

GEO/EVS 425/525 Unit 3

Composite Images and The ERDAS Imagine Map Composer

This unit involves two parts, both of which will enable you to present data more clearly than you might have thought possible. You will make a composite image based on the Landsat Enhanced Thematic Mapper + satellite, and you will learn to use the ERDAS Map Composer. The former includes 7 spectral bands with a resolution of 28.5 meters per pixel and a panchromatic band with a resolution of 14.25 meters per pixel. You will merge the two resolutions of the TM imagery and then superimpose some thematic imagery over your merged image. You will then use Map Composer to print your image. Once you have completed that, you will make hard copies of images you created in Unit 2.

Map Composer is the main mechanism by which images in Imagine are sent to the printer. Its use requires that images be readable within Imagine and that the computer in use be attached to a printer, either locally or on a network. In this class, you will use our networked printer, the Magicolor 6100.

You printed an image directly from the viewer in Unit 2, and you may question the need for the Map Composer. There is a great difference between the two modules. When you print from the viewer, you simply print the image and a logo. You have very little choice. When you use the Map Composer, you have a great deal of choice of the layout of your map as well as the other things you wish to print along with it. The images produced are very high-quality maps and presentation graphics.

Maps produced with the Map Composer include continuous and thematic raster layers, vector layers, mixed images, etc. These maps can include text, legends, scale bars, grid lines, tick marks, borders, symbols, etc. You can select from over 16 million colors, multiple line styles, and over 60 text fonts.

Making your Composite Map: Fusing Imagery of Different Resolution

You are going to make a rather interesting composite map for your first composition. Your first step will be to fuse thematic mapper imagery of different resolutions; you will then superimpose some simple thematic images over your fused image. On the Q drive, you can find two TM images of the Shaker Heights quadrangle taken in October, 1999. The panchromatic image is Shaker_L7_PC; the multispectral image is Shaker_L7_MS. Open two viewers and click on Session -> Tile Viewers to line them up next to each other. Open each image in a viewer so that you can compare them. Which has the most resolution? Can you see things in one that you cannot in the other? Rather, what can you see in the multispectral image that you cannot see in the panchromatic image, and *vice versa*?

To fuse the two images, click on Interpreter -> Spatial Enhancement -> Resolution Merge. Your high-resolution file is Shaker_L7_PC; your multispectral file is Shaker_L7_MS. Give your output file a suitable name. You can accept the default values for the details of the merge, but you might want to try out some of them to see what they do. Click on OK. Look at your result. What did you do?

Making your Composite Map: Getting Information from Thematic Maps

Your next step will be to obtain information from two images showing quantitative environmental data about the Shaker Heights quadrangle. The two images are ShakerImpervious, which estimates percentage of impervious surface on a scale of 0 - 100% and ShakerCanopy, which estimates percentage of tree canopy on a scale of 0 - 100%. Imagine that you have been hired to do an assessment of environmentally significant areas in the Shaker Heights quadrangle, and that your client wants to know which areas are extremely impervious (i.e. > 75% impervious surface), which have very high canopy coverage (i.e. > 75% canopy closure), and which have high canopy coverage (i.e. > 50 but < 75% canopy closure). You need to convert your continuous quantitative images into thematic qualitative images that show the classes of interest. To do this, you click on Interpreter -> GIS Analysis -> Recode. You will need to do this for each of your two input images. Your input images will be ShakerCanopy and ShakerImpervious, respectively; your output images can be anything you want them to be. To convert your images, you click on the Set Up Recode button after you enter the name of the input image. You will

note that the row values are the attribute values; they range from 0 to 100%. Using your mouse in the “row” column, highlight 0 through 50 for the canopy coverage image and change the value to ‘0’. You highlight a range of values by holding down the left mouse button and dragging the cursor from 0 to 50. In the same way, change values 51 through 75 to ‘1’ and 76 through 100 to ‘2’. Click on OK to recode the image and create your thematic map of canopy cover. Finally, use your mouse on the impervious-surface image to change values 0 through 75 to ‘0’ and 76 through 100 to ‘3’. Create your thematic map of impervious surface.

