H12940

NOAA Form 76-35A

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

DESCRIPTIVE REPORT

Type of Survey:	Navigable Area
Registry Number:	H12940

LOCALITY

State:	Alaska
General Locality:	Unalaska Island
Sub-locality:	Vicinity of Constantine Bay to Split Top Mountain

2016

CHIEF OF PARTY
CDR Mark Van Waes,
NOAA

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Date:

NOAA FORM 77-28 (11-72)	U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	REGISTRY NUMBER:
HYDROGRAPHIC TITLE SHEET		**H12940**

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:	**Alaska**
General Locality:	**Unalaska Island**
Sub-Locality:	**Vicinity of Constantine Bay and Split Top Mountain**
Scale:	1: **20,000**
Dates of Survey:	**8/12/2016 to 8/25/2016**
Instructions Dated:	**07/27/2016**
Project Number:	**OPR-Q328-FA-16**
Field Unit:	**NOAA Ship *Fairweather***
Chief of Party:	**CDR Mark Van Waes**
Soundings by:	**Multibeam Echo Sounder**
Imagery by:	
Verification by:	**Pacific Hydrographic Branch**
Soundings Acquired in:	**meters at Mean Lower Low Water**
H-Cell Compilation Units:	***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 Envitronmental Information (NCEI) and can be retrieved via http://www.ncei.noaa.gov/.

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Descriptive Report to Accompany Survey H12940

Project: OPR-Q328-FA-16

Locality: Unalaska Island

Sublocality: Vicinity of Constantine Bay and Split Top Mt

Scale: 1:20000

August 2016 - August 2016

NOAA Ship *Fairweather*

Chief of Party: CDR Mark Van Waes, NOAA

A. Area Surveyed

The survey area is located along the North Coast of Unalaska Island within the sub locality of Vicinity of Constantine Bay and Split Top Mt.

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
53° 58' 49.52" N 166° 31' 22.09" W	53° 55' 40.94" N 166° 24' 28.48" W

Table 1: Survey Limits

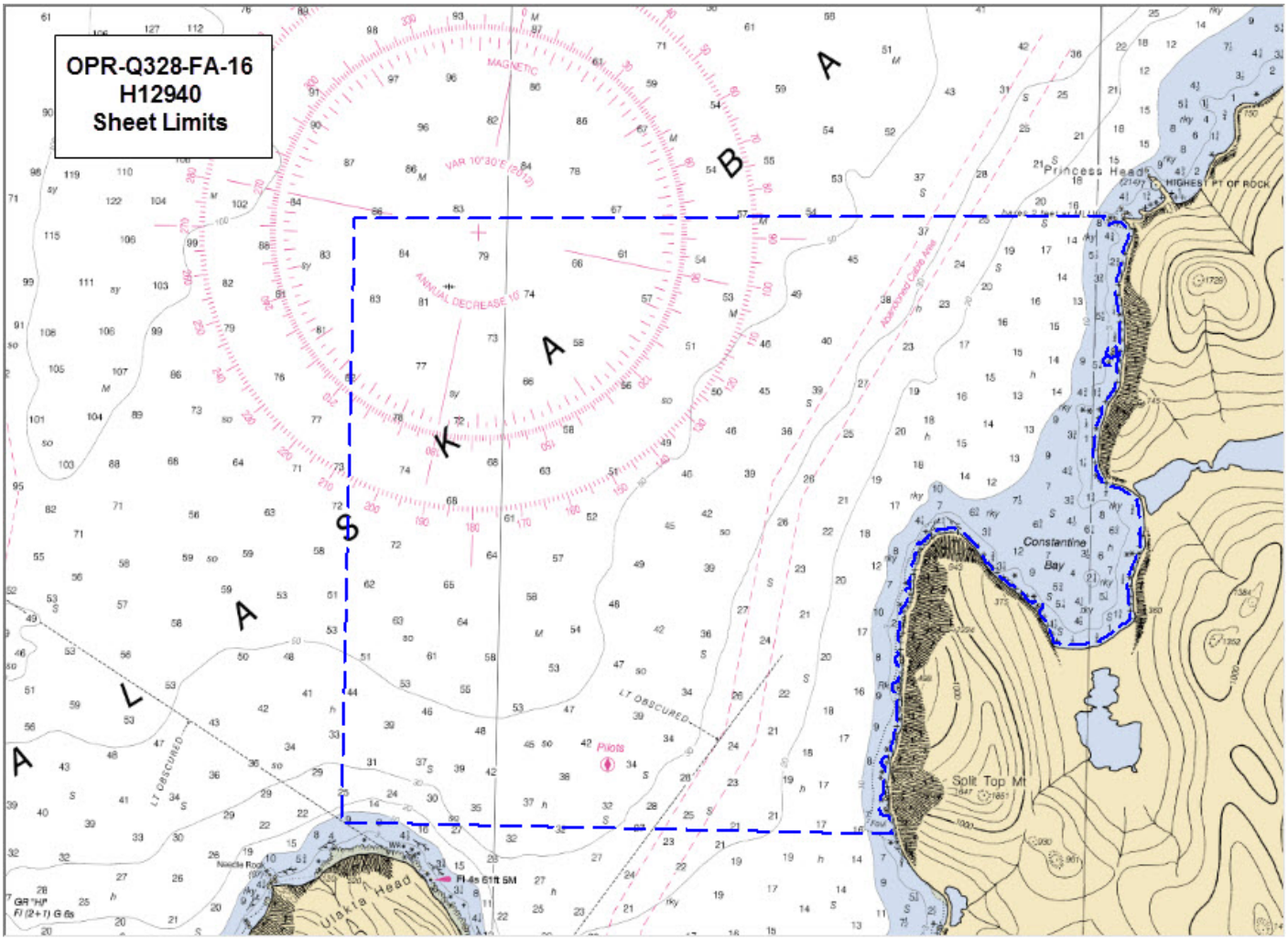


Figure 1: H12940 sheet limits (in blue) overlaid onto Chart 16528

Data were acquired to the survey limits in accordance with the requirements in the Project Instructions and the March 2016 NOS Hydrographic Surveys Specifications and Deliverables (HSSD) as shown in Figure 1. In all areas where the 4-meter depth contour or the sheet limits were not met, the Navigable Area Limit Line (NALL) was defined as the inshore limit of bathymetry due to the risks of maneuvering the survey vessel in close proximity to the steep and rocky shoreline or heavy kelp. An example of such an area is shown in Figure 2.

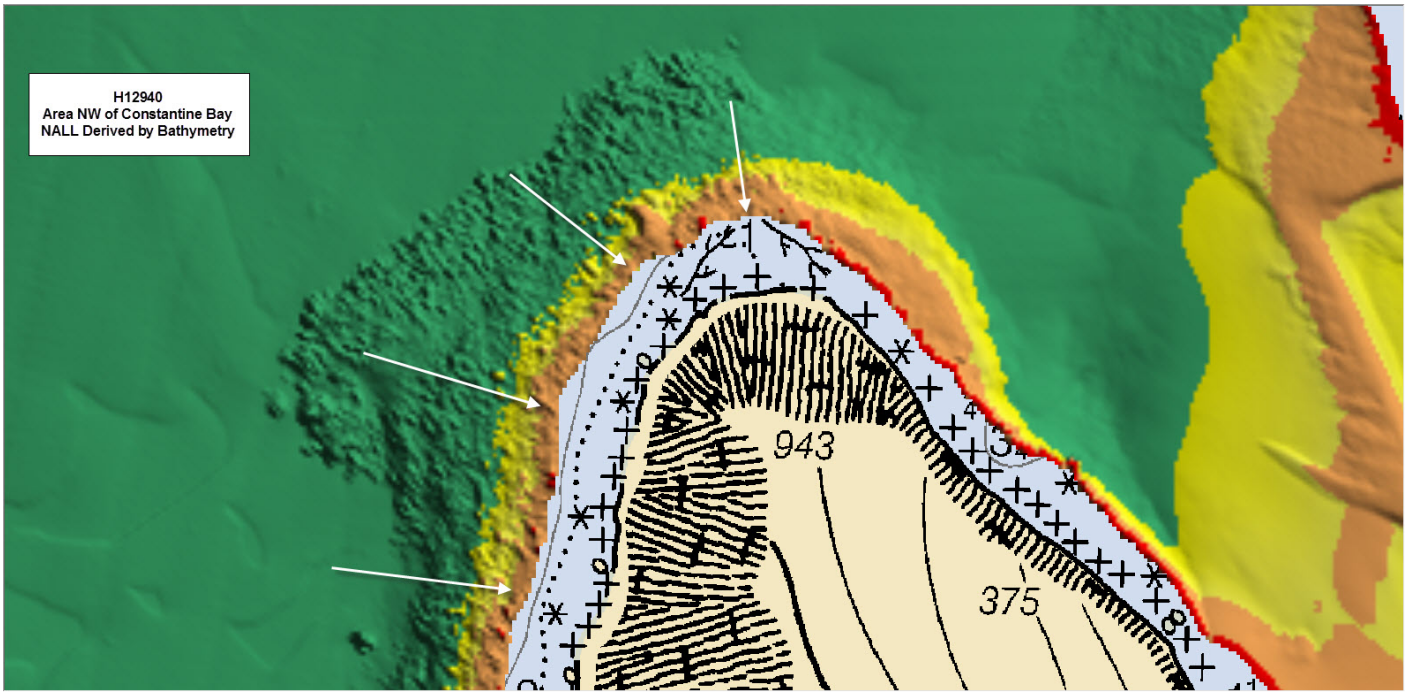


Figure 2: H12940 Area NW of Constantine Bay where the NALL was defined by coverage due to being foul with kelp and rocks

A.2 Survey Purpose

The purpose of this project is to provide contemporary surveys to update National Ocean Service nautical charting products in a high commercial traffic area. This project covers approximately 10 square nautical miles (SNM). This survey is a response to the USCG's request for a hydrographic survey after the July 2015 grounding of a polar ice class vessel, in addition to addressing local pilot requests for modern hydrography to support an increasing amount of vessel traffic in the area.

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

Data acquired in H12940 meet multibeam echo sounder (MBES) coverage requirements for complete coverage, as required by the HSSD. This includes crosslines (see Section B.2.1), NOAA allowable uncertainty (see Section B.2.10), and density requirements (see Section B.2.11). Additional compliance statistics can be found in the Standards and Compliance Review located in Appendix II of this report.

A.4 Survey Coverage

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

Water Depth	Coverage Required
Inshore limit to 8 meters water depth	Either complete coverage or multibeam set line spacing at 25m, as identified in the PRF by CTNARE areas. Refer to HSSD Sections 5.2.2.3, 5.2.2.4, and 5.2.2.1.
Greater than 8m water depth	Complete coverage. Refer to HSSD Section 5.2.2.3 (Option A).

The entirety of H12940 was completed with complete coverage MBES with backscatter meeting the requirements listed above and in the HSSD, see Figure 3 for an overview of coverage.

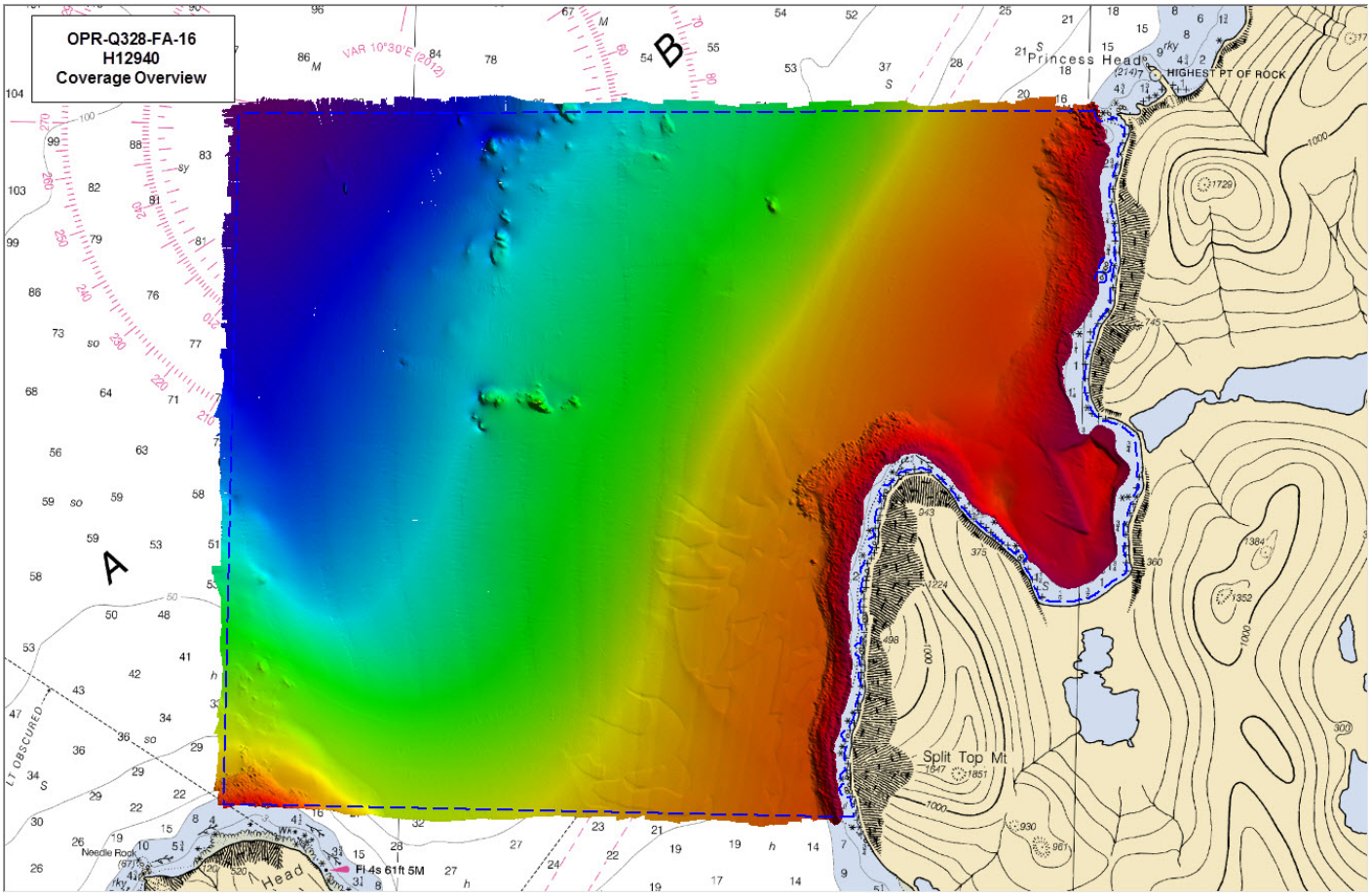


Figure 3: H12940 Survey Coverage Overview

A.5 Survey Statistics

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

	HULL ID	*2805*	*2806*	*2807*	*Total*
LNM	**SBES Mainscheme**	0	0	0	0
	MBES Mainscheme	87.33	56.94	38.49	182.76
	Lidar Mainscheme	0	0	0	0
	SSS Mainscheme	0	0	0	0
	SBES/SSS Mainscheme	0	0	0	0
	MBES/SSS Mainscheme	0	0	0	0
	SBES/MBES Crosslines	1.83	9.11	0	10.94
	Lidar Crosslines	0	0	0	0
Number of Bottom Samples					4
Number Maritime Boundary Points Investigated					0
Number of DPs					0
Number of Items Investigated by Dive Ops					0
Total SNM					10.63

Table 2: Hydrographic Survey Statistics

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

Survey Dates	Day of the Year
08/12/2016	225
08/19/2016	232
08/20/2016	233
08/21/2016	234
08/22/2016	235
08/23/2016	236
08/24/2016	237
08/25/2016	238

Table 3: Dates of Hydrography

B. Data Acquisition and Processing

B.1 Equipment and Vessels

Refer to the OPR-Q328-FA-16 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	*2805*	*2806*	*2807*
LOA	8.64 meters	8.64 meters	8.64 meters
Draft	1.12 meters	1.12 meters	1.12 meters

Table 4: Vessels Used

B.1.2 Equipment

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

Manufacturer	Model	Type
RESON	7125	MBES
Applanix	POS/MV V4	Positioning and Attitude System
RESON	SVP71	Sound Speed System
SeaBird	19plus	Conductivity, Temperature, and Depth Sensor

Table 5: Major Systems Used

B.2 Quality Control

B.2.1 Crosslines

Crosslines acquired for this survey totaled 5.99% of mainscheme acquisition.

Crosslines were collected, processed and compared in accordance with Section 5.2.4.3 of the HSSD. To evaluate crosslines, an 8-meter CUBE surface using strictly mainscheme lines, and an 8-meter CUBE surface using strictly crosslines were created. From these two surfaces, a difference surface (mainscheme - crosslines = difference surface) was generated at an 8-meter resolution (Figure 4), and is submitted in the Separates II Digital Data folder. Statistics show the mean difference between the depths derived from mainscheme and crosslines was -0.01 meters (with mainscheme being shoaler/deeper) and 95% of nodes falling within 0.42 meters (Figure 5). For the respective depths, the difference surface was compared to the allowable NOAA accuracy standards (Figure 6). In total, 99.88% of the depth differences between H12940 mainscheme and crossline data were within allowable NOAA uncertainties (Figure 7).

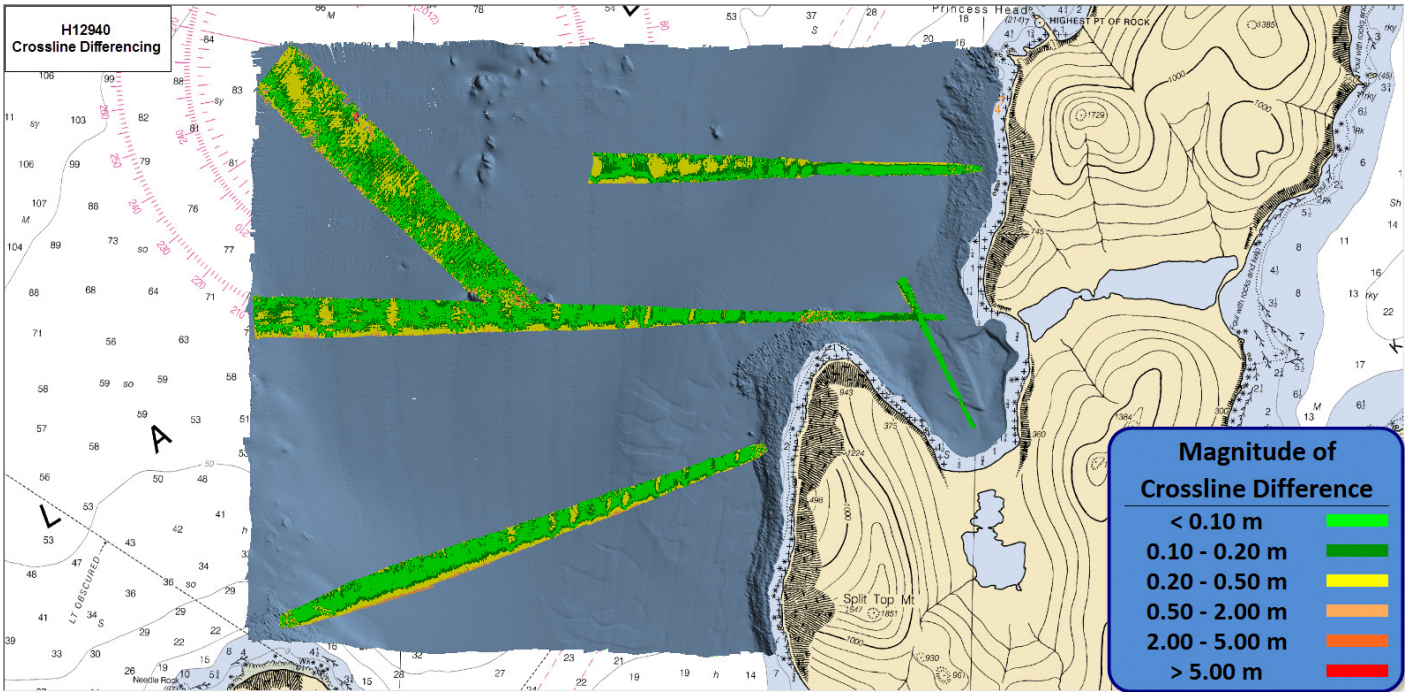
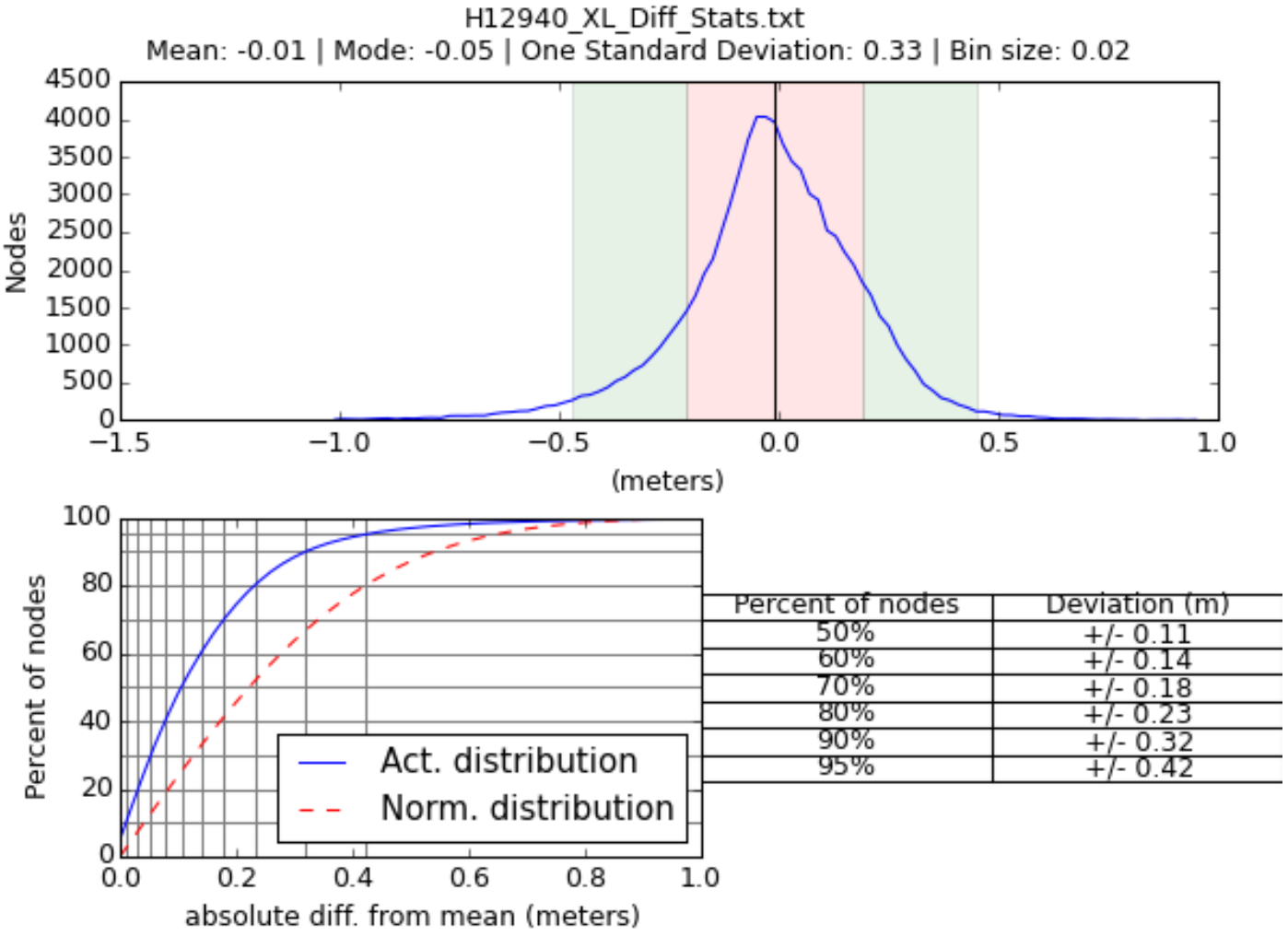


Figure 4: H12940 Crossline Difference Overview



Percent of nodes	Deviation (m)
50%	+/- 0.11
60%	+/- 0.14
70%	+/- 0.18
80%	+/- 0.23
90%	+/- 0.32
95%	+/- 0.42

Figure 5: H12940 Mainscheme and Crossline Difference Statistics

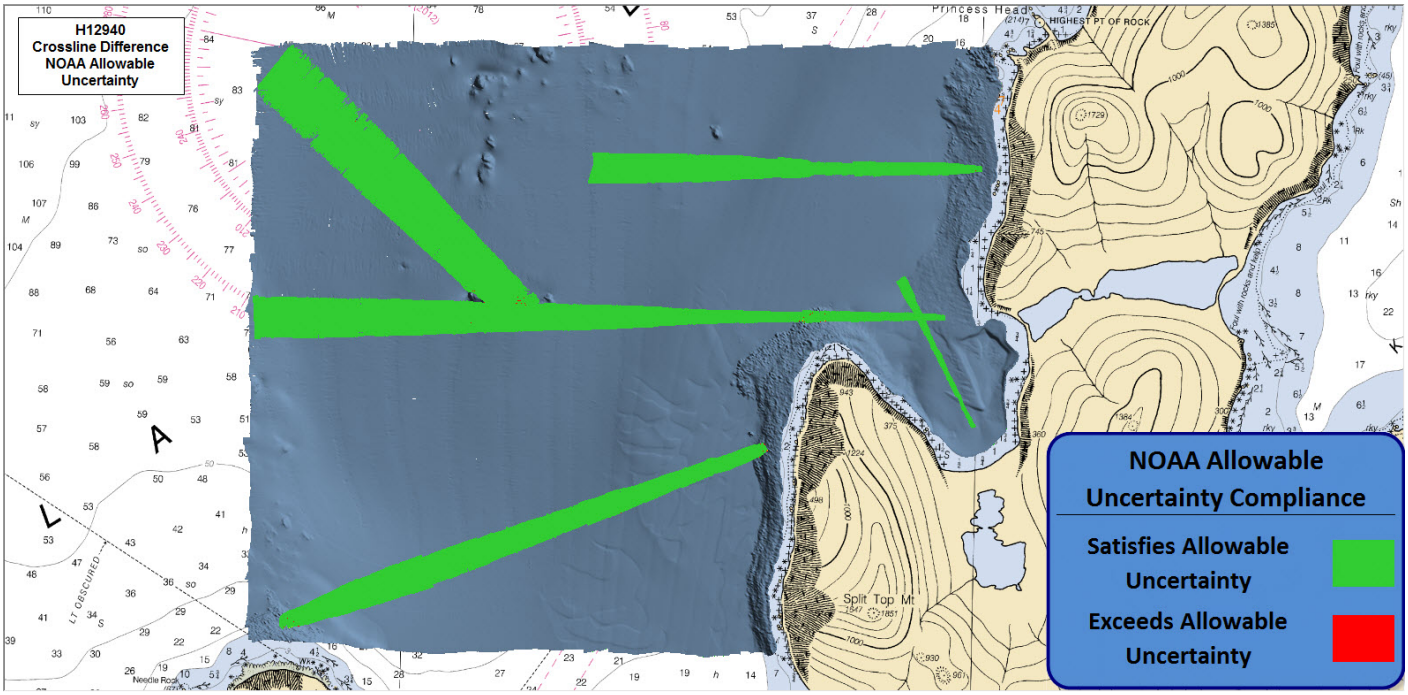


Figure 6: H12940 Crossline Difference vs. Allowable NOAA Uncertainty

H12940 Crossline Differencing NOAA Allowable Uncertainty

Total Nodes	Passed Nodes	Failed Nodes
79,451	79,359	92
Percentage Nodes Passed		99.88%
Percentage Nodes Failed		0.12%

Figure 7: H12940 Crossline Difference NOAA Allowable Uncertainty Statistics

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Measured	Zoning	Method
0 meters	0.061 meters	Discrete Zoning
0 meters	0.04 meters	ERS via PMVD

Table 6: Survey Specific Tide TPU Values.

Hull ID	Measured - CTD	Measured - MVP	Surface
2805	2 meters/second		0.5 meters/second
2806	2 meters/second		0.5 meters/second
2807	2 meters/second		0.5 meters/second

Table 7: Survey Specific Sound Speed TPU Values.

In addition to the usual a priori estimates of uncertainty provided via device models for vessel motion, discrete zoning tides, ERZT, and PMVD, real-time and post-processed uncertainty sources were also incorporated into the depth estimates of survey H12940. Real-time uncertainties were provided via Reson 7125 MBES data, and Applanix Delayed Heave RMS. Following post-processing of vessel motion, real time uncertainties of vessel roll, pitch, gyro and navigation were applied in CARIS HIPS and SIPS via a Smoothed Best Estimate of Trajectory (SBET) RMS file generated in Applanix POSPac.

B.2.3 Junctions

H12940 junctions with two adjacent surveys from this project, H12937, and H12939 as shown in Figure 8. Data overlap between all surveys was achieved. These areas of overlap between surveys were reviewed with CARIS HIPS and SIPS by surface differencing (at equal resolutions) to assess surface agreement. The multibeam data were also examined in CARIS Subset Editor for consistency and agreement. The junctions with H12940 are generally within the NOAA allowable uncertainty in their areas of overlap. For all junctions with H12940, a negative difference indicates H12940 was shoaler, and a positive difference indicates H12940 was deeper.

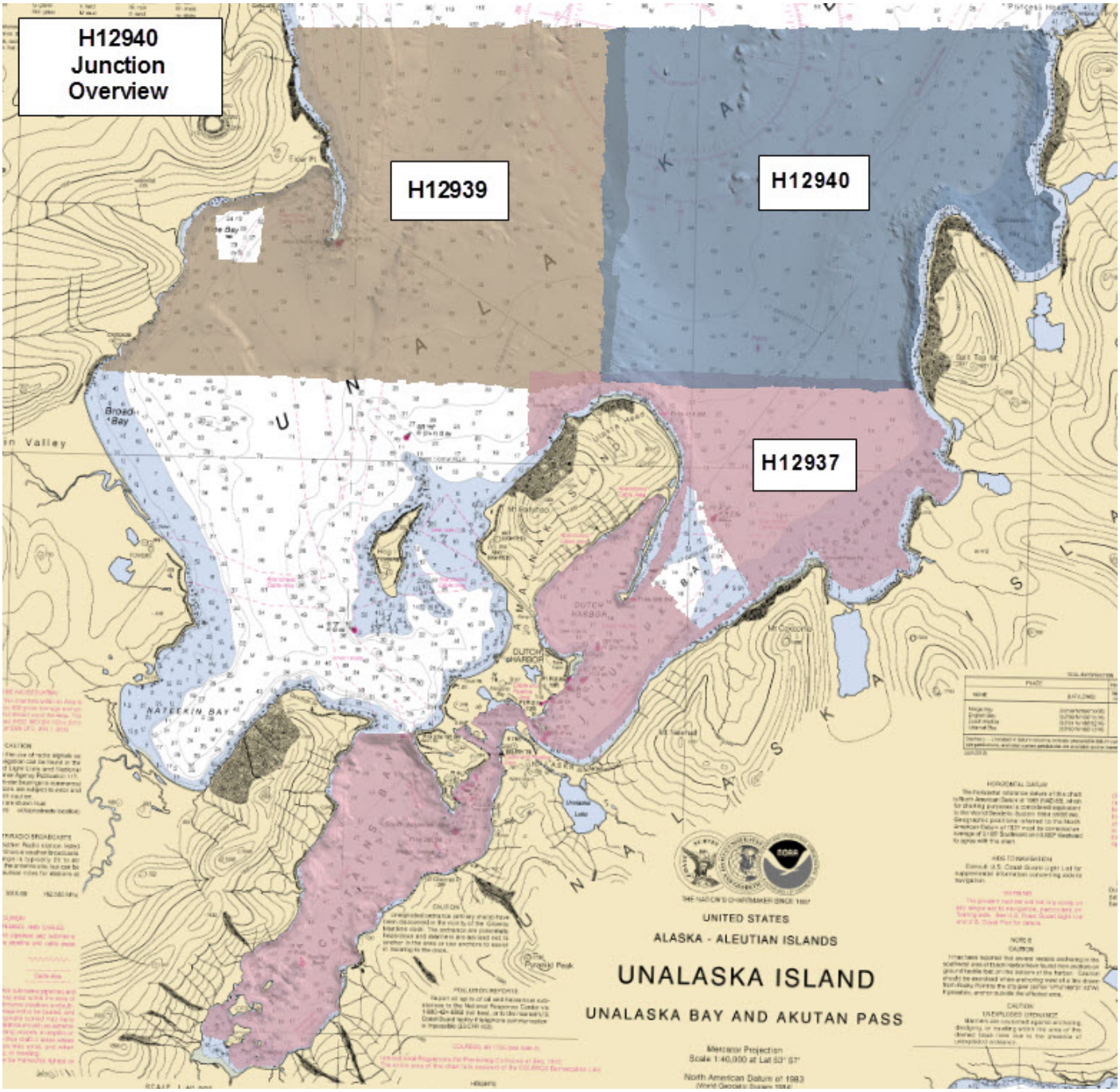


Figure 8: H12940 Overview of junction surveys

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H12937	1:5000	2016	NOAA Ship FAIRWEATHER	S
H12939	1:20000	2016	NOAA Ship FAIRWEATHER	W

Table 8: Junctioning Surveys

H12937

Surface differencing in CARIS HIPS and SIPS was used to assess junction agreement between the 8-meter combined surface from H12940 and the 8-meter combined surface from H12937. The statistical analysis of the difference surface shows a mean of -0.03 meters with 95% of all nodes having a maximum deviation of +/- 0.35 meters, as seen in Figure 10. A detailed graphical overview can be seen in Figure 9. In addition, a comparison surface was created between the difference surface and the NOAA allowable uncertainty (Figure 11). It was found that 99.87% of nodes are within NOAA allowable uncertainty (Figure 12).

