

F00864

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

DESCRIPTIVE REPORT

Type of Survey: Navigable AreaHabitat Mapping

Registry Number: F00864

LOCALITY

State(s): Ohio
Pennsylvania

General Locality: Lake Erie

Sub-locality: Lake Erie Transects

2022

CHIEF OF PARTY
Matthew J. Jaskoski, CDR/NOAA

LIBRARY & ARCHIVES

Date:

HYDROGRAPHIC TITLE SHEET

F00864

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): **Ohio Pennsylvania**

General Locality: **Lake Erie**

Sub-Locality: **Lake Erie Transects**

Scale: **10000**

Dates of Survey: **08/16/2022 to 08/17/2022**

Instructions Dated: **07/08/2022**

Project Number: **OPR-W386-TJ-22**

Field Unit: **NOAA Ship *Thomas Jefferson***

Chief of Party: **Matthew J. Jaskoski, CDR/NOAA**

Soundings by: **Kongsberg Maritime EM 2040 (MBES)**

Imagery by: **Kongsberg Maritime EM 2040 (MBES Backscatter)**

Verification by: **Atlantic Hydrographic Branch**

Soundings Acquired in: **meters at Low Water Datum IGLD-1985**

Remarks:

Any revisions to the Descriptive Report (DR) applied during office processing are shown in red italic text. The DR is maintained as a field unit product, therefore all information and recommendations within this report are considered preliminary unless otherwise noted. The final disposition of survey data is represented in the NOAA nautical chart products. All pertinent records for this survey are archived at the National Centers for Environmental Information (NCEI) and can be retrieved via <https://www.ncei.noaa.gov/>. Products created during office processing were generated in NAD83 UTM 17N, LWD-IGLD 1985. All references to other horizontal or vertical datums in this report are applicable to the processed hydrographic data provided by the field unit.

DESCRIPTIVE REPORT SUMMARY

A. Area Surveyed

This hydrographic survey was acquired in accordance with the requirements defined in the Project Instructions OPR-W386-TJ-22.

Data collected during transit (East-West) was processed along with the required transect lines (North-South) (Figure 1).

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
42° 20' 30.69" N 82° 32' 7.38" W	41° 27' 41.77" N 80° 16' 11.44" W

