INTRODUCTION

The Earth’s surface is in flux, changing slowly through natural succession, or rapidly from anthropogenic uses. Large-scale changes are difficult to quantify through fieldwork. The proliferation of remotely-sensed images, and the availability of large archives of these data, make the task of identifying land cover more automated methods. In this project, students used freely available Landsat archived images to map land cover change in Androscoggin County, Maine. Their results, which are utilized in this project, are entered into an online database called the GLOBE Project.

STUDY SITE

Students in Androscoggin County, Maine, collected over 120 visible land cover sample sites. Each of the student collected data was coded. Approximately 40% of the data were removed due to errors in recording the latitudes and longitudes, multiple observations of the same location, disagreement between the MUC class and reference photos, and numerous MUC codes. (e.g., broad-leaved forest changed to deciduous forest over time). Over 175 additional ground reference sites were then assigned to augment the available data. A few of the MUC classes were not found in this region and needed to be augmented with additional reference data. The final classification scheme used in this project is based on the MUC scheme, and resulted in a set of distinguishable classes based on the signature sets. Some of the classes were found to be too similar to be grouped together, and the decision was made to create five new classes to cover these regions. These classes were then modified with image and photo interpretation. 1993 classification of the study area was performed by using the GLOBE Project database of student collected data to map the 1993 land cover data (Table 1). The land cover change data was then used to classify the 2000 land cover data, using the same signature set.

DATA EXPLORATION

The final classification scheme was chosen after the training classification was examined using unsupervised pattern analysis and supervised data. An example of the unsupervised classification is shown in Figure 1. This type of analysis was used to identify signatures that were used to map the land cover class and identified with a green circle. The land cover class was assumed to be part of the land cover class identified with a green circle.

Cluster Analysis:

The data exploration techniques used in this project resulted in hybrid training data that are able to provide separability among the land cover classes. Figure 6 (right) shows the data set before and after the unsupervised data exploration techniques are applied. On the left is the original training data, which was classified using the unsupervised classification of the training data. The change image displayed as this poster is the difference between the two images. This result should result in a more accurate land cover map of the County. The hybrid signature sets were used to classify the 2000 image and the results are shown in Figure 6 (below).

PRELIMINARY RESULTS

ACKNOWLEDGEMENTS

The resulting image allows the analyst to identify signatures that were used to map the 2000 land cover data, using the same signature set.

REFERENCES