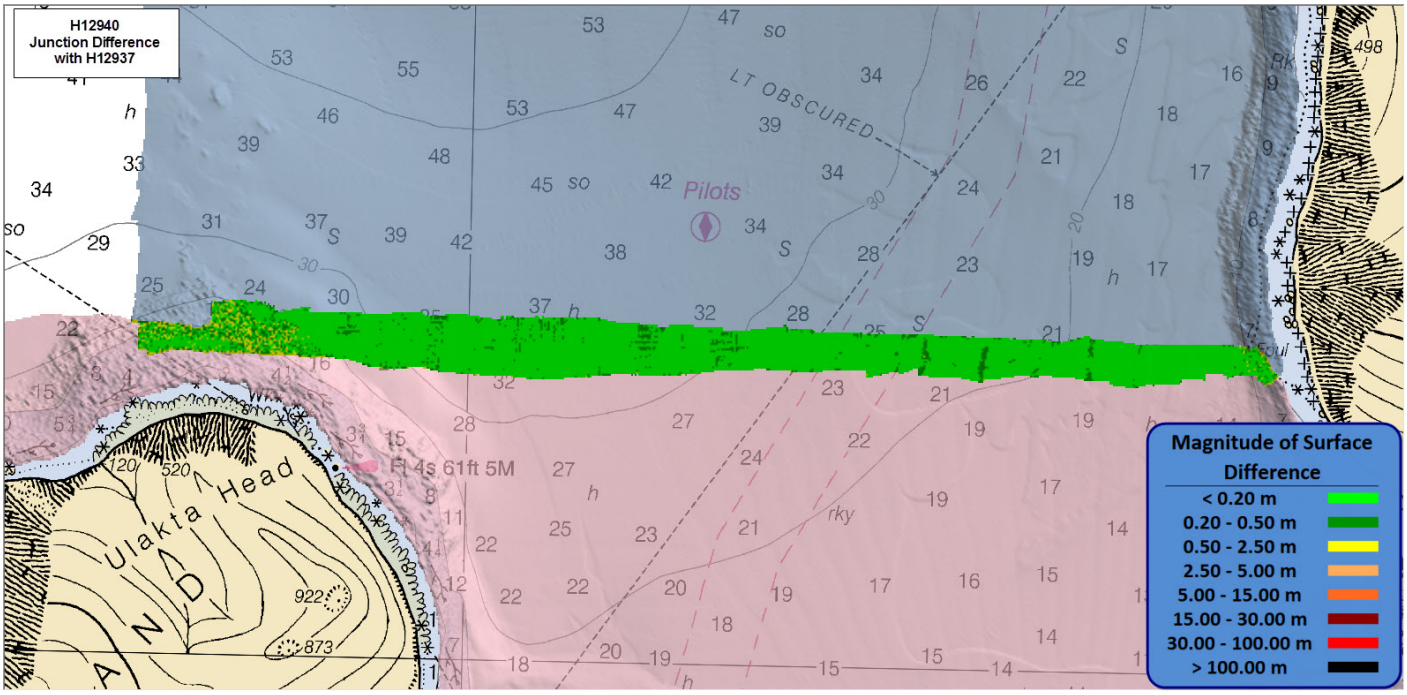
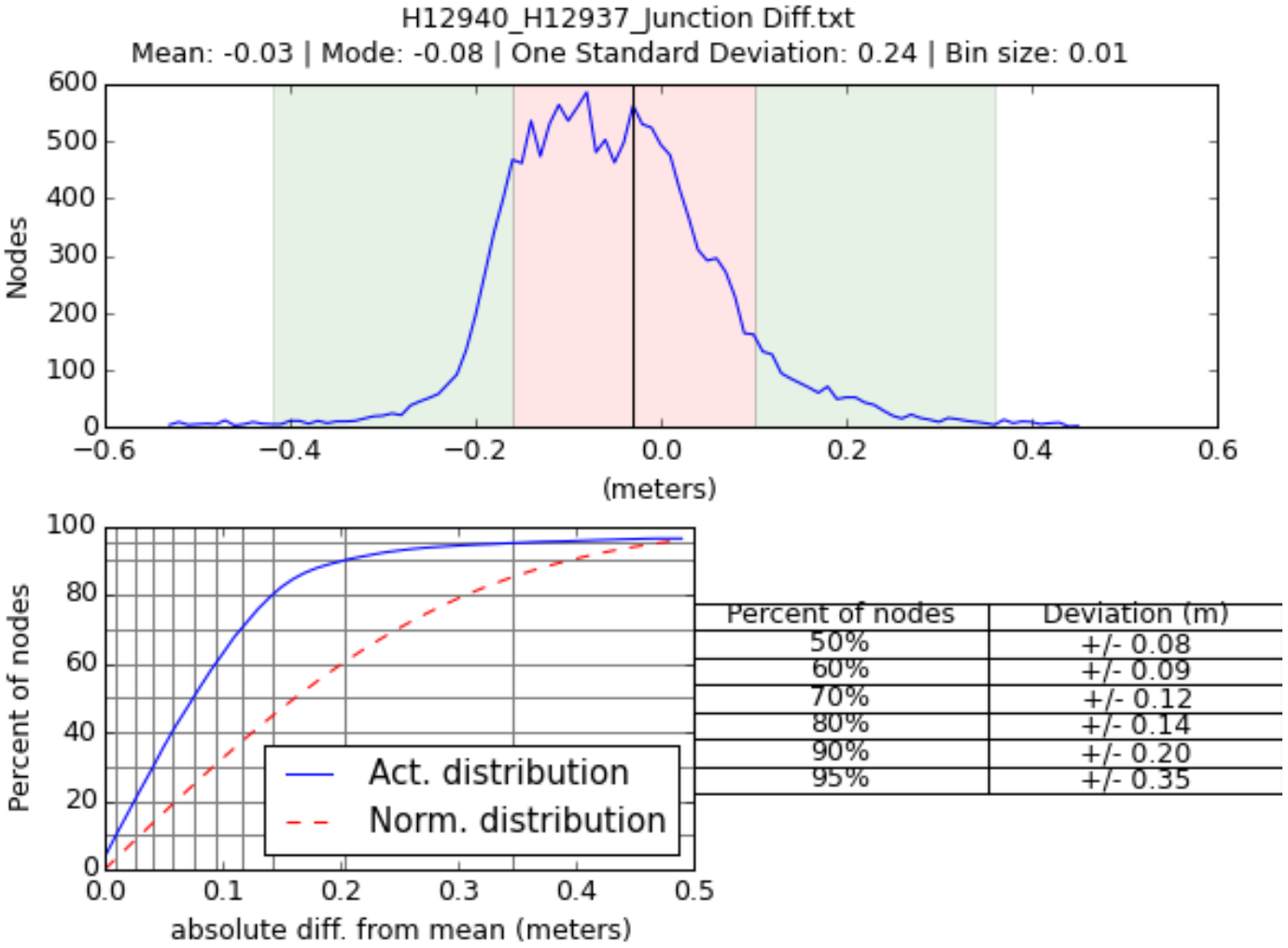


Figure 9: H12940 Junction Difference with H12937



Percent of nodes	Deviation (m)
50%	+/- 0.08
60%	+/- 0.09
70%	+/- 0.12
80%	+/- 0.14
90%	+/- 0.20
95%	+/- 0.35

Figure 10: H12940 Junction with H12937 Difference Statistics

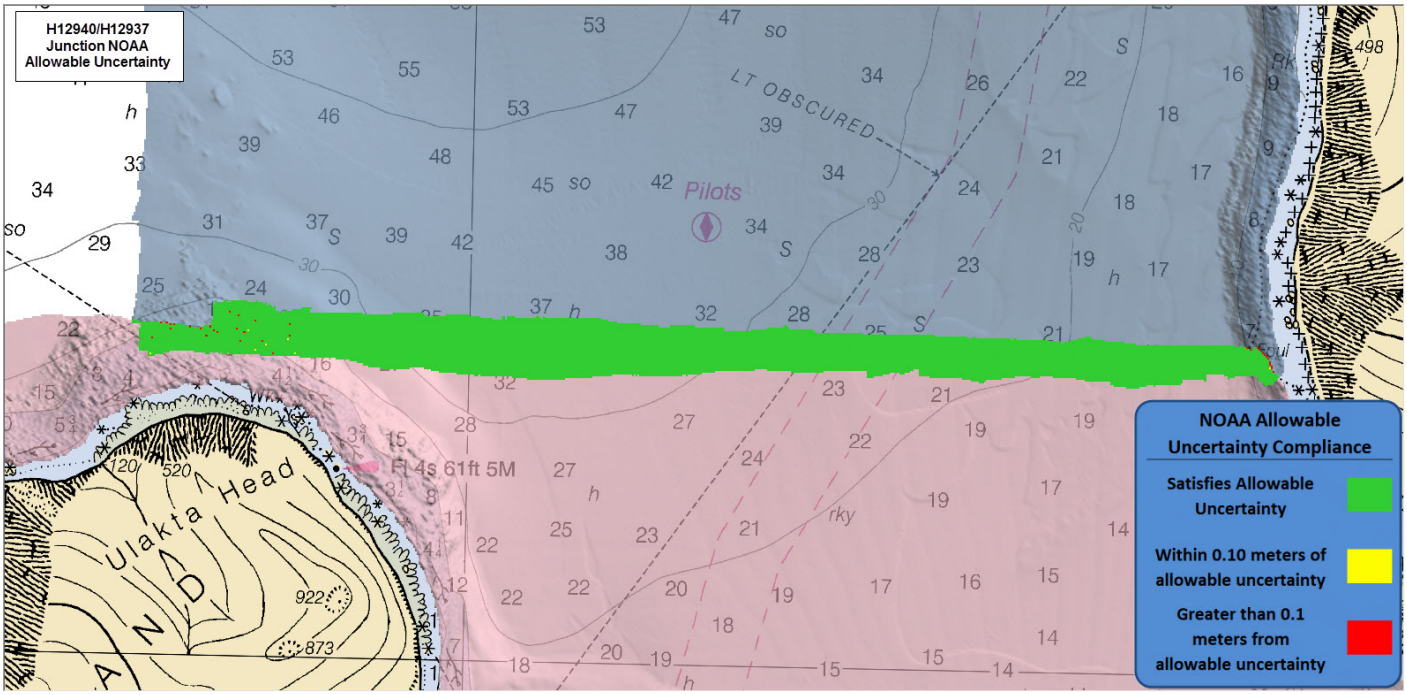


Figure 11: H12940 Junction with H12937 NOAA Allowable Uncertainty

H12940 Junction Differencing with H12937 NOAA Allowable Uncertainty

Total Nodes	Passed Nodes	Failed Nodes
15,529	15,509	20
Percentage Nodes Passed		99.87%
Percentage Nodes Failed		0.13%

Figure 12: H12940 Junction with H12937 NOAA Allowable Uncertainty Statistics

H12939

Surface differencing in CARIS HIPS and SIPS was used to assess junction agreement between the 8 meter combined surface from H12940 and the 8 meter combined surface from H12939. The statistical analysis of the difference surface shows a mean of 0.00 meters with 95% of all nodes having a maximum deviation of +/- 0.54 meters, as seen in Figure 14. A detailed graphical overview can be seen in Figure 13. In addition, a comparison surface was created between the difference surface and the NOAA allowable uncertainty (Figure 15). It was found that 99.57% of nodes are within NOAA allowable uncertainty (Figure 16).

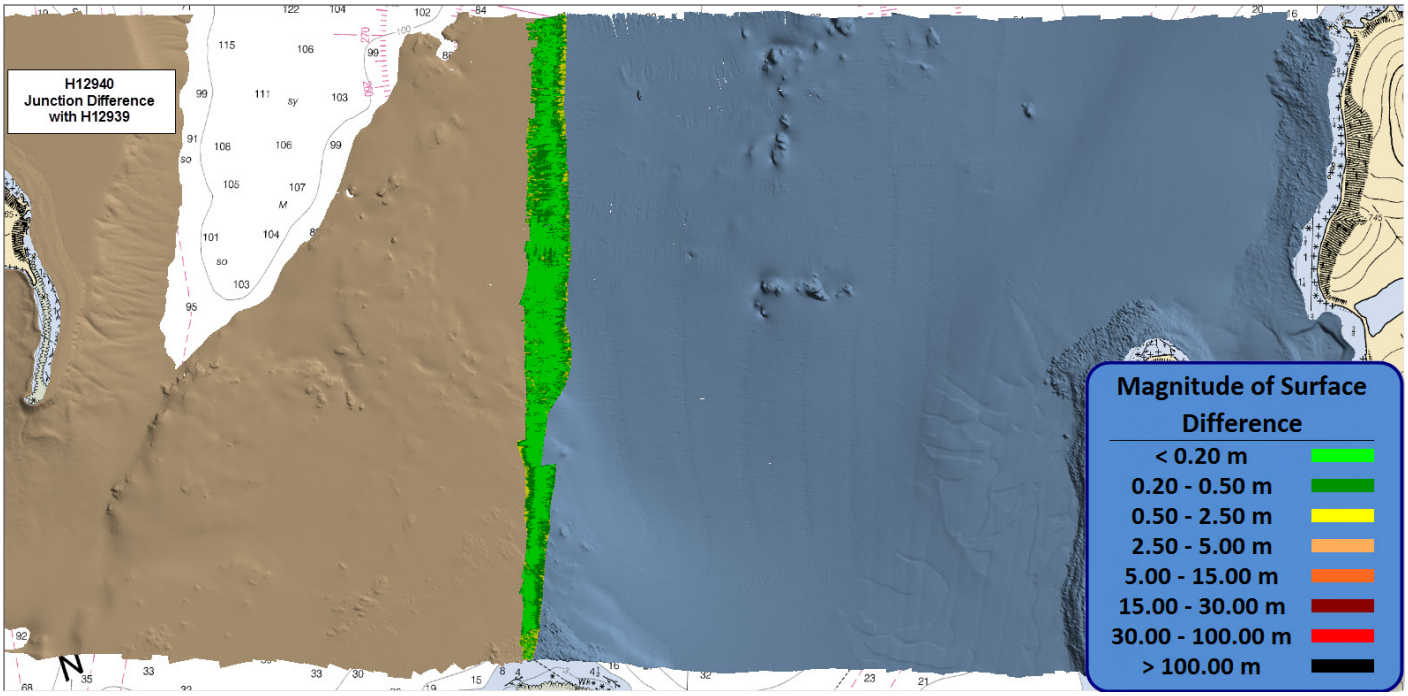
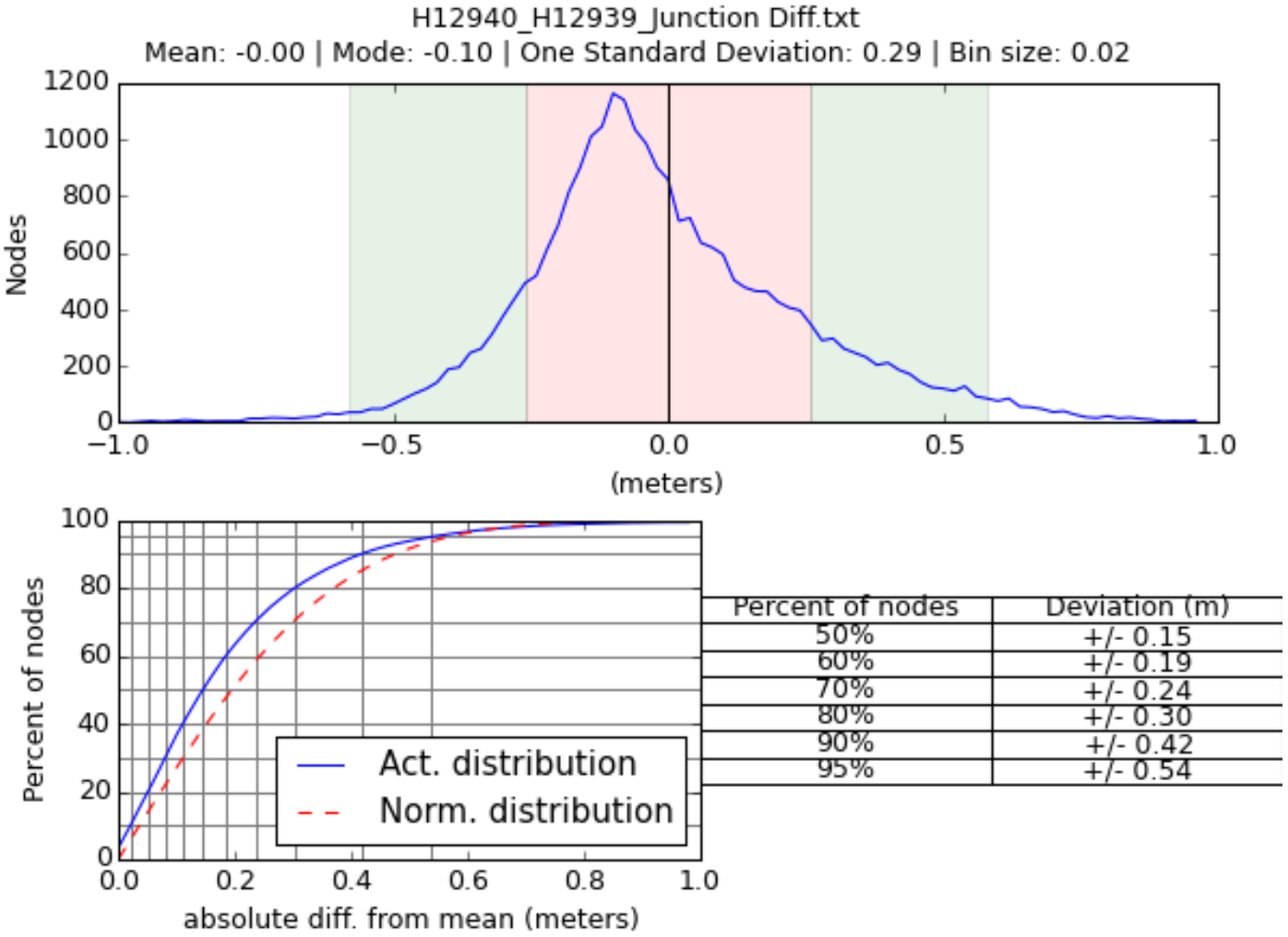


Figure 13: H12940 Junction Difference with H12939



Percent of nodes	Deviation (m)
50%	+/- 0.15
60%	+/- 0.19
70%	+/- 0.24
80%	+/- 0.30
90%	+/- 0.42
95%	+/- 0.54

Figure 14: H12940 Junction with H12939 Difference Statistics

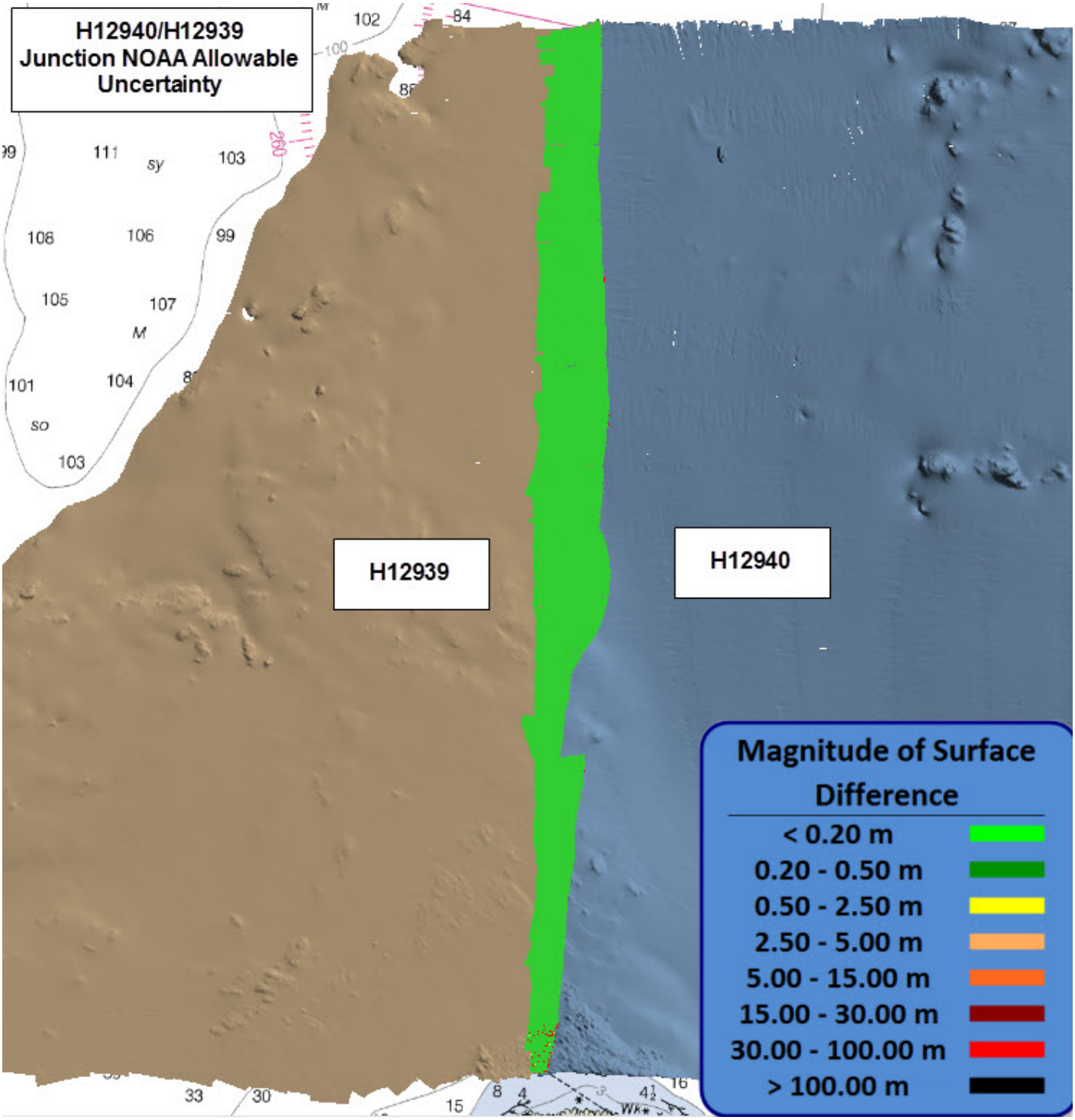


Figure 15: H12940 Junction with H12939 NOAA Allowable Uncertainty

H12940 Junction Differencing with H12939 NOAA Allowable Uncertainty

Total Nodes	Passed Nodes	Failed Nodes
25,599	25,490	109
Percentage Nodes Passed		99.57%
Percentage Nodes Failed		0.43%

Figure 16: H12940 Junction with H12939 NOAA Allowable Uncertainty Statistics

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

Sea State

During acquisition on survey H12939, the survey launches experienced periods of high sea-state from weather that caused excessive pitch and roll. The results of pitch and roll were areas of low density in the multibeam data as seen in Figure 17. Spurious soundings were rejected in Subset Editor in CARIS HIPS and SIPS and the data meets HSSD density requirements.

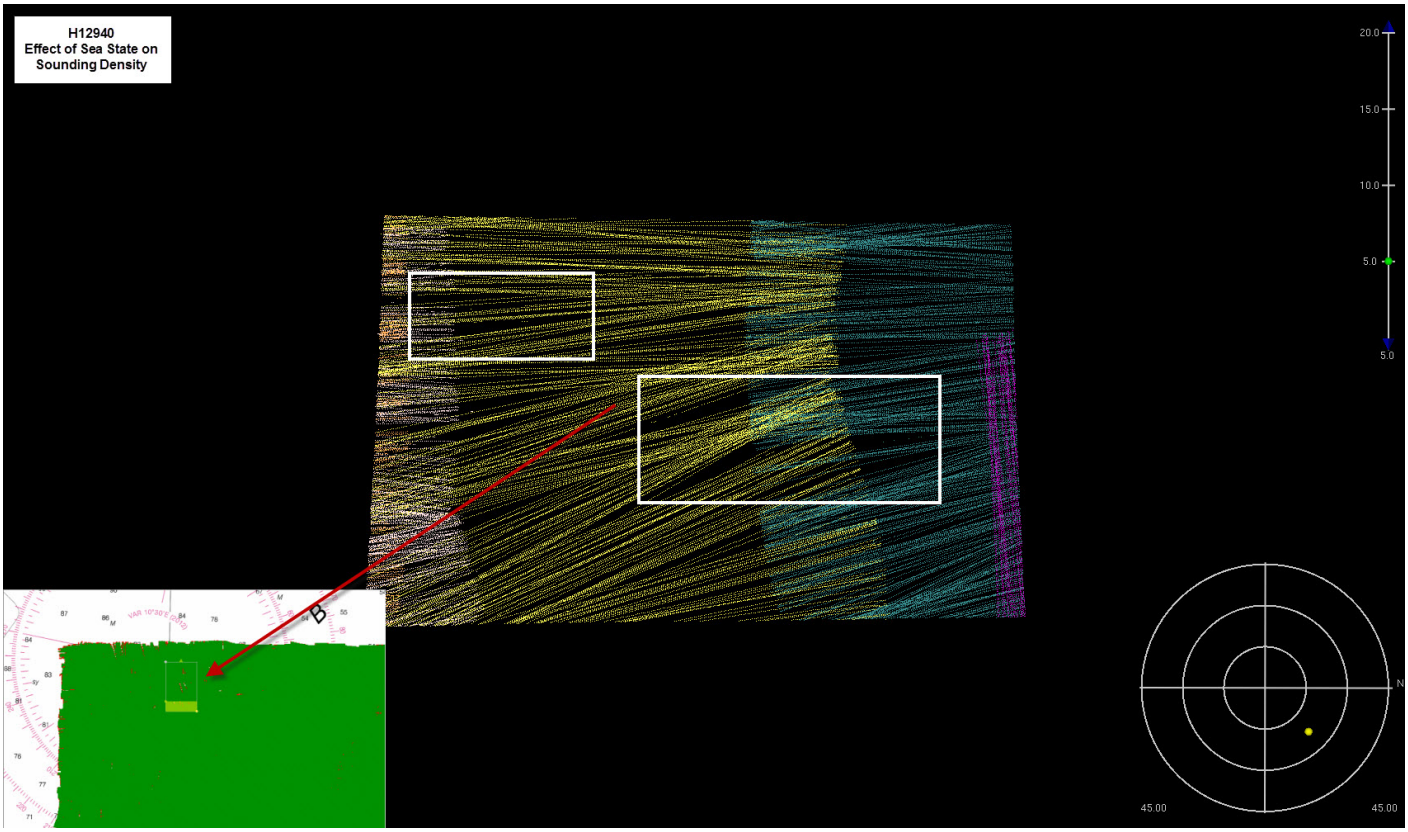


Figure 17: H12940 Effect of Sea State on Sounding Density

B.2.7 Sound Speed Methods

Sound Speed Cast Frequency: Casts were conducted at a minimum of at least one per every 4 hours during launch acquisition. Casts were conducted more often in areas where the influx of freshwater had an effect on the speed of sound in the water column and when there was a change in surface sound velocity greater than two meters per second. All sound speed methods were used as detailed in the DAPR.

B.2.8 Coverage Equipment and Methods

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

B.2.9 Holidays

H12940 data were reviewed in CARIS HIPS and SIPS for holidays in accordance with Section 5.2.2.3 of the HSSD. One holiday which meets the 3 by 3 node definition was identified via Pydro QC Tools Holiday Finder tool. This tool automatically scans finalized surfaces for holidays as defined in the HSSD and was run in conjunction with a visual inspection of all surfaces by the Hydrographer. Although other apparent holidays were flagged by Holiday Finder, they were examined and were determined to be from areas where

an adjoining finalized surfaces covered the gap (e.g., a holiday in the 2m finalized surface was covered by the 1m finalized surface due to the area being shoaler than the depth range for the 2m surface) as shown in Figure 18.

The one holiday identified is present at the inshore limits of H12940 and is a result of sparse outer beam data while launches developed the inshore limit of safe navigation (NALL), as shown in Figure 19.

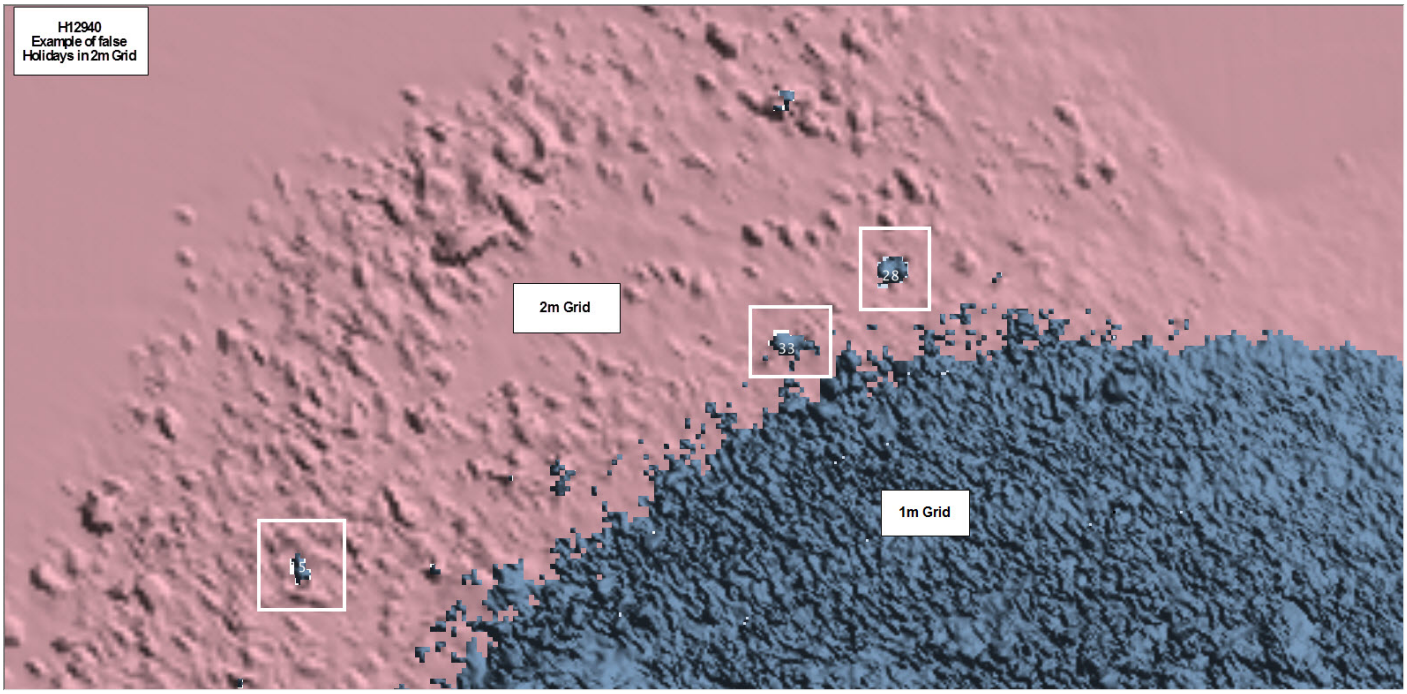


Figure 18: H12940 False Holidays in Overlapping Grids

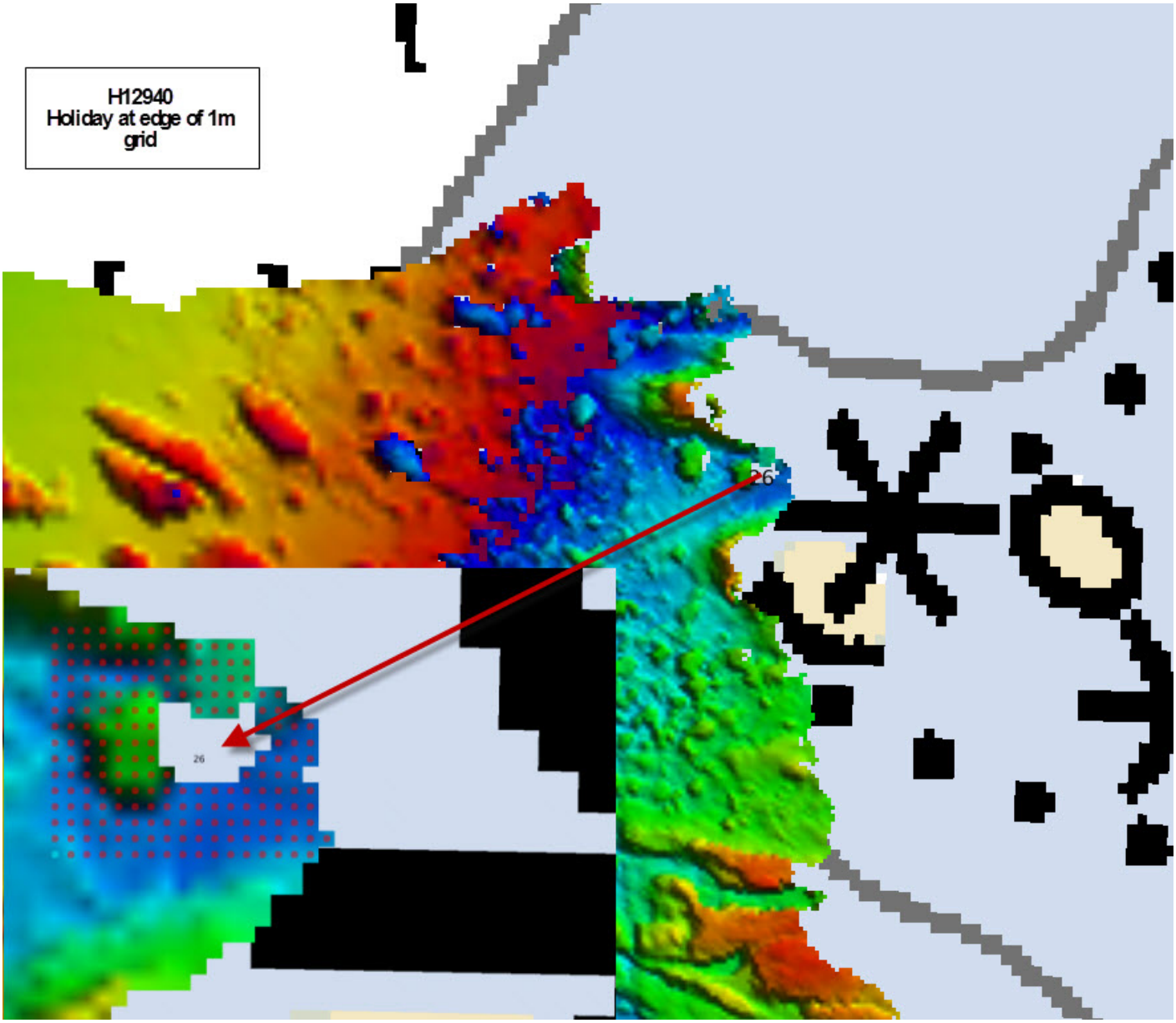


Figure 19: H12940 Holiday at Edge of 1m Grid

The holiday shown in Figure 19 lies outside of the survey limits.

B.2.10 NOAA Allowable Uncertainty

To verify that all data meets the accuracy specifications as stated in HSSD Section 5.1.3, a child layer titled "NOAA_Allowable_1" was created for each of the 1-meter, 2-meter, 4-meter, and 8-meter (72-100m) and "NOAA_Allowable_2" for the 8-meter (100-160m) finalized surfaces using the equations stated in Section C. 2.1 of the DAPR. These surfaces were then analyzed using the Pydro QC Tools Grid QA feature to determine what percentage of each surface meets specifications. Figure 20 shows an overview of the NOAA Allowable Uncertainty layers for all surfaces. Figure 21 shows the corresponding statistics for each individual surface. Overall, 99.97% of nodes with all surfaces meet or exceed NOAA Allowable Uncertainty

specifications for H12940. For individual graphs per surface of density requirements, see the Standards and Compliance Review located in Appendix II.

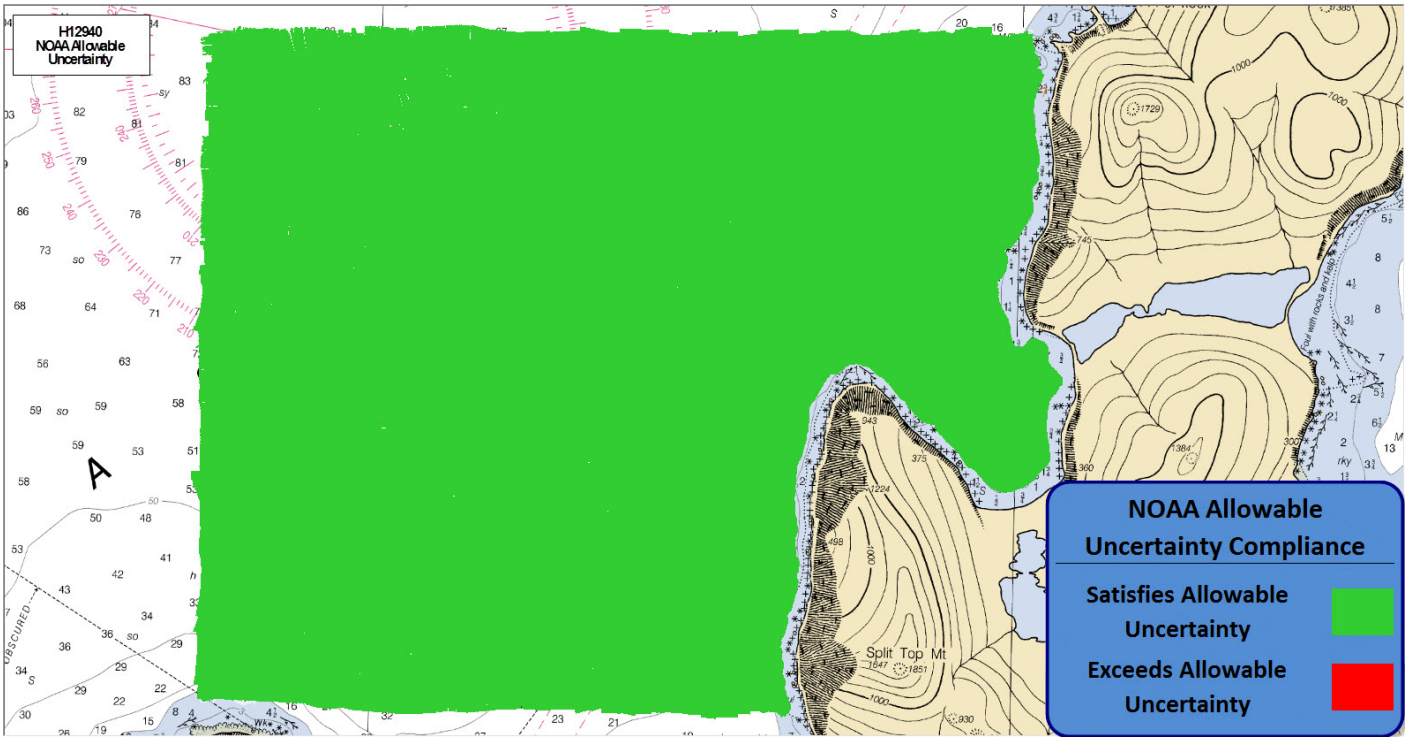


Figure 20: H12940 NOAA Allowable Uncertainty Overview

H12940 NOAA Allowable Uncertainty

	Total Nodes	Passed Nodes	Percent Pass
1m	2,876,305	2,875,292	99.96%
2m	1,689,525	1,689,210	99.98%
4m	677,113	677,078	99.99%
8m	304,423	304,381	99.99%
	Total Nodes		5,547,366
	Total Nodes Pass		5,545,961
	Total Percent Pass		99.97%

Figure 21: H12940 NOAA Allowable Uncertainty Statistics

B.2.11 Density

Finalized surfaces were analyzed using the Pydro QC Tools Grid QA feature and the results are shown in the figures below. Density requirements for H12940 were achieved with at least 99.88% of finalized surface nodes containing five or more soundings as required by HSSD Section 5.2.2.3. Figure 23 shows the corresponding statistics for each individual surface.The few nodes that did not meet density requirements are due to sparse data caused by heavy seas, which is addressed in Section B.2.6 Factors Affecting Soundings, and at the edges of the survey limits as shown in Figure 22. For individual graphs (per surface) of density requirements, see the Standards and Compliance Review located in Appendix II.