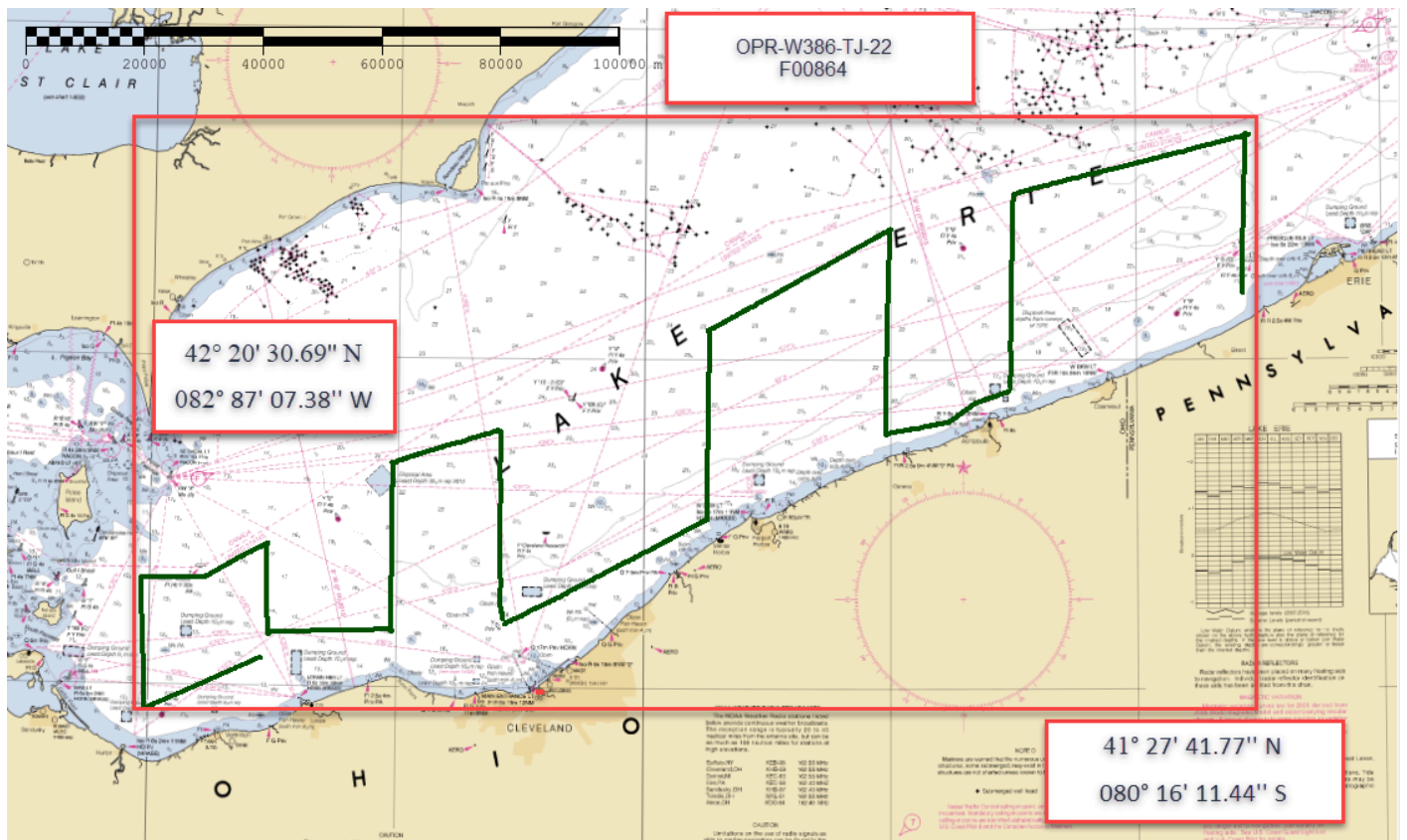


Figure 1: Survey layout for F00864 overlaid on RNC 14820. The red outline represents the geographical extents of the survey. The dark green lines represent the MBES transect and transit lines.

B. Survey Purpose

This survey supports research into the habitat of the zebra mussel, an invasive species. It aims to help determine the extent of the zebra mussel's coverage across the central basin of Lake Erie.

C. Intended Use of Survey

The entire survey is adequate to supersede previous data.

D. Data Acquisition and Processing

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.

The following vessel was used for data acquisition during this survey:

S222

Length Overall: 63.4m

Draft: 4.6m

A sound speed profile was acquired at the beginning of each acquisition day and at least once every four hours thereafter. MVP casts on S-222 were collected approximately every hour and targeted to deeper areas of the sheet in order to fully sample the thermocline. All sound speed methods were used as detailed in the DAPR. A total of 16 sound speed profiles were collected as part of acquisition of F00864 and display good spatial diversity (Figure 2). All sound speed profile data were concatenated into a master file for the sheet. MBES data were corrected by applying profiles nearest in distance in time (4 hours) using this master file.

Additional information to supplement sounding and survey data, and any deviations from the DAPR are discussed in the following sections.

