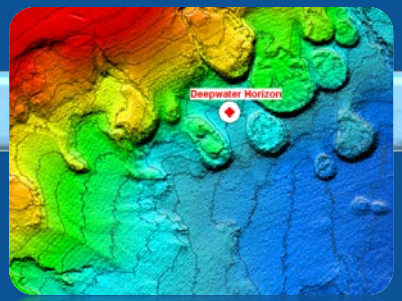




Office of Coast Survey
Latest GIS Applications

Kurt A. Nelson, Branch Chief
Geospatial Applications Development Branch
Coast Survey Development Laboratory

Agenda

Coast Survey Geospatial Products & Services

- Current List (nauticalcharts.noaa.gov)
- Recently Updated and New
- In Development

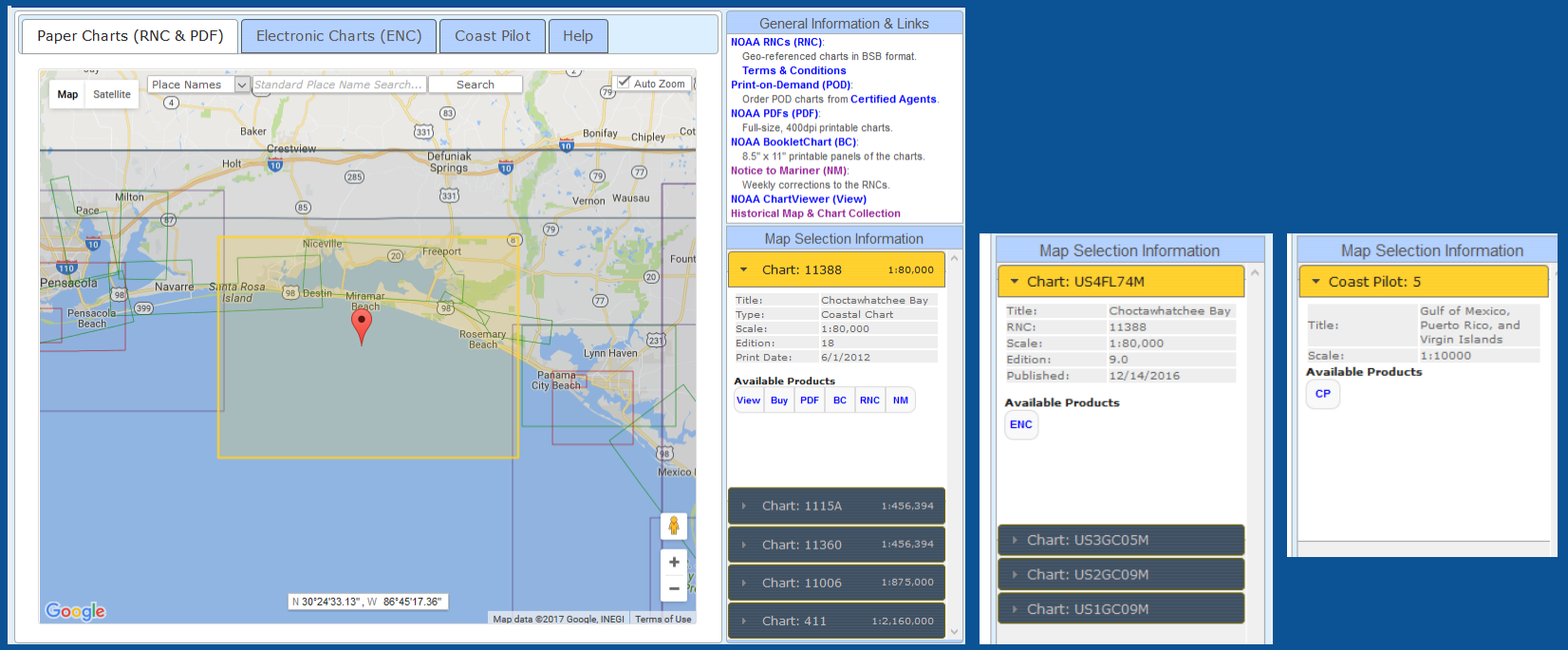
Nauticalcharts.noaa.gov

- Interactive Chart Catalog
  - Raster (RNCs)
  - Vector (ENCs)
  - Coast Pilot
- Historical Maps and Charts

- Survey Planning
- Public Wrecks and Obstructions

- Seamless Raster Service
- NOAA Tile Service
- ENC Direct to GIS
- nowCOAST
- ENCOnline Viewer

