.34 Paste Output X and Output Y coordinates of the GCP number (e.g. 596) from the "Coordinate Calculator" to the X Ref and Y Ref column respectively of the "GCP Tool" dialog box. .



8.35 The GCP will be reflected on the image.

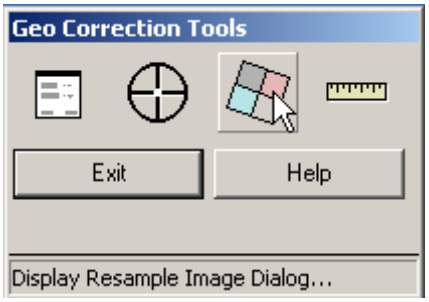



8.36 Repeat steps 8-31 to 8-34 until enough GCP's have been measured. Click "Solve Geometric Model with Control Points" icon and check RMS Error result if acceptable.

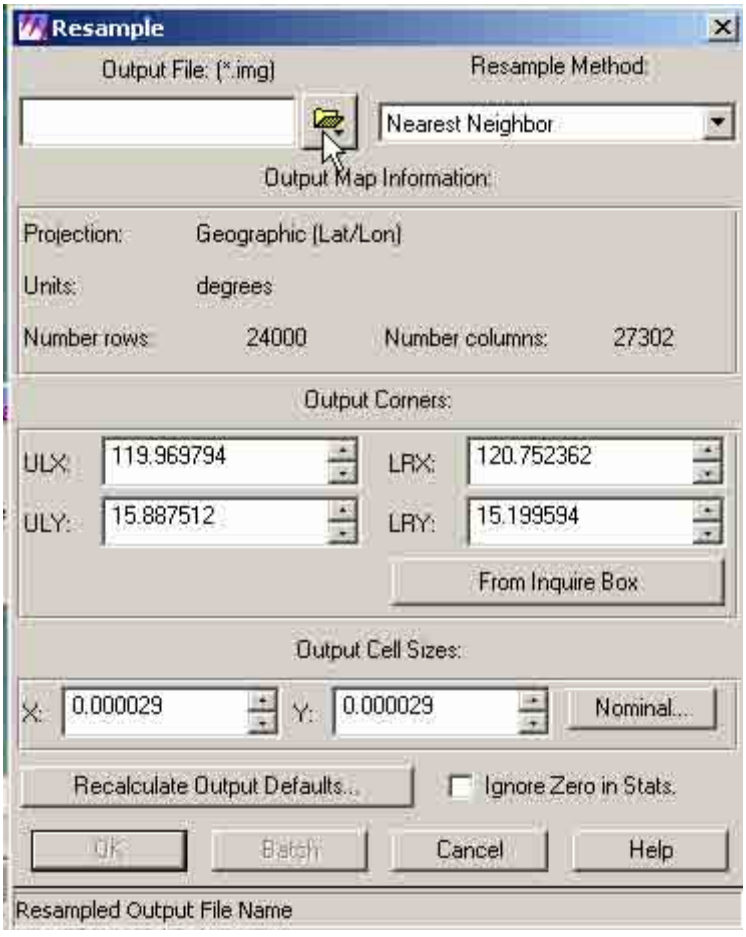



| Point # | Point ID | Color | X Input | Y Input | X Ref. | Y Ref. | Type | X Residual | Y Residual | RMS Error | Contrib. | Match |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | GCP #1 | | 120.106 | 15.883 | 120.105 | 15.885 | Control | 0.001 | 0.000 | 0.001 | 0.542 | |
| 2 | GCP #2 | | 120.749 | 15.729 | 120.752 | 15.730 | Control | 0.002 | -0.000 | 0.002 | 1.075 | |
| 3 | GCP #3 | | 120.617 | 15.205 | 120.618 | 15.202 | Control | 0.001 | -0.001 | 0.002 | 0.812 | |
| 4 | GCP #4 | | 119.976 | 15.358 | 119.973 | 15.356 | Control | -0.000 | -0.000 | 0.000 | 0.247 | |
| 5 | GCP #5 | | 120.578 | 15.721 | 120.575 | 15.722 | Control | -0.003 | -0.000 | 0.003 | 1.707 | |
| 6 | GCP #8 | | 120.589 | 15.224 | 120.588 | 15.223 | Control | -0.001 | 0.002 | 0.002 | 0.956 | |
| 7 | GCP #6 | | | | | | Control | | | | | |

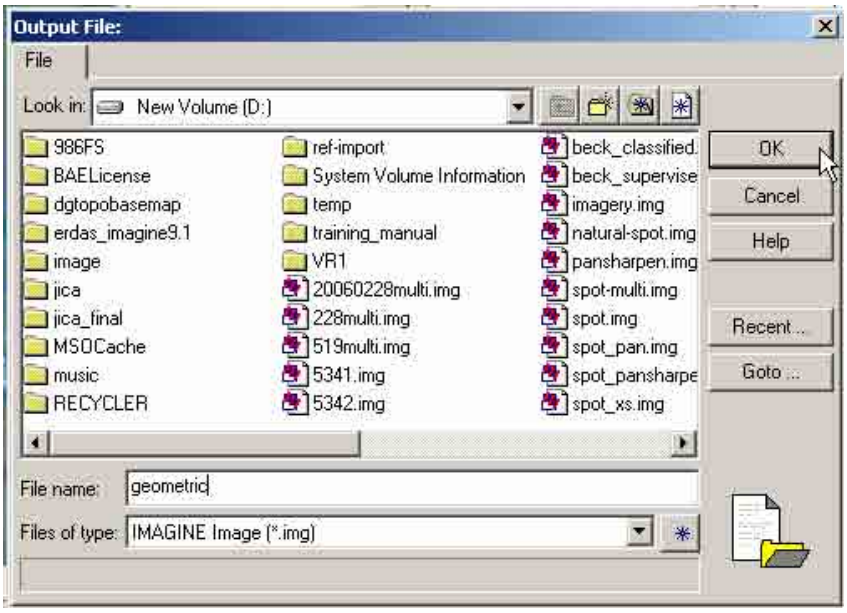
8.37 Click “Display Resample Image Dialog” icon.



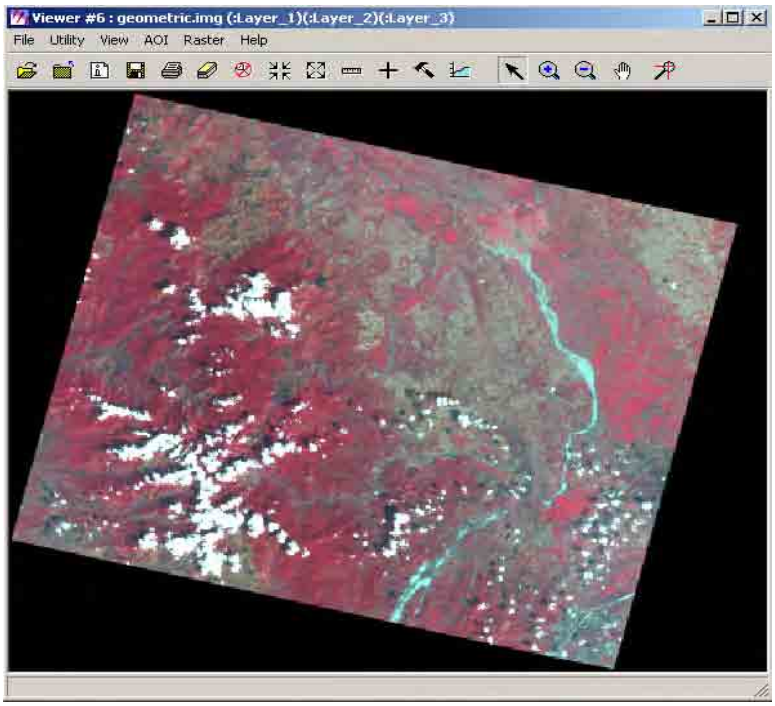

8.38 A “Resample” dialog box will appear. Click “Resample Output File” button.



8.39 An “Output File” dialog box will appear. Browse and locate the folder of the Output image file. Type the output file name (e.g. geometric.img) in the “File name” box. Then click “OK”.




8.40 The system will process the data. Click “OK” when done. Open a viewer. Navigate thru the directory, select and open the resampled file (e.g. geometric.img). The image will be shown in the viewer window.



## 9. Adding New Datum

ERDAS IMAGINE comes with an extensive library of built-in projections, spheroids, and datums. Every effort is made to include as many projection systems as possible. Frequently we are asked to add a new projection system to our library.
IMAGINE provides a mechanism for adding new spheroids and datums into the Projection Chooser. IMAGINE allows you to save specific sets of parameters to the menu system for future access.