After you have finished with both maps, you have created two thematic images. The first has canopy cover zones labeled 1 and 2, for those of interest, and 0 for “other” areas of the quadrangle. The second has an impervious surface zone labeled 3, for the zone of interest, and 0 for “other” areas of the quadrangle. There is no overlap between zones of interest for canopy cover and impervious surface. That is, a specific pixel is of interest *either* because its canopy cover is high *or* its impervious surface is high. No pixel is high in both.

Your next step will be to create a single image combining the information in the two images you have just created. To do this, click on Interpreter -> Utilities -> Operators. Your two input files are the two thematic images you have just created. Give your output file a suitable name. Choose ‘+’ for your operator (it is the default), and choose “unsigned 2-bit” as your output type. Click on OK to create your composite thematic image. Look at it when you are done. What did the “operator” routine actually do? Because you used the ‘+’ operator, it added the values of each pixel in the input images to calculate the value of the corresponding pixel in the output image. This is called “Map Algebra.” We will have more to say about it as the semester progresses. Because there is no overlap in the areas of interest, a pixel with high impervious surface (i.e. value = 3) would have a value of 0 in the canopy-cover image, and a pixel with a high canopy cover (i.e. value = 1 or 2) would have a value of 0 in the impervious-surface image. Thus the output image records values of 1 or 2 for pixels whose value in the canopy-cover image was 1 or 2, values of 3 for pixels whose value in the impervious-surface image was 3, and values of 0 for those whose value was 0 in both input images.

Open the raster attributes table for your new image. Click on Edit -> Add Class Names Column. Add descriptive names for classes 0, 1, 2, and 3. Also change the colors so that they are appropriate, and change the opacity of class 0 (i.e. not areas of interest to your client) to 0. Save your image with the new raster attributes. Erase the image from your viewer.

Now open the fused image you created above. In the same viewer, open the composite thematic image you just saved. What do you have? The areas of interest to your client should be colored using the schema you just devised, and the areas of no interest should be the fused TM image. Neat, no? You are now ready to make your printout to present to the client.

Making Your First Map Composition

In general, the process of creating a map involves a series of steps:

1. Plan the map. Determine the margins, decide on what elements will be included in the map, etc.
2. Start Map Composer.
3. Prepare the data layers, typically using a viewer.
4. Draw the map frame, and insert the data layers in the map frame.
5. Add the things you wish to include in the composition: e.g. Neatline, ticks, scale bars, legends, titles, north arrows, logo, etc.
6. Write whatever descriptive text you choose to add
7. Print the map

You need to have a plan or blueprint to follow. The plan you will use in the first map is shown in Figure 1. It includes a title (centered and at the top), the image (centered, 5 ½ x 5 ½), and a legend, north arrow, scale bar, and text, all below

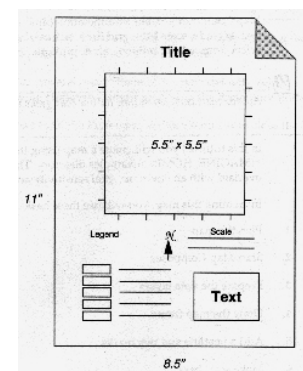


Figure 1: Basic setup of Map Composition

the image. The image will be bounded by a neatline, and it will have appropriate tick marks. Before you can deal with some of these details, you need to be know just what you want to include. To a degree, these issues are your choice, based on the purpose of your project. They are always issues you should consider seriously.

This map composition will include a number of different image elements, as indicated in Figure 2, which shows the Map Composer window containing a complete image ready to print. You will note that the window includes a ruler for both X and Y directions. You will also note that the page shown in the window is 7 ½" by 10" rather than 8 ½ by 11. This is because the image shown here is specified with a ½" margin on all sides. This is one of the things you will specify when you set up your composition.

