

NOAA COASTAL MAPPING PROGRAM

PROJECT COMPLETION REPORT

PROJECT AL0502

PORT OF MOBILE, ALABAMA

Introduction

Coastal Mapping Program (CMP) Project AL0502 provides highly accurate digital shoreline data for key areas of change within the Mobile River from Black Bayou to Choctaw Point. The analysis and the digital cartographic feature file (DCFF) may be used in support of the NOAA Nautical Charting Program (NCP) as well as geographic information systems (GIS) for coastal zone management applications.

Project Design

The design of Project AL0502 was accomplished by the Requirements Branch (RB) of the Remote Sensing Division (RSD) in response to the need for timely updates to the NOAA Electronic Navigational Chart series. Project requirements were formulated as a result of analysis conducted within the Coast and Shoreline Change Analysis Program (CSCAP), in which NOAA nautical chart products are compared to contemporary high resolution satellite imagery in order to ascertain the need for more current shoreline data. Refer to the Requirements Branch Memorandum dated September 7, 2005, regarding the Results of CSCAP Change Analysis for Mobile, Alabama, for details of the chart comparison process.

Field Operations

Routine CMP field operations did not apply for this project based on the origin of the project source data. Existing sources of horizontal control were used for the georeferencing process.

Georeferencing

Two IKONOS non-orthorectified color images with a spatial resolution of 1 meter, acquired from Space Imaging, Inc., were georeferenced using Erdas IMAGINE 8.5 software on a Windows platform. Within IMAGINE, the Raster Geometric Correction tool was used with a 1st order Polynomial model. Ground control points were acquired from previously measured coastal feature data obtained from the NOAA Shoreline Data Explorer. Once the control points were measured in IMAGINE, the satellite imagery was resampled using the Nearest Neighbor sampling method. The RMS of the standard deviations of the residuals for each measured control point were used to compute a predicted horizontal circular error (CE) of 2.58 meters for image #1 and 1.13 meters for image #2, based on a 95% confidence level. This CE value was tripled to yield a conservative predictor of the accuracy of well defined points measured during compilation. Positional data is based on the UTM Coordinate System (zone 16), and referenced to the North American Datum of 1983.

Compilation

The compilation of cartographic feature data for this project was accomplished by a member of the Applications Branch of RSD in October 2005. Digital feature data was compiled in ESRI shapefile format from imagery using ESRI's ArcGIS 8.3 desktop GIS software. Feature attributes were established using the C-COAST specification file, which provides the definition and attribution scheme for the full range of cartographic features pertinent to the CMP. Cartographic features were tested to have 7.74 meters horizontal accuracy at the 95% confidence level for image #1 and 3.39 meters for image #2. This predicted accuracy of well-defined points is based on a minimum of twenty (20) check points that were compared to an independent source of higher accuracy.

Image #	Image Source	Source ID	Source File Name	Acquisition Date/Time	Tide Stage*
1	IKONOS	2005070916484470000011629070	po_176390_rgb_0000000.tif	2005-07-09 16:48 GMT	0.6 m
2	IKONOS	2005070916484470000011629070	po_176390_rgb_0000001.tif	2005-07-09 16:48 GMT	0.6 m

* Tide levels are given in meters above MLLW and are based on actual observations recorded by the NOS gauge at the time of photography. The elevation of the MHW tidal datum at the Mobile River State Dock Tide Gauge is equal to 0.549 meters above MLLW.

Quality Control / Final Review

Quality control tasks were conducted during all phases of project completion by a senior member of the Applications Branch of RSD. The final QC review was completed in November 2005. The review process included analysis of the georeferencing results and assessment of the identification and attribution of cartographic features according to image analysis and criteria defined in C-COAST. The quality control process concluded with an inspection of topological connectivity within the DCFF using ArcGIS 8.3. The entire suite of project products was evaluated for compliance to CMP requirements.