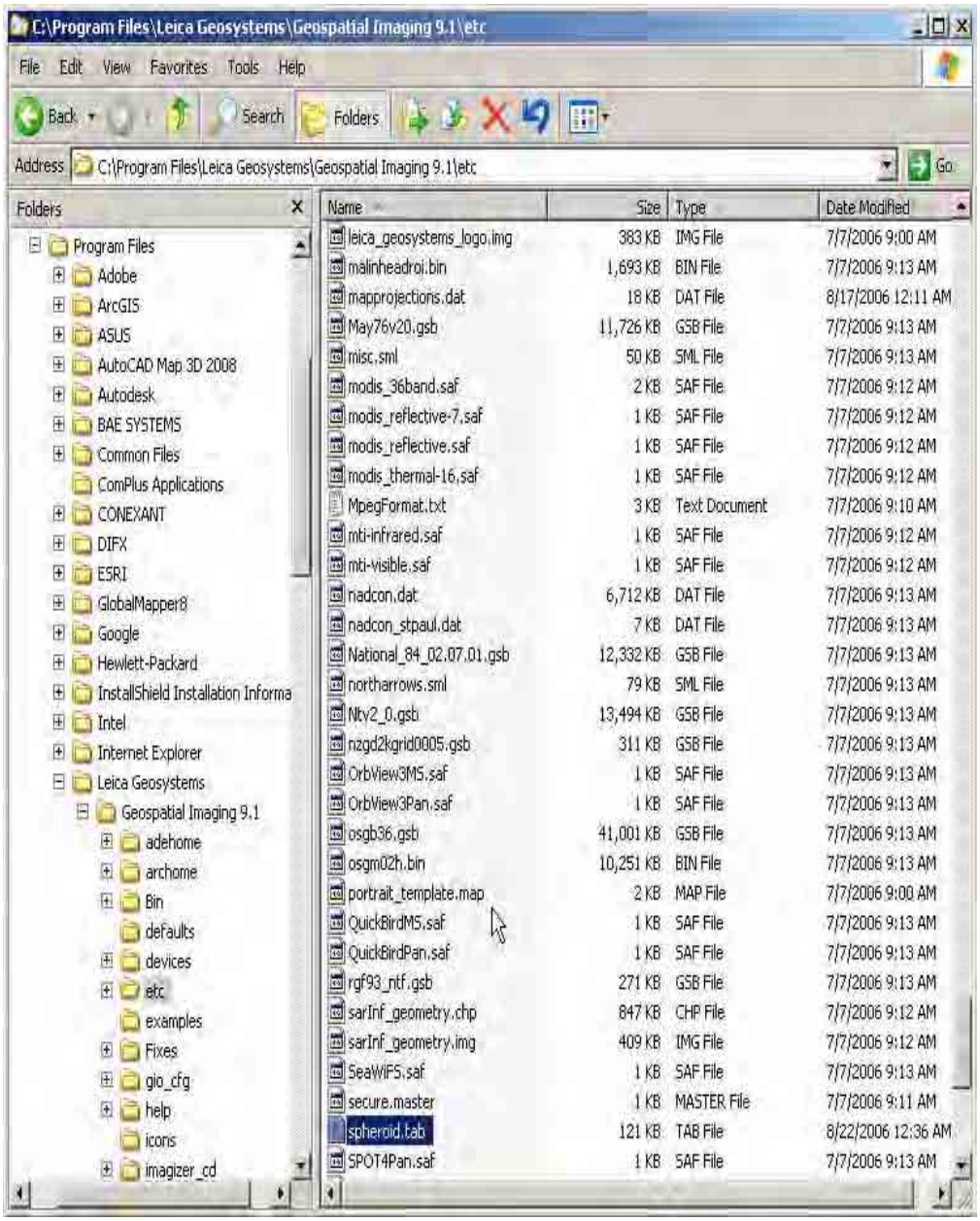
### Overview

Adding a new set of spheroids and/or datums is simple. The file **<IMAGINE_HOME>/etc/spheroid.tab** is read by the IMAGINE Projections Chooser to provide all the necessary parameters for defining spheroids and datums. You can access this file by going to **Tools > Edit Text Files...** from the main menu, and typing in the name of the file in the Text Editor dialog or you can just access the "spheroid.tab" in the explorer and edit it using notepad.

The ellipsoidal datums are recorded in terms of the seven parameters required to calculate a shift to the WGS84 datum.

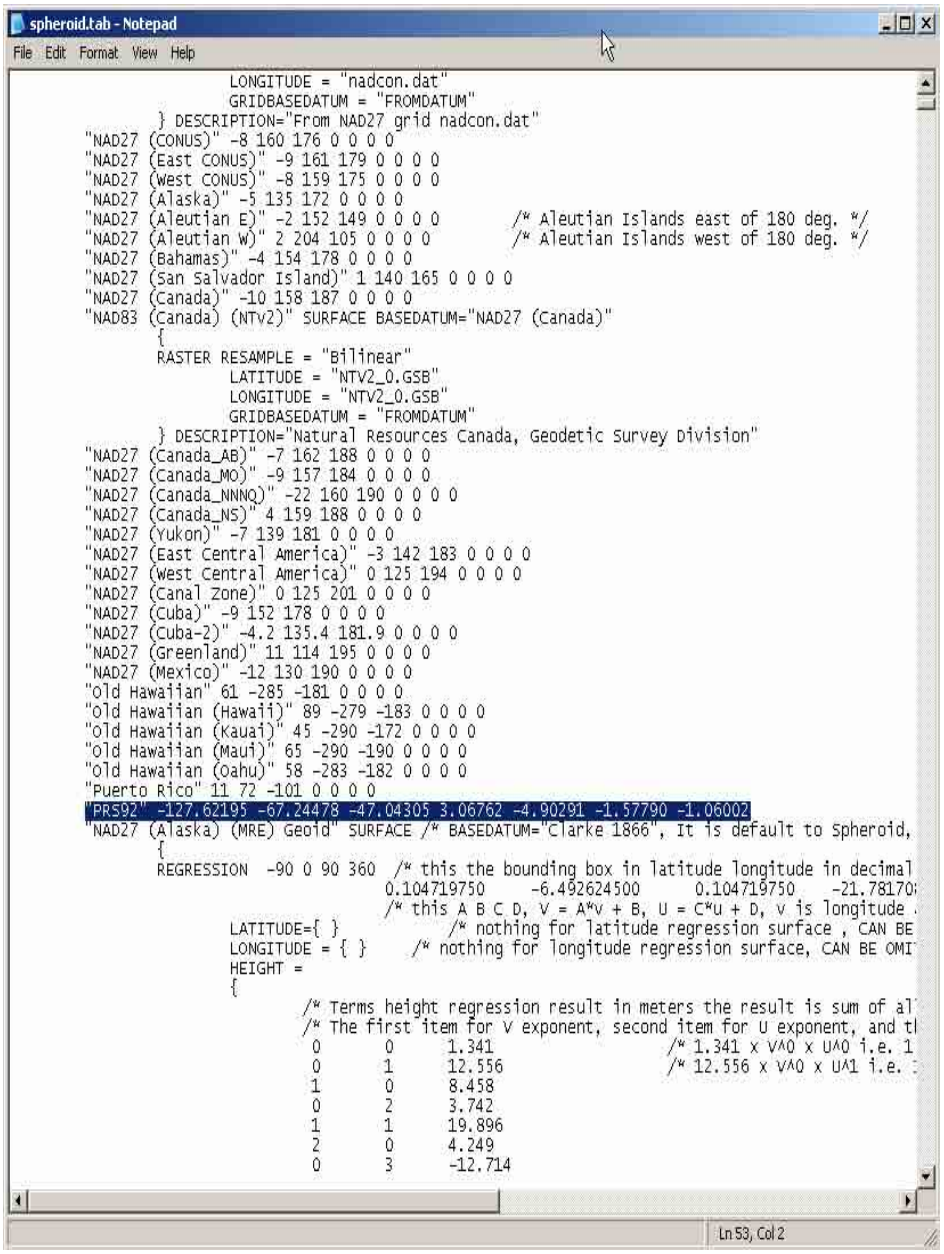
"Datum Name" [PARAMETRIC] dx dy dz rw rj rk ds [DESCRIPTION = string]
Where:
**dx**, **dy** and **dz** are the x,y,z translations to WGS84, in meters,
ʳω (or rw), ʳφ (or rj), and ʳκ (or rk) are the omega, phi, kappa rotations to WGS84, in radians and scientific notation,
and, **ds** is the scale change to WGS84 in scientific notation.

9.1 Using the window explorer, navigate thru the directory and access “spheroid.tab” file which contains parameters spheroid and datum settings.

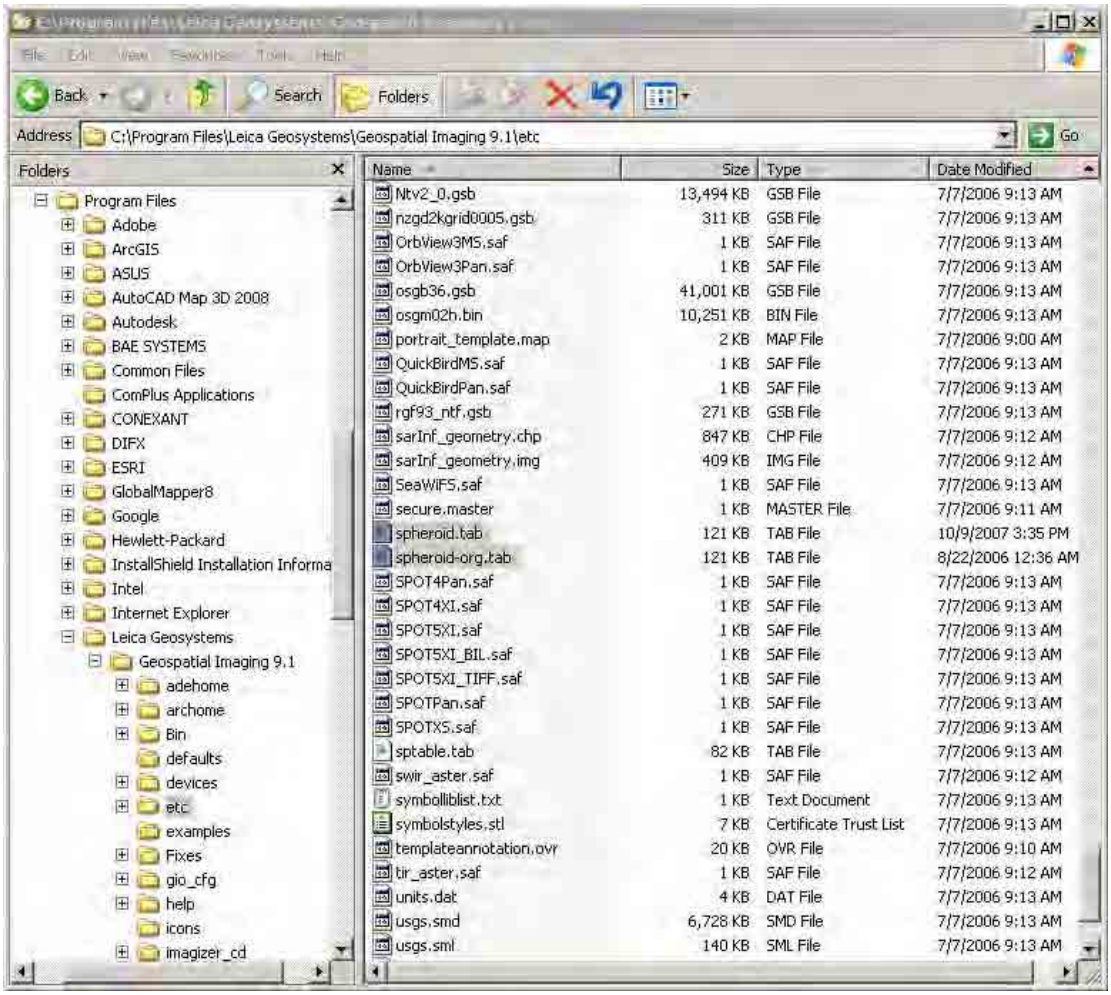


9.2 Copy original “spheroid .tab” file to another folder. Open “spheroid.tab” using notepad. Add new row data and type parameters for PRS92 settings based on the datum parameters ("Datum Name" [PARAMETRIC] dx dy dz rw rj rk ds) of the system.