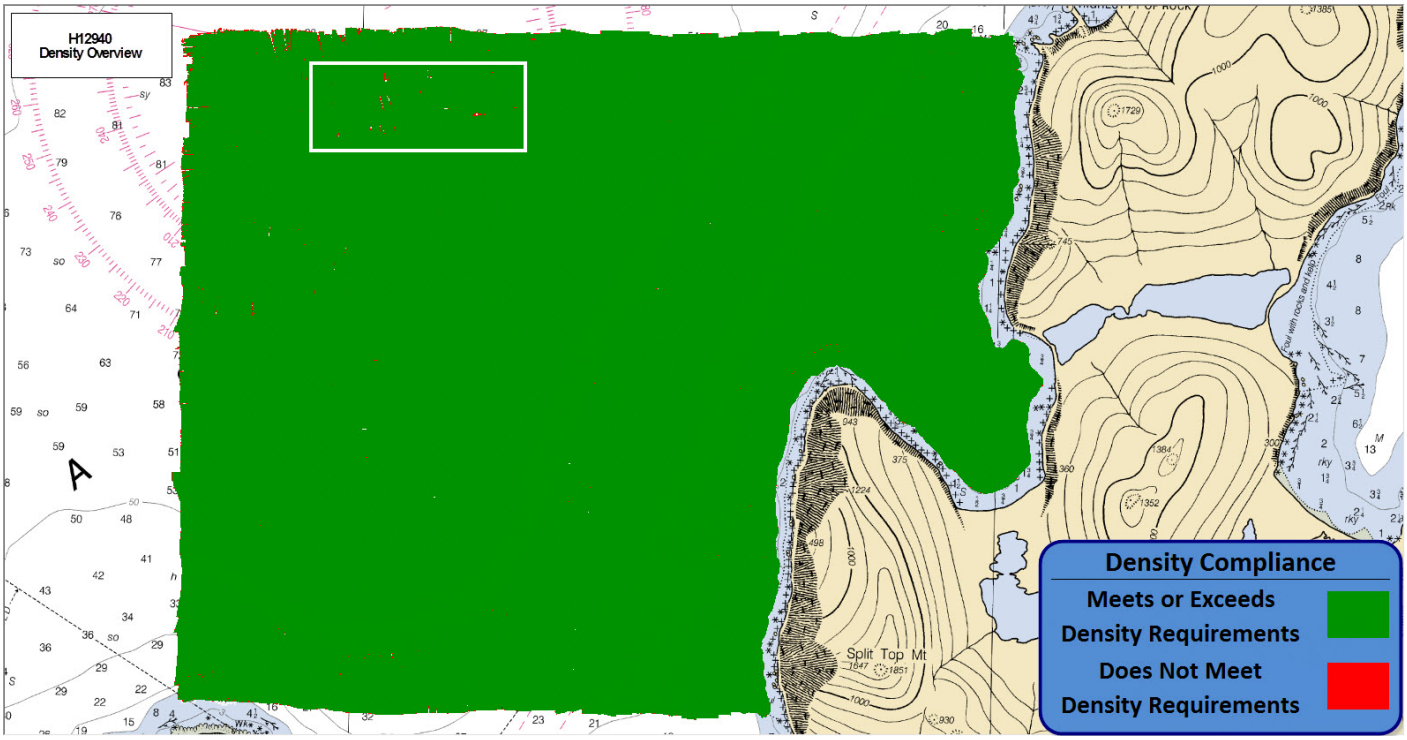


Figure 22: H12940 Density Overview (Highlighted area shows low density caused by heavy seas)

H12940 Density Statistics

	Total Nodes	Passed Nodes	Percent Pass
1m	2,876,305	2,872,617	99.87%
2m	1,689,525	1,688,528	99.94%
4m	677,113	676,335	99.89%
8m	304,423	303,464	99.68%
	Total Nodes		5,547,366
	Total Nodes Pass		5,540,944
	Total Percent Pass		99.88%

Figure 23: H12940 Density Statistics

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

Raw Backscatter was logged as a 7k file and has been processed and the corresponding mosaics, tiffs, projects and GSF files have been sent to the Processing Branch. Backscatter was processed by the field unit to review data quality as well as modify bottom sample locations. Figure 24 shows an overview of the mosaic created from H12940 survey data.

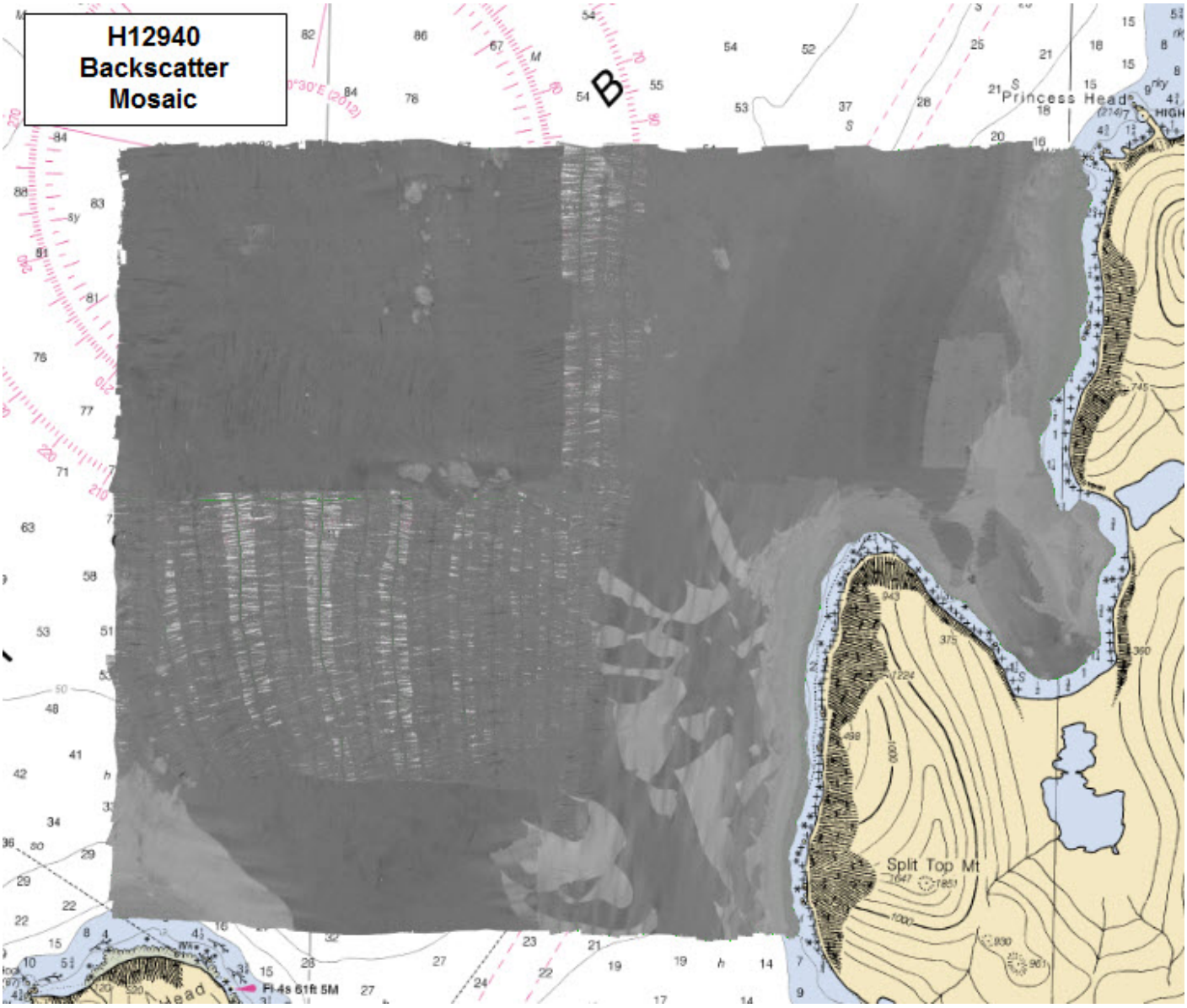


Figure 24: H12940 Backscatter Mosaic

B.5 Data Processing

B.5.1 Primary Data Processing Software

The following software program was the primary program used for bathymetric data processing:

Manufacturer	Name	Version
Teledyne CARIS	HIPS and SIPS	9.1

Table 9: Primary bathymetric data processing software

The following software program was the primary program used for imagery data processing:

Manufacturer	Name	Version
QPS	Fledermaus FMGT	7.5.3

Table 10: Primary imagery data processing software

The following Feature Object Catalog was used: NOAA Extended Attribute Files version 5.4

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
H12940_MB_1m_MLLW	CUBE	1 meters	-	NOAA_1m	Complete MBES
H12940_MB_2m_MLLW	CUBE	2 meters	-	NOAA_2m	Complete MBES
H12940_MB_4m_MLLW	CUBE	4 meters	-	NOAA_4m	Complete MBES
H12940_MB_8m_MLLW	CUBE	8 meters	-	NOAA_8m	Complete MBES
H12940_MB_1m_MLLW_Final	CUBE	1 meters	0 meters - 20 meters	NOAA_1m	Complete MBES
H12940_MB_2m_MLLW_Final	CUBE	2 meters	18 meters - 40 meters	NOAA_2m	Complete MBES
H12940_MB_4m_MLLW_Final	CUBE	4 meters	36 meters - 80 meters	NOAA_4m	Complete MBES
H12940_MB_8m_MLLW_Final	CUBE	8 meters	72 meters - 160 meters	NOAA_8m	Complete MBES

Table 11: Submitted Surfaces

The NOAA CUBE parameters defined in the HSSD were used for the creation of all CUBE surfaces in Survey H12940. The surfaces have been reviewed where noisy data, or "fliers," are incorporated into the gridded solutions causing the surface to be shoaler or deeper than the true sea floor. Where these spurious soundings cause the gridded surface to be shoaler or deeper than the reliably measured seabed by greater

than the maximum allowable Total Vertical Uncertainty at that depth, the noisy data have been rejected by the Hydrographer and the surface recomputed.

Flier Finder v3, part of the QC Tools package within Pydro, was used to assist the search for spurious soundings following gross cleaning. Flier Finder was run multiple times for each surface, reducing the flier height value for each consecutive run. This allowed Flier Finder to accurately and quickly identify gross fliers, but as the flier height was reduced the effectiveness of the tool diminished. With smaller heights, Flier Finder began to incorrectly flag dynamic aspects of the seafloor such as steep drop offs and rocky areas as fliers resulting in hundreds of false positives. At this point, the hydrographer ceased using the tool and returned to manual cleaning for these dynamic regions of seafloor.

B.5.3 Data Logs

Data acquisition and processing notes are included in the acquisition and processing logs, and additional processing such as final tide and sound velocity application are noted in the H12940 Data Log spreadsheet. All data logs are submitted digitally in the Separates I folder.

B.5.4 Designated Soundings

H12940 contains 2 designated soundings in accordance with HSSD Section 5.2.1.2.3. One designated sounding represents a feature, and the remaining designated sounding was selected to accurately represent the seafloor. The second designated sounding is in a rocky area where the CUBE surface did not accurately depict the true seafloor (Figure 26) . Figure 25 shows an overview of the survey area and the location of designated soundings.

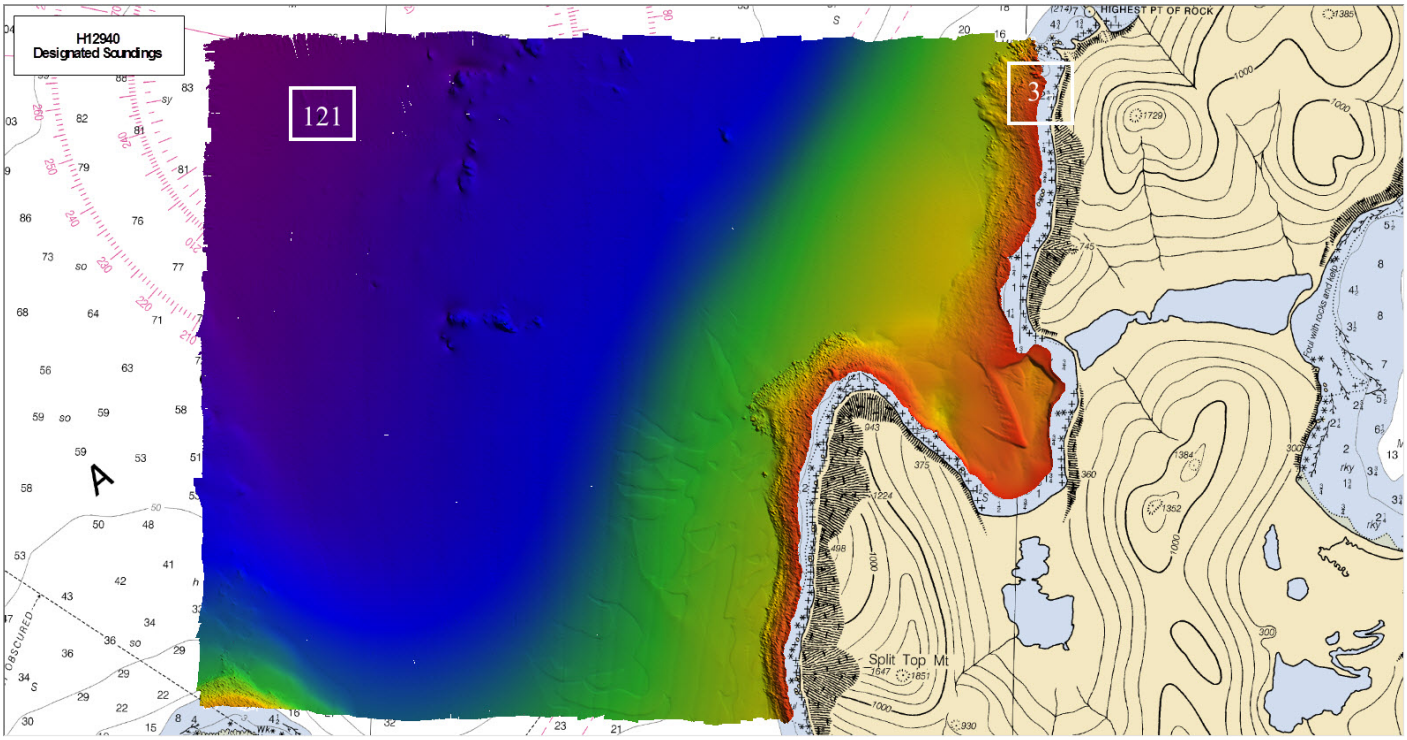


Figure 25: H12940 Designated Sounding Overview

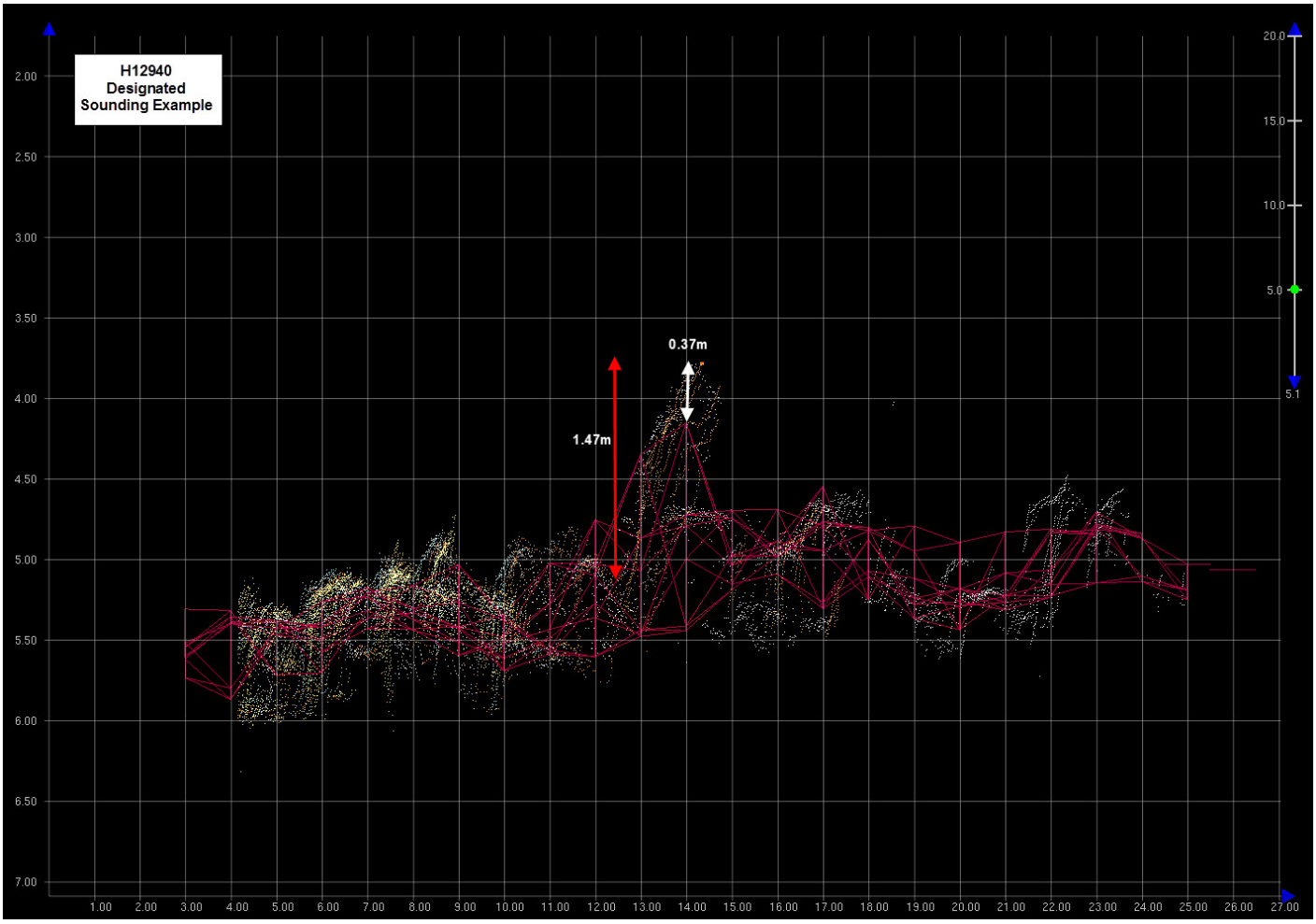


Figure 26: H12940 Example of Designated Sounding

C. Vertical and Horizontal Control

No control stations were installed by the field party, and as such, no Horizontal and Vertical Control Report (HVCR) is submitted with this report. All relevant discussion regarding horizontal and vertical control may be found in the discussion below.

C.1 Vertical Control

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

Traditional Methods Used:

Discrete Zoning

The following National Water Level Observation Network (NWLON) stations served as datum control for this survey:

Station Name	Station ID
Unalaska, AK	9462620

Table 12: NWLON Tide Stations

File Name	Status
9462620.tid	Final Approved

Table 13: Water Level Files (.tid)

File Name	Status
Q328FA2016CORP.zdf	Final

Table 14: Tide Correctors (.zdf or .tc)

A request for final approved tides was sent to N/OPS1 on 08/26/2016. The final tide note was received on 09/08/2016.

Initial reduction of acquired data to MLLW was accomplished via traditional tidal means using the discrete zoning provided by HSD-OPS. Following the successful application of SBETs and computation of an Ellipsoidally Referenced Zone Tide (ERZT) separation model, ERS methods were used for reducing data to MLLW.

Preliminary zoning was accepted as the final zoning for project OPR-Q328-FA-16.

ERS Methods Used:

ERS via Poor Mans VDATUM

Ellipsoid to Chart Datum Separation File:

Q328FA2016CORP_PMVDERZT_UTM-WGS84-8N_WGS84-MLLW_100m.csar

ERS methods were used as the final means of reducing H12940 to MLLW for submission. Data were initially reduced via traditional tidal means until an ERZT separation model could be calculated. This empirically derived model was then checked for consistency and compared to the Poor Man’s VDatum

(PMVD) separation model provided with the Project Instructions. The PMVD separation model was then vertically shifted such that the average difference between these two separation models is zero. This vertical shift de-biases the PMVD separation model, correcting for local offsets that cannot be effectively modeled by the PMVD. In areas where the PMVD model did not have sufficient coverage such as near shore areas, the ERZT separation model was appended to the PMVD model creating the composite ERZT/PMVD separation model listed above and used to reduce H12940 to MLLW. For further information see the ERS Capability Memo, submitted under a separate cover.

C.2 Horizontal Control

The horizontal datum for this project is WGS84 .

The projection used for this project is UTM Zone 3 North.

The following PPK methods were used for horizontal control:

Single Base

AV09 is a UNAVCO-PBO owned CORS station located at 53.8756361N, 166.541836W. Vessel kinematic data were post-processed using Applanix POSPac processing software and Single Base Positioning methods described in the DAPR. Smoothed Best Estimate of Trajectory (SBET) and associated error (RMS) data were applied to all MBES data in CARIS HIPS and SIPS. For further details regarding the processing and quality control checks performed see the H12940 POSPAC Processing Log spreadsheet located in the SBET folder with the GNSS data.

Hydrographic Technical Directive (HTD) 2016-3, which revises the horizontal datum requirement to NAD83, was released prior to acquisition for OPR-Q328-FA-16. The field unit conferred with HSD-OPS and a waiver was recieved to maintain WGS84 as the datum for submission. This correspondence has been included in Appendix II.

The following CORS Stations were used for horizontal control:

HVCR Site ID	Base Station ID
AV09	Haystack_AK2004

Table 15: CORS Base Stations

C.3 Additional Horizontal or Vertical Control Issues

3.3.1 WAAS

During real-time acquisition, launches 2805, 2806 and 2807 received correctors from the Wide Area Augmentation System (WAAS) for increased accuracies similar to USCG DGPS stations. WAAS and SBETs were the sole methods of positioning for survey H12940. No DGPS stations were available for real-time horizontal control.

D. Results and Recommendations

D.1 Chart Comparison

A comparison was performed between survey H12940 and Chart 16528 as well as ENC US5AK6CM using CARIS HIPS and SIPS sounding and contour layers derived from the 8 meter combined surface. The contours and soundings were overlaid on the charts to assess differences between the surveyed soundings and charted depths. ENCs were compared to a 8 meter combined grid by extracting all soundings from the chart and creating an interpolated TIN surface which could be differenced with the combined surface from H12940.

All data from H12940 should supersede charted data. In general, surveyed soundings agree with the majority of charted depths. A full discussion of any disagreements follows below.

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
16528	1:40000	18	09/2012	09/13/2016	09/10/2016

Table 16: Largest Scale Raster Charts

16528

The charted depths and contours of Chart 16528 are identical to those found on ENC US5AK6CM. As such, all discussions regarding the comparisons between surveyed soundings and charted depths are covered under the ENC US5AK6CM discussion below.

D.1.2 Electronic Navigational Charts

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

ENC	Scale	Edition	Update Application Date	Issue Date	Preliminary?
US5AK6CM	1:40000	13	11/25/2015	11/25/2015	NO

Table 17: Largest Scale ENCs

US5AK6CM

Soundings from H12940 are in a general agreement with charted depths on ENC US5AK6CM, with most depths agreeing within 1 to 2 fathoms as shown in Figure 27. The largest differences are seen in in a rocky area in the middle of the sheet where differences range to 13 fathoms as seen in Figure 28.

To more accurately visualize trends within these differences, an 8 meter TIN surface was interpolated from the ENC sounding layer. This surface was then differenced with a corresponding 8 meter surface from H12940 and visualized in Figure 29. In this difference surface red colors indicate H12940 was shoaler than the ENC US5AK6CM, green colors indicate agreement, and blue colors indicate H12940 was deeper than ENC US5AK6CM. The mean difference between surveyed soundings from H12940 and the charted depths on ENC US5AK6CM is -0.23 meters, with 95% of nodes having a deviation of +/- 3.95 meters as shown in Figure 30.

Contours from H12940 are in a general agreement with charted contours on ENC US5AK6CM as shown in Figure 31. The largest differences are seen in the 50 fathom contour where surveyed and charted contours differ by over 200 meters as seen in Figure 32. Furthermore, the Hydrographer recommends that a 5 fathom contour be added to ENC US5AK6CM to provide additional information to the mariner as shown in Figure 33.

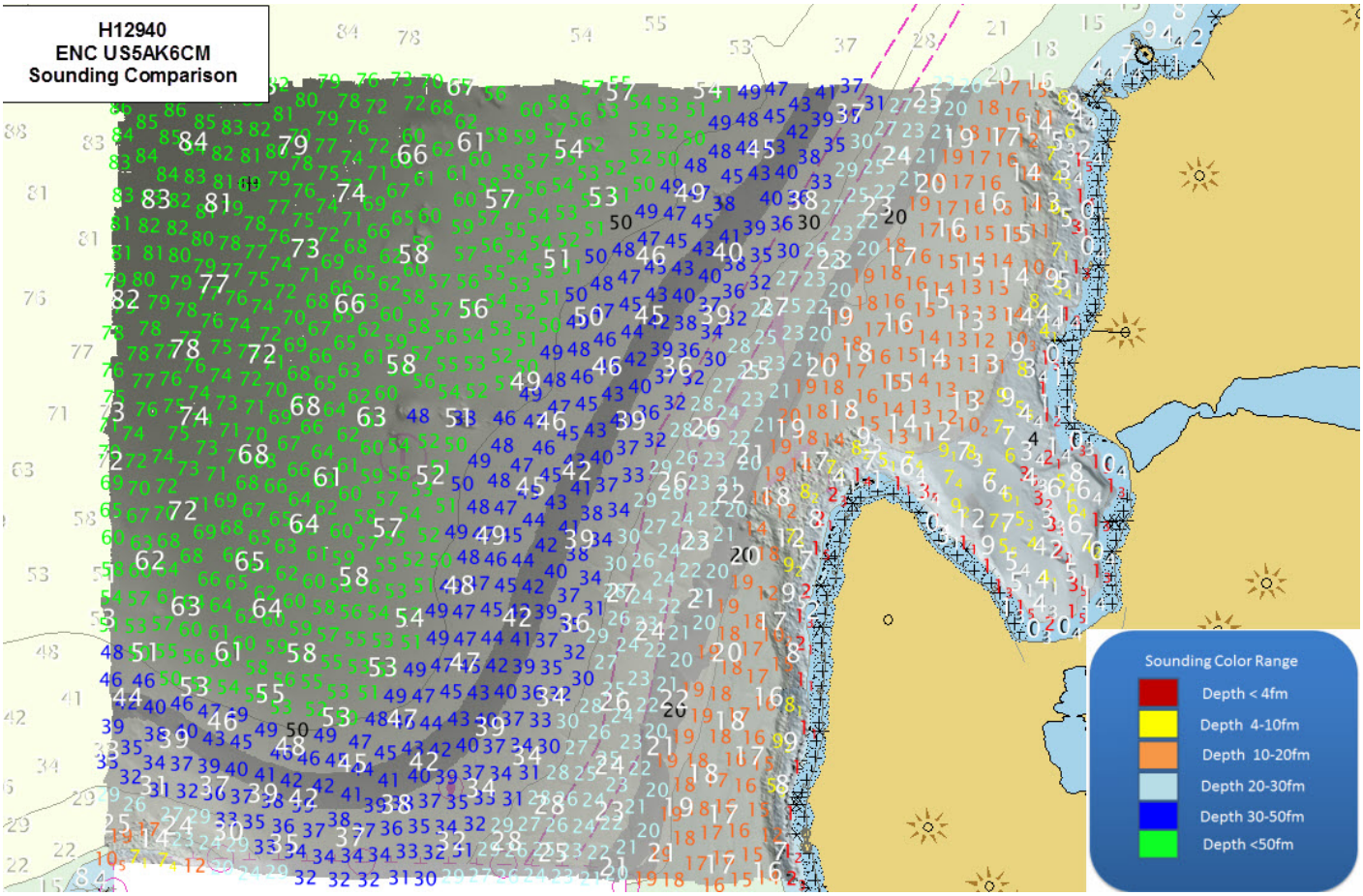


Figure 27: H12940 Sounding Comparison Overview (Charted Depths in White)

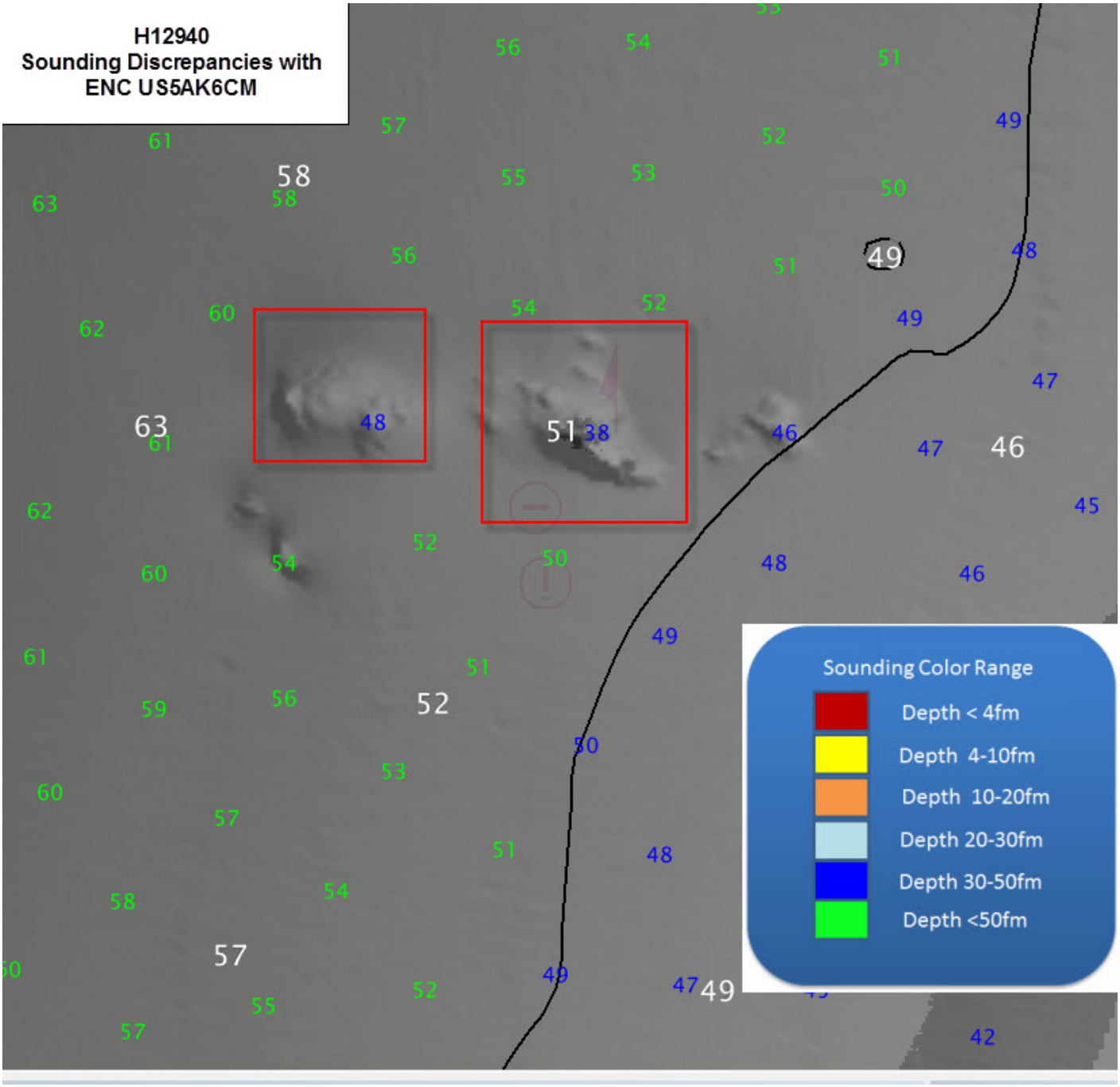


Figure 28: H12940 13fm Sounding Discrepancy (Charted soundings in white)

