CHC-NSC 2018
www.chc-nsc2018.ca
Victoria, B.C. March 26-29, 2018 | Victoria, C.B. 26 au 29 mars 2018
Land and Sea Shaping the World
Terre et Mer Façonnant le Monde

eTrac's Evaluation of Qimera:

Accomplishing the NOAA Workflow

David Neff [1]
Matthew Wilson [2]
[1] eTrac, Inc
[2] Quality Positioning Services (Q.P.S.)

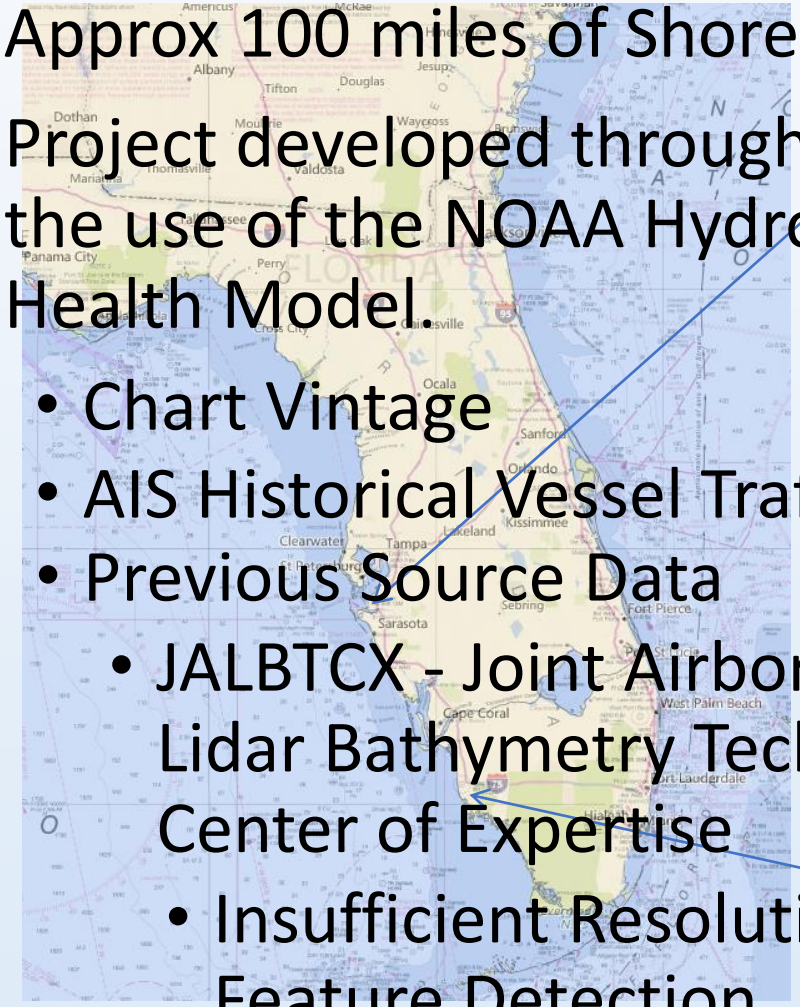
#chcnsc2018

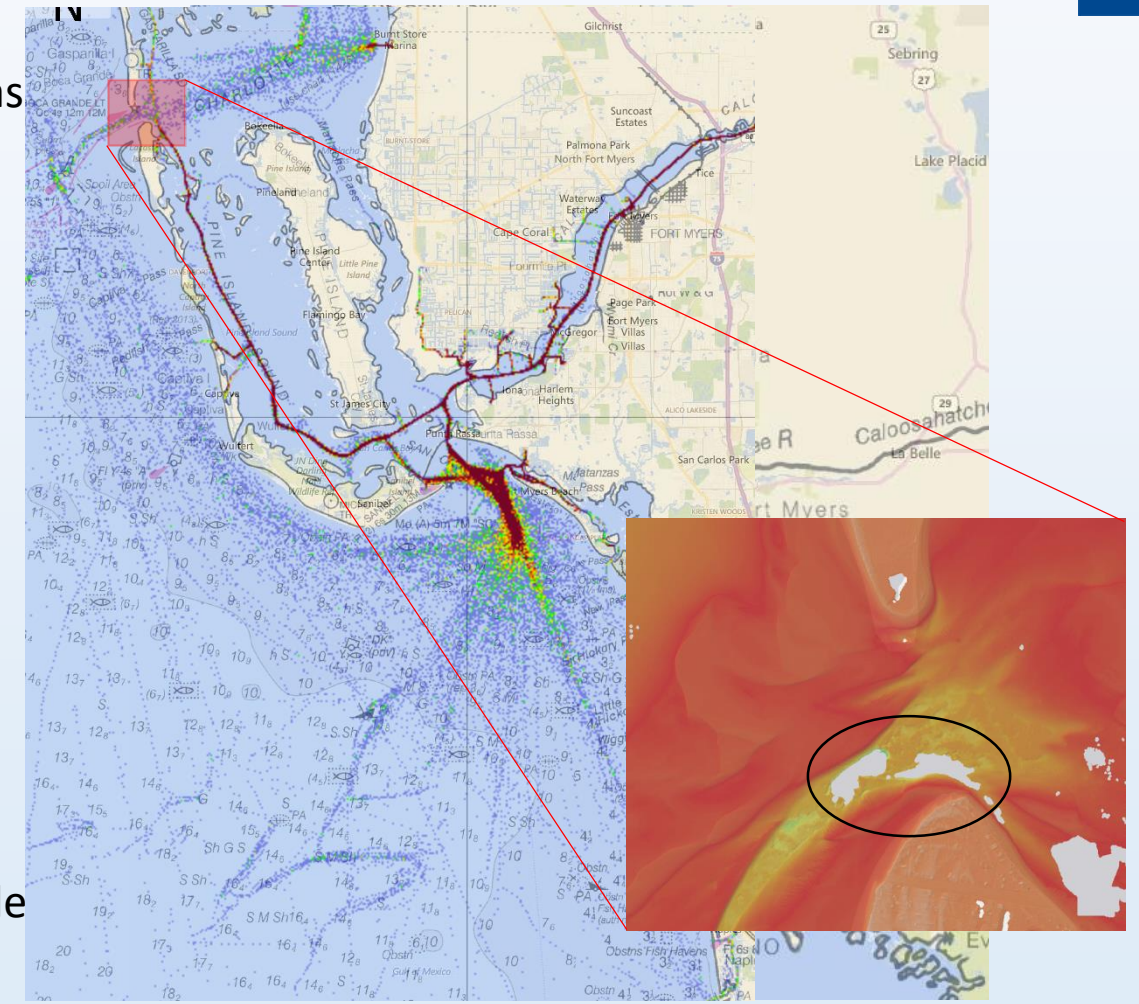
Company Background

- eTrac Inc. – Established 2003
  - San Francisco Bay Area
  - Southern California
  - Pacific Northwest
  - Alaska
- Users of QPS Products since 2004
  - Advantages in multiple marine sectors
