

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Service

DESCRIPTIVE REPORT

Type of Survey: Navigable Area

Registry Number: H12843

LOCALITY

State(s): North Carolina

General Locality: Approaches to Chesapeake Bay

Sub-locality: 13 Miles East of Sheep House Hill

2015

CHIEF OF PARTY
LCDR Briana J. Welton, NOAA

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Date:

H12843

HYDROGRAPHIC TITLE SHEET

H12843

INSTRUCTIONS: The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

State(s): **North Carolina**

General Locality: **Approaches to Chesapeake Bay**

Sub-Locality: **13 Miles East of Sheep House Hill**

Scale: **40000**

Dates of Survey: **08/05/2015 to 10/18/2015**

Instructions Dated: **07/24/2015**

Project Number: **OPR-D304-FH-15**

Field Unit: **NOAA Ship *Ferdinand R. Hassler***

Chief of Party: **LCDR Briana J. Welton, NOAA**

Soundings by: **Multibeam Echo Sounder**

Imagery by: **Multibeam Echo Sounder Backscatter**

Verification by: **Atlantic Hydrographic Branch**

Soundings Acquired in: **meters at Mean Lower Low Water**

Remarks:

The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS) nautical charts. All separates are filed with the hydrographic data. Any revisions to the Descriptive Report (DR) generated during office processing are shown in bold red italic text. The processing branch maintains the DR as a field unit product, therefore, all information and recommendations within the body of the DR are considered preliminary unless otherwise noted. The final disposition of surveyed features is represented in the OCS nautical chart update products. All pertinent records for this survey, including the DR, are archived at the National Centers for Environmental Information (NCEI) and can be retrieved via <http://www.ncei.noaa.gov/>.

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Descriptive Report to Accompany Survey H12843

Project: OPR-D304-FH-15

Locality: Approaches to Chesapeake Bay

Sublocality: 13 Miles East of Sheep House Hill

Scale: 1:40000

August 2015 - October 2015

NOAA Ship *Ferdinand R. Hassler*

Chief of Party: LCDR Briana J. Welton, NOAA

A. Area Surveyed

Survey H12843 was conducted in the Chesapeake Bay, with a sublocality of 13 Miles East of Sheep House Hill as shown in Figure 1.

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
36° 35' 42.1" N 75° 41' 43.88" W	36° 25' 26.41" N 75° 35' 36.87" W

Table 1: Survey Limits

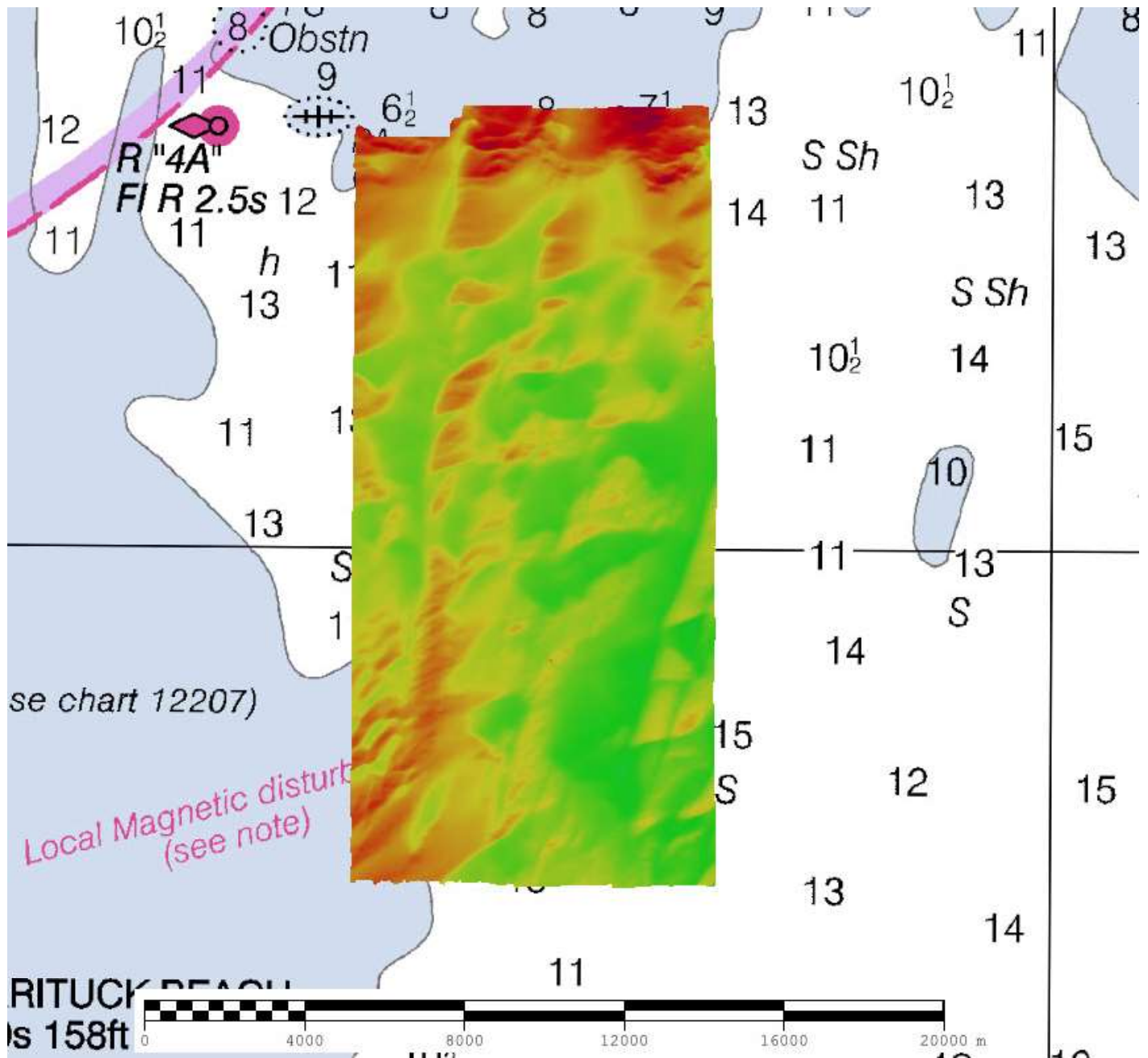


Figure 1: H12843 survey limits

Survey Limits were extended to the East to include the portion of H12842. Survey H12842 was opened, but only a small amount of acquisition was conducted on the sheet and was then merged into H12843 for processing efficiency.

A.2 Survey Purpose

The purpose of this project is to provide contemporary surveys to update National Ocean Service (NOS) nautical charting products. In addition, this project will improve the chart for traffic navigating the Atlantic Ocean Channel and will support the Bureau of Ocean Energy Management (BOEM) research in the area.

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

A.4 Survey Coverage

The following table lists the coverage requirements for this survey as assigned in the project instructions:

Water Depth	Coverage Required
All waters in survey area	Complete Multibeam with Backscatter

Survey coverage was in accordance with the requirements listed above and in the HSSD.

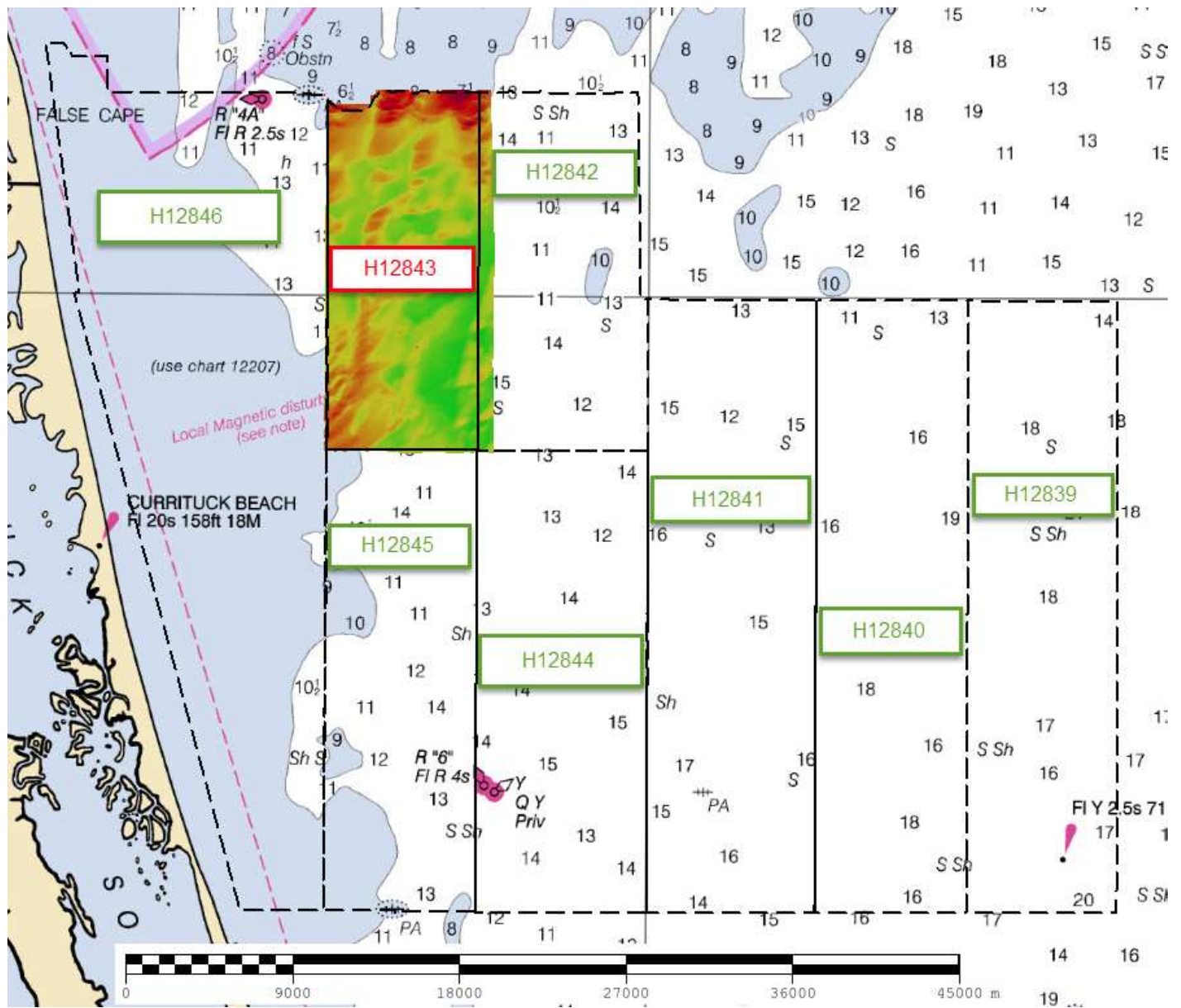


Figure 2: Survey layout for OPR-D304-FH-15 over raster chart 12200.

A.5 Survey Statistics

The following table lists the mainscheme and crossline acquisition mileage for this survey:

	HULL ID	<i>S250</i>	<i>Total</i>
LNM	SBES Mainscheme	0	0
	MBES Mainscheme	1026.3	1026.3
	Lidar Mainscheme	0	0
	SSS Mainscheme	0	0
	SBES/SSS Mainscheme	0	0
	MBES/SSS Mainscheme	0	0
	SBES/MBES Crosslines	57.0	57
	Lidar Crosslines	0	0
Number of Bottom Samples			8
Number Maritime Boundary Points Investigated			0
Number of DPs			0
Number of Items Investigated by Dive Ops			0
Total SNM			51.0

Table 2: Hydrographic Survey Statistics

The following table lists the specific dates of data acquisition for this survey:

Survey Dates	Day of the Year
08/05/2015	217
08/06/2015	218

Survey Dates	Day of the Year
08/13/2015	225
08/14/2015	226
08/18/2015	230
08/20/2015	232
08/21/2015	233
08/22/2015	234
08/27/2015	239
08/28/2015	240
09/03/2015	246
09/09/2015	252
10/18/2015	291

Table 3: Dates of Hydrography

Mainscheme survey lines were run with a dual-head multibeam echosounder. Linear nautical miles were calculated using statistics from the port head.

B. Data Acquisition and Processing

B.1 Equipment and Vessels

Refer to the Data Acquisition and Processing Report (DAPR) for a complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods. Additional information to supplement sounding and survey data, and any deviations from the DAPR are discussed in the following sections.

B.1.1 Vessels

The following vessels were used for data acquisition during this survey:

Hull ID	<i>S250</i>
LOA	37.7 meters
Draft	3.77 meters

Table 4: Vessels Used

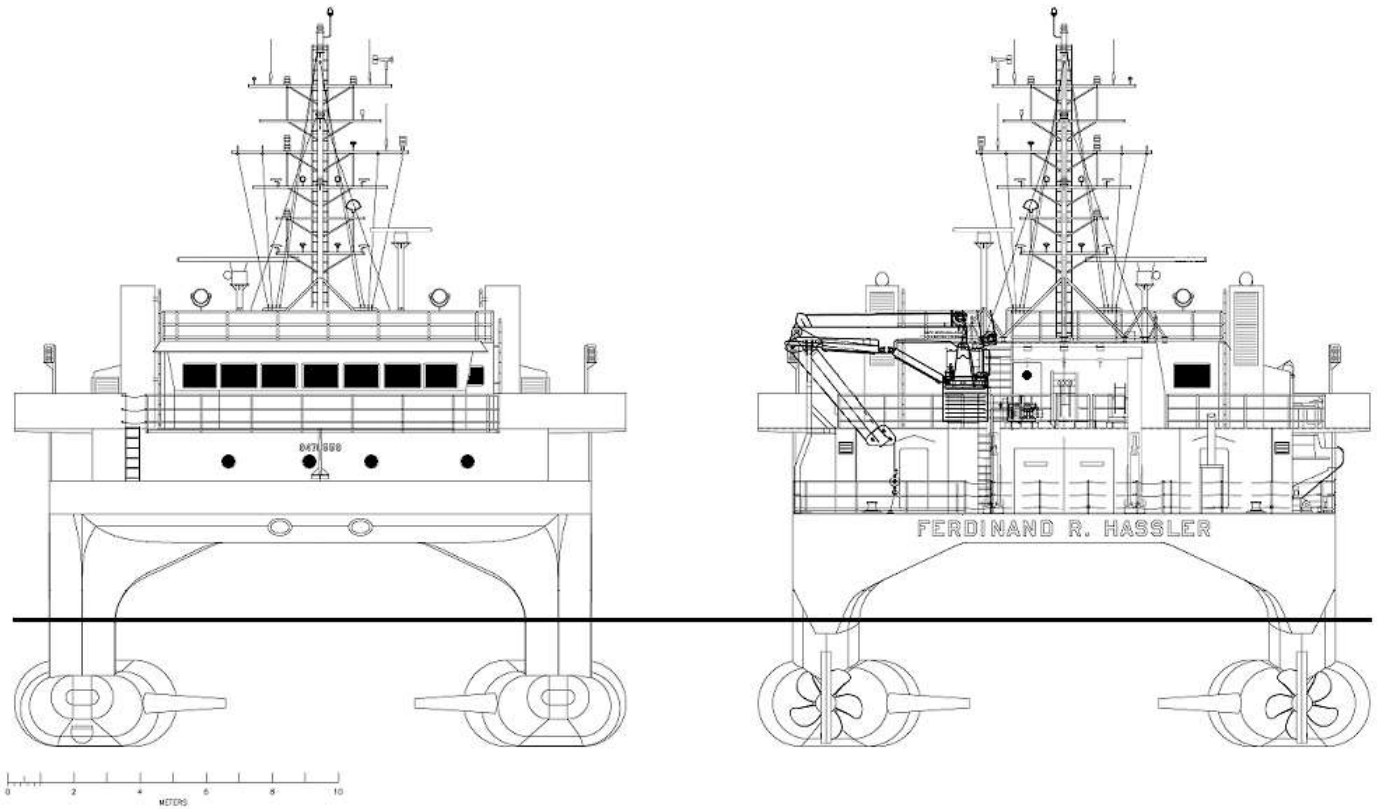


Figure 3: NOAA Ship FERDINAND R. HASSLER

NOAA Ship FERDINAND R. HASSLER (S250), shown in Figure 3, acquired all surveyed soundings during operation for H12843

B.1.2 Equipment

The following major systems were used for data acquisition during this survey:

Manufacturer	Model	Type
Reson	7125	MBES
Applanix	POS M/V 320 V5	Positioning and Attitude System
Hemisphere	MBX-4	Sound Speed System
AML	MicroCTD	Sound Speed System
Brooke Ocean	MVP-200	Sound Speed System
RESON	SVP-70	Sound Speed System
Sea Bird	SBE 19+	Sound Speed System

Table 5: Major Systems Used

B.2 Quality Control

B.2.1 Crosslines

Crosslines acquired for this survey totaled 5.55% of mainscheme acquisition.

A geographic plot of crosslines is shown in Figure 4. It should be noted that crossline coverage did not reach the eastern extent of the survey area, leaving the six easternmost mainscheme lines without a crossline. Crosslines were filtered to remove soundings greater than 45 degrees from nadir. To evaluate crossline agreement, two 2-meter surfaces were created: one from crossline depths, the other from mainscheme depths. These two surfaces were differenced using CARIS HIPS/SIPS. The 2.6 million nodes have a difference value range from -0.45 meters and 0.80 meters. The statistical analysis of the differences between the mainscheme and crossline surfaces is shown in Figure 5. The average difference between the surfaces is -0.04 meters with a standard deviation of 0.08 meters; Ninety-five percent of nodes agree within +/- 0.16 meters of the mean.

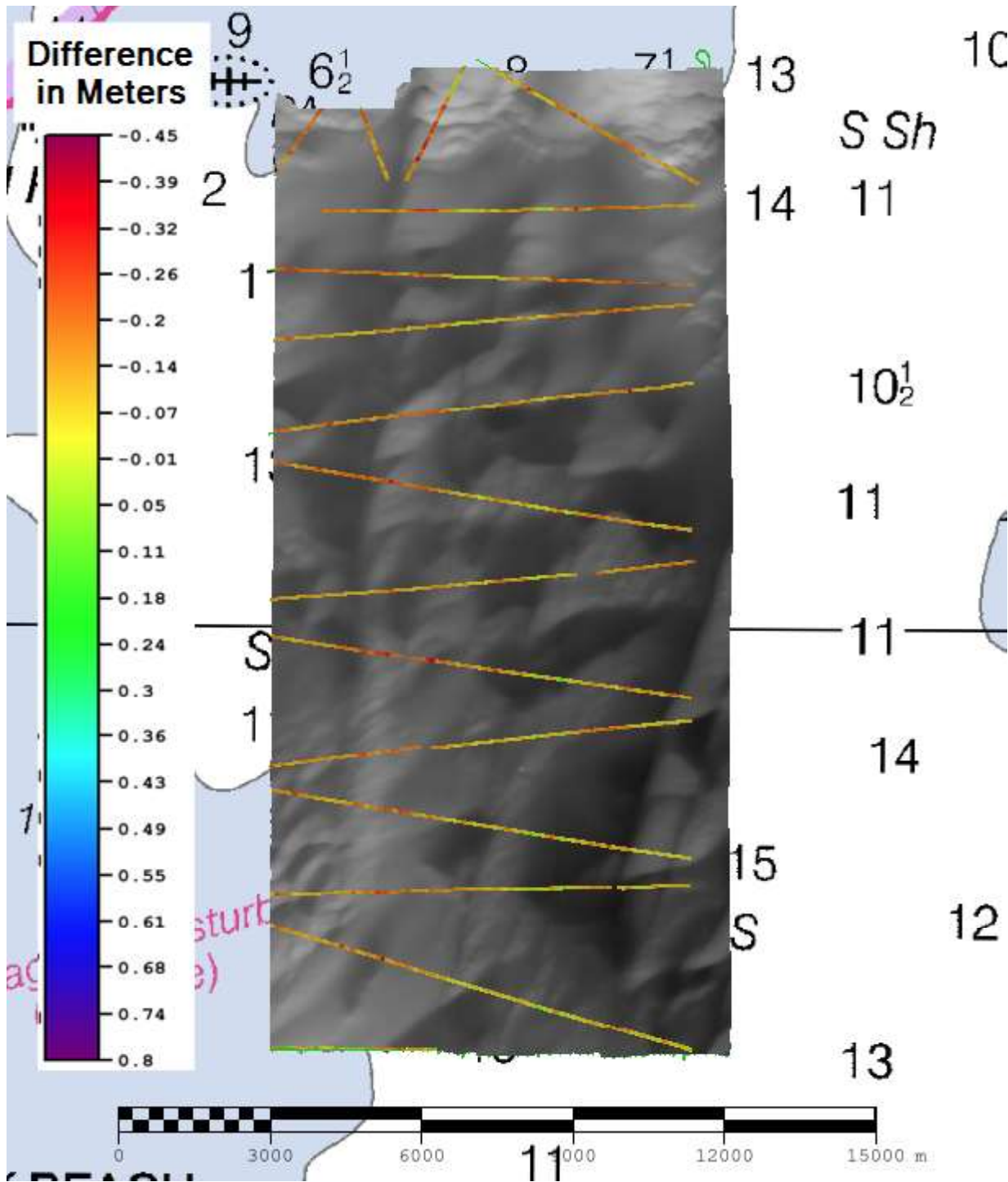


Figure 4: Location of crosslines for H12843.

