NOAA COASTAL MAPPING PROGRAM
PROJECT COMPLETION REPORT

PROJECT MP0703

Farallon de Medinilla, Northern Mariana Islands

Introduction

NOAA Coastal Mapping Program (CMP) Project MP0703 provides digital shoreline data for Farallon de Medinilla in the Northern Mariana Islands. The Geographic Cell (GC10675) may be used to compliment the Nautical Charting Program (NCP) as well as geographic information systems (GIS) for a variety of coastal zone management applications.

Project Design

Project MP0703 was designed 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. The change analysis determined that Farallon de Medinilla is depicted on chart 81086 approximately 800 meters from its correct position. Refer to the Requirements Branch Memorandum of April 20, 2007, "Results of CSCAP Change Analysis for Farallon De Medinilla, CNMI", for details of the chart comparison process.

Based on an analysis of project requirements, and as a result 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 sources acquired in September of 2005.

Field Operations

Routine CMP field operations did not apply for this project based on the origin of the project source data.

Aerotriangulation

The aerotriangulation task was initiated by a member of the Applications Branch (AB) of the Remote Sensing Division (RSD) in May 2007 utilizing a Digital Photogrammetric Workstation (DPW), which is a configuration of computer hardware, modular software components and other associated peripheral devices. The image files were imported into SOCET SET (version 5.2) using the DataThruWay (version 5.2) software extension. The import process converted the stored compressed files to the National Imagery Transmission Format (NITF 2.0) with headers and metadata. Aerotriangulation procedures were accomplished using the Multi-Sensor Triangulation (MST) module of SOCET SET. The Interactive Point Measurement (IPM) tool within MST was used to collect several tie points and a simultaneous solve adjustment was then performed,

forecasting an average predicted horizontal circular error for all well defined points of 10 meters at the 95% confidence level. Positional data for this project is referenced to NAD 83.

Compilation

Digital feature data compilation for this project was accomplished by AB personnel in May of 2007. The digital mapping was performed using a DPW in conjunction with the SOCET SET Feature Extraction software module. 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 cartographic features were further modified with additional descriptive information to refine general classification.

Note that much of the compiled data was attributed as "approximate" due to extensive areas being obscured by shadows and steep cliffs.

Cartographic features were compiled to meet a horizontal accuracy of 15 meters at the 95% confidence level. This reported accuracy is the total of the circular error derived from aerotriangulation statistics, along with an estimate of the additional error caused by the difficulty in interpreting the shoreline in the source imagery. Tidal information was unavailable for the project area.

Quality Control / Final Review

Quality control tasks were conducted during all phases of project completion by senior CMP personnel of RSD. The final QC review was completed in May of 2007. The review process included an analysis of aerotriangulation results and the assessment of the identification and attribution of cartographic features 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 9.1 software. All project data was evaluated for compliance to CMP requirements.

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

81086 Mariana Islands, 6th Ed., Dec. 06, Scale 1:45,602.

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 GC10675 file contents, attached to PCR