  - Increased quality, efficiency, productivity
- NOAA Charting Contractors Since 2014

Project Background

- Florida Gulf Coast
- Approx 100 miles of Shoreline
- Project developed through the use of the NOAA Hydro Health Model.
  - Chart Vintage
  - AIS Historical Vessel Traffic
  - Previous Source Data
    - JALBTCX - Joint Airborne Lidar Bathymetry Technical Center of Expertise
      - Insufficient Resolution for Feature Detection
      - Lidar Data Extinction

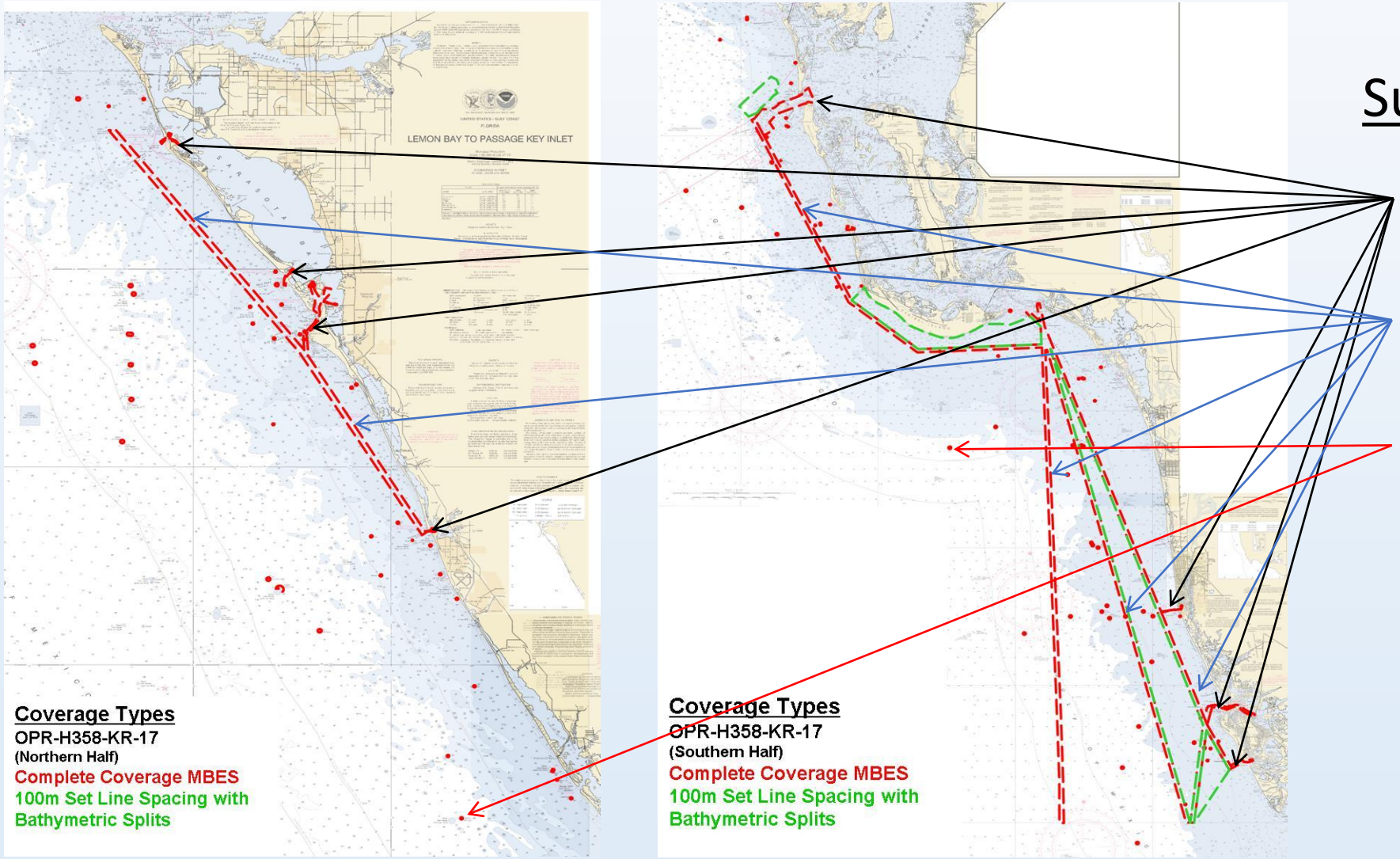




Project Background

Northern Area (Sarasota)

Southern Area (Naples/Ft. Myers)



