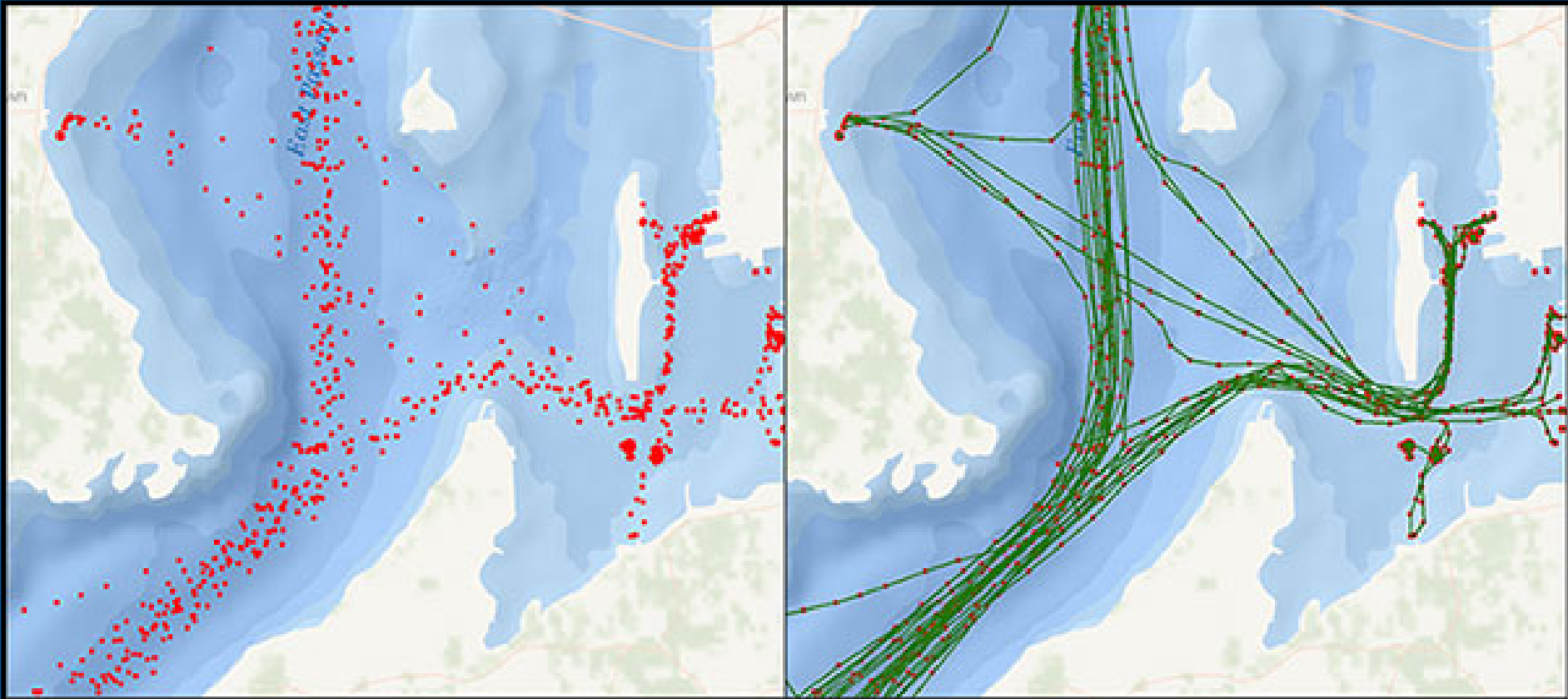


Crowdsourced Bathymetry

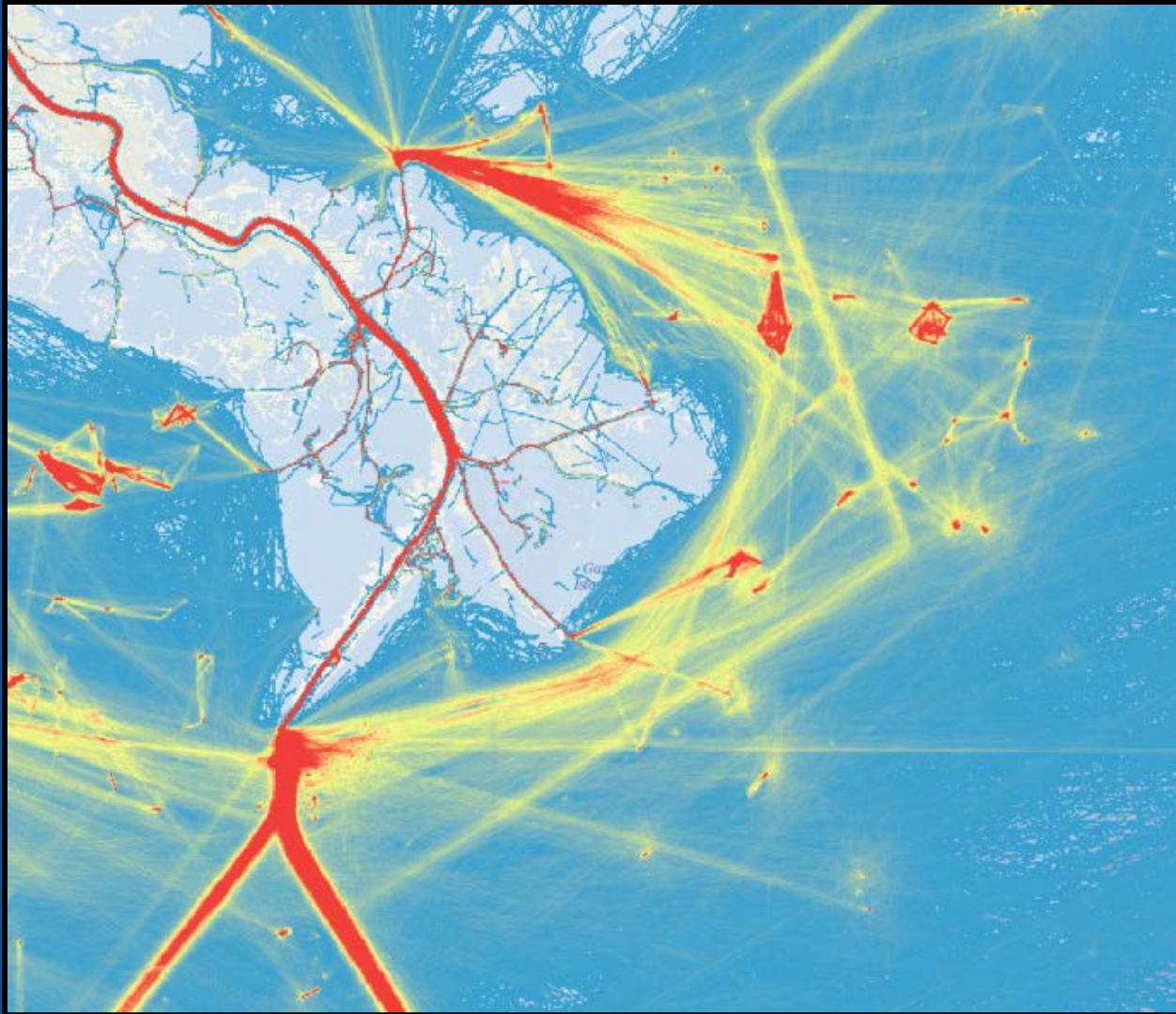


Adam Reed, LT/NOAA

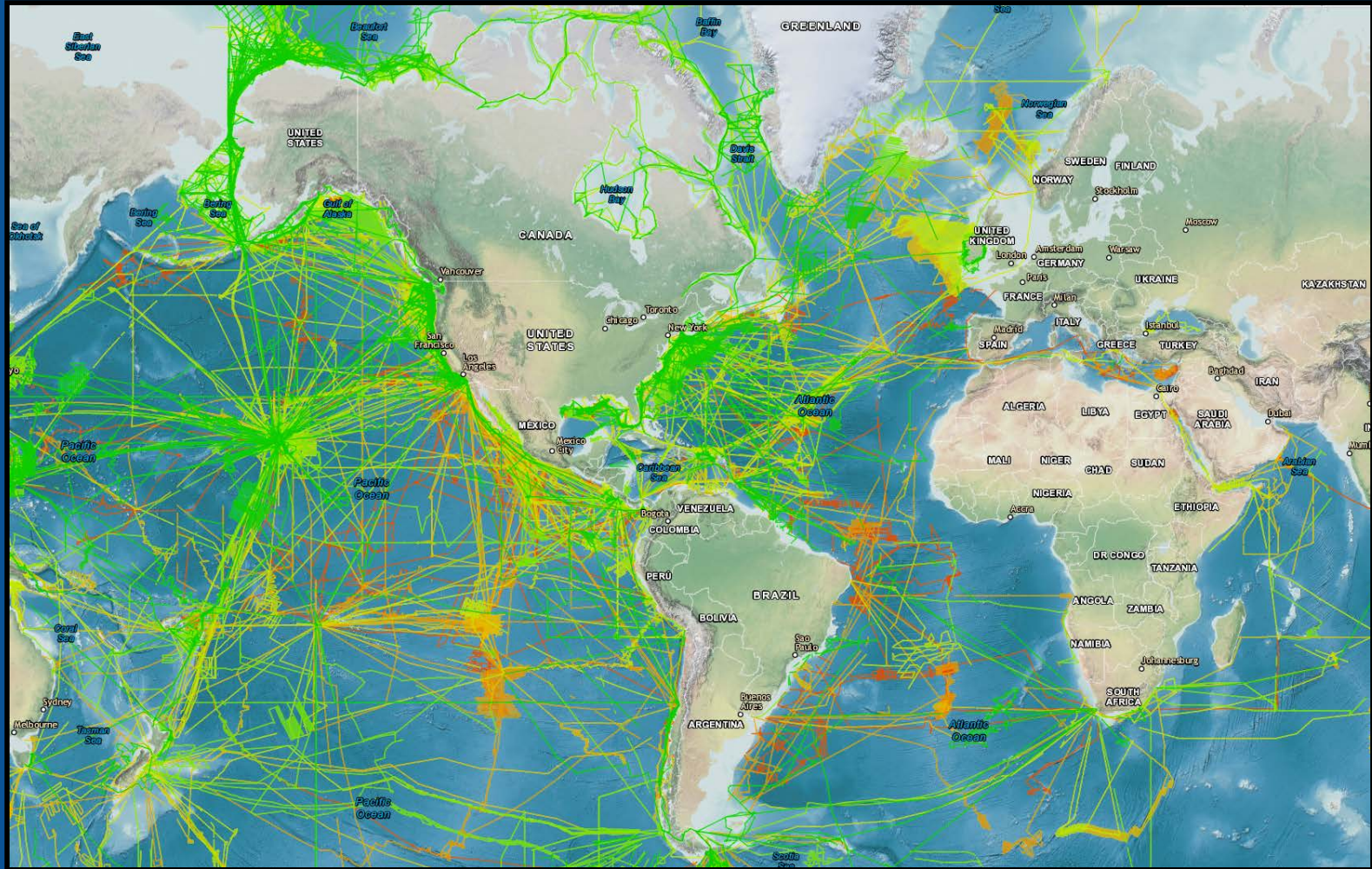
Office of Coast Survey



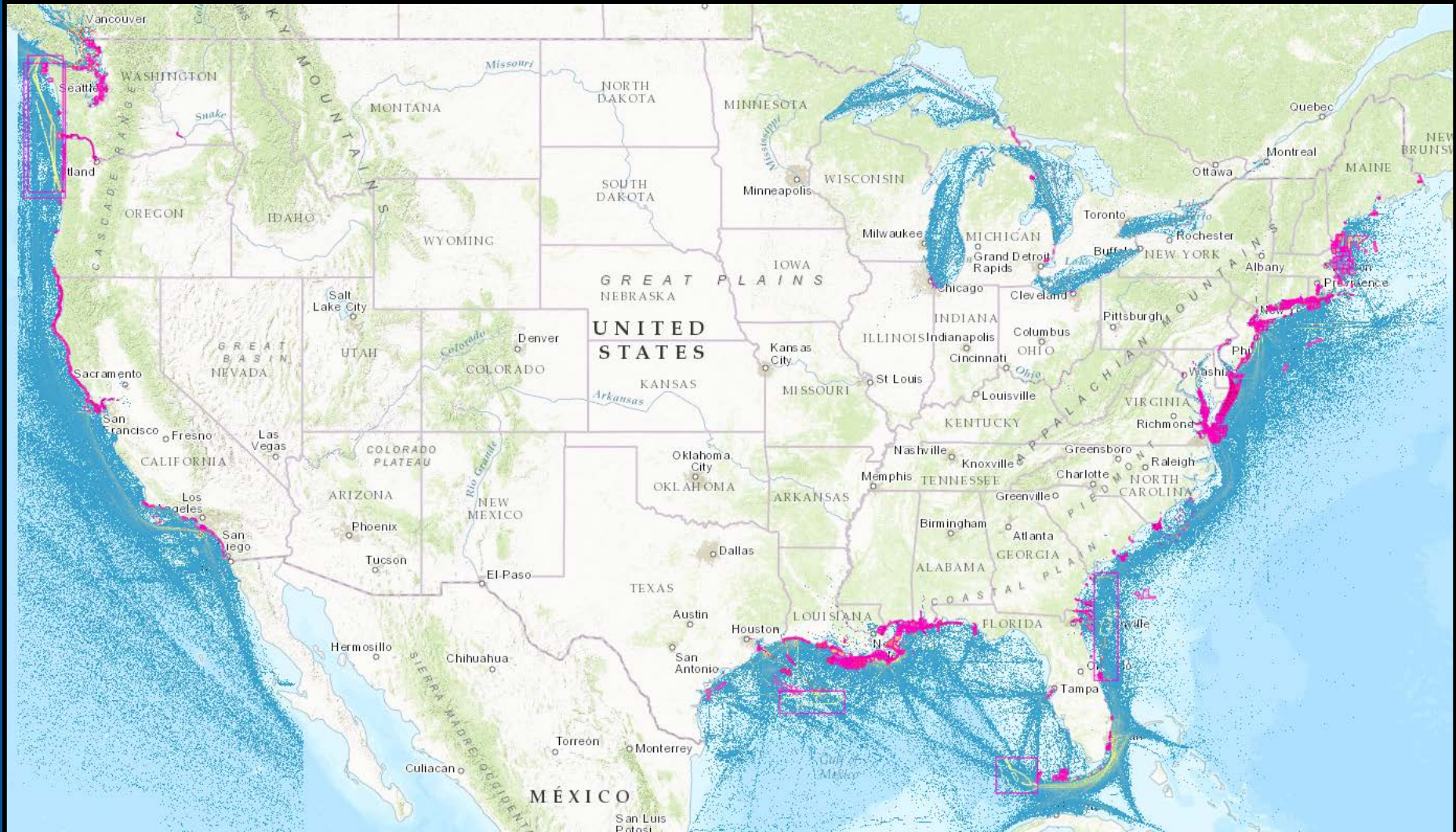
Benefits of crowdsourced bathymetry



Benefits of crowdsourced bathymetry



Benefits of crowdsourced bathymetry



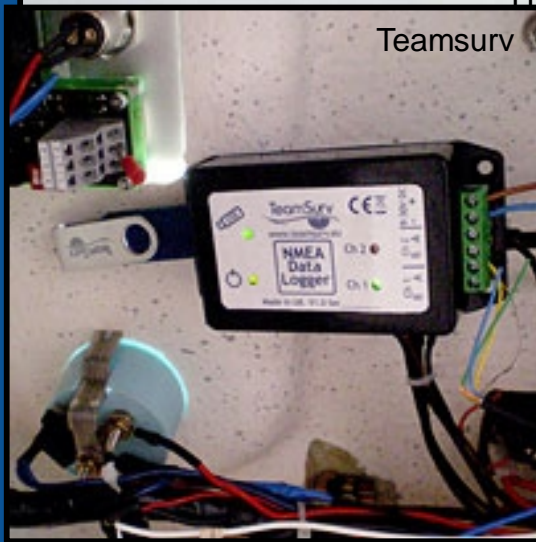
Hardware Solutions



Hydro International



Olex



Teamsurv



Herodotus
Sea-ID



Software Solutions

- Electronic Charting Systems (ECS)
- Crowd size and diversity
- Minimize Barriers to entry



www.pcmaritime.com

Log files

- NMEA strings
 - GGA
 - DPT
- Automatically logged

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Testing the theory

- NOAA R/V *Bay Hydro II*
- Coastal Explorer (Rose Point Navigation Systems)