"Datum Name" dx dy dz rw rj rk ds
“PRS92” -127.62195 -67.24478 -47.04305 3.06762 -4.90291 -1.57790 -1.06002



9.3 Rename original “spheroid.tab” file in the system folder. Then copy edited “spheroid.tab” which contains PRS92 datum to the system folder.

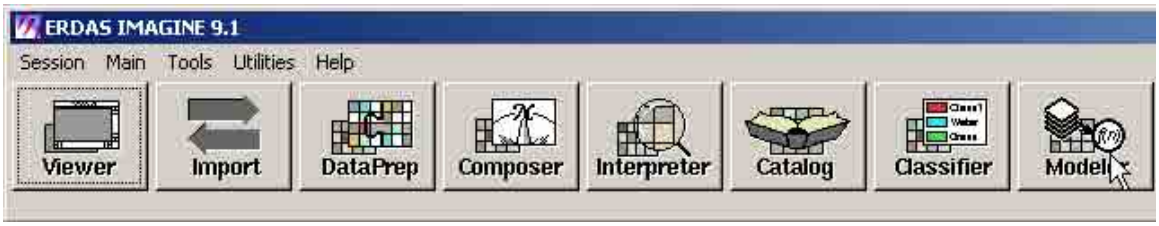


**10. Model Maker**

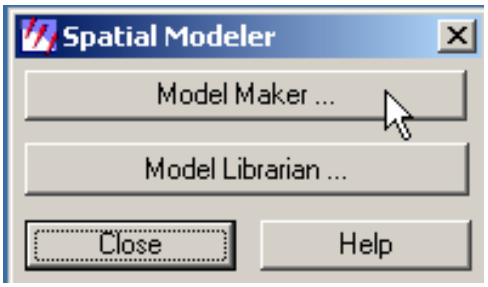
A model is a set of instructions processed by the IMAGINE Spatial Modeler component for performing GIS and image processing operations.

The IMAGINE Model Maker is an editor for creating models using a palette of tools. These tools are used to place graphics representing input data, functions, criteria, and output data on a page to create a graphical model by drawing its flow chart.
The Spatial Modeler Language (SML) is a modeling language that is used by Model Maker to execute the operations specified in the graphical models that you create. You can also use the Spatial Modeler Language directly to write your own script models

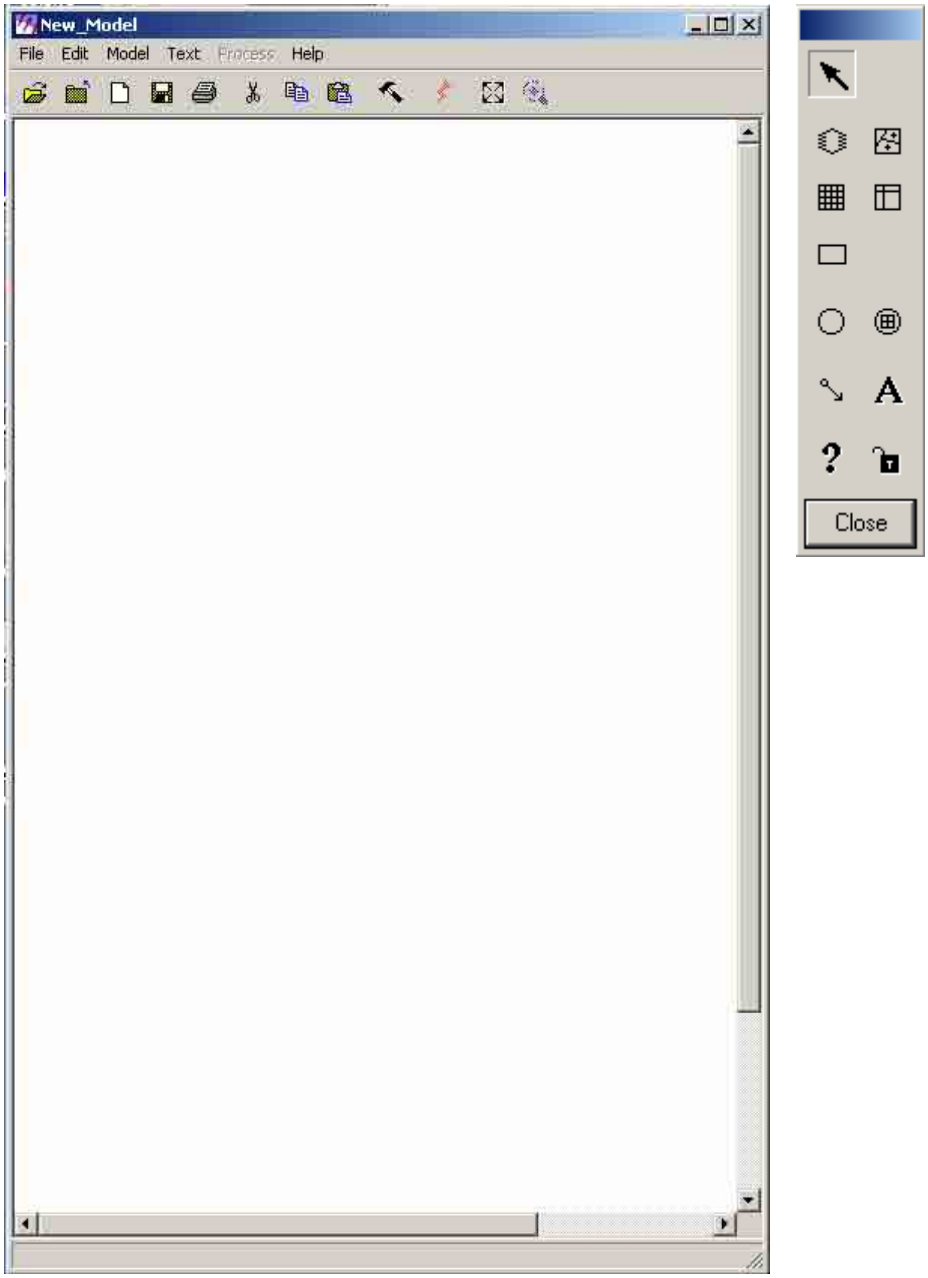
10.1 Click “Modeler” icon on Erdas main icon panel.



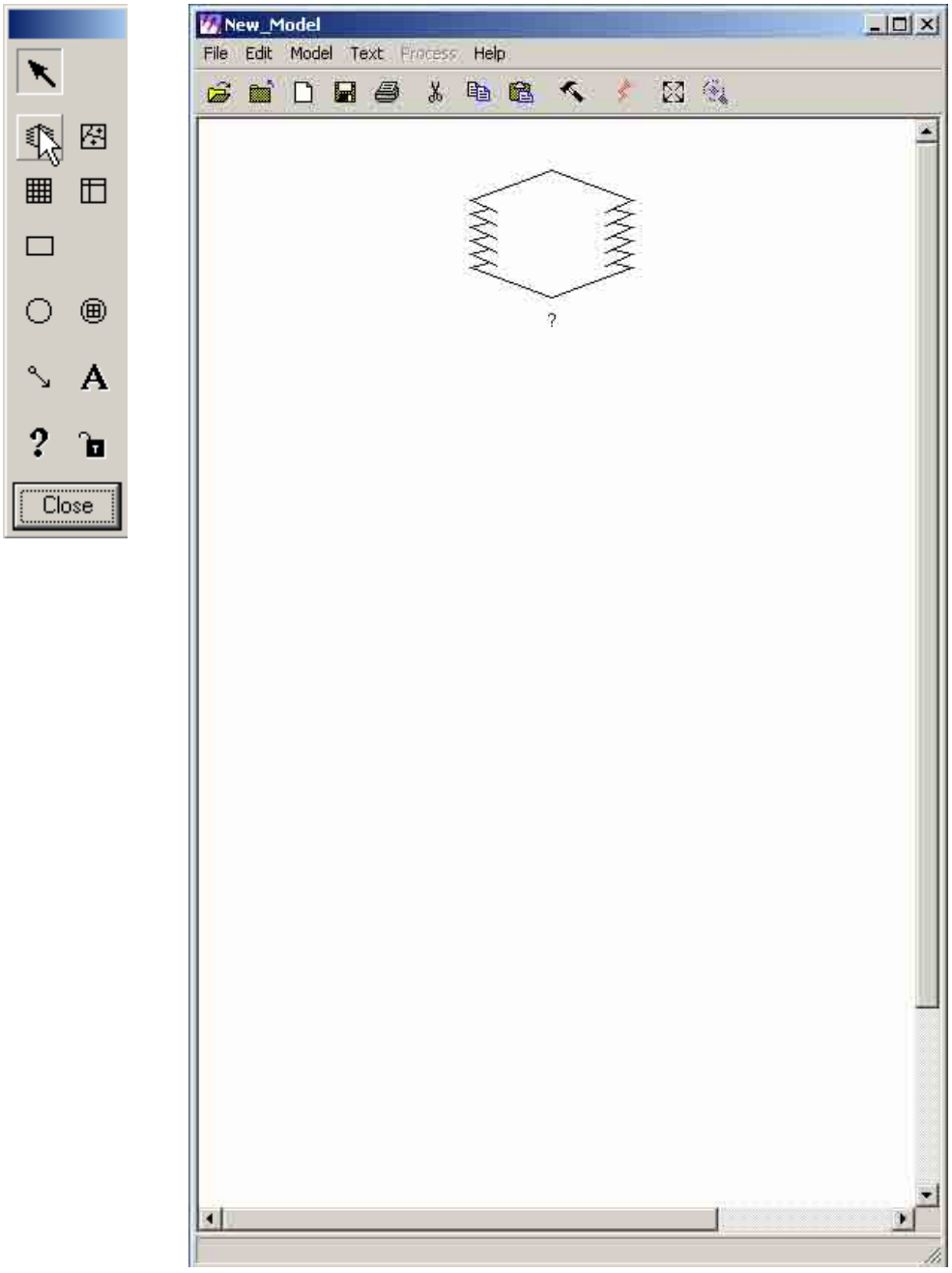

10.2 A “Spatial Modeler” button box will appear. Click “Model Maker” button.



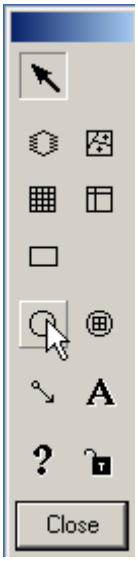
10.3 A “New_Model” window and a tool palette box will appear.