There are two ways to start the Map Composer. The more obvious is by clicking on the Composer icon on the main Imagine Control Panel. Then click "New Map Composition" to create a new map composition. Alternatively, you can choose File -> New -> Composition from the viewer menu bar. When the New Map Composition dialog opens, type in a suitable name for the map and specify 7.5 as the Map Width, 10.0 as the Map Height, and Inches as the units. Leave 1.0 as the Display Scale and White as the background. There is good reason to set the width and height smaller than the paper size of 8.5 x 11. On one hand, it is useful to have a margin of at least ½ inch on all sides. More important, few printers can print to the very edges of the paper. Almost all have a "dead zone" around the edge of the paper. By inserting a "live" size of 7 ½ x 10, you are simply recognizing the realities of the capabilities of your printer. Click on OK. A blank Map Composer viewer appears, along with the Annotation tools palette. You will recognize the icons on the Map Composer icon bar; they are essentially the same as those of the viewer icon bar.

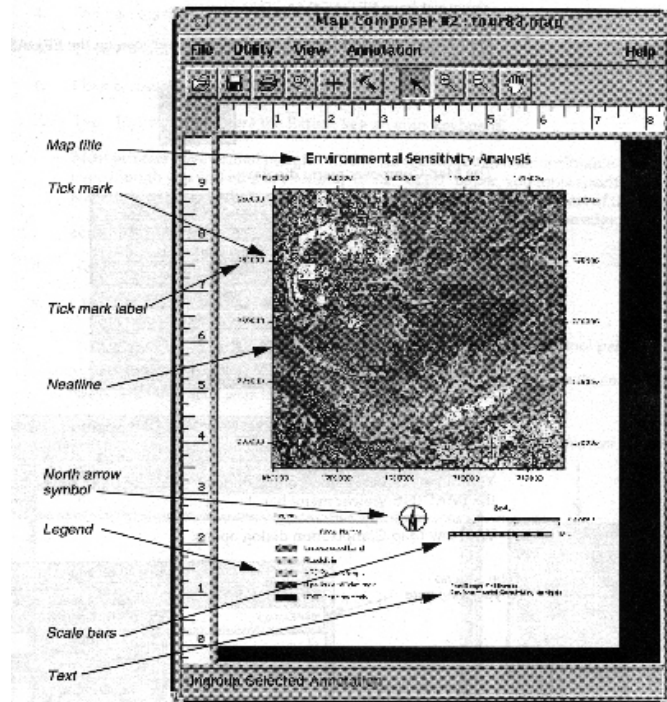


Figure 2: More detailed view of Map Composition

The Annotation tool palette includes a number of icons which allow you to place rectangles, squares, polygons, lines, circles, scale bars, legends, map frames, grid lines, tick marks, text, etc. on your map composition. You can see the function of any icon on the Tool palette by putting the mouse cursor over it and reading the function on the status bar of the Map Composition viewer. If for any reason the Annotation tool palette disappears from your desktop, you can replace it by clicking on the Tool icon on the Map Composer icon bar or by clicking on Annotation-Tools from the Map Composer menu bar.

To see the entire Map Composer window, right-click the mouse within the Map Composer window to raise the "Quick-View" menu. Then click on Fit Map to Window.

The next step is to prepare the data layers. Here you will use the composite image you created in your viewer.

Prepare to draw the map frame. Map frames are unusual objects. They are placed on the map composition like other objects, but they behave much as viewers. They can contain any type of image that a viewer can. When you place an image in a map frame, you will see it. However, the image is not *copied* to the map frame; it is *referenced* there. When you save the map composition, you are also saving a

pointer to the image rather than the image itself. You choose the image you wish to include in the map frame by clicking on the viewer containing the image you wish to use. There are three ways to select the dimensions of a map frame, and the options you will use will depend on the image area you wish to include in your final map composition.

The map area is the area in the viewer displayed in the map frame in the map composition. It corresponds to the dimensions of the area on the ground in map units.