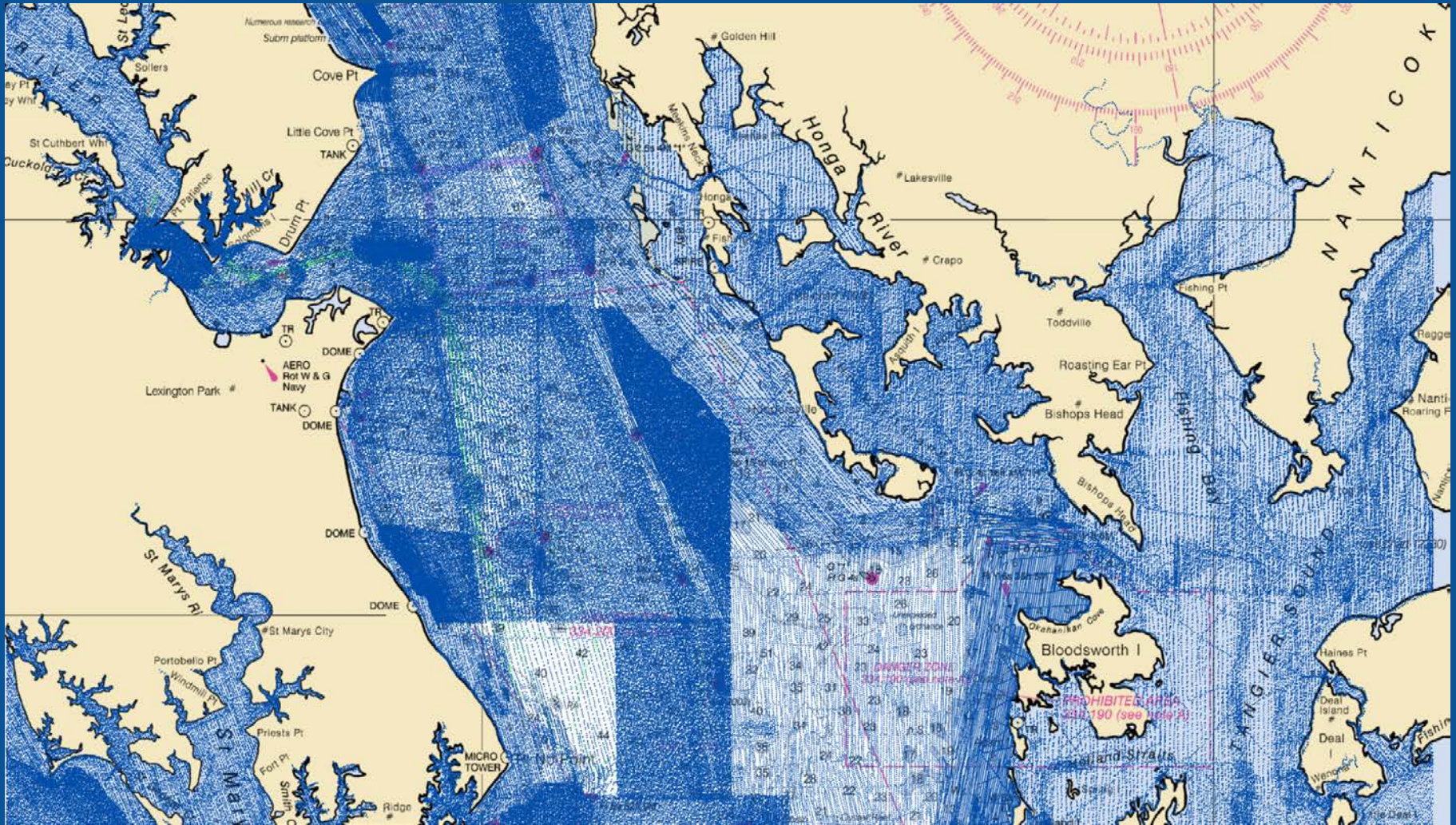


www.rosepointnav.com

Project Area



Survey Scale (Fair Sheet) Soundings



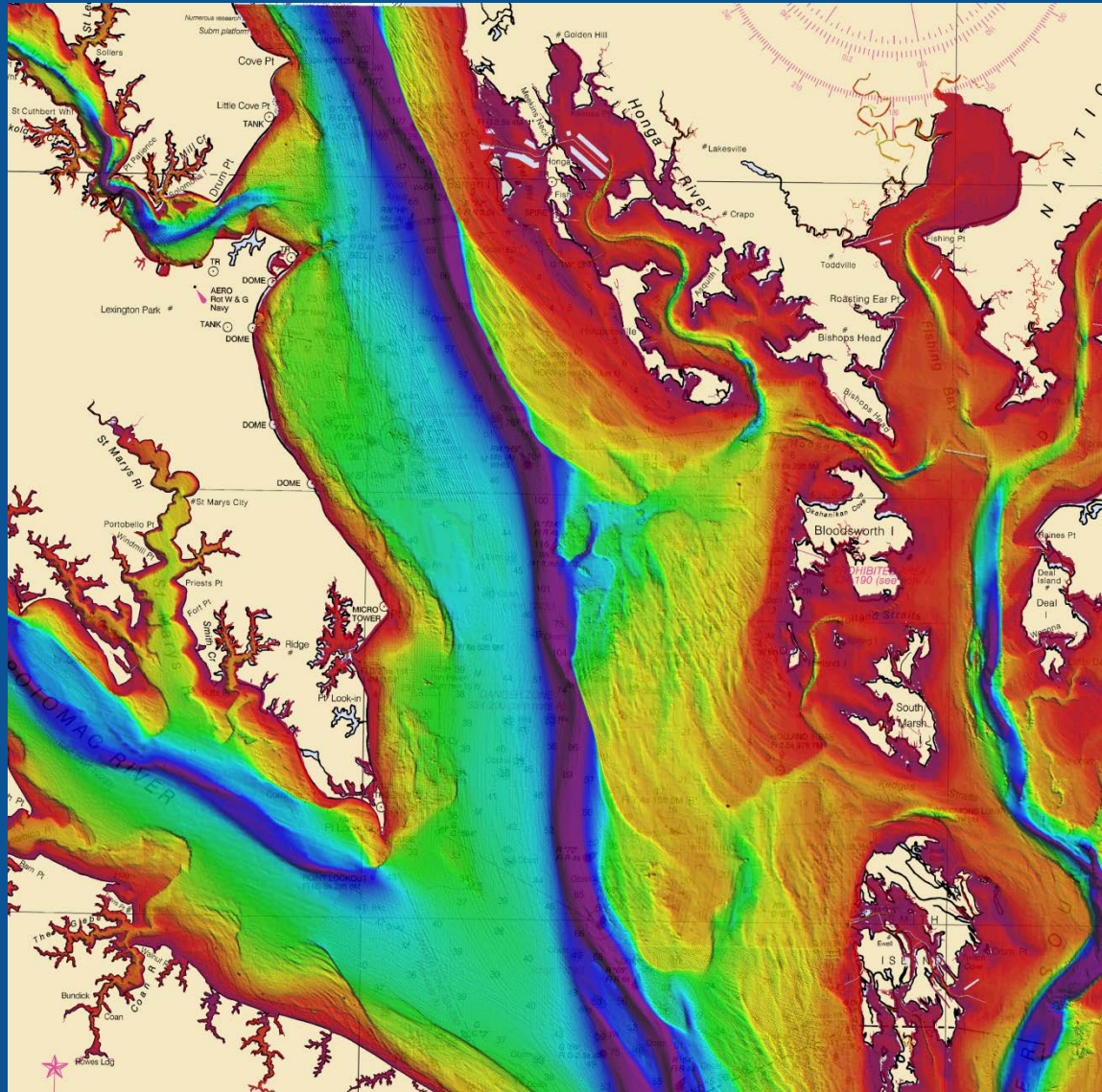
Reference Surface

reference surface

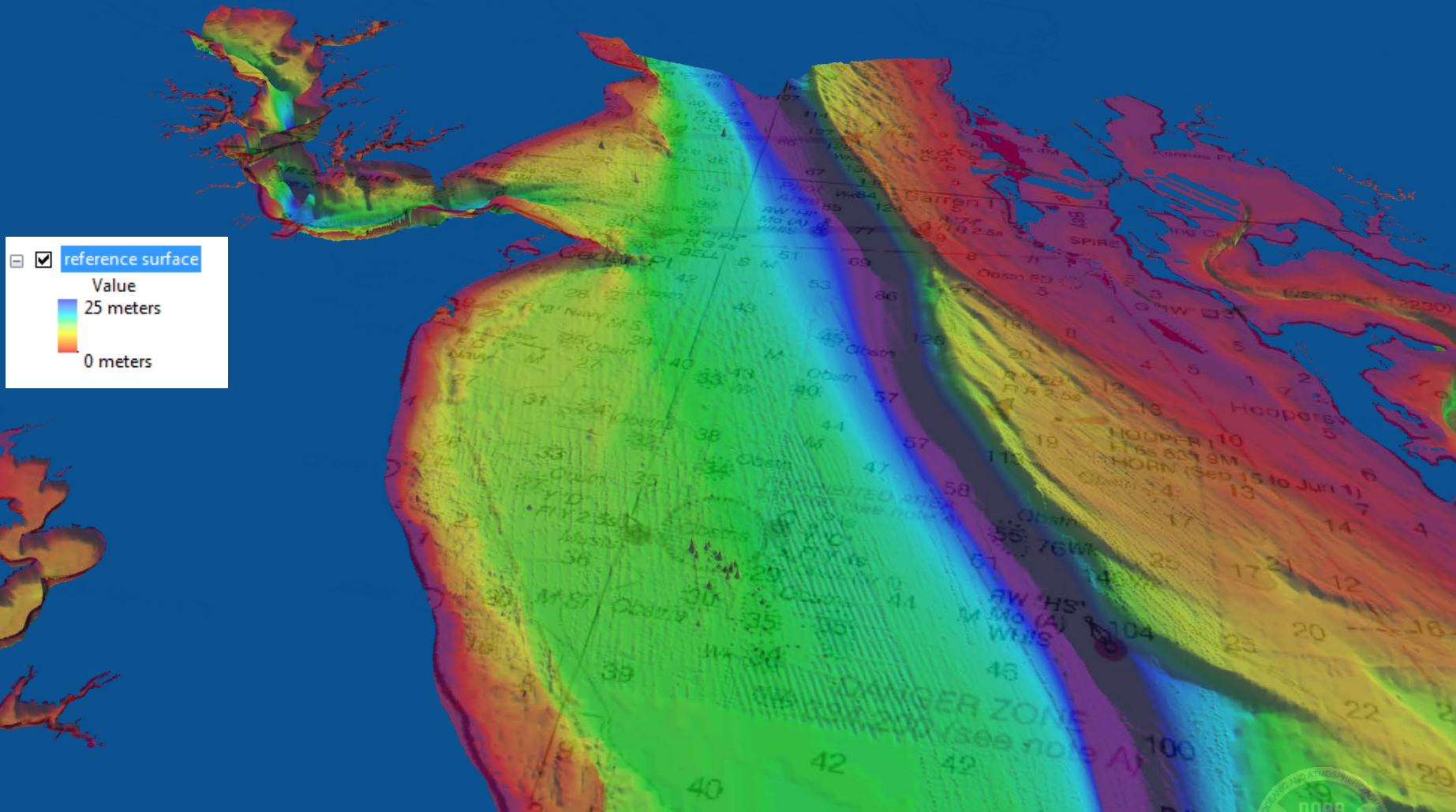