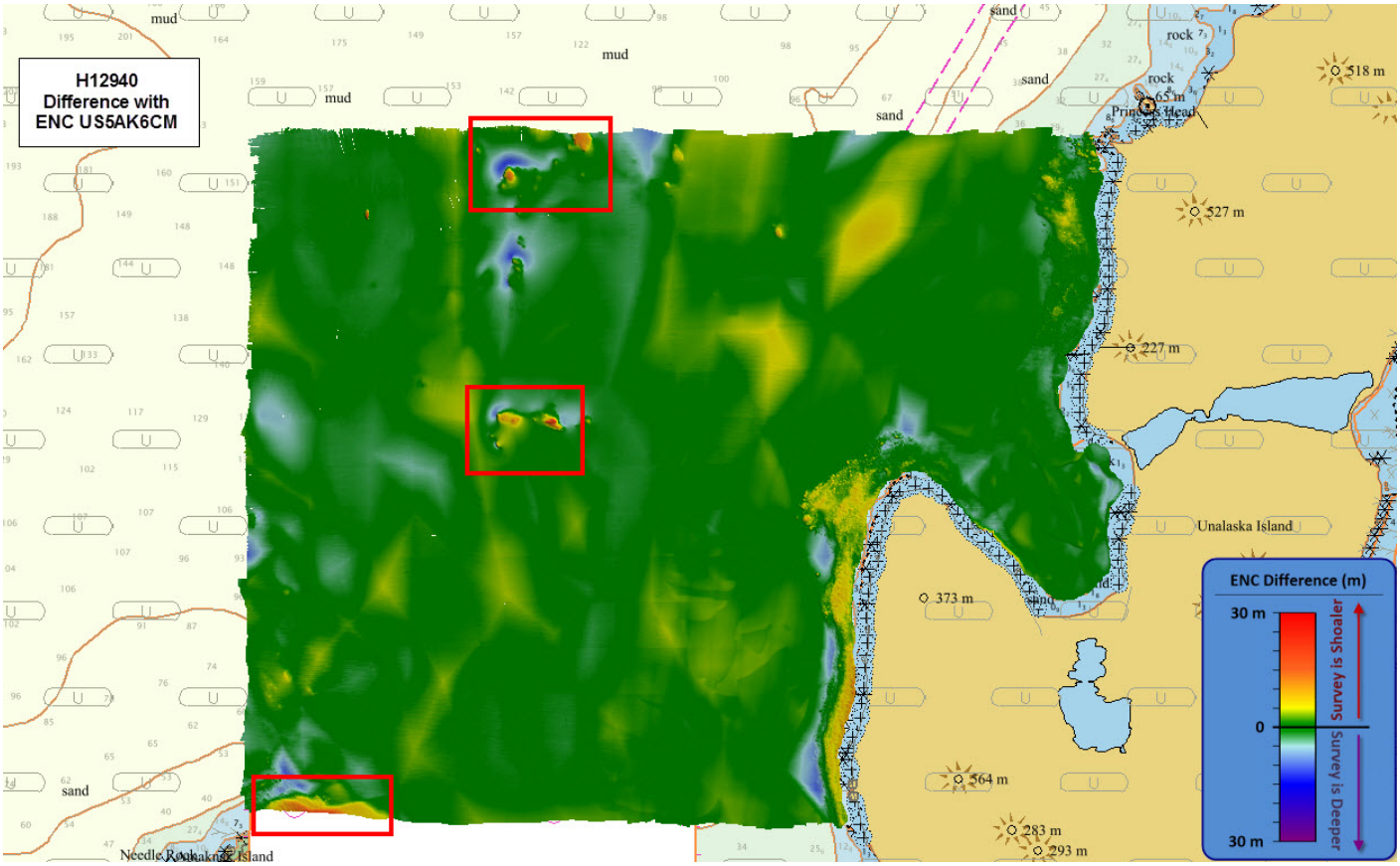
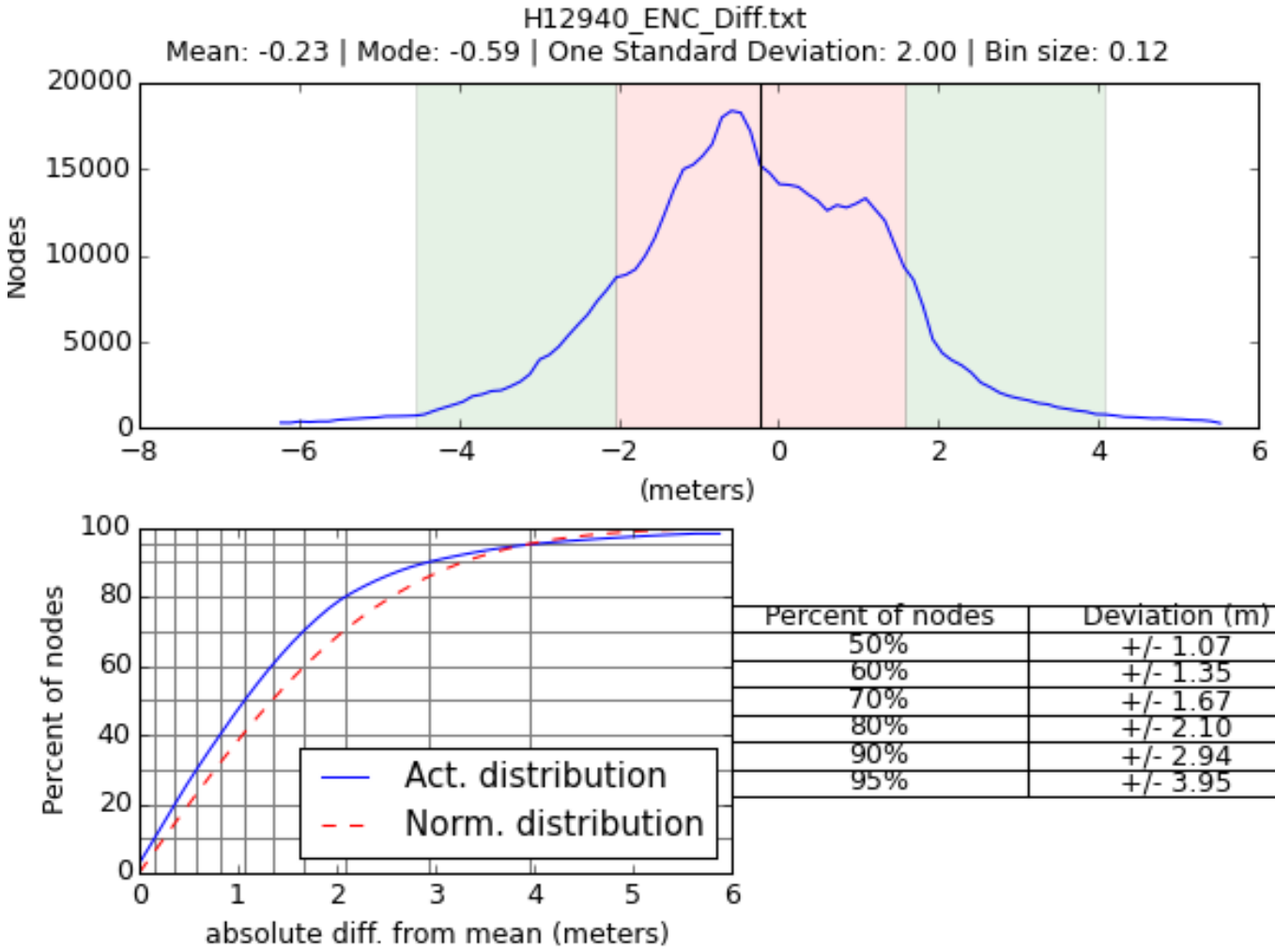


Figure 29: H12940 Difference Surface with ENC US5AK6CM



Percent of nodes	Deviation (m)
50%	+/- 1.07
60%	+/- 1.35
70%	+/- 1.67
80%	+/- 2.10
90%	+/- 2.94
95%	+/- 3.95

Figure 30: H12940 ENC US5AK6CM Difference Statistics

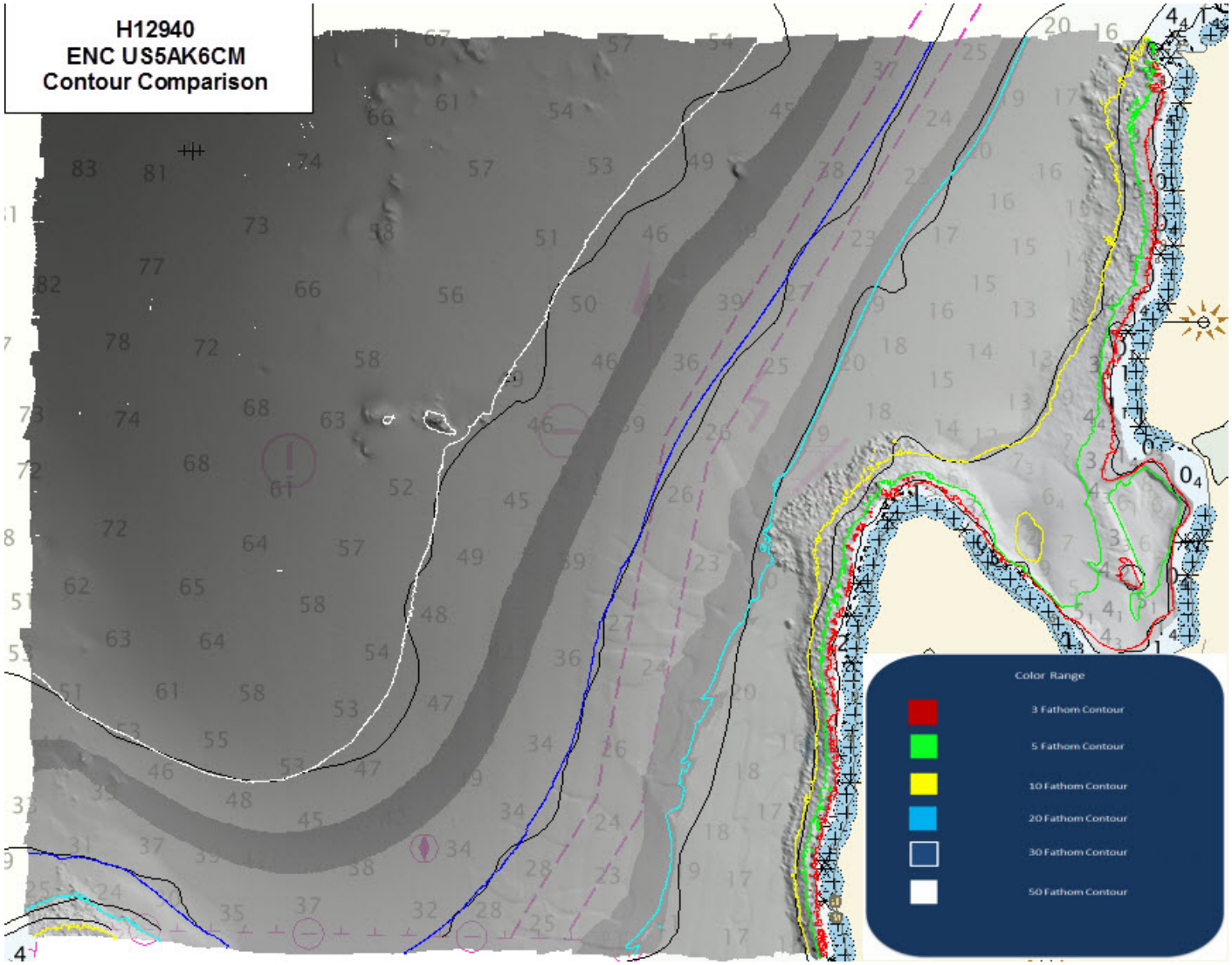


Figure 31: H12940 Contour Comparison Overview

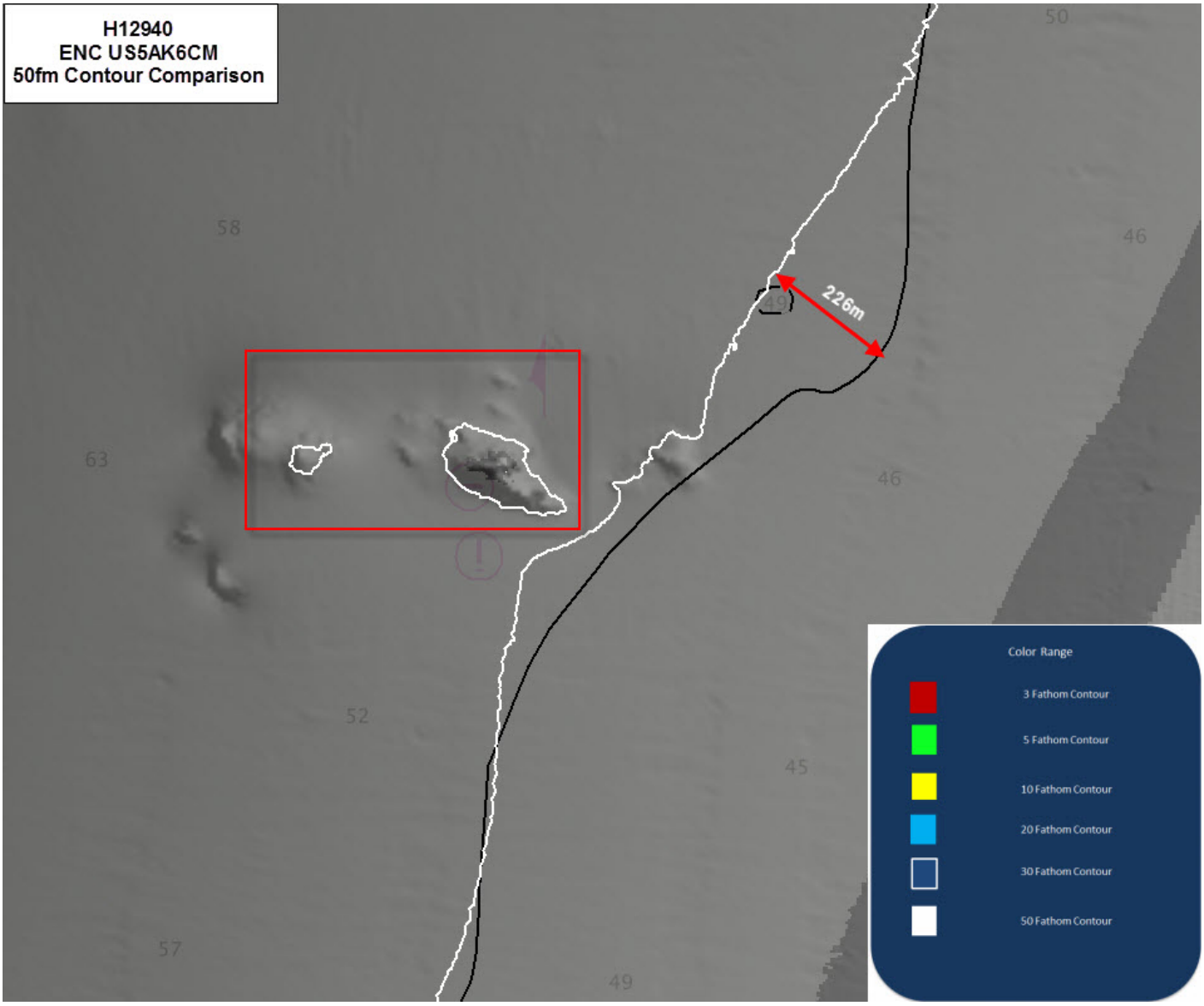


Figure 32: H12940 50fm Contour Discrepancies

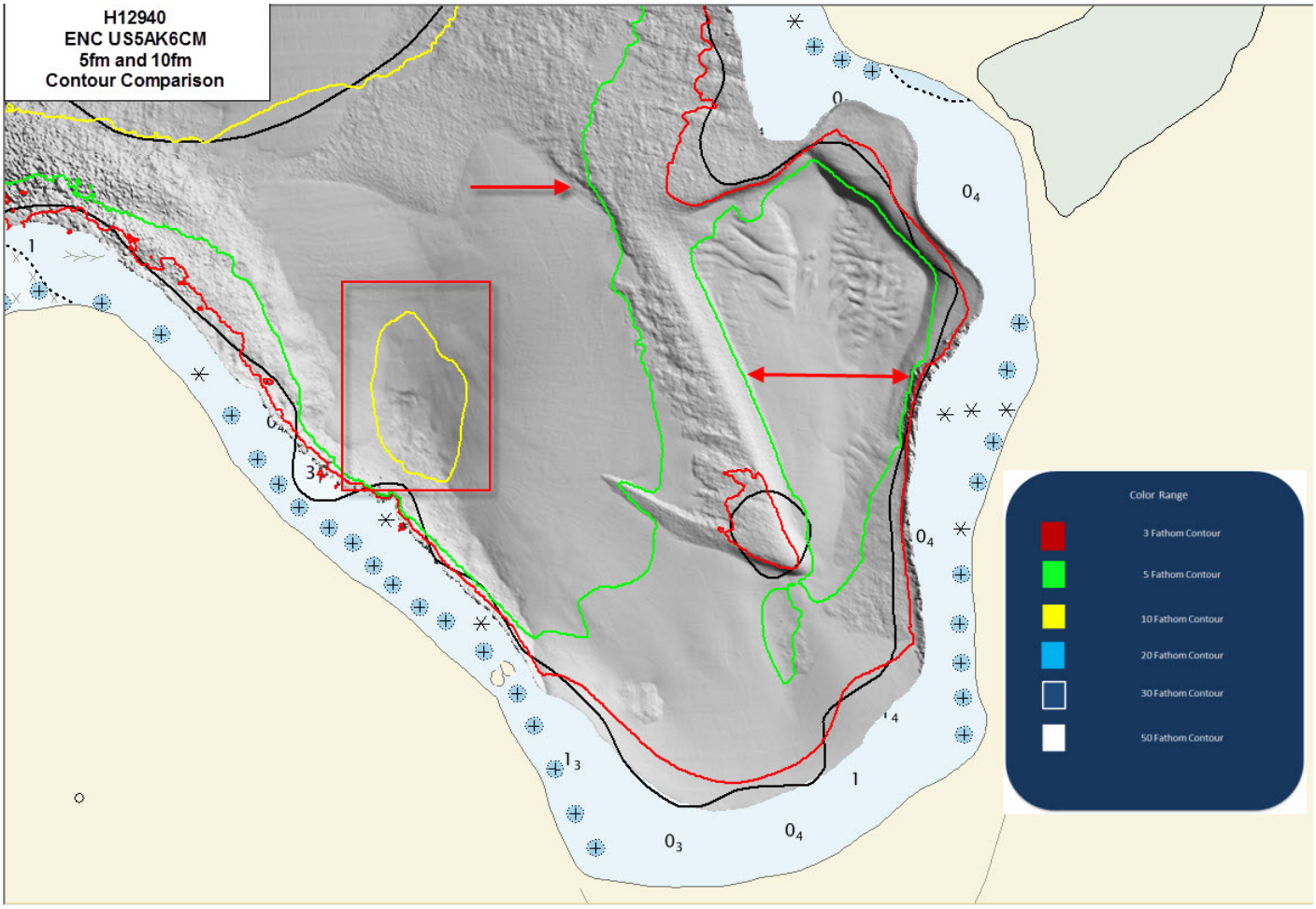


Figure 33: H12940 Recommended Addition of 5fm and 10fm Contours (Charted Contours in Black)
During cartographic compilation it was deemed that a 5 fathom contour would not improve the chart as a whole, therefore it was not added during the compilation of H12940.

D.1.3 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.1.4 Charted Features

All assigned features within the NALL were addressed and are included in the H12940 Final Feature File. Assigned features inshore of the NALL were given the description of “Not Addressed” with remarks “Retain as charted, not investigated due to being inshore of NALL” in accordance with HSSD 7.3.1.

D.1.5 Uncharted Features

No uncharted features exist for this survey.

D.1.6 Dangers to Navigation

No Danger to Navigation Reports were submitted for this survey.

D.1.7 Shoal and Hazardous Features

During survey operations for H12940, a shoal was identified in Constantine Bay. The charted depths correctly delineate the shoal, and are three to four fathoms shoaler than the surrounding depths, as shown in Figure 34. The addition of a 5 fathom contour, as referenced above in Section D.1.2 Figure 33, would help to better delineate the shoal on the affected charts.

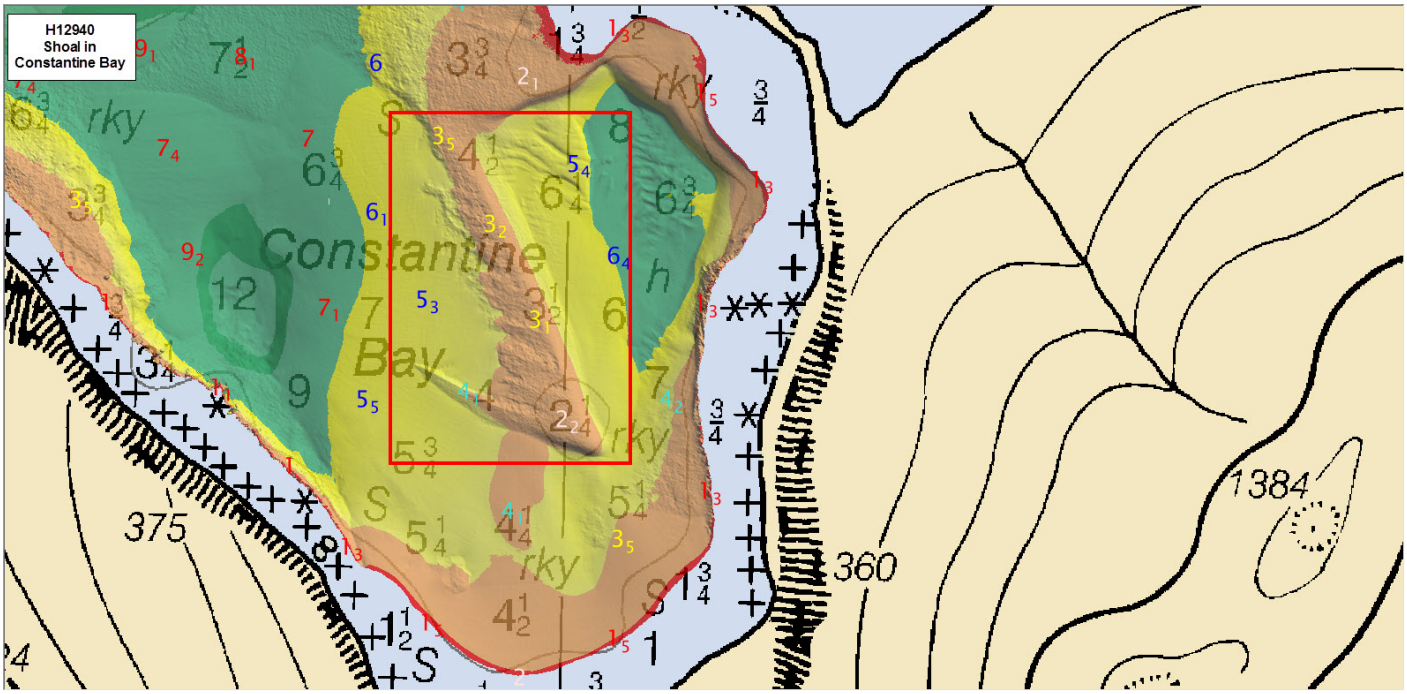


Figure 34: H12940 Shoal in Constantine Bay

During cartographic compilation it was deemed that a 5 fathom contour would not improve the chart as a whole, therefore it was not added during the compilation of H12940.

D.1.8 Channels

A pilot boarding area exists at the Southern end of Survey H12940. Surveyed soundings match the charted depths in the area are accurately depicted by ENC US5AK6CM and Chart 16528.

D.1.9 Bottom Samples

The original bottom sample locations in the Project Reference File were adjusted based on the processed multibeam imagery. Four bottom samples were acquired, three of which were assigned and one added after

reviewing the backscatter, in accordance with the Project Instructions and Project Reference File for survey H12940. All bottom samples were entered in the H12940 Final Feature File. See Figure 35 for a graphical overview of sample locations.

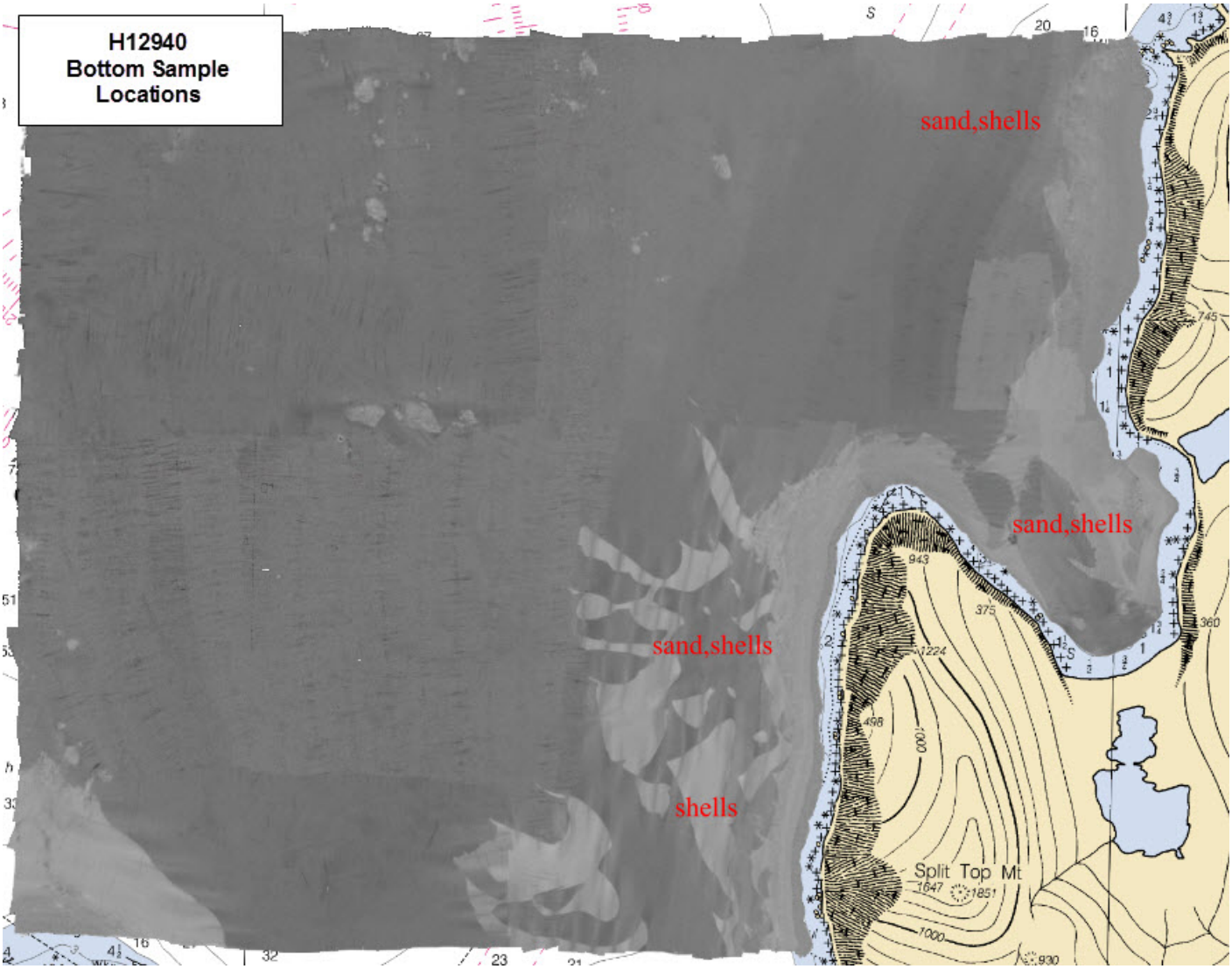


Figure 35: H12940 Bottom Sample Locations

D.2 Additional Results

D.2.1 Shoreline

H12940 survey limits extended to the NALL (see Section A.1) and all features within these limits were addressed and attributed in the H12940 Final Feature File. All features inshore of the NALL were addressed in the Final Feature File with the description of “Not Addressed” and remarks of “Retain as charted, not investigated due to being inshore of NALL” as per HSSD Section 7.3.1.

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

An abandoned cable area runs the length of Survey H12940 from the NE to the S. No dangers were found in the survey data.

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

As Chief of Party, field operations for this hydrographic survey were conducted under my direct supervision, 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.

Report Name	Report Date Sent
Data Acquisition and Processing Report	2016-10-25
Coast Pilot Report	2016-10-26

Approver Name	Approver Title	Approval Date	Signature
CDR Mark Van Waes, NOAA	Chief of Party	11/02/2016	VAN WAES.MARK.1240076329 2016.11.02 09:33:04 -08'00'
LT Bart Buesseler, NOAA	Field Operations Officer	11/02/2016	Digitally signed by BUESSELER.BART.OWEN.1396600559 Date: 2016.11.02 08:44:18 -08'00'
HCST Douglas Bravo	Chief Survey Technician	11/02/2016	Douglas Bravo 2016.11.01 21:33:50 -07'00'
PS Katrina Wyllie	Sheet Manager	11/02/2016	WYLLIE.KATRINA.ROSE.1399406567
HSST Clinton Marcus	Senior Survey Technician	11/02/2016	MARCUS.CLINTON.ROY. 1187224876 2016.11.01 14:18:59 -08'00'

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 Staiton
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 Stated Coast Guard
UTM	Universal Transverse Mercator
XO	Executive Officer
ZDA	Global Positiong System timing message
ZDF	Zone Definition File

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : September 07, 2016

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-Q328-FA-2016
HYDROGRAPHIC SHEET: H12940

LOCALITY: Vicinity of Constantine Bay & Split Top Mt, Unalaska Island
TIME PERIOD: August 12, 2016 to August 25, 2016

TIDE STATION USED: 9462620 Unalaska, AK
Lat. 53° 52.8'N Long. 166° 32.2'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.011

REMARKS: RECOMMENDED ZONING

Preliminary zoning for this project was provided under project OPR-Q328-FA-2016. Preliminary zoning is accepted as the final zoning for Registry No. H12940 for the time period of August 12, 2016 to August 25, 2016.

Please use the zoning file Q328FA2016CORP submitted with the project instructions for OPR-Q328-FA-2016. Zones BGS89 and BGS92 are the applicable zones for H12940.

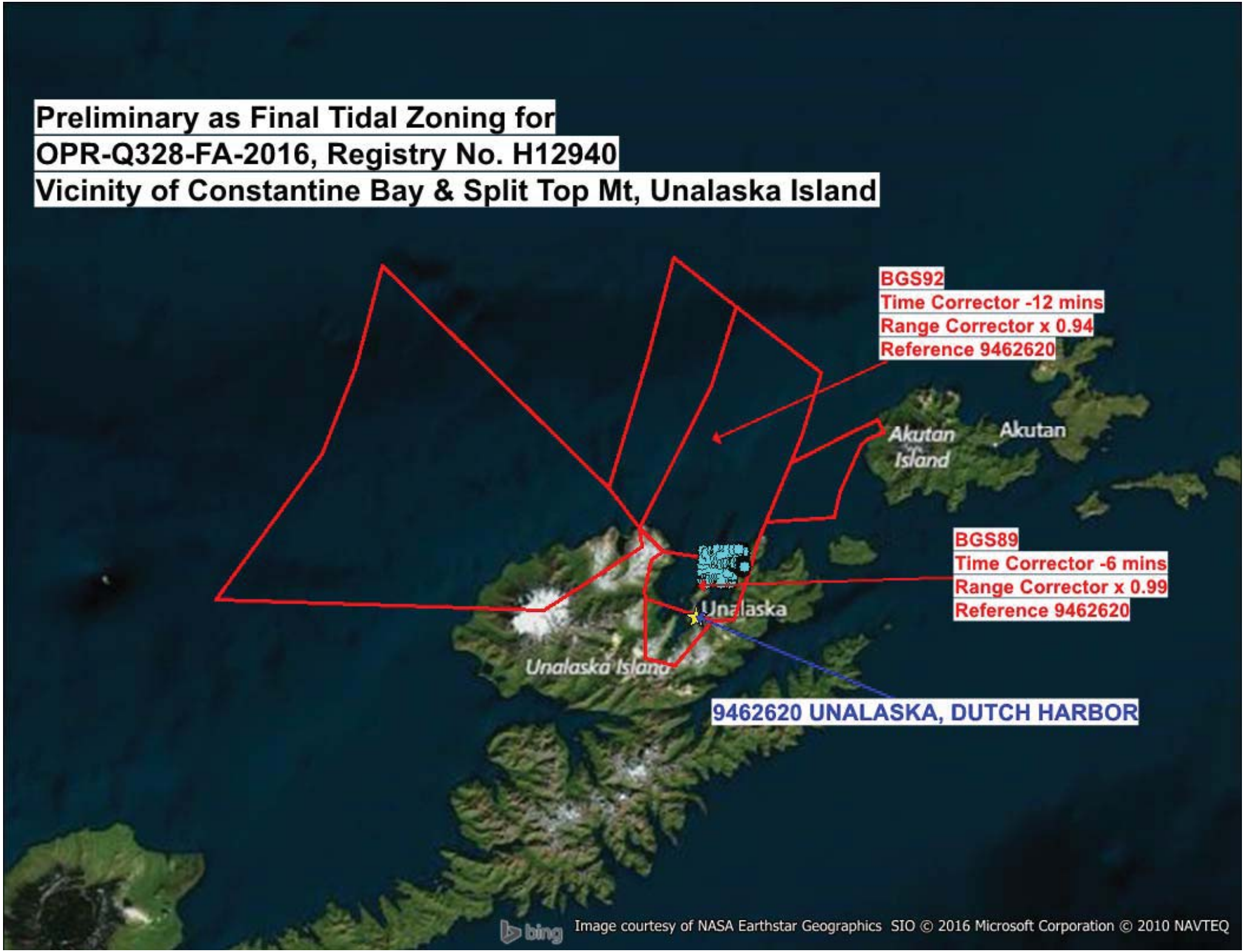
Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time on the 1983-2001 National Tidal Datum Epoch (NTDE).

HOVIS.GERALD.THOMAS.JR.1365860250

Digitally signed by HOVIS.GERALD.THOMAS.JR.1365860250
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=OTHER, cn=HOVIS.GERALD.THOMAS.JR.1365860250
Date: 2016.09.08 09:11:04 -04'00'

CHIEF, PRODUCTS AND SERVICES BRANCH


Preliminary as Final Tidal Zoning for
OPR-Q328-FA-2016, Registry No. H12940
Vicinity of Constantine Bay & Split Top Mt, Unalaska Island
BGS92
Time Corrector -12 mins
Range Corrector x 0.94
Reference 9462620
Akutan Island
Akutan
BGS89
Time Corrector -6 mins
Range Corrector x 0.99
Reference 9462620
Unalaska
Unalaska Island
9462620 UNALASKA, DUTCH HARBOR
bing
Image courtesy of NASA Earthstar Geographics SIO © 2016 Microsoft Corporation © 2010 NAVTEQ

Clinton Marcus - NOAA Federal <clinton.r.marcus@noaa.gov>

Coast Pilot Review; OPR-Q328-FA-16, North Coast Unalaska Island

1 message

FA OPS <ops.fairweather@noaa.gov> Wed, Oct 26, 2016 at 10:43 AM
To: OCS NDB - NOAA Service Account <OCS.NDB@noaa.gov>, _NOS OCS NSD Coast Pilot <coast.pilot@noaa.gov>
Cc: Katrina Wyllie <katrina.wyllie@noaa.gov>, CO Fairweather <co.fairweather@noaa.gov>, CST Fairweather <chiefst.fairweather@noaa.gov>, Samuel Candio - NOAA Federal <samuel.candio@noaa.gov>, Clinton Marcus - NOAA Federal <clinton.r.marcus@noaa.gov>, Hannah Marshburn - NOAA Federal <Hannah.Marshburn@noaa.gov>, Patrick Debroisse <patrick.j.debroisse@noaa.gov>

Greetings,

Attached is *Fairweather*'s Coast Pilot feedback for our North Coast Unalaska Island project from this summer. Updates were made in accordance with HSSD 8.1.3, with additional notes made in the document to improve clarity. If there are any questions as to the feedback provided, please do not hesitate to ask for clarification.

Very Respectfully,

LT Bart Buesseler, NOAA

--
Operations Officer
NOAA Ship Fairweather
1010 Stedman Street
Ketchikan, Alaska 99901

Cell: 907.254.2842
Iridium: 808.659.0054
OPS.Fairweather@noaa.gov

2 attachments

OPR-Q328-FA-16_Coast Pilot Review Report.docx
567K

OPR-Q328-FA-16_Coast Pilot Review Report.pdf
292K

Re: Hydrographic Technical Directive 2016-3: Horizontal Datums for hydrographic surveys

Michael Gonsalves - NOAA Federal <michael.gonsalves@noaa.gov> Fri, Jul 22, 2016 at 8:13 AM
To: Michael Gonsalves - NOAA Federal <michael.gonsalves@noaa.gov>
Cc: Eric Berkowitz - NOAA Federal <eric.w.berkowitz@noaa.gov>, Richard Brennan - NOAA Federal <Richard.T.Brennan@noaa.gov>, Lorraine Robidoux - NOAA Federal <lorraine.robidoux@noaa.gov>, John Nyberg - NOAA Federal <John.Nyberg@noaa.gov>, Mike Aslaksen - NOAA Federal <mike.aslaksen@noaa.gov>, Samuel Greenaway <Samuel.Greenaway@noaa.gov>, Russell Proctor - NOAA Federal <russell.proctor@noaa.gov>, _OMAO MOP CO Rainier <CO.Rainier@noaa.gov>, _OMAO MOP CO Fairweather <co.fairweather@noaa.gov>, "CO.Thomas Jefferson - NOAA Service Account" <co.thomas.jefferson@noaa.gov>, "CO.Ferdinand Hassler - NOAA Service Account" <co.ferdinand.hassler@noaa.gov>, "Evans, Rod E." <RHODRI.E.EVANS@leidos.com>, George Reynolds <ggr@oceansurveys.com>, Andrew Orthmann <aorthmann@terrasond.com>, Arthur Wright <artw@wassoc.com>, David Neff <david@etracinc.com>, "Millar, David FPI" <dmillar@fugro.com>, Deam Moyles <dmoyles@fugro.com>, Jon Dasler <jld@deainc.com>, Tara Levy <tlevy@oceaneering.com>, _NOS OCS HSD OPS <hsd.ops@noaa.gov>, _NOS OCS HSD AHB <nos.ahb.allpersonnel@noaa.gov>, _NOS OCS HSD PHB <nosphb@noaa.gov>, "ops.fairweather" <ops.fairweather@noaa.gov>, "OPS.Rainier" <ops.rainier@noaa.gov>, "OPS.Thomas Jefferson - NOAA Service Account" <OPS.Thomas.Jefferson@noaa.gov>, "OPS.Ferdinand Hassler - NOAA Service Account" <OPS.Ferdinand.Hassler@noaa.gov>, _OMAO MOP ChiefST Fairweather <chiefst.fairweather@noaa.gov>, Chief ST Rainier <ChiefST.Rainier@noaa.gov>, "ChiefST.Thomas Jefferson - NOAA Service Account" <chiefst.thomas.jefferson@noaa.gov>, "ChiefST.Ferdinand Hassler - NOAA Service Account" <chiefst.ferdinand.hassler@noaa.gov>, Chief NRB OCS - NOAA Service Account <chief.nrb.ocs@noaa.gov>, Christopher Hare - NOAA Federal <Christopher.Hare@noaa.gov>, Megan Greenaway - NOAA Federal <Megan.Greenaway@noaa.gov>

Greetings folks,

My apologies if I've induced a datum-related panic throughout the fleet - I should have provided a little more clarifying language.