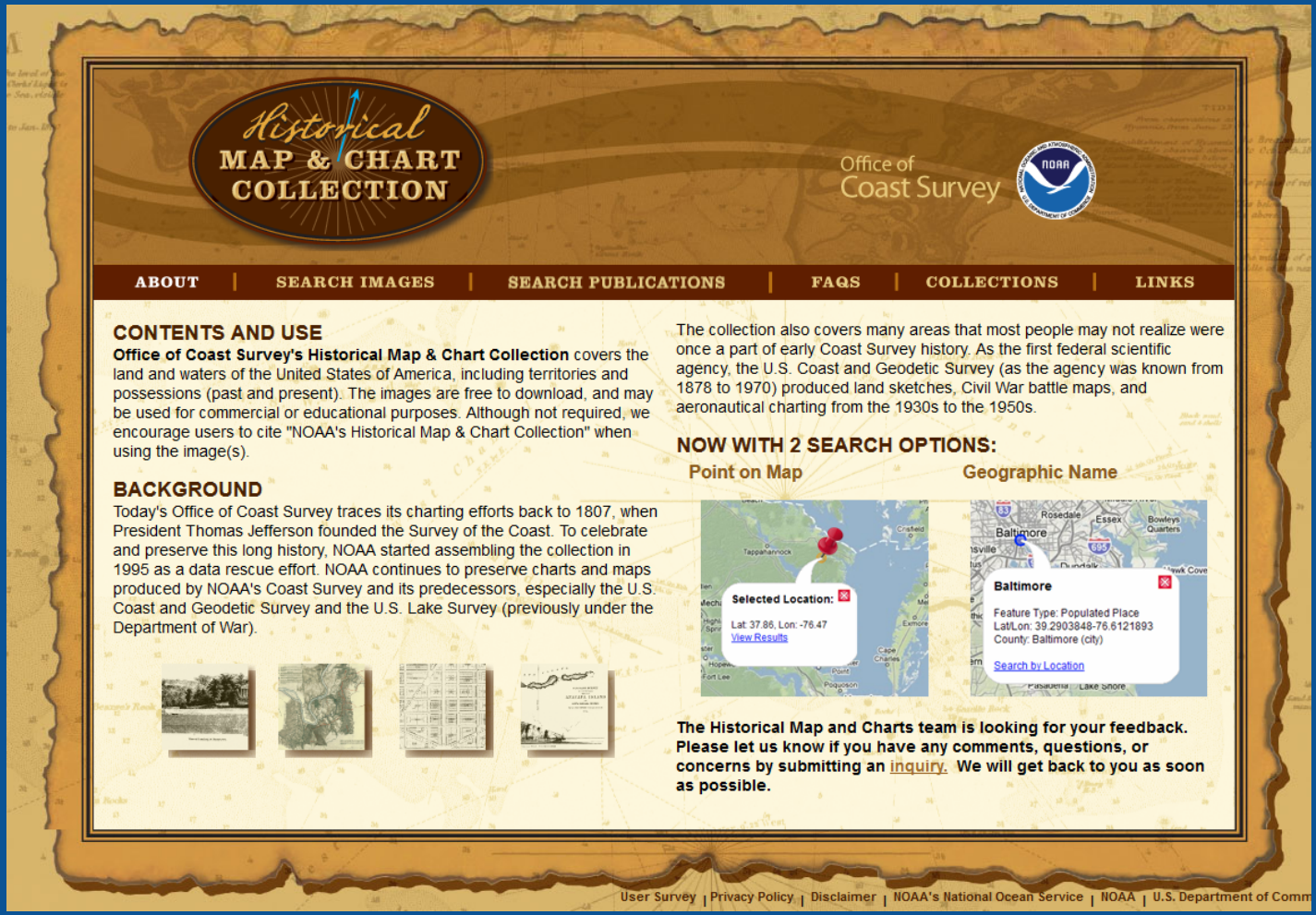
Interactive Catalog



RNC ENC Coast Pilot

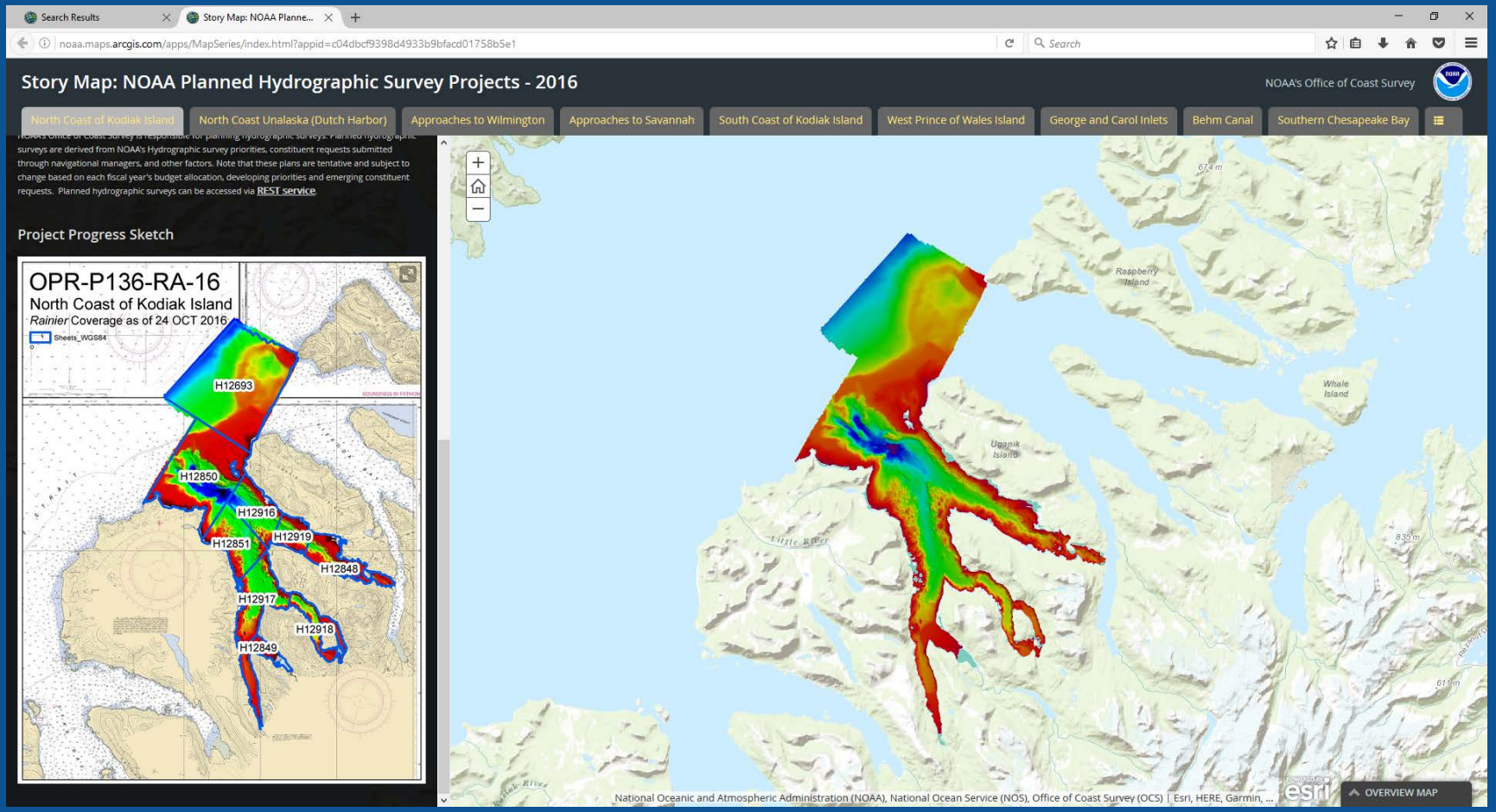
https://www.charts.noaa.gov/InteractiveCatalog/nrnc.shtml