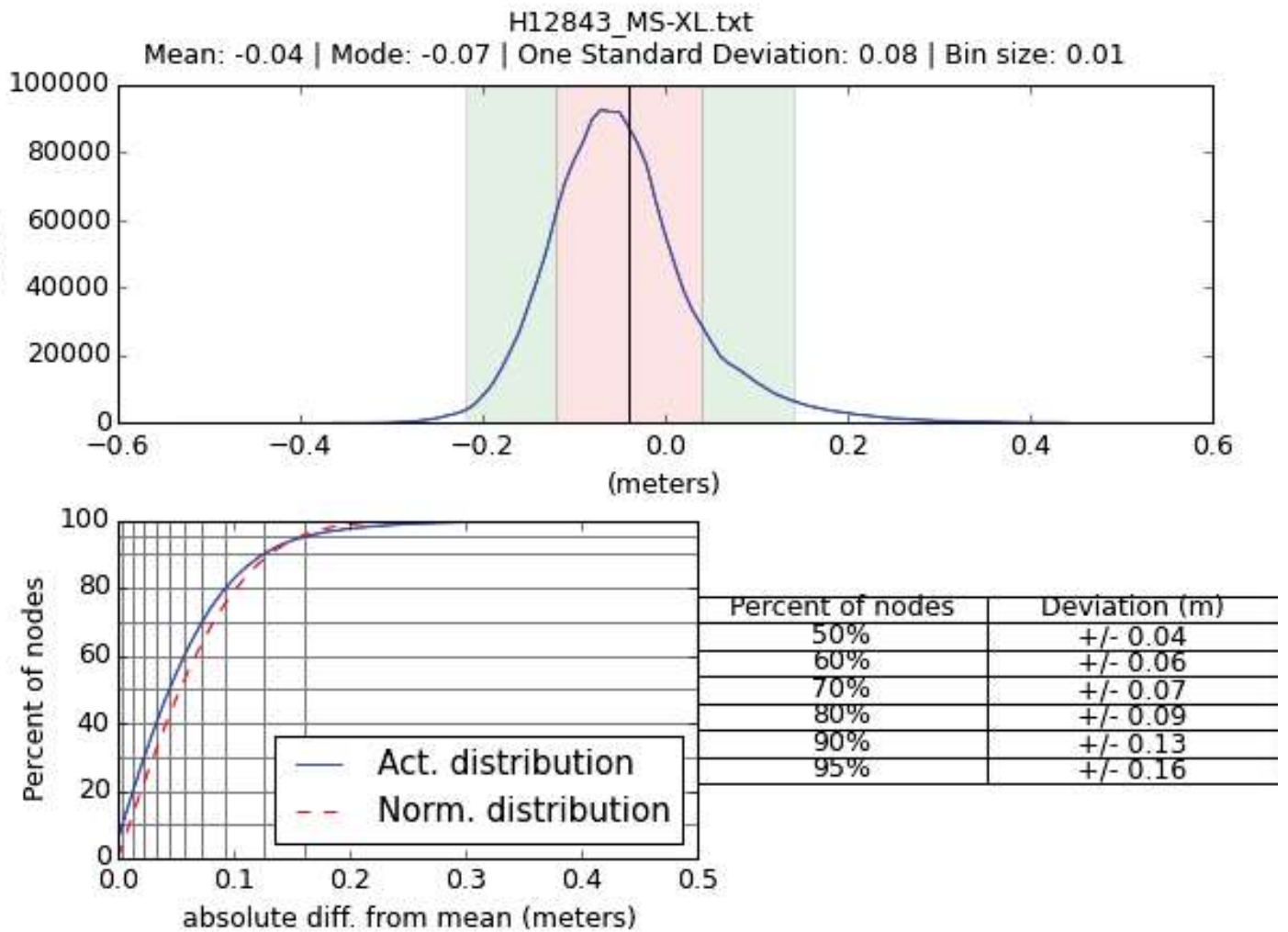


Figure 5: H12843 crossline difference statistics: mainscheme minus crossline.

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Measured	Zoning	Method
0.01 meters	0.102 meters	VDATUM

Table 6: Survey Specific Tide TPU Values

Hull ID	Measured - CTD	Measured - MVP	Surface
S250	1.0 meters/second	1.0 meters/second	0.5 meters/second

Table 7: Survey Specific Sound Speed TPU Values

Two tidal models were available for water level corrections associated with survey H12843. A discrete tide zone file, produced by CO-OPS for project OPR-B304-FH-15, was provided to the field unit. Additionally, a vertical datum transformation (VDatum) model was delivered to the field unit in the project instructions. All data for survey H12843 were reduced to MLLW via VDatum. This model functioned as a gridded separation model for GPS tide computations with a 0.102 meter uncertainty. Final TPU calculations are derived from the following sources: VDatum separation model, sound velocity (MVP and surface sound velocimeter), HVF uncertainties, and SBET post processed uncertainty. Error data sources applied through CARIS processing software are listed in Figure 6.

<i>Uncertainty</i>	<i>Source</i>
Position	Realtime
Sonar	Vessel
Heading	Realtime
Pitch	Realtime
Roll	Realtime
Vertical	Realtime heave
Tide	Static

Figure 6: Sources of error data applied during CARIS processing.

B.2.3 Junctions

Two prior surveys to the north junctions with H12843. See Figure 7 for further information.

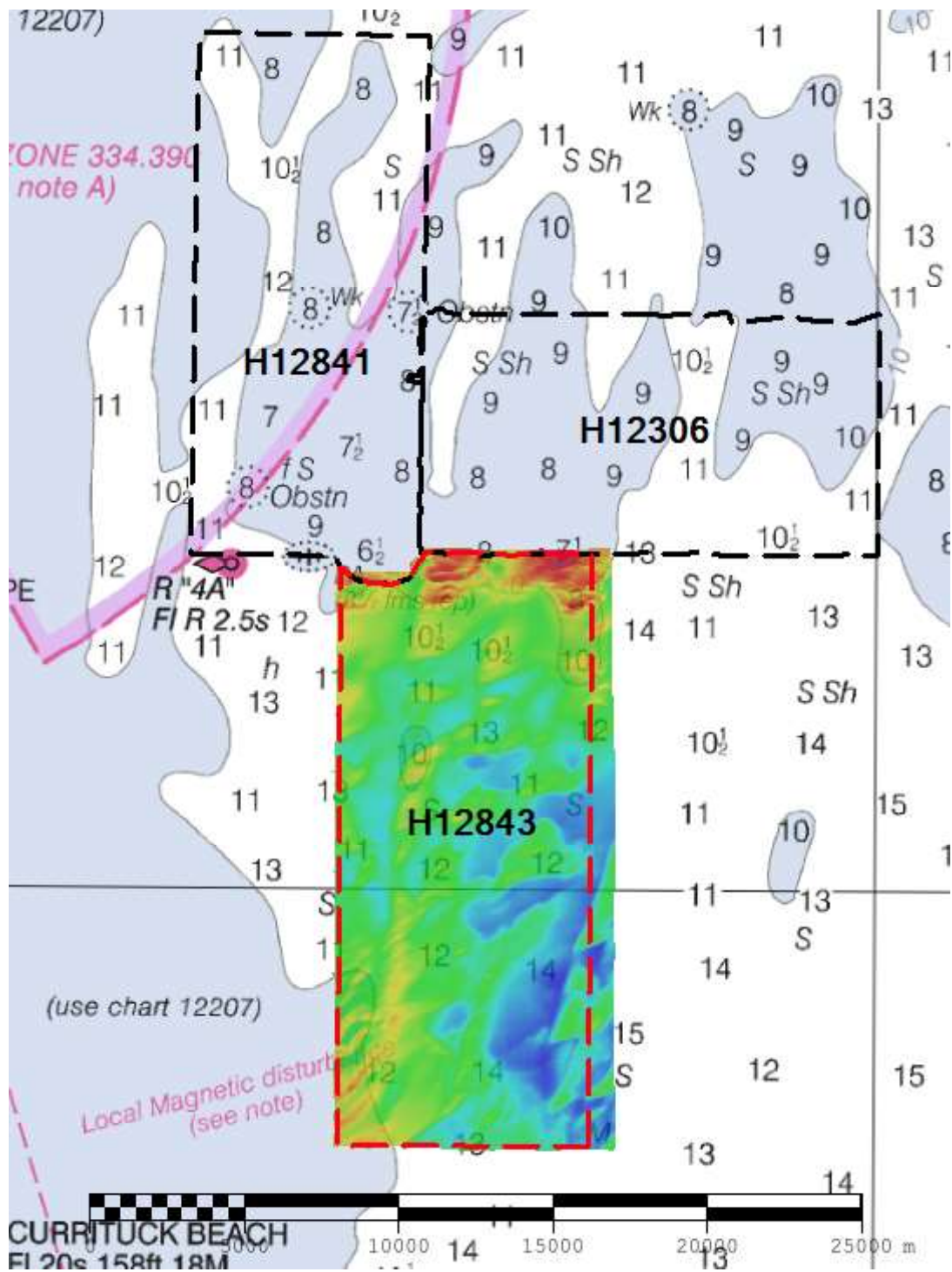


Figure 7: H12843 Junction Survey

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H12306	1:40000	2011	NOAA Ship THOMAS JEFFERSON	N
H12341	1:20000	2011	NOAA Ship THOMAS JEFFERSON	N

Table 8: Junctioning Surveys

H12306

Survey H12843 junctions with survey H12306 with nodes overlapping approximately 20 to 150 meters to the north (See Figure 8). The minimum and maximum depth difference between the two surveys is -2.09 meters and 1.59 meters respectively. Of the greater than one hundred and eighteen thousand overlapping nodes, the average difference is -0.03 meters with a standard deviation of 0.35 meters; Ninety-five percent of the differenced surface nodes are within ± 0.72 meters of the mean, as shown in Figure 9.

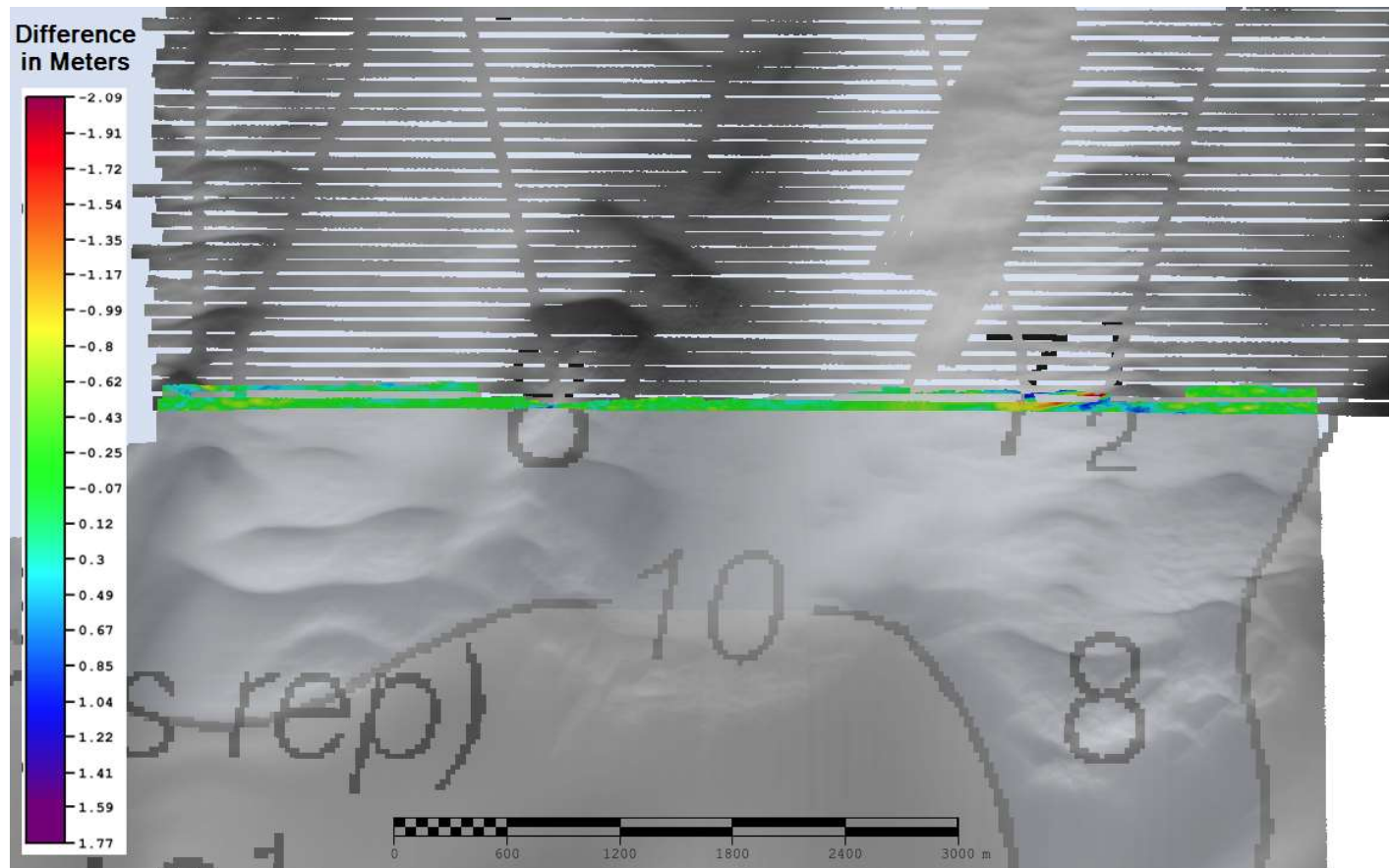


Figure 8: Area of overlap between H12843 and H12306.

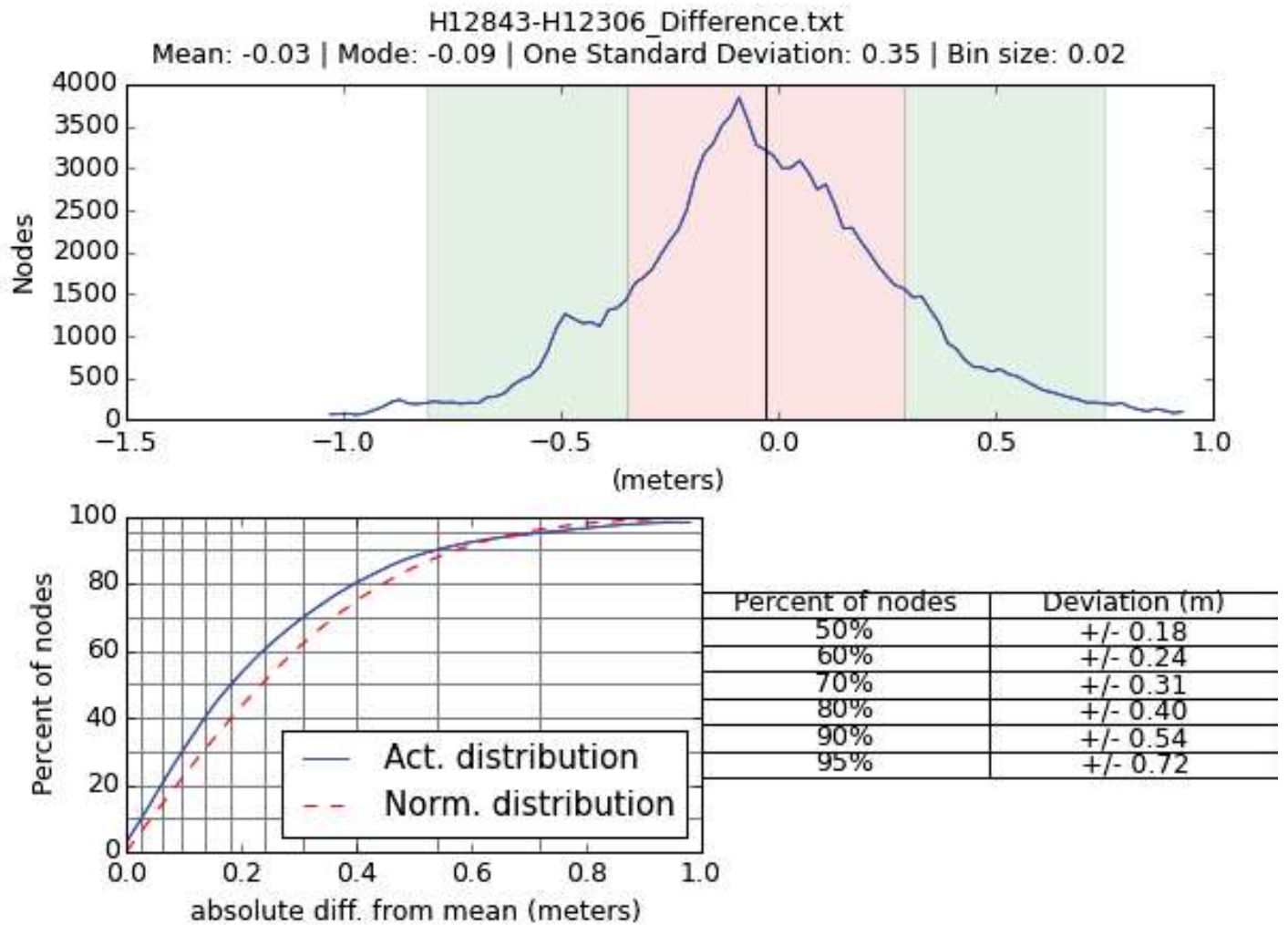


Figure 9: Difference surface statistics for H12843 and H12306.

H12341

Survey H12843 junctions with survey H12341 with nodes overlapping approximately 30 to 230 meters to the north. The junction was made using the provided survey outlines from the Project Instructions. There are two gaps in data between the two junction surveys that are not covered by side scan data, as shown in the red boxes in Figure 10. The minimum and maximum depth difference between the two surveys is -1.58 meters and 1.57 meters respectively. Of the greater than one hundred and eighteen thousand (118,000) overlapping nodes, the average difference is -0.02 meters with a standard deviation of 0.32 meters; Ninety-five percent of the differenced surface nodes are within +/- 0.64 meters of the mean, as shown in Figure 11.