Value

25 meters

0 meters

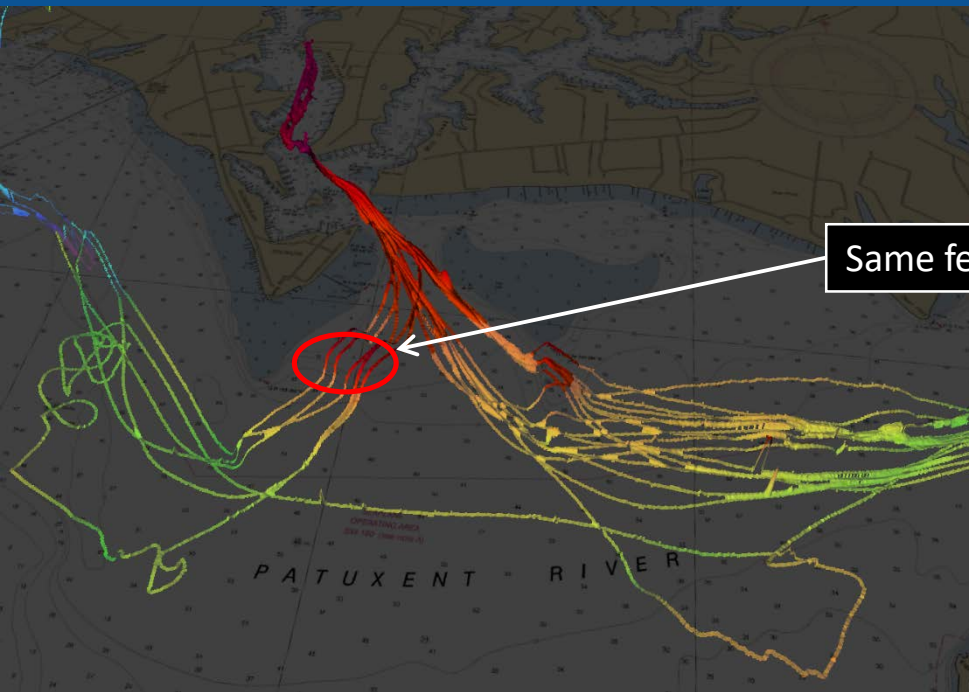


Reference Surface

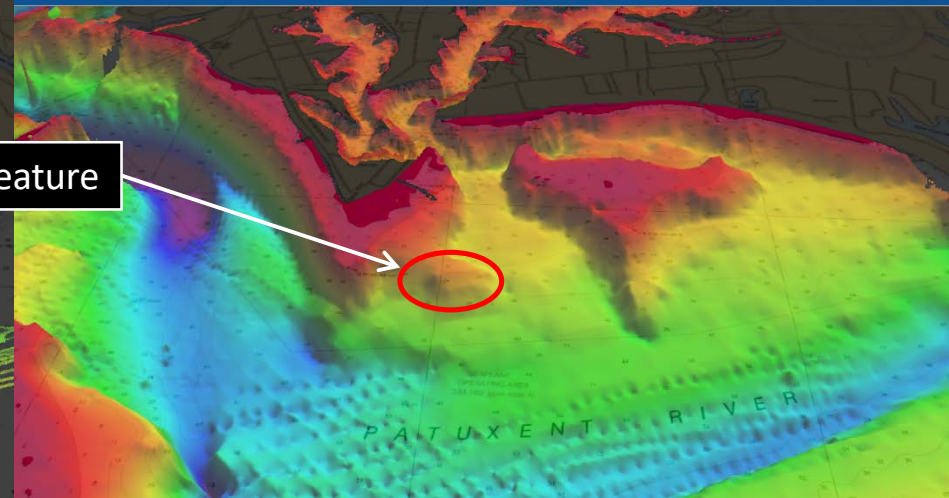


Comparison to Charted Depths

Crowdsourced Bathymetry



