Geography 38/42:353
Introduction to Remote Sensing
Laboratory Exercise #7

Digital Image Analysis and Classification Using MultiSpec
Part 1: Training Field Selection

(20 pts)

The digital image analysis and classification section of the lab component of this course consists of a three-part project. Part one focuses on the development of a land cover classification scheme and the selection of training fields for a supervised classification of the Landsat 7 Thematic Mapper (TM) imagery provided. Part two covers the evaluation of training field statistics and editing and revising selected training fields. Part three includes the final classification of the imagery using a selection of supervised classification algorithms and presentation of the resulting land cover maps. A copy of the current version of MultiSpec and software documentation is available from the Purdue University website (see link on course website), and the Clear Lake thematic mapper imagery and metadata file is available from the course web site.

1) Develop an appropriate land cover classification scheme for the Clear Lake TM imagery provided. The number of classes you select may vary but a reasonable number would be from five to no more than seven classes for a general land cover classification or, if you are attempting a more specialized classification, no fewer than three classes.

2) Select <u>two or three training fields for each land cover category</u> in your classification; as demonstrated in class. Note: you may need to subdivide some of these classes for the purposes of training field selection and classification, and then regroup them for the final land cover map. For example, you may have to divide water into a "clear/deep" and a "shallow/silty" class, select training fields within each of these subclasses, and then later regroup them into one water class after the final classification.

3) Be sure to save your project often (using save as *filename*_***verX***.*prj*) so that you can go back to a previous version if changes don't work out or when editing the training fields later in Part 2.

4) Provide a brief (2-3 pages max. not including figs) report on your results that includes the following:
   a) Provide a general description of the land cover classification scheme you have selected and a short description of each class.
   b) Generate <u>class statistics</u> (command = list classes stats) and discuss how the mean and standard deviation of each of your classes compares to expected values.
   c) Produce class histograms (command = histogram classes) for all classes and include a separate histogram for each band/channel. Discuss the separability and/or overlap/confusion between classes.
   d) Produce training field histograms (command = histogram fields) for all training fields within each class. Discuss how individual training fields performed; for example, are all training fields spectrally similar (i.e. do their histograms overlap), with low standard deviations and ranges, or are any training fields significantly different and potentially problematic.
   e) Submit a properly formatted report in hard copy format.

Part 1 is due Friday, March 19th at the <u>beginning</u> of class.

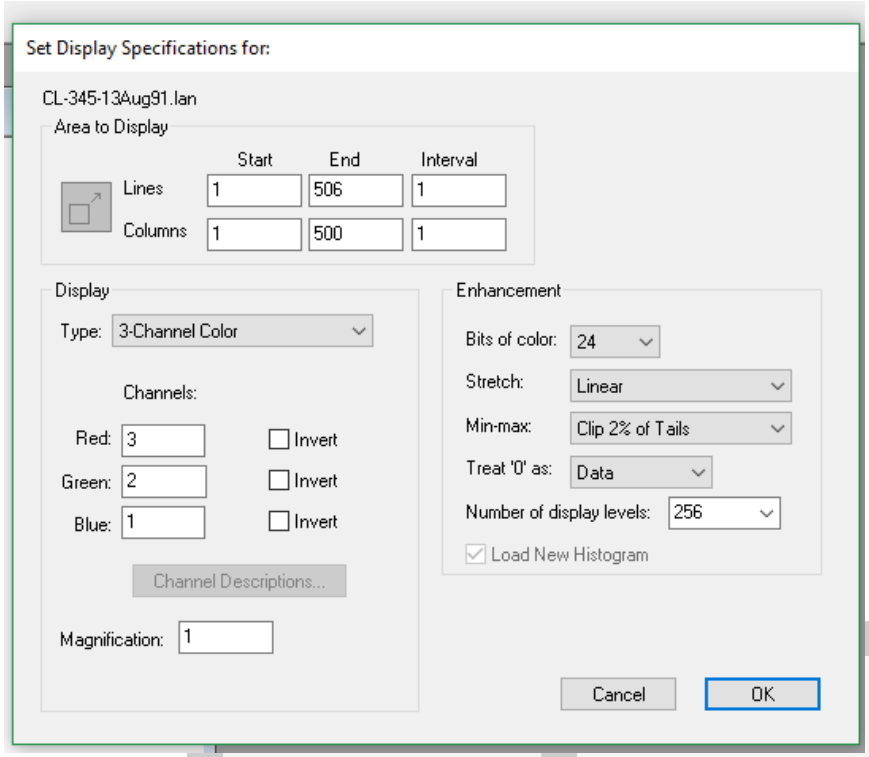

Figure 1: Display settings.

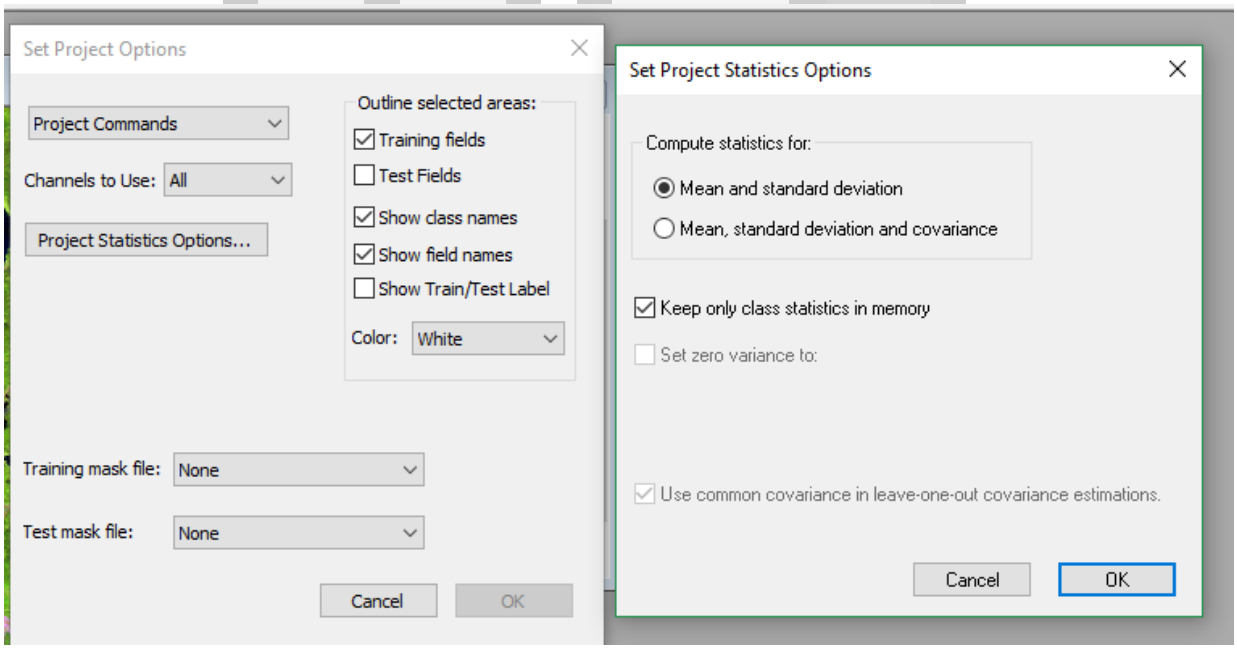

Figure 2 Project options settings.