GEPL 4500/5500
Lab 4: Classification Accuracy Assessment

Assessing the accuracy of your work is very important to demonstrate to others that you have done good work. It is a way to quantify your classification. Although there are problems with reporting your accuracy, i.e. it is easy to show positive results, we will go through the process because it will be important if you do remote sensing work in the future.

Qualitative Analysis: You can take a first cut through your analysis by just looking at the image and determining if there are errors that are easily apparent.

1. Are there any gross errors that you see right off of the bat? What are they?
   For example, I had a pavement category when I did my classification. Any water that had a high concentration of sediment was classified as pavement, oops!

2. What class has the most errors in classification either of omission or commission? Which one has the least?

3. Print out a color copy with a legend of your classified image.

Quantitative Analysis:
We are going to use two techniques to validate the classification.
1) we are going to use some field data that graduate students in Geography and Planning collected this spring. The data are of farm fields only and include pictures of the fields. The Excel file with the data is located on the RAID at: \\gisag99\utview and then to the directories Remote Sensing → Student_Proj → DrC backup → GEPL 5500. The file Fultoncauv_02_val has the latitude, longitude and crop type for those fields. It also has the direction from the road that they were looking to take the observations. Use points 7-9 and 11-18 for validation points.

2) You will use the stratified random point generator to get 50 random points for your accuracy assessment. We really want 50 random points for each class for a total of 400 points but your lab would take too long if you did that. There are several sources of information that will help you validate your classification: The original Landsat 7 image, aerial photographs, and your personal knowledge of the area will be used to validate the classification. Another approach to validating classifications is to visit sites with a GPS unit. This would also be too time consuming for this class.

Have your classified image in a Viewer. Click on the **Classifier** icon from the Erdas Main Menu. Select **Accuracy Assessment** → the Accuracy Assessment viewer opens. This viewer allows you to compare the class of pixels in your image to the class you pick from your reference image (i.e. aerial photograph, false color image, etc.). In the Accuracy Assessment viewer, select **File|Open** and open the classified image.

In the Accuracy Assessment viewer, select **View|Select Viewer** and then click on the viewer with your classified image in it.

Generate the Random Points - \\gisag99\utview GIS→ Fulton Co. → Aerials (I still have to figure this out). Or, use Terraserver http://terraserver.microsoft.com/default.aspx

In the Accuracy Assessment viewer, select **Edit|Create/Add Random Points** → the Add Random Points dialog opens. Choose 80 stratified random points and then choose a minimum of 8 points for each class and click OK. → a list of points will appear in the Accuracy Assessment CellArray. In the Accuracy Assessment viewer, select **View|Show All**. Now select **View|Change Colors**. In the Change Colors dialog, set the Points with no reference and the Points with reference to colors that will show up best for you. Click on **Edit/Show class values** to get the classes from the image.

Now, enter your best guess of the classes in the Reference column of the Accuracy Assessment CellArray using the original Landsat image and aerial photographs. As you enter the value for each point, it will turn from white to yellow. Open the **Report|Options** to check the Error Matrix Accuracy Totals and the Kappa Statistics. Select the Report|Accuracy Report and the Report|Cell Report to generate information about the classification. The reports will appear in the text editors. You can save the reports and print them out. Given the data the you have entered, generate an Error Matrix similar to the one shown on page 248 of your textbook.

4. Print out the Accuracy Report which includes the error matrix and the Cell Report for your classification.

5. What is the overall accuracy of your classification?

6. Should you redo any of the classes? List them.

7. How can you improve upon your classification? i.e. by using other images or other classification techniques. I would like some detail here. Please read the sections in the book to get some ideas.