The **frame area** is the area used by the map frame in the map composition. It is the area on the page occupied by the image in question. It is defined in page units.

The **scale** is the ratio of the distance in the map frame to the distance represented on the ground. You can, for example, define an area showing a scale of 1:24,000.

Make sure that you have both a viewer and a map composition viewer open, and that the viewer contains the image you wish to print. Click on the Map Frame icon on the Annotation tool palette to draw the boundary of the map frame. The Map Frame icon looks like a square with tick marks to its inside. Near the top of your map composition, shift-drag the cursor downward and diagonally to draw a map frame. Don't worry about where it is or what size it is; you will change these later. If you want to be super compulsive and draw a perfect square, press the shift key while you are drawing your map frame.

When you release the mouse, the Map Frame Data Source window opens, allowing you to choose a data source from a viewer or from imported data, or to cancel or to obtain help. Click on "Viewer." A new window opens, giving you instructions in how to choose a viewer with data. Put the cursor over the viewer you wish to use. The cursor should change to a check mark. Click anywhere in the image on the viewer.

A very important and sometimes confusing window, the Map Frame window, now opens. This window allows you to determine the size and position of your map composition, as well as its location on the page. Of the three ways to select the dimensions of your map composition discussed above, you can maintain any one; the others can be changed and will be calculated in the process. You can also rotate the image. You can choose to use the entire image or to use a part of it. You will need to experiment with these options in order to understand them. The key to this window is to choose the appropriate "change" option. As indicated earlier, you have 3 choices:

1. *Change Map and Frame Area (Maintain Scale)*. The "scale" window is grayed out, and you can change the map's width and height (in map units) and the frame width and height (in paper units). You will need to fill these in, either by filling in the numbers or by moving the appropriate boxes with your mouse.
2. *Change Scale and Frame Area (Maintain Map Area)*. The Map Area Width and Height fields are grayed out, and you can adjust the scale and the frame width and height, again, either by filling in numbers or by moving the appropriate boxes with your mouse.
3. *Change Scale and Map Area (Maintain Frame Area)*. The Frame Width and Height fields are grayed out, and you can adjust the scale and the map area width and height, again, either by filling in numbers or by moving the appropriate boxes with your mouse.
4. Alternatively, if you wish to use the entire image, you can click on the "Use Entire Source" button.

When the Map Frame window opens, a cursor box also opens up over the image in the viewer. This shows the portion of the image that will appear in the map frame in the Map Composition. You should experiment with the buttons and see how they change the options available to you and how these options affect the cursor box in the viewer. For purposes of this composition, choose "Change Map and Frame Area (Maintain Scale)." Double-click the value in Frame Width to select it and type 5.5 as the value. Do the same for Frame Height and type 5.5 as the value. Press the return key after inserting each value. What this does is to set the map frame to the dimensions you want.

Now choose "Change Scale and Map Area (Maintain Frame Area)." Remember that you have set the frame as you want it, so you will not want to change it again. Now set your frame coordinates. Move to the Upper Left Frame Coordinates portion of the window, and change the X value to 1.0 and the Y value to 9.0. Press the return key after inserting each value. Now double-click on the value in Scale 1: to select it, and type 50000 in the window. Press the return key.

Now move your cursor to the cursor box in the viewer. Drag the cursor box to the area you want to display in your composition. When you have positioned the image to your satisfaction, click OK in the Map Frame dialog to reference that portion of the image to the map composition. The image area you chose is now displayed in the map frame in the Map Composer window.

If you wish to enlarge the image in the Map Composer viewer drag on the corners of the Map Composer window to enlarge it and then right-click (and hold) on the viewer to select "Fit Map to Window" from the Quick View menu. You can now close the viewer.

We will assume at this point that you are really satisfied with your image and proceed to completing it. You could, if you wanted to, edit the map frame or delete the map frame. Instructions on doing these operations will be given later in this handout.

