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EXPERIMENTS TO INTEGRATE THEMATIC MAPPER DATA WITH GEOGRAPHIC INFORMATION SYSTEMS

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ABSTRACT

The Canada Centre for Remote Sensing (CCRS) is developing a new image analysis system to support experiments to integrate thematic mapper data with geographic information systems. This system is called the LANDSAT-4 Digital Image Analysis System (LDIAS). It incorporates an Inter-graph sub-system for geographic input and output in combination with another VAX 11/780 for pattern recognition and image processing. A variety of array processors and special purpose hardware enable the interpretation of a full thematic mapper frame into 32 classes in 8 hours.

One component of exchanging information with various geographic information systems is the determination of the media for such an exchange. The LDIAS is electronically linked to the Surveys and Mapping Branch of the Department of Energy, Mines and Resources (EMR) and the British Columbia Forest Services (BCFS) Inventory Branch. In addition, a standard format for the transfer by magnetic tape of geocoded polygon information has been developed by CCRS and three other federal departments and has been widely accepted in the Canadian government.

We require topographic information, for example, in order to radiometrically and geometrically correct thematic mapper scenes and to stratify classifications by elevation. Existing data bases can provide resource information to estimate prior probabilities for a satellite multivariate classification. Our experiments will be focused on the transfer of topographic information and forestry information. For example, in forestry the BCFS Inventory Branch under Mr. Frank Hegyi needs to update its clear cut information on an annual basis. We have to

solve problems relating the clear cuts identified on thematic mapper imagery with those in the geographic data base. We have demonstrated the ability to draw data from the Canadian Geographic Information System and to send classified data to Statistics, Canada's geographic information system.

This paper will describe our methodology and results from such experiments. We will also briefly describe the LDIAS and its linkages to other geographic information systems.