

# The National Bathymetric Source: Quality Metadata

Katrina Wyllie HSRP Panel September 28, 2023





#### **Coast Survey's Data-Driven Evolution**

OFFICE OF COAST SURVEY FY23-27 STRATEGIC GOALS SUMMARY

#### MISSION

Provide the nation with navigation services that support ocean-going commerce and coastal economies, keep people safe and secure, and protect coastal environments.

#### VISION

The nation's economy is stronger, vessel navigation is safer, and coasts are more resilient.

> TAGLINE Navigate with confidence.

#### GOALS

Expand and strengthen U.S. capabilities to acquire high-value ocean and coastal geospatial data

Deliver products and services that advance safe navigation, increase coastal resilience, and support data-driven decision making

Enhance and sustain a highly skilled, diverse, and thriving workforce

Evolve Coast Survey's systems and processes to improve timely product development and delivery







## **Coast Survey's Data-Driven Evolution**



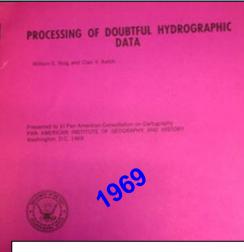
# **External Source Data (ESD):**

Data that may have value for NOAA navigation product improvements, but was not originally requested by, produced intentionally for, or contracted by the National Ocean Service for the purpose of updating NOAA nautical charts.



Coast Survey is interested in all ocean mapping data given that sufficient metadata is present to enable quality assessment.





NOAA Recommended Practice for the Use of External Data

NOAA Recommended Practice for the Use of External Data

Version 3.0 2013 March 27



Office of Coast Survey National Oceanic Atmospheric Administration



Use of External Source Data for Nautical Charting



2017

Approved by: Director, Office of Coast Survey May 18, 2017



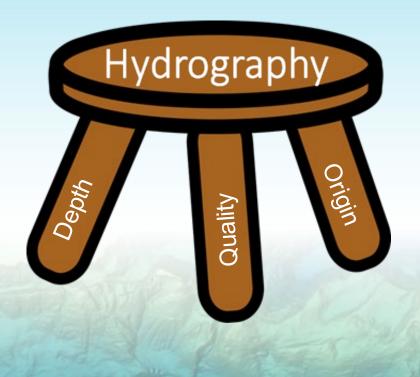
NOAA Environmental Data Management Committee



#### **Bathymetry Metadata**

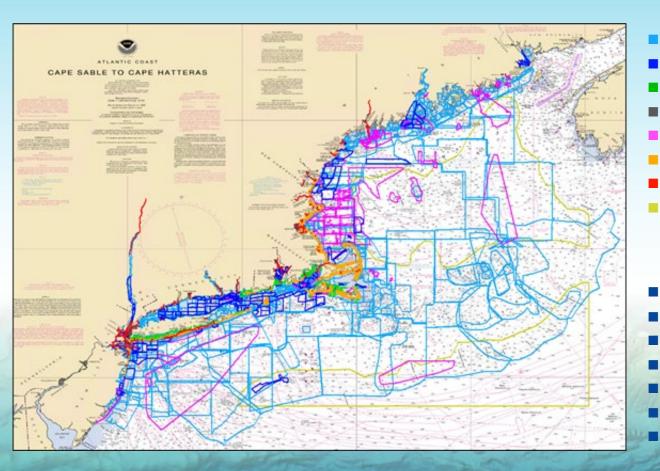
# How deep is it?

- Datum
- Units
- How well do we know it?
  - Coverage
  - Uncertainty
  - Feature Detection
- What is the origin?
  - Source Information
  - Data License