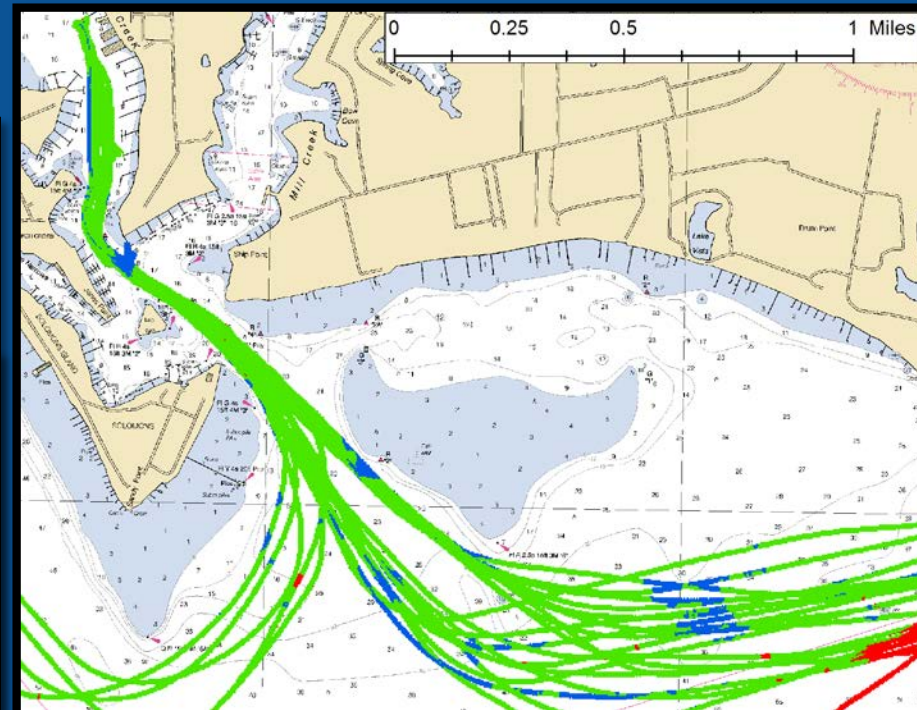
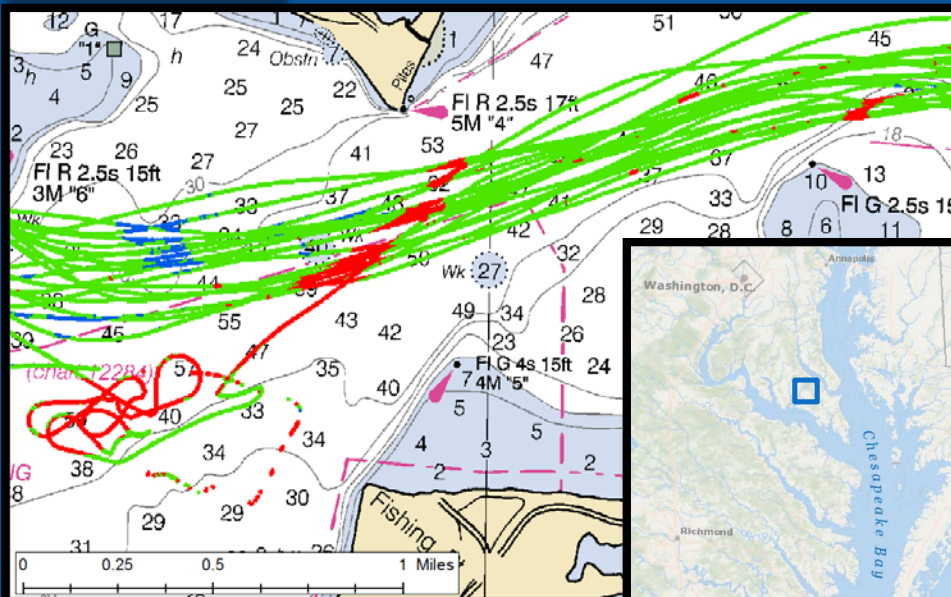
Reference Surface



Same feature

Internally Consistent Trends

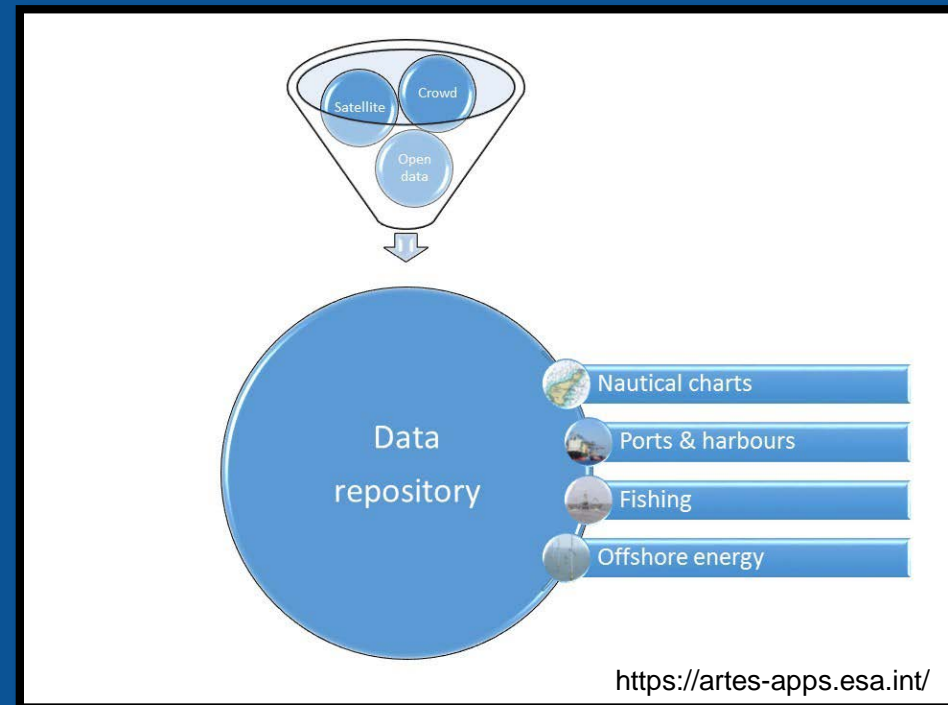
- Areas with shoaling can be easily identified



