NOAA COASTAL MAPPING PROGRAM
PROJECT COMPLETION REPORT

PROJECT TX1401-CS-T

Matagorda Ship Channel, Texas

Introduction

Coastal Mapping Program (CMP) Project TX1401-CS-T provides highly accurate digital shoreline data for key areas of change in the Matagorda Ship Channel, Texas, including Port Lavaca and Port O'Connor. The Geographic Cell (GC) may be used in support of the NOAA Nautical Charting Program (NCP) as well as geographic information systems (GIS) for a variety of coastal zone management applications.

Project Design

The design of Project TX1401-CS-T was accomplished by the Requirements Branch (RB) of the Remote Sensing Division (RSD) in response to the need for updates to the NOAA Electronic Navigational Chart (ENC) 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 imagery in order to ascertain the need for more current shoreline data. Orthorectified natural color WorldView-2 commercial satellite imagery (tiles) from DigitalGlobe, Inc. were obtained for this analysis. These images have a spatial resolution of 0.5 meters. A Chart Evaluation File (CEF) was forwarded from RB to the Applications Branch (AB) of RSD upon completion of the CSCAP analysis. Refer to the RB CSCAP memorandum of March 21, 2014 for further 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

All georeferencing tasks were accomplished by RSD AB personnel in September 2014. Two WorldView images (of the four acquired for CSCAP analysis) were adjusted and rectified using the Georeferencing tool in Esri's ArcGIS version 9.3.1, with a 1st order polynomial model. Check points measured from previously aerotriangulated imagery for CMP project TX1107 were used to assess the results, with at least twenty check points extracted for each rectified image. The RMS of the residuals for measured check points was used to compute a horizontal accuracy at the 95% confidence level (CE95) of 0.98 meters. This CE95 value was doubled and added to the CE95 of the source imagery from which ground control points were extracted, in order to conservatively predict the accuracy of well-defined points measured during the compilation process. Positional data is referenced to the North American Datum of 1983 (NAD 83).

Compilation

The data compilation phase of this project was accomplished by a member of AB in September 2014. Digital feature data was compiled in ESRI shapefile format from imagery using ESRI's ArcGIS 10.1 desktop GIS software. Feature attribution was assigned in compliance with the Coastal Cartographic Object Attribute Source Table (C-COAST), which provides the definition and attribution scheme for the full range of cartographic features pertinent to the CMP. Selected features were further modified with additional descriptive information to refine general classification.

Spatial data accuracies for Project TX1401-CS-T were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were tested to have a horizontal accuracy of 2.5 meters at the 95% confidence level. The following table provides information on the satellite images used in the project completion:

Image #	Image Source	Derivative File Name	Acquisition Date/Time	Tide Level*
1	WorldView-2	20131216_173148_wv2_ori.tif	2013-12-16 17:31GMT	-0.2 m
2	WorldView-2	20131216_173130_wv2_ori_a_rectify.jp2 †	2013-12-16 17:31GMT	-0.2 m
3	WorldView-2	20131216_173130_wv2_ori_b.tif	2013-12-16 17:31GMT	-0.2 m
4	WorldView-2	20131216_173113_wv2_ori_rectify.jp2 †	2013-12-16 17:31GMT	-0.2 m

* Tide levels are given in meters above MLLW and are based on preliminary observations at the time of photography recorded by the gauges at the Port Lavaca & Port O'Connor TCOON stations. The elevation of the MHW tidal datum in the project area varies between 0.24 – 0.27 meters above MLLW.

† Image used for compilation.

Quality Control / Final Review

Quality control tasks were conducted during all phases of project completion by a member of AB. The final QC review was completed in October 2014. The review process included analysis of the georeferencing results and assessment of the identification and attribution of digital feature data within the GC according to image analysis and criteria defined in C-COAST. The quality control process concluded with an inspection of topological connectivity within the GC using ArcGIS 10.1. 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:

Remote Sensing Division Electronic Data Library

- CSCAP evaluation memorandum
- Accuracy Assessment

- Project Completion Report (PCR)
- GC11105 in shapefile format
- CEF in shapefile format