#### **Bathymetry Sources**



#### Historic NOAA

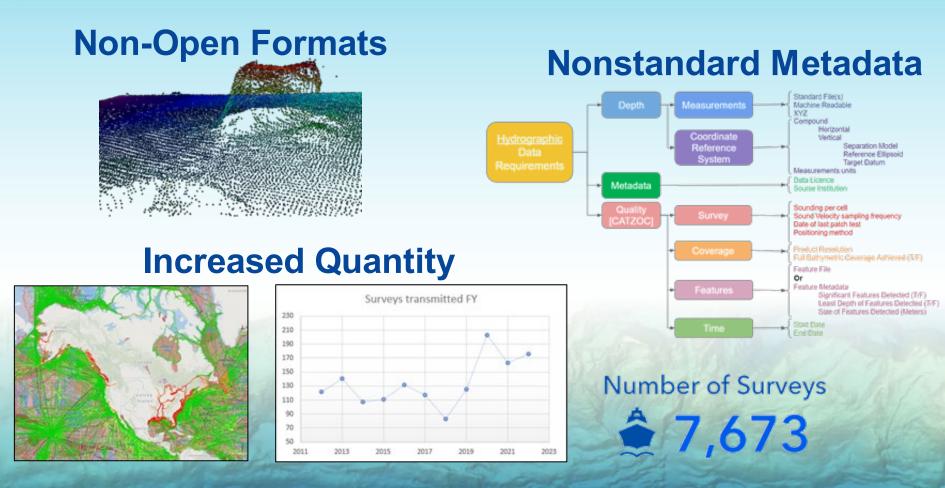
- Modern NOAA
- NOAA LIDAR
- ENC Soundings
- External Sources
- JALBTCX LIDAR
- USACE eHydro
- GMRT >200m

#### **Future External Sources**

- USGS CONED LiDAR
- EK60/80 Water Column
  - NCEI Bathy Warehouse
- Satellite Derived Bathymetry
  - Crowd Sourced Bathymetry
  - Wave Kinematic Bathymetry Other

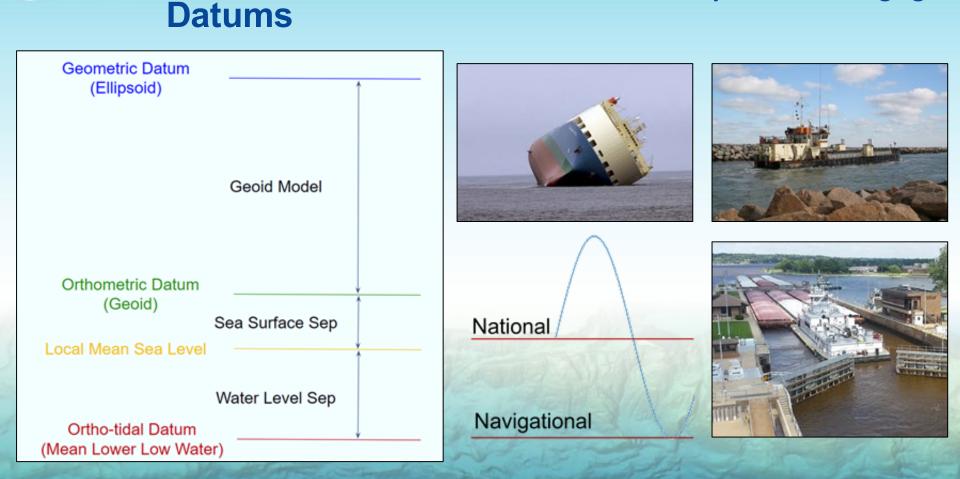


Why is ESD challenging?