End Products and Deliverables

The following specifies the location and identification of end products generated during the completion of this project:

RSD Applications Branch Archive

- Hardcopy of the Project Completion Report (PCR)
- Page size graphic plot of GC10580 file contents, attached to PCR
- CSCAP evaluation memorandum

Remote Sensing Division Electronic Data Library

- Digital copy of DCFF GC10580 in ESRI shapefile format
- Digital copy of the PCR in Adobe PDF format
- Chart Evaluation File in shapefile format

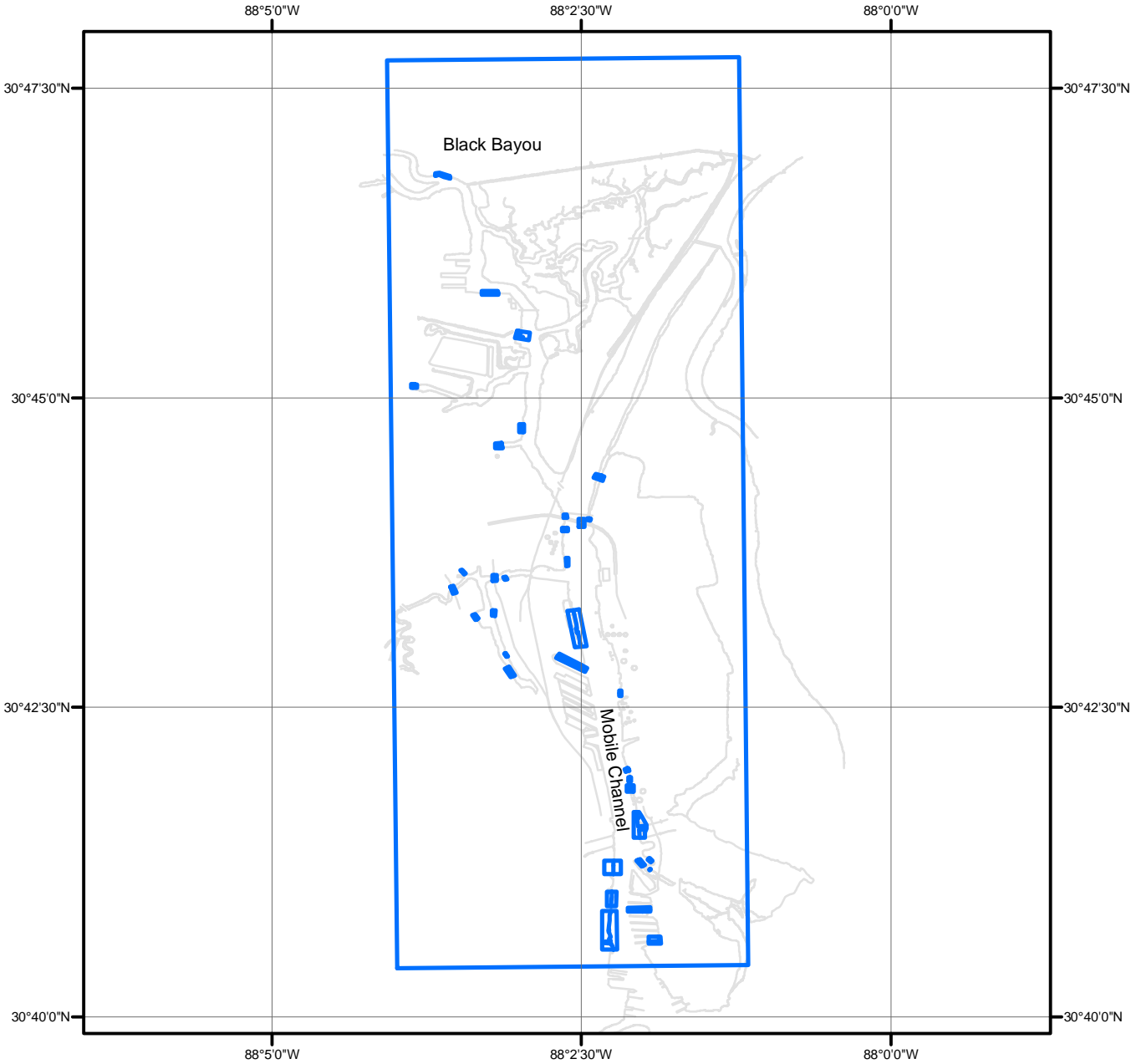
NOAA Shoreline Data Explorer

- DCFF for GC10580
- Metadata file for GC10580
- Digital copy of the PCR in Adobe PDF format

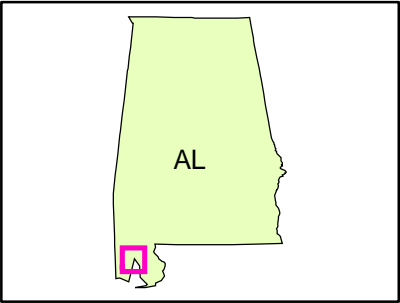
End of Report

PORT OF MOBILE

ALABAMA



Overview



AL0502

GC10580