Remote Sensing Division Electronic Data Library

- Project database
- GC10675 in shapefile format

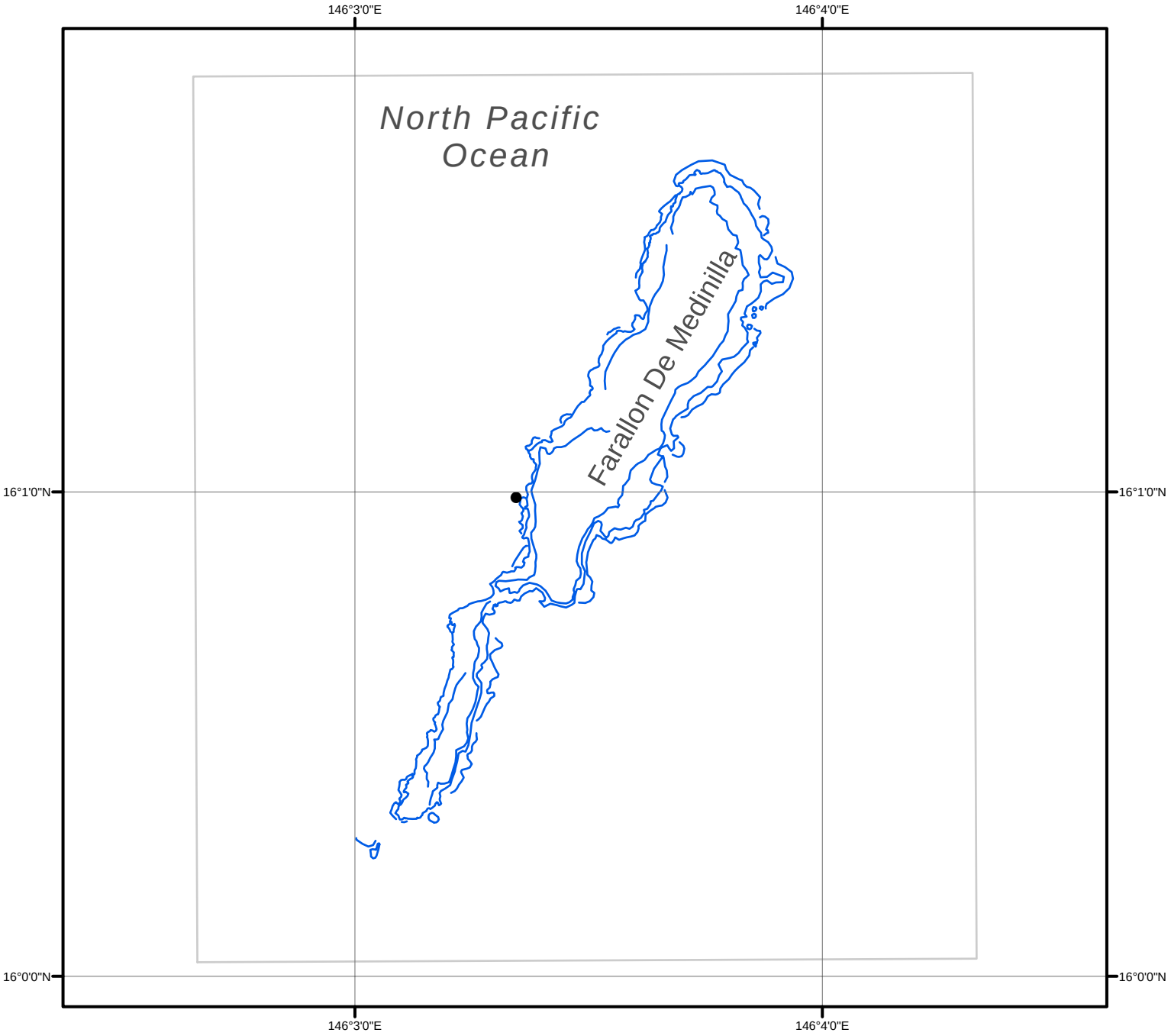
- Digital copy of the PCR in Adobe PDF format
- CEF in shapefile format

NOAA Shoreline Data Explorer

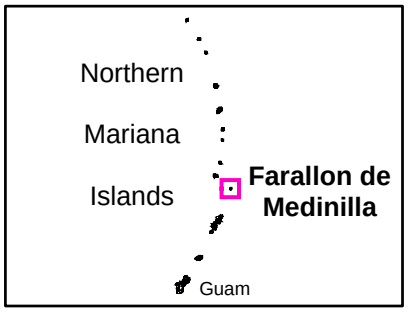
- GC10675 in shapefile format
- Metadata file for GC10675
- Digital copy of the PCR in Adobe PDF format

End of Report

FARALLON DE MEDINILLA
NORTHERN MARIANA ISLANDS



Overview



MP0703

GC10675