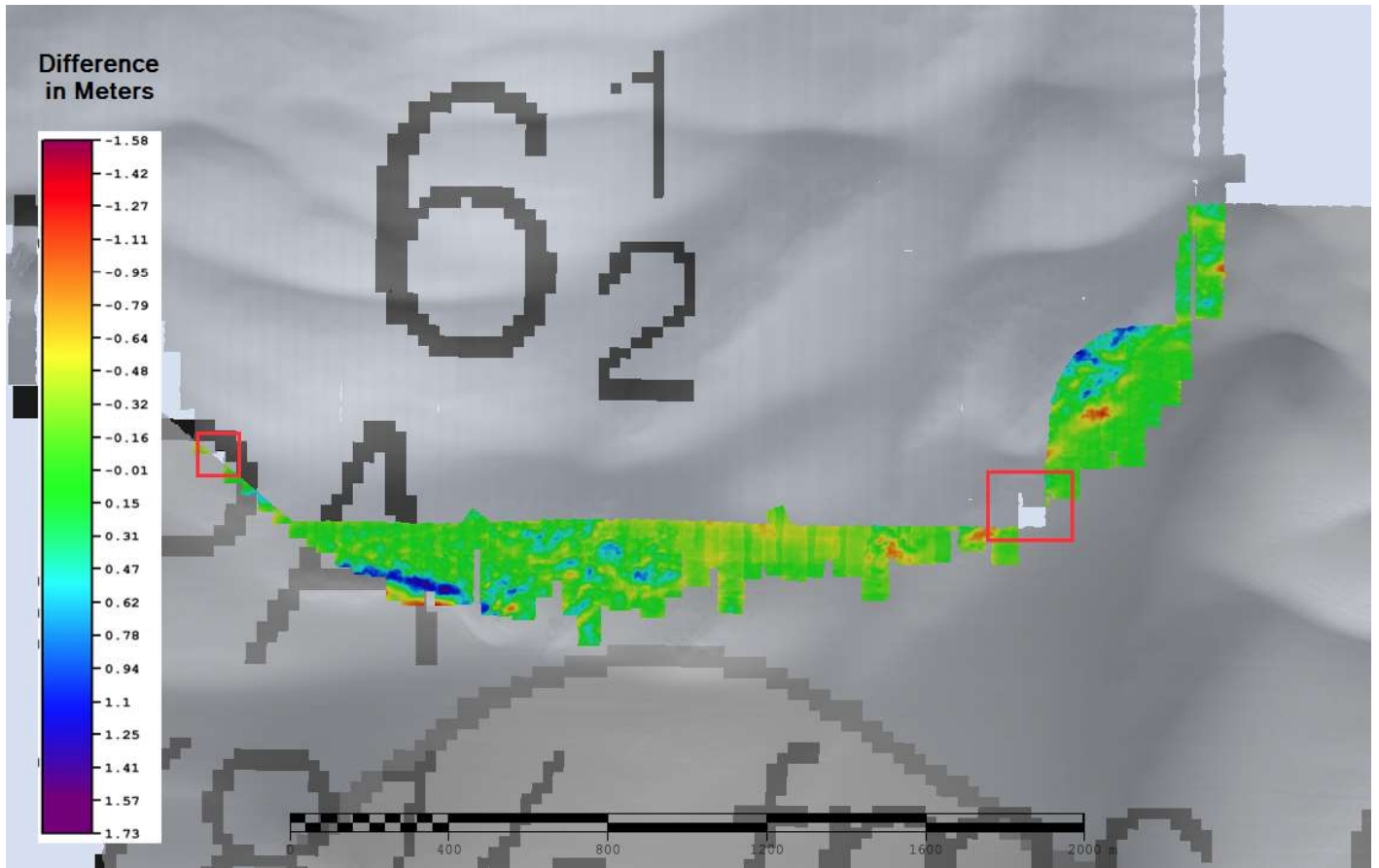


Figure 10: Area of overlap between H12843 and H12341.

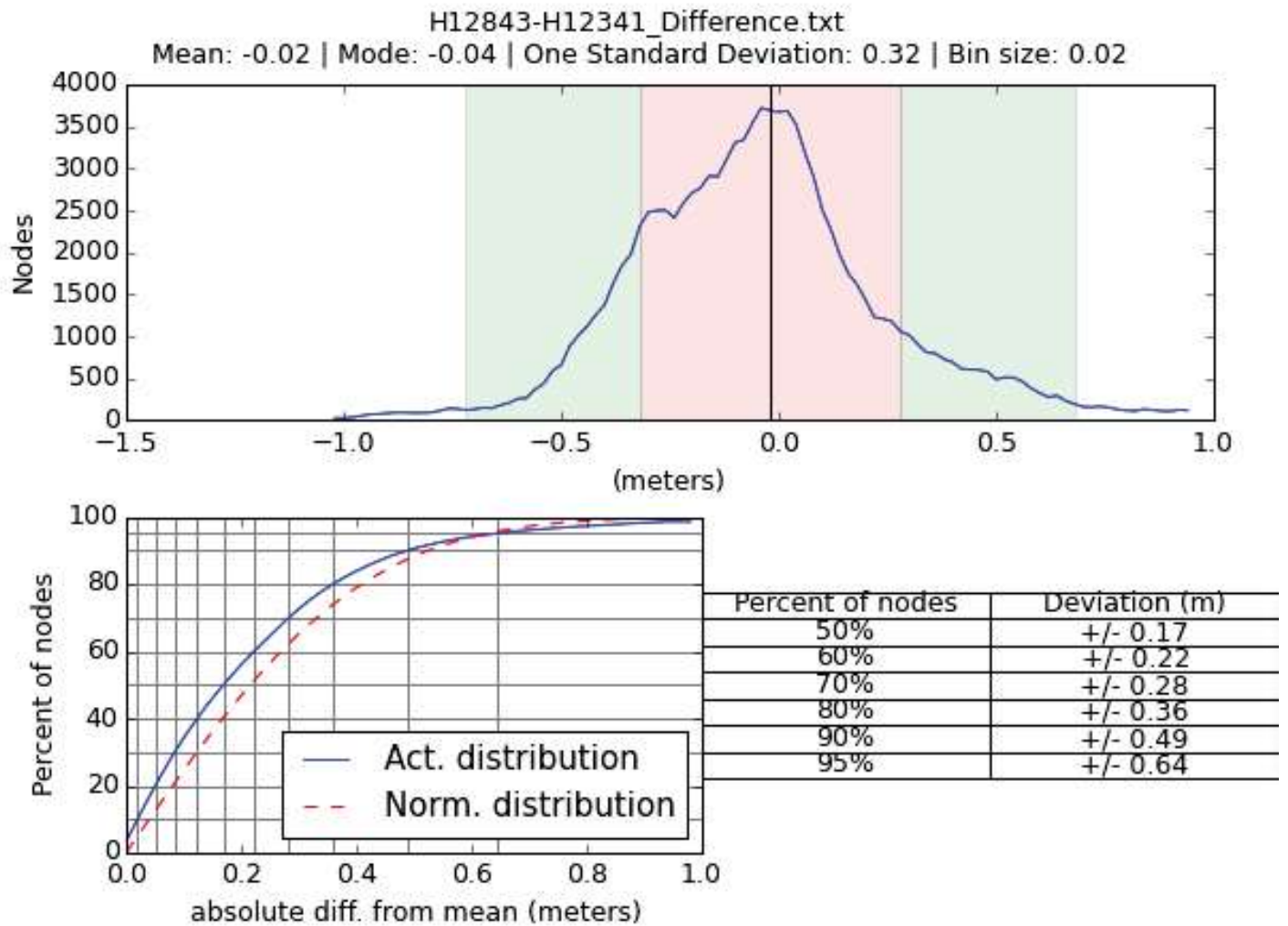


Figure 11: Difference surface statistics for H12843 and H12341.

B.2.4 Sonar QC Checks

Sonar system quality control checks were conducted as detailed in the quality control section of the DAPR.

B.2.5 Equipment Effectiveness

There were no conditions or deficiencies that affected equipment operational effectiveness.

B.2.6 Factors Affecting Soundings

Sound Speed Errors

Refraction issues due to environmental conditions exist in survey H12843. As shown in Figure 12, the likely culprit was the very steep below-layer gradient which moved up and down in the water by about 10 meters per second which were very present on data collected between DN217-226 (See Figure 13). Sound speed casts were taken at a very frequent rate, yet refraction still was an issue, because it was believed that the sound speed variability in nature, specifically, the survey lines may have crossed a significant below-layer sound speed gradient.

A number of methods were used to mitigate the refraction. Initially the sonars were being operated using its entire 140 degree swath. After an in port in Norfolk, VA, the hydrographer instituted two changes: the use of Cast-Time to model these refraction issues and the decrease in swath width. This change most likely is the reason why data from DN226 and 227 do not exhibit the extreme refraction issues seen on the earlier days.

To mitigate the impacts of refraction on data that was already collected, the hydrographer utilized Subset Editor in CARIS HIPS/SIPS to further eliminate poor data. This did not eliminate all instances of refraction in H12843. The surfaces do meet the Total Vertical Uncertainty requirements (See Section B.5.4 Total Vertical Uncertainty Analysis in this report for more information).

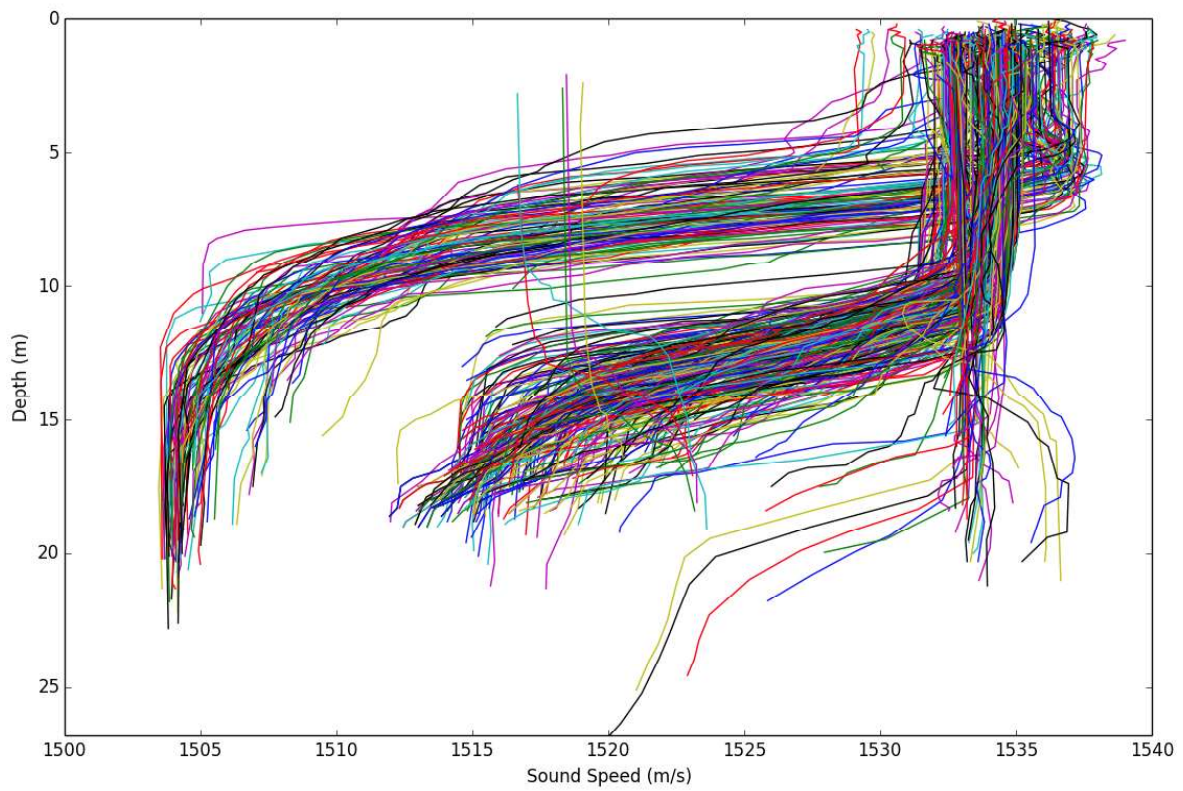


Figure 12: Sound speed measurements related to H12843.

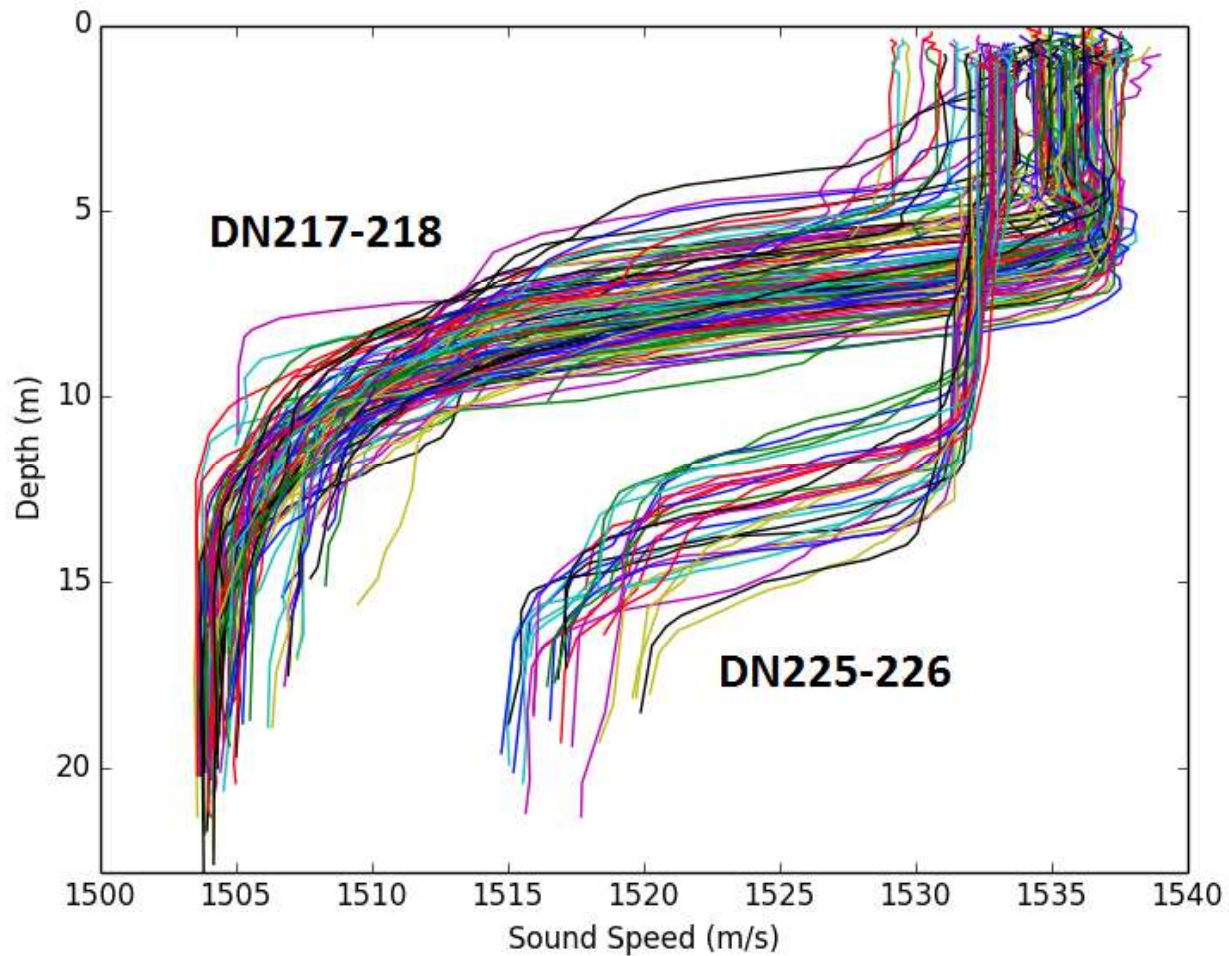


Figure 13: Sound speed measurements on from DN217-226.

B.2.7 Sound Speed Methods

Sound Speed Cast Frequency: A total of 484 sound speed measurements were taken within the boundaries of H12843 (See Figure 14). These sound speed measurements were collected using the MVP-200 approximately every 30 minutes. Comparisons were made by the survey watch to assess sound speed variation in the water column.

Sound speed corrections were applied in CARIS HIPS/SIPS using Nearest in Distance Within Time (NIDWT) of every 1 hour (for DN 230, 232, 233, and 234), 2 hours (DN 246, 252, and 291), and 4 hours (DN 217, 218, 225, 226, 239, and 240).

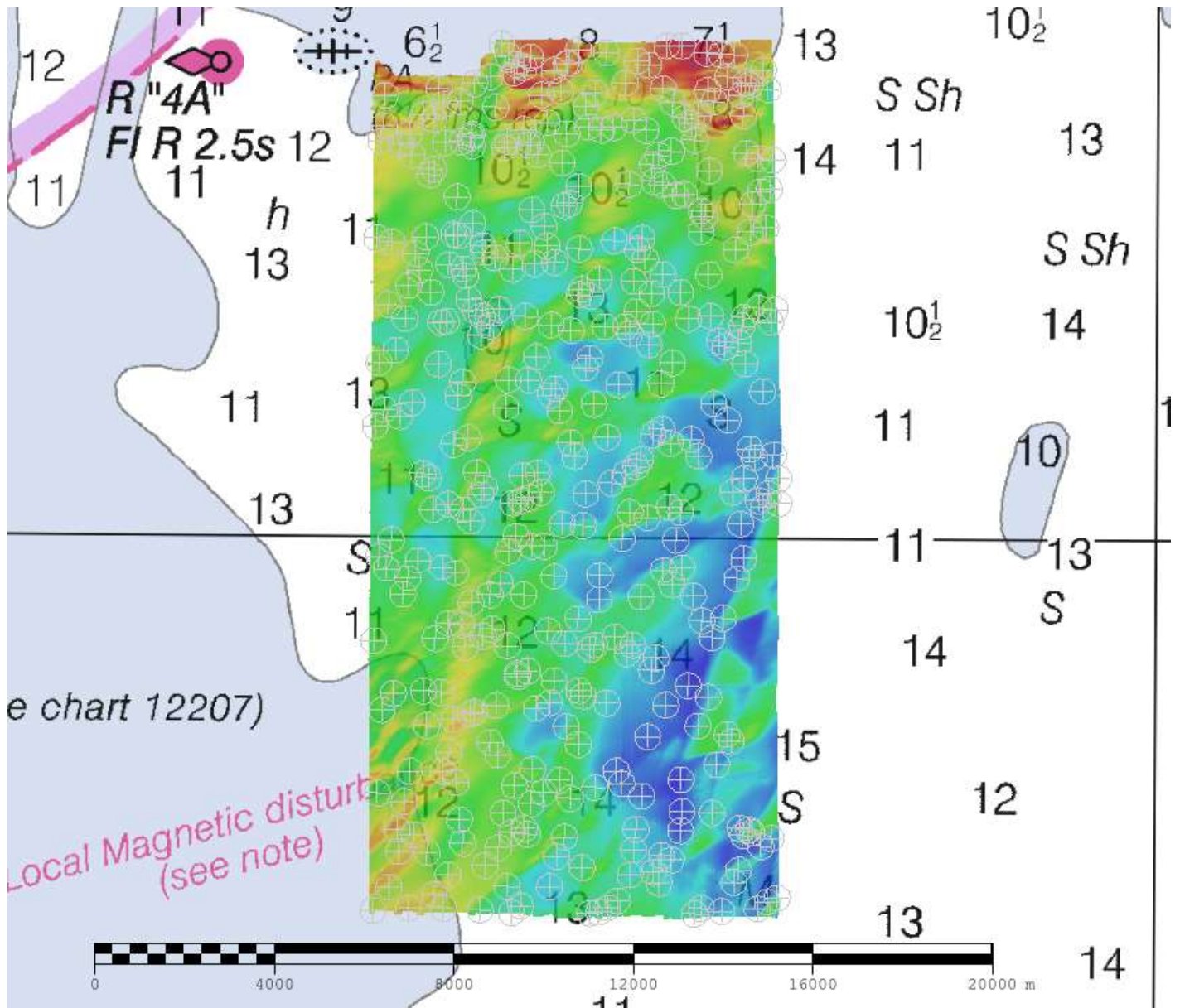


Figure 14: H12843 sound speed profile locations.