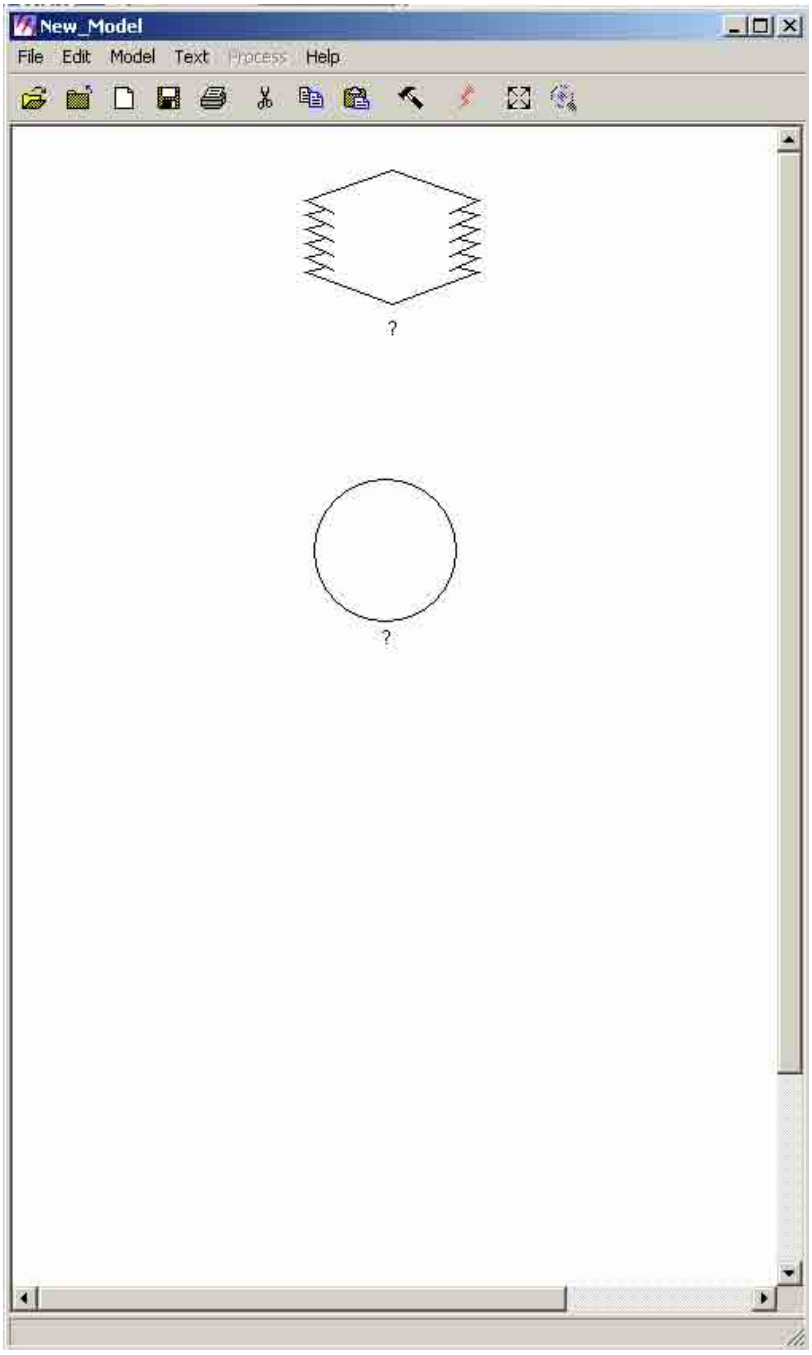


10.4 Click the Raster icon in the Model Maker tool palette. Click the pointer arrow inside the “New_Model” window.

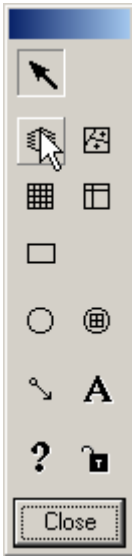


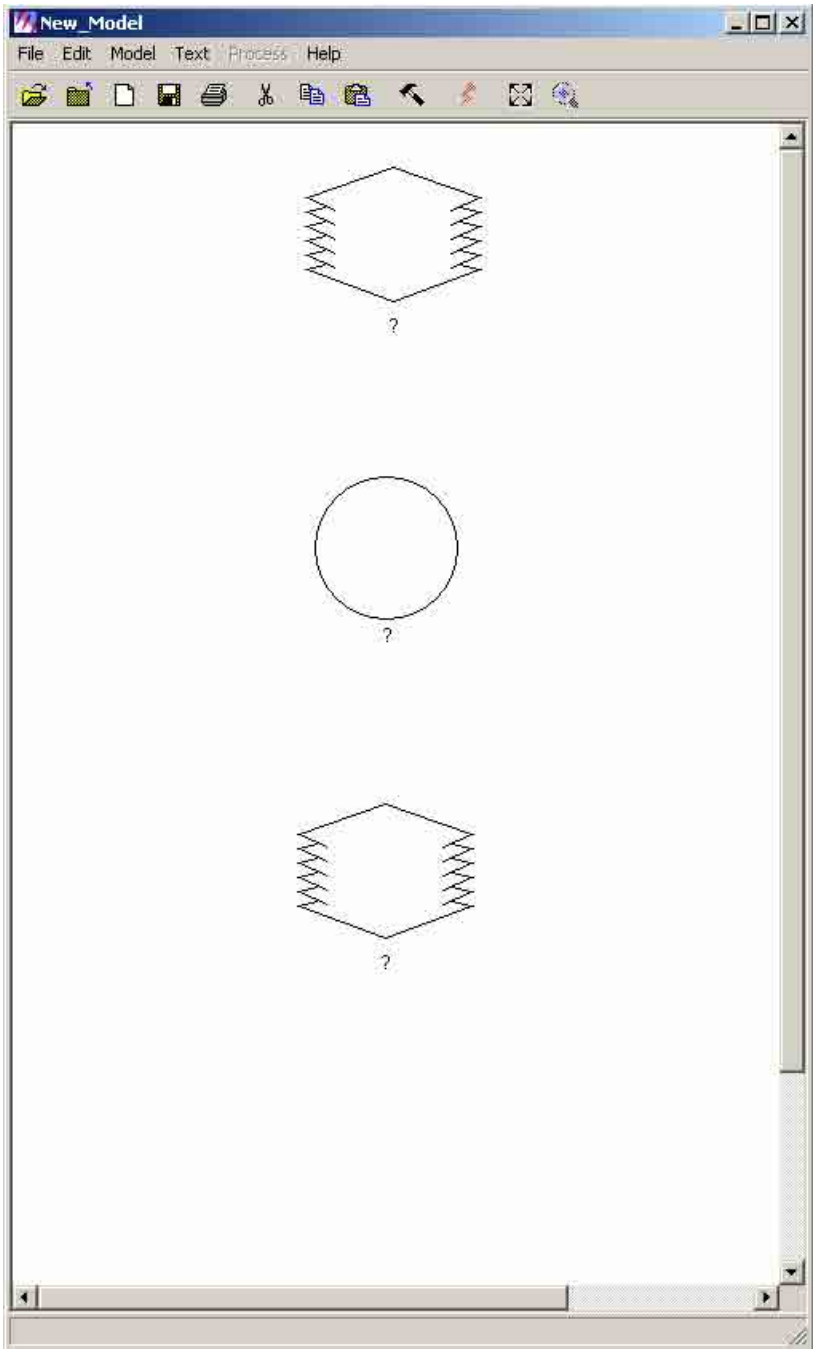
10.5 Select the Function icon in the Model Maker tool palette. Click the pointer arrow inside the “New_Model” window.