Historical Map & Chart Collection



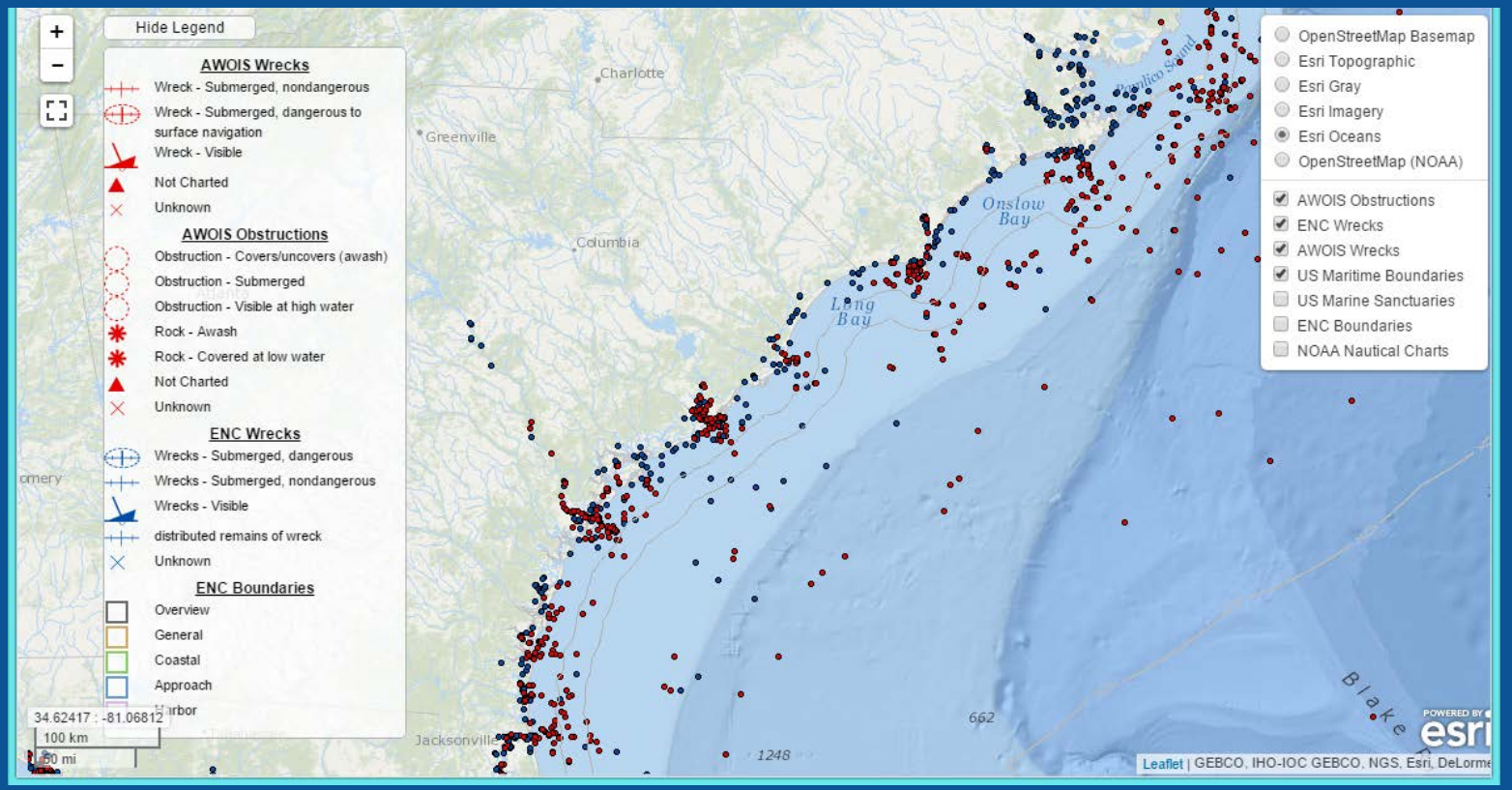
https://historicalcharts.noaa.gov/

NOAA Planned Survey Projects - 2016



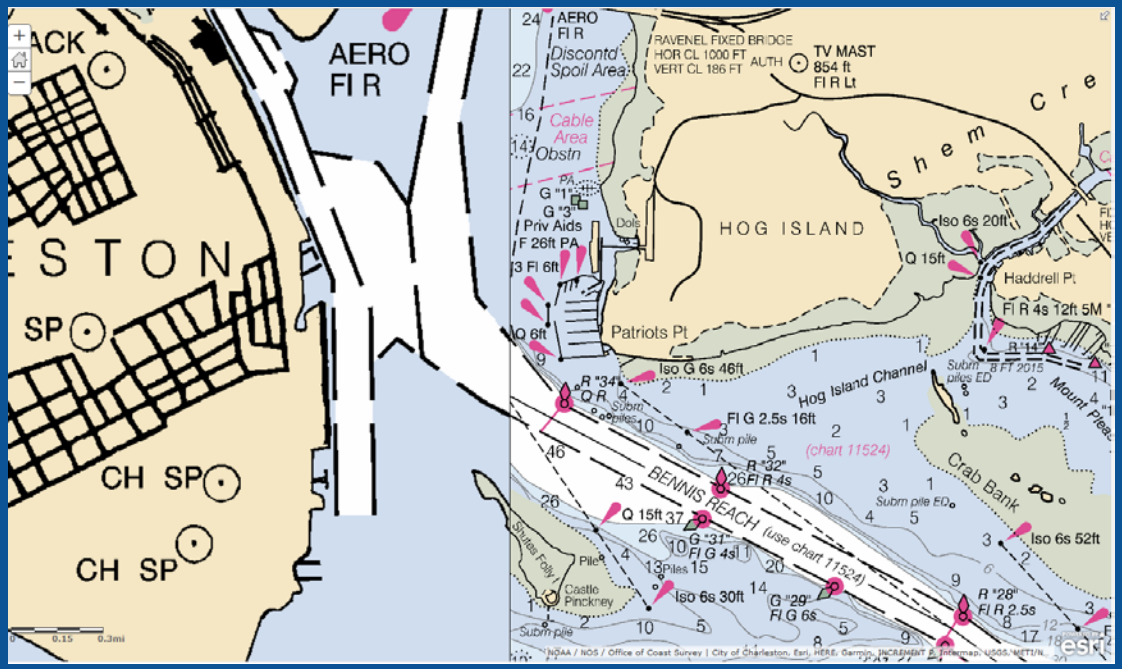
Story Map

Public Wrecks & Obstruction Database & Viewer



https://wrecks.nauticalcharts.noaa.gov/viewer/

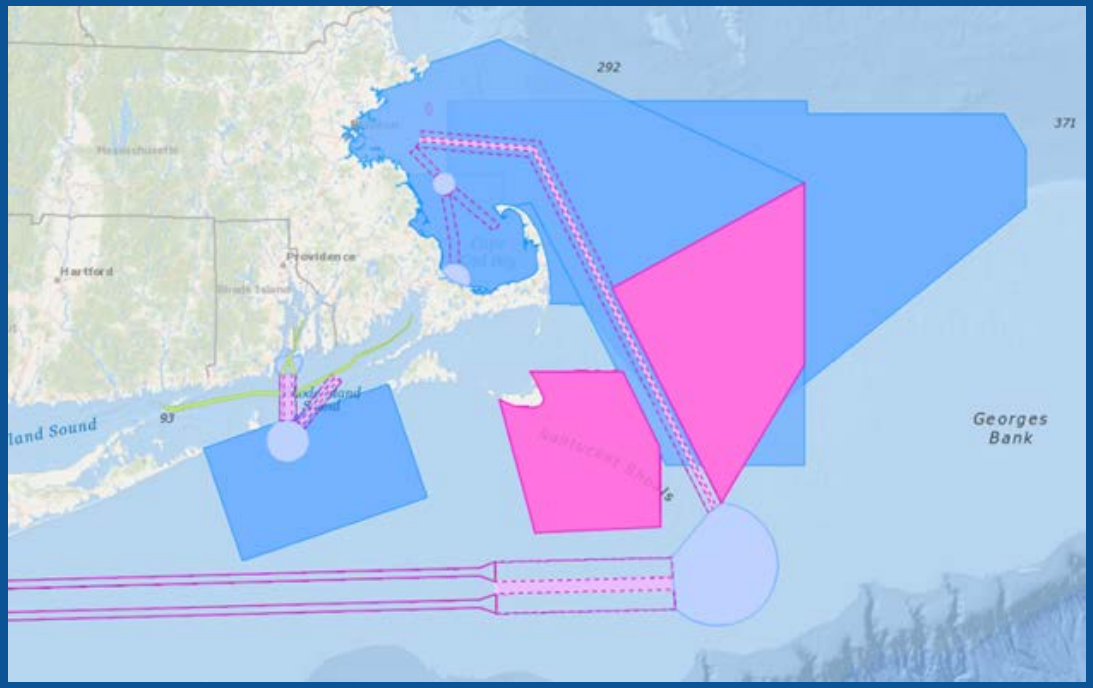
Seamless Raster Service



UPDATED WEEKLY
Supports Web Mapping Services
KMZ files created to support Google Earth

- The NOAA Chart Tile Service provides standardized nautical chart tilesets for the public
- Eliminates the need for application developers to regularly undergo the cumbersome process of transforming NOAA BSB files into tilesets.
- It provides geo-referenced charts compatible with the Web Map Tile Specifications (WMTS) and Tile Map Service Specification (TMS).
- All tilesets are published on a weekly basis.

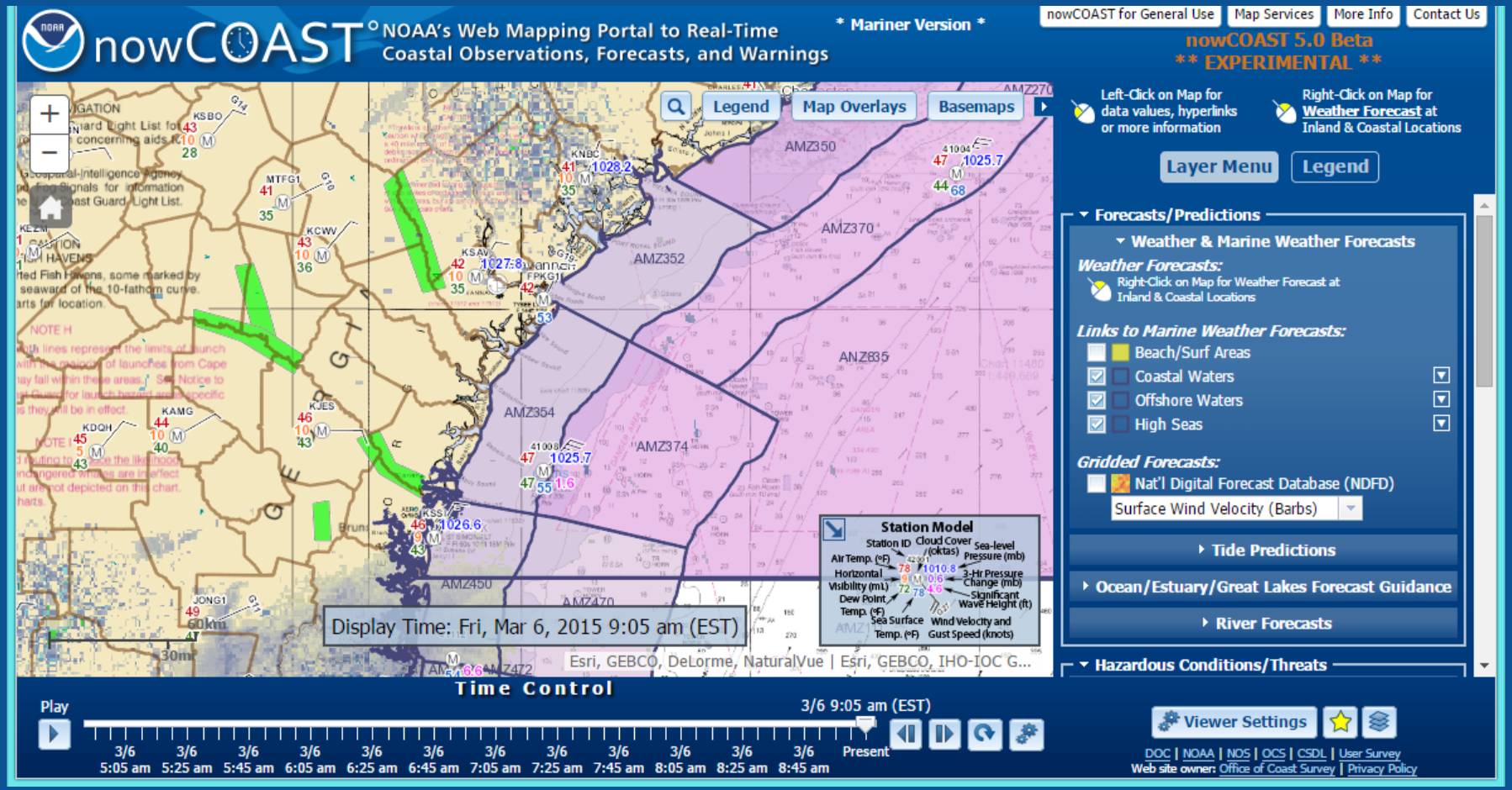
ENC Direct of GIS Authoritative Theme Layers



Updated Shipping Lanes and Regulatory Areas

https://encdirect.noaa.gov

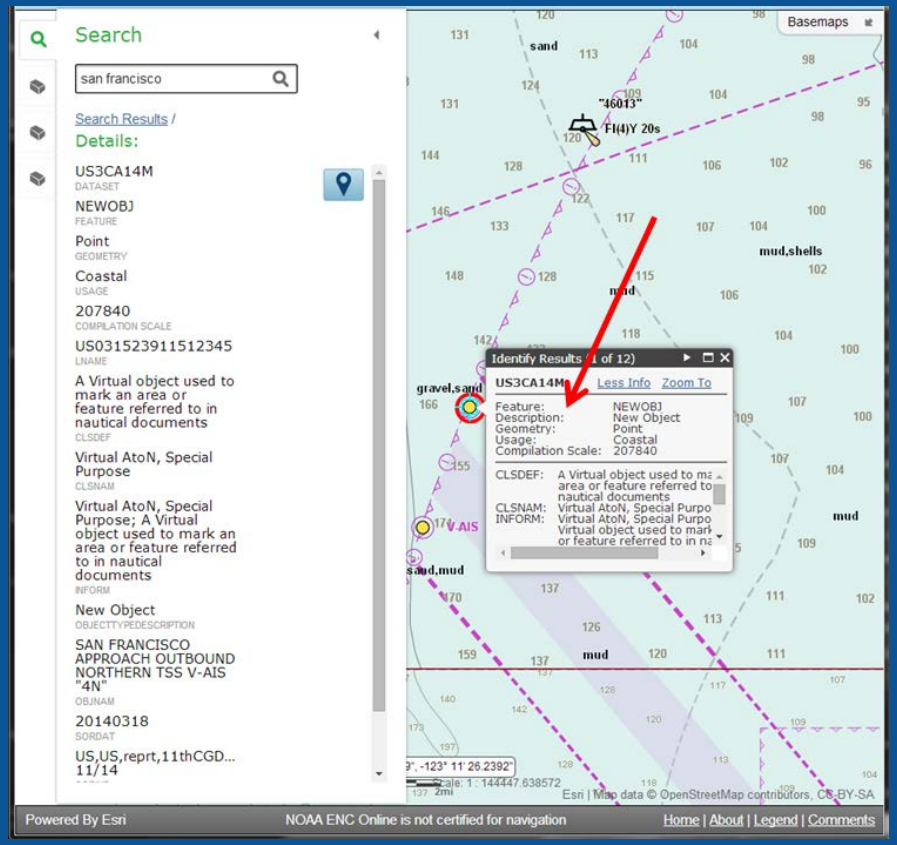
nowCOAST



https://nowcoast.noaa.gov/

NOAA ENC® Online

- Search for ENC features
- Identify by clicking in map window
- Zoom to selected features
- Switch between basemaps
- Adjust transparency
- Switch ECDIS display parameters
- Link to U.S. Chart No. 1
- Able to provide feedback
- Access to up-to-date data



https://www.nauticalcharts.noaa.gov/ENCOnline/enconline.html

Recently Updated or New Products and Services

- Arctic Voyage Planning Guide
- Chart Distribution
  - Weekly Updates
  - Historical
- Precision Navigation Tool (Beta)

- Organizing & Sharing Information
  - Internal OCS GIS Portal
  - External NOAA GeoPlatform

U.S. ARCTIC VOYAGE PLANNING GUIDE

Home | Important Notice | This Guide | Partners and Authorities | Feedback | Emergency Information | Geography of US Arctic | Navigation | Regulations & Requirements | Weather & Ice

Navigation in the Arctic region should be considered dangerous.

