LAB EXERCISE NO. 12   **DUE DATE: 12/08/2015**
Total Points: 4

TOPIC: LAND COVER AND LAND USE CHANGE DETECTION – Urban Sprawl

INSTRUCTIONS: You will use the image processing techniques you learned in class to map the changes in land cover and land use over your study areas using a "before" and "after" image.
I encourage you to experiment with '**tabulate area**" for categorical variable and "**zonal statistics**" and "**zonal statistics by table**" in ArcGIS. Also experiment with "**Summary report of matrix**" under the "Thematic" drop-down menu.

QUESTIONS TO BE ANSWERED:

1. Are there any land use and land cover changes?
2. What type of land use and land cover changed the most over the decades?
3. Was there any change in vegetative cover and if so by how much?

PROCEDURES:

1. **Change Detection**
   a. *Categorical changes*
   Conduct a change matrix using the two classified land use and land cover maps and quantify the differences. You can create a land cover transformation matrix using ERDAS Imagine software
   b. *Continuous changes*
   Take the differential image between the fractional cover in "before" and "after'. Investigate the quantitative changes.
   c. *Examine changes in greenness*
   Create a differential $\Delta fc = fc_{2000} - fc_{1991}$ or simple differences in NDVI and analyze the differential image by examining the histogram. When you subtract one from the other, the output image should be in *float* format.