You will now add a neatline (a rectangular border around the map frame) and tick marks. Click on the Grid/Tick icon on the Annotation Tool palette. This will enable you to place grid ticks. Now click on the map frame on which you wish to place the neatline and tick marks. The Set Grid/Tick Info dialog opens. Be sure that Neatline is checked, and leave the Margin at its default value of 0, so that the neatline fits to the edge of the map frame. In the Horizontal Axis options, drag across the Length Outside: field to select it. Enter a tick length of 0.06 and press return. This means that the tick marks will extend 0.06" outside of the map frame. Drag across the Spacing: field to select it. Enter the value 5000 and press the return key. This will place the tick lines with a spacing of 5000 feet. You may wish to change other fields as well. When you have determined the dimensions of the horizontal ticks, you can click the "Copy to Vertical" button if you wish to use the same settings on the vertical axis. Alternatively, you can click on the Vertical Axis tab and enter other values. Whether you Copy to Vertical or not, you should click on the Vertical Axis tab and verify that the vertical axis values are set as you wish them. Click on "Apply" on the Set Grid/Tick Info dialog to set the neatline and tickmarks on the map. If you are satisfied, click Close. Otherwise, make whatever adjustments you wish to make and click "Redo" to apply them. Experiment with some of the other settings possible on this dialog. For example, you might vary the Map Units or see how your map would appear if it had a full grid rather than tick marks.

You will now change some of the details of your map. Select the group of ticks, tick labels, and the neatline by clicking on any of the number labels outside of the map frame. A selection group appears around the entire group. From the Map Composer viewer menu bar, select Annotation-Styles. The Styles dialog opens. Hold on the popup list next to Line Style: and select Other. The Line Style Chooser dialog opens. Enter 1.00 as the Width: to change the width of lines in points. Click Apply and then Close in the Line Style Chooser dialog. The group redraws with the new line width. Now hold on the popup list next to Text Style: and select Other. Pick a new font, and change the Size to 9.0. Click Apply. If your change improves the image, click on Close in the Text Style Chooser dialog. Otherwise change the settings. Click Apply and Close. Deselect the annotation group on which you are working by clicking anywhere in the map composition window outside of the selection box. Then click Close in the Styles dialog.

Again, there may be instances when you would like to edit one or more individual elements in a complex object, like the one you have created here. Since grids and ticks are groups of elements, they can be ungrouped and the elements edited individually or copied, cut, pasted, etc. Instructions on how to do this will appear later in this handout. At this point, we will proceed to the scale bar.

You can create as many scale bars as you wish for any georeferenced map. In this case, we will create two. To place scale bars, select the Scale Bar tool from the Annotation tool palette. Move the cursor into the Map Composer viewer, and the cursor changes to the scale bar positioning cursor. Drag the mouse to draw a box under the right corner of the map frame in the Map Composer viewer, outlining the length and location of the scale bars. You will be able to change these later, if you choose. Releasing the mouse button activates the Scale Bar Instructions dialog. You will be instructed to click on the Map Frame you wish to use for the scale bar. Since only one is open, you have only one choice. You could, however, have several Map Frames open, and you can choose any open Map Frame.

When you identify the Map Frame you wish to use, the Scale Bar Properties dialog opens. You have

several possibilities for Scale Bars. Experiment with several of them, to see what happens. When you are done, you should have checked "Zero" in the Alignment area, to indicate that you wish the scale bars centered on each other, you should have checked "Kilometers" and "Miles" in the Units area, you should indicate "Scale" as the title, and you should enter 2.0 inches as your maximum length. Click on "Apply." If you are satisfied with their appearance, Close the Scale Bar Properties dialog. Otherwise click on "Redo" to change the information.

Once the scale bars are placed on your map, you can move either of them by clicking on the bar and dragging it to a new position. When you have moved your scale bar, click outside of the selection box to deselect the scale bars.