B.2.8 Coverage Equipment and Methods

All equipment and survey methods were used as detailed in the DAPR.

B.3 Echo Sounding Corrections

B.3.1 Corrections to Echo Soundings

All data reduction procedures conform to those detailed in the DAPR.

B.3.2 Calibrations

All sounding systems were calibrated as detailed in the DAPR.

B.4 Backscatter

Backscatter was logged in RESON datagram 7008 snippets record in the raw .s7k files. The .s7k file also holds the navigation record and bottom detections for all lines of survey H12843. The files were paired with the CARIS HDCS data, imported, and processed using Fledermaus Geocoder Toolbox (FMGT). The FMGT projects and backscatter mosaic imagery is included in the field submission. The processed mosaic is formatted as a geo-referenced tiff image per specifications. The following information is provided as metadata for the processing branch:

Backscatter data processing and mosaicing performed in Fledermaus FMGT version 7.4.4b using Reson DeTVG plug-ins where appropriate.

Backscatter data has a histogram range of 10 to -70dB

Backscatter data is provided in separate layers broken down by survey vessel hull number and sonar operating frequency.

H12843_S250_Port_400kHz | 4m resolution mosaic | Absorption Coefficient = 100dB/km

H12843_S250_Stbd_400kHz | 4m resolution mosaic | Absorption Coefficient = 100dB/km

B.5 Data Processing

B.5.1 Primary Data Processing Software

The following Feature Object Catalog was used: NOAA Profile V_5_3

B.5.2 Surfaces

The following surfaces and/or BAGs were submitted to the Processing Branch:

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
H12843_MB_1m_MLLW	CUBE	1 meters	14.08 meters - 30.20 meters	NOAA_1m	Complete MBES
H12843_MB_1m_MLLW_Final	CUBE	1 meters	14.08 meters - 20.00 meters	NOAA_1m	Complete MBES

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
H12843_MB_2m_MLLW	CUBE	2 meters	13.93 meters - 28.21 meters	NOAA_2m	Complete MBES
H12843_MB_2m_MLLW_Final	CUBE	2 meters	18.00 meters - 28.21 meters	NOAA_2m	Complete MBES

Table 9: Submitted Surfaces

Gaps in data coverage (holidays) do exist in the 1-meter finalized surface (See Figures 15-16). These gaps in coverage are due to poor overlap in the outerbeams. The holidays occur in flat areas and the hydrographer believes that they do not pose a risk to surface navigation.

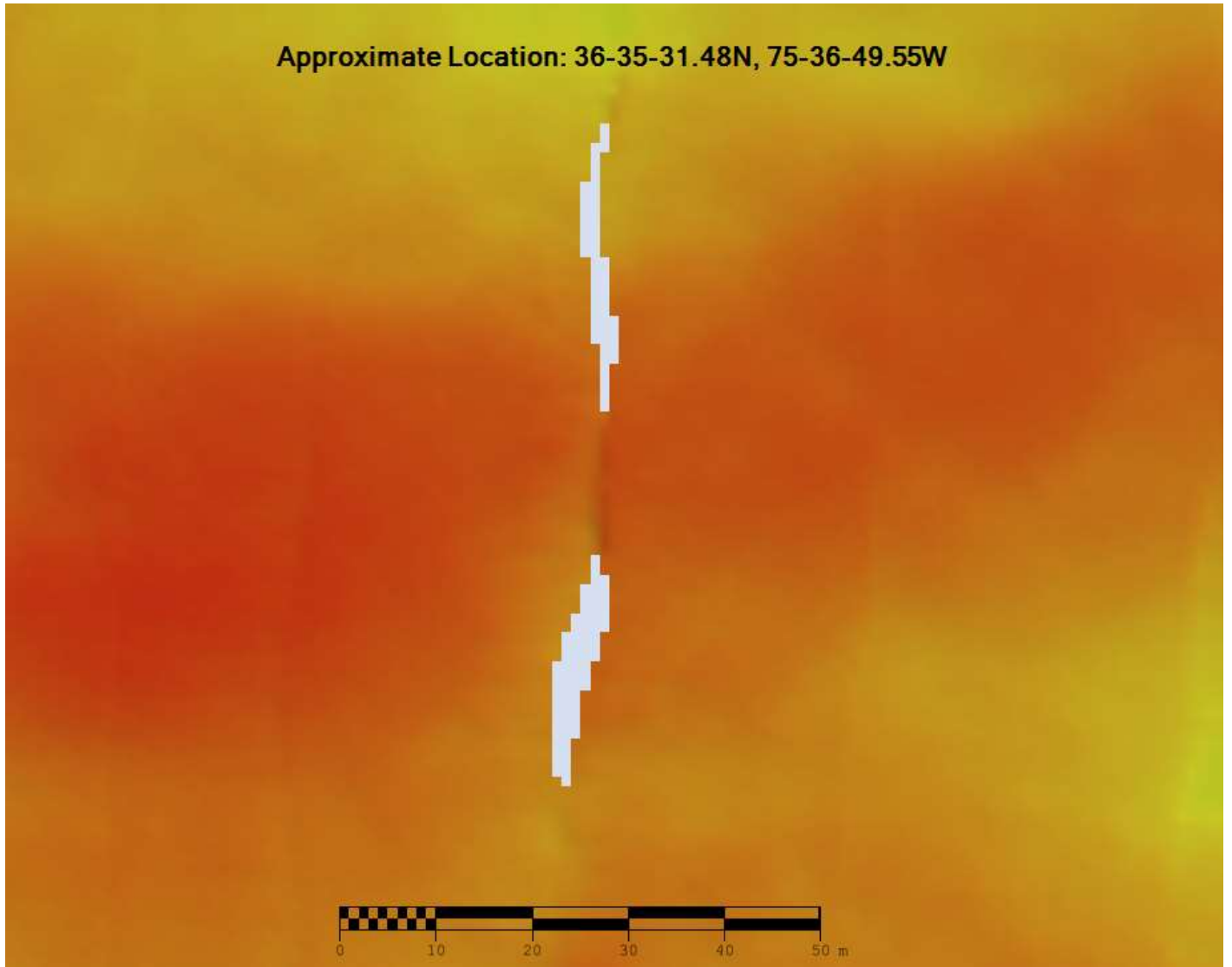


Figure 15: Example of holiday in the 1-meter finalized surface.

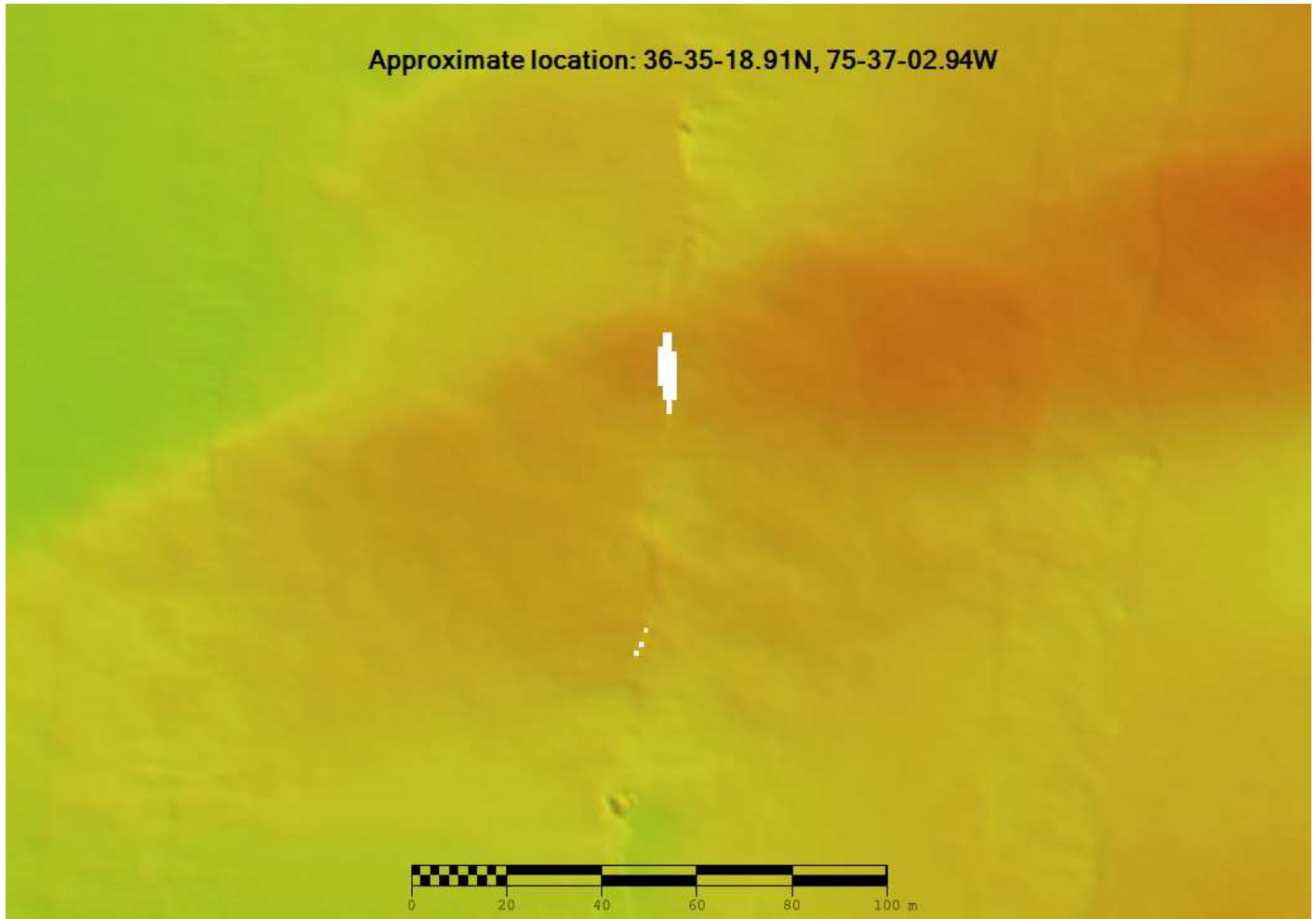


Figure 16: Example of holiday in the 1-meter finalized surface

B.5.3 Data Density

A density analysis was run to calculate the number of soundings per surface node. The results determined that 99.9% of all nodes contained five or more soundings which meets the data density specifications (See Figures 17 and 18).

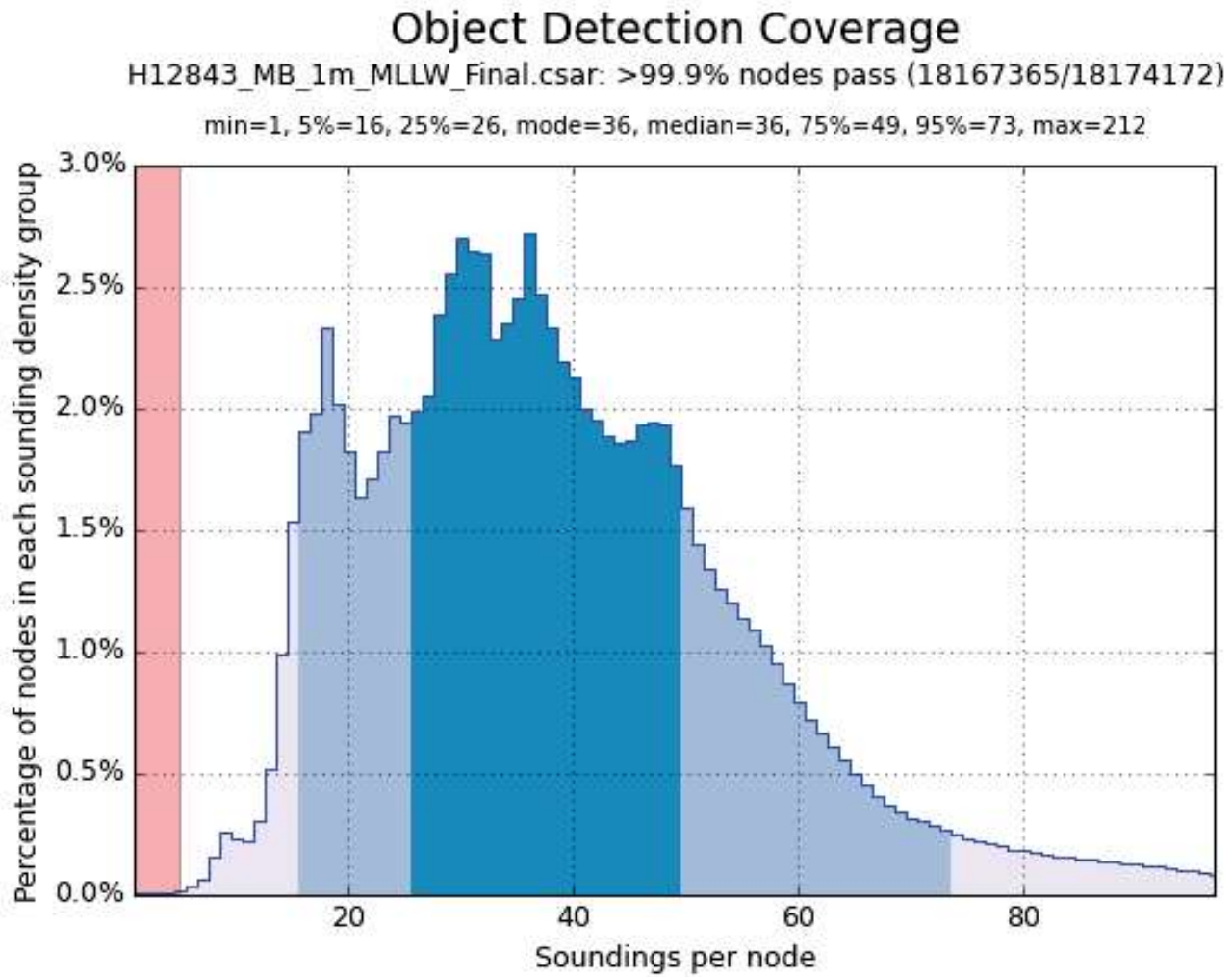


Figure 17: Data density for the 1-meter finalized surface.

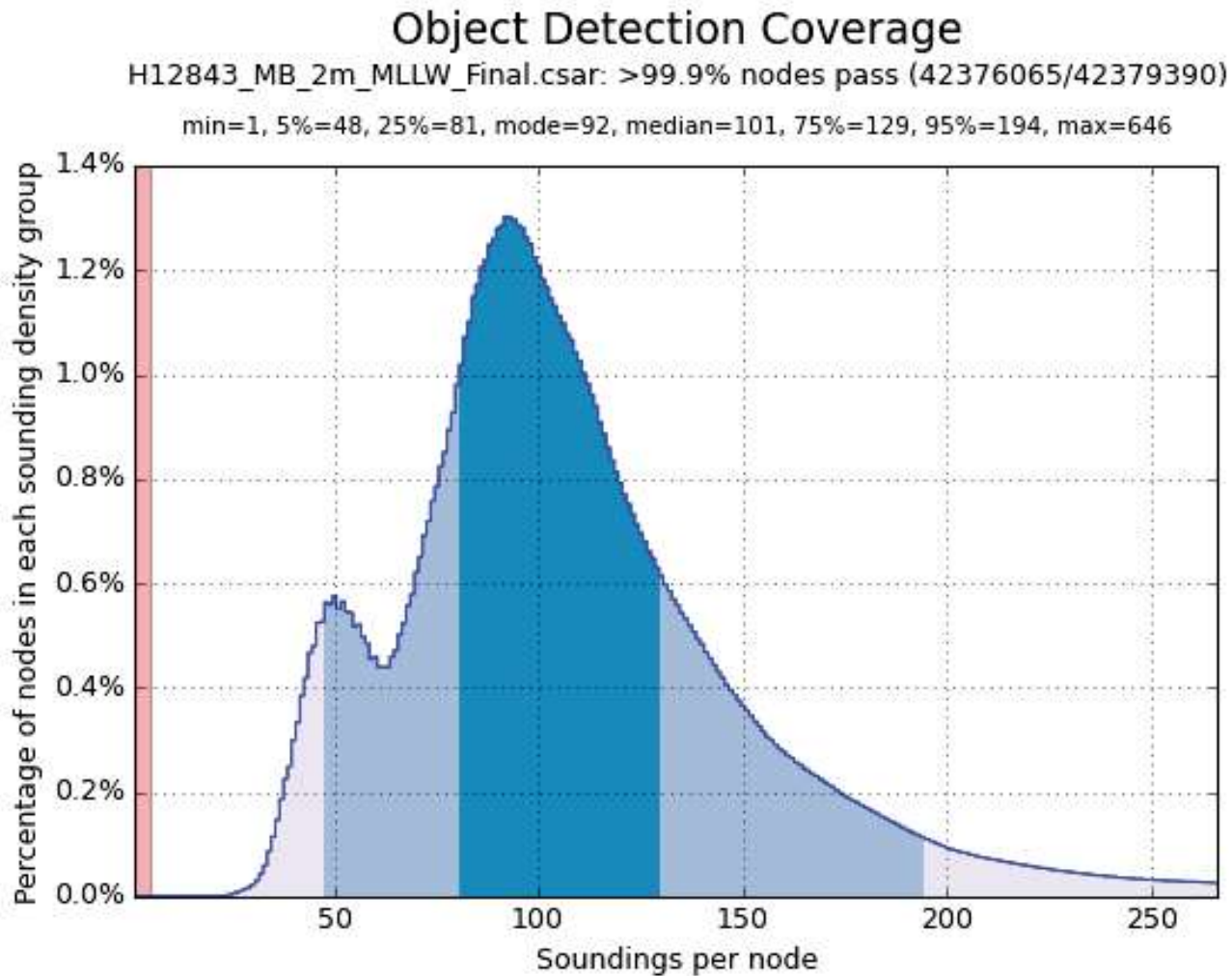


Figure 18: Data density for the 2-meter finalized surface.

B.5.4 Total Vertical Uncertainty Analysis

Pydro's Finalized CSAR QA tool was used to calculate the percentage of nodes which meet total vertical uncertainty (TVU) specifications. The resulting statistical analysis yielded only one node failed to meet TVU specifications (See Figures 19 and 20). In addition, a custom layer was created for the finalized surfaces submitted in correlation with H12843. The layer was derived from the difference between the calculated uncertainties of individual nodes and the allowable uncertainty at the coupled node.