The Crowdsourced Model

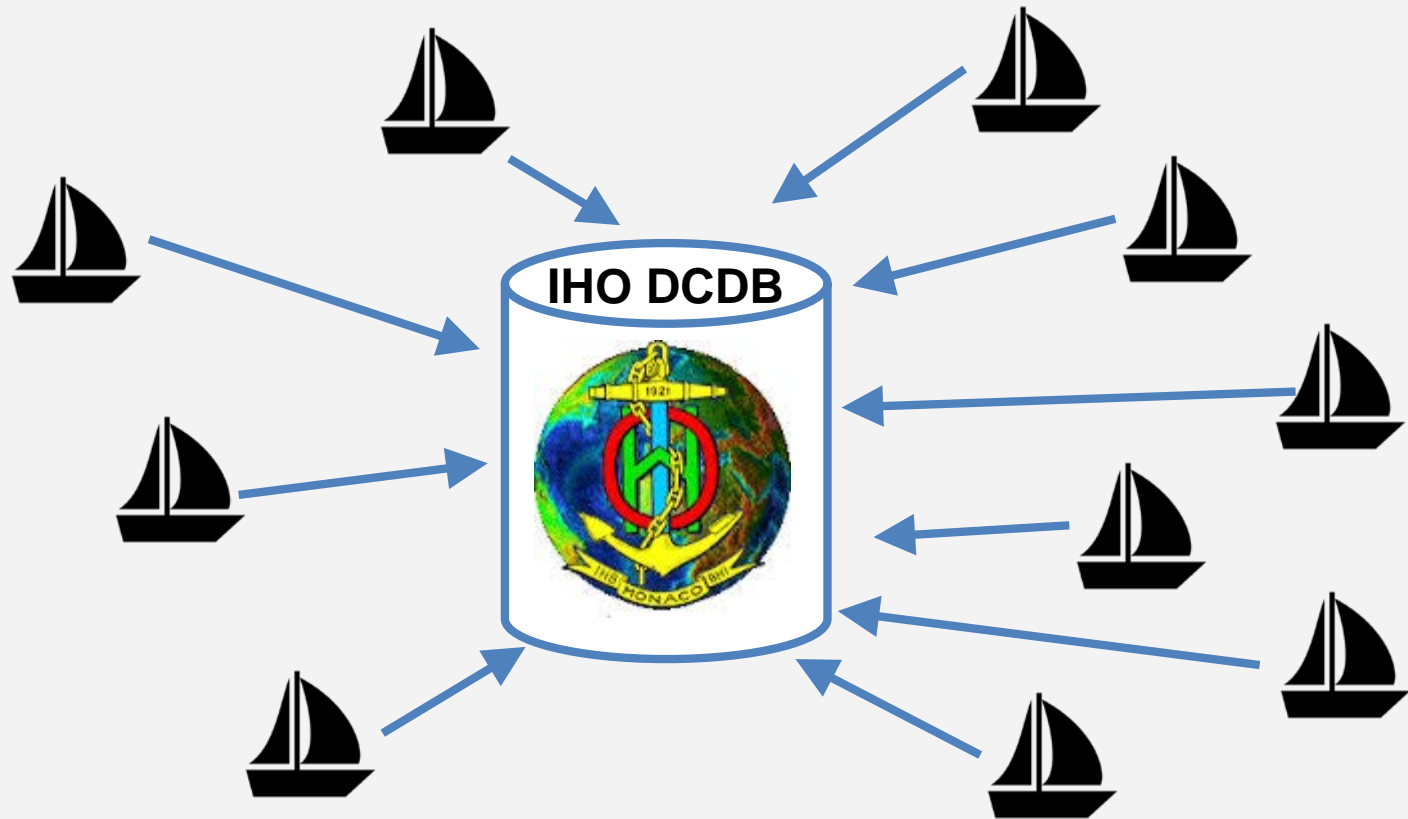
NOAA's Office of Coast Survey is using it for:

- Examining vessel traffic
- Determining Survey Priorities
- Determining Chart Adequacy

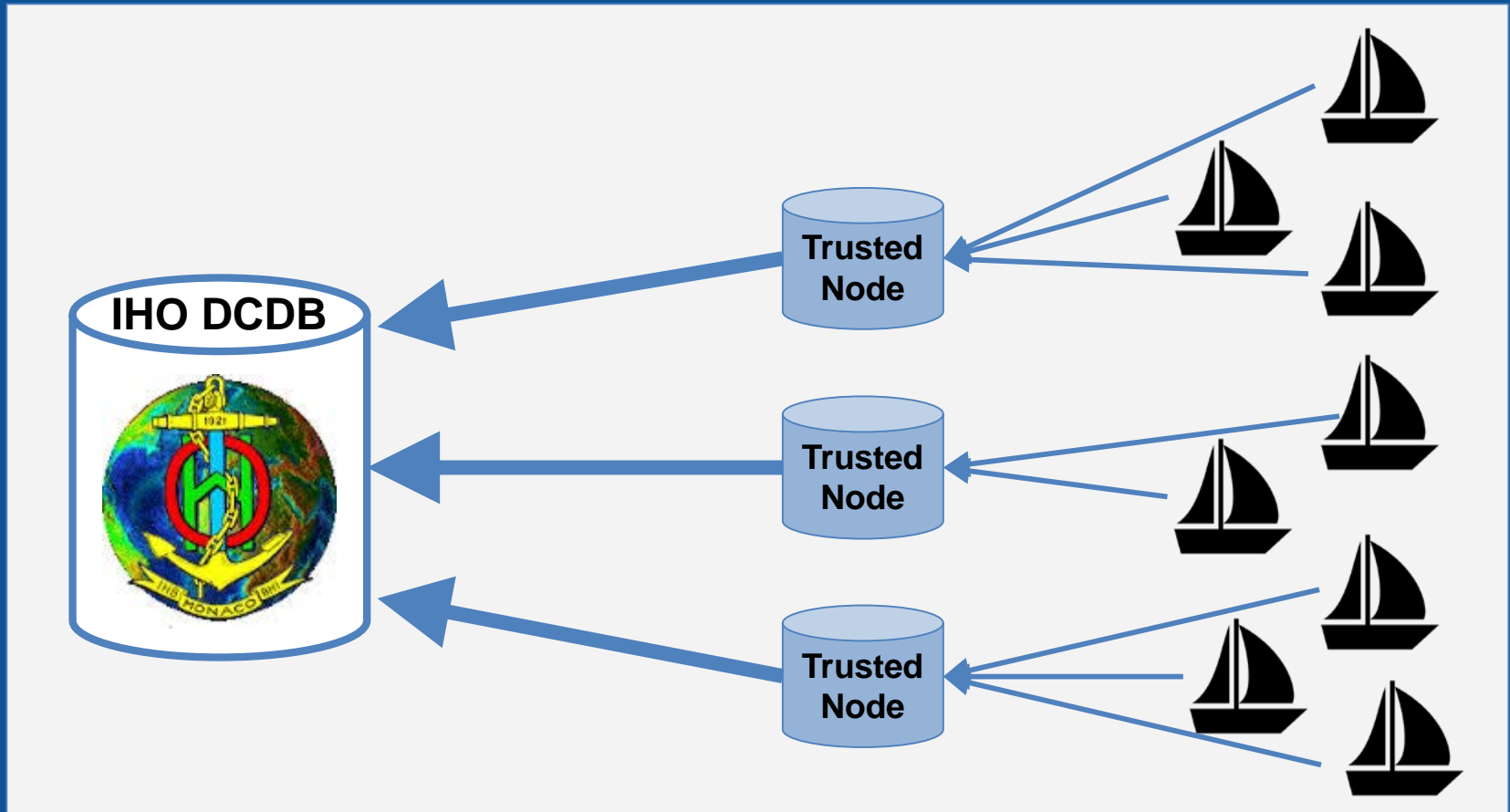


How would this data help you?

