NOAA COASTAL MAPPING PROGRAM
PROJECT COMPLETION REPORT

PROJECT SC1408

Charleston Approach, South Carolina

Introduction

Coastal Mapping Program (CMP) Project SC1408 provides accurate digital shoreline data within the approach to the port of Charleston, South Carolina. The Geographic Cell (GC) 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

Project SC1408 was designed per a request from the Marine Chart Division (MCD) of the Office of Coast Survey, NOAA, in response to observed shoreline changes within the approach to the port of Charleston. Based on analysis of project requirements and results of a source data search, it was determined that CMP procedures for multiple source projects would apply for this project. Available source data deemed adequate for successful completion of this project included three orthorectified WorldView commercial satellite images from DigitalGlobe Inc. with a resolution of 0.5 meters.

Field Operations

Routine CMP field operations did not apply for this project based on the origin of the project source data, which was obtained from external sources.

Georeferencing

Rigorous refinement of the georeferencing of the WorldView images used for compilation was not necessary since image positioning compared well spatially with ground control points (GCPs), and since the image vendor provided an acceptable accuracy assessment for the imagery. The accuracy of the imagery reported by the vendor is 8.4 meters at the 90% confidence level (CE90). The locations of eight GCPs from the National Geodetic Survey (NGS) control database and four US Coast Guard-maintained navigational aids were measured in the WorldView imagery as a means of verifying the reported accuracy. All GCPs were measured within 5.0 meters of published coordinates. The reported accuracy is exclusive of viewing geometry and terrain distortions. Positional data for this project is referenced to the North American Datum of 1983 (NAD 83).

Compilation

The compilation of cartographic feature data for this project was accomplished by a member of the Applications Branch (AB) of the Remote Sensing Division (RSD) in February 2014. Using Esri ArcGIS 9.3 desktop GIS software, digital feature data was compiled in Esri shapefile format. Feature attributes were established using 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.

Spatial data accuracy for Project SC1408 was determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were compiled to meet a horizontal accuracy of 9.6 meters, based on the vendor reported CE90 accuracy converted to the 95% confidence level (CE95). The table below provides detailed information on the images used for feature compilation.

Image Source	Image Name	Product Type	Acquisition Date/Time	Tide Stage*
WorldView-2	20130118_161925_wv2_ori.tif	Pan Sharpened Natural Color	2013-01-18 / 16:19:25	1.3 – 1.5 m
WorldView-2	20130217_161335_wv2_ori.tif	Pan Sharpened Natural Color	2013-02-17 / 16:13:35	1.0 m
WorldView-1	20140218_155303_wv1_ori.tif	Panchromatic	2014-02-18 / 15:55:03	1.2 – 1.4 m

* Tide levels are given in meters above MLLW and are based on actual observations recorded by the NOS gauge at Charleston, SC at the time of image acquisition, with corrections applied to three substations within the project area. The elevation of MHW in the project area is approximately 1.6 meters above MLLW.

Quality Control / Final Review

Quality control tasks were conducted by a senior cartographer within the CMP. The final QC review was completed in February 2014. Review included of assessment of the identification and attribution of cartographic features according to image analysis and criteria defined in C-COAST. Quality control concluded with an inspection of topological connectivity within the GC using ArcGIS 9.3. All project products were evaluated for compliance to CMP requirements.

Comparison of the largest scale NOAA nautical charts with the satellite imagery resulted in creation of the Chart Evaluation File (CEF). The following nautical charts were used in the comparison:

11521, Charleston Harbor and Approaches, 1:80,000 scale, 30th Ed., Dec. 11/10
11523, Charleston Harbor Entrance, 1:20,000 scale, 25th Ed., Oct. 23/10

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 GC11057 file contents, attached to PCR

Remote Sensing Division Electronic Data Library

- GC11057 in shapefile format
- Digital copy of the PCR in Adobe PDF format
- CEF in shapefile format