Uncertainty Standards

H12843_MB_1m_MLLW_Final.csar: >99.9% nodes pass (18174171/18174172)

min=0.47, 5%=0.47, 25%=0.48, mode=0.49, median=0.49, 75%=0.50, 95%=0.54, max=1.00

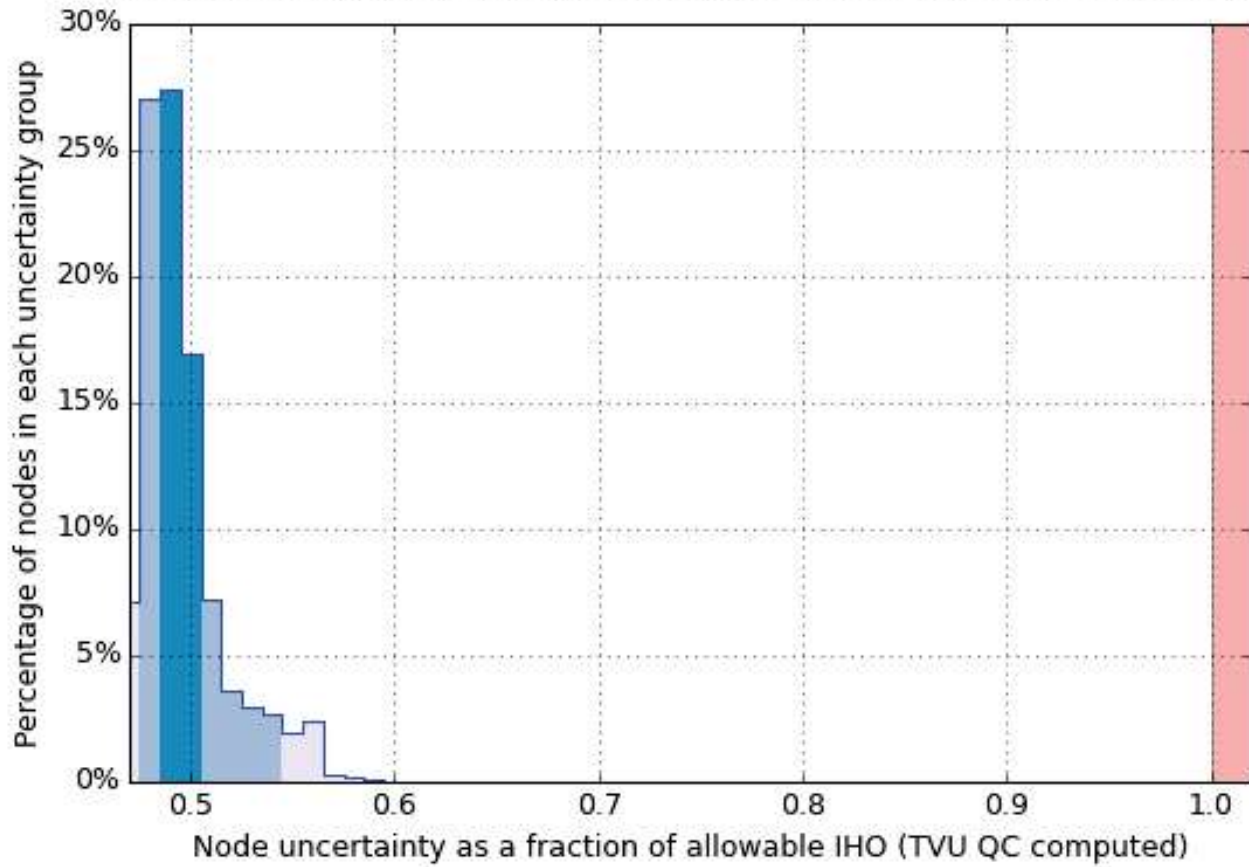


Figure 19: Total vertical uncertainty analysis for 1-meter finalized surface.

Uncertainty Standards

H12843_MB_2m_MLLW_Final.csar: 100% nodes pass (42379390/42379390)

min=0.43, 5%=0.45, 25%=0.46, mode=0.47, median=0.48, 75%=0.49, 95%=0.56, max=0.96

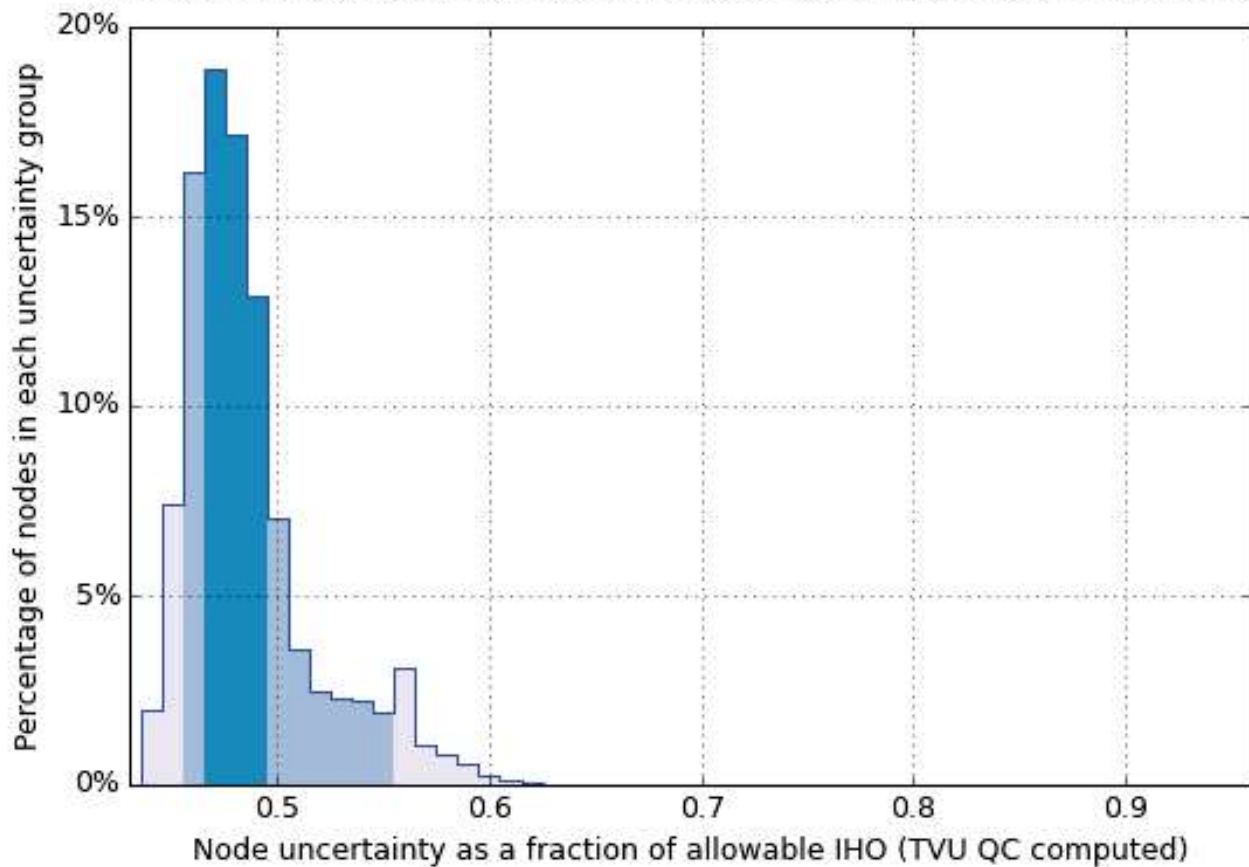


Figure 20: Total vertical uncertainty analysis for 2-meter finalized surface.

B.5.5 Designated Soundings

Within the limits of H12843, two (2) soundings are flagged as designated.

C. Vertical and Horizontal Control

All vertical and horizontal control activities conducted during the course of this survey are fully addressed in the following sections. No separate HVCR is submitted.

C.1 Vertical Control

The vertical datum for this project is Mean Lower Low Water.

Non-Standard Vertical Control Methods Used:

VDatum

Ellipsoid to Chart Datum Separation File:

2015_D304_VDatum_NAD83_MLLW

All soundings submitted for H12843 has been reduced to MLLW using documented VDatum techniques.

C.2 Horizontal Control

The horizontal datum for this project is North American Datum of 1983 (NAD83).

The projection used for this project is UTM Zone 18N..

The following PPK methods were used for horizontal control:

Single Base

Single Base processing was the primary method used for for Post Processed Kinematics (PPK) processing of Applanix TrueHeave data for Smooth Best Estimate of Trajectory (SBET) production. SBET files have been loaded for all lines for survey H12843 and are used to reduce acquired soundings to MLLW via HSD Operations Branch provided separation model.

The following CORS Stations were used for horizontal control:

HVCR Site ID	Base Station ID
DUCK 3, Duck, NC	NCDU
LOYOLA, Virginia Beach, VA	LS03

Table 10: CORS Base Stations

The following DGPS Stations were used for horizontal control:

DGPS Stations
Driver, VA (289 kHz)

Table 11: USCG DGPS Stations

C.3 Additional Horizontal or Vertical Control Issues

3.3.1 Interpolation of SBETs

On occasion, SBET altitude spikes compromised the data's TVU. In these instances, Pydro's POSPAC Automated QC tool was used to interpolate the SBET (See Figure 21 for an example). The interpolated SBET was exported out of the POSPAC Automated QC tool, opened in POSPAC MMS, and exported again to ensure the SBET was in the correct datum (NAD83). The new SBET contains the prefix "interpolated" for easy identification.

The following SBETs were interpolated for H12843:

DN218 Starboard lines using interpolated_2015_218_S250S_b.sbet

DN225 Starboard lines using interpolated_2015_225_S250S_b.sbet

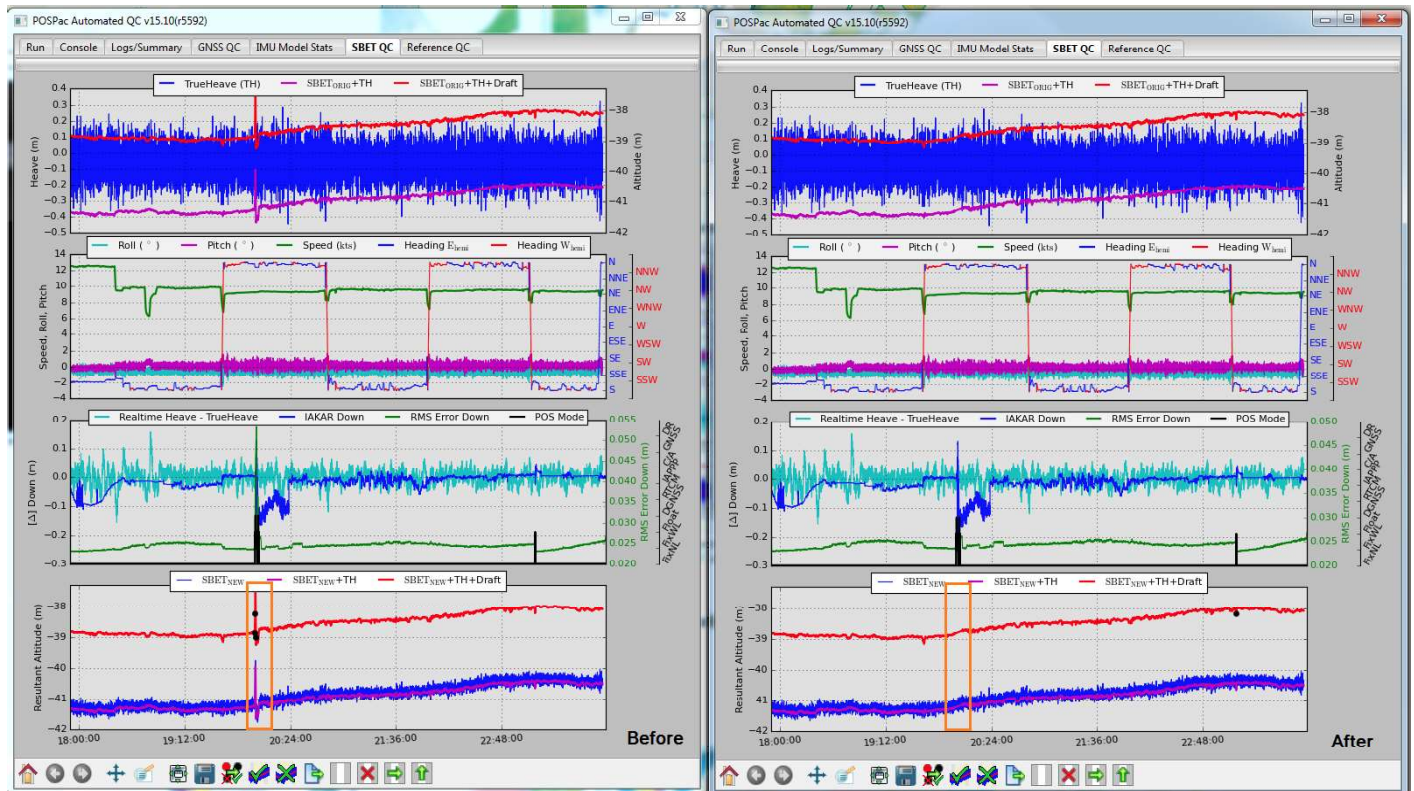


Figure 21: Example of SBET interpolation for 2015_225_S250S. The anomalous data on the left has been edited in POSPAC AutoQC and the resultant SBET is seen on the right.

3.3.2 Base Station Outages

Throughout acquisition of H12843 the preferred base station used for single base processing was DUCK. During acquisition there was an outage of the DUCK station, requiring the use of an alternate station. LS03 was used, with ship to station distance ranging from 149km to 183km. Though LS03 was far outside the recommended base station range, the SBET that used LS03 was only applied on data acquired during DN 218. A vertical offset ranging from 0.3-0.5 meters can be seen in the data for line 2209 (Figures 22 and 23) due to an SBET that has periods of poor quality vertical solutions. The oscillations in the vertical solution are within the TVU specifications for the depth of the area.

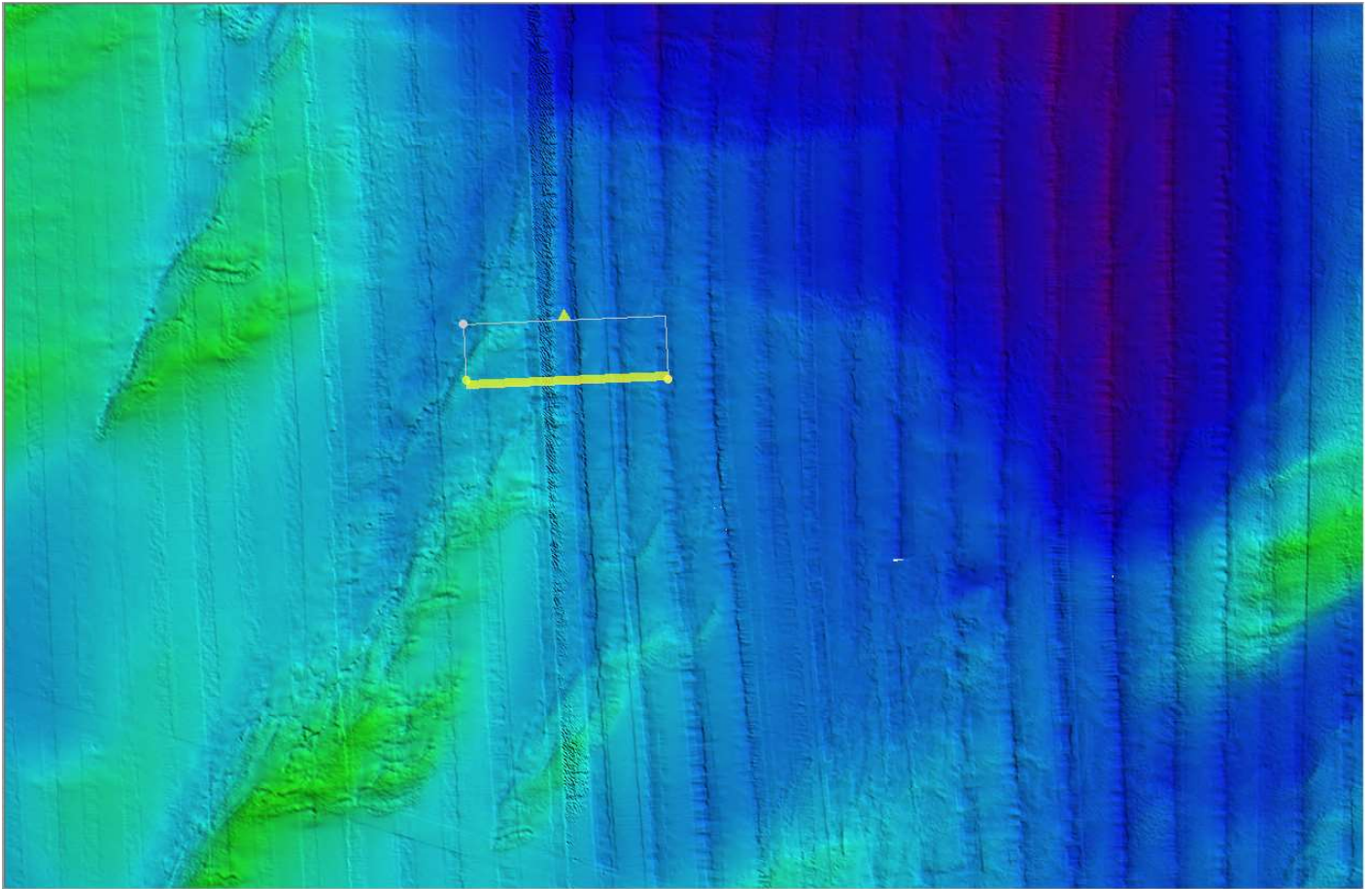


Figure 22: The 2-meter combined surface affected by offset.

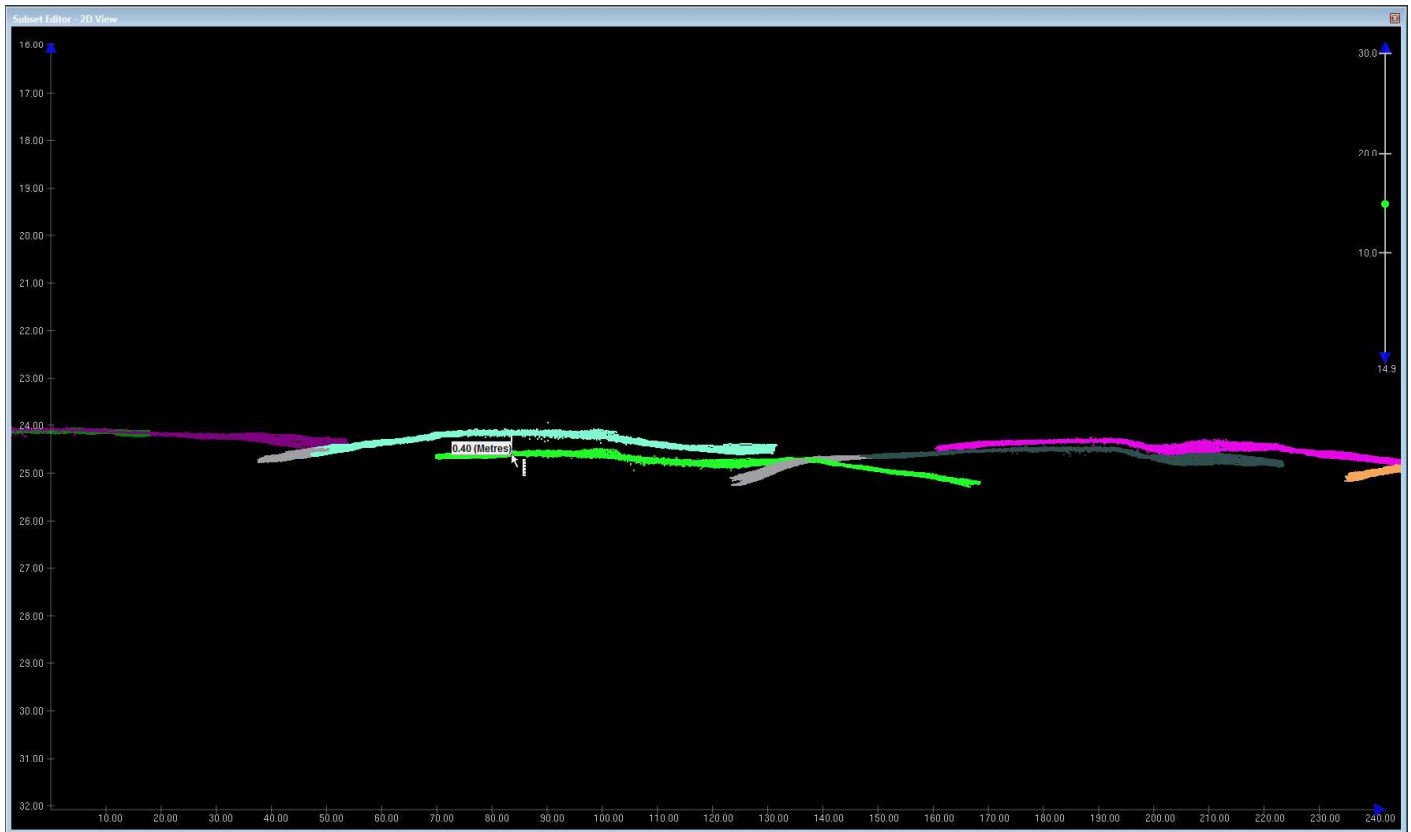


Figure 23: DN 218, line 2209 offset shown in subset editor.