Survey Missions

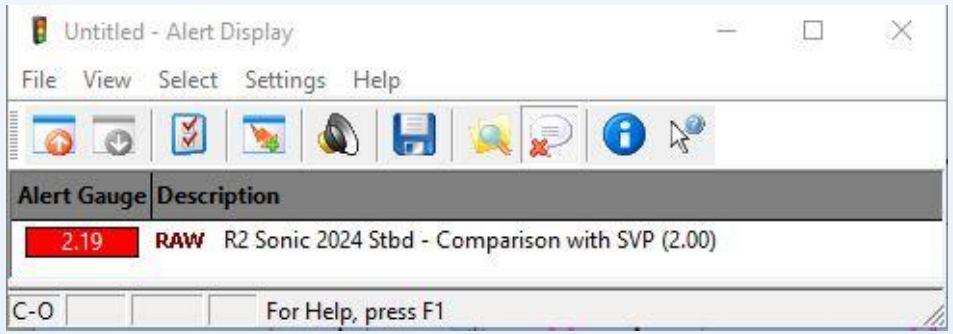
- 8 Inlets/Passes
- Vessel Traffic Corridors
- Over 100 Feature Investigations

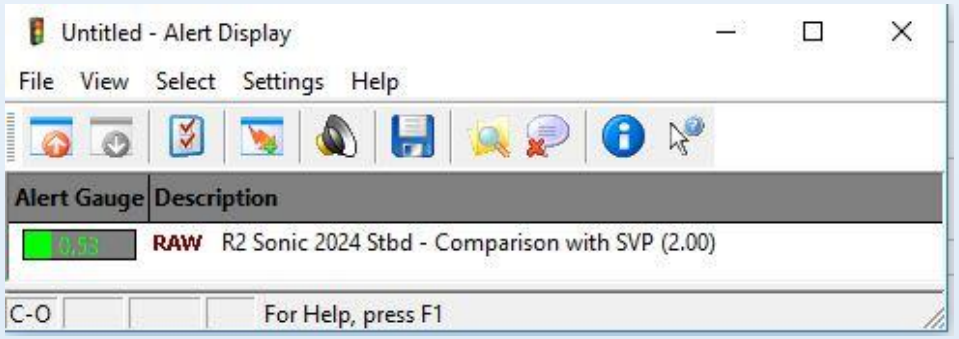
Vessel Mobilization

- 30-35ft Class Armstrong Catamaran Survey Vessels
- 2 Vessels Mobilized with Dual Head Multibeam Sonars
- 1 Vessel Mobilized with Single Head Multibeam Sonar
- Challenging Mobilization in the wake of Hurricane Irma