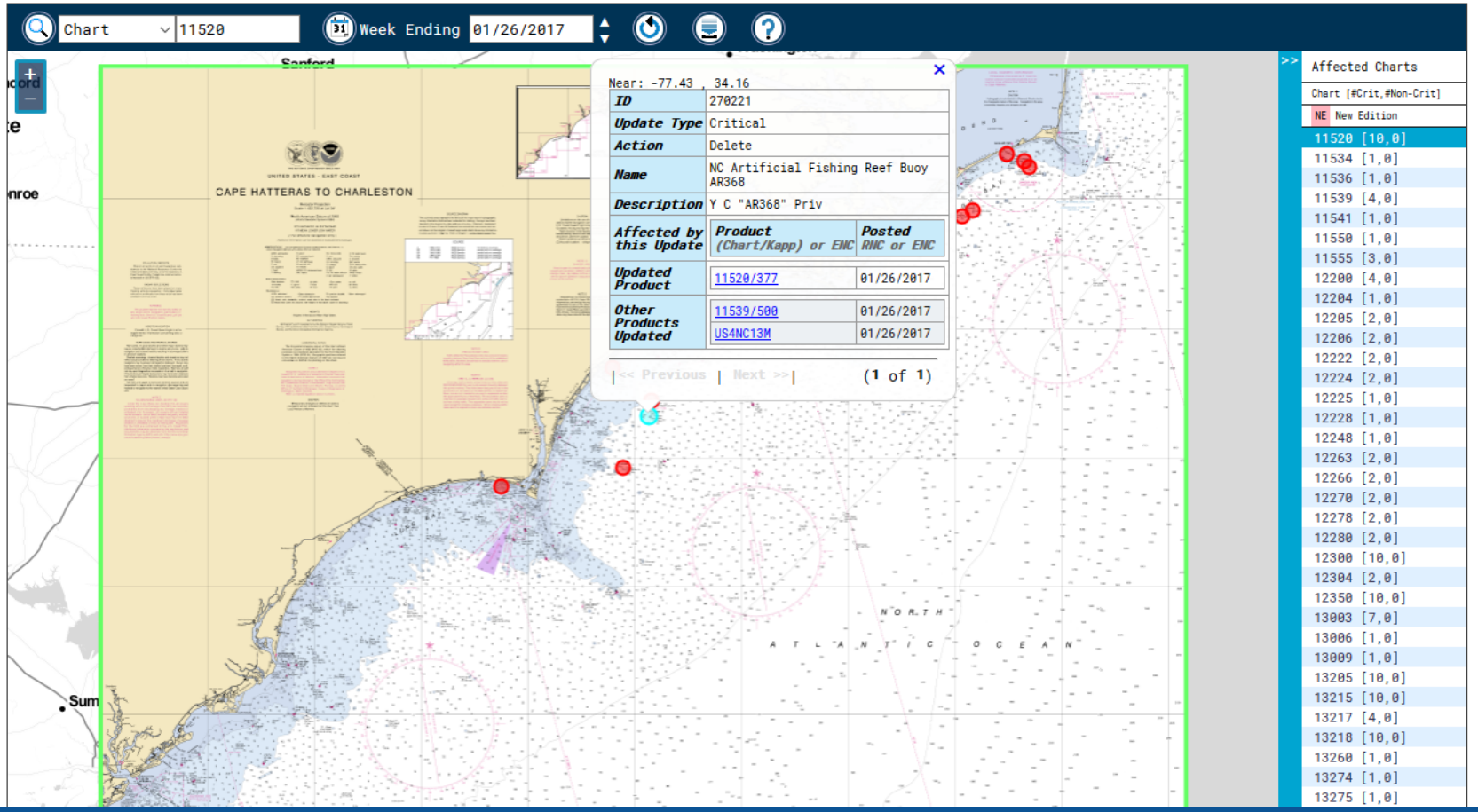
This Mariner's Voyage Planning Guide must be kept up to date using the latest applicable notice to Mariners that are available. This Guide does not replace information contained in critical nautical charts and other official nautical publications published by services on the authority of national Governments.

Masters should carefully and in good time plan their passage through Arctic waters, making use of navigational charts of sufficiently large scale and with enough detail to ensure the safety of navigation. The latest edition of nautical charts and publications must be used.

The International Maritime Organization is developing a Polar Code that should be consulted for recommended practices for navigating in polar waters. The Polar Code will be finalized in May and enter into force on January 1, 2017.

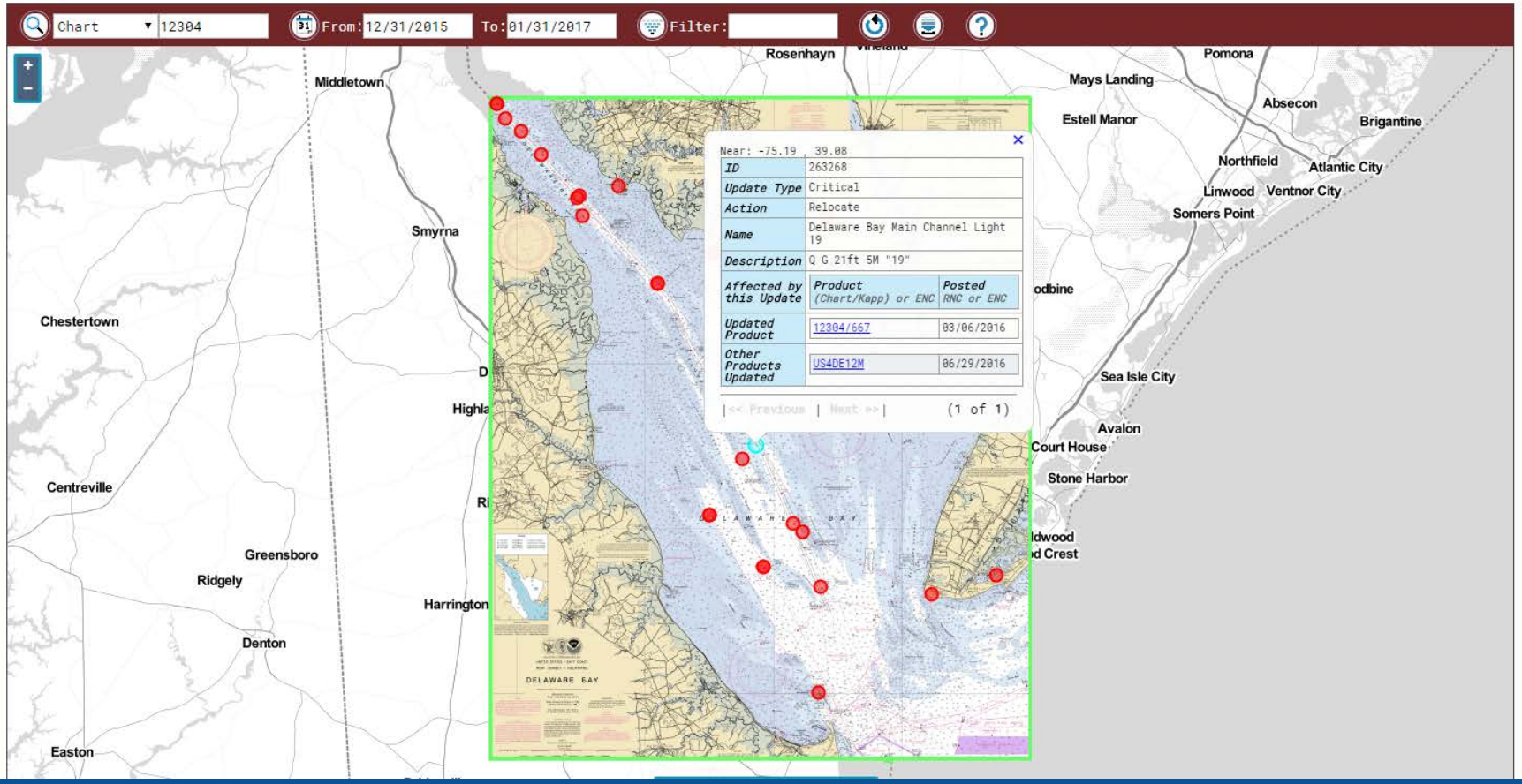
Disclaimer: The information provided is intended to consolidate information helpful in planning an Arctic voyage, but should not be relied upon exclusively. All relevant information sources should be consulted and all applicable international, national, and state/local (if any) requirements must be adhered to.

