Introduction

The Coastal Change Analysis Project St. Croix Estuary Region CD-ROM data set uses Landsat Thematic Mapper (TM) imagery from 1985 to 1992 to provide a regional change analysis of the St. Croix Estuary and Passamaquoddy Bay in Maine and Canada. This project was a cooperative effort involving the U.S. Fish and Wildlife Service, the Gulf of Maine Program and Environment Canada. The CD-ROM was produced with the cooperation of the NOAA Coastal Ocean Program's Estuarine Habitat Studies Program, the National Marine Fisheries Service, the National Oceanographic Data Center, and the National Geophysical Data Center.

Steady increases in coastal development bring with it non-point source pollution, erosion and other environmental threats. In an effort to improve our understanding of these changes, the C-CAP program has strived to develop a nationally accepted standard protocol for monitoring land cover and habitat changes for coastal regions of the U.S. The St. Croix Estuary is the second release in this series of CD-ROM datasets. Historically valuable as a habitat for salmon, this area is now threatened by changes from the large Maine and Canadian forestry industries. Understanding where and how these changes are occurring is important for sound resource management decisions.

CD-ROM Contents

1. **The St. Croix Estuary product consists of three parts:**
    1. a 1985 land cover analysis
    2. a 1992 land cover analysis
    3. a land cover change detection analysis

    Each data set is approximately 16 megabytes in size (4212 pixels per row, 3821 rows). The data are not explicitly georeferenced, but may be by using a Geographical Information System (GIS). Fifteen land cover classes are defined for the land cover analyses, and 225 potential classes result from the various combinations of changes between 1985 and 1992.

2.

    Table 1. Landsat TM Scenes processed:

PATH	ROW	DATES
10	29	5-23-1985
10	29	5-26-1992

3.
4. **Product Description**

    The land cover analyses distinguishes between 15 classifications:

(1) Developed-High Intensity, (2) Developed-Low Intensity, (3) Cultivated Land, (4) Grassland, (5) Deciduous Forest, (6) Evergreen Forest, (7) Mixed Forest, (8) Mixed Shrub/Scrub, (9) Palustrine Woody Wetland, (10) Estuarine Emergent Wetland, (11) Palustrine Emergent Wetland, (12) Palustrine Woody Wetland Mixed Scrub/Shrub, (13) Marine/Estuarine Unconsolidated Shore, (14) Bare Land, (15) Water

5. **Data Characteristics**

   The data are in a binary unblocked format. A record equals one row of pixels, and the first data record value is in the upper left-hand corner of the image. The positional accuracy and precision of this data set are based on the Landsat Thematic Mapper database. Nominally the source data are 30 meter by 30 meter cells with a positional accuracy of 0.5 cells (15 m) in each direction. Additional uncertainties, however, reduce the spatial precision of the data set to about 1.5 cells (45 m) in each direction. This, in turn, yields a minimum detection unit of 3 cells by 3 cells (90 m by 90m) or about 2.5 acres.

   Tests indicate that overall confidence in the satellite derived maps is comparable to aerial photograph/field maps for spatial resolutions of 2.5 acres or greater. Logical consistency tests insure that all row and column positions in the selected latitude/longitude window contain data. Conversion and integration with vector files indicate that all positions are consistent with earth coordinates covering the same area.

   The classification scheme comprehensively includes all anticipated land covers, and all pixels have been classified.

6. **Access Software**

   This CD-ROM includes GeoVu display software developed by the National Geophysical Data Center. Some features of this software include enabling the user to select and view a specific data set, browse the data documentation, identify the geographic area of interest, and view the land-cover classification codes. Users may display images using prepackaged palettes or develop their own. Data may be displayed on the screen, saved to disk, or copied to floppy diskette.

Minimum System Requirements

This software will operate on any IBM-PC/AT or compatible personal computer, with MS Windows (Ver. 3.1) and a compatible CD-ROM reader (2x or faster). The software will also operate on unix. A minimum of 3 mb of hard disk space is required to load and execute the software. A large capacity hard disk is needed if large files are to be saved. We also recommend a minimum of 8 mb of RAM, and a math coprocessor to significantly speed up the operation.

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