First of all: relax! Don't cease acquisition, don't reconfigure your base stations, don't start transforming your data, don't reprocess all your SBETs.

The moral of the story is that HSD is fine with whichever horizontal datum you choose (NAD83 or WGS84), all we ask is that you document which datum was used. If you've already acquired half of a sheet in WGS84, then continue to do so, document the datum within your metadata and the Descriptive Report -- there isn't a need for HSD to issue any waiver to the HSSD because you're following the HSSD as written at the time of the issuance of your Project Instructions. All of AHB and PHB are CC'd on this email chain -- no field unit will get a demerit for submitting in one datum versus another. If you've completed one sheet of a project in WGS84 and would like to continue the rest of the project in WGS84 - go for it (in fact, for the purposes of DAPR documentation, I suspect the branches would prefer that).

Some of you may wonder why we made this change mid-season -- if you're one of those people, read the next three sentences (if you aren't, have a great weekend and remember to document your datums). The reason we made the change in language is strictly to satisfy an administrative requirement. As a civilian federal agency, we in the Office of Coast Survey could not publish an official technical specification that was in direct conflict with the Office of Management and Budget Circular A-16. The government is a little sensitive when it comes to having conflicting requirements out in the public space; as such, we were legally obliged to clean up the language.

We're only a few years away from the next realization of NAD83 which will be functionally indistinguishable from WGS84; so, eventually, these differences will truly be imperceptible.

Remember: relax, keep doing what you're doing, and document what you did.

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

On Thu, Jul 21, 2016 at 5:09 PM, Michael Gonsalves - NOAA Federal <michael.gonsalves@noaa.gov> wrote:

> Greetings,

The attached Hydrographic Technical Directive (HTD) provides a revision to the horizontal datum requirement, as stated in the 2016 Hydrographic Surveys Specifications and Deliverables. This HTD changes the requirement from WGS84 to NAD83, which brings us into compliance with other civilian federal agencies (see the document for further details).

If there are any questions or concerns about meeting this specification, please consult with your HSD Project Manager or Contracting Officer's Representative.

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

Clinton Marcus - NOAA Federal <clinton.r.marcus@noaa.gov>

Fwd: OPR-Q328-FA-16 Final Tides Request (H12937, H12938, H12939, H12940)

1 message

FA OPS <ops.fairweather@noaa.gov> Thu, Oct 13, 2016 at 1:15 PM
To: Clinton Marcus - NOAA Federal <clinton.r.marcus@noaa.gov>

FYI, final tides request for H12940.

Very Respectfully,

LT Bart Buesseler, NOAA

-------- Forwarded Message --------
Subject:OPR-Q328-FA-16 Final Tides Request (H12937, H12938, H12939, H12940)
Date: Fri, 26 Aug 2016 16:33:32 -0800
From: Bart Buesseler - NOAA Federal <Bart.O.Buesseler@noaa.gov>
To: Final Tides - NOAA Service Account <final.tides@noaa.gov>
CC:_OMAO MOP CO Fairweather <co.fairweather@noaa.gov>, Katrina Wyllie - NOAA Federal <katrina.wyllie@noaa.gov>, Samuel Candio - NOAA Federal <samuel.candio@noaa.gov>, Patrick Debroisse - NOAA Federal <patrick.j.debroisse@noaa.gov>, Hannah Marshburn - NOAA Federal <Hannah.Marshburn@noaa.gov>, ops. fairweather <ops.fairweather@noaa.gov>, Douglas Bravo - NOAA Federal <chiefst.fairweather@noaa.gov>

Greetings,

Attached is a zip file containing the final tides requests for OPR-Q328-FA-16, North Coast Unalaska Island. This includes data for all sheets H12937, H12938, H12939, and H12940.

Please let me know if you have any questions or if any the data fails to open. Thanks!

Very Respectfully,

LTJG Bart Buesseler, NOAA

Operations Officer
NOAA Ship *Fairweather*
1010 Stedman Street
Ketchikan, Alaska 99901

Cell: 907.254.2842
Iridium: 808.659.0054
Personal Cell: 503.318.3606
Bart.O.Buesseler@noaa.gov

OPR-Q328-FA-16_FinalTidesRequests.zip
932K

Clinton Marcus - NOAA Federal <clinton.r.marcus@noaa.gov>

Fwd: Re: Request for waiver; OPR-Q328-FA-16 on WGS84

1 message

FA OPS <ops.fairweather@noaa.gov> Sun, Oct 16, 2016 at 1:07 PM
To: Clinton Marcus - NOAA Federal <clinton.r.marcus@noaa.gov>

You'll also want this.

Very Respectfully,

LT Bart Buesseler, NOAA

-------- Forwarded Message --------
Subject: Re: Request for waiver; OPR-Q328-FA-16 on WGS84
Date: Sat, 13 Aug 2016 19:07:53 -0800
From: Katrina Wyllie - NOAA Federal <katrina.wyllie@noaa.gov>
To: Bart Buesseler - NOAA Federal <Bart.O.Buesseler@noaa.gov>
CC:ops. fairweather <ops.fairweather@noaa.gov>, Samuel Candio - NOAA Federal <samuel.candio@noaa.gov>, Patrick Debroisse - NOAA Federal <patrick.j.debroisse@noaa.gov>, Hannah Marshburn - NOAA Federal <Hannah.Marshburn@noaa.gov>, Michael Gonsalves - NOAA Federal <michael.gonsalves@noaa.gov>

LTJG Buesseler,

Request granted. Please include this email in DR Appendix II and make sure the DRs and metadata state your horizontal datum.

Katrina

On Sat, Aug 13, 2016 at 4:34 PM, Bart Buesseler - NOAA Federal <bart.o.buesseler@noaa.gov> wrote:

> Katrina,
>
> We would like to request that project OPR-Q328-FA-16 be acquired and processed in the horizontal datum of WGS84 UTM Zone 3N. The project instructions were issued prior to HTD 2016-3 and the local USCG DGPS station is decommissioned, necessitating the use of WAAS. It will be easier and more effective to keep this project in WGS84 rather than covert everything over to NAD83.
>
> Very Respectfully,
>
> LTJG Bart Buesseler, NOAA
>
> Operations Officer
> NOAA Ship *Fairweather*
> 1010 Stedman Street
> Ketchikan, Alaska 99901
>
> Cell: 907.254.2842
> Iridium: 808.659.0054
> Personal Cell: 503.318.3606
> Bart.O.Buesseler@noaa.gov

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Tests against HSSD v.2016

1. Redundant features
OK

2. Features (excluding carto notes) missing mandatory attribute SORIND
OK

3. Features (excluding carto notes) missing mandatory attribute SORDAT
OK

4. Assigned features missing mandatory attribute description
OK

5. Assigned features missing mandatory attribute remarks
OK

6. New or deleted features missing mandatory attribute remarks
OK

7. New or deleted features missing mandatory attribute recommendation
OK

8. AWOIS features missing mandatory attribute dbkyid (2015 only)

9. AWOIS features missing mandatory attribute images (2015 only)

10. SOUNDG missing mandatory attribute TECSOU
OK

11. SOUNDG missing mandatory attribute QUASOU
OK

12. Special feature types (DTONS) missing images
OK

13. New or Updated WRECKS missing images
OK

14. New or Updated WRECKS missing mandatory attribute CATWRK
OK

15. New or Updated WRECKS missing mandatory attribute WATLEV
OK

16. New or Updated WRECKS missing mandatory attribute VALSOU
OK

17. New or Updated WRECKS missing mandatory attribute TECSOU
OK

18. New or Updated WRECKS missing mandatory attribute QUASOU

OK

19. New or Updated UWTROC missing mandatory attribute VALSOU
OK

20. New or Updated UWTROC missing mandatory attribute WATLEV
OK

21. New or Updated UWTROC missing mandatory attribute QUASOU
OK

22. New or Updated UWTROC missing mandatory attribute TECSOU
OK

23. New or Updated OBSTRN missing mandatory attribute images
found OBSTRN at (-166.442452757, 53.9423377437)
found OBSTRN at (-166.41304369, 53.9804131349)

24. New or Updated OBSTRN missing mandatory attribute VALSOU
OK

25. New or Updated OBSTRN missing mandatory attribute WATLEV
OK

26. New or Updated OBSTRN missing mandatory attribute QUASOU
OK

27. New or Updated OBSTRN missing mandatory attribute TECSOU
OK

28. New or Updated OFSPLF missing images (2016 only)
OK

29. MORFAC missing mandatory attribute CATMOR
OK

30. SBDARE missing mandatory attribute NATSUR
OK

31. SBDARE missing mandatory attribute COLOUR (2015 only)

32. SBDARE lines or areas missing mandatory attribute WATLEV
OK

33. COALNE missing mandatory attribute CATCOA
OK

34. SLCONS missing mandatory attribute CATSLC
OK

35. LNDELV missing mandatory attribute ELEVAT
OK

36. M_COVR missing mandatory attribute CATCOV

OK

37. M_COVR missing mandatory attribute INFORM

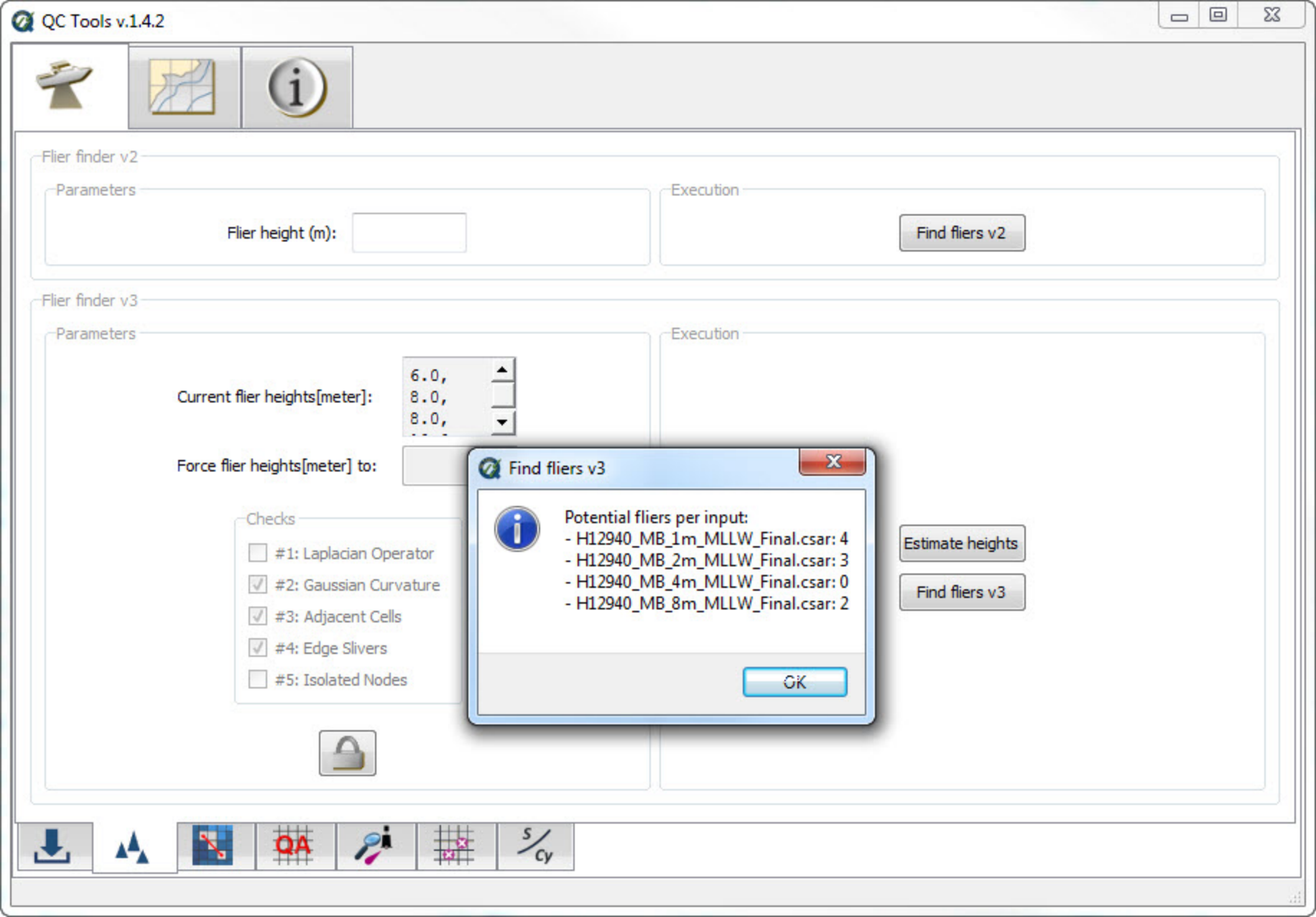
OK

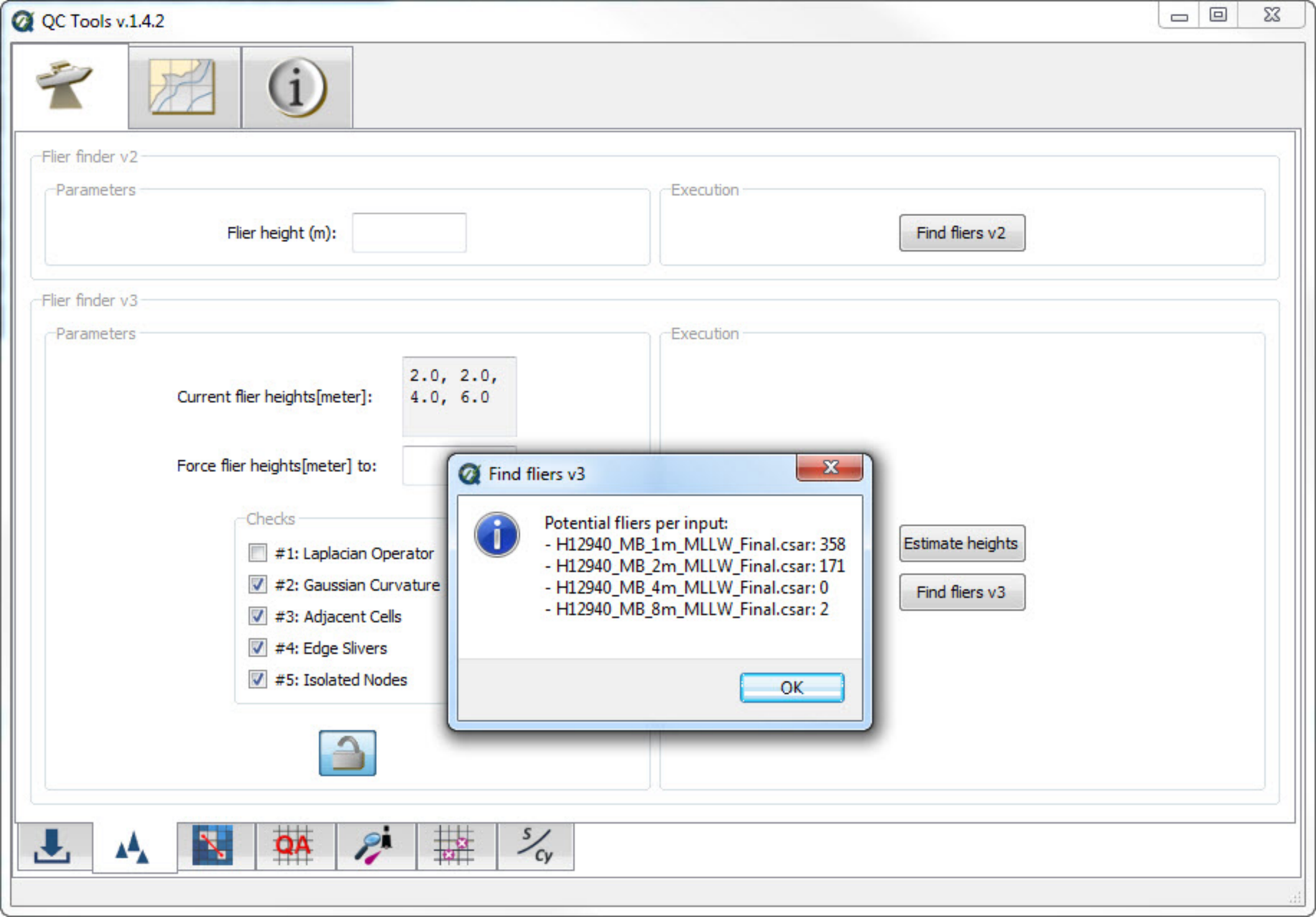
38. M_COVR missing mandatory attribute NINFOM

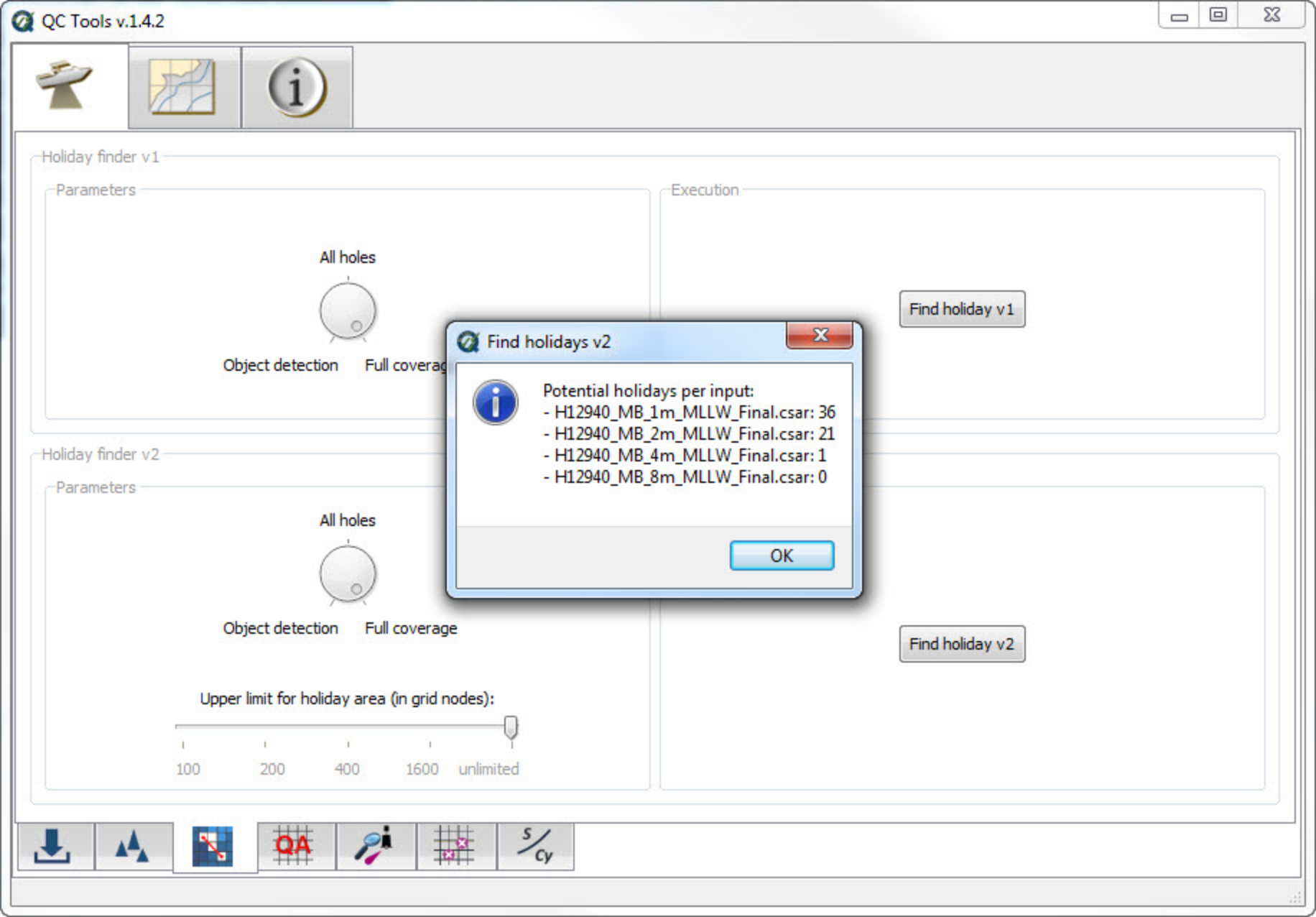
OK

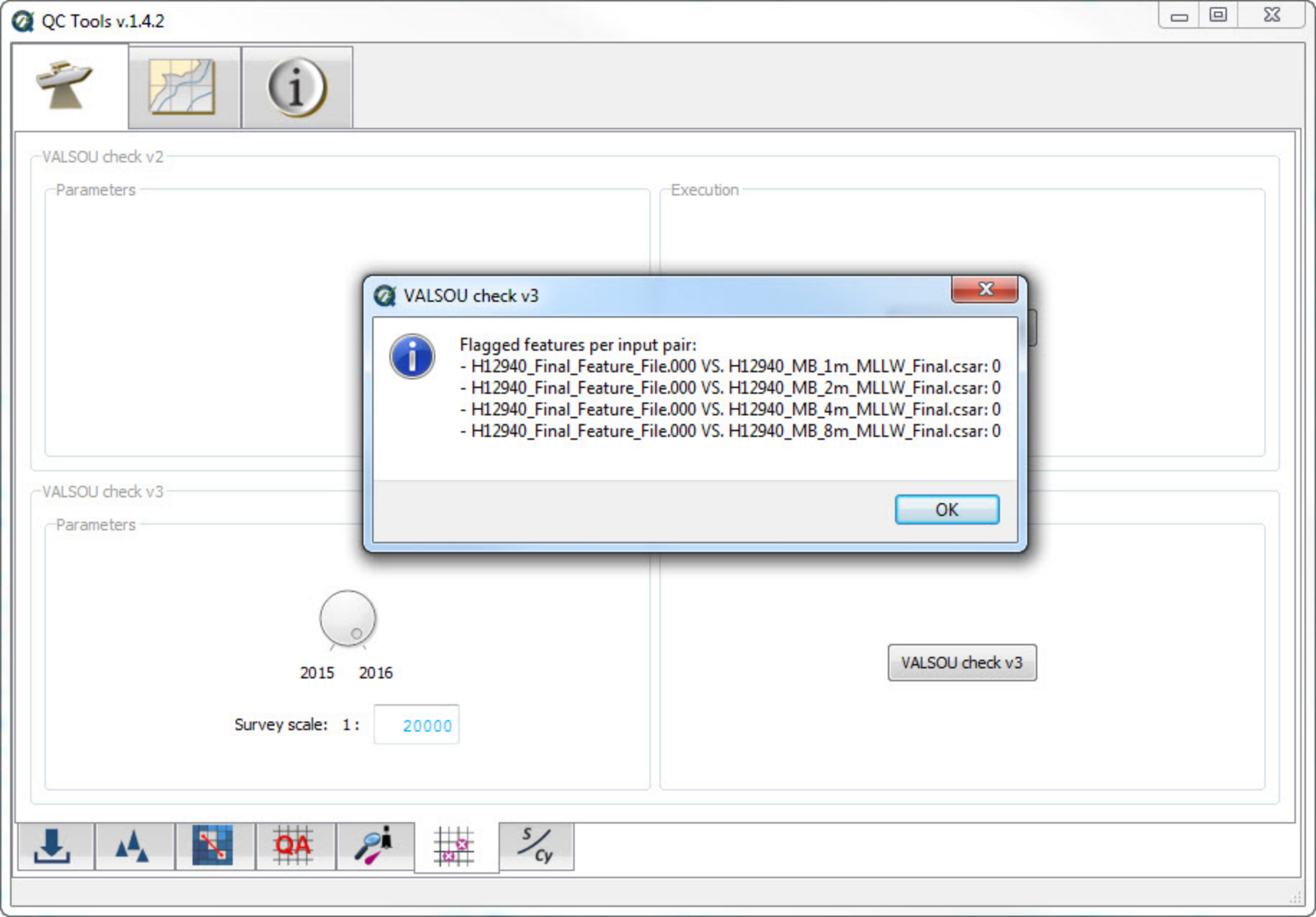
39. SUMMARY

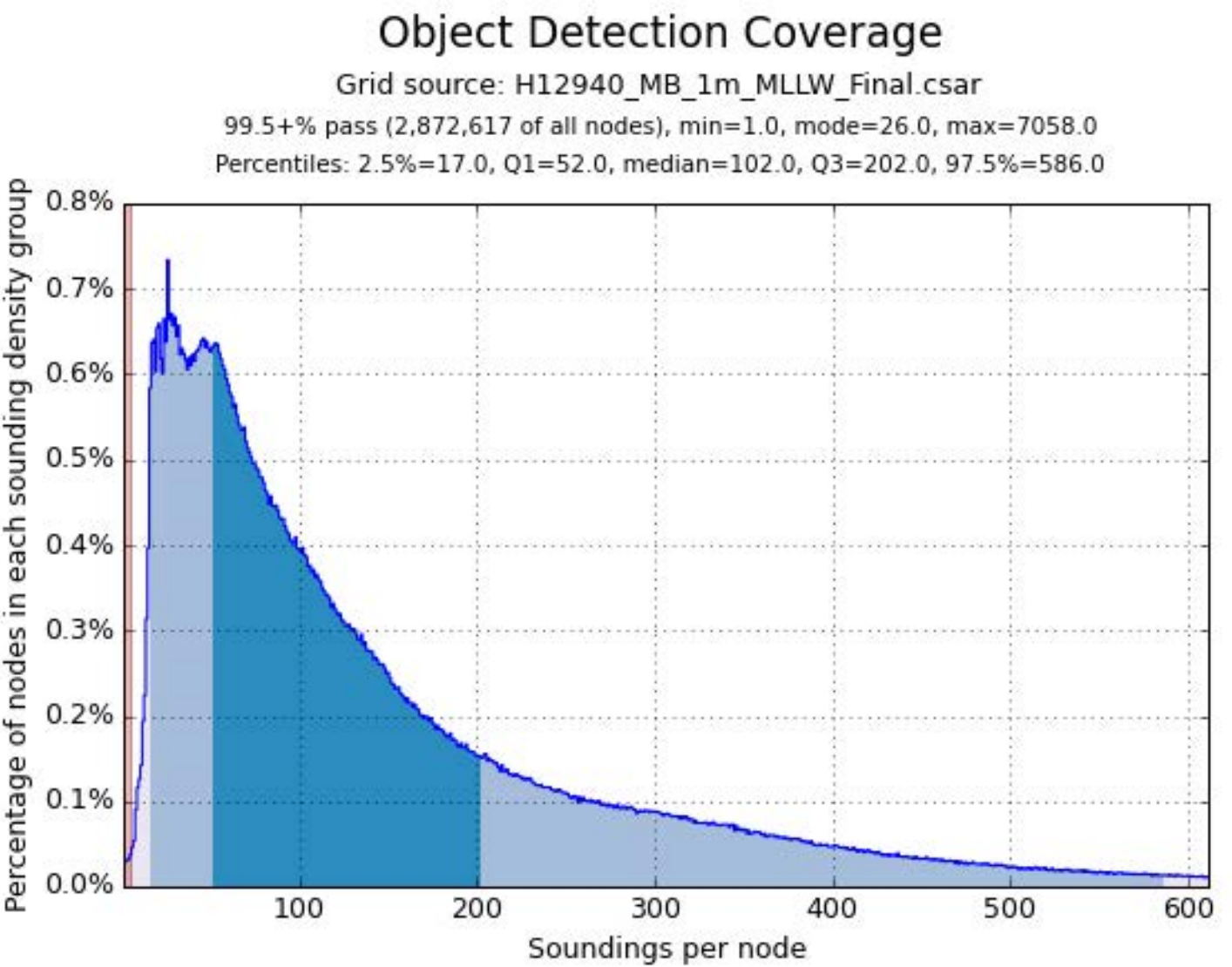
- Check 1 - Redundant features: 0
- Check 2 - Features (excluding carto notes) missing mandatory attribute SORIND: 0
- Check 3 - Features (excluding carto notes) missing mandatory attribute SORDAT: 0
- Check 4 - Assigned features missing mandatory attribute description: 0
- Check 5 - Assigned features missing mandatory attribute remarks: 0
- Check 6 - New or deleted features missing mandatory attribute remarks: 0
- Check 7 - New or deleted features missing mandatory attribute recomd: 0
- Check 8 - AWOIS features missing mandatory attribute dbkyid (2015 only)
- Check 9 - AWOIS features missing mandatory attribute images (2015 only)
- Check 10 - SOUNDG missing mandatory attribute TECSOU: 0
- Check 11 - SOUNDG missing mandatory attribute QUASOU: 0
- Check 12 - Special feature types (DTONS) missing images: 0
- Check 13 - Special feature types (WRECKS) missing images: 0
- Check 14 - New or Updated WRECKS missing mandatory attribute CATWRK: 0
- Check 15 - New or Updated WRECKS missing mandatory attribute WATLEV: 0
- Check 16 - New or Updated WRECKS missing mandatory attribute VALSOU: 0
- Check 17 - New or Updated WRECKS missing mandatory attribute TECSOU: 0
- Check 18 - New or Updated WRECKS missing mandatory attribute QUASOU: 0
- Check 19 - New or Updated UWTROC missing mandatory attribute VALSOU: 0
- Check 20 - New or Updated UWTROC missing mandatory attribute WATLEV: 0
- Check 21 - New or Updated UWTROC missing mandatory attribute QUASOU: 0
- Check 22 - New or Updated UWTROC missing mandatory attribute TECSOU: 0
- Check 23 - New or Updated OBSTRN missing mandatory attribute images: 2
- Check 24 - New or Updated OBSTRN missing mandatory attribute VALSOU: 0
- Check 25 - New or Updated OBSTRN missing mandatory attribute WATLEV: 0
- Check 26 - New or Updated OBSTRN missing mandatory attribute QUASOU: 0
- Check 27 - New or Updated OBSTRN missing mandatory attribute TECSOU: 0
- Check 28 - New or Updated OFSPLF missing mandatory attribute images (2016 only): 0
- Check 29 - MORFAC missing mandatory attribute CATMOR: 0
- Check 30 - SBDARE missing mandatory attribute NATSUR: 0
- Check 31 - SBDARE missing mandatory attribute COLOUR (2015 only)
- Check 32 - SBDARE lines and areas missing mandatory attribute WATLEV: 0
- Check 33 - COALNE missing mandatory attribute CATCOA: 0
- Check 34 - SLCONS missing mandatory attribute CATSLC: 0
- Check 35 - LNDELV missing mandatory attribute ELEVAT: 0
- Check 36 - M_COVR missing mandatory attribute CATCOV: 0
- Check 37 - M_COVR missing mandatory attribute INFORM: 0
- Check 38 - M_COVR missing mandatory attribute NINFOM: 0


QC Tools v.1.4.2
Flier finder v2
Parameters
Flier height (m):
Execution
Find fliers v2
Flier finder v3
Parameters
Current flier heights[meter]:
6.0,
8.0,
8.0,
Force flier heights[meter] to:
Checks
#1: Laplacian Operator
#2: Gaussian Curvature
#3: Adjacent Cells
#4: Edge Slivers
#5: Isolated Nodes
Execution
Estimate heights
Find fliers v3
Find fliers v3
Potential fliers per input:
- H12940_MB_1m_MLLW_Final.csar: 4
- H12940_MB_2m_MLLW_Final.csar: 3
- H12940_MB_4m_MLLW_Final.csar: 0
- H12940_MB_8m_MLLW_Final.csar: 2
OK
QA
S/Cy


QC Tools v.1.4.2
Flier finder v2
Parameters
Flier height (m):
Execution
Find fliers v2
Flier finder v3
Parameters
Current flier heights[meter]:
2.0, 2.0, 4.0, 6.0
Force flier heights[meter] to:
Checks
#1: Laplacian Operator
#2: Gaussian Curvature
#3: Adjacent Cells
#4: Edge Slivers
#5: Isolated Nodes
Execution
Estimate heights
Find fliers v3
Find fliers v3
Potential fliers per input:
- H12940_MB_1m_MLLW_Final.csar: 358
- H12940_MB_2m_MLLW_Final.csar: 171
- H12940_MB_4m_MLLW_Final.csar: 0
- H12940_MB_8m_MLLW_Final.csar: 2
OK
QA
S/Cy


QC Tools v.1.4.2
Holiday finder v1
Parameters
All holes
Object detection
Full coverag
Execution
Find holiday v1
Find holidays v2
Potential holidays per input:
- H12940_MB_1m_MLLW_Final.csar: 36
- H12940_MB_2m_MLLW_Final.csar: 21
- H12940_MB_4m_MLLW_Final.csar: 1
- H12940_MB_8m_MLLW_Final.csar: 0
OK
Holiday finder v2
Parameters
All holes
Object detection
Full coverage
Find holiday v2
Upper limit for holiday area (in grid nodes):
100
200
400
1600
unlimited
QA


QC Tools v.1.4.2
VALSOU check v2
Parameters
Execution
VALSOU check v3
Flagged features per input pair:
- H12940_Final_Feature_File.000 VS. H12940_MB_1m_MLLW_Final.csar: 0
- H12940_Final_Feature_File.000 VS. H12940_MB_2m_MLLW_Final.csar: 0
- H12940_Final_Feature_File.000 VS. H12940_MB_4m_MLLW_Final.csar: 0
- H12940_Final_Feature_File.000 VS. H12940_MB_8m_MLLW_Final.csar: 0
OK
VALSOU check v3
Parameters
2015
2016
Survey scale: 1 :
20000
VALSOU check v3
QA