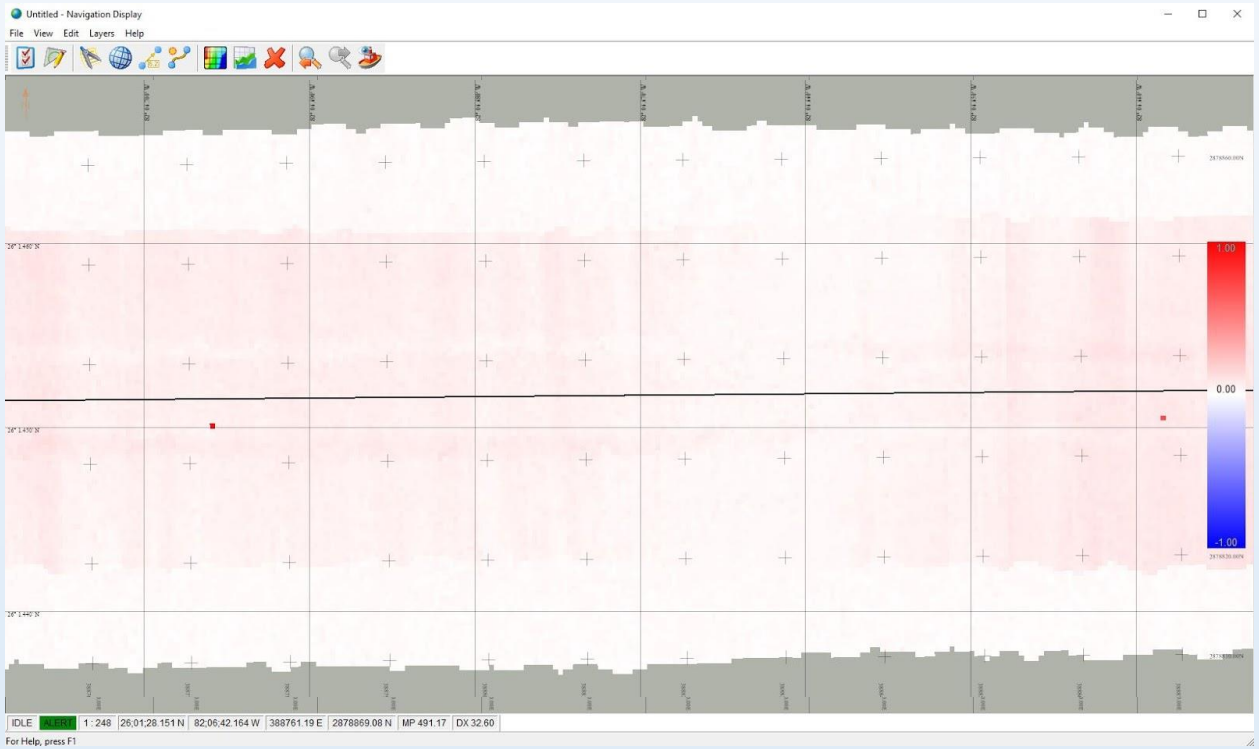
Real Time QC

Sound Velocity Comparison Alarm

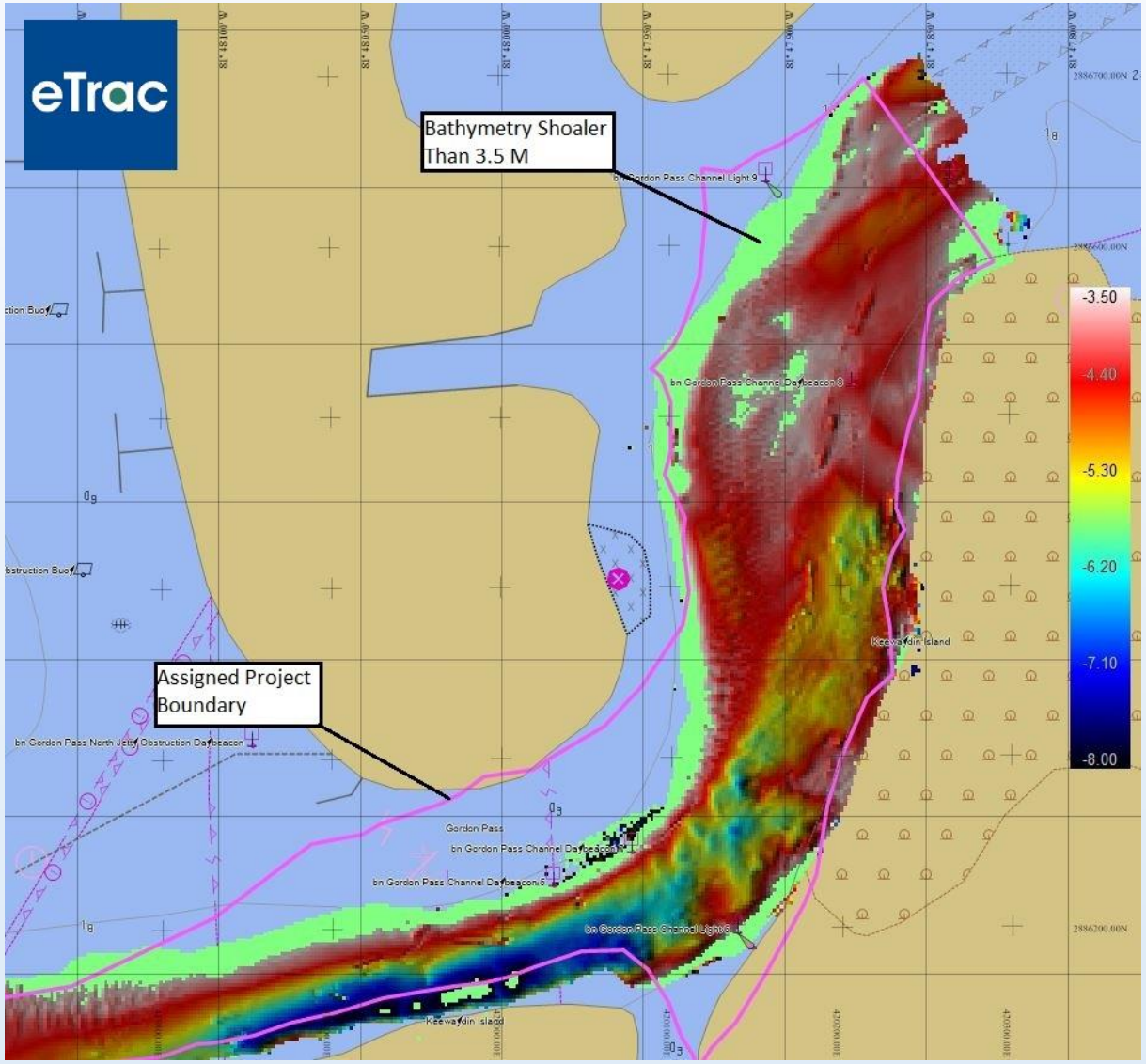




Standard Deviation Navigation View



Geodetics



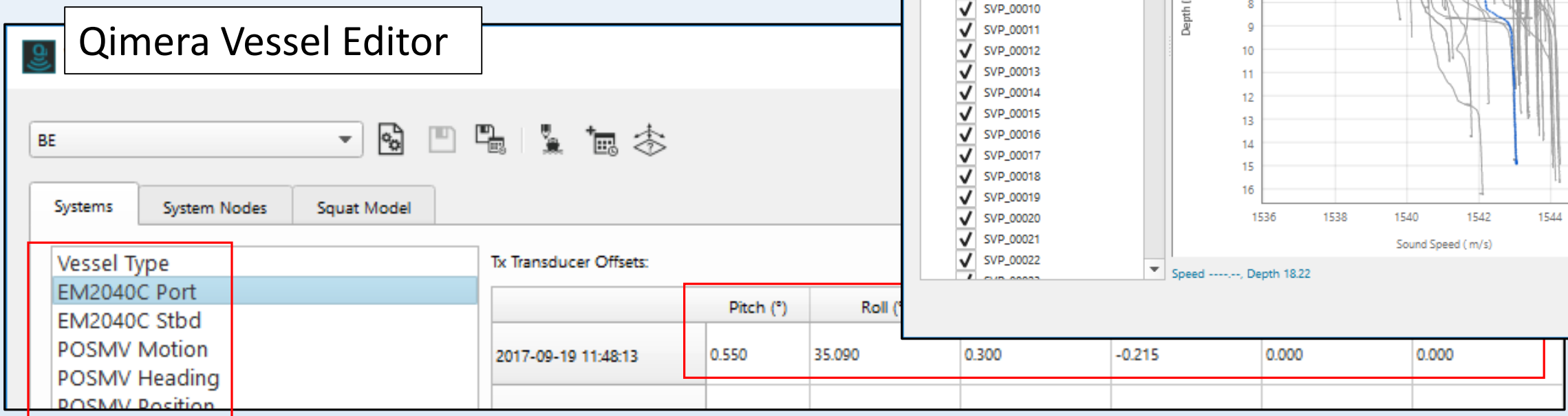
- Requirement to survey to 4m contour per scope of work
- Leveraged Marinestar Correction Service
- Achieved Ellipsoidal Elevations in realtime to an accuracy of 13-17cm.
- Developed custom QPS separation file to reduce ellipsoidal elevations to MLLW
- Implemented custom separation file in reatime on each vessel to achieve MLLW in the field.
- Efficiently developed shoreline areas without the need to recover area due to insufficient coverage.