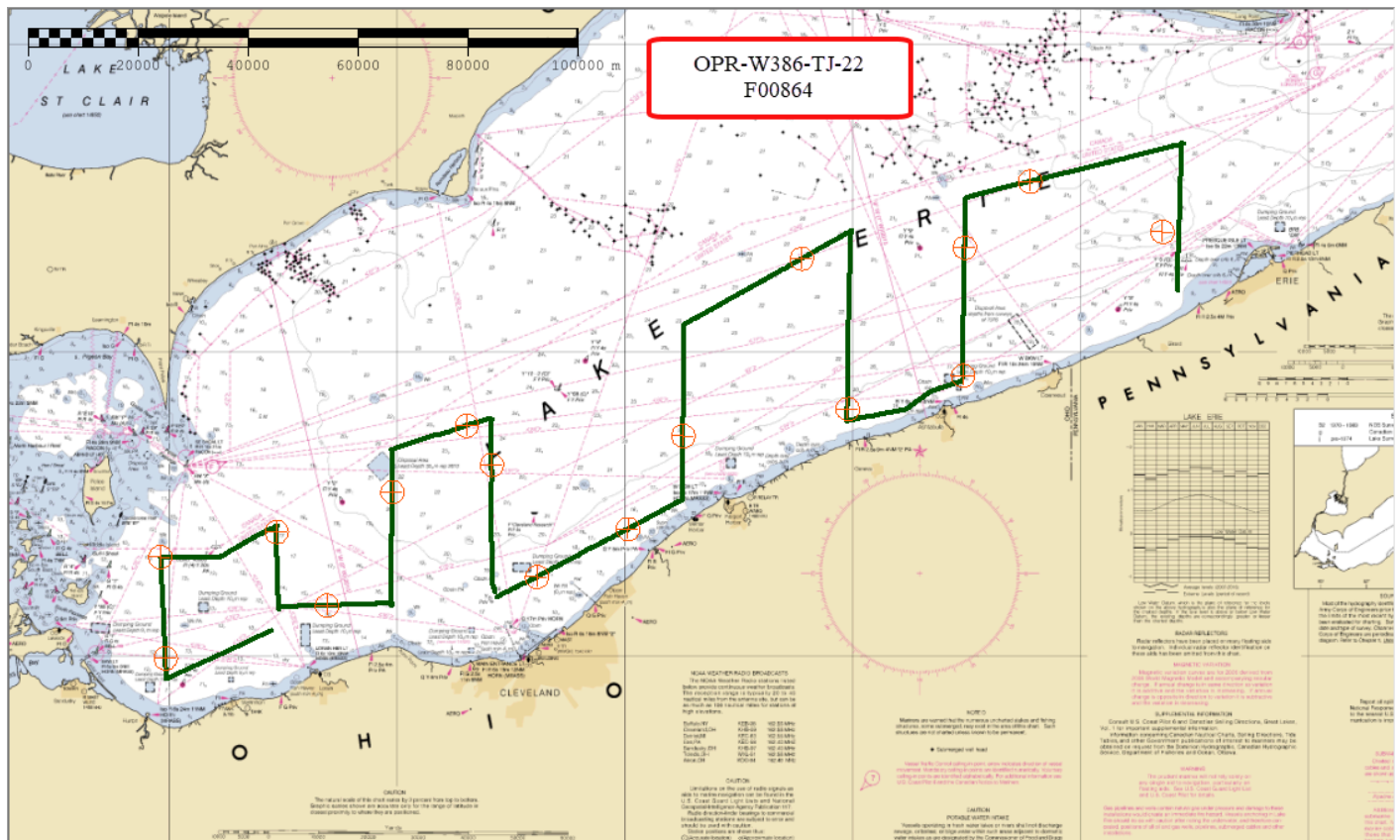


Figure 2: F00864 Sound Speed Cast Locations

E. Uncertainty

The following survey specific parameters were used for this survey:

Survey Specific Tide TPU values:

- ERS via VDATUM measured: 0.0 meters
- ERS via VDATUM zoning: 0.045 meters

Survey Specific Sound Speed TPU Values for S222:

- Measured MVP: 4 m/sec
- Surface: 0.2 m/sec

The bathymetric surface's uncertainty and density layers are compliant with the 2022 HSSD. Over 99.5% of all nodes pass uncertainty and density standards (Figures 3 and 4).

Due to the nature of this survey, a crossline comparison was not required.