## Why is ESD challenging?

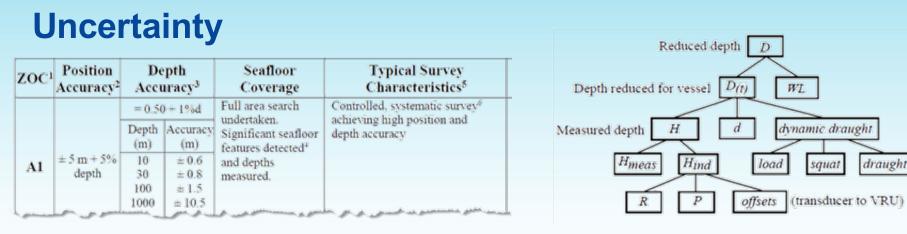


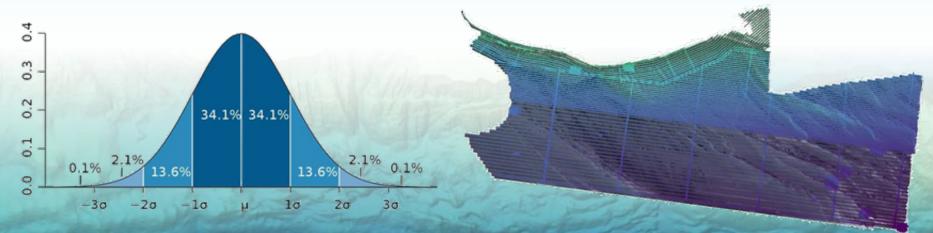


#### Why is ESD challenging?

squat

draught

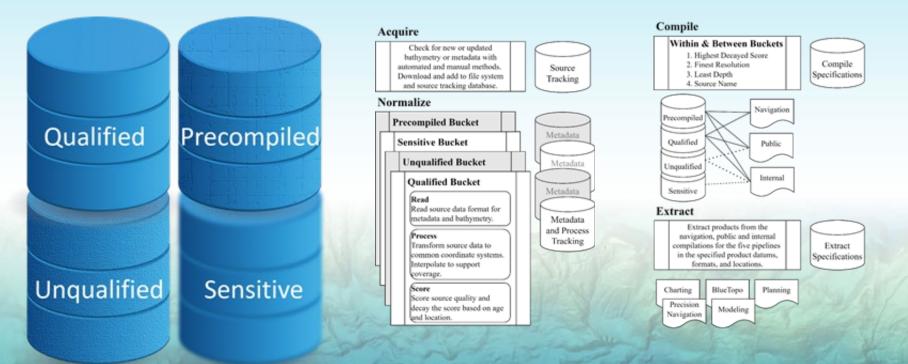






#### National Bathymetric Source (NBS)

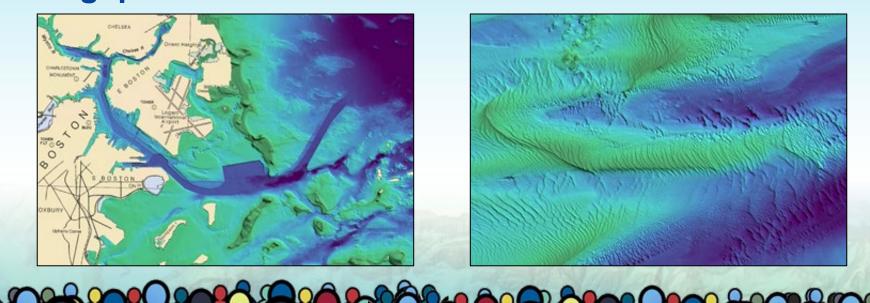
The NBS is a series of algorithms reflecting a compilation of the best available sources created to deliver purpose-built bathymetric products.





### Why is the NBS challenging?

# The best bathymetry is not always the most recent bathymetry. **Throughput matters.**





#### **Coast Survey's Data-Driven Evolution**

# National Bathymetry



# Navigation ENC S-102





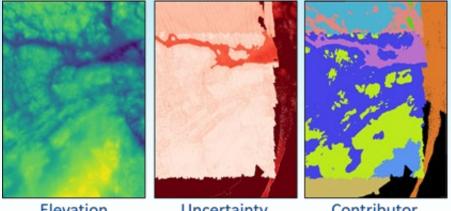


#### **Product Exchange Formats**

#### **Elevation, Uncertainty, and Contributor Layers**

- GeoTIFF with Raster Attribute Table
- Bathymetric Attributed Grid (BAG) v2.0
- S-102 v2.2





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#### Contributor

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DDCAGAAAA05/DC3 - Office of Coast Survey	1084-11-13	2003-01-04
DOC/NOAU/NOL/DCS - Office of Coast Survey	2007-08-11	207-01-14
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DOD/ASADI US Army Carps of Engineers New Engineet District	10-01-015	2010-05-22
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**Raster Attribute Table** 



Metadata is key to automation, efficiency, repeatability, and reliability

- Metadata informs the NBS compilation and downstream product use
- Metadata enables the best bathymetry to be available for the Digital Twin