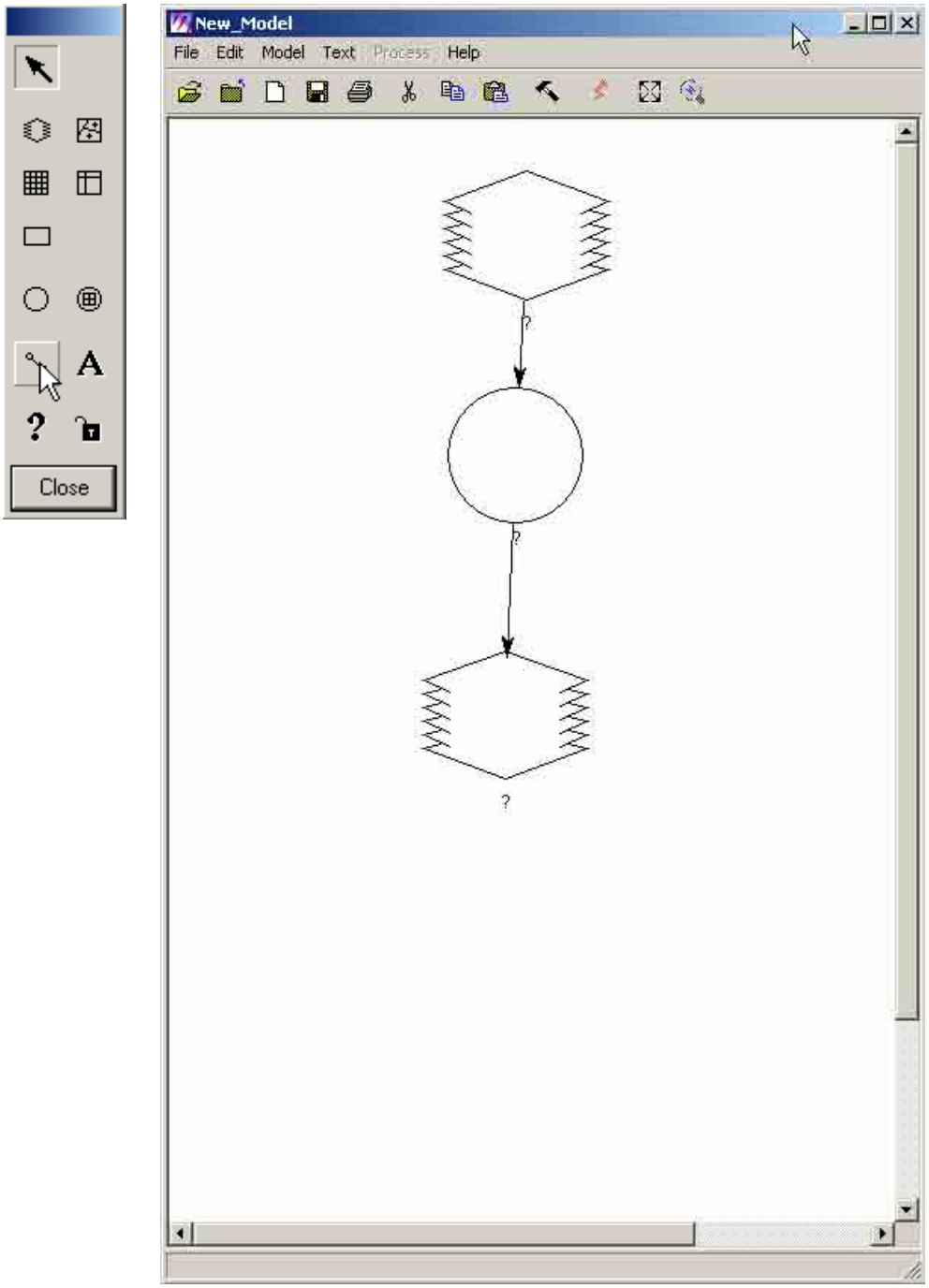



10.6 Click another Raster icon in the Model Maker tool palette. Click the pointer arrow inside the “New_Model” window.

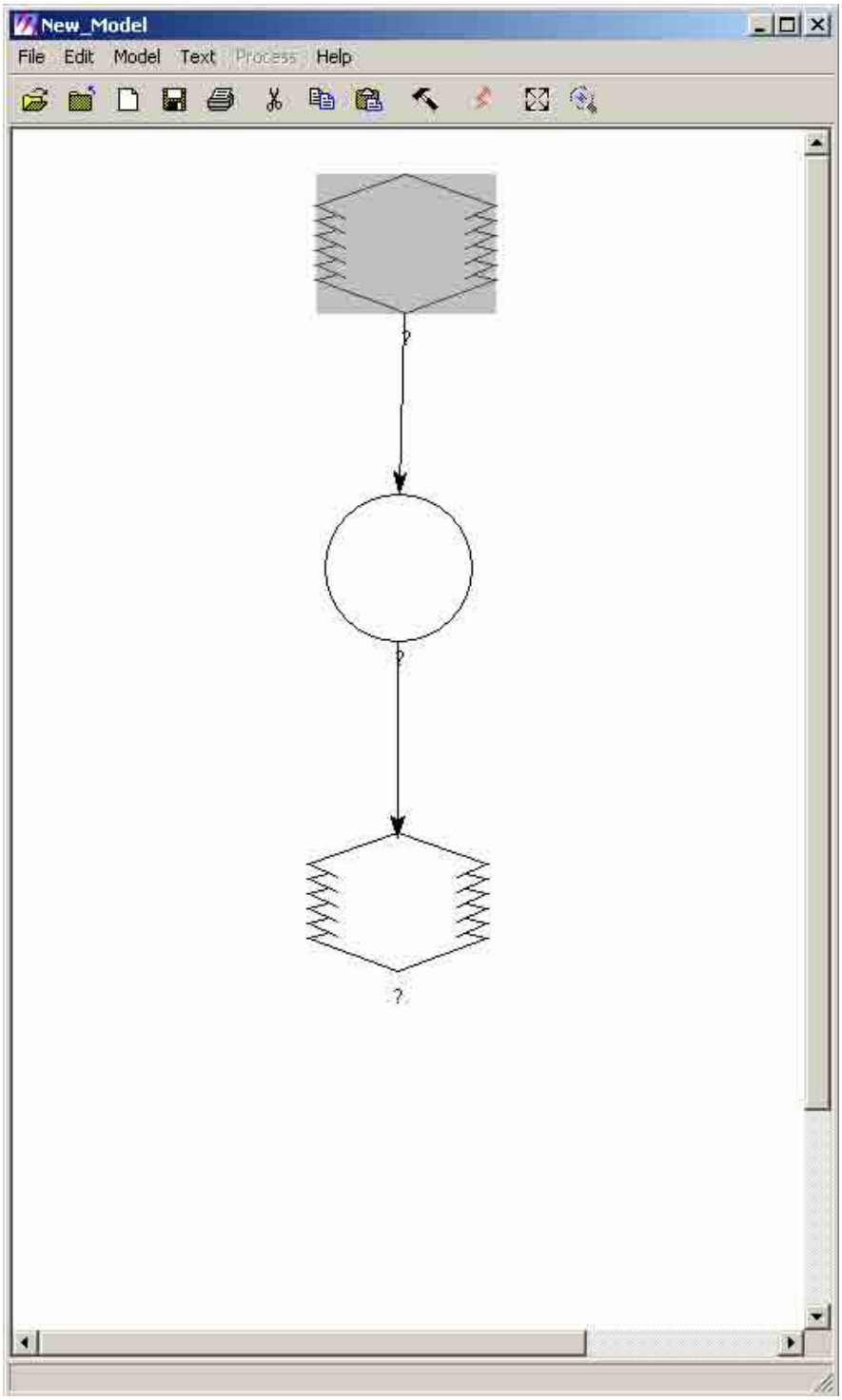


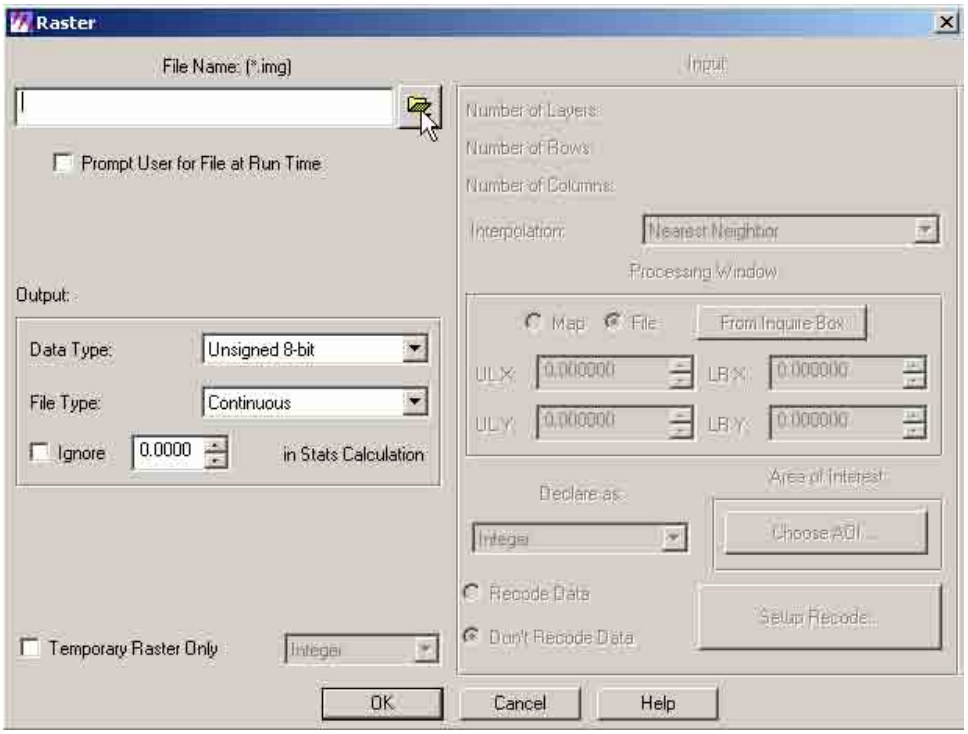
10.7 Select the Connect icon in the Model Maker tool palette. Connect the raster and function symbol by clicking and dragging the point arrow between each symbol.