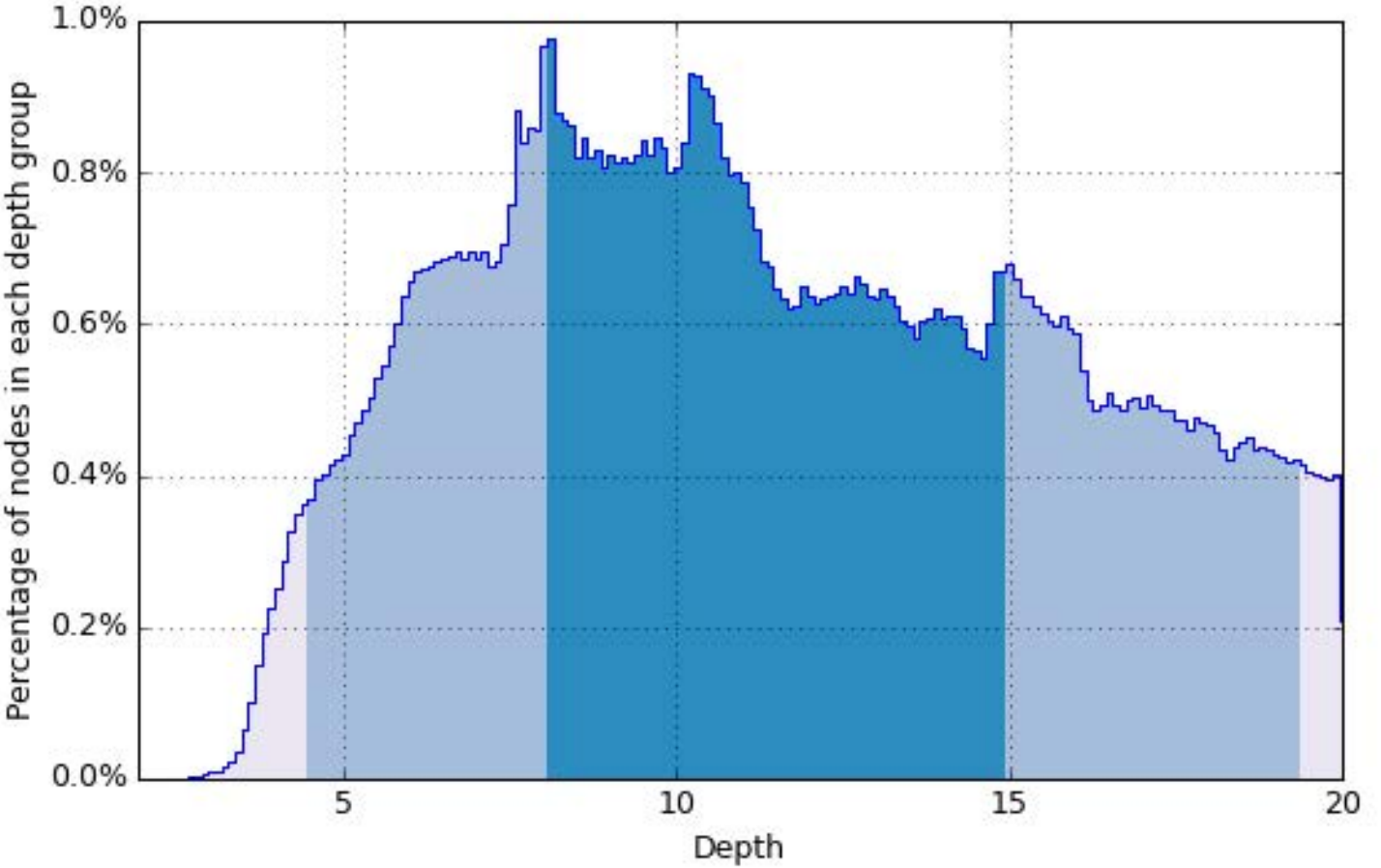

Object Detection Coverage
Grid source: H12940_MB_1m_MLLW_Final.csar
99.5+% pass (2,872,617 of all nodes), min=1.0, mode=26.0, max=7058.0
Percentiles: 2.5%=17.0, Q1=52.0, median=102.0, Q3=202.0, 97.5%=586.0
Percentage of nodes in each sounding density group
0.8%
0.7%
0.6%
0.5%
0.4%
0.3%
0.2%
0.1%
0.0%
100
200
300
400
500
600
Soundings per node

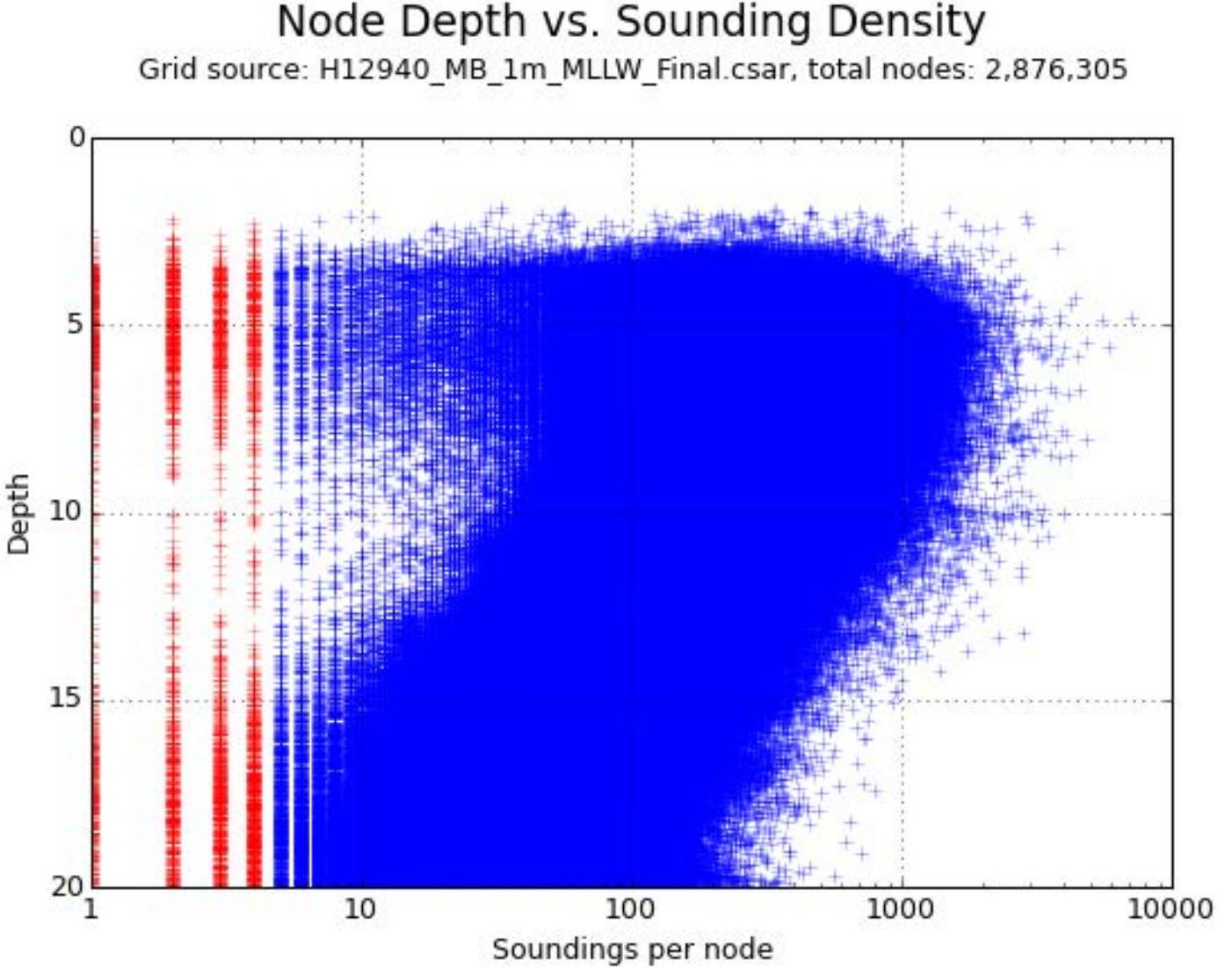
Depth Distribution

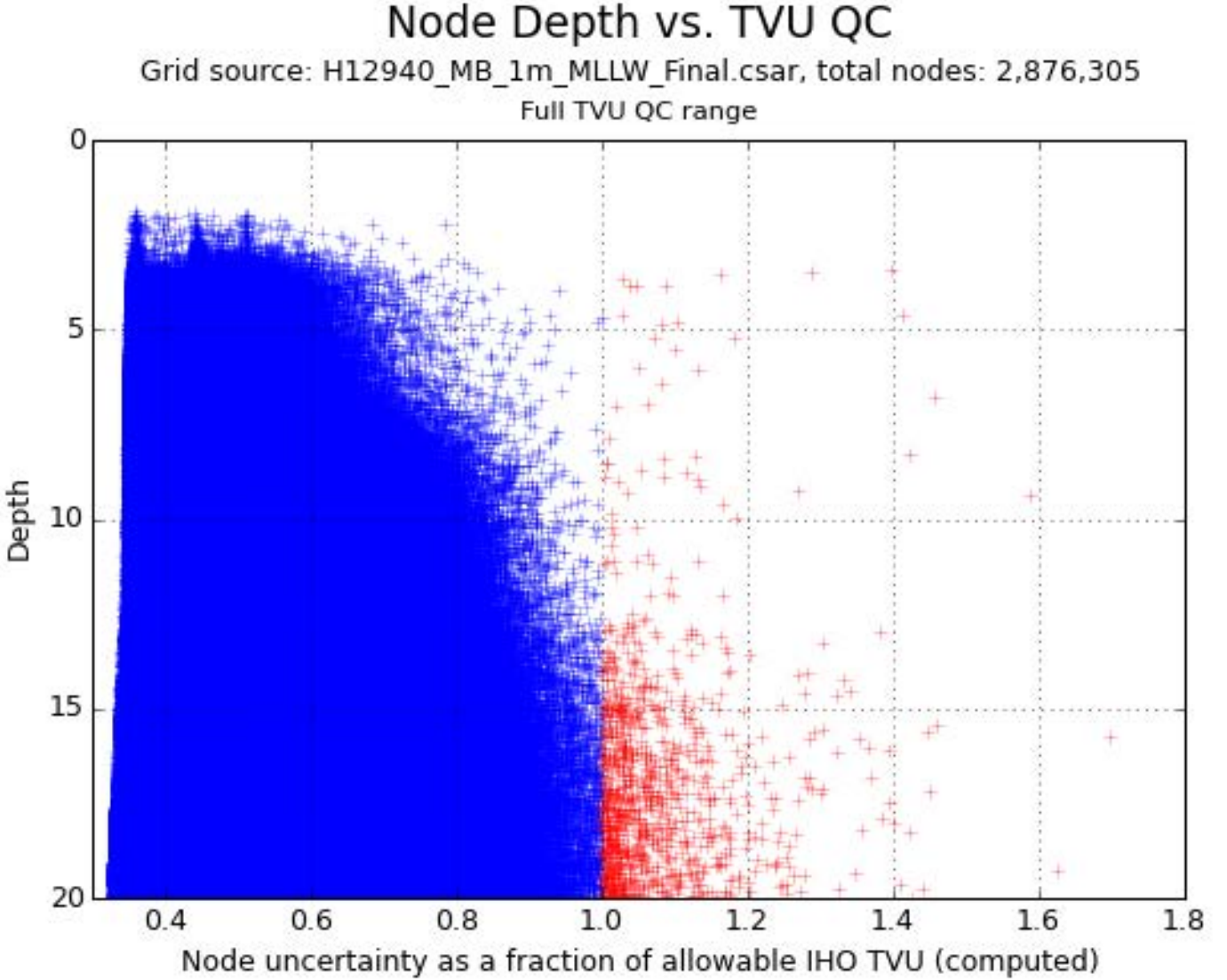
Grid source: H12940_MB_1m_MLLW_Final.csar

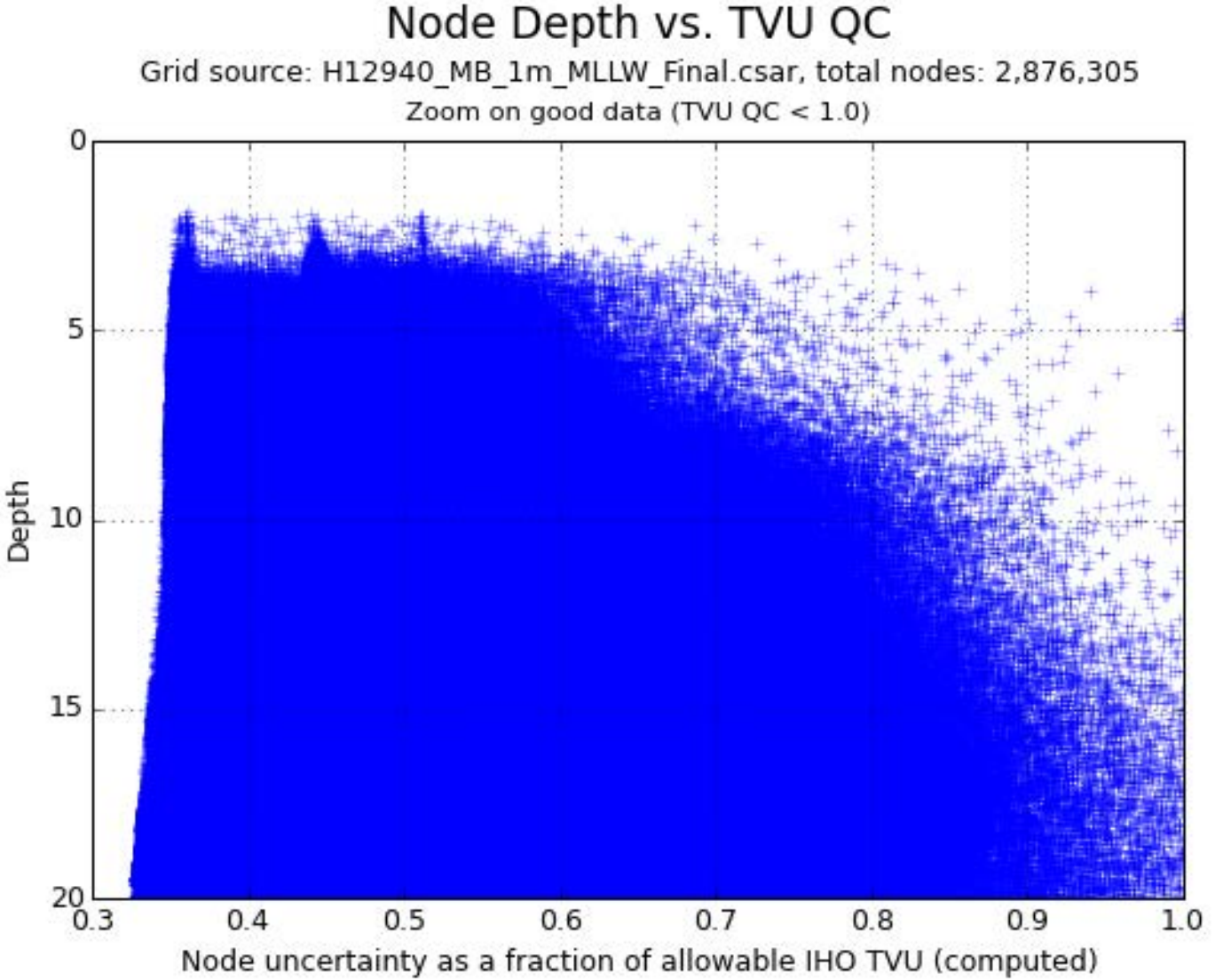
Total nodes: 2,876,305, min=1.87, mode=8.10, max=20.00

Percentiles: 2.5%=4.47, Q1=8.04, median=11.00, Q3=14.94, 97.5%=19.38




Node Depth vs. Sounding Density
Grid source: H12940_MB_1m_MLLW_Final.csar, total nodes: 2,876,305
Depth
0
5
10
15
20
1
10
100
1000
10000
Soundings per node


Node Depth vs. TVU QC
Grid source: H12940_MB_1m_MLLW_Final.csar, total nodes: 2,876,305
Full TVU QC range
Depth
0
5
10
15
20
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
Node uncertainty as a fraction of allowable IHO TVU (computed)

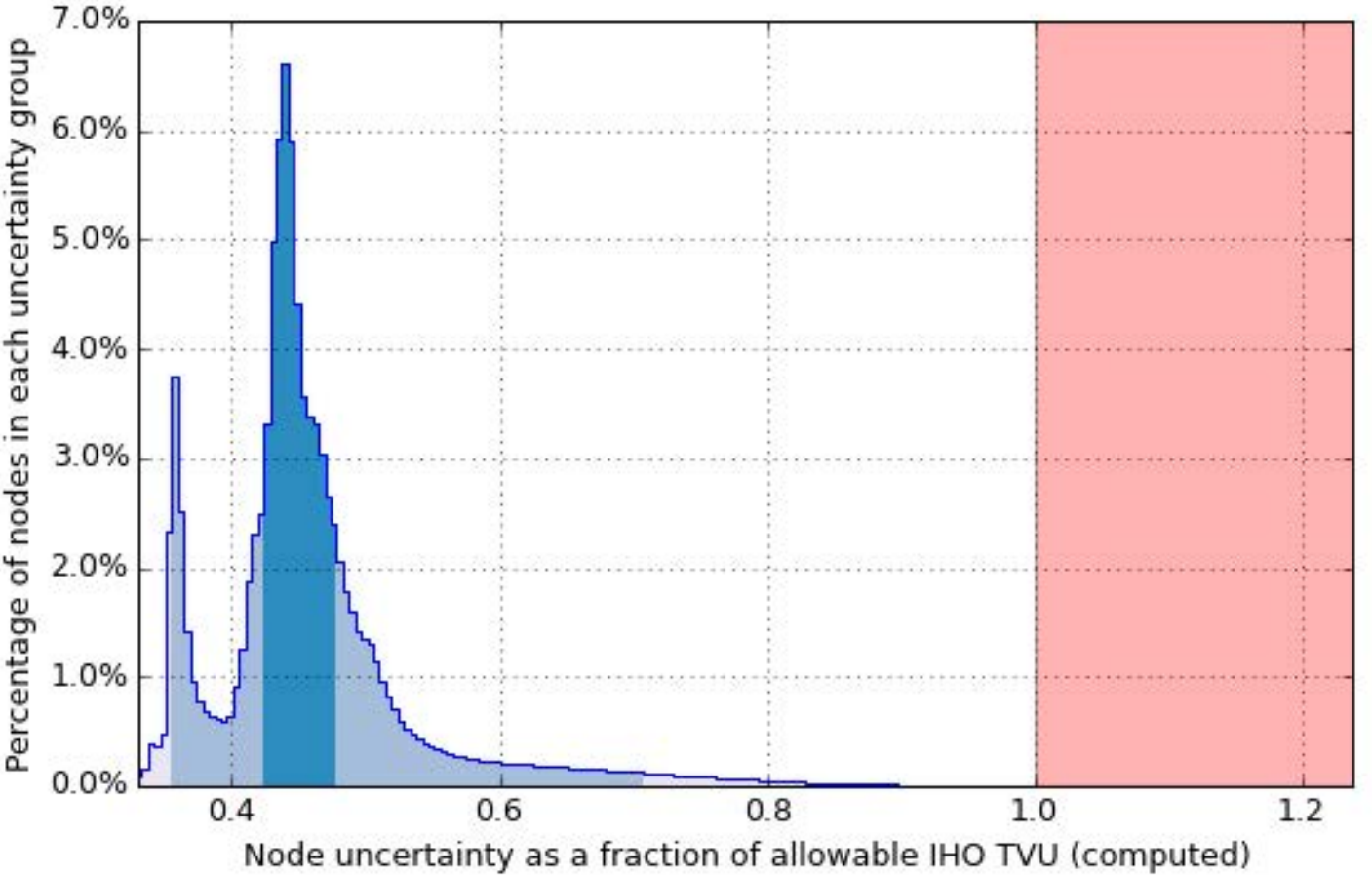

Node Depth vs. TVU QC
Grid source: H12940_MB_1m_MLLW_Final.csar, total nodes: 2,876,305
Zoom on good data (TVU QC < 1.0)
Depth
0
5
10
15
20
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Node uncertainty as a fraction of allowable IHO TVU (computed)

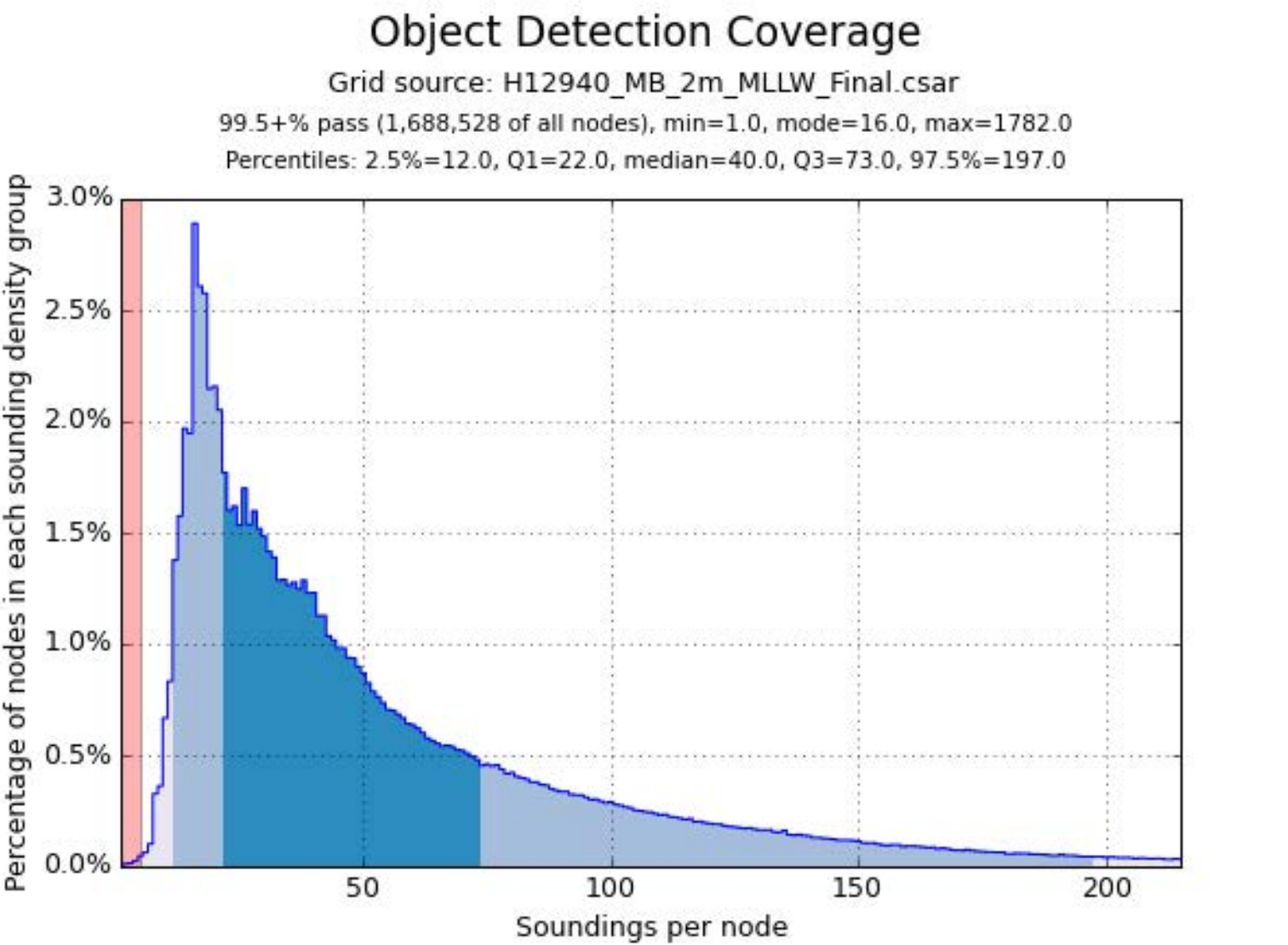
Uncertainty Standards

Grid source: H12940_MB_1m_MLLW_Final.csar

99.5+% pass (2,875,292 of all nodes), min=0.33, mode=0.44, max=1.70

Percentiles: 2.5%=0.35, Q1=0.42, median=0.44, Q3=0.48, 97.5%=0.71



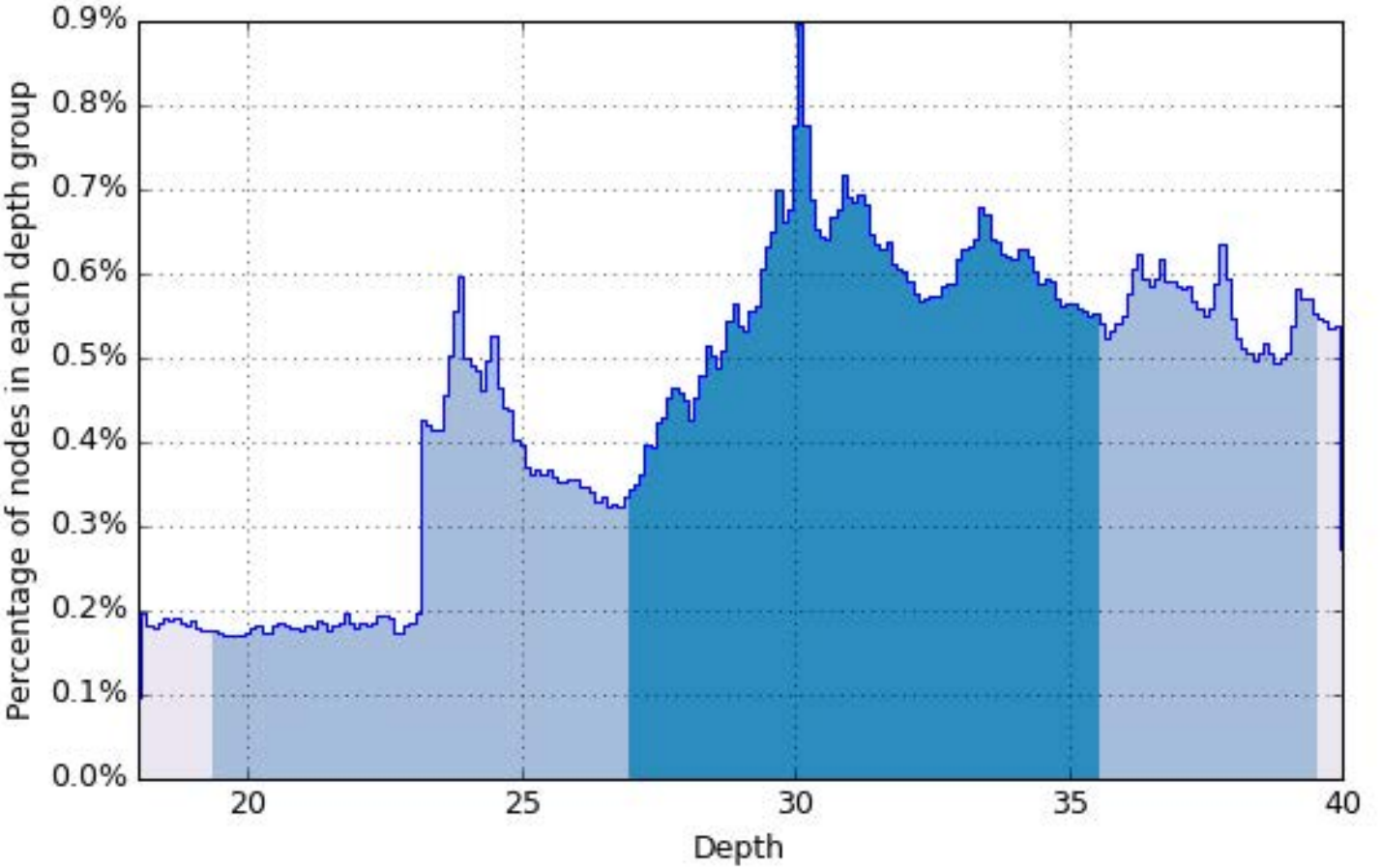

Object Detection Coverage
Grid source: H12940_MB_2m_MLLW_Final.csar
99.5+% pass (1,688,528 of all nodes), min=1.0, mode=16.0, max=1782.0
Percentiles: 2.5%=12.0, Q1=22.0, median=40.0, Q3=73.0, 97.5%=197.0
Percentage of nodes in each sounding density group
3.0%
2.5%
2.0%
1.5%
1.0%
0.5%
0.0%
50
100
150
200
Soundings per node

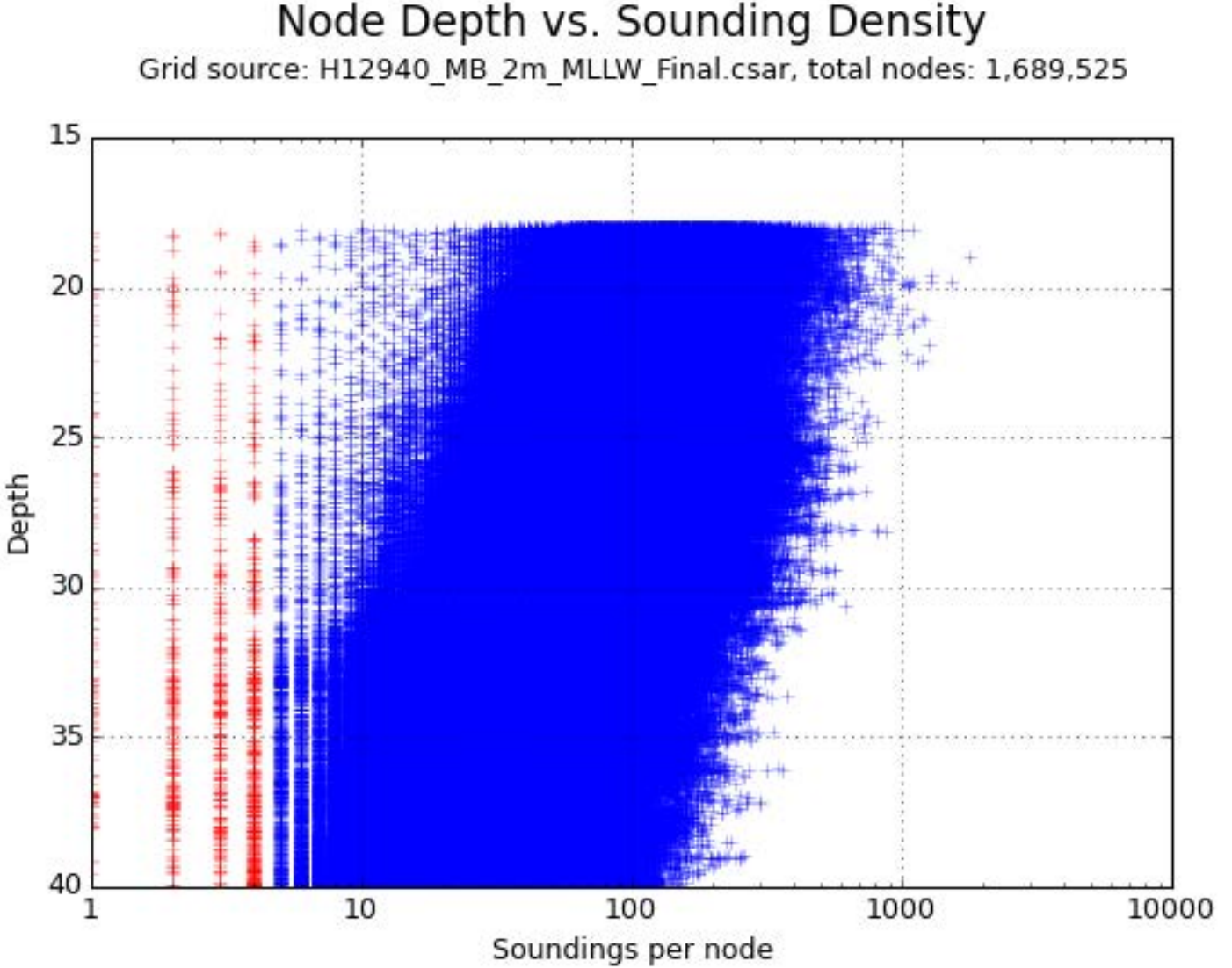
Depth Distribution

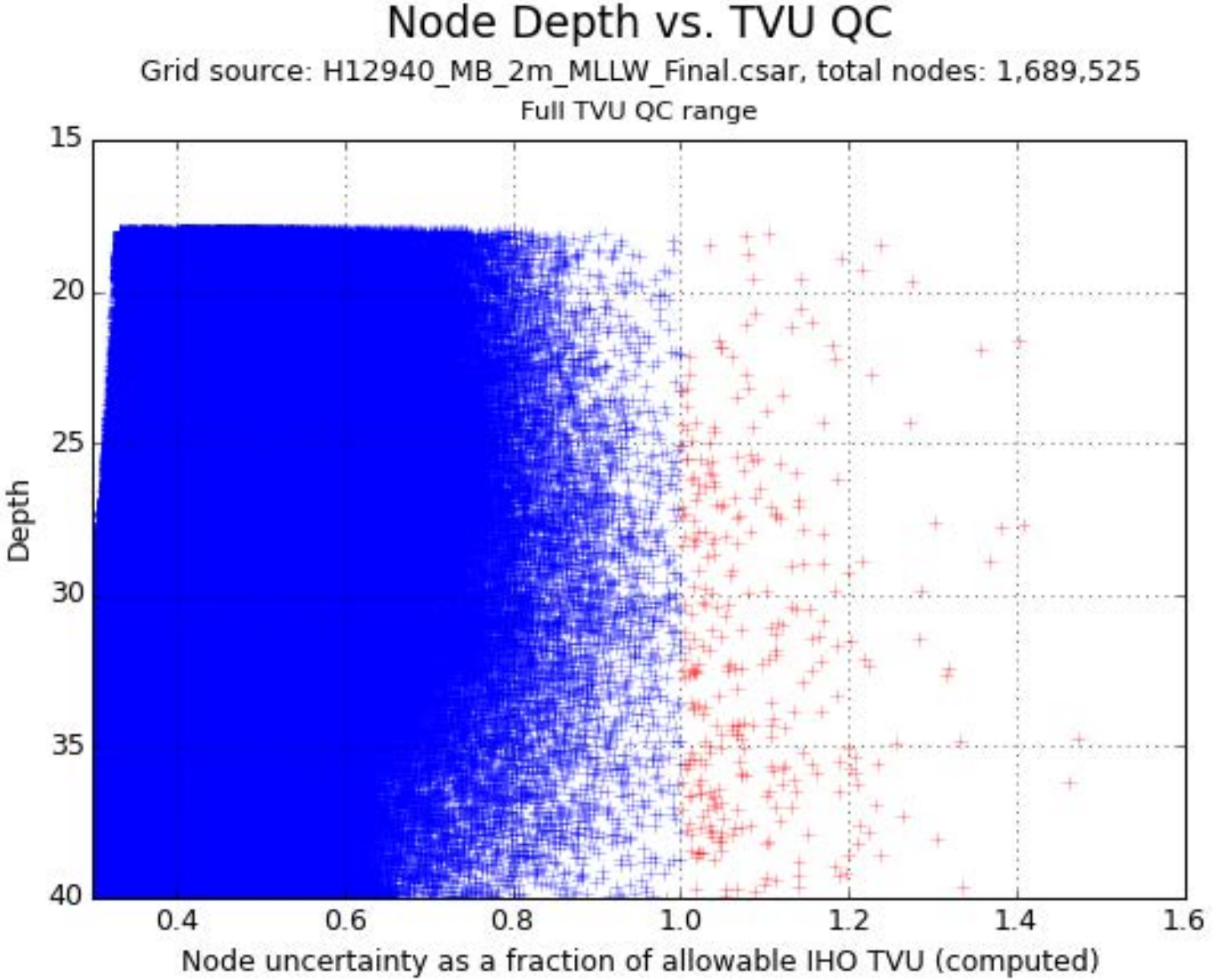
Grid source: H12940_MB_2m_MLLW_Final.csar

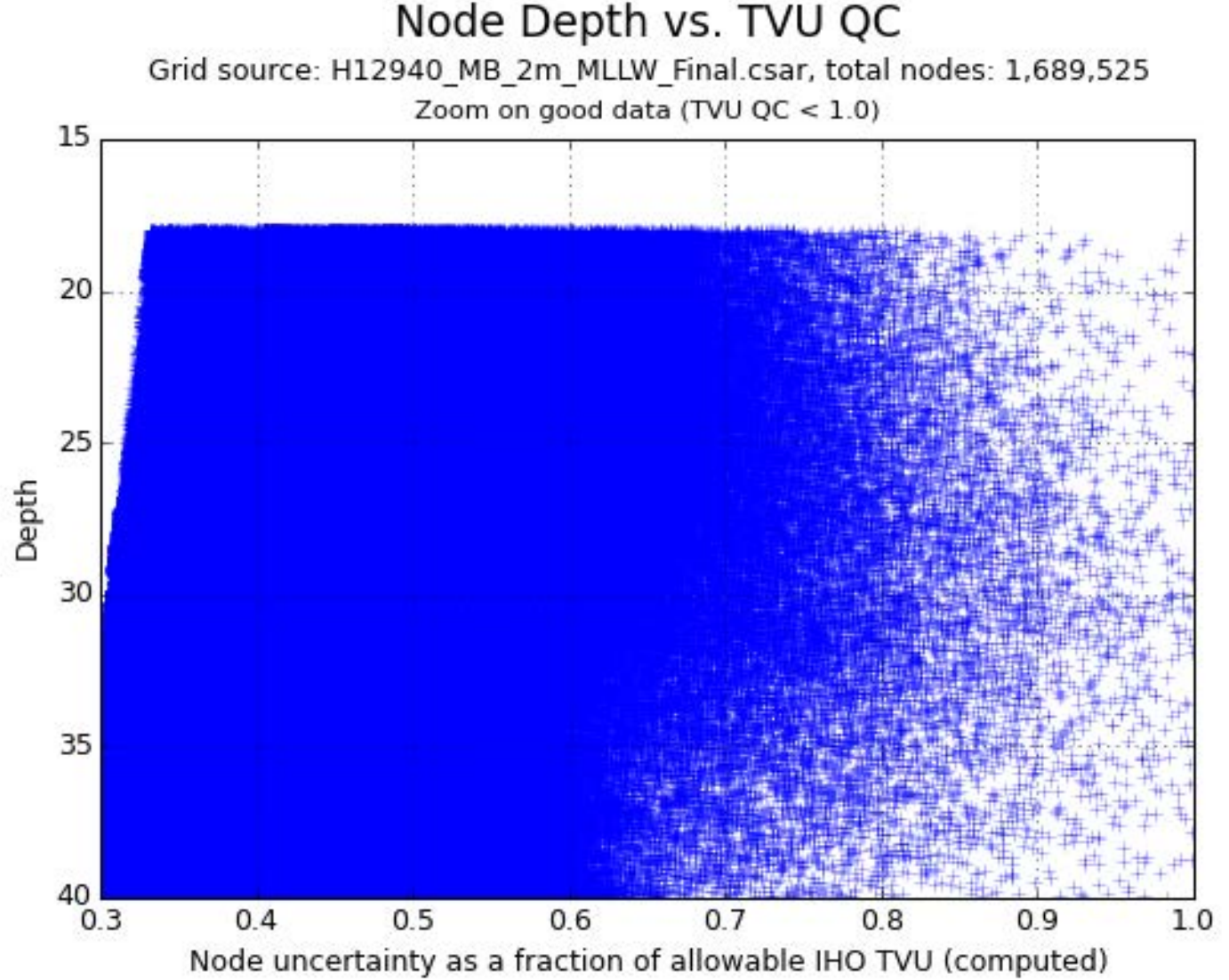
Total nodes: 1,689,525, min=18.00, mode=30.10, max=40.00