Weekly Chart Updates



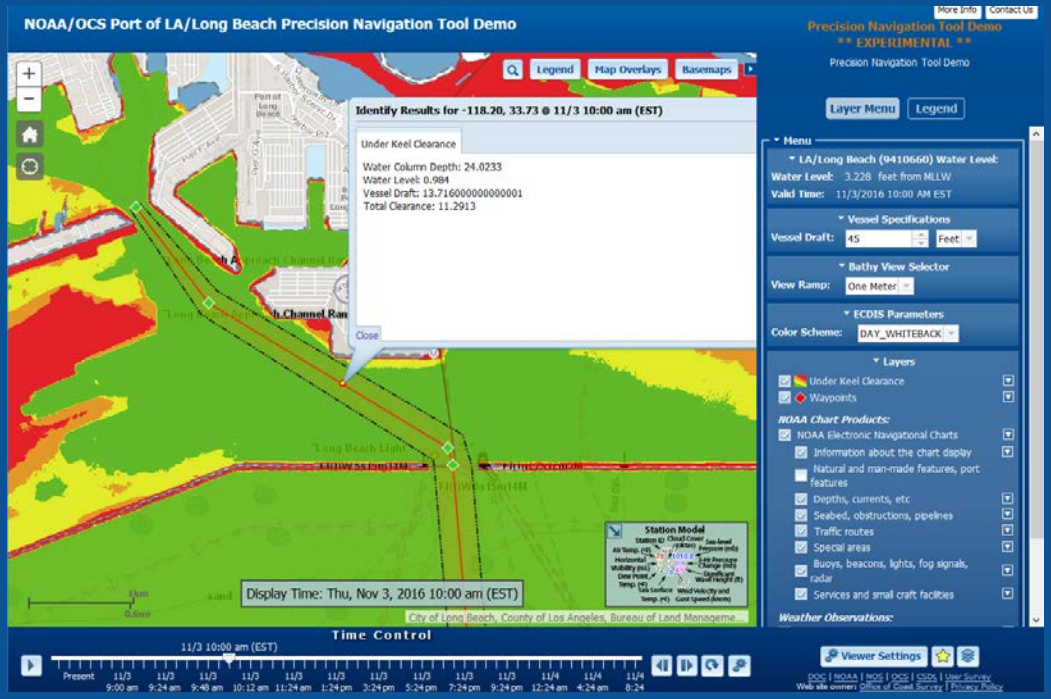
https://distribution.charts.noaa.gov/weekly_updates/

Historical Chart Updates



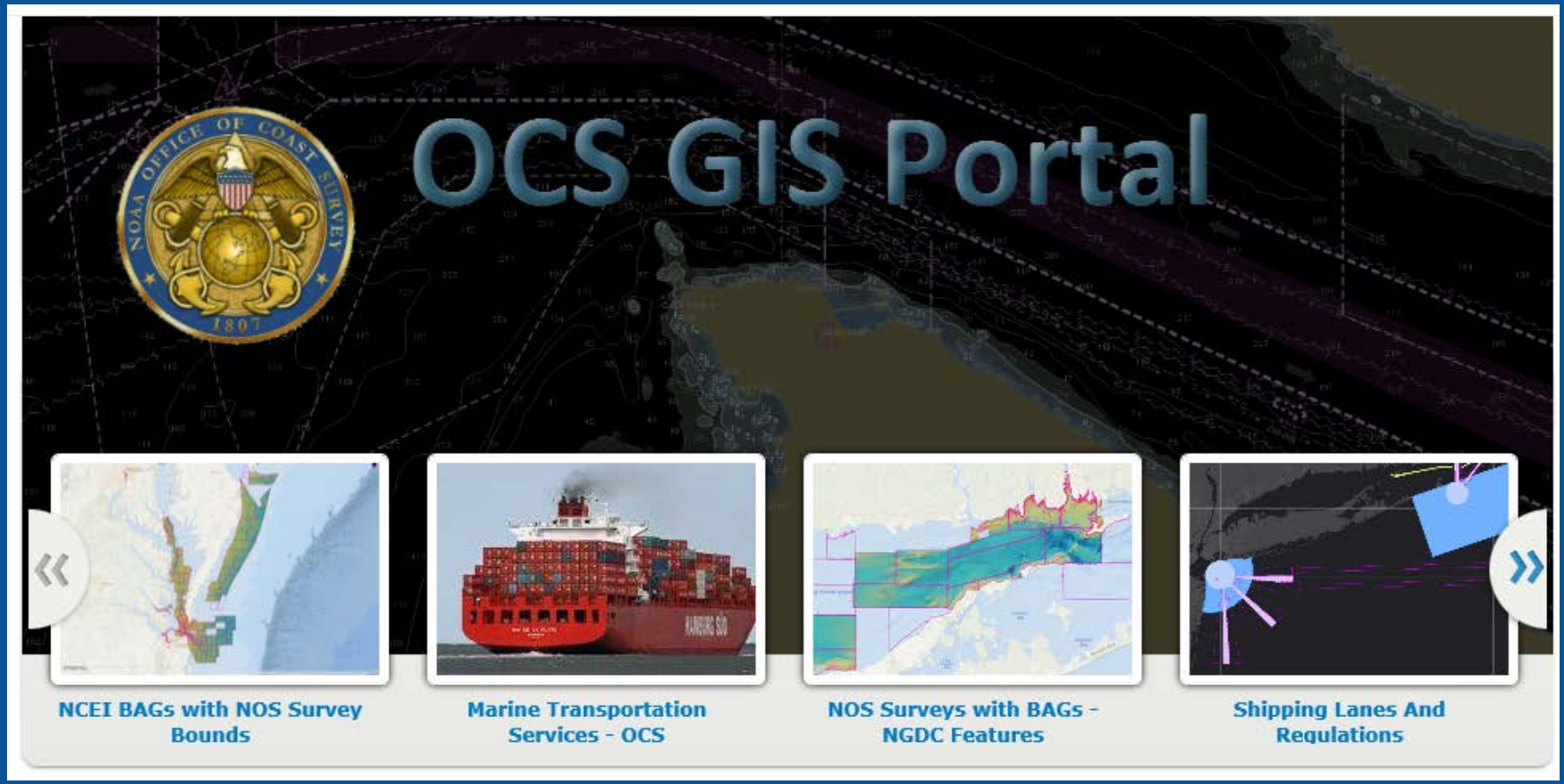
https://distribution.charts.noaa.gov/historical_updates/

Precision Navigation Tool Demo



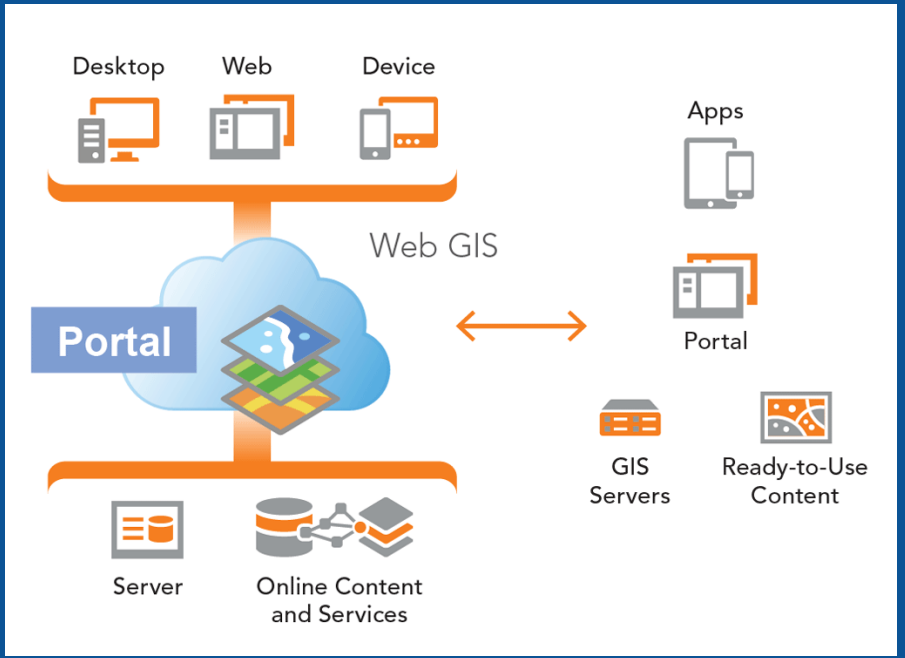
- Forecast Under Keel Clearance based on Total Water Column
- Overlaid weather observations
- Multiple display options
- Developed with input from the maritime community