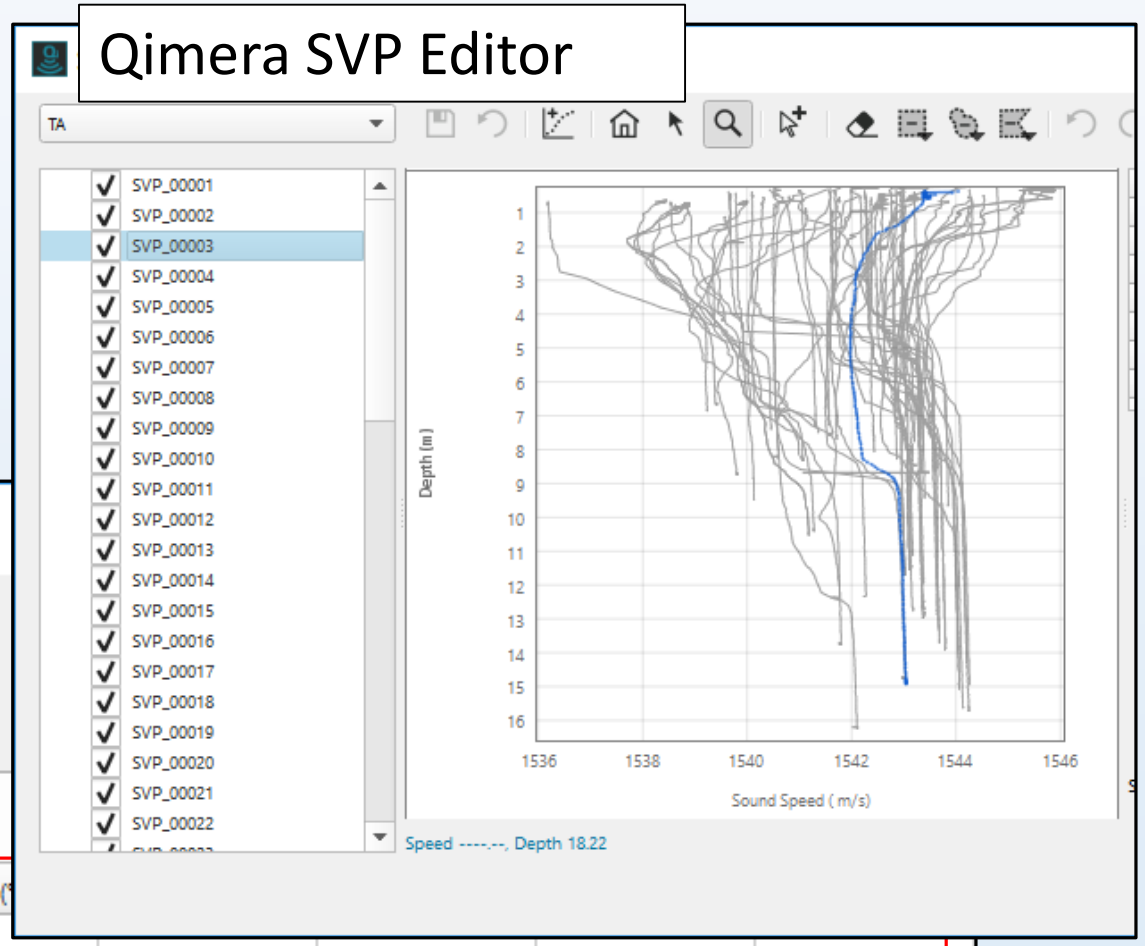
Processing: Introduction

- Qimera 1.6 evaluated for suitability to NOAA workflow
  - Does it meet all requirements?
  - Will the design streamline processes and/or remove human error?
- OPR-H358-KR-17 provides good opportunity for testing
  - Heavy data throughput: three vessels, two with dual-head multibeam
  - High number of feature investigations to test new S-57 functionality
- Evaluation of Qimera
  - To highlight advantages as well as any shortcomings
  - eTrac to provide recommendations to guide development moving forward