Uncertainty Standards - NOAA HSSD

Grid source: F00864_MB_VR_LWD

99.5+% pass (13,289,565 of 13,289,567 nodes), min=0.01, mode=0.03, max=1.06

Percentiles: 2.5%=0.02, Q1=0.02, median=0.03, Q3=0.03, 97.5%=0.07

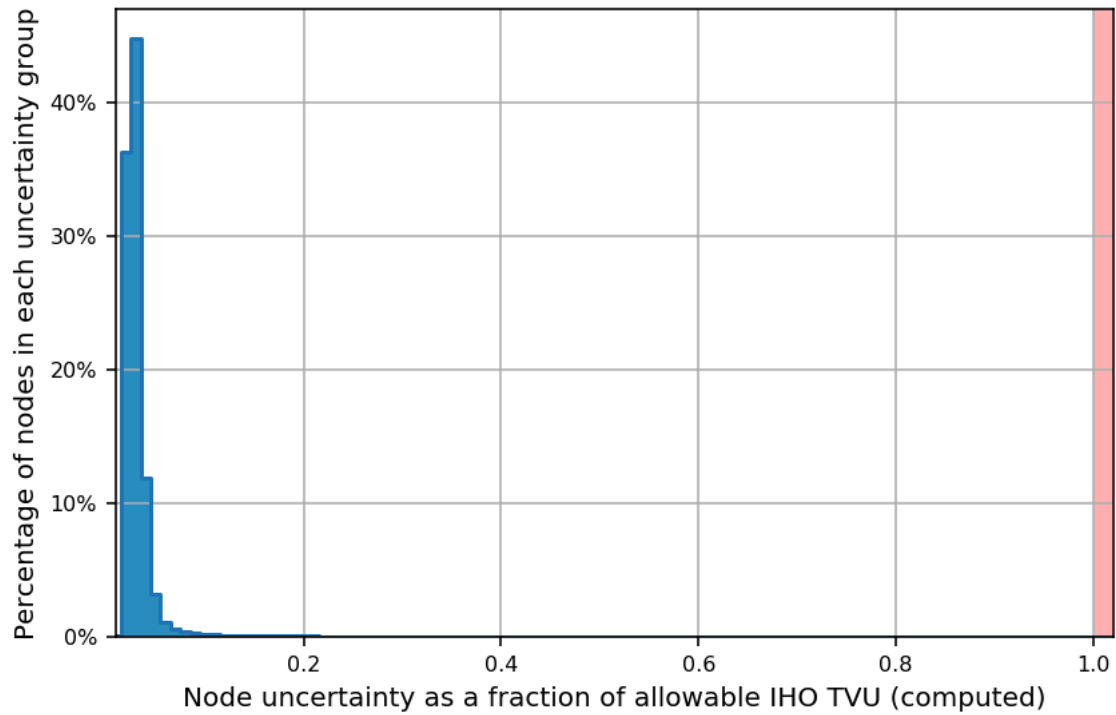


Figure 3: F00864 uncertainty standards

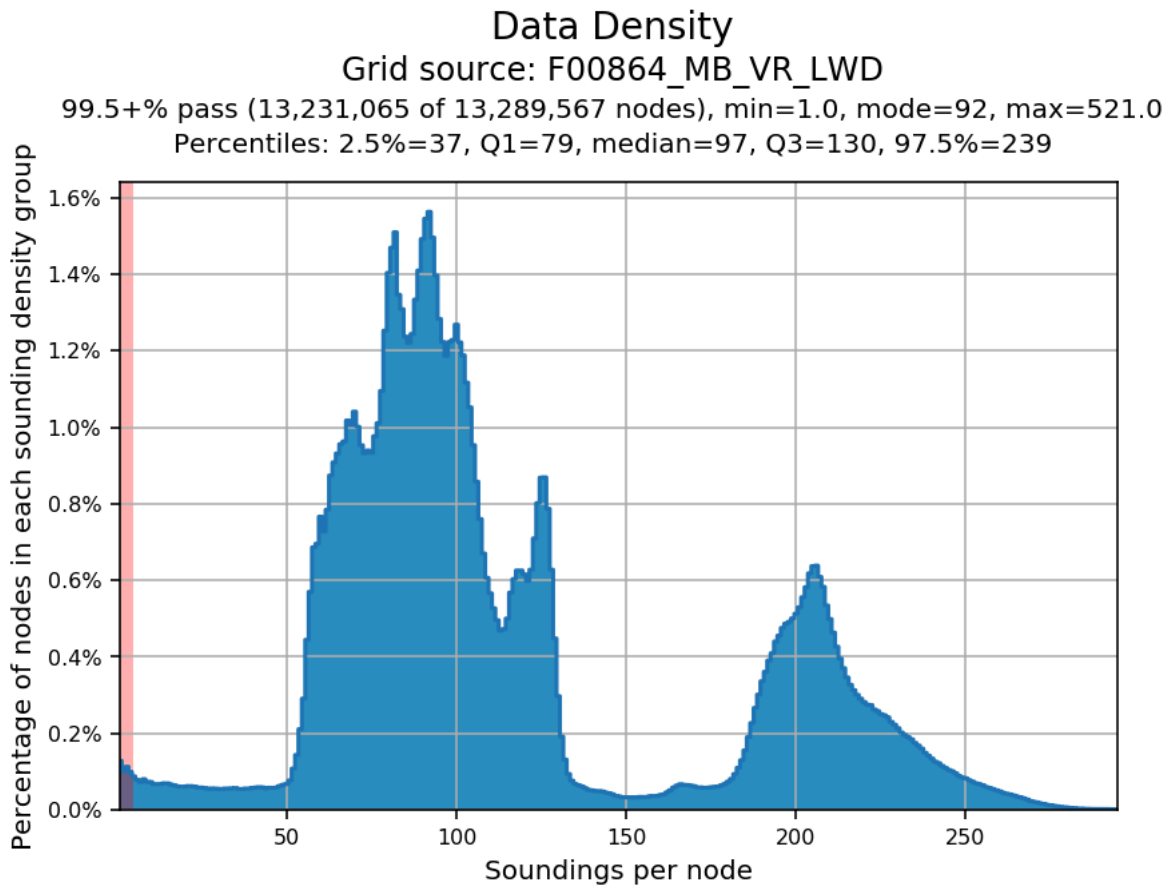


Figure 4: F00864 Data Density

F. Results and Recommendations

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

ENC	Scale	Edition	Update Application Date	Issue Date
US4MI11M	1:100000	22	11/12/2021	07/27/2022
US4OH01M	1:80000	18	11/16/2022	11/16/2022
US4OH02M	1:80000	11	07/27/2022	07/27/2022
US4OH04M	1:100000	8	03/15/2018	05/15/2020
US4PA20M	1:100000	7	02/22/2017	05/15/2020
US4PA21M	1:80000	14	10/15/2021	03/31/2022

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

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
F00864_MB_VR_LWD	CARIS VR Surface (CUBE)	Variable Resolution m	10.9 m - 25.3 m	NOAA_VR	MBES Trackline
F00864_MB_VR_LWD_Final	CARIS VR Surface (CUBE)	Variable Resolution m	10.9 m - 25.3 m	NOAA_VR	MBES Trackline
F00864_MBAB_2m_S222_300kHz_1of4	MB Backscatter Mosaic	2 m	N/A	N/A	MBES Trackline
F00864_MBAB_2m_S222_300kHz_2of4	MB Backscatter Mosaic	2 m	N/A	N/A	MBES Trackline
F00864_MBAB_2m_S222_300kHz_3of4	MB Backscatter Mosaic	2 m	N/A	N/A	MBES Trackline
F00864_MBAB_2m_S222_300kHz_4of4	MB Backscatter Mosaic	2 m	N/A	N/A	MBES Trackline

After multiple rounds of cleaning, a total of three fliers remain as detected by NOAA's QC Tool Flier Finder available in the Pydro CL-19 suite. The hydrographer reviewed the flagged nodes and considers them to be accurate representations of the lake bed.

G. Vertical and Horizontal Control

The vertical datum for this project is Low Water Datum IGLD-1985. The vertical control method used was VDatum.

Refer to the DAPR for a complete description of vertical control procedures.

The horizontal datum for this project is North American Datum of 1983 (NAD 83). The projection used for this project is Universal Transverse Mercator (UTM) Zone 17.

Refer to the DAPR for a complete description of horizontal control procedures.

H. Additional Results

Thermal Stratification

Thermal stratification is a persistent environmental condition encountered in the project area and was present for the duration for the survey. This stratification was identified in the MVP sound speed profiles (Figure 5) and resulted in varying degrees of refraction of the outer MBES swath. However, this refraction did not result in vertical displacement of soundings that was greater than the maximum allowable total vertical uncertainty (TVU) at any depth (Figure 6). The final delivered surfaces meet NOAA allowable vertical uncertainty parameters from the 2022 HSSD. As such, the data remain sufficient to supersede previous data.

Surveyed soundings were compared against previously charted data on the ENC's. Depth values were found to be in general agreement with previously charted soundings, though some shallower soundings exist across the transect and transit lines. The hydrographer does not believe any surveyed soundings pose a hazard to navigation, but recommends charted soundings be updated to reflect the survey.