D. Results and Recommendations

D.1 Chart Comparison

The hydrographer has compared a sounding plot from the surveyed area to the charted soundings. There are no charted contours to compare.

D.1.1 Raster Charts

The following are the largest scale raster charts, which cover the survey area:

Chart	Scale	Edition	Edition Date	LNM Date	NM Date
12207	1:80000	24	07/2014	03/22/2016	04/02/2016

Table 12: Largest Scale Raster Charts

12207

A comparison was performed with Chart 12207 (1:80,000) using depths derived from a 2-meter combined surface. Most charted soundings agree within 3-4 feet of H12843 surveyed depths, with exception of the areas shown below in Figure 24.

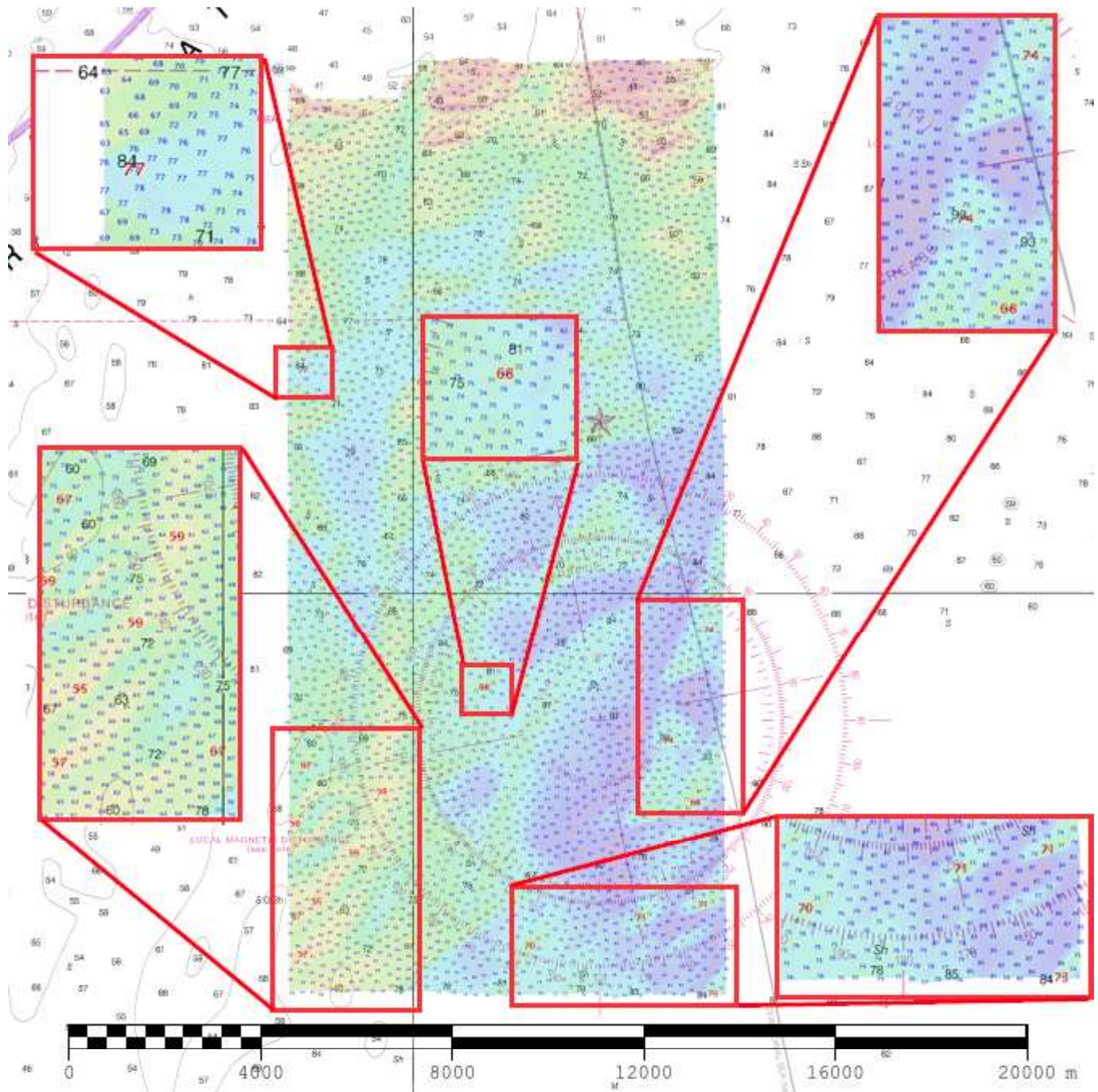


Figure 24: Chart 12207 comparison.

D.1.2 Electronic Navigational Charts

The following are the largest scale ENC's, which cover the survey area:

ENC	Scale	Edition	Update Application Date	Issue Date	Preliminary?
US4NC32M	1:80000	24	07/01/2014	04/02/2016	NO

Table 13: Largest Scale ENC's

US4NC32M

ENC soundings were extracted from the S-57 file and used to create an interpolated .csar surface. The interpolated surface was then differenced with the 2-meter finalized surface from survey H12843. The depth differences range from -6.22 to 5.91 meters. The high depth differences were determined to be the result of coarse resolution soundings extracted from the ENC. All other depth differences mirrored RNC depth differences, with a mean difference value of 0.16 meters, shown in Figure 25. In general, surveyed depths were deeper than charted. Figure 26 shows a surface created by interpolating the differenced point cloud between the ENC and surveyed depths. Negative values indicate areas where surveyed depths are deeper than charted.

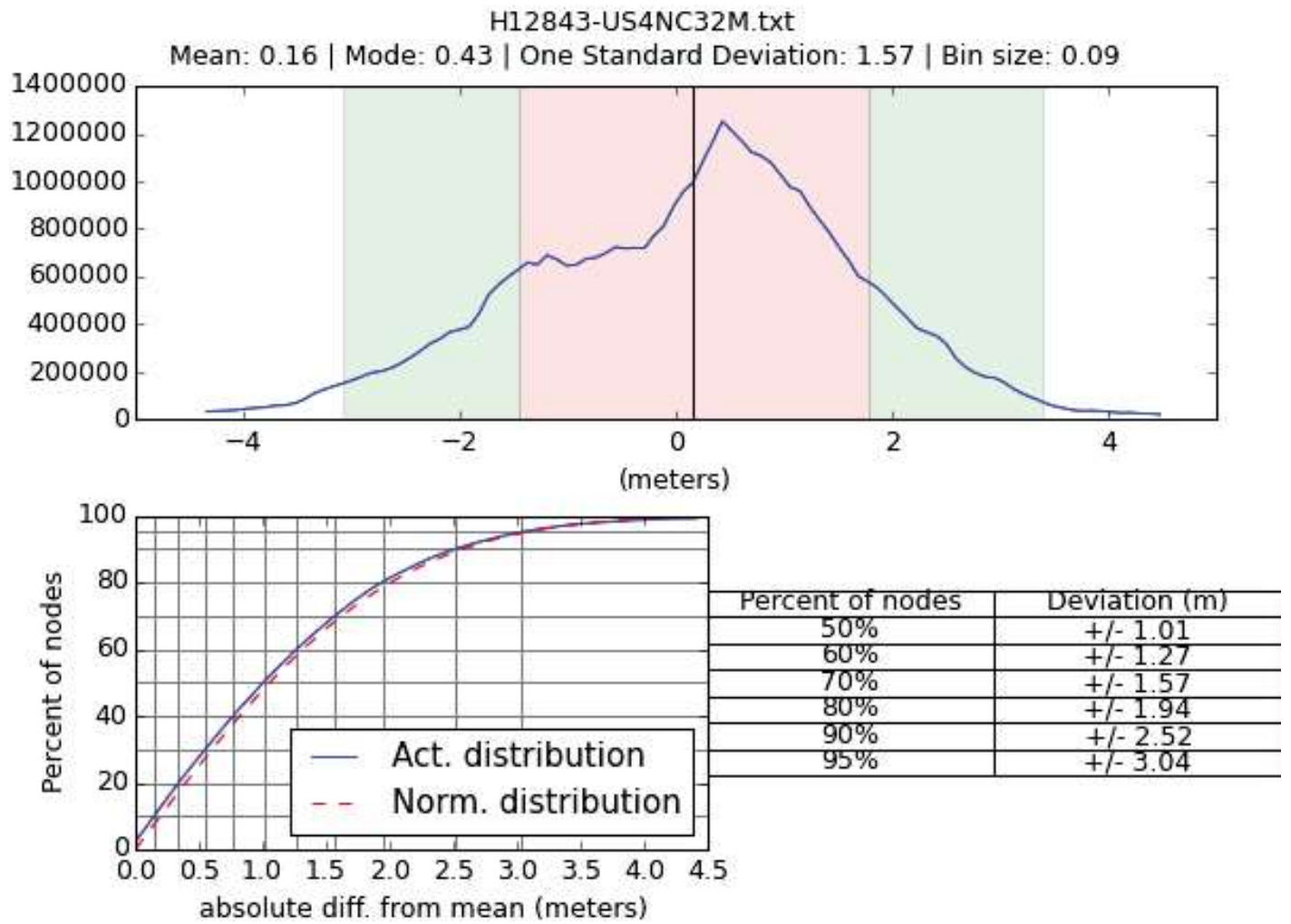


Figure 25: ENC US4NC32M comparison.

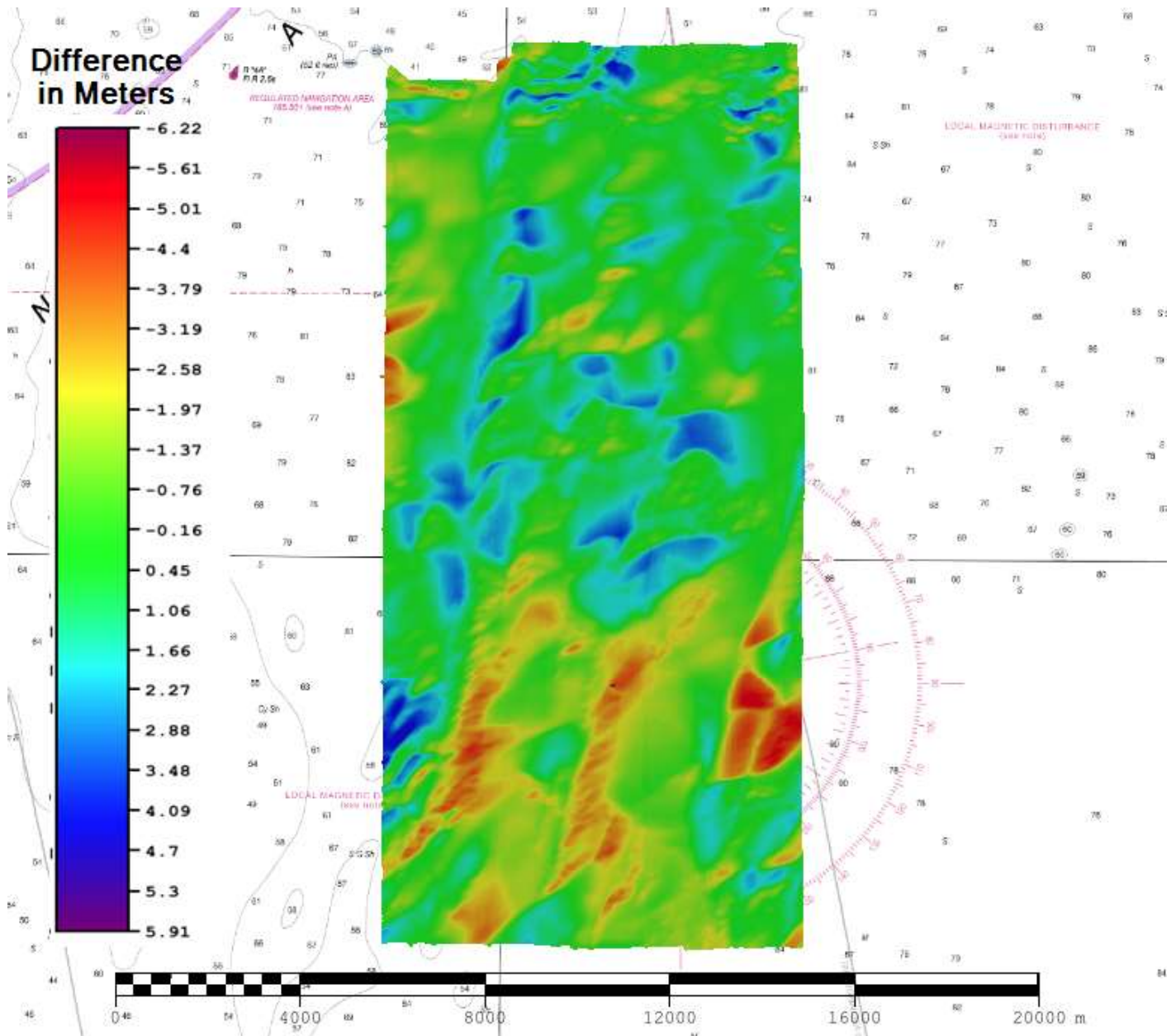


Figure 26: Difference surface between ENC US4NC32M and H12842.

D.1.3 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.1.4 Charted Features

No charted features exist for this survey.

D.1.5 Uncharted Features

One new wreck was identified with data collected for survey H12843. See the final feature file for further information.

D.1.6 Dangers to Navigation

No Danger to Navigation Reports were submitted for this survey.

D.1.7 Shoal and Hazardous Features

No shoals or potentially hazardous features exist for this survey.

D.1.8 Channels

No channels exist for this survey. There are no designated anchorages, precautionary areas, safety fairways, traffic separation schemes, pilot boarding areas, or channel and range lines within the survey limits.

D.1.9 Bottom Samples

Six (6) bottom samples were acquired for this survey though one sample did not result in a return after three attempts therefore was not submitted. A total of five (5) bottom samples have been submitted in the final feature file. See final feature file for more information.

D.2 Additional Results

D.2.1 Shoreline

Shoreline was not assigned in the Hydrographic Survey Project Instructions or Statement of Work.

D.2.2 Prior Surveys

No prior survey comparisons exist for this survey.

D.2.3 Aids to Navigation

No Aids to navigation (ATONs) exist for this survey.

D.2.4 Overhead Features

No overhead features exist for this survey.

D.2.5 Submarine Features

No submarine features exist for this survey.

D.2.6 Ferry Routes and Terminals

No ferry routes or terminals exist for this survey.

D.2.7 Platforms

No platforms exist for this survey.

D.2.8 Significant Features

No Significant Features exist for this survey.

D.2.9 Construction and Dredging

No present or planned construction or dredging exist within the survey limits.

D.2.10 New Survey Recommendation

No new surveys or further investigations are recommended for this area.

D.2.11 Inset Recommendation




No new insets are recommended for this area.

E. Approval Sheet

Field operations for this hydrographic survey were conducted under the direct supervision of the then Chief of Party, Commander Marc S. Moser, with frequent personal checks of progress and adequacy. I have reviewed the attached survey data and reports.

All field sheets, this Descriptive Report, and all accompanying records and data are approved. All records are forwarded for final review and processing to the Processing Branch.

The survey data meets or exceeds requirements as set forth in the NOS Hydrographic Surveys and Specifications Deliverables Manual, Field Procedures Manual, Letter Instructions, and all HSD Technical Directives. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required with the exception of deficiencies noted in the Descriptive Report.

Approver Name	Approver Title	Approval Date	Signature
LCDR Briana Welton, NOAA	Chief of Party	05/27/2016	 <small>WELTON.BRIANA.JANE.12 67667531 2016.05.31 09:24:04 -04'00'</small>
LT Nicholas Morgan, NOAA	Field Operations Officer	05/27/2016	 <small>MORGAN.NICHOLAS.C.129 2288138 2016.05.31 09:27:23 -04'00'</small>
PS Tyanne Faulkes	Sheet Manager	05/27/2016	 <small>Digitally signed by T. FAULKES, FNANM, CN=1381291550 DN: cn=T. FAULKES, o=NOAA, ou=OP&E, ou=OTHER, ou=FAULKES, email=C.1381291550 Date: 2016.05.31 09:27:23 -04'00'</small>

F. Table of Acronyms

Acronym	Definition
AHB	Atlantic Hydrographic Branch
AST	Assistant Survey Technician
ATON	Aid to Navigation
AWOIS	Automated Wreck and Obstruction Information System
BAG	Bathymetric Attributed Grid
BASE	Bathymetry Associated with Statistical Error
CO	Commanding Officer
CO-OPS	Center for Operational Products and Services
CORS	Continually Operating Reference Station
CTD	Conductivity Temperature Depth
CEF	Chart Evaluation File
CSF	Composite Source File
CST	Chief Survey Technician
CUBE	Combined Uncertainty and Bathymetry Estimator
DAPR	Data Acquisition and Processing Report
DGPS	Differential Global Positioning System
DP	Detached Position
DR	Descriptive Report
DTON	Danger to Navigation
ENC	Electronic Navigational Chart
ERS	Ellipsoidal Referenced Survey
ERZT	Ellipsoidally Referenced Zoned Tides
FFF	Final Feature File
FOO	Field Operations Officer
FPM	Field Procedures Manual
GAMS	GPS Azimuth Measurement Subsystem
GC	Geographic Cell
GPS	Global Positioning System
HIPS	Hydrographic Information Processing System
HSD	Hydrographic Surveys Division
HSSD	Hydrographic Survey Specifications and Deliverables

Acronym	Definition
HSTP	Hydrographic Systems Technology Programs
HSX	Hypack Hysweep File Format
HTD	Hydrographic Surveys Technical Directive
HVCR	Horizontal and Vertical Control Report
HVF	HIPS Vessel File
IHO	International Hydrographic Organization
IMU	Inertial Motion Unit
ITRF	International Terrestrial Reference Frame
LNM	Local Notice to Mariners
LNM	Linear Nautical Miles
MCD	Marine Chart Division
MHW	Mean High Water
MLLW	Mean Lower Low Water
NAD 83	North American Datum of 1983
NAIP	National Agriculture and Imagery Program
NALL	Navigable Area Limit Line
NM	Notice to Mariners
NMEA	National Marine Electronics Association
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
NRT	Navigation Response Team
NSD	Navigation Services Division
OCS	Office of Coast Survey
OMAO	Office of Marine and Aviation Operations (NOAA)
OPS	Operations Branch
MBES	Multibeam Echosounder
NWLON	National Water Level Observation Network
PDBS	Phase Differencing Bathymetric Sonar
PHB	Pacific Hydrographic Branch
POS/MV	Position and Orientation System for Marine Vessels
PPK	Post Processed Kinematic
PPP	Precise Point Positioning
PPS	Pulse per second

Acronym	Definition
PRF	Project Reference File
PS	Physical Scientist
PST	Physical Science Technician
RNC	Raster Navigational Chart
RTK	Real Time Kinematic
SBES	Singlebeam Echosounder
SBET	Smooth Best Estimate and Trajectory
SNM	Square Nautical Miles
SSS	Side Scan Sonar
ST	Survey Technician
SVP	Sound Velocity Profiler
TCARI	Tidal Constituent And Residual Interpolation
TPE	Total Propagated Error
TPU	Topside Processing Unit
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
UTM	Universal Transverse Mercator
XO	Executive Officer
ZDA	Global Positioning System timing message
ZDF	Zone Definition File

APPENDIX I
TIDES AND WATER LEVELS



OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov>

Request for Final Tides, OPR-D304-FH-15, H12843

1 message

OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov> Sat, Sep 5, 2015 at 2:15 PM

To: Final Tides - NOAA Service Account <Final.Tides@noaa.gov>

Cc: Patrick Berube - NOAA Federal <patrick.j.berube@noaa.gov>, Nicholas Morgan - NOAA Federal <nicholas.morgan@noaa.gov>

Good Afternoon,

Please find attached the final tide request for OPR-D304-FH-15, survey H12843.