Importing Data into Qimera

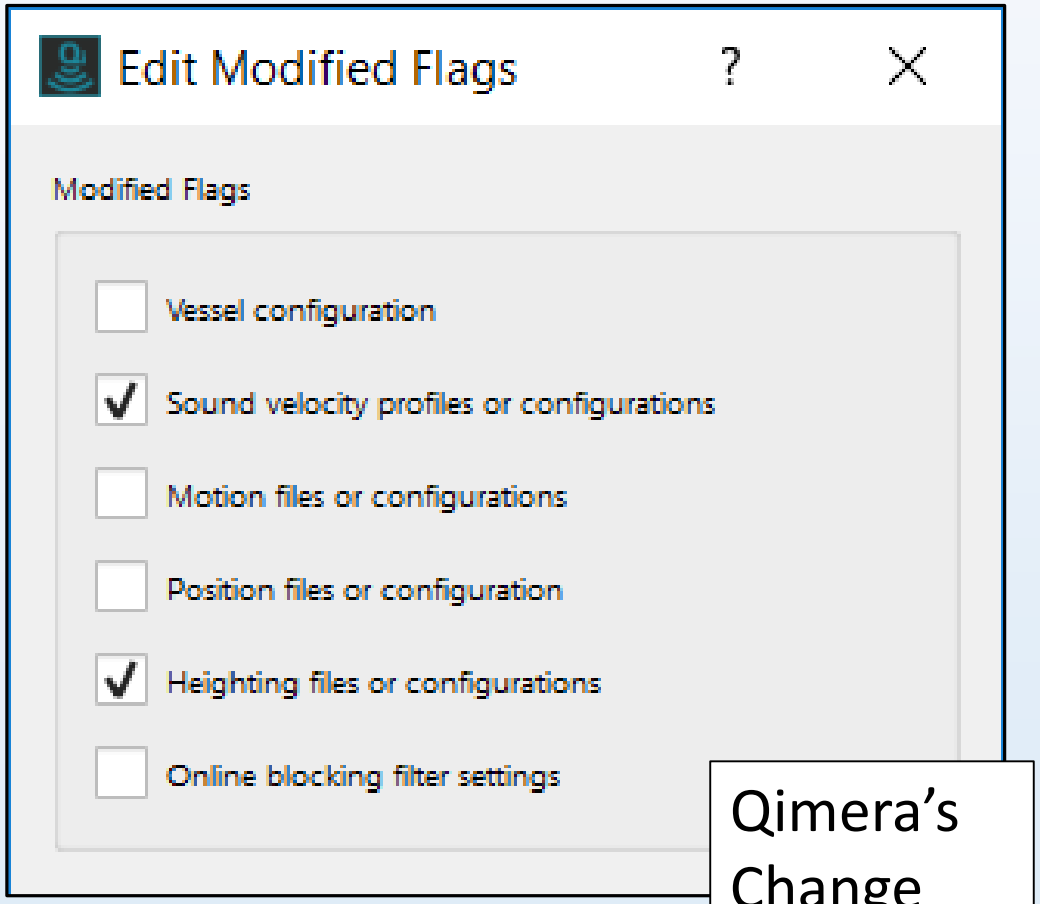
- QINSy DB files – a “rich” file format
  - Vessel files generated automatically
  - Linear and angular offsets populated
  - Sound speed profiles extracted





Post-Processing Steps

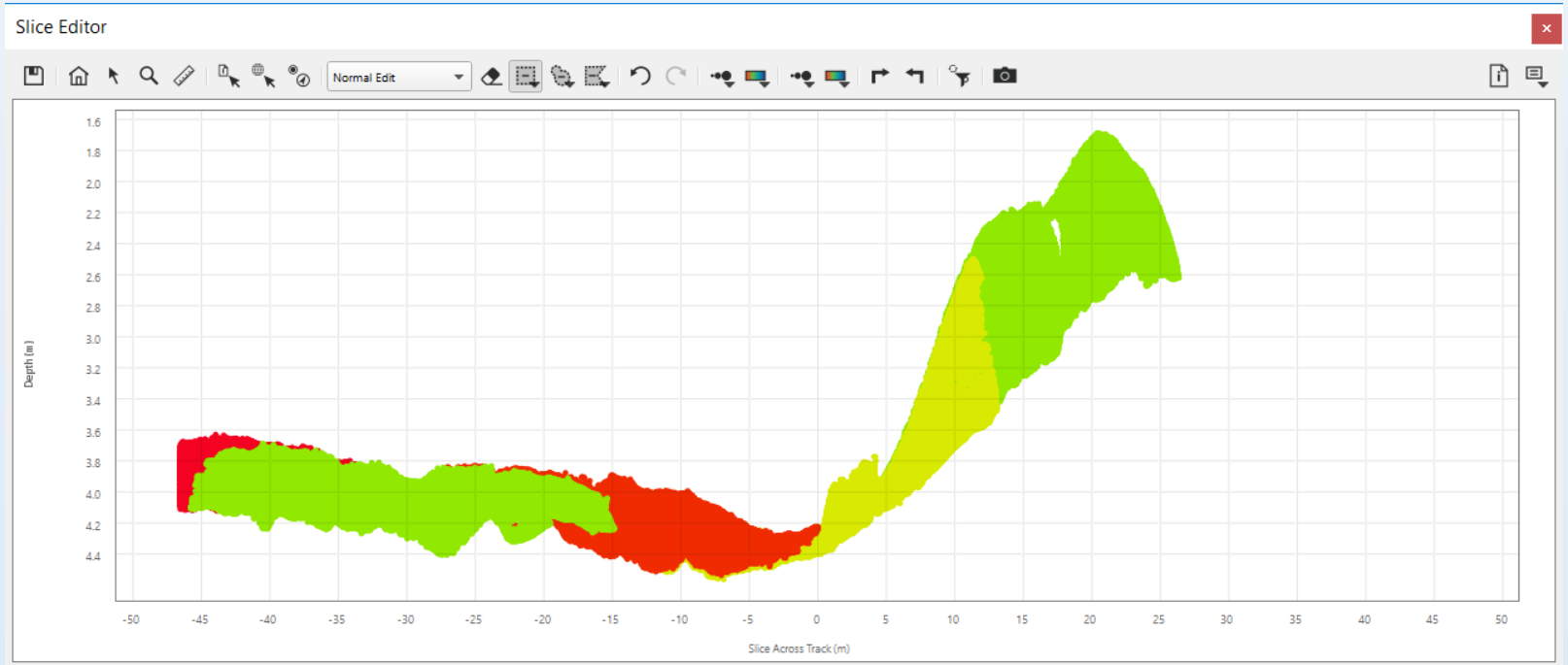
- Sound speed strategy adjusted
  - From the real-time schedule to nearest in distance within 4 hours
- Applanix SBETs applied
  - VDatum separation to achieve MLLW
- Qimera “tracks” the necessary processing
  - Eliminates improper or redundant steps
- CUBE grids generated
  - Per NOAA CUBE parameters