Now you need to create a legend. This is a very important part of many maps, especially the sorts of thematic maps that characterize environmental, scientific, and natural-resource applications of remote sensing and GIS. Legends are created in the Map Composer as groups of elements generated automatically to your specifications. The map you currently have in the Map Frame is a thematic map. You can create a legend for any thematic map – but not for a continuous map. To begin to create a legend, click on the Legend icon in the Annotation tool palette, and move the cursor into the Map Composer window. The cursor changes into the Legend Positioning cursor. Click in the Map Composer viewer under the left side of the Map Frame to indicate the position of the upper left corner of the legend. The Legend Instructions dialog now opens, asking you to click in the Map Frame corresponding to the image from which you plan to derive the legend. The Legend Properties dialog opens. This dialog contains 4 tabs (Basic, Title, Columns, Color Patches). The Basic tab is displayed. Make sure that all of the entries in the "Class_Names" column are meaningful. You will need to add an entry for the enhanced TM portion of your image. Under "Legend Layout," move your cursor to the row column and click on the first row you wish to include in the legend. Then double-click on the last row you wish to include. This selects the classes to display in the legend; these are highlighted in yellow. They are the only ones that will be included in the legend.

Click the Title tab. Enter the word "Legend" in the Title column, and make sure that it is Left-Justified. Click "Apply" in the Legend Properties dialog. The legend is drawn in the Map Composer viewer. As before, choose to Close the dialog or Redo it, depending on whether or not you are satisfied with its appearance. You can reposition the legend, if you choose, by clicking on any of the color patches or text strings to select it. Drag the box using the mouse. When you are finished, deselect the legend by clicking outside of the legend box.

Now you should add a title to your map. Click on the Text icon in the Annotation tool palette. Move your cursor to the top of the map in the Map Composer viewer. The cursor becomes an I-beam, indicating that you are about to place text. Click where you want to place the text. This will become the *bottom left* corner of the text string. The Annotation Text dialog opens. Enter "Environmental Sensitivity Analysis" in the Enter Text String: field, and click OK to place the text. To change the text style, click on the text string to select it. Select Annotation-Styles from the Map Composer menu bar. The styles dialog opens. Hold on the popup list next to Text Style: in the Styles dialog, and select Other. In the Text Style Chooser dialog, change the Size: to 20 points. Now click on the Custom tab of the Text Style Chooser dialog. Choose a different font. Click on "Apply." If you are satisfied, Close the Text Style Chooser dialog. If not, Redo it.

To position the title, double-click on it. The Text Properties dialog opens, enabling you to edit, position, and align the text. You first want to make sure the text is centered. To do this, drag across the X: value to select it. You know that your viewer is 7.5 inches wide. Therefore, enter "7.5/2" in the X" window, and press return. This returns a value of 3.75. Now change the Y: value to 9.5, and press return. Now look at the Alignment area. You want the title centered. That is, you want the *center* of your title to be located at the 3.75" location you specified in the X: position. So you should click on the Center radio button for the Horizontal: setting. You want the *bottom* of your title to be at the 9.5 position. So you should click on the Bottom radio button for the Vertical: setting. Click on Apply. If you are satisfied, Close the dialog.

The next step will be to place a North arrow. This is one of many symbols you can place on a Map

Composition. If the Styles dialog isn't open, open it by clicking on Annotation-Styles from the Map Composition menu bar. Hold on the popup list next to Symbol Style: and select Other. In the Symbol Chooser dialog, click on the popup list next to Menu, and select North Arrows. Select north arrow 4 from the list. Change the Size: to 36 points (1 point equals 1/72 inch, so 36 points is ½ inch. Click on Apply and then Close in the Symbol Chooser dialog. Note that the North Arrow is now the default symbol for the Symbol Style in the Styles dialog. Select the Symbol tool from the Annotation tool palette. Click beneath the map image in the Map Composer viewer, between the legend and the scale bars. This places the north arrow on your composition. As with other elements in the Map Composition, you can move it by double-clicking on it and dragging it to a new position.