Thank you,
Jon

Field Operations Officer, NOAA Ship *Ferdinand R. Hassler*
29 Wentworth Road
New Castle, NH, 03854

2 attachments



H12843_Final_Tides_Request.pdf

35K



H12843_Final_Tides_Request.zip

219K



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Silver Spring, Maryland 20910



**Preliminary as Final Tidal Zoning for
OPR-D304-FH-2015, H12839
36 Miles East of Currituck Beach,
Approaches to Chesapeake Bay, VA & NC**

8651370 Duck, NC

SA57
Reference 8651370

0 10
nautical miles



Final Tide Notes for OPR-D304-FH-2015, Registry Nos. H12839 & 12843

4 messages

Hua Yang - NOAA Affiliate <hua.yang@noaa.gov>

Wed, Sep 16, 2015 at 8:49 AM

To: "CO.Ferdinand Hassler - NOAA Service Account" <co.ferdinand.hassler@noaa.gov>, "OPS.Ferdinand Hassler - NOAA Service Account" <ops.ferdinand.hassler@noaa.gov>

Cc: Corey Allen - NOAA Federal <Corey.allen@noaa.gov>, Michael Gonsalves - NOAA Federal <michael.gonsalves@noaa.gov>, Castle Parker - NOAA Federal <Castle.E.Parker@noaa.gov>, AHB Chief - NOAA Service Account <ahb.chief@noaa.gov>, "_NOS.CO-OPS.HPT" <nos.coops.hpt@noaa.gov>



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Silver Spring, Maryland 20910

DATE: 9/16/2015

MEMORANDUM FOR: CDR Marc Moser
Commanding Officer, Ferdinand Hassler

FROM: Gerald Hovis
Chief, Products and Services Branch, N/OPS3

SUBJECT: Delivery of Tide Requirements for Hydrographic Surveys

This is notification that the preliminary zoning is accepted as the final zoning for survey project OPR-D304-FH-2015, Registry Nos. H12839 & 12843, during the time period between July 30 and September 03, 2015. The accepted reference station for Registry Nos. H12839 & 12843 is Duck, NC (8651370).


Included with this memo are Tide Note in .PDF format, stating the preliminary zoning has been accepted as the final zoning.


Thanks,

Hua Yang

Hydrographic Planning Team
NOAA/National Ocean Service
Center for Operational Oceanographic Products and Services
Station 7128
1305 East West Highway, SSMC4
Silver Spring, MD 20910
Office: 301-713-2890 x210
Email: Hua.Yang@noaa.gov
Web: <http://tidesandcurrents.noaa.gov/>

2 attachments

 **H12843.pdf**
597K

 **H12839.pdf**
605K

Megan Greenaway - NOAA Federal <megan.greenaway@noaa.gov> Thu, Sep 17, 2015 at 8:49 AM
To: "OPS.Ferdinand Hassler - NOAA Service Account" <ops.ferdinand.hassler@noaa.gov>

Jon,
I am filling out Survey Tracker but am missing a date. When did you request the tides for H12839 and H12843?
Thanks,
Megan


----- Forwarded message -----


From: **Michael Gonsalves - NOAA Federal** <michael.gonsalves@noaa.gov>
Date: Wed, Sep 16, 2015 at 5:11 PM
Subject: Fwd: Final Tide Notes for OPR-D304-FH-2015, Registry Nos. H12839 & 12843
To: Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov>, Megan Greenaway - NOAA Federal <Megan.Greenaway@noaa.gov>
Cc: Corey Allen - NOAA Federal <corey.allen@noaa.gov>

FYI

[Quoted text hidden]

2 attachments

 **H12843.pdf**
597K

 **H12839.pdf**
605K

OPS.Ferdinand Hassler - NOAA Service Account Thu, Sep 17, 2015 at 11:57 AM
<ops.ferdinand.hassler@noaa.gov>
To: Megan Greenaway - NOAA Federal <megan.greenaway@noaa.gov>

Hi Megan,

That request was sent Sept 5th. Thanks.

V/r,
Jon

Field Operations Officer, NOAA Ship *Ferdinand R. Hassler*
29 Wentworth Road
New Castle, NH, 03854

[Quoted text hidden]

Megan Greenaway - NOAA Federal <megan.greenaway@noaa.gov> Fri, Sep 18, 2015 at 8:52 AM
To: "OPS.Ferdinand Hassler - NOAA Service Account" <ops.ferdinand.hassler@noaa.gov>

Thanks Jon.

Megan

[Quoted text hidden]

APPENDIX II

SUPPLEMENTAL SURVEY RECORDS AND CORRESPONDENCE



OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov>

Hydro Hot List request, OPR-D304-FH-15

1 message

OPS.Ferdinand Hassler - NOAA Service Account

<ops.ferdinand.hassler@noaa.gov>

Mon, Jul 27, 2015 at 7:39 AM

To: _NOS CO-OPS OET Team <nos.coops.oetteam@noaa.gov>

Bcc: Nicholas Morgan - NOAA Federal <nicholas.morgan@noaa.gov>

Good morning,

NOAA Ship *Ferdinand Hassler* is scheduled to begin survey operations on OPR-D304-FH-15 on July 29, 2015. Please add the following station to the Hydro Hot List for OPR-D304-FH-15:

8651370 - Duck, NC

Thank you,
LT Jon Andvick, NOAA

Field Operations Officer, NOAA Ship *Ferdinand R. Hassler*
29 Wentworth Road
New Castle, NH, 03854

ERS Checkline Analysis and VDatum ERZT comparison

OPR-D304-FH-15 Approaches to Chesapeake Bay

NOAA Ship *Ferdinand R. Hassler*

ERS checklines were run spanning the total project area of OPR-D304-FH-15. Bathymetry was collected, SBETs applied, and an ERZT separation model was created and a difference surface was created using the datum height of the separation model and Vdatum model. A preliminary .tid file was used with the project .zdf file.

SBETs were colored by RMS position error (both vertical and horizontal) and the highest RMS value was less than or equal to 0.07 m. This maximum uncertainty value was seen on the checkline that was run furthest away from the base station assigned for the project (DUCK). All of the other SBETs that were processed have yielded a position RMS value of less than or equal to 0.05 m. This is lower than our zoned tide uncertainty value of 0.16 m, suggesting it would be beneficial to use SBETs in processing. The ERZT Vdatum difference surface was exported to ASCII and the statistics utility was used giving a mean of -0.03 m and a deviation of 0.09 m.