10.8 Double click first raster symbol

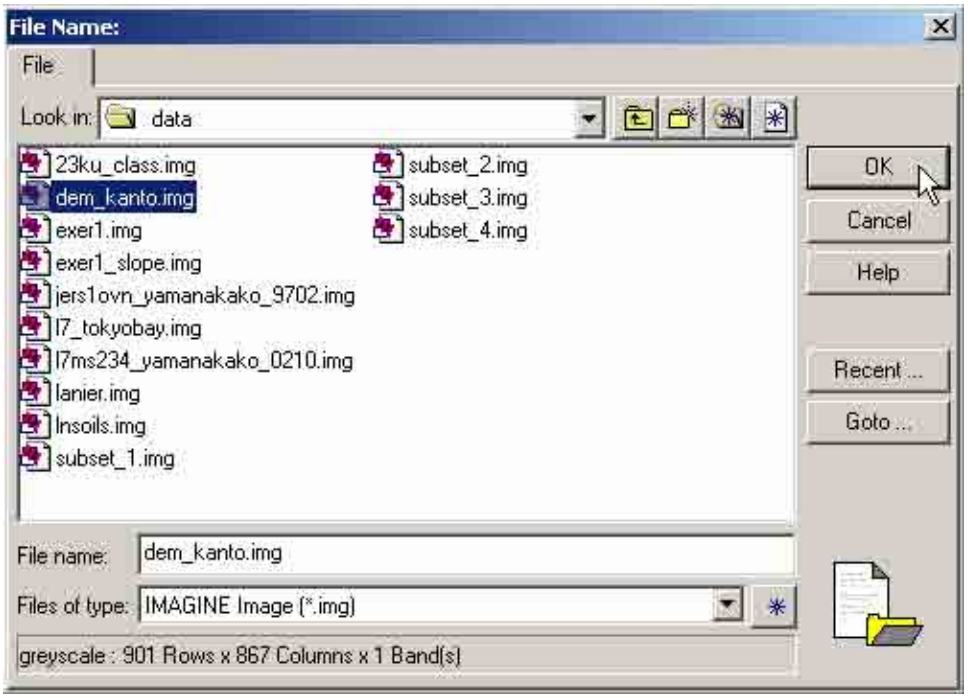


10.9 A “Raster” dialog box will appear. Click the “Open” icon to select the input raster.

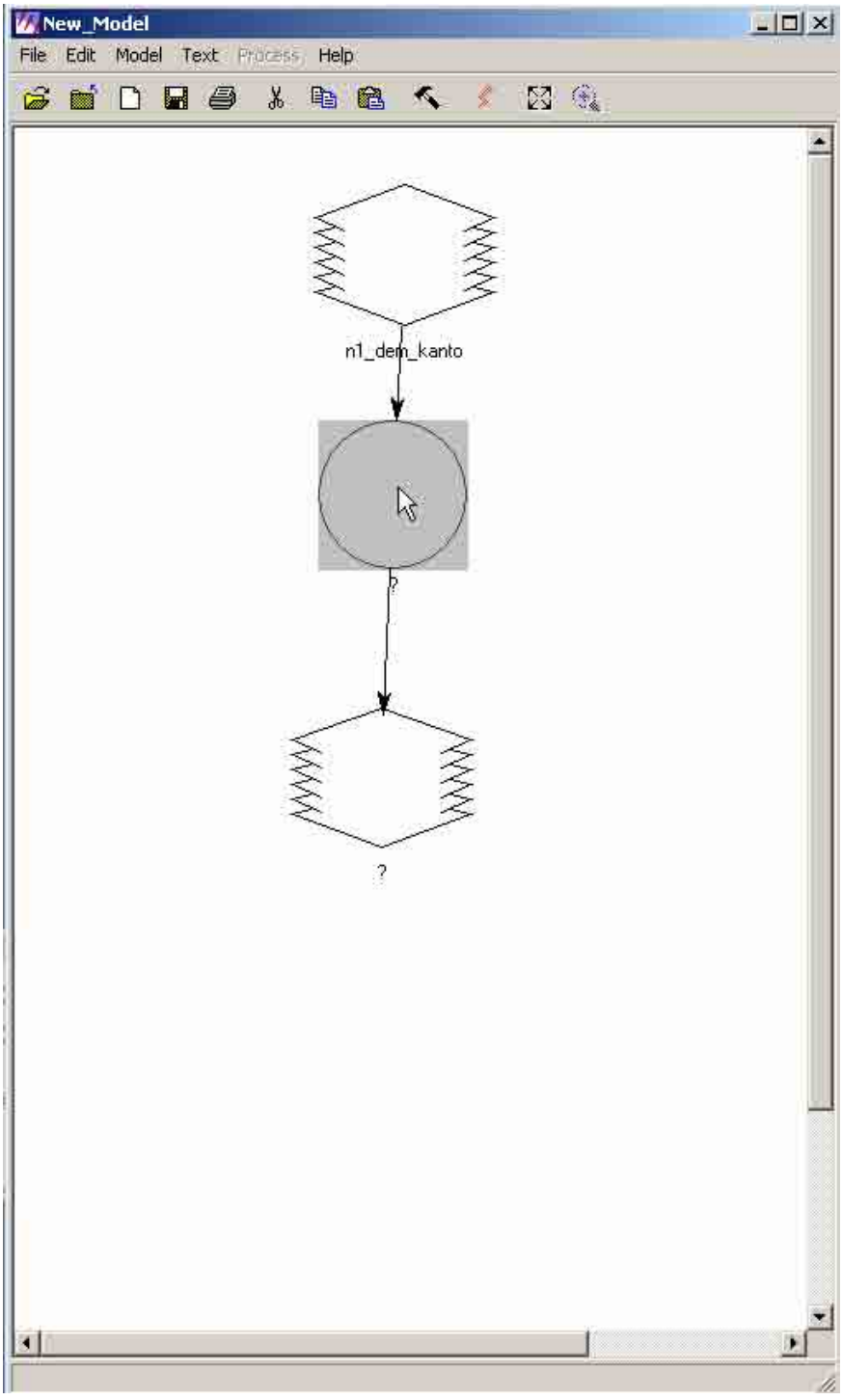



1

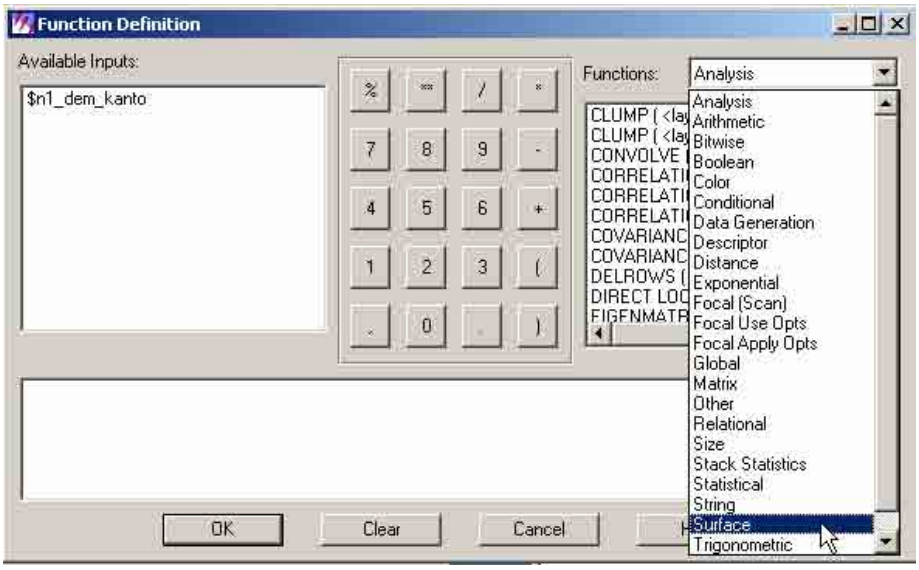
0.10 A “File Name” dialog box will appear. Navigate thru the directory, locate the folder and select the raster file (e.g. dem_kanto.img) to be used. Then click “OK”.



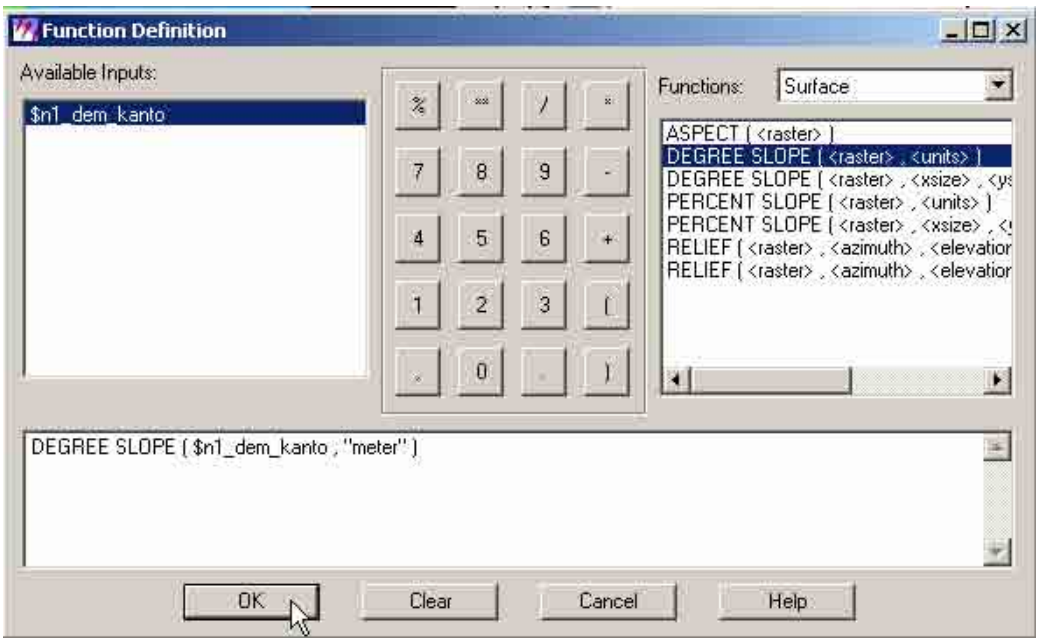
10.11 Double click function symbol.



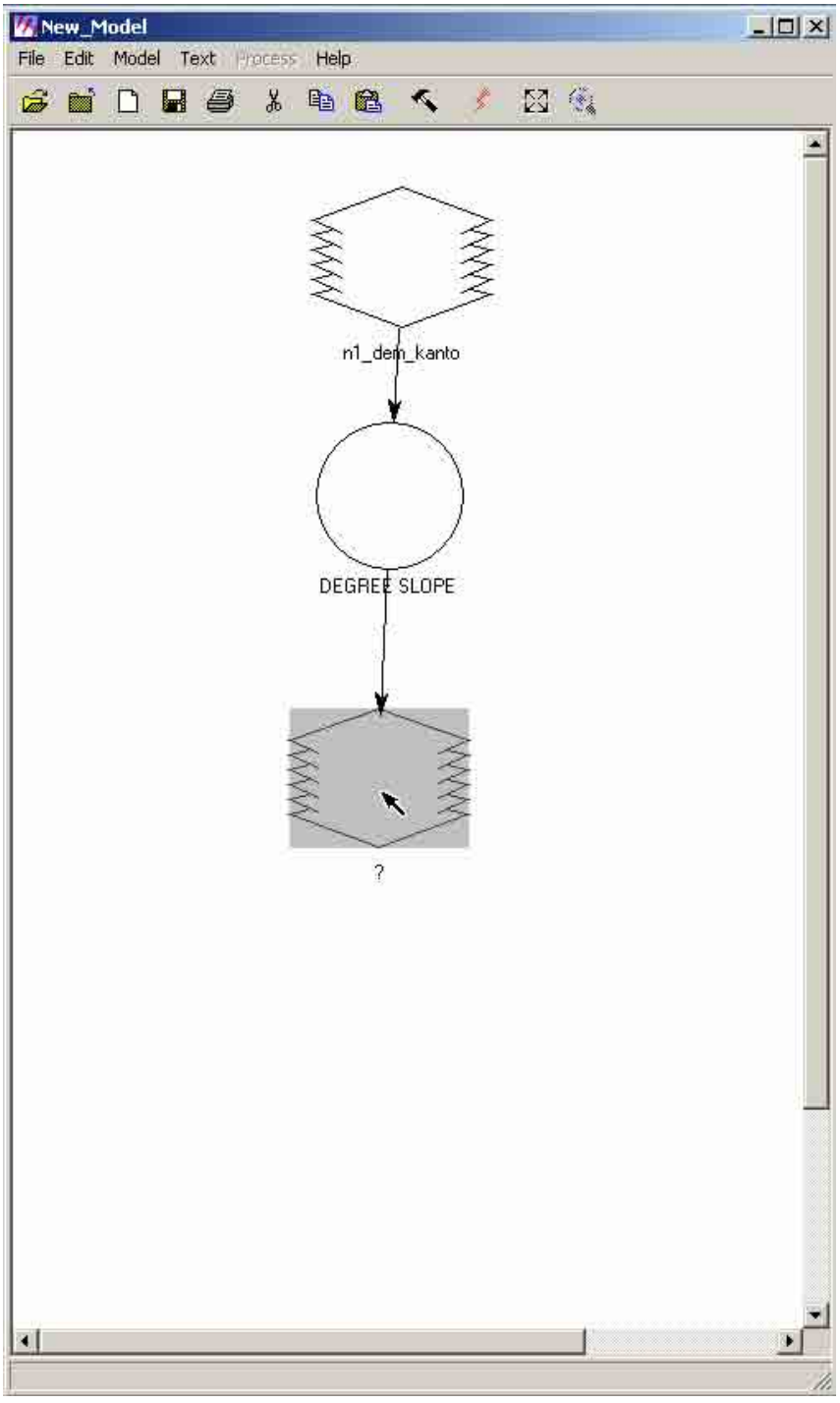
10.12 A “Function Definition” dialog box will appear. Select the function (e.g. Surface) in the “Funtions” box.