Percentiles: 2.5%=19.35, Q1=26.98, median=31.36, Q3=35.50, 97.5%=39.54




Node Depth vs. Sounding Density
Grid source: H12940_MB_2m_MLLW_Final.csar, total nodes: 1,689,525
Depth
15
20
25
30
35
40
1
10
100
1000
10000
Soundings per node


Node Depth vs. TVU QC
Grid source: H12940_MB_2m_MLLW_Final.csar, total nodes: 1,689,525
Full TVU QC range
Depth
15
20
25
30
35
40
0.4
0.6
0.8
1.0
1.2
1.4
1.6
Node uncertainty as a fraction of allowable IHO TVU (computed)

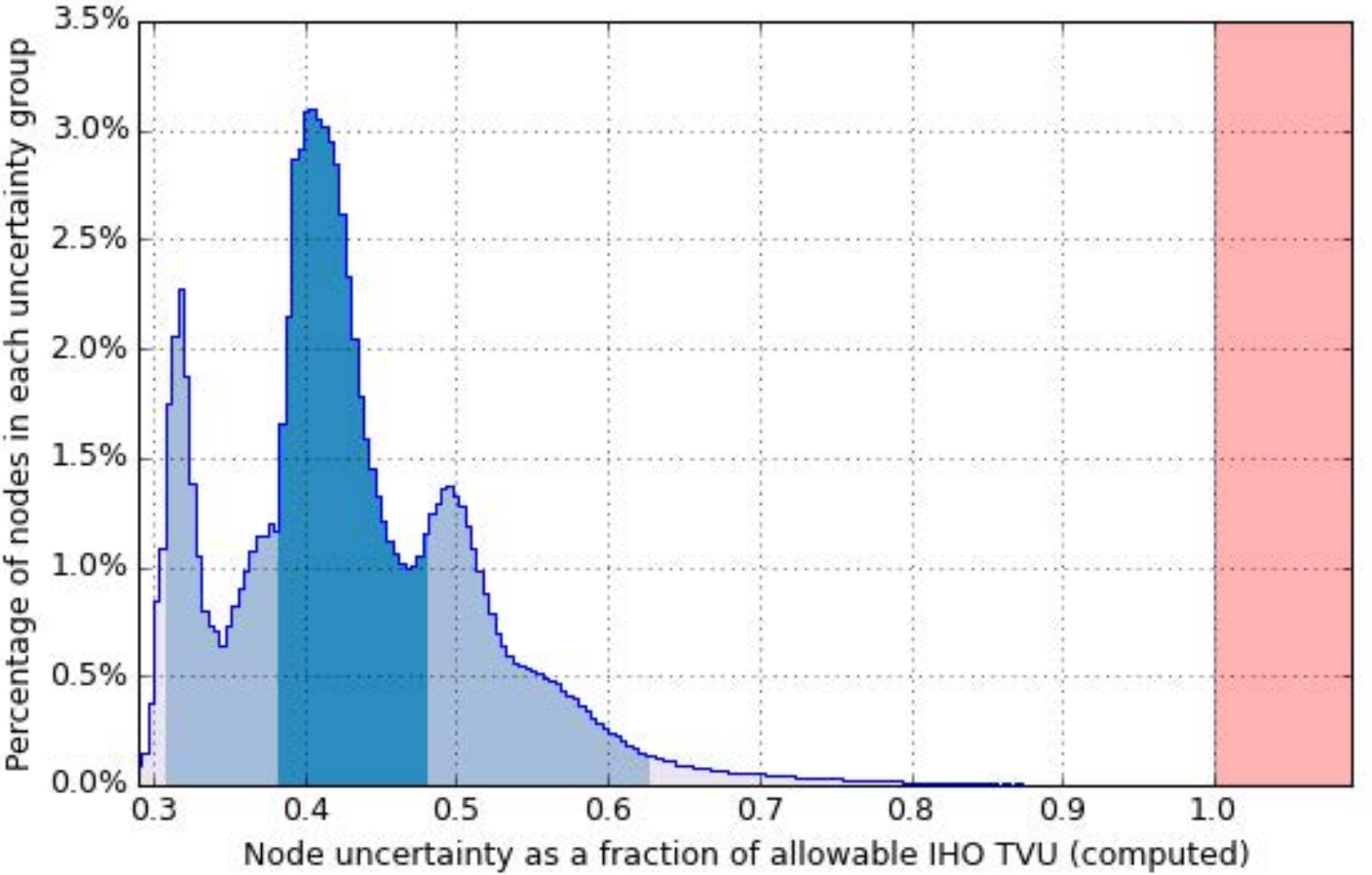

Node Depth vs. TVU QC
Grid source: H12940_MB_2m_MLLW_Final.csar, total nodes: 1,689,525
Zoom on good data (TVU QC < 1.0)
Depth
15
20
25
30
35
40
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Node uncertainty as a fraction of allowable IHO TVU (computed)

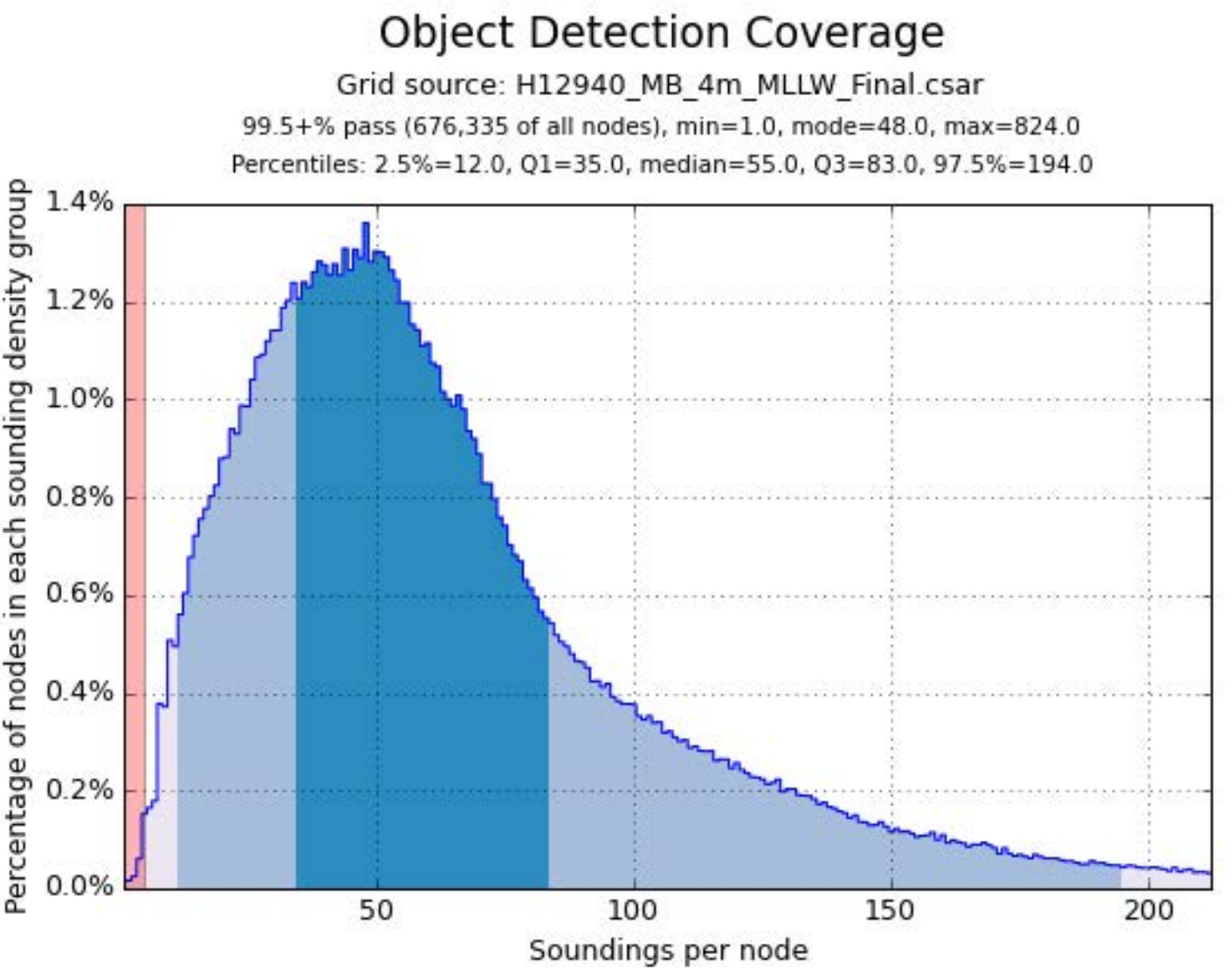
Uncertainty Standards

Grid source: H12940_MB_2m_MLLW_Final.csar

99.5+% pass (1,689,210 of all nodes), min=0.29, mode=0.40, max=1.47

Percentiles: 2.5%=0.31, Q1=0.38, median=0.42, Q3=0.48, 97.5%=0.63



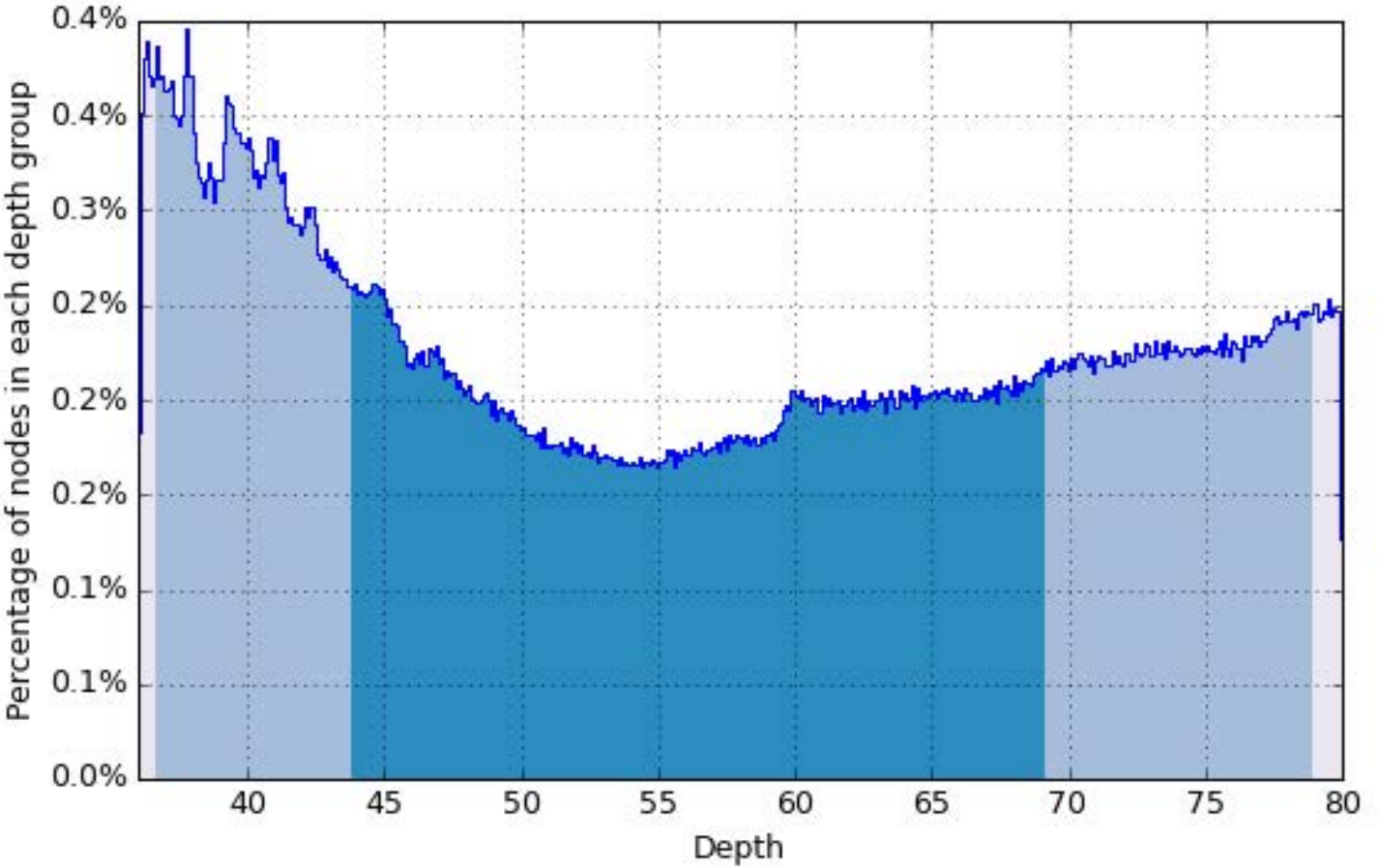

Object Detection Coverage
Grid source: H12940_MB_4m_MLLW_Final.csar
99.5+% pass (676,335 of all nodes), min=1.0, mode=48.0, max=824.0
Percentiles: 2.5%=12.0, Q1=35.0, median=55.0, Q3=83.0, 97.5%=194.0
Percentage of nodes in each sounding density group
1.4%
1.2%
1.0%
0.8%
0.6%
0.4%
0.2%
0.0%
50
100
150
200
Soundings per node

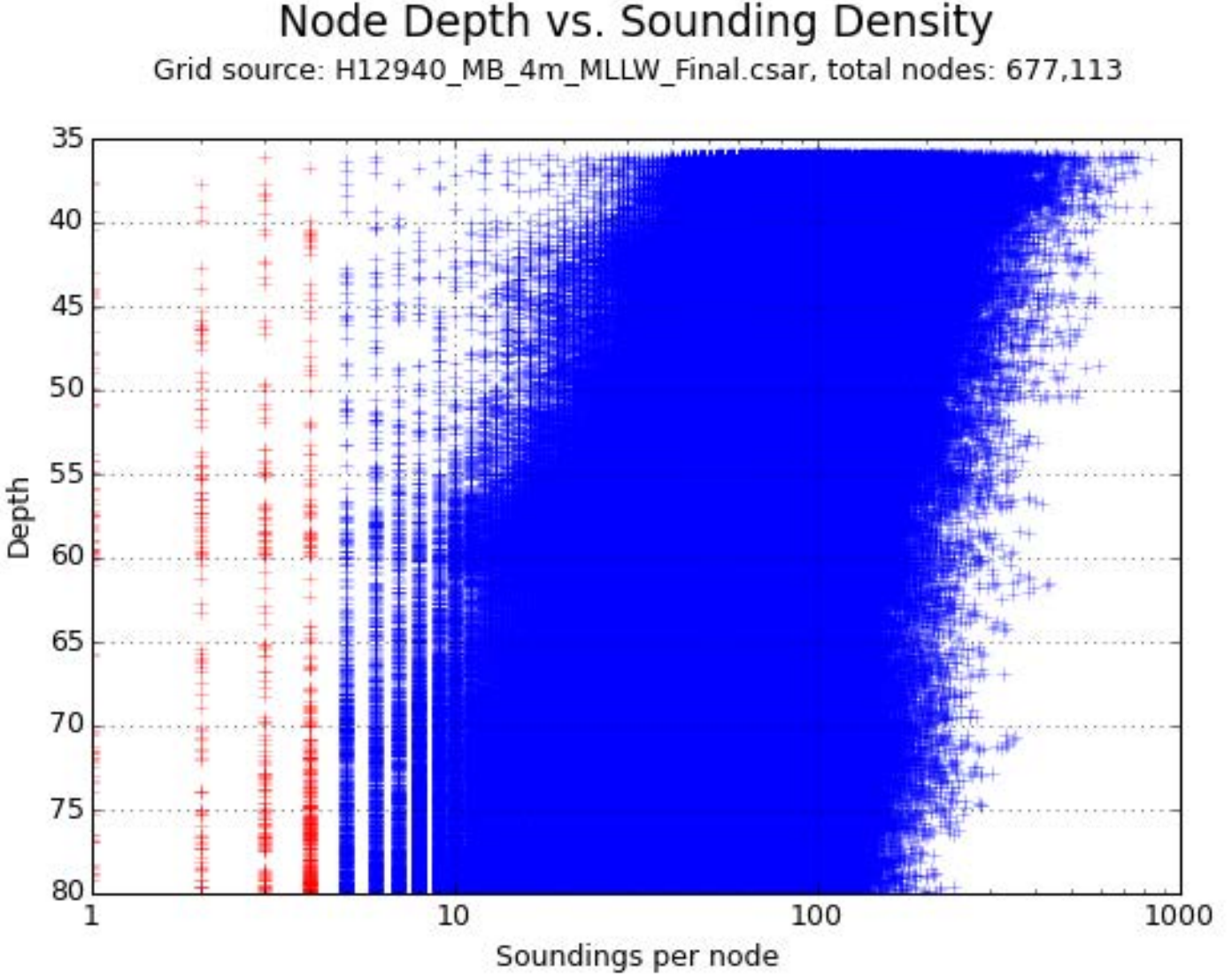
Depth Distribution

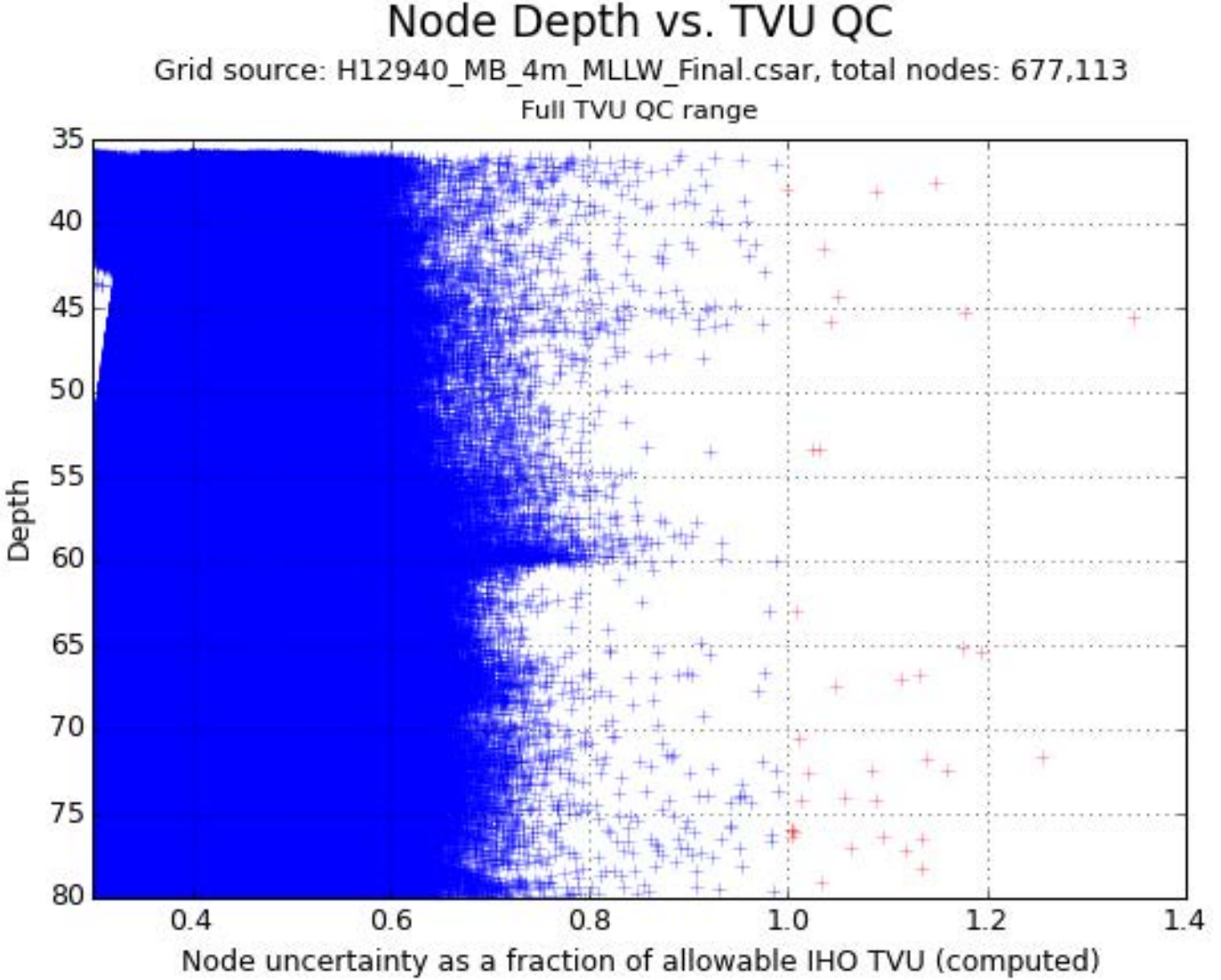
Grid source: H12940_MB_4m_MLLW_Final.csar

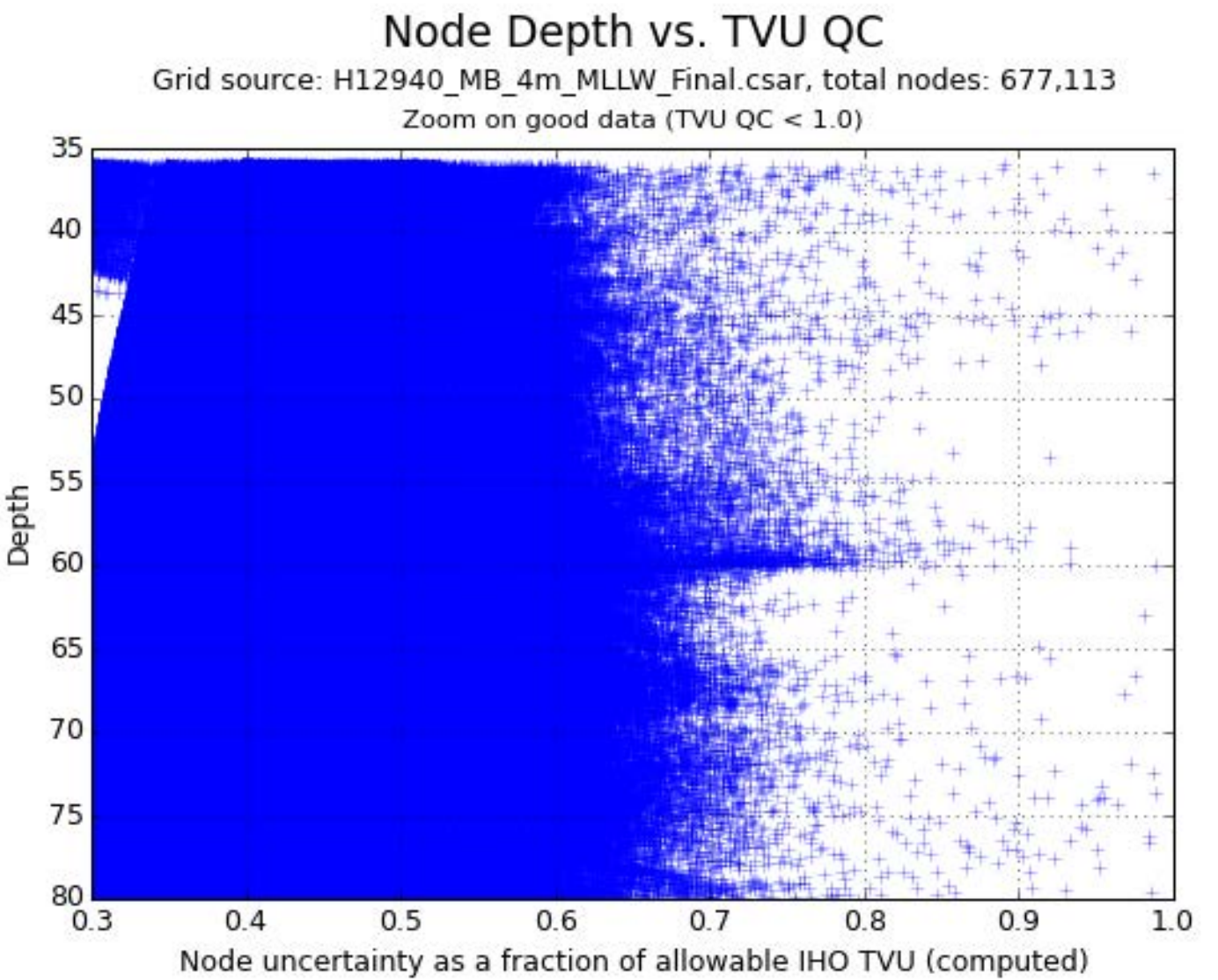
Total nodes: 677,113, min=36.00, mode=37.80, max=80.00

Percentiles: 2.5%=36.67, Q1=43.71, median=56.41, Q3=69.12, 97.5%=78.99




Node Depth vs. Sounding Density
Grid source: H12940_MB_4m_MLLW_Final.csar, total nodes: 677,113
Depth
35
40
45
50
55
60
65
70
75
80
1
10
100
1000
Soundings per node


Node Depth vs. TVU QC
Grid source: H12940_MB_4m_MLLW_Final.csar, total nodes: 677,113
Full TVU QC range
Depth
35
40
45
50
55
60
65
70
75
80
0.4
0.6
0.8
1.0
1.2
1.4
Node uncertainty as a fraction of allowable IHO TVU (computed)

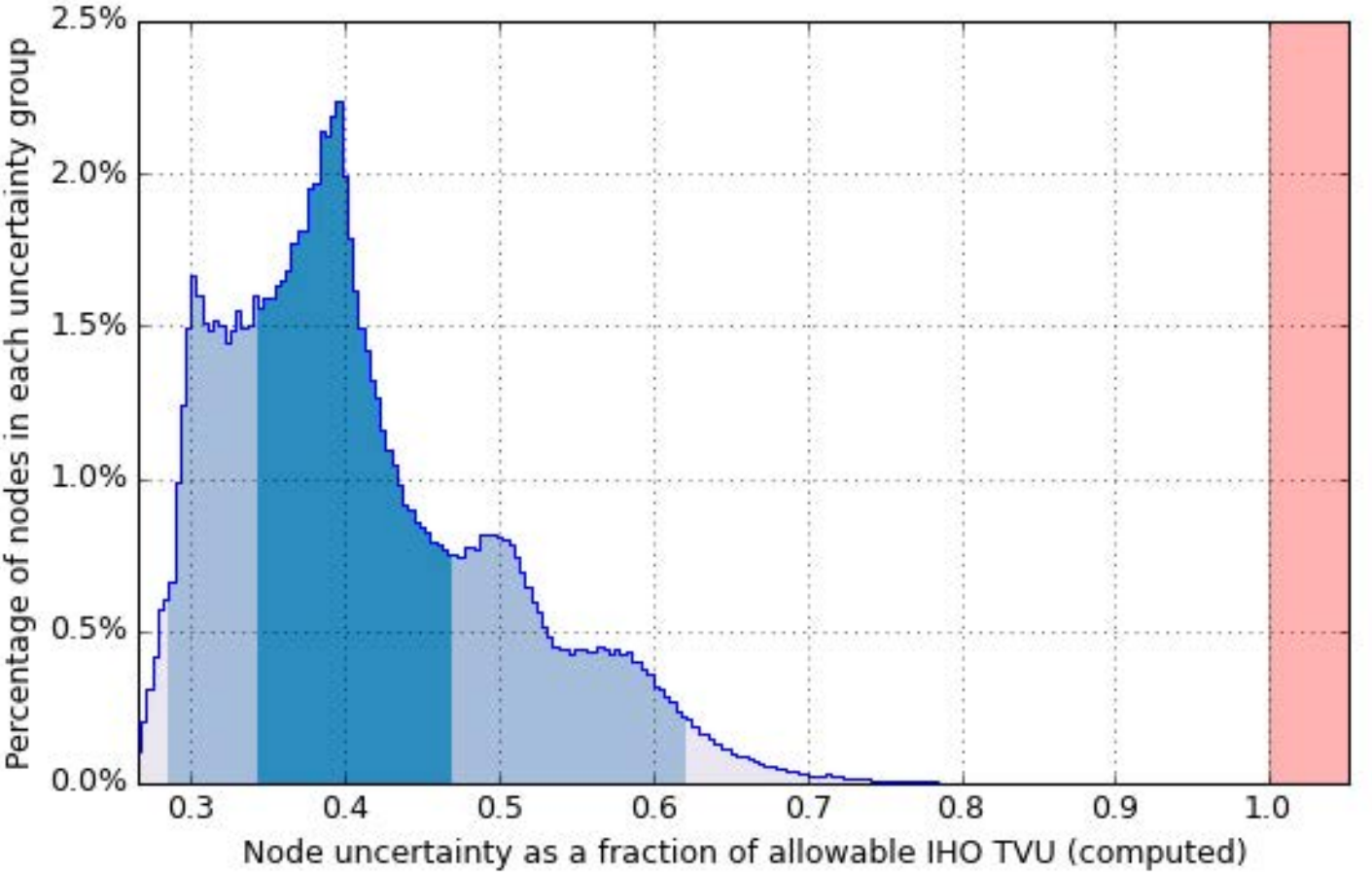

Node Depth vs. TVU QC
Grid source: H12940_MB_4m_MLLW_Final.csar, total nodes: 677,113
Zoom on good data (TVU QC < 1.0)
Depth
35
40
45
50
55
60
65
70
75
80
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Node uncertainty as a fraction of allowable IHO TVU (computed)