Qimera’s Change Tracking

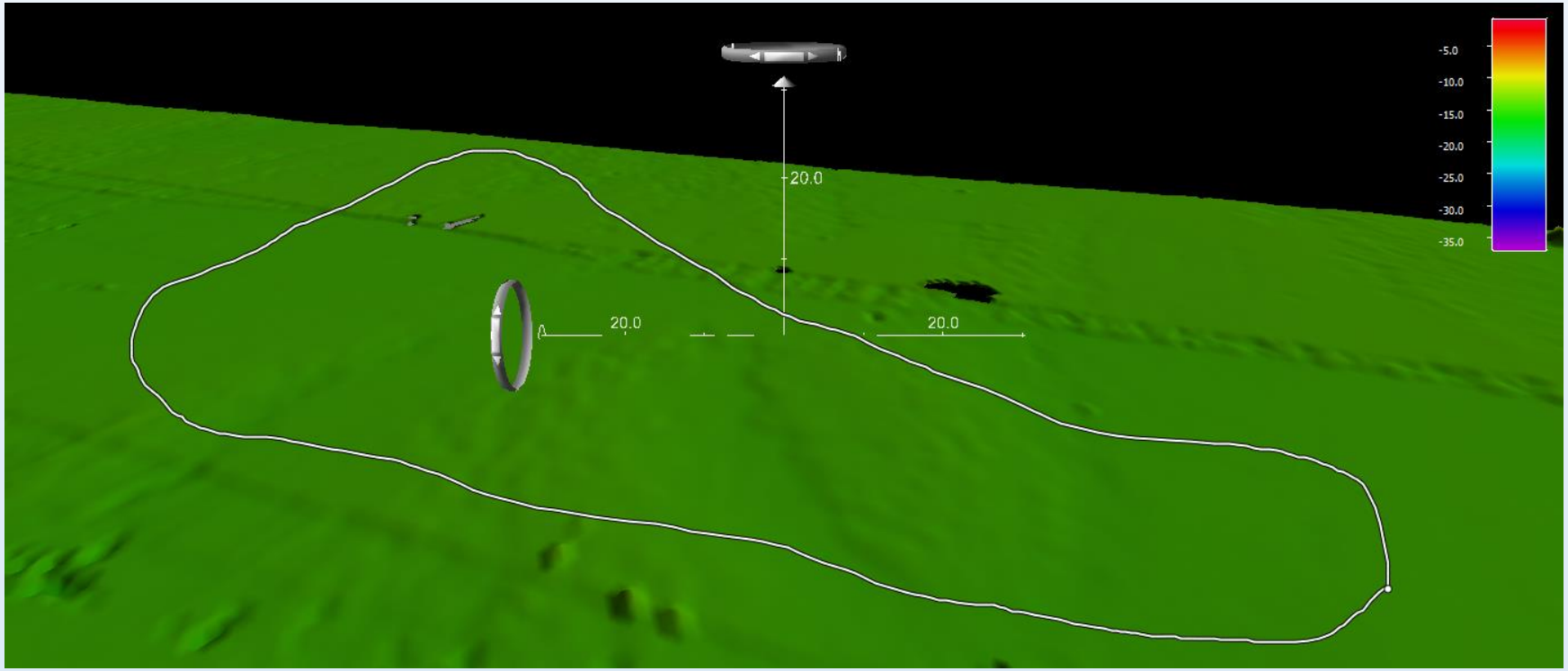
Data Cleaning

- Facilitated by Qimera's customizable spline filters
  - Achieve rapid data cleaning, and higher confidence in grid (i.e. no grid "fliers")
  - Run in a step-by-step, iterative fashion, or over entire line, or entire survey