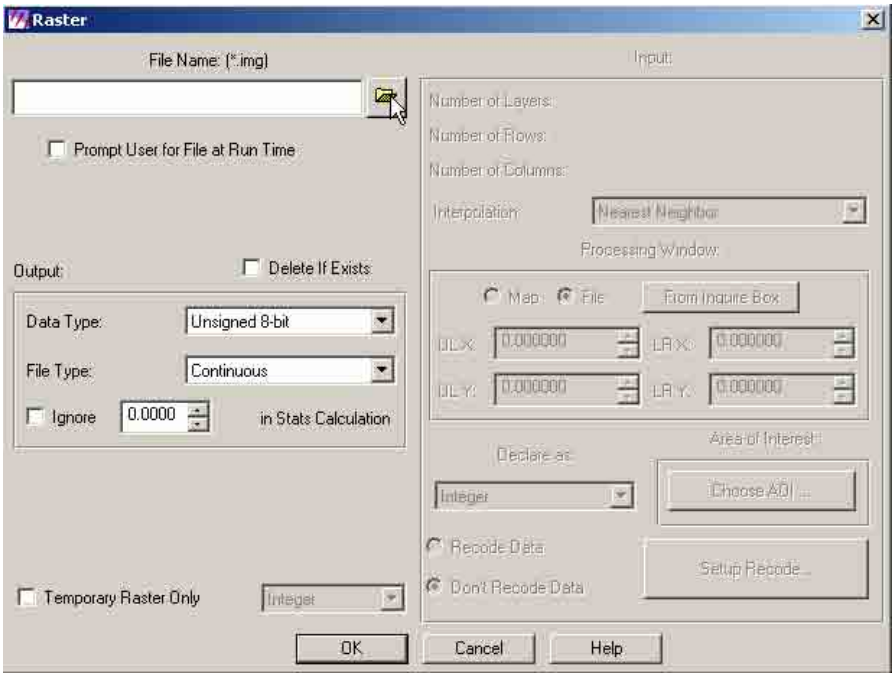

10.13 Click the syntax (e.g. DEGREE SLOPE [<raster>,<units>]) or operation of the function (e.g. Surface) selected. Change <raster> to $n1_dem_kanto, and <units> to “meter”. Then click “OK”.



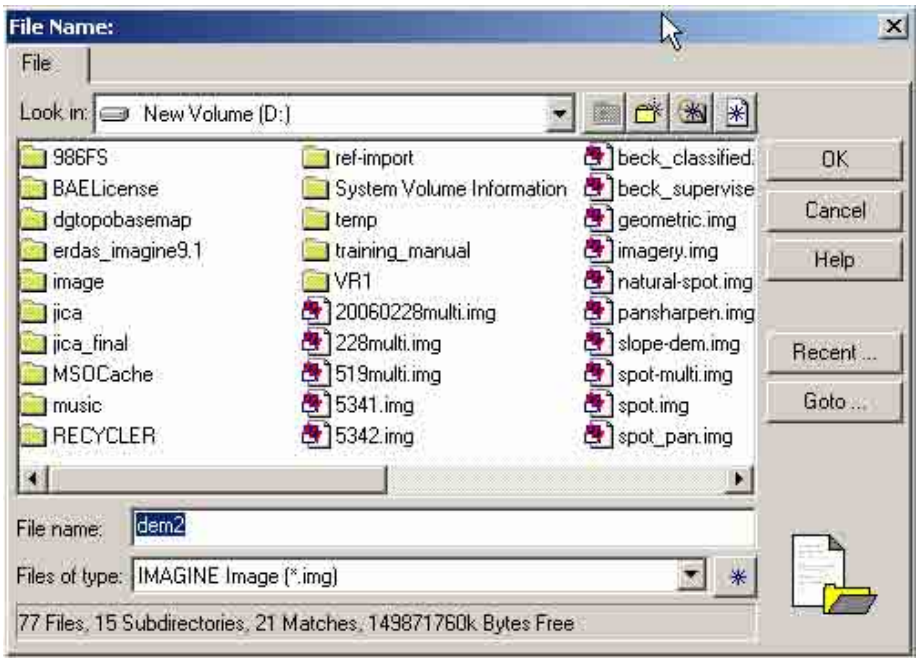
10.14 Double click last raster symbol



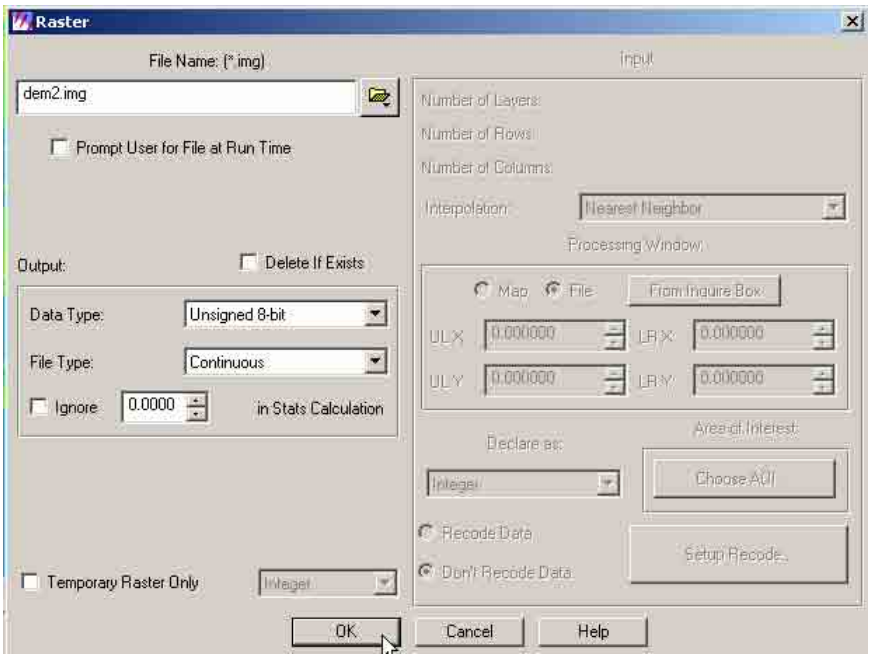
10.15 A “Raster” dialog box will appear. Click the “Open” icon to select the input raster.



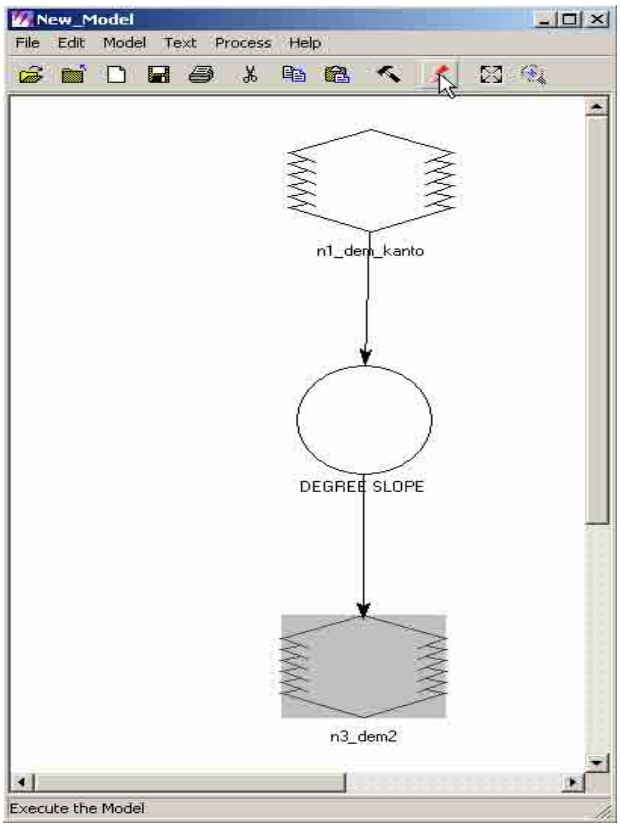

10.16 A “File Name” dialog box will appear. Navigate thru the directory and locate the folder where the output model is to be saved. Type the output file name (e.g. dem2). Then click “OK”.