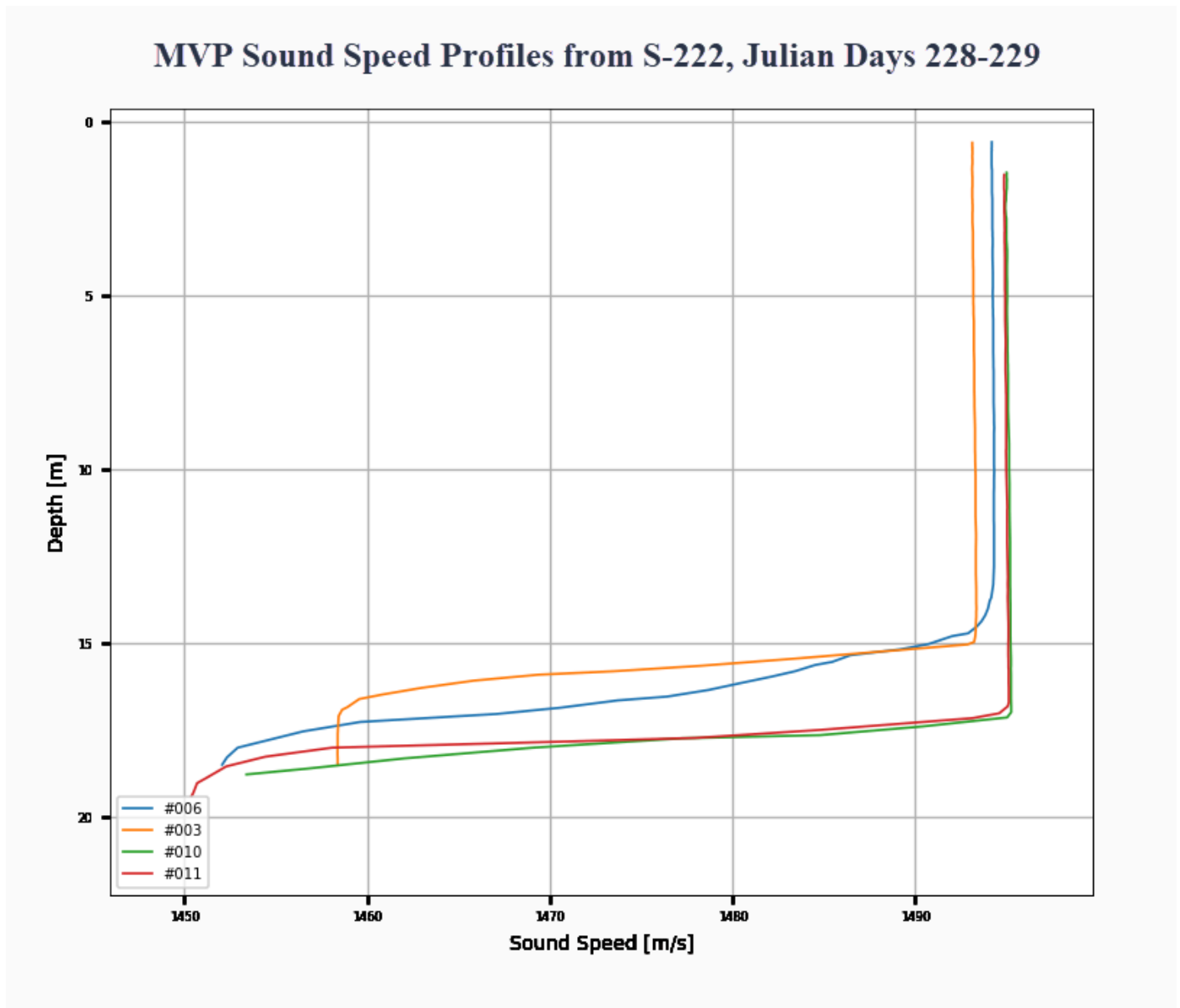


Figure 5: Sound speed profiles from MVP casts that represent typical conditions in the survey area.

