

NOAA COASTAL MAPPING PROGRAM PROJECT COMPLETION REPORT

PROJECT SC1902-CM-T

Southern End of Drum Island, South Carolina

Introduction

Coastal Mapping Program (CMP) Project SC1902-CM-T provides accurate digital shoreline data for the southern end of Drum Island, at the confluence of Town Creek and the Cooper River in 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 a variety of coastal zone management applications.

Project Design

Project SC1902-CM-T was designed in response to a request from the Marine Chart Division (MCD) of NOAA's Office of Coast Survey for updated shorelines of Drum Island impacted by a restoration project. 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 one orthorectified pan-sharpened natural color satellite image (downloaded in tiled format) from DigitalGlobe (Maxar), Inc., obtained via the NextView contract.

Field Operations

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

Georeferencing

Satellite image accuracy was refined using the Georeferencing toolset within Esri's ArcGIS (ver. 10.7) desktop GIS software by a member of the Applications Branch (AB) of the Remote Sensing Division (RSD) in August 2019. The satellite image was adjusted to fit control points extracted from a previous CMP project, SC1502-CS-N, with several check points also extracted to assess final image accuracy. The RMS of the residuals for measured check points was used to compute a horizontal accuracy at the 95% confidence level of 0.6 meters. This value was doubled and added to the accuracy of the source from which check points were obtained in order to conservatively predict the accuracy of well-defined points measured during compilation. Positional data for this project is referenced to the North American Datum of 1983 (NAD 83).

Compilation

Data compilation was completed by AB personnel in August 2019. Digital feature data was compiled in shapefile format from the satellite image using ArcGIS software. Feature identification and attribution within the GC were based on image analysis of the satellite image as well as information extracted from the largest scale NOAA nautical chart and other

ancillary sources. 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.

Spatial data accuracies for SC1902-CM-T were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were compiled to meet a horizontal accuracy of 1.5 meters at the 95% confidence level, a predicted accuracy value derived using check points described above. The following table provides further detail on the imagery used to complete this project:

Sensor	Resolution	Source (Tile) ID	Acquisition Date/Time	Tide Level*
WorldView-3	0.32 m	20190809_WV03_ORI_R1C1.jp2	2019-08-09 / 16:25:52 GMT	0.8 m

* Tide levels are given in meters above MLLW and are based on preliminary observations recorded by the NOS reference gage at Cooper River Entrance in Charleston, SC. The height of the MHW tidal datum in the project area is 1.648 meters above MLLW.

Quality Control / Final Review

Quality control tasks were conducted upon project completion by senior CMP personnel in September 2019. The review process included an assessment of image georeferencing and 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. The entire suite of project products was evaluated for compliance to CMP requirements.

Comparison of the largest scale NOAA nautical chart with the project imagery and compiled feature data resulted in creation of the Chart Evaluation File (CEF). The following nautical chart was used for comparison:

- 11524, Charleston Harbor, 54th Ed., Jun. 2015

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

- Project database
- GC11563 in shapefile format
- Project Completion Report (PCR)
- CEF in shapefile format

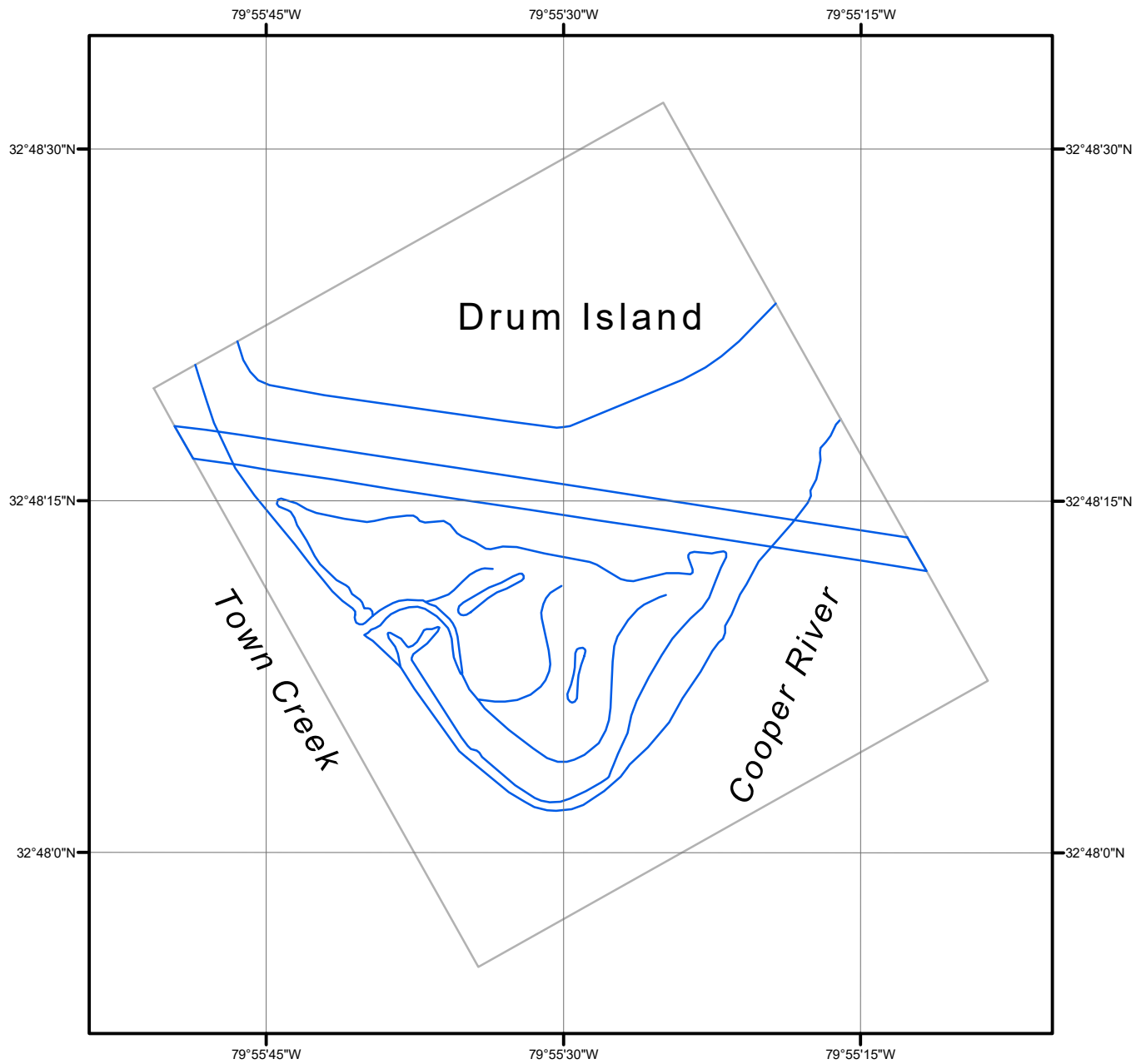
NOAA Shoreline Data Explorer

- GC11563 in shapefile format
- Metadata file for GC11563
- PCR in Adobe PDF format

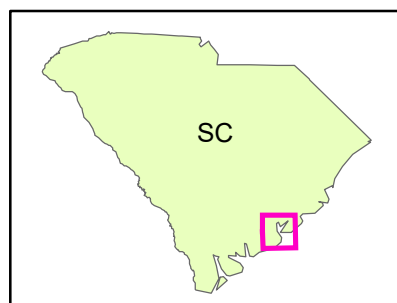
End of Report

SOUTHERN END OF DRUM ISLAND

SOUTH CAROLINA



Overview



SC1902-CM-T

GC11563