Finally, add some descriptive text. If the Styles dialog isn't open, open it by selecting Annotation-Styles from the Map Composer menu bar. Hold on the Text Style: popup and select Other. In the Text Style Chooser, change the text Size to 10 points. Click on the Custom tab at the top of the Text Style Chooser dialog. Check to be sure that Fill Style: is set to a solid black. Click on "Apply" to change the defaults. Close both the Text Style Chooser dialog and the Styles dialog. Click on the Text icon in the Annotation tool palette to use the text option to write your descriptive text. The Annotation Text dialog opens. Move your pointer into the Enter Text String: section of the Annotation Text dialog, and type. Use the return key to left-align each line. Enter suitable text to describe the image. You can make this extend over several lines if you wish by hitting the <return> key when you want to break a line. Also, don't forget to add your name to this field! When you have entered this, click OK in the Annotation Text dialog to place the text.

Save your Map Composition by clicking the Save icon on the Map Composer tool bar or by selecting File-Save-Map Composition from the Map Composer menu bar. This will save your Map Composition as a file with the *.MAP extension, indicating that it is a Map Composition.

Now print your map composition. If you have closed your Map Composition viewer, you can open it by clicking on the Composer icon on the main Imagine control panel. If your Map Composition viewer is already open, you don't need to open another. Select "Print Map Composition" from the Map Composer menu or File-Print from the Map Composition viewer menu bar. Click on the name of the Map Composition you've just saved under Filename: (*.map), and click on OK. The Print Map Composition dialog opens. Your destination printer is the Magicolor 6100. It will take a couple of seconds for Imagine to connect to the printer driver. When it does, you will be able to click on OK.

Dealing with Loose Ends

Editing and Deleting the Map Frame. There may be times, after you have placed a Map Frame, that you wish to edit it or delete it. The Map Composer is a very powerful tool, but it is also idiosyncratic, and you have to be know how to edit the Map Frame correctly if you are to edit it at all. You cannot, for example, change the image you are using. If you want to use a different image in a particular Map Composition, you need either to delete the Map Frame and redraw it or to edit the *.map file.

To edit a Map Frame, click on the Select Map Frame icon on the Annotation tool palette. Click in the Map Frame you wish to select. Click on Annotation-Element Properties in the Map Composer viewer, or double-click in the map frame. A new viewer opens, containing the image you are currently using. The area currently in the Map Frame is shown by a white cursor box. Change the information in the Map Frame dialog and/or move the cursor box in the viewer. When you are satisfied with the modified image in the Map Frame, click on OK in the Map Frame dialog, and close the file in the viewer.

To delete a Map Frame, choose View-Arrange Layers from the Map Composition viewer menu bar. Move your pointer to the box entitled MapFrame_ *your name for your image*.img. Right-click this box and select Delete Layer. After the box disappears, click on Apply and then Close in the Arrange Layers dialog. Note that you cannot "undelete" a Map Frame which you have deleted. Once you have done this, you will need to redraw the Map Frame. You do this in exactly the same way you created the Map Frame in the first place.

Editing *.MAP files. Files you create when you save a map or graphic using Map Composer have the

*.MAP extension. This file contains all of the information required to construct your composition, such as size, position, and name of the image(s), annotations, symbols, etc. When you display or print a Map Composition using Composer, the software reads this *.map file and recreates the map you originally composed. Although you “place” an image in a Composition, you really are only referencing it. The name of the image you are using is listed in the *.map file. Therefore, when you enhance or change an image in any way, you change the image in the Map Composition because it is the same image. You need to edit a map file if you wish to move an image that has been used in a Map Composition to a new directory, or to make certain other changes. You can edit the annotations in a Map Composition using the annotation tools you used to place the annotations when you originally created the map.

