

NOAA COASTAL MAPPING PROGRAM PROJECT COMPLETION REPORT

PROJECT AK0506

Port of Valdez, Alaska

Introduction

Coastal Mapping Program (CMP) Project AK0506 provides highly accurate digital shoreline data for key areas of change within the Port of Valdez from Mineral Creek to southern shoreline of Sawmill Creek. 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 a variety of coastal zone management applications.

Project Design

The design of Project AK0506 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 (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 satellite imagery in order to ascertain the need for more current shoreline data. Refer to the RB Memorandum of September 13, 2005, "Results of CSCAP Change Analysis for Valdez, Alaska," 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 8.7 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 residuals for measured check points were used to compute a predicted horizontal circular error at the 95% confidence interval (CE95%) of 2.8 meters for image #1 and 2.5 meters for image #2. However, the documented horizontal accuracy of the source from which the features used to derive ground control points were compiled is 7.5 meters. Therefore, given the cumulative nature of horizontal error, the CE95% for compiled project data is given as

10.3 meters. Positional data is based on the UTM Coordinate System (zone 6), 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 February 2006. Digital feature data was compiled in ESRI shapefile format from imagery using ESRI's ArcGIS 9.1 desktop GIS software. 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.

Cartographic features were compiled to meet a horizontal accuracy of 13 meters at the 95% confidence level. This predicted accuracy of well-defined points is conservatively estimated by comparing a minimum of fifteen (15) check points per image to previously compiled feature data of a known accuracy.

The following table provides information on satellite images used in the project completion:

Image #	Image Source	Source ID	Source File Name	Acquisition Date/Time	Tide Level*
1	IKONOS	2005080720531570000010004315	po_176755_rgb_0010000.tif	2005-08-07 20:53 GMT	1.7 m
2	IKONOS	2005080720531570000010004315	po_176755_rgb_0010001.tif	2005-08-07 20:53 GMT	1.7 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 Valdez (AK) Tide Gauge is equal to 3.414 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 February 2006. 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 9.1. 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:

RSD Applications Branch Archive

- Hardcopy of the Project Completion Report (PCR)
- Page size graphic plot of GC10600 file contents, attached to PCR
- Hardcopy of the CSCAP evaluation memorandum

Remote Sensing Division Electronic Data Library

- Digital copy of DCFF GC10600 in ESRI shapefile format
- Digital copy of the PCR in Adobe PDF format
- Chart Evaluation File (CEF) in shapefile format

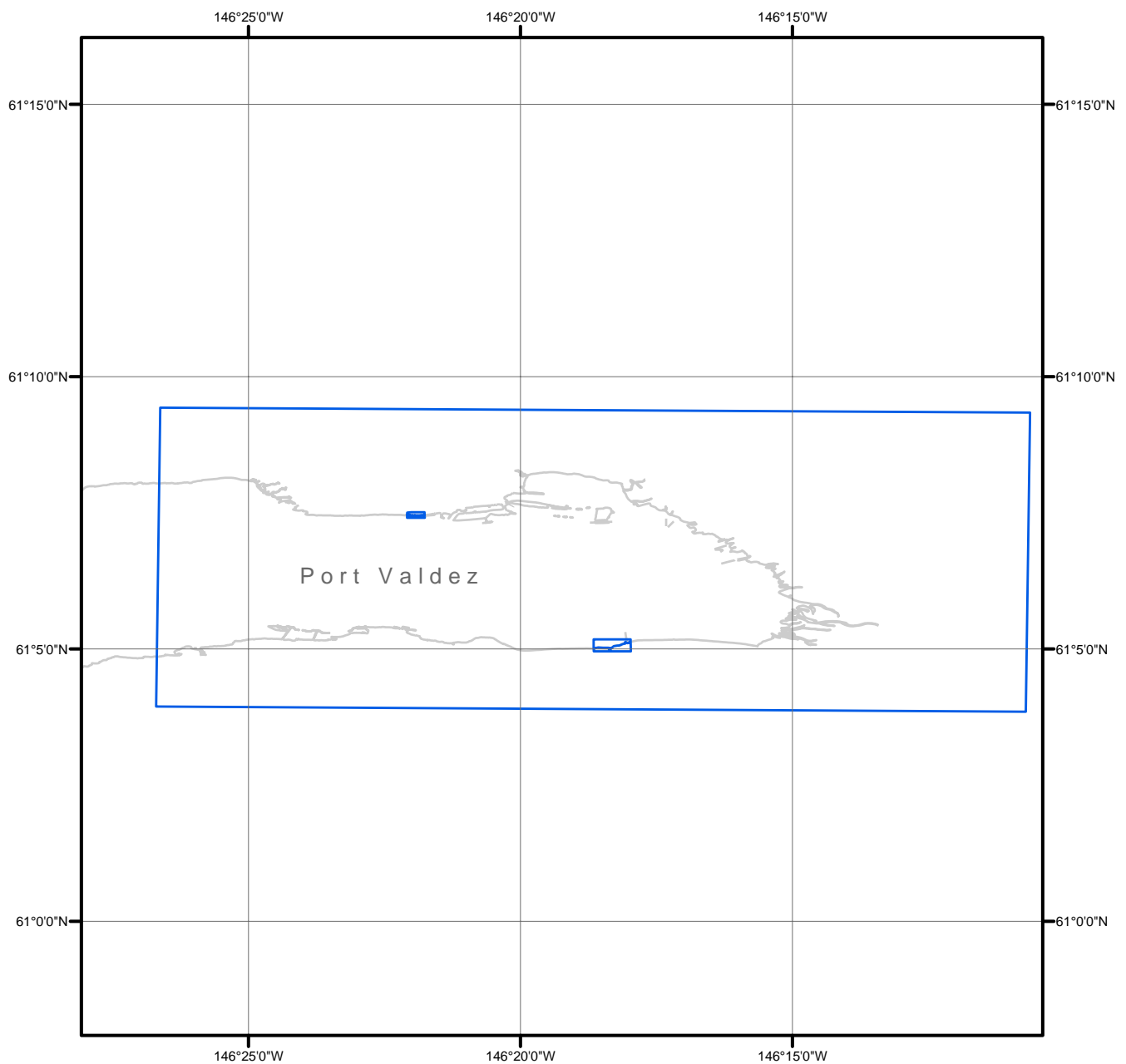
NOAA Shoreline Data Explorer

- DCFF for GC10600
- Metadata file for GC10600
- Digital copy of the PCR in Adobe PDF format

End of Report

PORT OF VALDEZ

ALASKA



Overview



AK0506

GC10600