Uncertainty Standards

Grid source: H12940_MB_4m_MLLW_Final.csar

99.5+% pass (677,078 of all nodes), min=0.26, mode=0.40, max=1.35

Percentiles: 2.5%=0.29, Q1=0.34, median=0.39, Q3=0.47, 97.5%=0.62

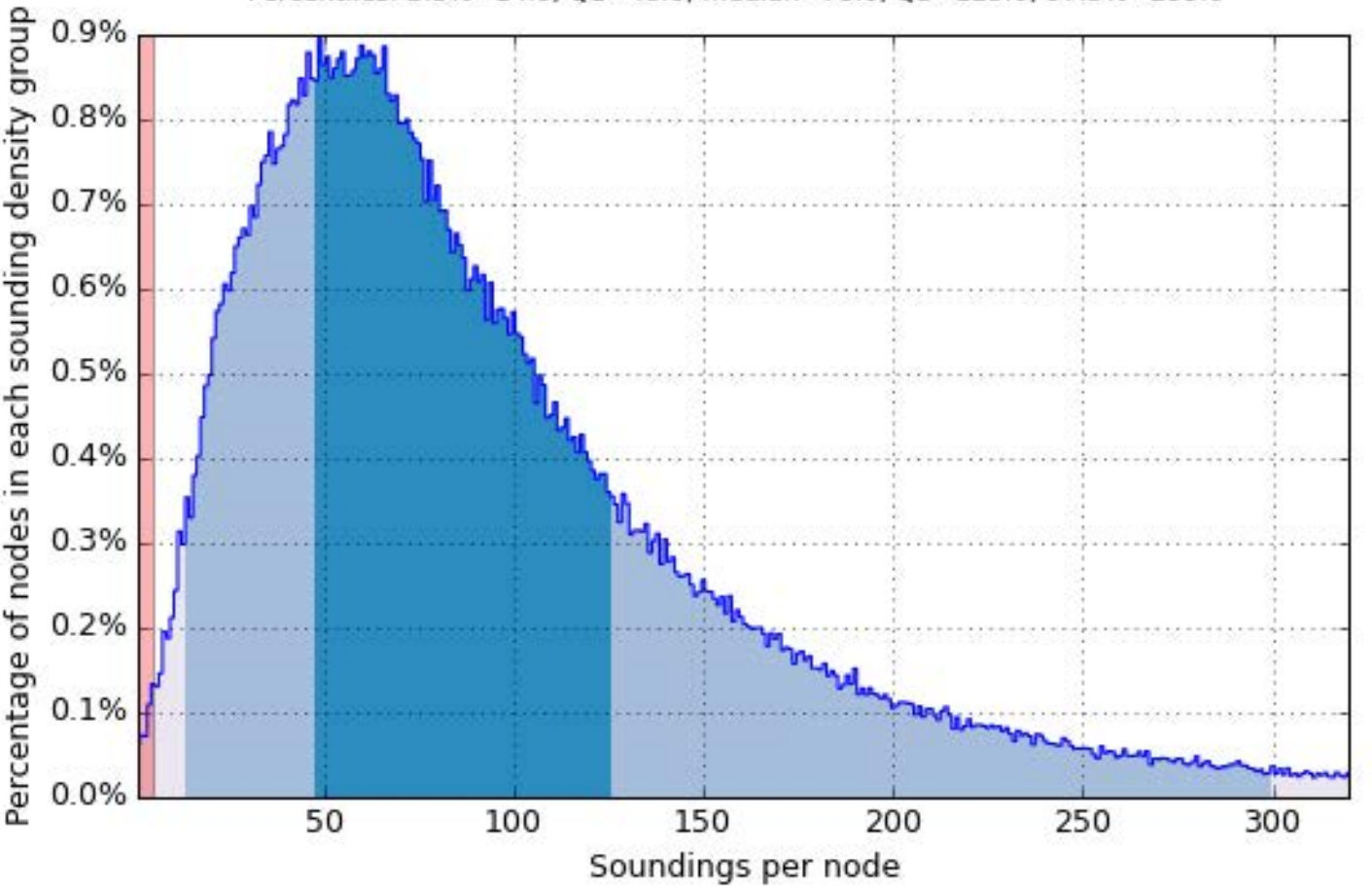


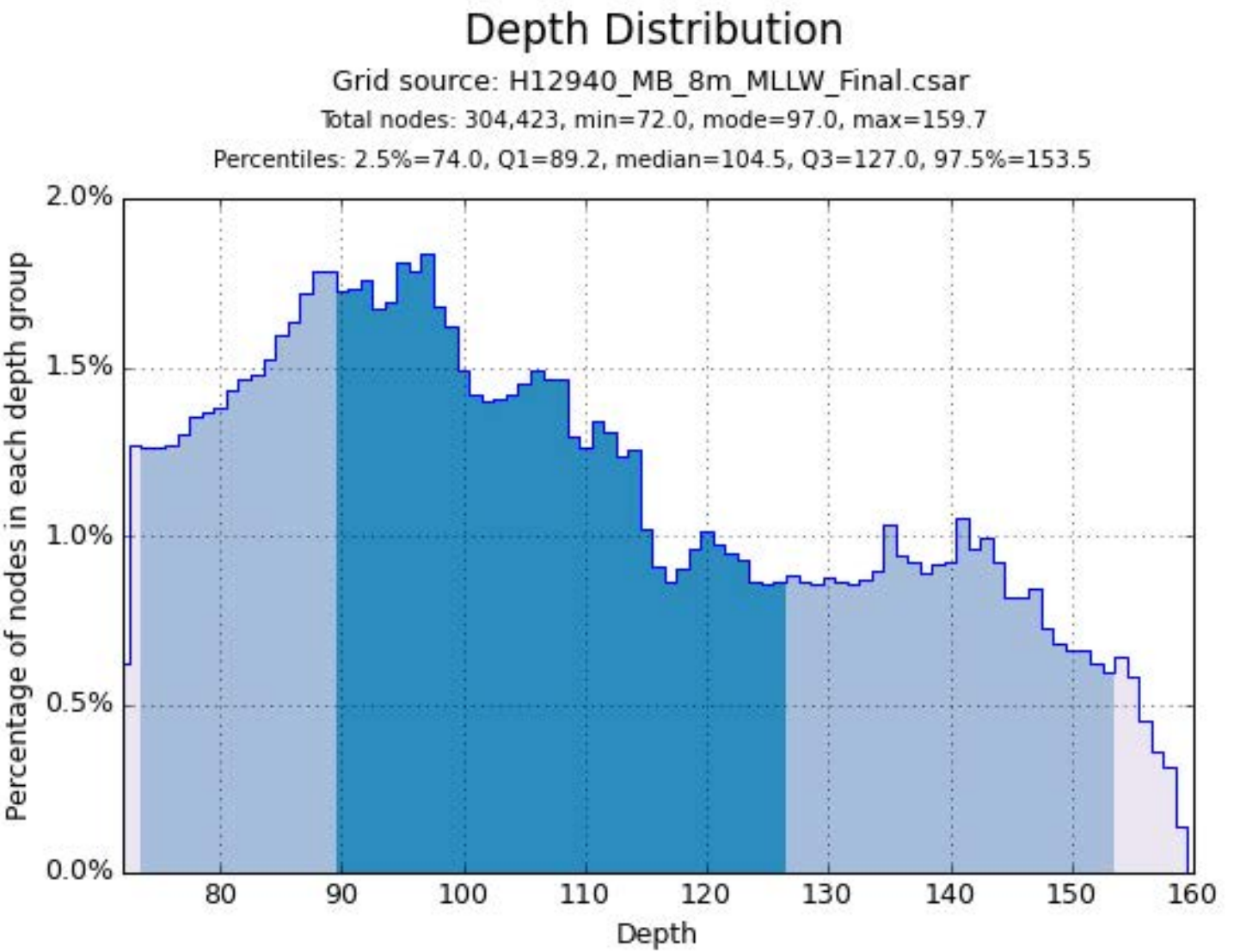
Object Detection Coverage

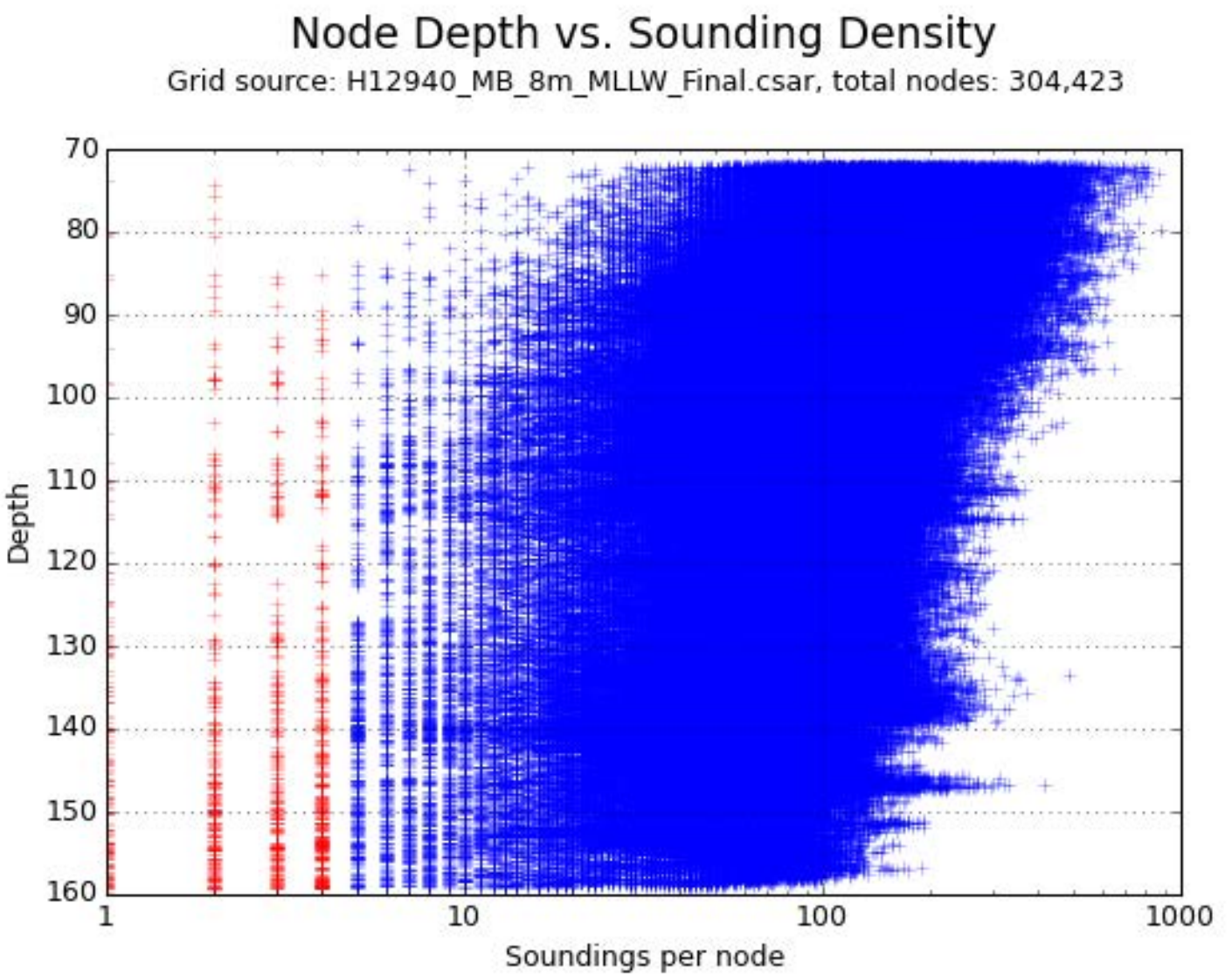
Grid source: H12940_MB_8m_MLLW_Final.csar

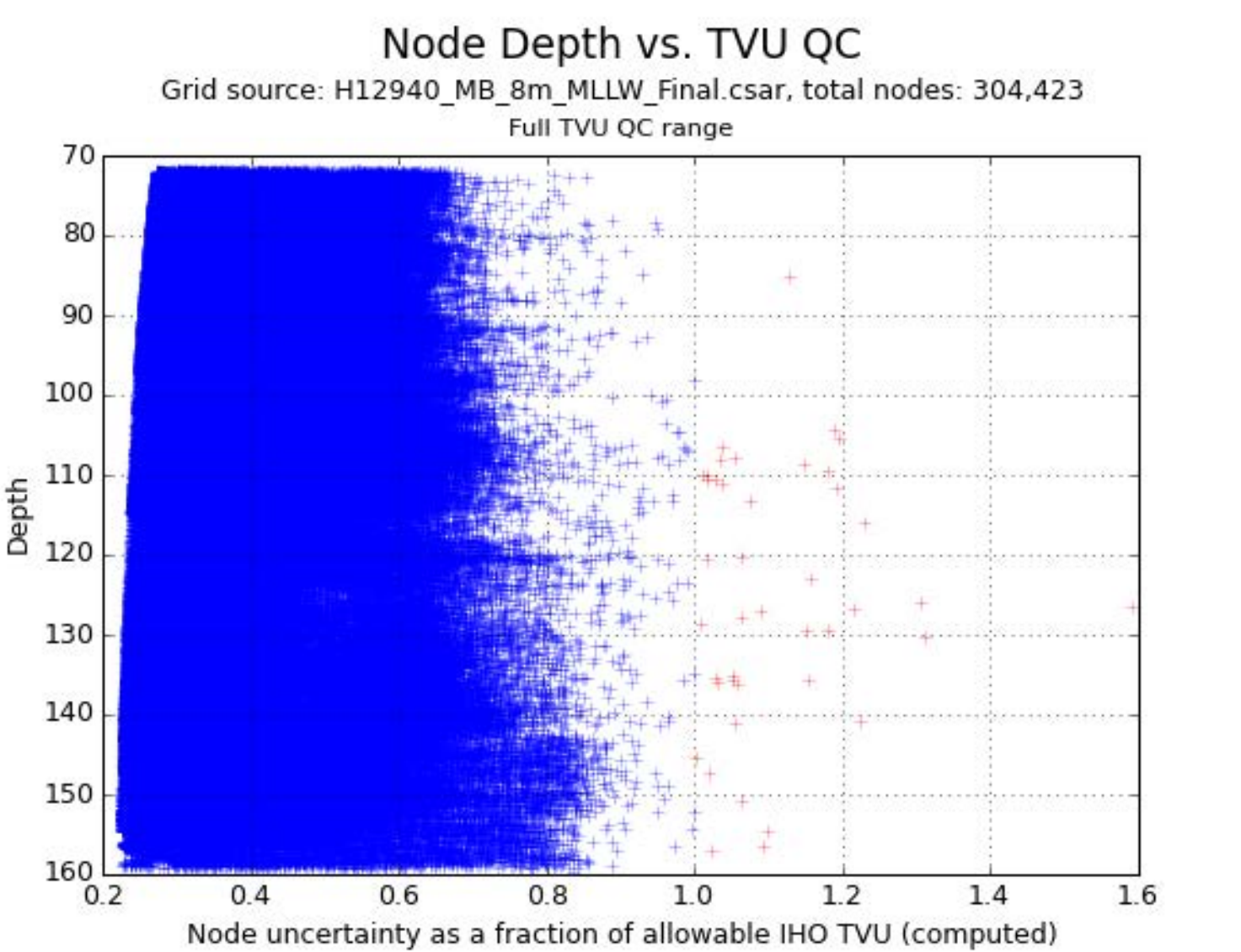
99.5+% pass (303,464 of all nodes), min=1.0, mode=49.0, max=874.0

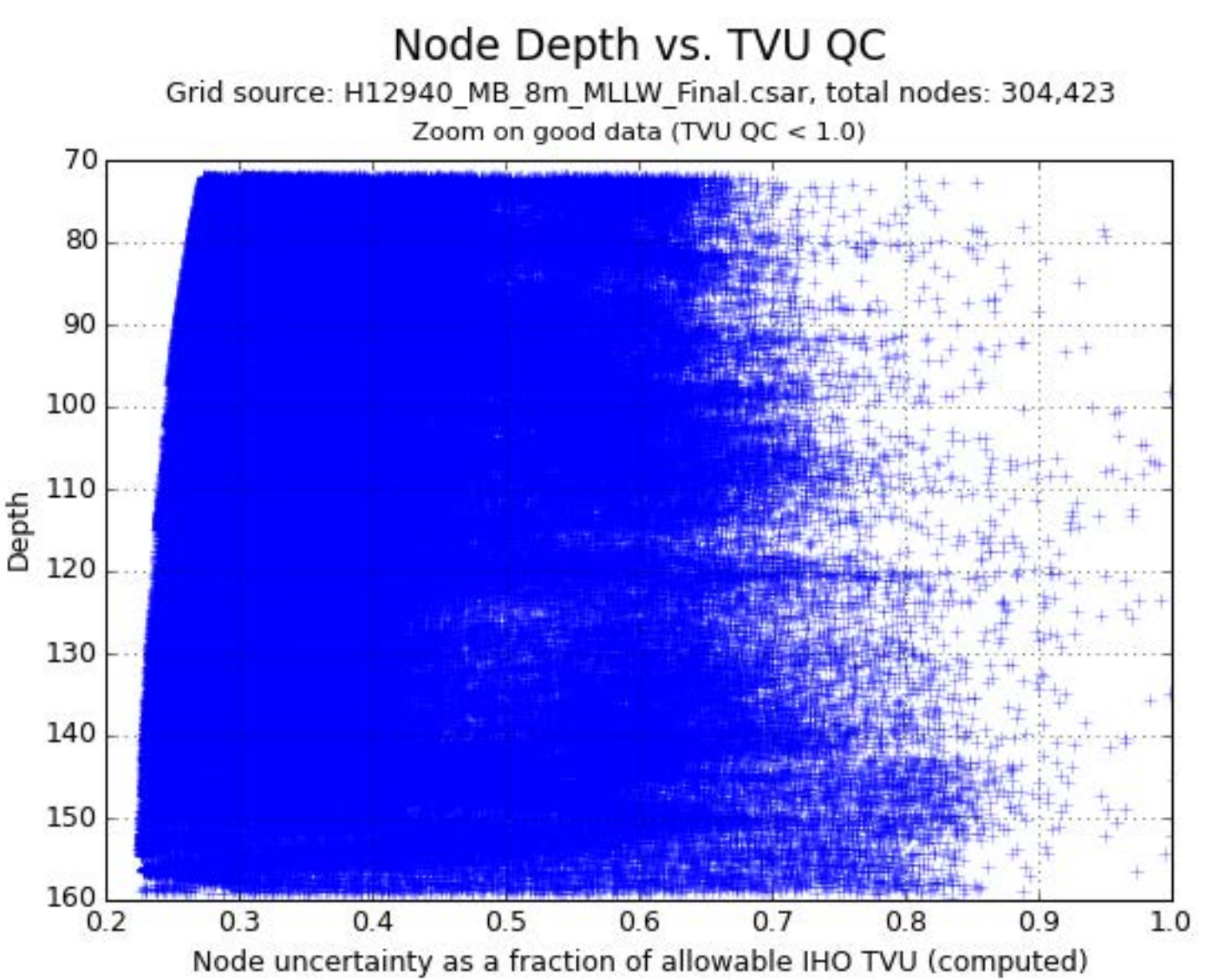
Percentiles: 2.5%=14.0, Q1=48.0, median=78.0, Q3=125.0, 97.5%=299.0




Depth Distribution
Grid source: H12940_MB_8m_MLLW_Final.csar
Total nodes: 304,423, min=72.0, mode=97.0, max=159.7
Percentiles: 2.5%=74.0, Q1=89.2, median=104.5, Q3=127.0, 97.5%=153.5
Percentage of nodes in each depth group
2.0%
1.5%
1.0%
0.5%
0.0%
80
90
100
110
120
130
140
150
160
Depth


Node Depth vs. Sounding Density
Grid source: H12940_MB_8m_MLLW_Final.csar, total nodes: 304,423
Depth
70
80
90
100
110
120
130
140
150
160
1
10
100
1000
Soundings per node


Node Depth vs. TVU QC
Grid source: H12940_MB_8m_MLLW_Final.csar, total nodes: 304,423
Full TVU QC range
Depth
70
80
90
100
110
120
130
140
150
160
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
Node uncertainty as a fraction of allowable IHO TVU (computed)

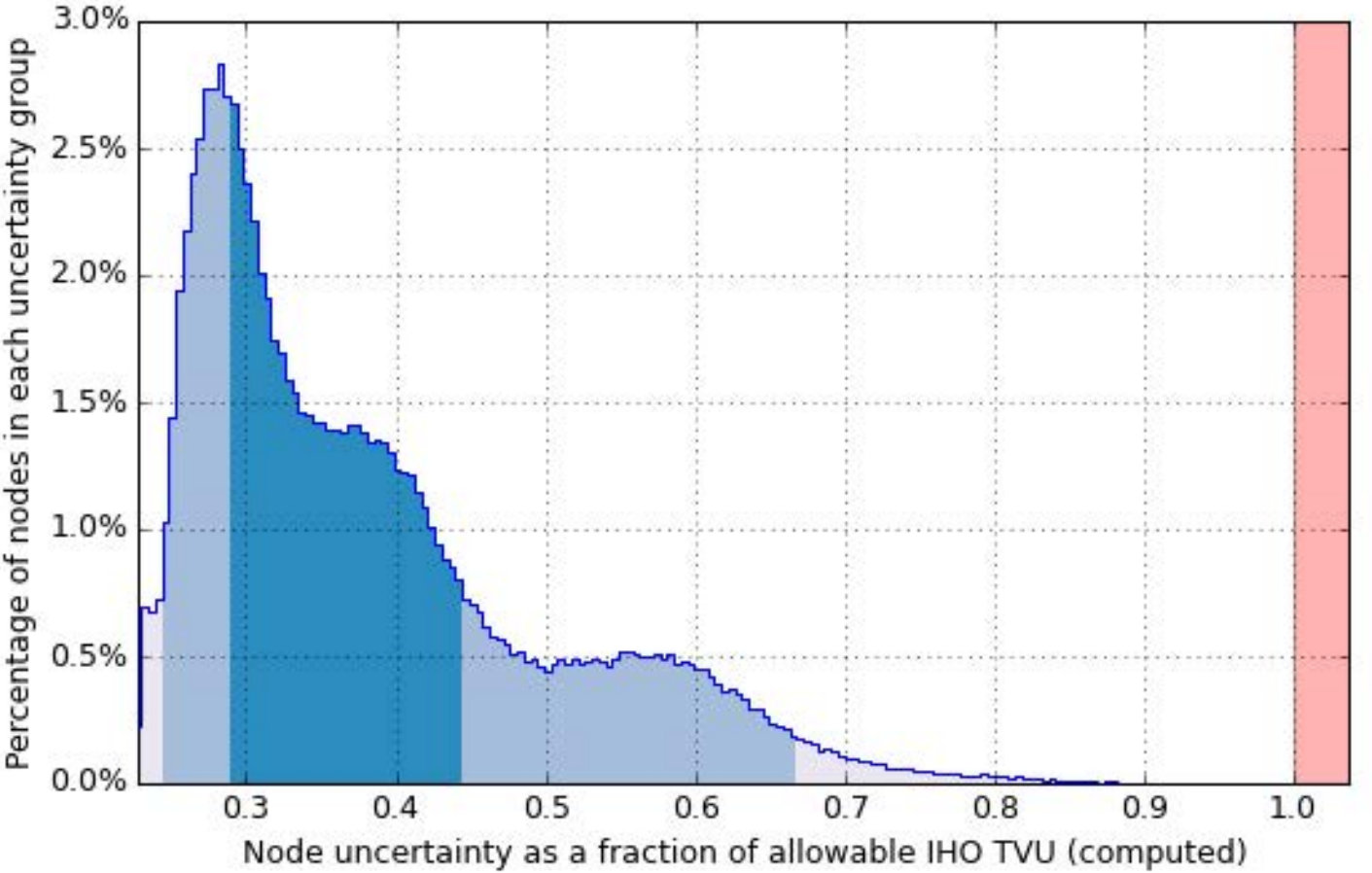

Node Depth vs. TVU QC
Grid source: H12940_MB_8m_MLLW_Final.csar, total nodes: 304,423
Zoom on good data (TVU QC < 1.0)
Depth
70
80
90
100
110
120
130
140
150
160
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Node uncertainty as a fraction of allowable IHO TVU (computed)

Uncertainty Standards

Grid source: H12940_MB_8m_MLLW_Final.csar

99.5+% pass (304,381 of all nodes), min=0.23, mode=0.28, max=1.59

Percentiles: 2.5%=0.24, Q1=0.29, median=0.35, Q3=0.44, 97.5%=0.67



Clinton Marcus - NOAA Federal <clinton.r.marcus@noaa.gov>

Fwd: Survey Outlines; OPR-Q328-FA-16; H12937, H12938, H12939, H12940

1 message

FA OPS <ops.fairweather@noaa.gov> Sun, Oct 16, 2016 at 1:07 PM
To: Clinton Marcus - NOAA Federal <clinton.r.marcus@noaa.gov>

FYI.

Very Respectfully,

LT Bart Buesseler, NOAA

-------- Forwarded Message --------
Subject: Survey Outlines; OPR-Q328-FA-16; H12937, H12938, H12939, H12940
Date: Fri, 26 Aug 2016 12:13:09 -0800
From: Bart Buesseler - NOAA Federal <Bart.O.Buesseler@noaa.gov>
To:survey.outlines@noaa.gov
CC: Katrina Wyllie - NOAA Federal <katrina.wyllie@noaa.gov>, Samuel Candio - NOAA Federal <samuel.candio@noaa.gov>, Hannah Marshburn - NOAA Federal <Hannah.Marshburn@noaa.gov>, Patrick Debroisse - NOAA Federal <patrick.j.debroisse@noaa.gov>, ops. fairweather <ops.fairweather@noaa.gov>, Douglas Bravo - NOAA Federal <chiefst.fairweather@noaa.gov>, _OMAO MOP CO Fairweather <co.fairweather@noaa.gov>

Greetings,

Please find the attached survey outlines for OPR-Q328-FA-16, North Coast Unalaska Island, surveys H12937, H12938, H12939, H12940.

Please let me know if you have any questions or difficulties opening the files. Thanks!

Very Respectfully,

LTJG Bart Buesseler, NOAA

Operations Officer
NOAA Ship *Fairweather*
1010 Stedman Street
Ketchikan, Alaska 99901

Cell: 907.254.2842
Iridium: 808.659.0054
Personal Cell: 503.318.3606
Bart.O.Buesseler@noaa.gov

OPR-Q328-FA-16_SurveyOutlines.zip
582K

Douglas Bravo - NOAA Federal <douglas.a.bravo@noaa.gov>

Fwd: Fwd: CSF and Unattributed Features

1 message

FA OPS <ops.fairweather@noaa.gov> Thu, Oct 20, 2016 at 10:09 AM
To: CST Fairweather <chiefst.fairweather@noaa.gov>, Clinton Marcus - NOAA Federal <clinton.r.marcus@noaa.gov>, Samuel Candio - NOAA Federal <samuel.candio@noaa.gov>, Patrick Debroisse <patrick.j.debroisse@noaa.gov>, Steven Eykelhoff - NOAA Federal <Steven.J.Eykelhoff@noaa.gov>, Roger Stillick - NOAA Federal <roger.stillick@noaa.gov>, Mason Carroll - NOAA Federal <mason.carroll@noaa.gov>, Matthew Sharr <Matthew.Sharr@noaa.gov>, Lander Verhoef <Lander.Verhoef@noaa.gov>, Amber Batts - NOAA Federal <amber.batts@noaa.gov>, Jeffrey Douglas <jeffrey.douglas@noaa.gov>, Hannah Marshburn - NOAA Federal <Hannah.Marshburn@noaa.gov>

FYI for all (email below).

Very Respectfully,

LT Bart Buesseler, NOAA

-------- Forwarded Message --------
Subject: Fwd: CSF and Unattributed Features
Date: Thu, 20 Oct 2016 13:44:24 -0400
From: Russell Quintero - NOAA Federal <russell.quintero@noaa.gov>
To:_OMAO MOA CO Thomas Jefferson <CO.Thomas.Jefferson@noaa.gov>, _OMAO MOP CO Rainier <co.rainier@noaa.gov>, CO - Fairweather (Zezula) <co.fairweather@noaa.gov>, CO.Ferdinand Hassler - NOAA Service Account <CO.Ferdinand.Hassler@noaa.gov>, _OMAO MOA OPS Thomas Jefferson <OPS.Thomas.Jefferson@noaa.gov>, Ops Rainier (LT Meghan McGovern) <ops.rainier@noaa.gov>, ops. fairweather <ops.fairweather@noaa.gov>, OPS. Ferdinand Hassler - NOAA Service Account <OPS.Ferdinand.Hassler@noaa.gov>, LCDR Ben Evans <Benjamin.K.Evans@noaa.gov>, Briana Welton - NOAA Federal <Briana.Welton@noaa.gov>, Richard Brennan - NOAA Federal <richard.t.brennan@noaa.gov>, _NOS OCS HSD OPS <hsd.ops@noaa.gov>, Matthew Wilson - NOAA Federal <matthew.wilson@noaa.gov>

COs, FOOs, Branch Chiefs, et al.,

There was some recent traffic regarding RSAs kicking surveys back to the ships, and one of the tests that failed was the lack of attribution on LNDARE features. Investigation by the branch and field unit found that this lack of attribution came from the CSF and the ENC itself.

This is intentional and should not cause a survey to be rejected. This is related to MCD policy on populating those fields, as detailed in the attached policy change letter and explained by Mike Brown in the email below.

Until the QC tool can be modified to not flag an error on missing SORIND/SORDAT on these three feature types (LNDARE, DPTARE, DPTCNT), please treat those as false positives and neither hold the field unit as in error nor hold any animosity towards the Project Managers. Please pass this along to anyone who needs to know.

Very Respectfully,
Russ

Lieutenant Russell Quintero, NOAA
National Oceanic & Atmospheric Administration
1315 East-West Hwy, SSMC3 6217
Silver Spring, MD 20910
Cell: 970-481-2030

---------- Forwarded message ----------
From: **Mike Brown - NOAA Federal** <mike.brown@noaa.gov>
Date: Thu, Oct 20, 2016 at 9:38 AM
Subject: Re: CSF and Unattributed Features

To: Russell Quintero - NOAA Federal <russell.quintero@noaa.gov>
Cc: Corey Allen - NOAA Federal <corey.allen@noaa.gov>

Corey and Russ,

After some research, I found that things were reworded, and more restrictive in the case of the H-Cell Spec, as the rules were interpreted regarding SORIND/SORDAT on the features in question. The bottom line is that these attributes are optional for three features and mandatory for all others. When Julia gets back from leave, we should check to see if the language in the H-Cell Spec was intentional, and if not, fix it to match. Here are the citations from most authoritative to least (I put some bold text in for emphasis):

Nautical Chart Manual, Volume 3, A.1 General Guidance: Attribute Classes Associated With All Object Classes

1) SORIND – The source indicator **must be encoded** for all objects in the ENC, **except** DEPARE, LNDARE and DEPCNT. The SORIND value should allow NOAA to place a feature with authoritative confidence.

2) SORDAT – The source date **must be encoded** for all object classes in the ENC, **except** DEPARE, LNDARE and DEPCNT. Add the source date of the spatial feature in the format YYYYMMDD. If the specific day is not known use 00.

The Policy Letter (attached) that Russ found says:

Effective immediately it is **not required to encode** SORIND and SORDAT for the following features: DEPCNT, DEPARE, LNDARE.

It has been recognized that SORIND and SORDAT on these features does not provide any useful information to the mariner, and the elimination of encoding these attributes will optimize source application on the ENCs by reducing the need to cut the feature to change the SORIND and SORDAT. In addition, the information that changed these features can be found using DREG and the history.

The H-Cell Specifications say:

For features included in the HCell that originate from an ENC or other source use the SORDAT and SORIND from that source. SORDAT and SORIND is **prohibited** on LNDARE, DEPARE and DEPCNT

Mike

Michael B. Brown
Deputy Chief, Marine Chart Division
Office of Coast Survey
NOAA, National Ocean Service
mike.brown@noaa.gov

(301) 713-2724x101

"Happiness equals reality minus expectations." Tom Magliozzi

L50-2015.pdf
8K

MCD ENC encoding policy change

TO: All Cartographers
Marine Chart Division

SUBJECT: SORDAT and SORIND on DEPCNT, DEPARE and LNDARE

APPLICATION: All Affected ENC's as designated by NDB

EFFECTIVE DATE: Immediately

REFERENCE: Nautical Chart Manual Volume III, Section A.1

Effective immediately it is not required to encode SORIND and SORDAT for the following features:

DEPCNT
DEPARE
LNDARE

It has been recognized that SORIND and SORDAT on these features does not provide any useful information to the mariner, and the elimination of encoding these attributes will optimize source application on the ENCs by reducing the need to cut the feature to change the SORIND and SORDAT. In addition, the information that changed these features can be found using DREG and the history.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Coast Survey
Silver Spring, Maryland 20910-3282

November 7, 2016

MEMORANDUM FOR: Commander Mark Van Waes, NOAA
Commanding Officer, NOAA Ship *Fairweather*

FROM: Lieutenant Russell Quintero, NOAA
Chief, Hydrographic Surveys Division

SUBJECT: OPR-Q328-FA-16 ERS Capability Memorandum, North Coast of Unalaska Island

Hydrographic surveys H12937, H12938, H12939, and H12940 are approved for vertical reduction to chart datum, Mean Lower Low Water (MLLW), using the NOAA's composite Poor Man's VDatum (PMVD) model.

Approval of the composite PMVD, in lieu of the NOAA Center for Operational Oceanographic Products and Services (CO-OPS) traditional discrete zoned tides package as per the Project Instructions, is based on your recommendation and the review of comparison results you included in your attached email from October 28, 2016.

The results of the data analysis show that ellipsoidally referenced survey (ERS) techniques with the composite PMVD used as the vertical datum reducer meet or exceed horizontal and vertical specifications for hydrographic surveys.

The comparison techniques are in line with the procedures outlined in the NOS Hydrographic Surveys Specifications and Deliverables document.

You shall include a description of your ERS processing procedures and the comparisons you conducted between ERS and traditional tides in the appropriate Descriptive Report (DR), Horizontal and Vertical Control Report and/or Data Acquisition and Processing Report. As appropriate in the DR, document specific vessel day(s) or line(s) that have not been processed using ERS techniques as the vertical reducer to MLLW, where discrete zoning provides better results and/or where vertical uncertainties of your post processed vertical positional data are out of the range determined by the HSSD 2016.

Include this memo in the supplemental correspondence Appendix of the DR.

H12940 Feature Report

Registry Number: H12940
State: Alaska
Locality: Unalaska Island
Sub-locality: Vicinity of Constantine Bay and Split Top Mountain
Project Number: OPR-Q328-FA-16
Survey Date: 08/25/2016

H12940 Feature Report

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
16528	18th	09/01/2012	1:40,000 (16528_1)	USCG LNM: 12/22/2015 (3/21/2017) CHS NTM: None (2/24/2017) NGA NTM: None (4/1/2017)
16520	23rd	08/01/2008	1:300,000 (16520_1)	[L]NTM: ?
16500	10th	05/01/2005	1:300,000 (16500_1)	[L]NTM: ?
16011	37th	11/01/2007	1:1,023,188 (16011_1)	[L]NTM: ?
16006	35th	04/01/2008	1:1,534,076 (16006_1)	[L]NTM: ?
513	7th	06/01/2004	1:3,500,000 (513_1)	[L]NTM: ?
530	32nd	06/01/2007	1:4,860,700 (530_1)	[L]NTM: ?
50	6th	06/01/2003	1:10,000,000 (50_1)	[L]NTM: ?

* Correction(s) - *source: last correction applied (last correction reviewed--"cleared date")*

Features

No.	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Wreck	121.15 m	53° 58' 26.6" N	166° 30' 28.5" W	---

1 - New Features

1.1) Wreck

Survey Summary

Survey Position:	53° 58' 26.6" N, 166° 30' 28.5" W
Least Depth:	121.15 m (= 397.47 ft = 66.246 fm = 66 fm 1.47 ft)
TPU (±1.96σ):	**THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp:	2016-238.00:00:00.000 (08/25/2016)
Dataset:	H12940_4FeatureReport.000
FOID:	US 0000012292 00001(0226000030040001)
Charts Affected:	16528_1, 16500_1, 16520_1, 16011_1, 16006_1, 513_1, 530_1, 50_1

Remarks:

WRECKS/remrks: New position and least depth of charted wreck

Feature Correlation

Source	Feature	Range	Azimuth	Status
H12940_4FeatureReport.000	US 0000012292 00001	0.00	000.0	Primary

Hydrographer Recommendations

Chart new position and least depth of charted wreck

Arithmetically-Rounded Depth (Unit-wise Affected Charts):

66ft (16528_1, 16500_1, 16520_1, 16011_1, 16006_1, 530_1)

121m (513_1, 50_1)

S-57 Data

Geo object 1:	Wreck (WRECKS)
Attributes:	CATWRK - 1:non-dangerous wreck
	QUASOU - 6:least depth known
	SORDAT - 20160825
	SORIND - US,US,graph,H12940
	TECSOU - 3:found by multi-beam
	VALSOU - 121.150 m
	WATLEV - 3:always under water/submerged

Office Notes

SAR:Concur

Feature Images

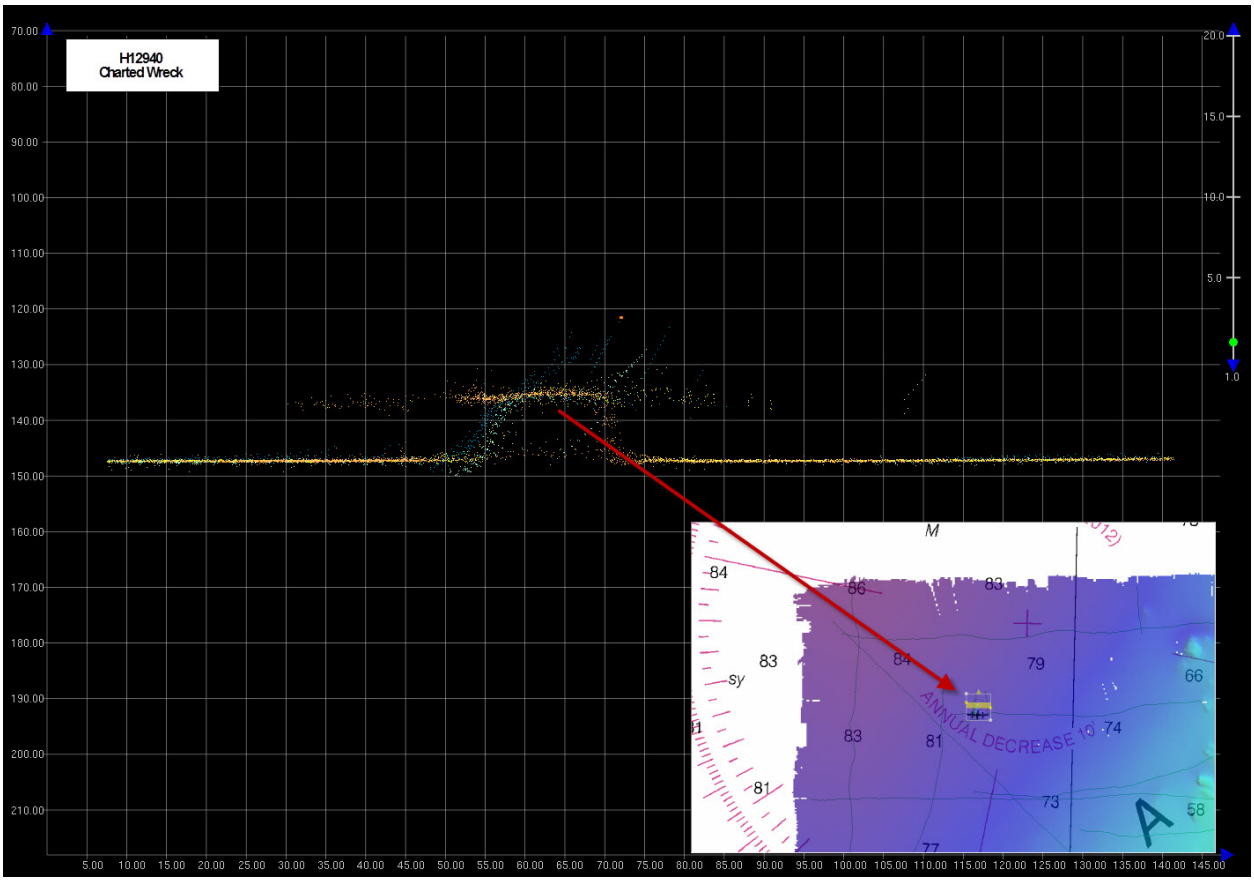


Figure 1.1.1

APPROVAL PAGE

H12940

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 NGDC for archive

- H12940_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- H12940_GeoImage.pdf

The survey evaluation and verification has been conducted according current OCS Specifications.

Digitally signed by HOLMBERG.PETER.SCOTT.1365886101
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=OTHER, cn=HOLMBERG.PETER.SCOTT.1365886101
Date: 2017.05.11 08:40:13 -07'00'

Approved:_____

Peter Holmberg
Cartographic Team Lead, Pacific Hydrographic Branch

The survey has been approved for dissemination and usage of updating NOAA's suite of nautical charts.

FROELICH.GRANT.DANIEL.1272192509
2017.05.11 08:56:44 -07'00'

Approved:_____

Grant Froelich
Acting Chief, Pacific Hydrographic Branch