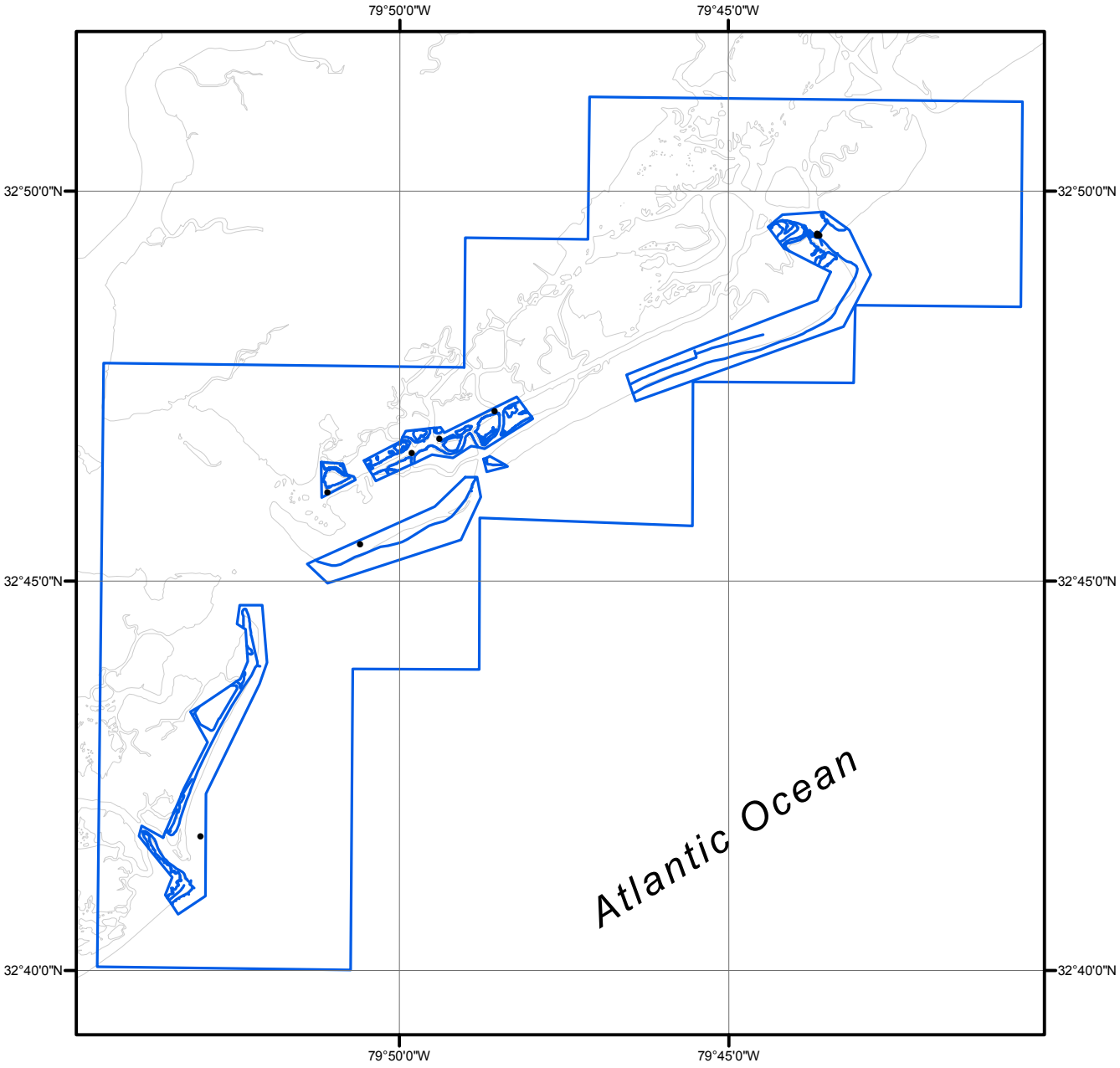
NOAA Shoreline Data Explorer

- GC11057 in shapefile format
- Metadata file for GC11057
- Digital copy of the PCR in Adobe PDF format

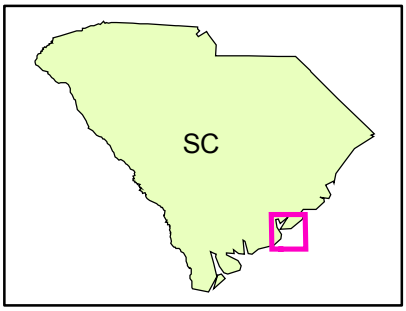
End of Report

CHARLESTON APPROACH

SOUTH CAROLINA



Overview



SC1408

GC11057