10.17 Click “OK” in the “Raster” dialog box.

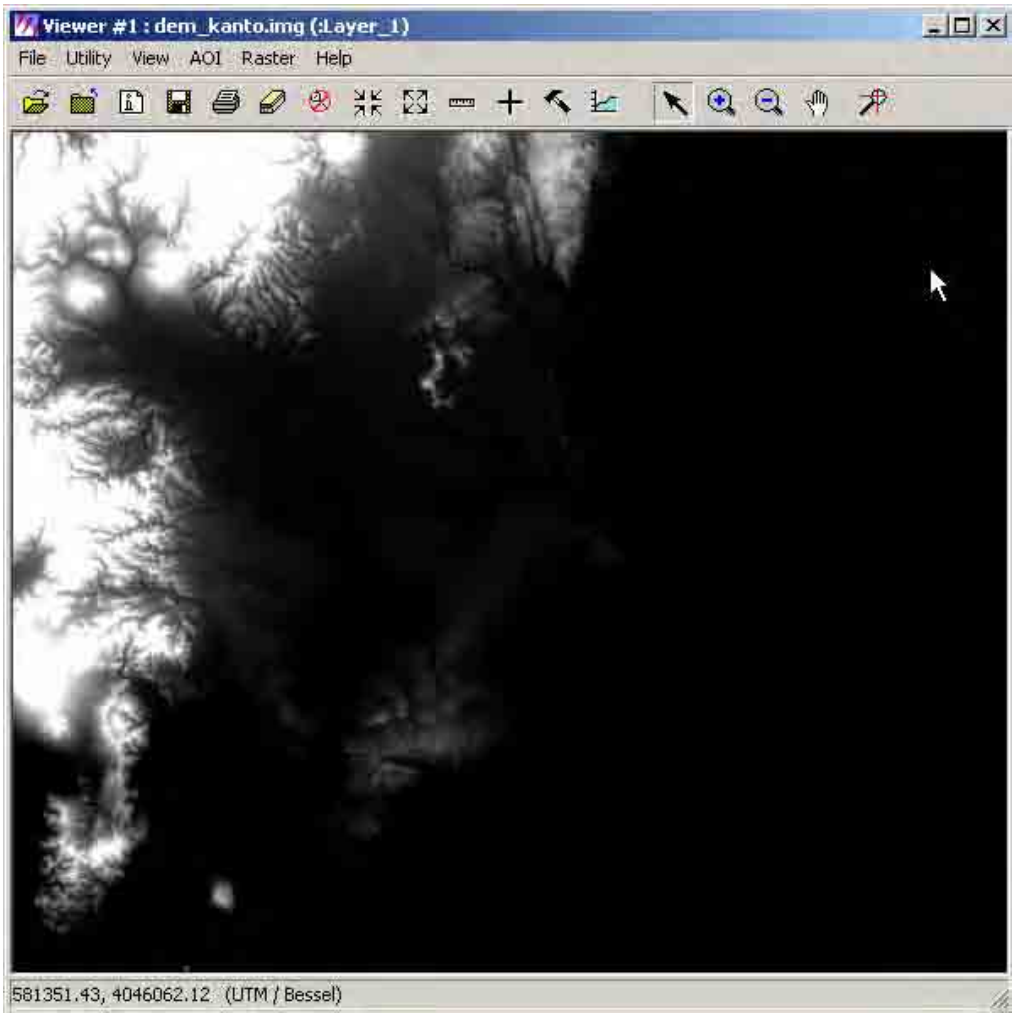



10.18 Click “Execute the Model” icon in the “Raster” dialog box.

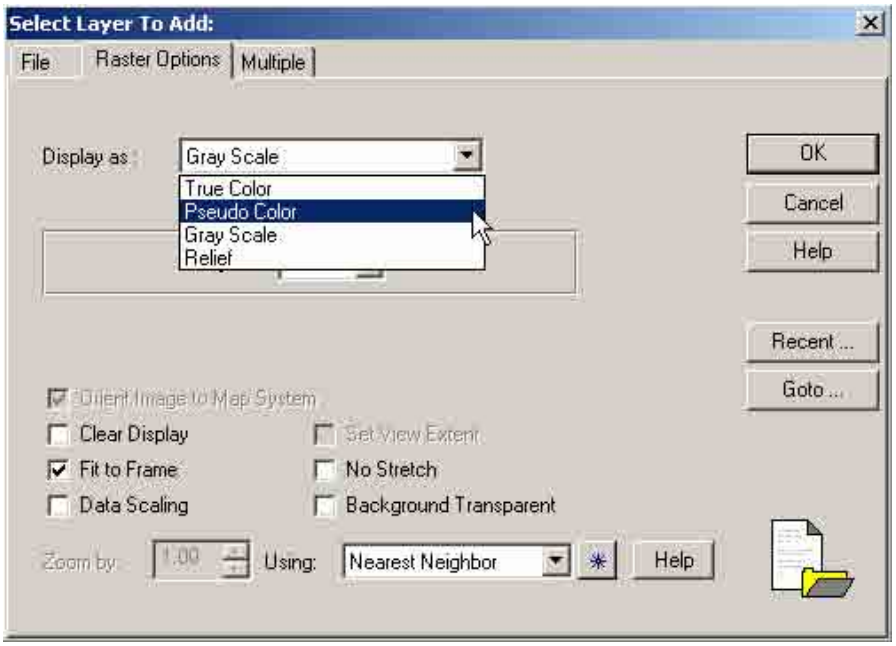


10.19 The system will process the data. Click “OK” when done.

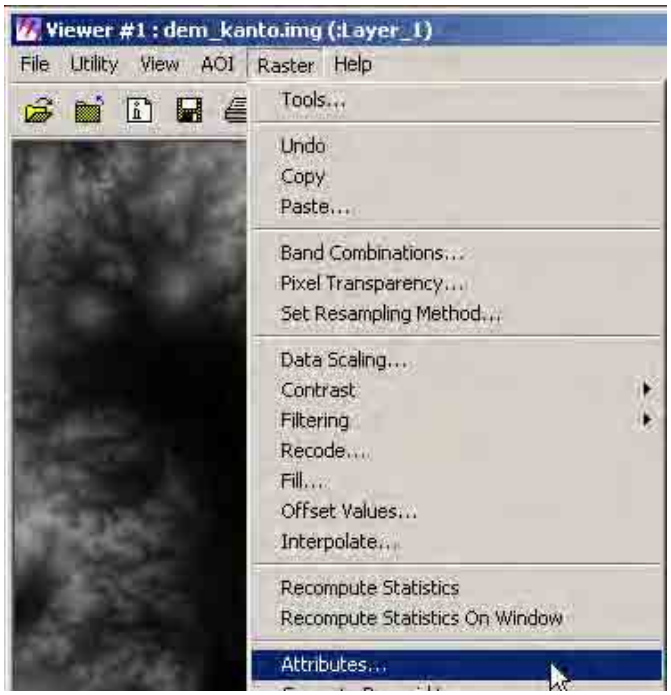

10.20 Open a viewer window and open the output model file (e.g. dem2.img)



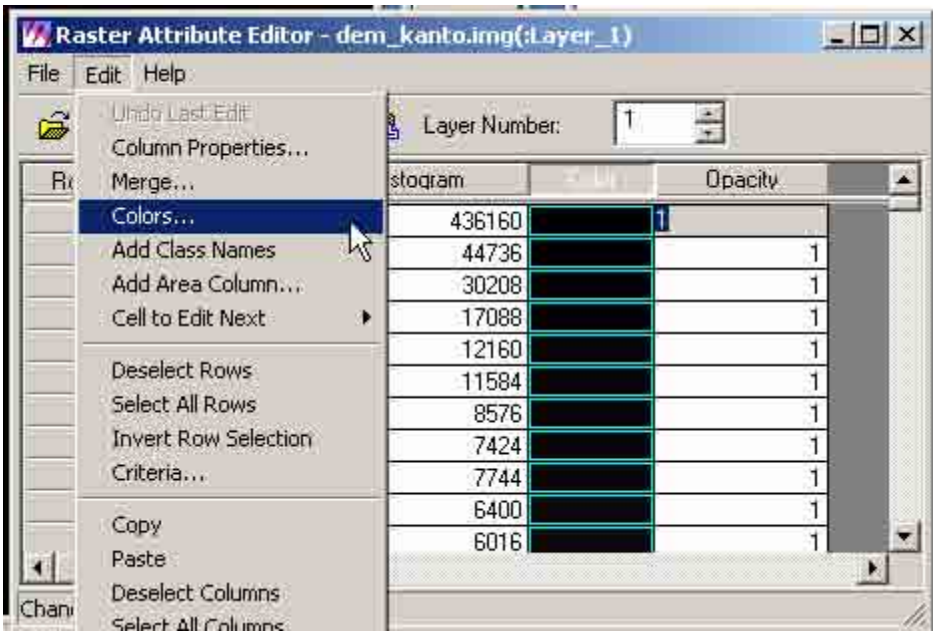
10.21 To change the color display of the image. Click “Open Layer” icon and click ”Raster Options” tab. Select “Pseudo Color” in the “Display as” box. Then click “OK”.



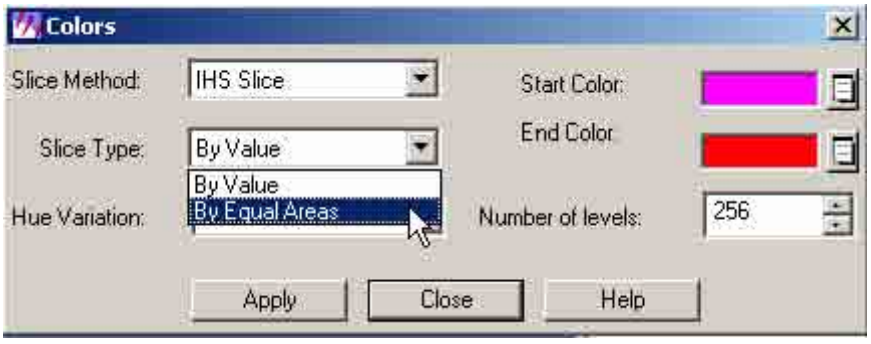

10.22 On the viewer window, pull down “Raster” and click “ Attributes”.



10.23 A “Raster Attribute Editor” dialog box will appear. Click the “Color” column. Pull down “Edit” and click “Colors”.




10.24 A “Color” dialog box will appear. Select “By Equal Areas” in the “Slice Type” box. Then click “Apply”.



10.25 The color display of the image will be changed.