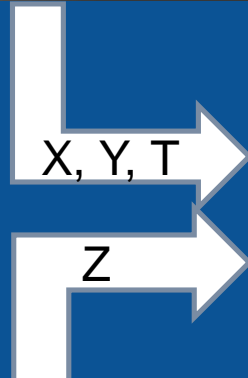
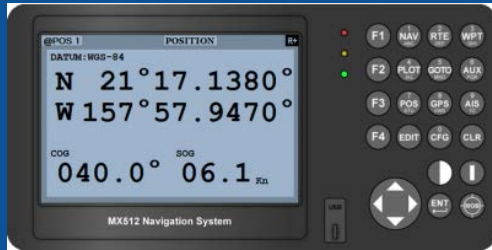
Individual Contributor Model



Trusted Node Model



Project Flow

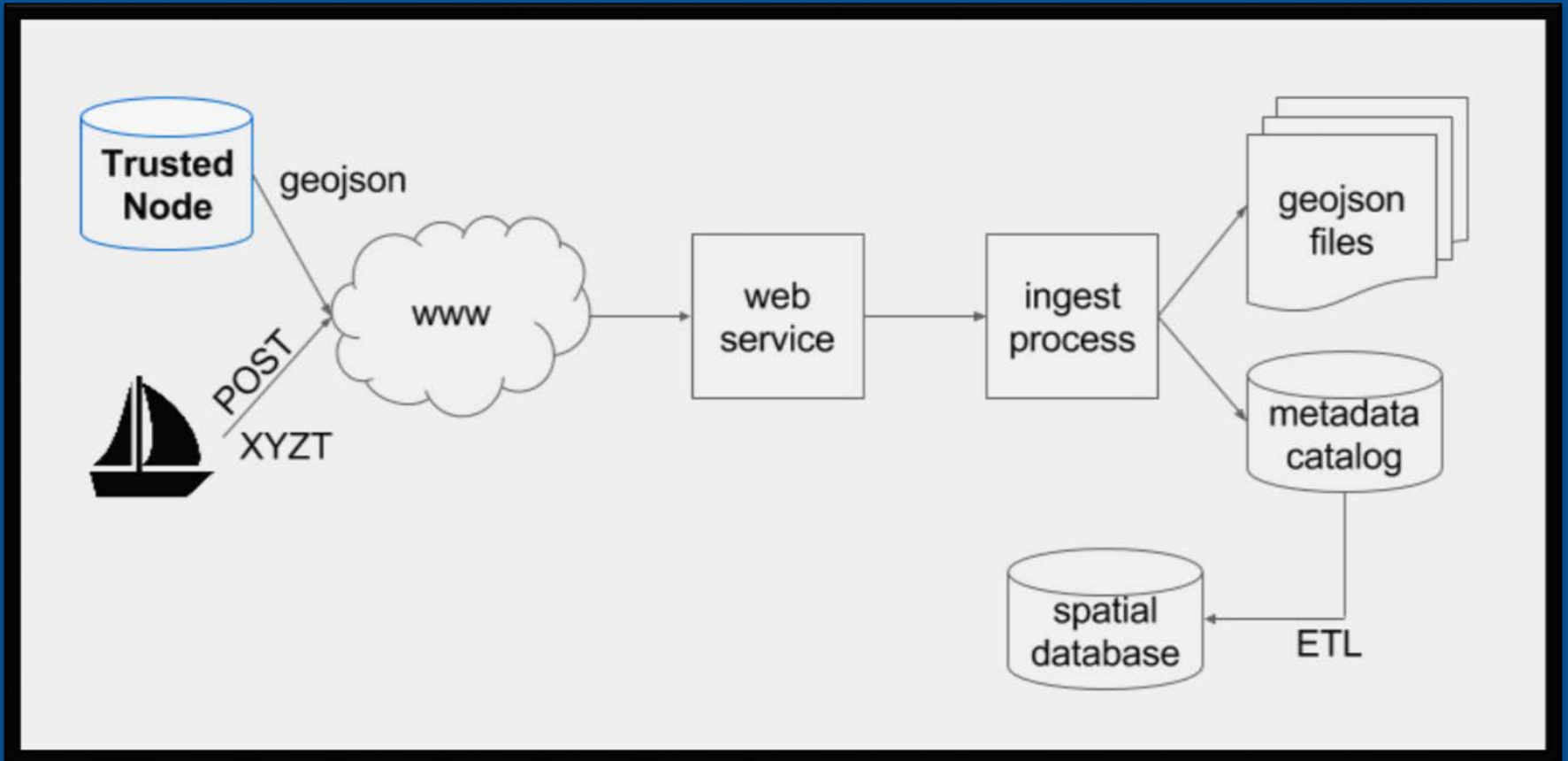


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Project Flow

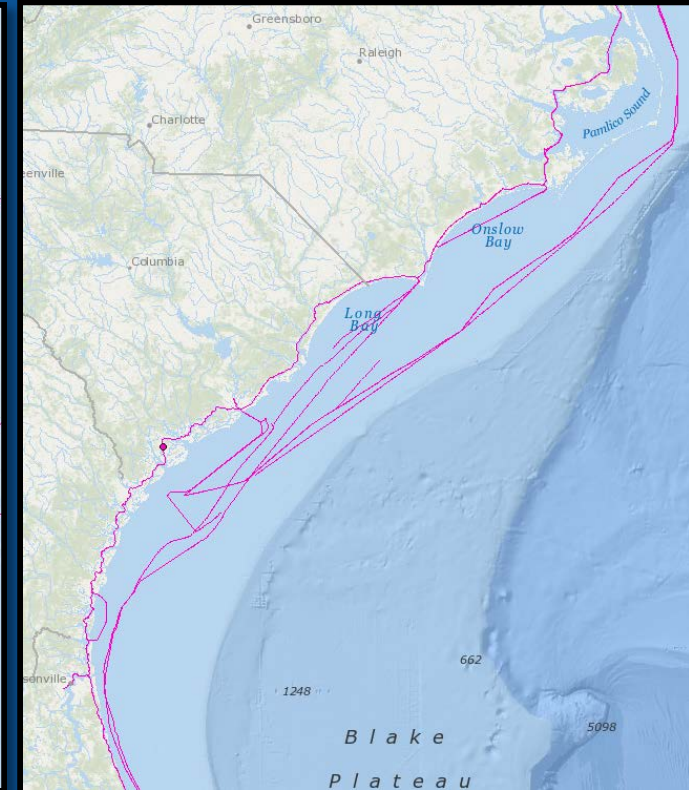
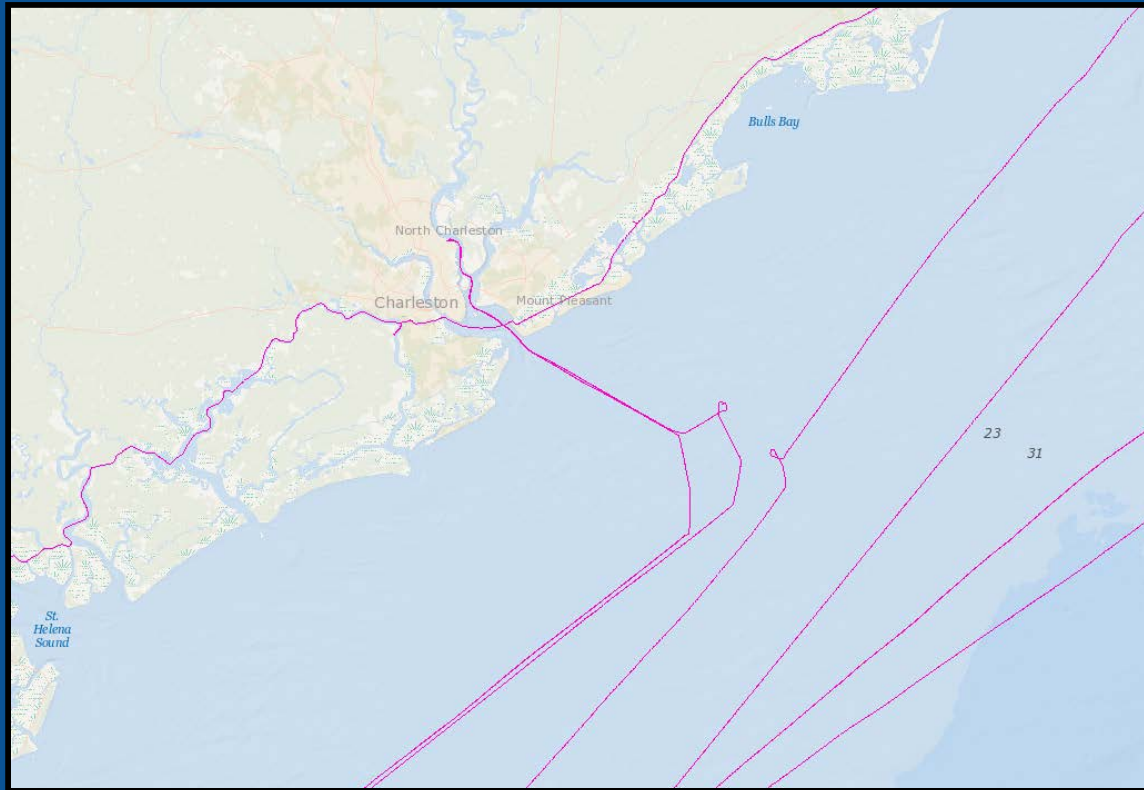