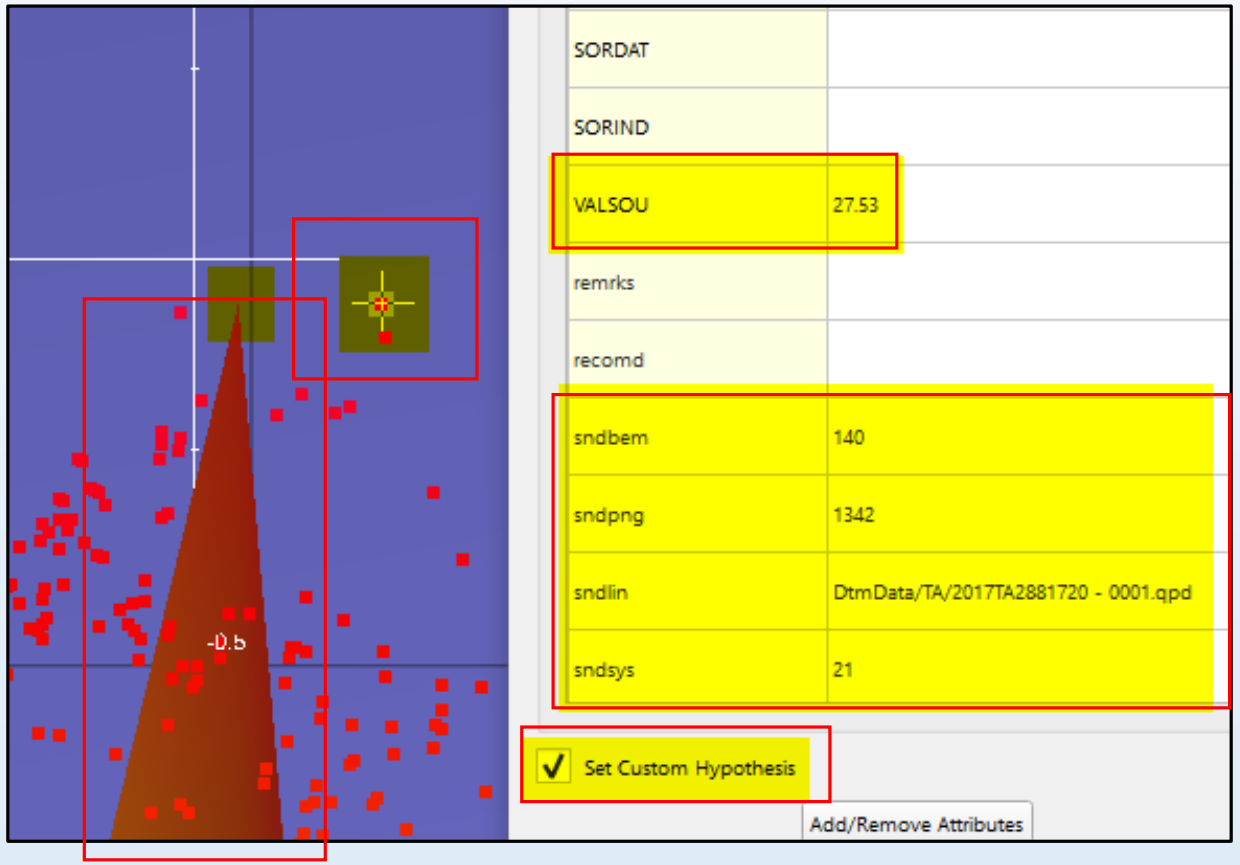
Grid QA/QC

- 3D visualization and statistical layers utilized
  - Dynamic surface allows for instant validation of results



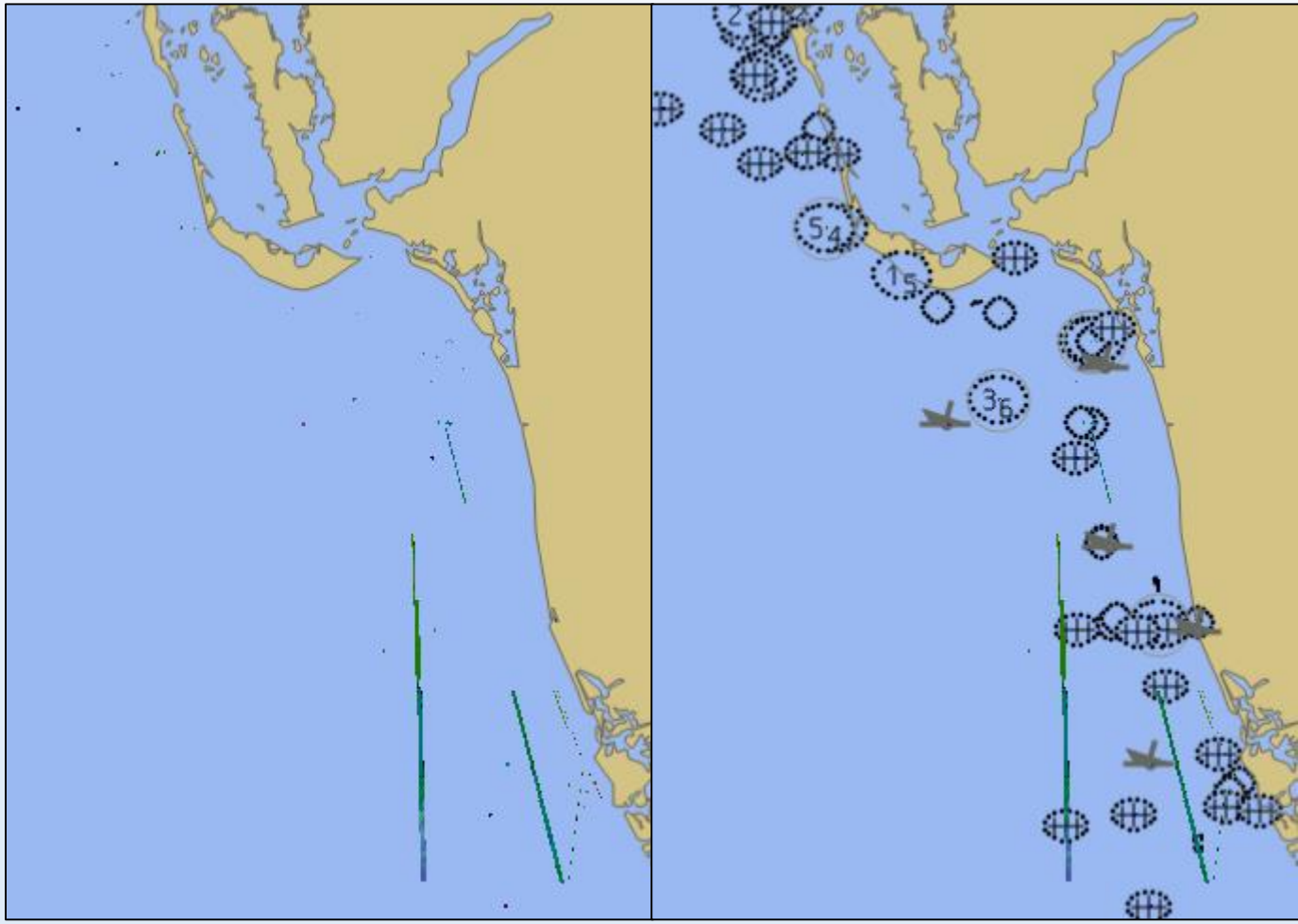
S-57 Feature Management

- Hundreds of assigned features
  - Organized by custom filtering of NOAA-specific attributes
- New Features derived from:
  - A single least-depth sounding, or a grid node
- Ensures 3-way agreement:
  - Soundings, Grid, and S-57 feature VALSOU



Processing Summary

- Qimera Total Processing
  - 1535 lines processed
  - 351 GB raw data
  - 126 wrecks, rocks, and obstructions
  - 1 meter CUBE grids to satisfy complete coverage req’ts
  - 50 cm resolution grids generated for feature verification



Summary

- Benefits
  - QINSy-to-Qimera time savings
  - Streamlined processing and validation
  - More rapid feature management
- QPS Future work / recommendations
  - Continued grid and feature validation techniques
  - More reporting / charting tools
  - User feedback and observations to guide development