To edit a *.map file which you have saved, click on Composer in the main Imagine Control Panel. Choose Edit Composition Paths. The Map Path Editor opens. Open a file by clicking on the Open icon or choosing File-Open. The Compositions dialog opens. Choose the map file you wish to edit, and click on OK. The information for the selected map file displays in the Map Path editor. The type of Layer: and Layer Information displays for the image. Note the path name for the image, located under Layer Information. Click on Composition under Frame:. Under Layer Information, type the new file name or directory name in the Name text entry field. Click “Apply” in the Map Path editor. The changes you have made are applied to the map composition. If you don’t want the changes you’ve just made, click the Reset button. If you are satisfied, save the file by clicking File-Save from the Map Path Editor menu bar.

Ungrouping Elements in Annotation Groups. The Annotation tools in the Map Composer module are very powerful, and they are capable of considerable editing. Some of these tools are relatively simple: things like North Arrows, Explanatory Text, etc. are simple features in which the Annotation element is a single entity that can be edited using the Annotation tools. Others, such as neatlines, grids, and tick marks are more complex. To edit the simple elements, simply enter the Annotation tools, and change the materials controlled by the tool in question.

For more complex elements, consider the neatline/tick mark/grid elements. To edit these, you may have to ungroup them. First, select the group you wish to deal with. Then click on Annotation-Ungroup in the Map Composer menu bar to ungroup the selected elements. This draws selection boxes around each component making up the group. If the component you wish to work on is selected by this action, fine. Otherwise, click on a particular group to select it and then click on Annotation-Ungroup to ungroup it further. You may need to use Annotation-Ungroup several times in order to achieve the desired separation. Deselect everything by clicking outside any of the selection boxes. Then click on any element you wish to edit. A selection box will form around it. You can now edit, cut, paste, copy, etc.

When you are done, you will probably want to regroup the elements into a group. Click on the first element you wish to regroup, then shift-click on all of the other elements you want included in the group until all are selected. Then select Annotation-Group from the Map Composer menu bar.

Other Map Compositions to Create

Beginning with this unit, you will use Map Composer to print all maps for your portfolio. ***All maps printed for your portfolio should be brought to class at the time of the recitation.*** All maps should include the following elements:

1. Your name in a text annotation field
2. A title, which should include the Unit number in which the map was generated
3. A brief explanation of what the map shows in a text annotation field
4. A legend, *if a legend is appropriate for the map in question*

The map created above is the only map solely from Unit 3 that will be included in the portfolio. However, you will now create Map Compositions for the following maps from Unit 2 and print them, with the following specifications.

1. The LNSOILS.IMG file.

2. The VUE file you created in Unit 2 showing the area in Madison Sandy Loam soil with a slope of 15-25%, from the LNSOILS.IMG file superimposed over the LANIER.IMG image.
3. The image showing forested areas in the Germantown, MD area suitable for development as housing projects, superimposed over the GERMTN.IMG image.

In all three cases, your images should be as large as feasible. That is, don't limit yourself to a Map Frame size of 5.5 x 5.5 inches. If you can fit everything in with an image of 8 x 8, do it. You should be able to make images this size for two of the three images. ***Also, you should use the entire image.*** In figuring out how to do this, keep in mind that you will need to specify the size of the image and the position of its upper left-hand corner. You should also use the Use Entire Source button.

Questions to Consider

1. What are the advantages of resolution merge in interpreting an image over using the raw TM image?
2. Do you think that you could do a resolution merge of imagery from different sources – e.g. TM multispectral imagery and SPOT panchromatic images?
3. In planning a Map Composition, what do you think is the easiest way to maximize the size of the printed image while insuring that you get all of the other pieces of information you need to get on your Map Composition?
4. Why are legends limited to Thematic maps? That is, why can't you print a legend for a continuous image? Also, why did you need to combine your two thematic maps into a single layer in order to get a proper legend?

Portfolio

Four Map Compositions are required for the portfolio from Unit 3:

1. The map of your composite image
2. The map of LNSOILS.IMG
3. The map of the Madison Sandy Loam with slope of 15-25%, superimposed over LANIER.IMG
4. The image showing forested areas suitable for housing development, superimposed over GERMTN.IMG.