Organizing & Sharing Geospatial Information



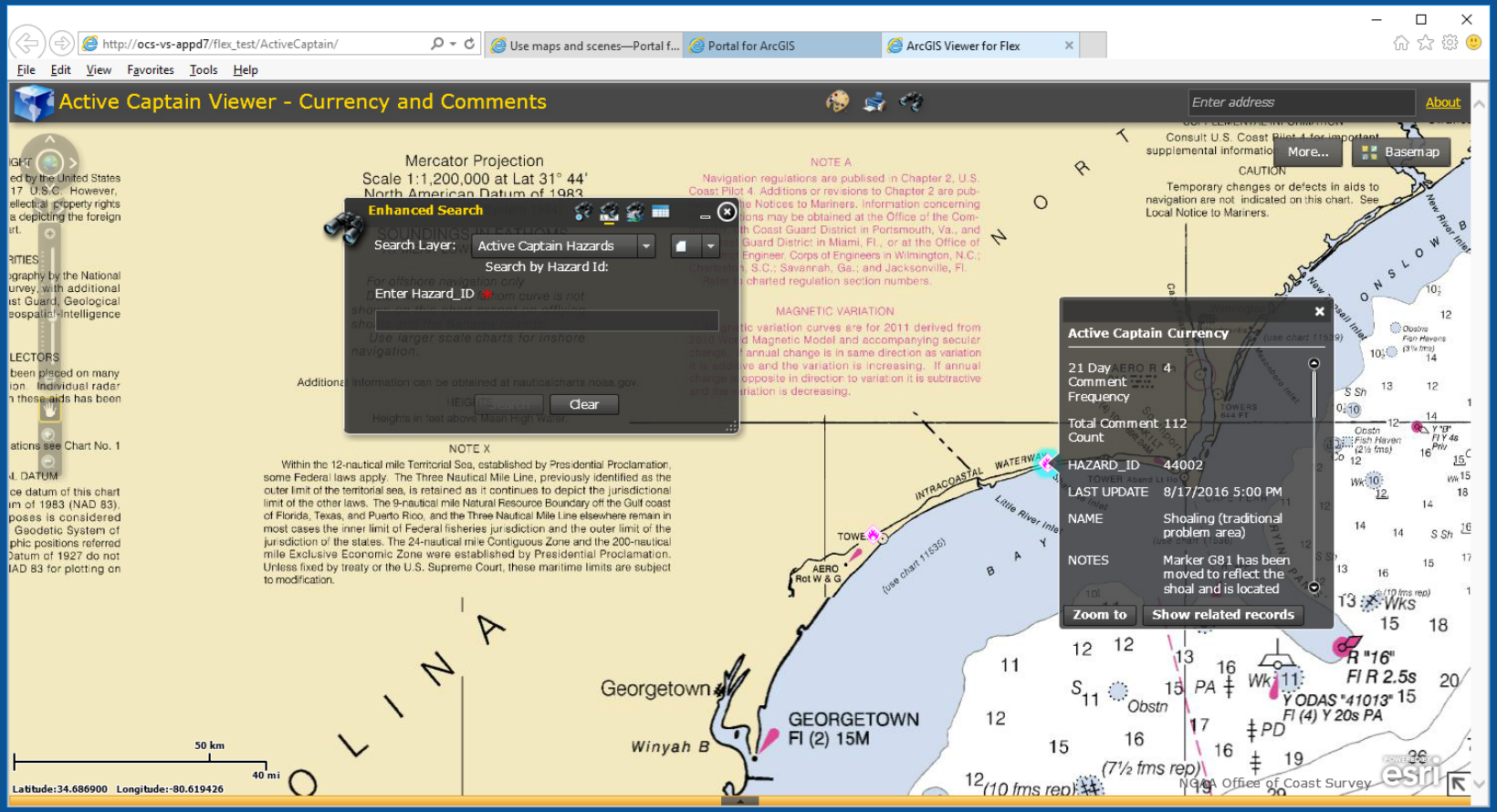
Capabilities

- Configure Portal to Meet Organization Requirements
- Manage Access through User Accounts
- Leverage ArcGIS Server
- Store Feature Data
- Create and Share Content
- View and Edit Content

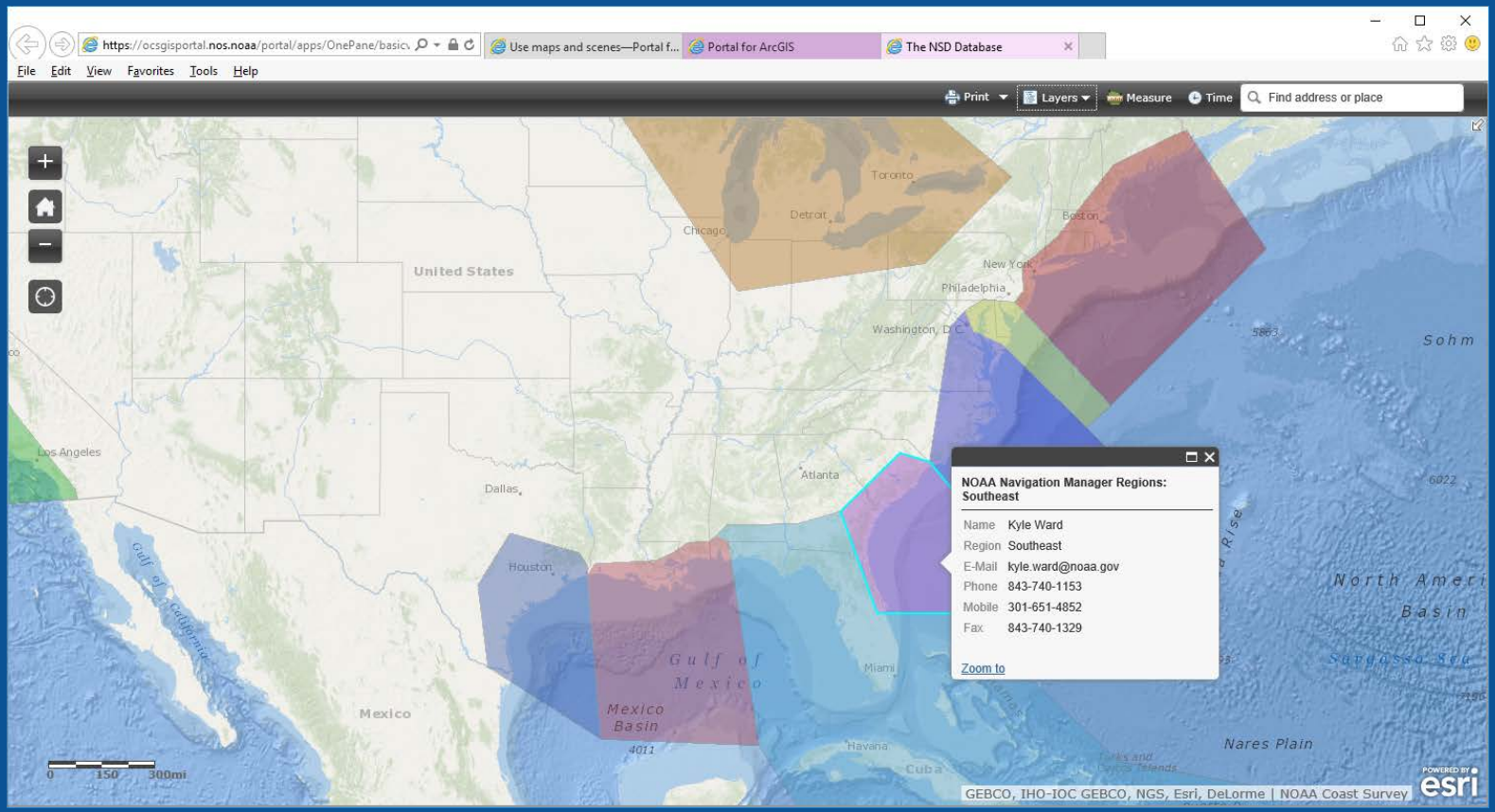


Web GIS Concept Diagram

Active Captain Application
Crowdsource Hazard Reporting



Navigation Manager Area of Responsibility



Yukon River ENC

300,000 vs 90,000 Scale Chart

PROTOTYPE

Welcome to NOAA GeoPlatform

Providing geospatial data, maps, and analytics in support of NOAA's mission

Features

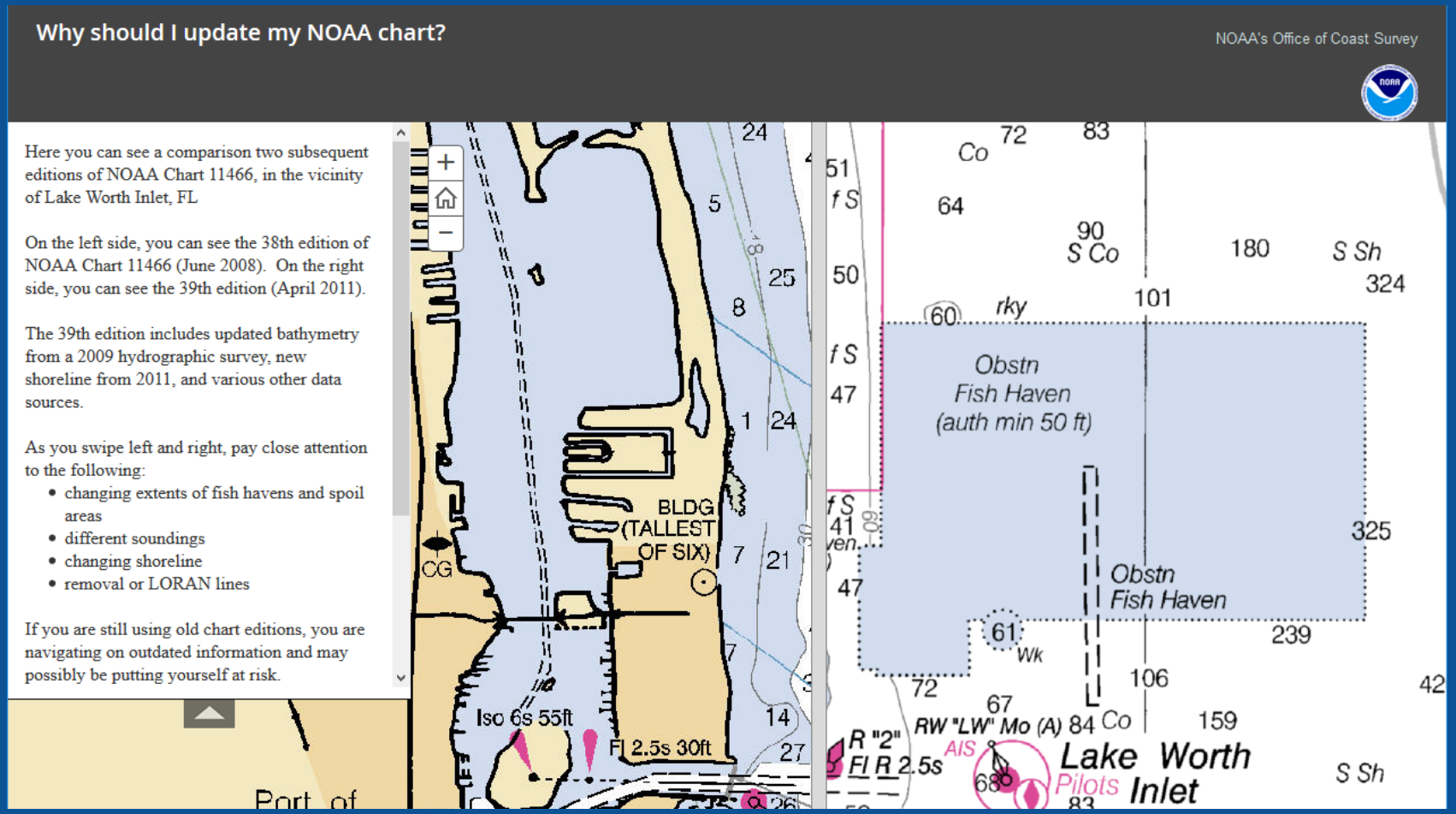
2015-2016 Strong El Niño Event Recap by the NWS Los