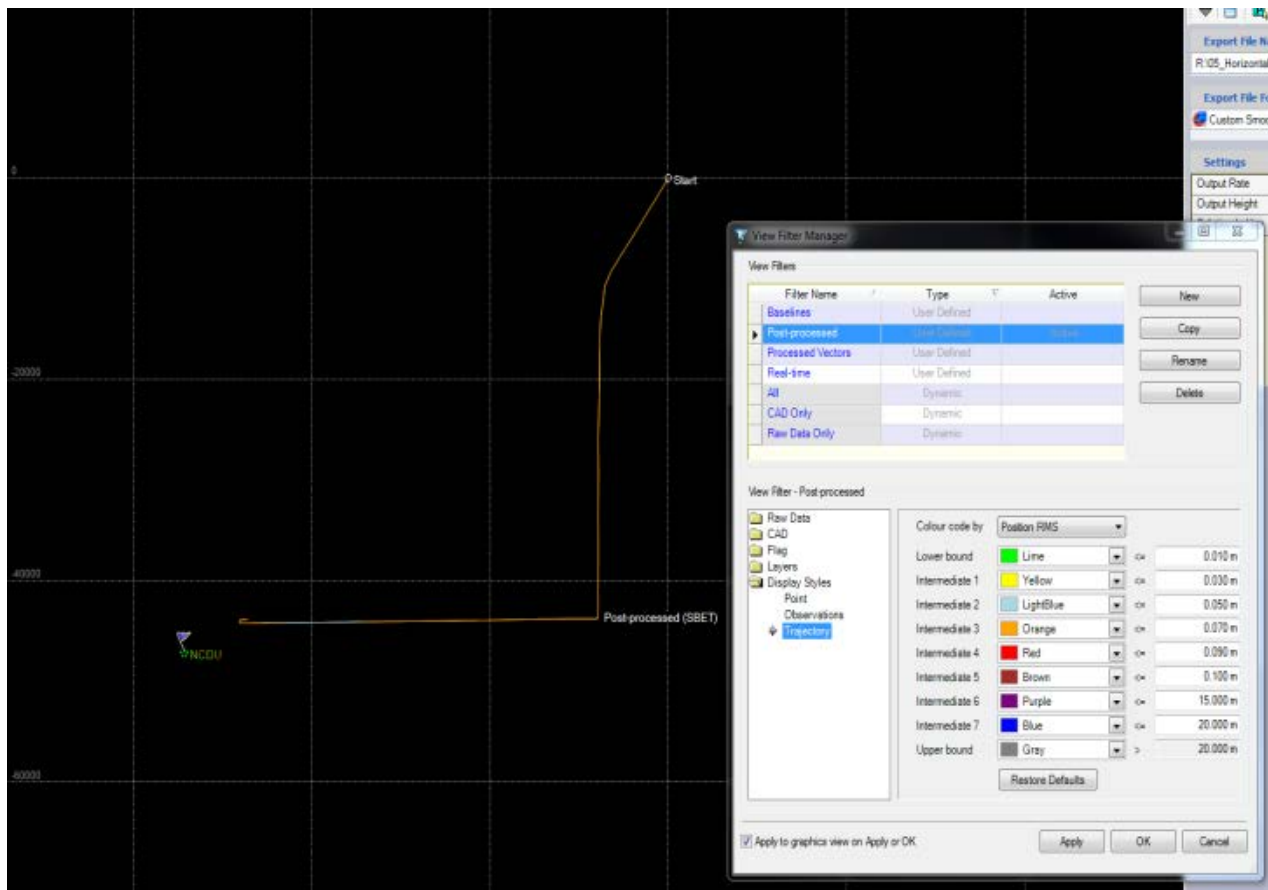


Figure 1: Day 210 Port SONAR SBET position RMS

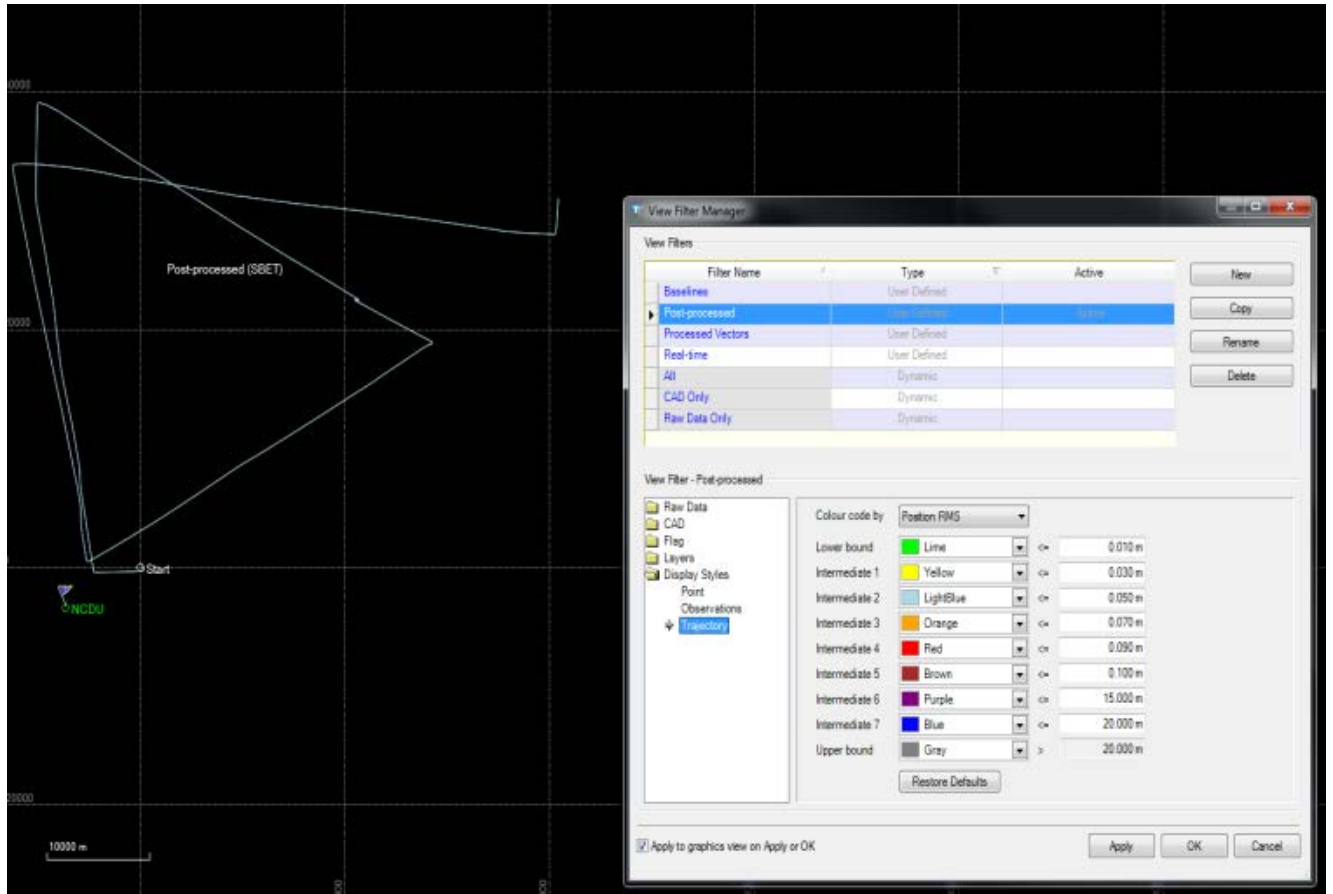


Figure 2: Day 210 Port SONAR position RMS Continued

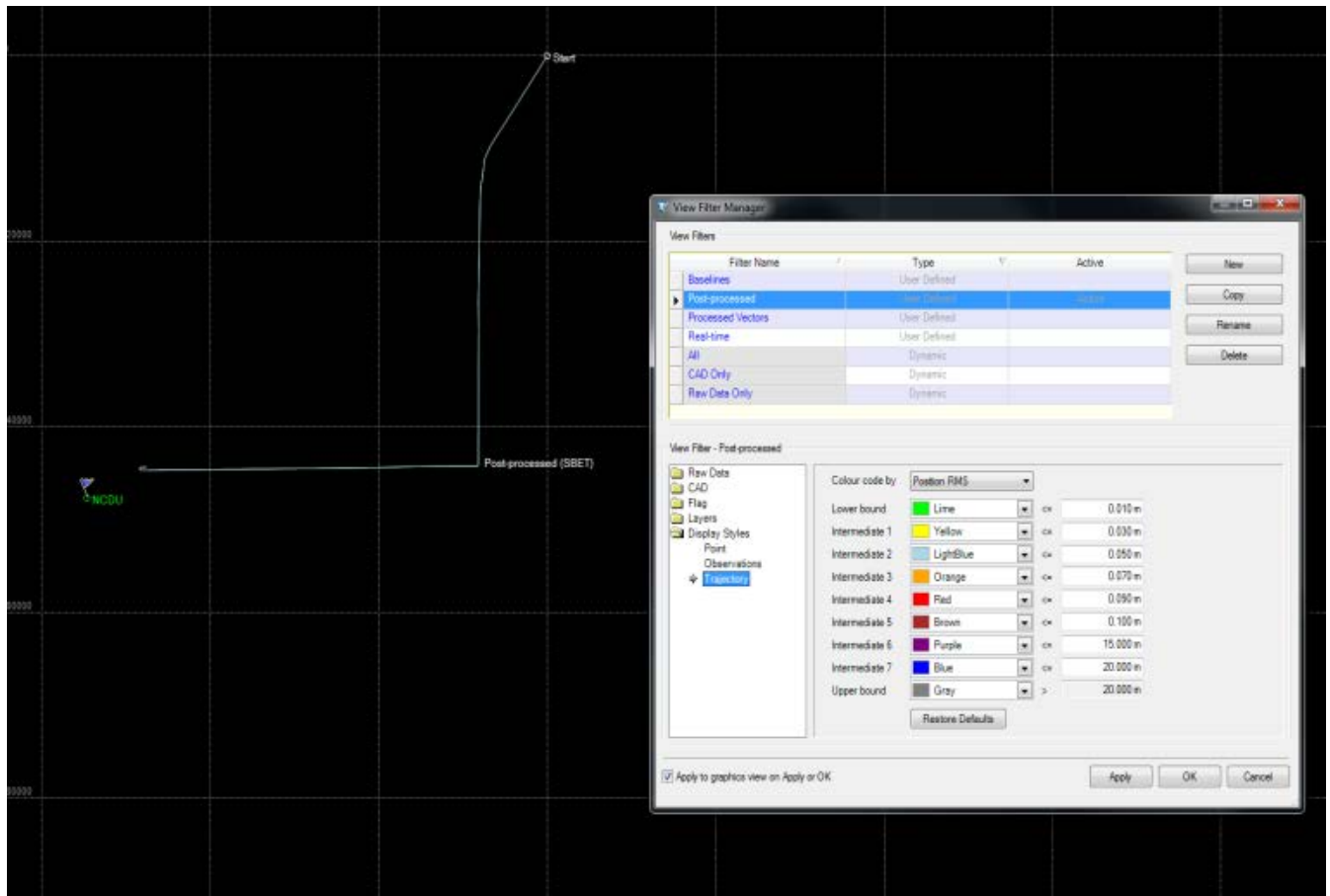


Figure 3: Day 20 Starboard SONAR SBET positon RMS

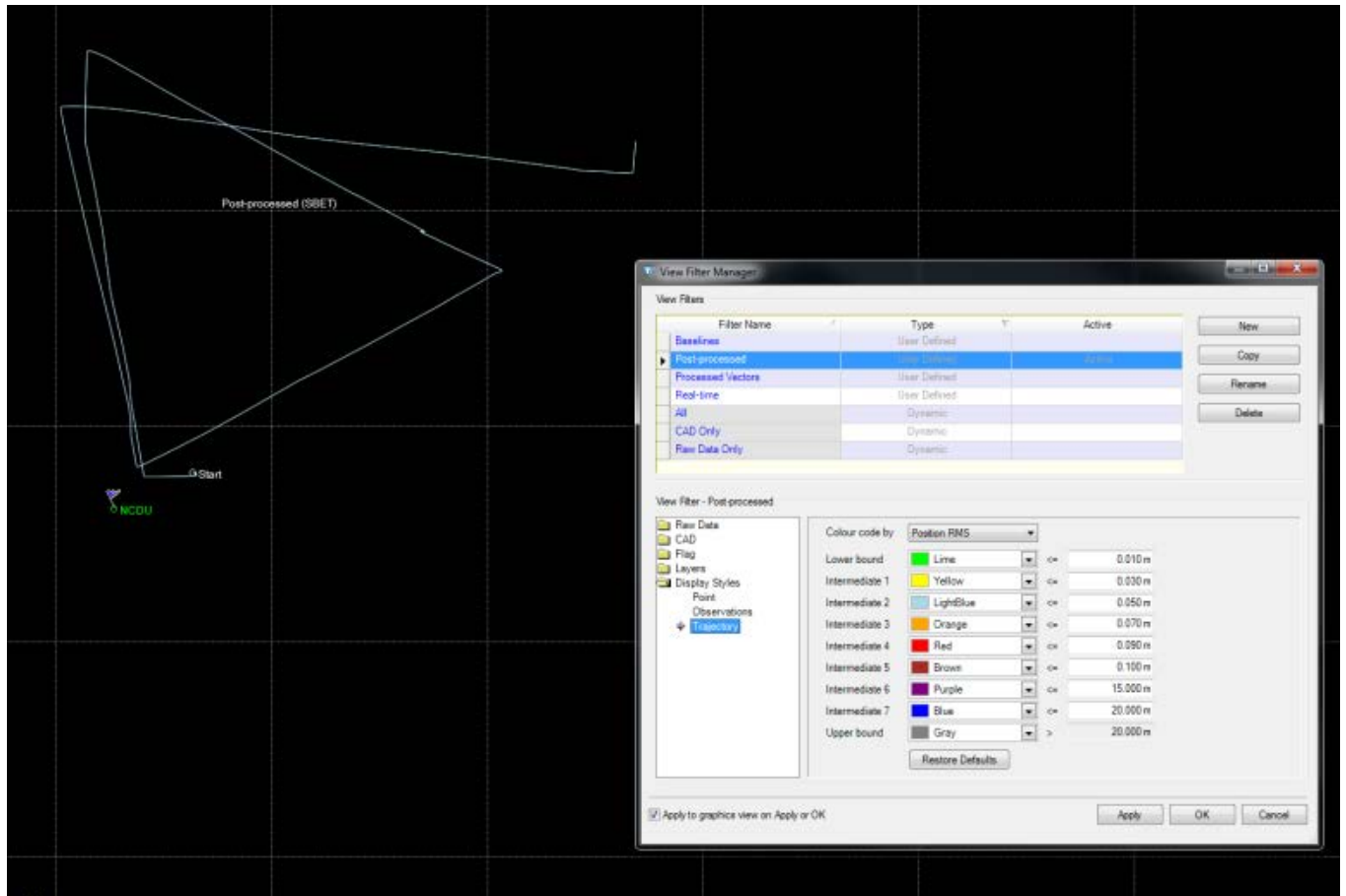


Figure 4: Day 210 Starboard SONAR SBET position RMS continued

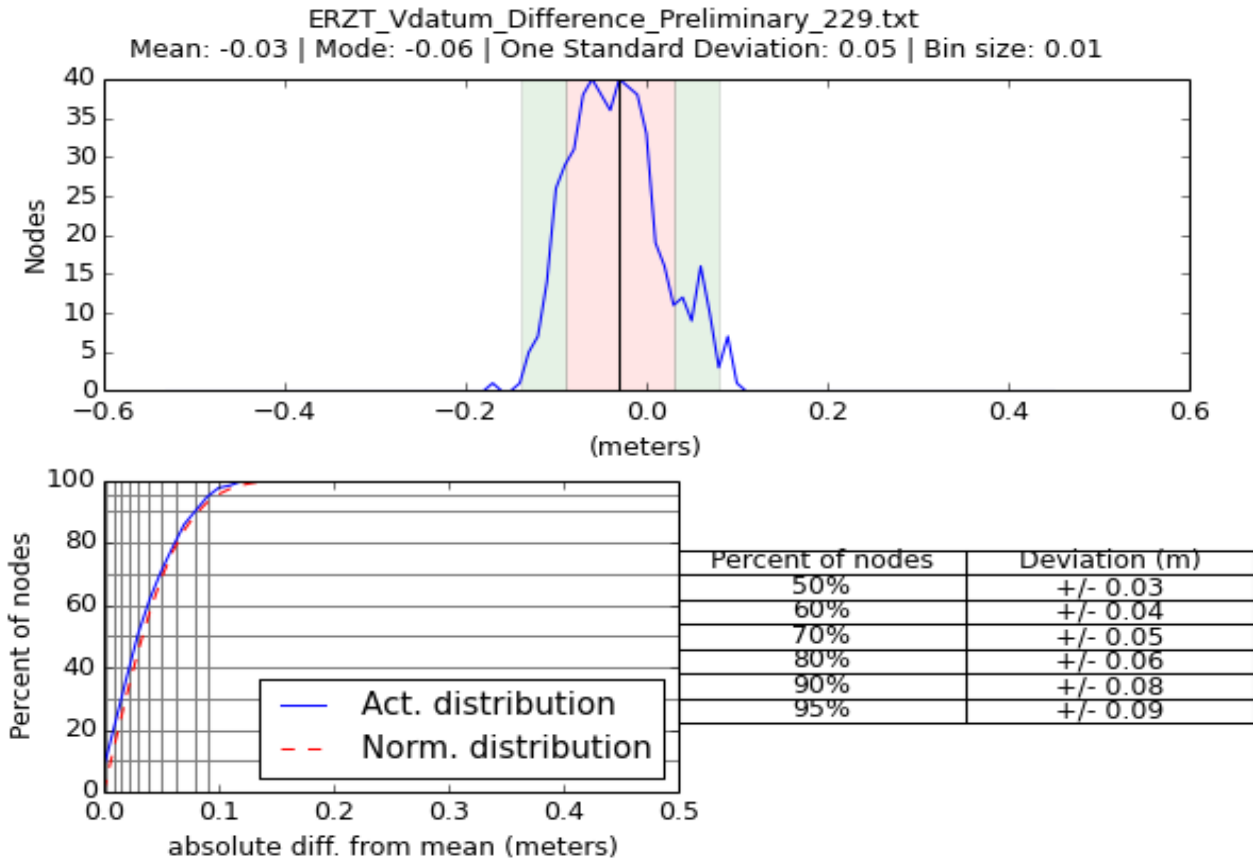


Figure 5: ERZT Vdatum difference surface statistics



OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov>

OPR-D304-FH-15 Sheet Status

5 messages

OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov> Sat, Oct 17, 2015 at 5:18 AM
To: Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>, Katrina Wyllie - NOAA Federal <katrina.wyllie@noaa.gov>, Megan Greenaway - NOAA Federal <megan.greenaway@noaa.gov>
Cc: Corey Allen - NOAA Federal <Corey.Allen@noaa.gov>, Michael Gonsalves - NOAA Federal <michael.gonsalves@noaa.gov>, "CO.Ferdinand Hassler - NOAA Service Account" <co.ferdinand.hassler@noaa.gov>

Hi All,

HASSLER is now working the last few days of D304 acquisition and offers the following estimate for final sheet acquisition status:

These sheets have completed FULL acquisition:
H12839, H12840, H12843

These sheets will have completed PARTIAL acquisition:
H12841 (more than half)
H12842 (about 5% so may just append to H12843)

The following sheets will NOT be opened:
H12844, H12845, H12846

Thank you.
V/r,
Jon

Field Operations Officer, NOAA Ship *Ferdinand R. Hassler*
29 Wentworth Road
New Castle, NH, 03854

Michael Gonsalves - NOAA Federal <michael.gonsalves@noaa.gov> Sun, Oct 18, 2015 at 5:17 PM
To: "OPS.Ferdinand Hassler - NOAA Service Account" <ops.ferdinand.hassler@noaa.gov>

Thanks for the update Jon. Once we have your final survey outlines, we'll update our survey plans for next year.
Cheers!
~~ mike.g.
[Quoted text hidden]

OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov> Sun, Oct 18, 2015 at 7:43 PM
To: Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov>

I forgot to include you on this, Starla. Sorry.

V/r,
Jon

Field Operations Officer, NOAA Ship *Ferdinand R. Hassler*
29 Wentworth Road
New Castle, NH, 03854

[Quoted text hidden]

Starla Robinson - NOAA Federal <starla.robinson@noaa.gov> Mon, Oct 19, 2015 at 9:42 AM
To: "OPS.Ferdinand Hassler - NOAA Service Account" <ops.ferdinand.hassler@noaa.gov>

Thanks for the update Jon! Good luck on the final leg! - *la

--

*Starla D. Robinson, Physical Scientist
NOS - OCS - HSD - Operations Branch
National Oceanic Atmospheric Administration
Office: 301-713-7202 x125
Cell: 360-689-1431*

Megan Greenaway - NOAA Federal <megan.greenaway@noaa.gov>

Mon, Oct 19, 2015 at 2:29 PM

To: Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov>

Cc: "OPS.Ferdinand Hassler - NOAA Service Account" <ops.ferdinand.hassler@noaa.gov>

Starla,
Forwarding this your way as you are the primary.

Jon, FYI Starla is the primary project manager for D304. I see you sent her the bottom sample request in a subsequent email.

Megan

----- Forwarded message -----

From: **OPS.Ferdinand Hassler - NOAA Service Account** <ops.ferdinand.hassler@noaa.gov>

Date: Sat, Oct 17, 2015 at 5:18 AM

Subject: OPR-D304-FH-15 Sheet Status

To: Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>, Katrina Wyllie - NOAA Federal <katrina.wyllie@noaa.gov>, Megan Greenaway - NOAA Federal <megan.greenaway@noaa.gov>

Cc: Corey Allen - NOAA Federal <Corey.Allen@noaa.gov>, Michael Gonsalves - NOAA Federal <michael.gonsalves@noaa.gov>, "CO.Ferdinand Hassler - NOAA Service Account" <co.ferdinand.hassler@noaa.gov>

[Quoted text hidden]



OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov>

Re: REQUESTING PERMISSION Fwd: OPR-D304-FH-15 Sheet H12841 Bottom Samples

2 messages

Michael Gonsalves - NOAA Federal <michael.gonsalves@noaa.gov> Mon, Oct 19, 2015 at 11:48 AM
To: "OPS.Ferdinand Hassler - NOAA Service Account" <OPS.Ferdinand.Hassler@noaa.gov>
Cc: Corey Allen - NOAA Federal <corey.allen@noaa.gov>, Starla Robinson - NOAA Federal <starla.robinson@noaa.gov>

Hey Jon,

Starla had to step out of the office, so I'm replying in her stead. After discussion, we provisionally agree with your proposal. We in HSD have always approved of the FH's method of using the backscatter mosaic to determine the density and distribution of bottom samples. If, in developing a mosaic of the unsurveyed areas, you find the bottom characteristics to be similarly uniform, then please proceed with the reduced bottom samples. If you later discover the seafloor is less homogeneous than previously anticipated, then please adjust your sampling as appropriate.

You may include this message in your project correspondence folder.

Very respectfully,
~~ michael.gonsalves, LCDR/NOAA
HSD Operations Branch, Chief

On Mon, Oct 19, 2015 at 9:45 AM, Starla Robinson - NOAA Federal <starla.robinson@noaa.gov> wrote:

----- Forwarded message -----

From: **OPS.Ferdinand Hassler - NOAA Service Account** <ops.ferdinand.hassler@noaa.gov>
Date: Sun, Oct 18, 2015 at 9:06 PM
Subject: OPR-D304-FH-15 Sheet H12841 Bottom Samples
To: Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov>
Cc: Megan Greenaway - NOAA Federal <megan.greenaway@noaa.gov>

Hi Starla,

As *Hassler* enters the final week of acquisition on D304, I would like to propose a reduction to the bottom samples requested for H12841 from twelve to six. The green circles in the attached jpg are my proposed new bottom sample locations within H12841. All but one utilize originally requested locations.

The backscatter imagery from H12841 (only partial coverage through yesterday) indicates a fairly consistent sea floor. Bottom samples from adjacent sheets H12840 and H12839 resulted in the same fine sand and broken shell consistency across the board.

Please let me know by 0700 EDT Wednesday if HSD Ops agrees to this proposal or not since that is when the ship plans to commence bottom sample acquisition. Thank you.

V/r,
Jon

Field Operations Officer, NOAA Ship *Ferdinand R. Hassler*
29 Wentworth Road
New Castle, NH, 03854

--

*Starla D. Robinson, Physical Scientist
NOS - OCS - HSD - Operations Branch
National Oceanic Atmospheric Administration
Office: 301-713-7202 x125
Cell: 360-689-1431*

OPS.Ferdinand Hassler - NOAA Service Account

Mon, Oct 19, 2015 at 4:34 PM

<ops.ferdinand.hassler@noaa.gov>

To: Michael Gonsalves - NOAA Federal <michael.gonsalves@noaa.gov>

Cc: Corey Allen - NOAA Federal <corey.allen@noaa.gov>, Starla Robinson - NOAA Federal <starla.robinson@noaa.gov>

Thank you Mike. Understood on the conditions.

V/r,
Jon

Field Operations Officer, NOAA Ship *Ferdinand R. Hassler*
29 Wentworth Road
New Castle, NH, 03854

[Quoted text hidden]



OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov>

Hydro Hot List removal request, OPR-D304-FH-15

2 messages

OPS.Ferdinand Hassler - NOAA Service Account

Tue, Oct 27, 2015 at 9:24 AM

<ops.ferdinand.hassler@noaa.gov>

To: "_NOS CO-OPS OET Team" <nos.coops.oetteam@noaa.gov>, "_NOS.CO-OPS.HPT" <NOS.COOPS.HPT@noaa.gov>

Bcc: Nicholas Morgan - NOAA Federal <nicholas.morgan@noaa.gov>

Good morning,

NOAA Ship *Ferdinand Hassler* has completed project OPR-D304-FH-15 on October 24, 2015. Please remove the following station from the Hydro Hot List for project OPR-D304-FH-15:

8651370 - Duck, NC

Thank you,
LT Jon Andvick, NOAA

Field Operations Officer, NOAA Ship *Ferdinand R. Hassler*
29 Wentworth Road
New Castle, NH, 03854

Hua Yang - NOAA Affiliate <hua.yang@noaa.gov>

Tue, Oct 27, 2015 at 9:38 AM

To: "OPS.Ferdinand Hassler - NOAA Service Account" <ops.ferdinand.hassler@noaa.gov>

Cc: "_NOS CO-OPS OET Team" <nos.coops.oetteam@noaa.gov>, "_NOS.CO-OPS.HPT" <NOS.COOPS.HPT@noaa.gov>, Gerald Hovis - NOAA Federal <gerald.hovis@noaa.gov>

Good morning LTJon Andvick,

Thank you very much for your timely notice. The station will be marked "Completed" soon and be deleted from the Hydro Hot List for the project in a week.

Best regards,

Hua Yang

Hydrographic Planning Team
NOAA/National Ocean Service
Center for Operational Oceanographic Products and Services
Station 7128
1305 East West Highway, SSMC4
Silver Spring, MD 20910
Office: 301-713-2890 x210
Email: Hua.Yang@noaa.gov
Web: <http://tidesandcurrents.noaa.gov/>

Hydro Hot List: <http://tidesandcurrents.noaa.gov/hydro.shtml>

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OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov>

Weekly Hydro Ship Activity Report - Ferdinand Hassler

3 messages

OPS.Ferdinand Hassler - NOAA Service Account

Tue, Oct 27, 2015 at 9:18 AM

<ops.ferdinand.hassler@noaa.gov>

To: progress.sketches@noaa.gov

Cc: "CO.Ferdinand Hassler - NOAA Service Account" <co.ferdinand.hassler@noaa.gov>, AHB Chief - NOAA Service Account <ahb.chief@noaa.gov>, Corey Allen - NOAA Federal <Corey.Allen@noaa.gov>, Samuel Greenaway - NOAA Federal <samuel.greenaway@noaa.gov>, Eric Younkin - NOAA Federal <eric.g.younkin@noaa.gov>, Katrina Wyllie - NOAA Federal <katrina.wyllie@noaa.gov>, Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>, Megan Greenaway - NOAA Federal <megan.greenaway@noaa.gov>, Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov>, Erin Weller - NOAA Federal <erin.weller@noaa.gov>, Meghan McGovern - NOAA Federal <meghan.mcgovern@noaa.gov>

RECAP: Oct 18 - 24

Building sea states overnight Saturday forced a pause in survey operations and the ship anchored in Hampton Roads on Sunday. The ship resumed mainscheme MBES coverage on sheet H12841 Monday evening. Bottom sample acquisition, remaining crosslines and holiday coverage for H12841 occurred Wednesday. The ship returned to MOC-A in Norfolk Thursday morning for fueling and crew transfer, departing again Friday afternoon to wait for weather at Hampton Roads anchorage. FH resumed mainscheme MBES coverage on sheet H12841 Saturday around noon, but engine fuel system problems Saturday evening forced the ship to secure the port main engine and transit to Lynnhaven Roads anchorage for repairs. With that, survey operations for project OPR-D304-FH-15 were finished.

PLAN: Oct 25 - 31

FH moved anchorages from Lynnhaven Roads to Hampton Roads on Sunday for better protection from weather. Engine repairs are in progress, and expected to be completed Tuesday. The ship plans to return to MOC-A in Norfolk after the engine repairs are completed. FH will remain alongside MOC-A until Friday, when the weather is forecast to be favorable to begin the transit to New Castle, NH.

V/r

LT Jon Andvick, NOAA

Field Operations Officer, NOAA Ship *Ferdinand R. Hassler*
29 Wentworth Road
New Castle, NH, 03854

**FH_Weekly_Update_10_24_2015.pdf**

222K

OPS.Ferdinand Hassler - NOAA Service Account

Wed, Oct 28, 2015 at 12:24 PM

<ops.ferdinand.hassler@noaa.gov>

To: Erin Weller - NOAA Federal <erin.weller@noaa.gov>

Hi Erin,

As the Mid-Atlantic Nav Manager, please note that NOAA Ship *Ferdinand Hassler* is now finished with survey operations for OPR-D304-FH-15, Approaches to Chesapeake Bay. Please let me know if you have any questions. Thanks.

V/r,

Jon

Field Operations Officer, NOAA Ship *Ferdinand R. Hassler*
29 Wentworth Road
New Castle, NH, 03854

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Erin Weller - NOAA Federal <erin.weller@noaa.gov>

Thu, Oct 29, 2015 at 8:42 AM

To: "OPS.Ferdinand Hassler - NOAA Service Account" <ops.ferdinand.hassler@noaa.gov>

Thank you

Erin C. Weller
Physical Scientist
NOAA's National Ocean Service
Office of Coast Survey, Hydrographic Survey Division
Atlantic Hydrographic Branch
[757.441.6746 ext. 101](tel:757.441.6746)

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OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov>

OPR-D304-FH-15 Project Acquisition Finished

2 messages

OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov> Tue, Oct 27, 2015 at 3:19 AM

To: Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov>, Megan Greenaway - NOAA Federal <megan.greenaway@noaa.gov>

Cc: Michael Gonsalves - NOAA Federal <michael.gonsalves@noaa.gov>, Corey Allen - NOAA Federal <Corey.Allen@noaa.gov>, "CO.Ferdinand Hassler - NOAA Service Account" <co.ferdinand.hassler@noaa.gov>

HSD Ops,

NOAA Ship *Ferdinand Hassler* is now finished with all acquisition for project OPR-D304-FH-15. Survey outlines for H12840, H12841 and a re-do for H12843 (including what was H12842 lines) will be submitted soon.

V/r,
LT Andvick

Field Operations Officer, NOAA Ship *Ferdinand R. Hassler*
29 Wentworth Road
New Castle, NH, 03854

Michael Gonsalves - NOAA Federal <michael.gonsalves@noaa.gov> Tue, Oct 27, 2015 at 9:36 AM

To: "OPS.Ferdinand Hassler - NOAA Service Account" <ops.ferdinand.hassler@noaa.gov>

Cc: Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov>, Megan Greenaway - NOAA Federal <megan.greenaway@noaa.gov>, Corey Allen - NOAA Federal <Corey.Allen@noaa.gov>, "CO.Ferdinand Hassler - NOAA Service Account" <co.ferdinand.hassler@noaa.gov>

Good work team FH.

~~ mog

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APPROVAL PAGE

H12843

Data meet or exceed current specifications as certified by the OCS survey acceptance review process. Descriptive Report and survey data except where noted are adequate to supersede prior surveys and nautical charts in the common area.

The following products will be sent to NCEI for archive

- H12843_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- H12843_GeoImage.pdf

The survey evaluation and verification has been conducted according current OCS Specifications, and the survey has been approved for dissemination and usage of updating NOAA's suite of nautical charts.

Approved: _____

Lieutenant Commander Briana Welton Hillstrom, NOAA
Chief, Atlantic Hydrographic Branch