IHO DCDB Crowdsourced Viewer

The screenshot displays the IHO DCDB Crowdsourced Viewer interface. At the top left is the International Hydrographic Organization logo and name. The main map area shows bathymetric data for the North Atlantic, North Pacific, and South Pacific Oceans, with labels for various basins and seas. A vertical scale bar is on the left, and a coordinate box at the bottom left shows the current position: $-176.270^\circ, 49.114^\circ$ and an elevation of -5095 meters. The interface includes a 'Layers' panel on the left with options for Crowdsourced Bathymetry, NOAA/NCEI Bathymetric Surveys, EMODNet Bathymetric Surveys, and NOAA/NCEI Digital Elevation Models (DEMs). A 'Legend' section is at the bottom left. On the right side, there are controls for 'Identify', 'Basemap', and 'Options', along with a vertical toolbar for map projection (Mercator, Arctic, Antarctic) and a small inset map.

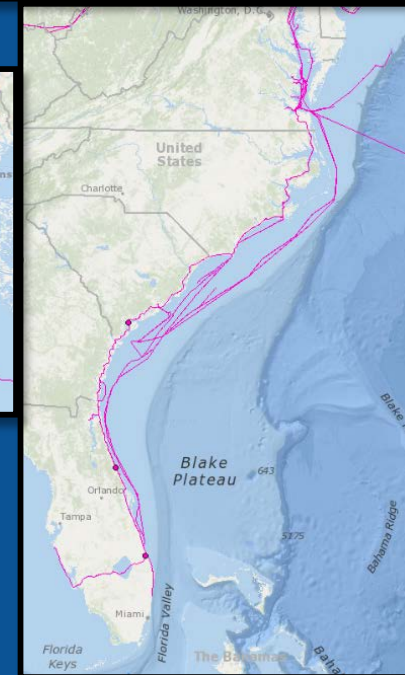
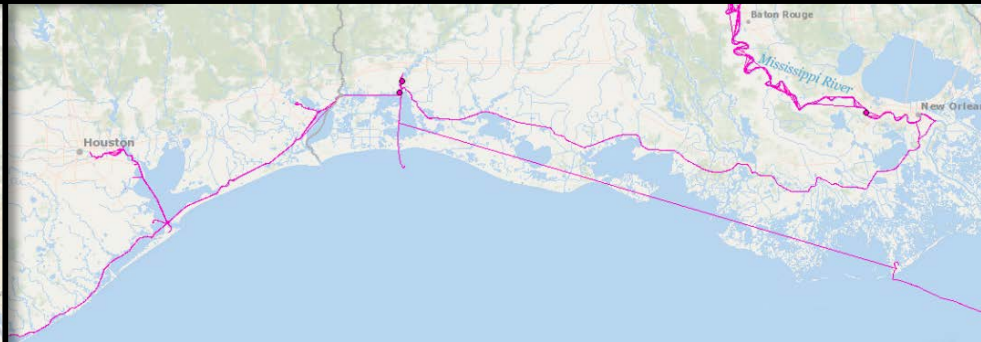
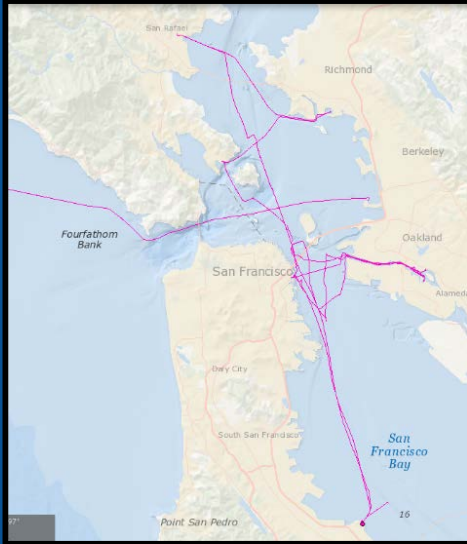
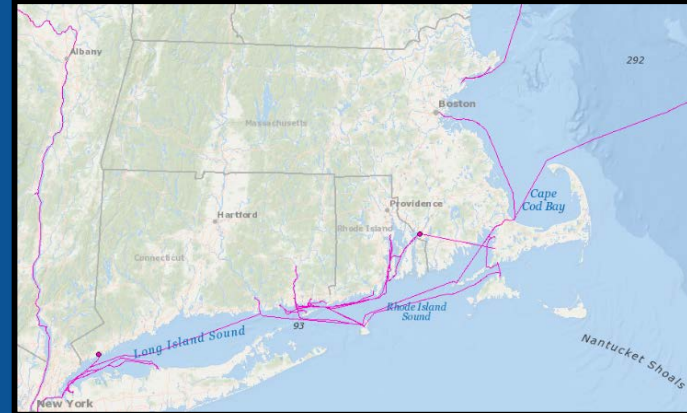
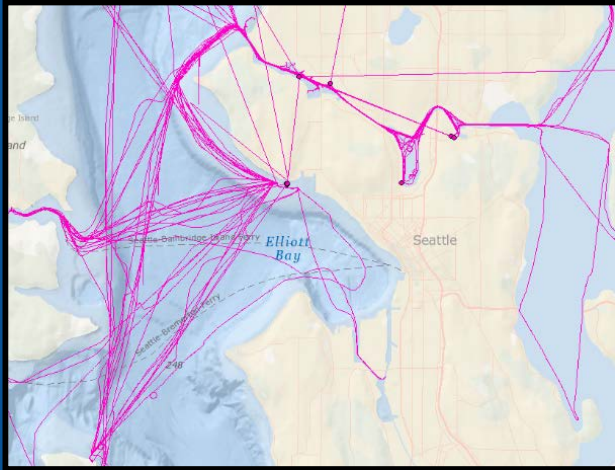
maps.ngdc.noaa.gov/viewers/csb/

Current Data in DCDB near Charleston



maps.ngdc.noaa.gov/viewers/csb/

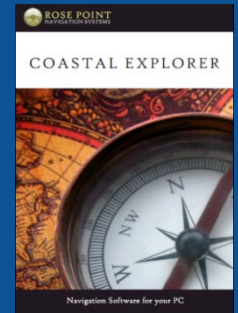
Crowdsourced Bathymetry - Archive



maps.ngdc.noaa.gov/viewers/csb/

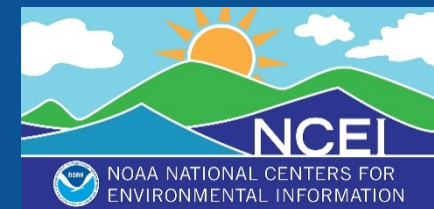
Thank you

- LT Anthony Klemm & Evan Robertson
- Rose Point Navigation Systems
- NOAA R/V *Bay Hydro II*
- International Hydrographic Organization
- Crowdsourced Bathymetry Working Group
- National Centers for Environmental Information



Adam.Reed@noaa.gov

NOAA Integrated Oceans and Coastal Mapping



Office of Coast Survey