April 27, 2011: A Day Alabama Will Never Forget

Fish Passage at Northwest Hydroelectric Proje

Growth Rings: Patterns of Urban Development

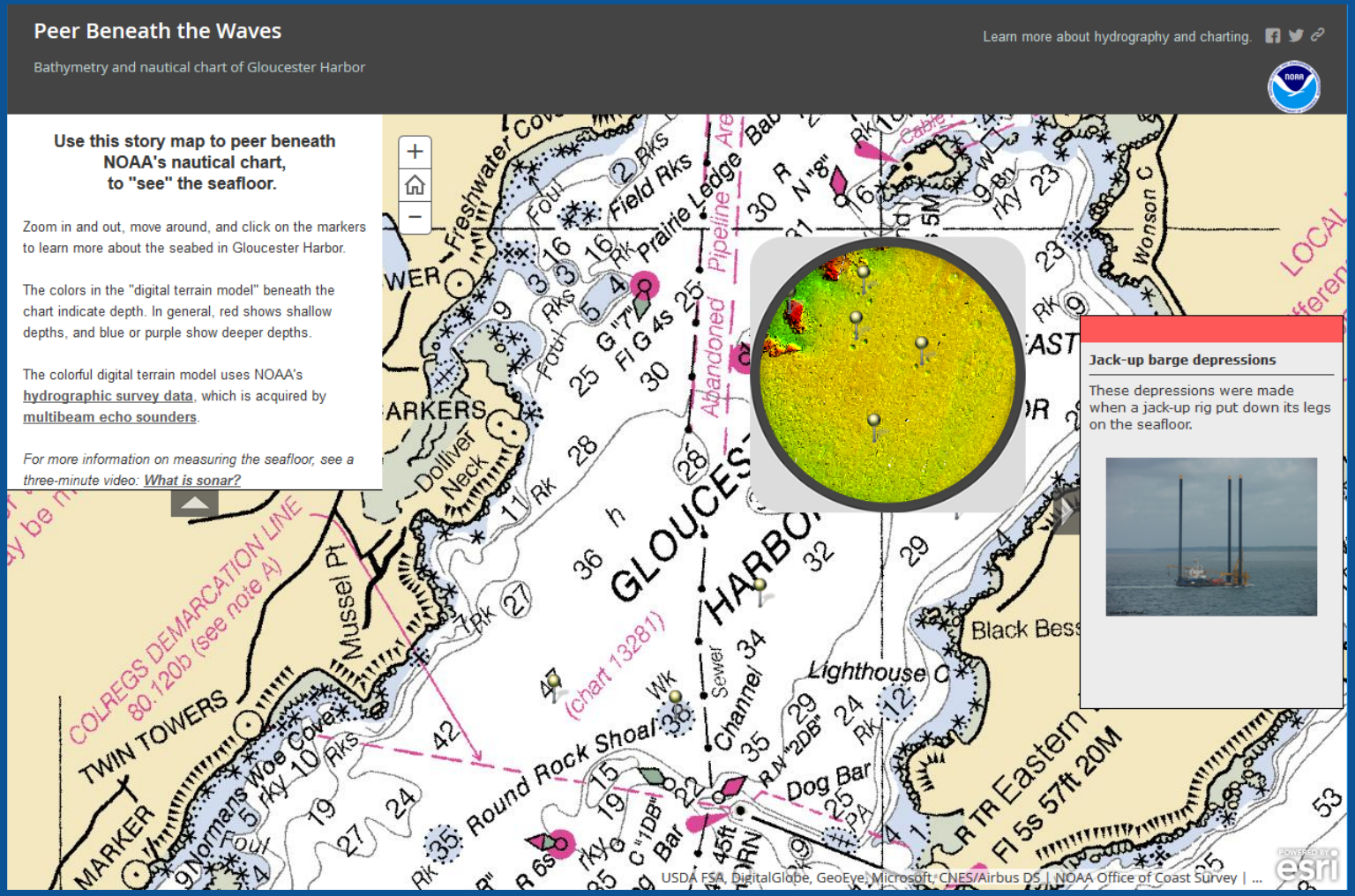
Chart Comparison - NOAA Chart 11466



38th Ed (June 2008)

39th Ed (April 2011)

Peer Beneath the Waves Story Map



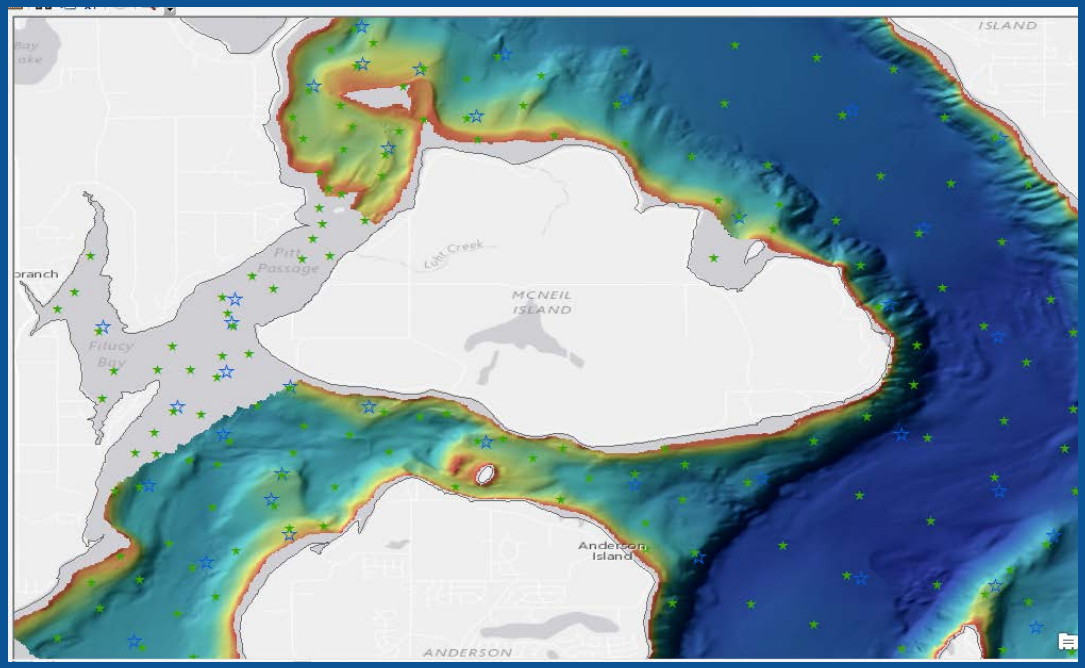
Outcomes

- Improved effectiveness of geospatial activities across the organization
- Supports collaboration by sharing geospatial resources
- Reduced duplication of effort
- Reduced time spent looking for authoritative data sources

In Development

- Development of a Navigation Bathymetric Database
- Hydrographic Health Modeling
- ENC Re-scheming
- Seabed 2030

Navigational Bathymetric Gridded Database Project



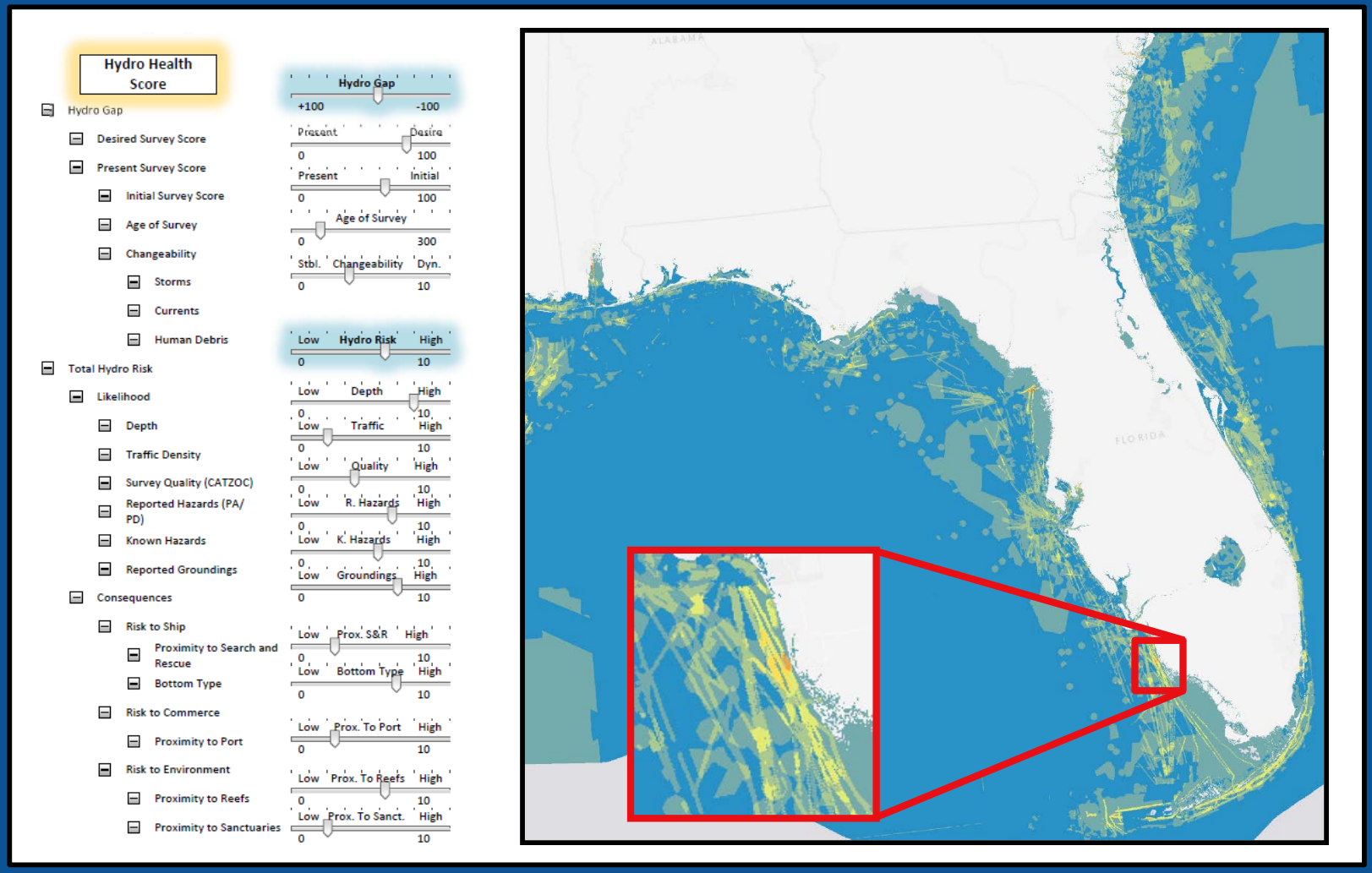
- Access to Full Resolution Hydrographic Survey from Multiple Sources
- Puget Sound as the initial test case
- Ability to link database to current charted sounding
- Create new higher resolution products and services
- Support Rescheming the ENCs