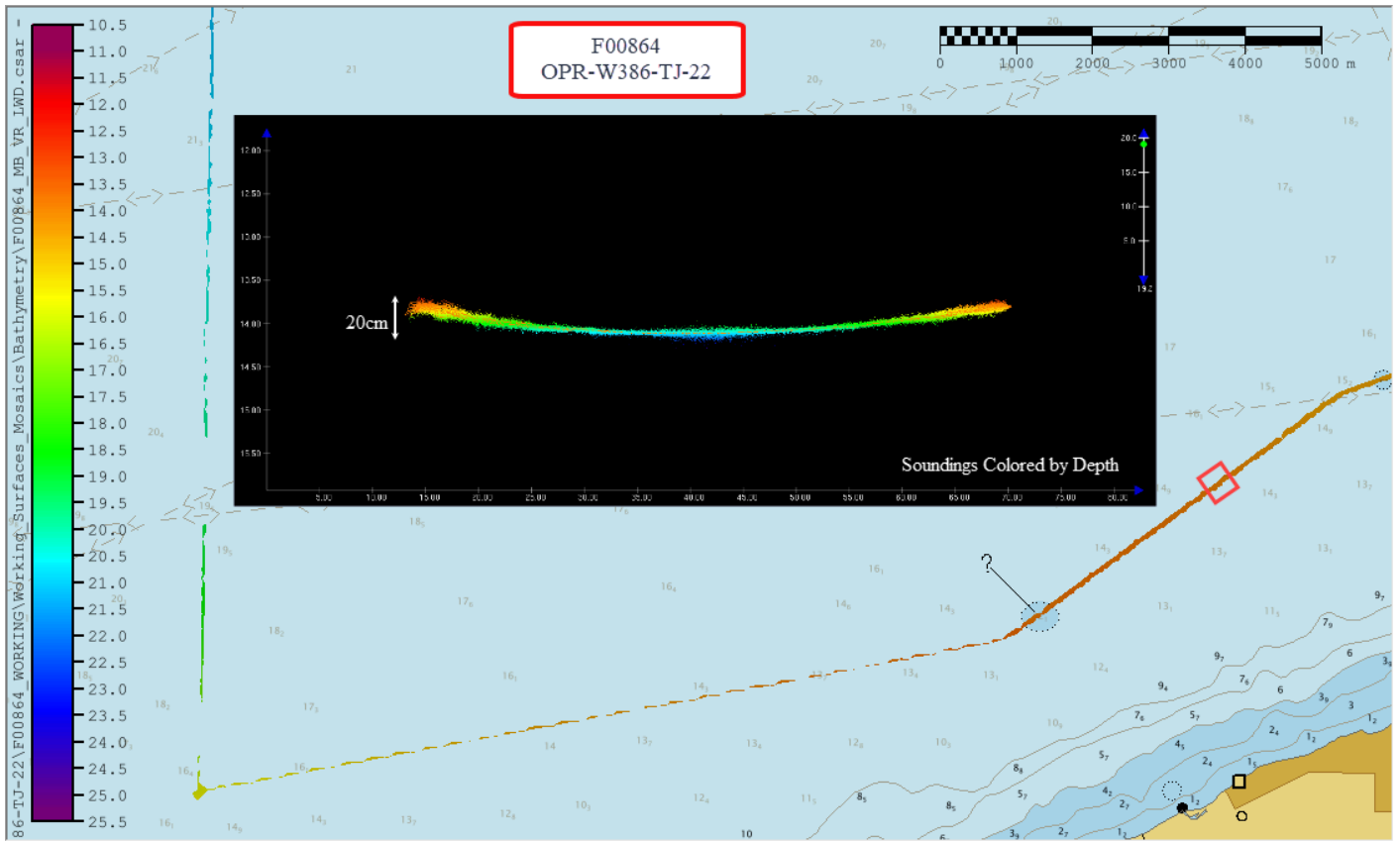


Figure 6: 2D view of survey data showing upturn in the outer swath likely caused by sound speed issues. 2D view exaggeration 19x.

I. Approval

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 Survey Summary 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 Specifications and Deliverables, Field Procedures Manual, Standing and 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 Survey Summary Report.

Approver Name	Title	Date	Signature
Matthew J. Jaskoski, CDR/NOAA	Chief of Party	12/06/2022	 JASKOSKI.MATTHEW.JACOB. 1275636262 2022.12.13 08:11:05 -05'00'
Sydney M. Catoire, LT/NOAA	Field Operations Officer	12/06/2022	CATOIRE.SYDNEY.M ARIE.1120060623  Digitally signed by CATOIRE.SYDNEY.MARIE.112006 0623 Date: 2022.12.13 08:37:04 -05'00'
Erin K. Cziraki	Chief Survey Technician	12/06/2022	CZIRAKI.ERIN.KA YE.1550015338  Digitally signed by CZIRAKI.ERIN.KAYE.1550015338 Date: 2022.12.13 09:54:45 -05'00'
Danielle H. Black	Assistant Survey Technician	12/06/2022	BLACK.DANIELLE.H ARBIN.1616553832  Digitally signed by BLACK.DANIELLE.HARBIN.16165 53832 Date: 2022.12.13 12:00:43 -05'00'