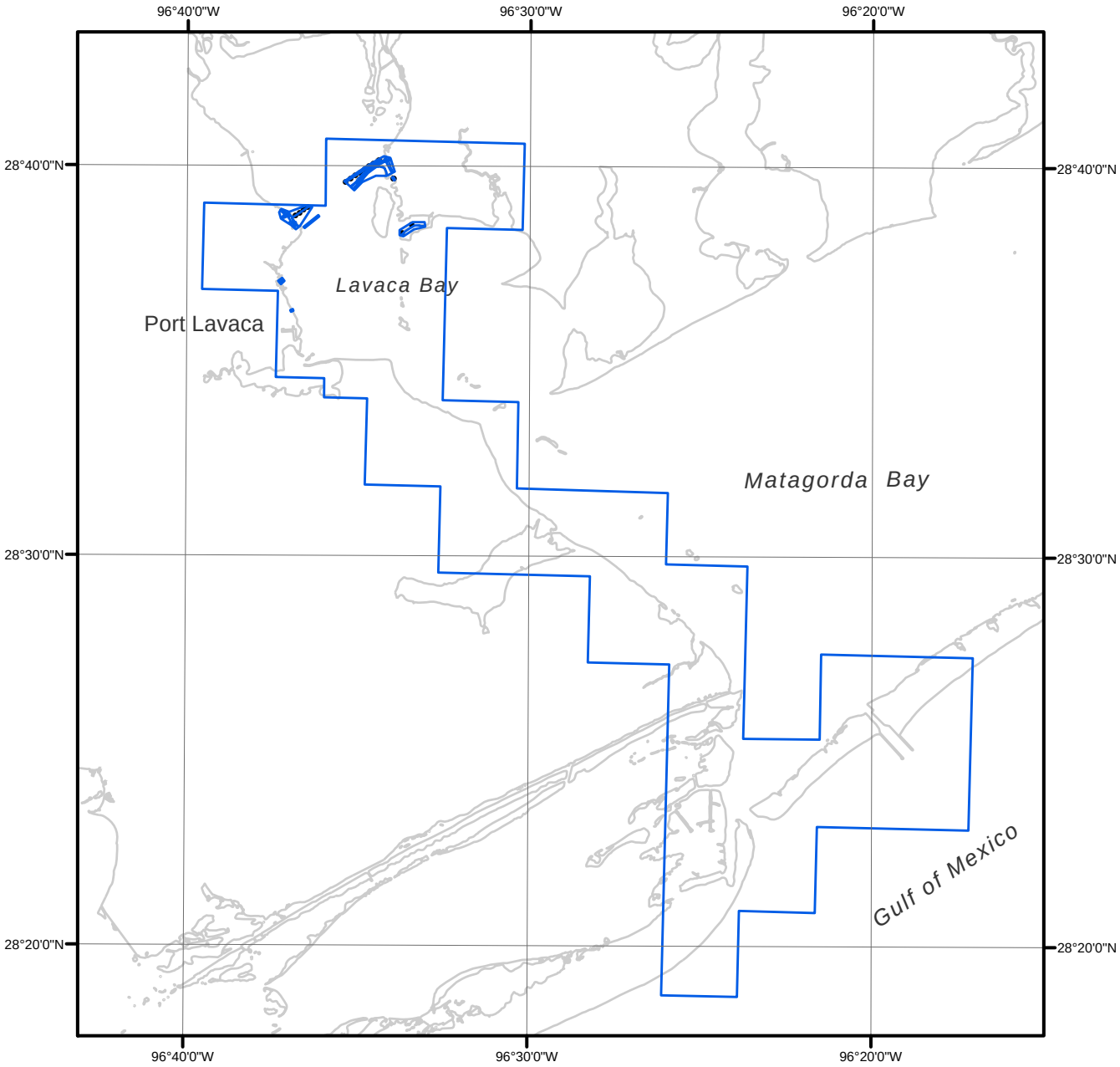
NOAA Shoreline Data Explorer

- GC11105 in shapefile format
- Metadata file for GC11105
- Digital copy of the PCR in Adobe PDF format

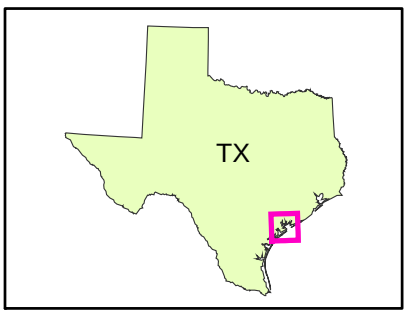
End of Report

MATAGORDA SHIP CHANNEL

TEXAS



Overview



TX1401-CS-T

GC11105