A Model of Hydrographic Health

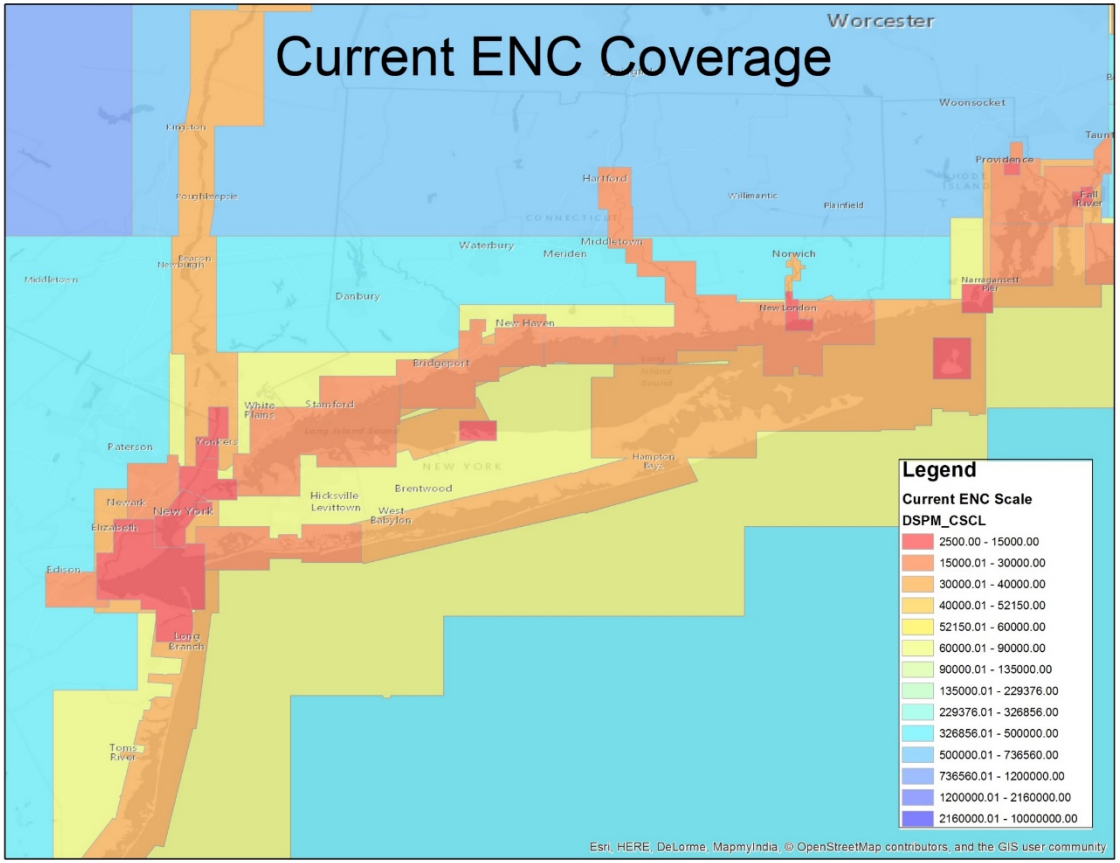
$$\text{Hydrographic Health} = \underbrace{\left(\text{Desired Survey Score} - \text{Present Survey Score}\right)^2}_{\textit{Hydrographic Gap}} \times \underbrace{\sum\left(\text{Consequence} \times \prod(\text{Likelihood})\right)}_{\textit{Hydrographic Risk}}$$

- Hydrographic Gap
  - The difference between the desired and present survey score; the larger the gap, the worse the hydrographic health.
- Hydrographic Risk
  - Modeled as the risk to surface navigation due to inaccurate depths or unknown hazards; the greater the risk, the worse the hydrographic health.

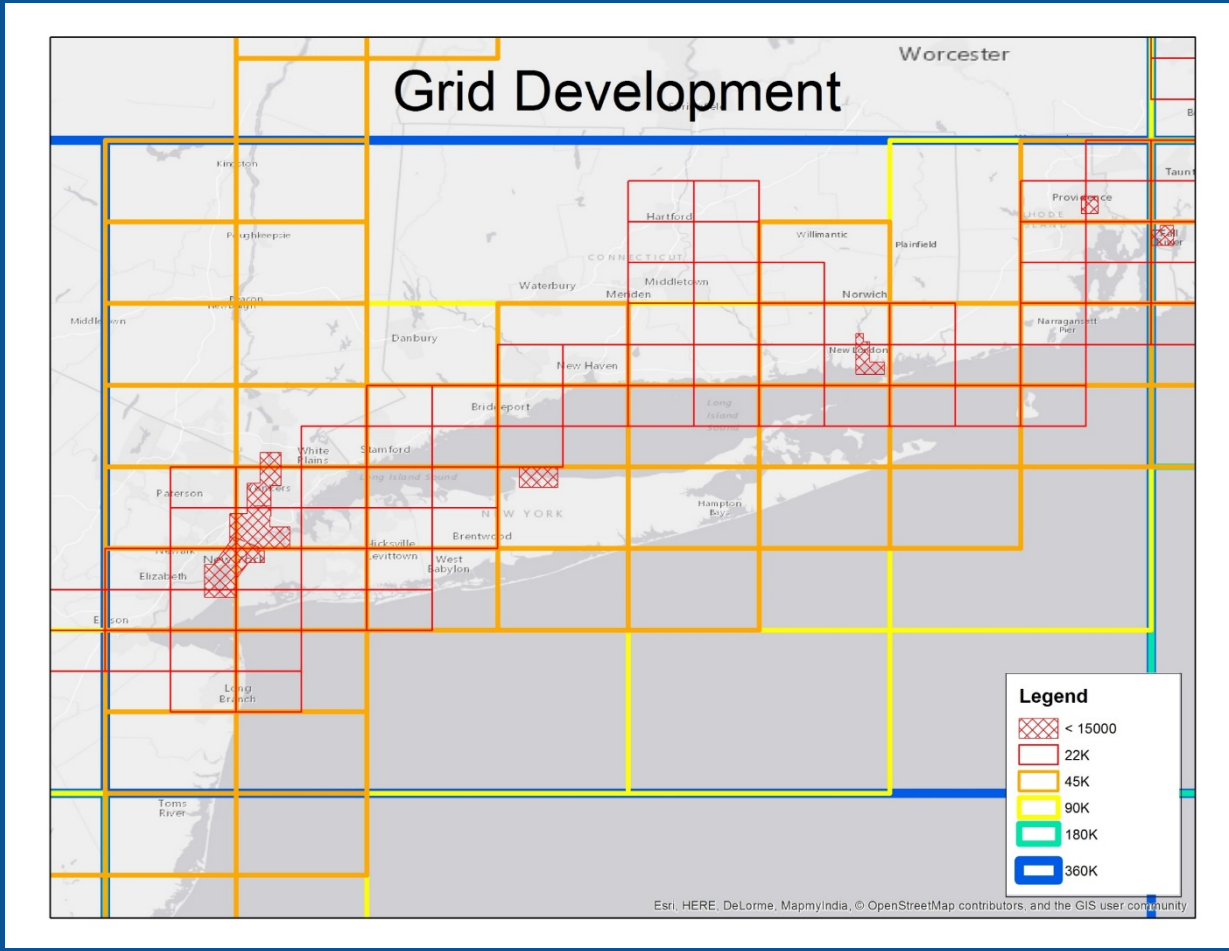
Survey Area Prioritization



Proposed ENC Re-scheming



Proposed ENC Re-scheming



Seabed 2030

- A quest to map the Seafloor by 2030
  - Currently less than 15% of the seafloor is mapped
- GEBCO is leading the internal effort
  - Held meeting in June 2016 to begin the discussion
- Coast Survey developing a plan to meet the goals of Seabed 2030 for US Waters

Contact Information

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