

The National Bathymetric Source: Quality Metadata

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HSRP Panel
September 28, 2023



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

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



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



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



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





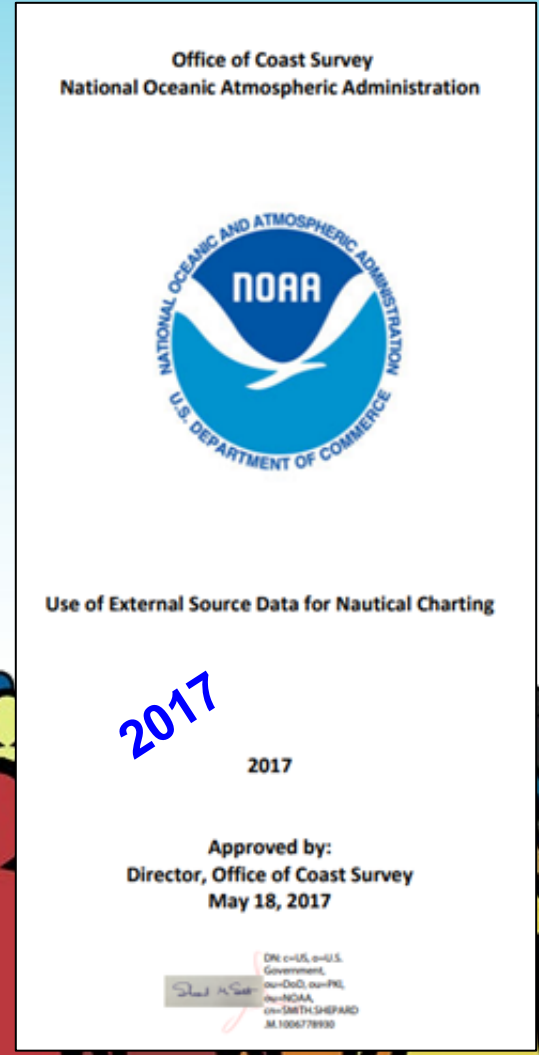
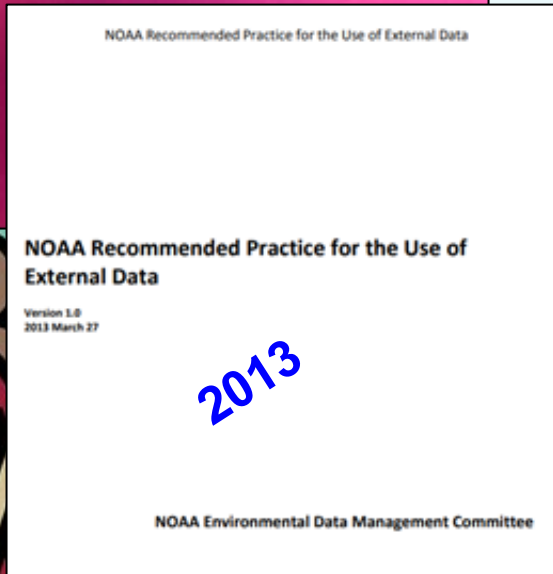
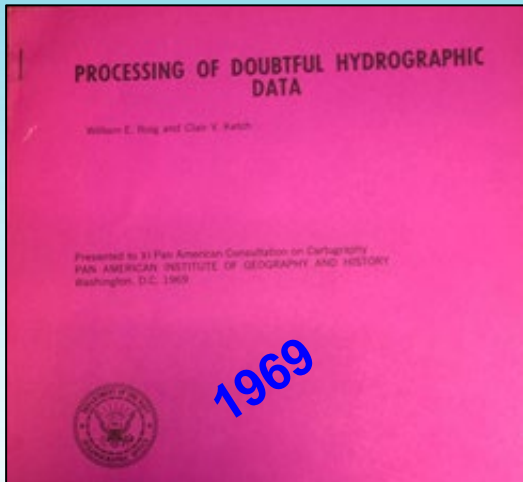


External Source Data (ESD):

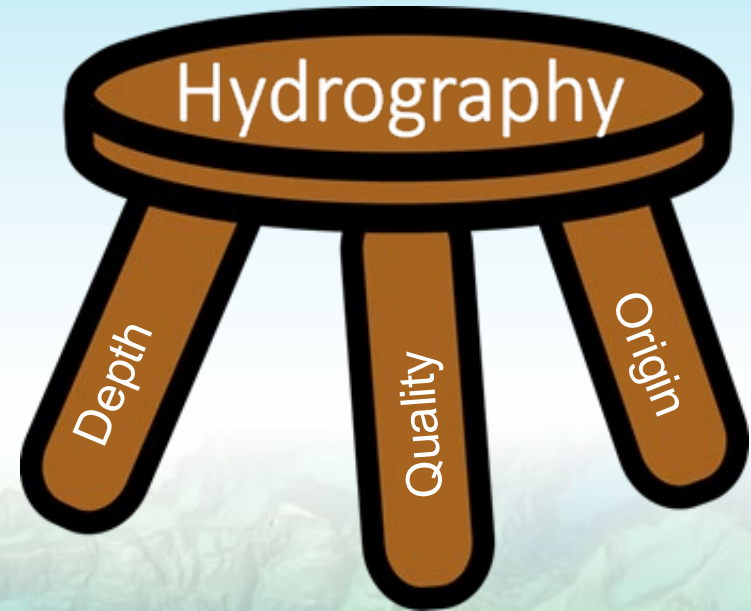
Data that may have value for NOAA navigation product improvements, but was not originally requested by, produced intentionally for, or contracted by the National Ocean Service for the purpose of updating NOAA nautical charts.



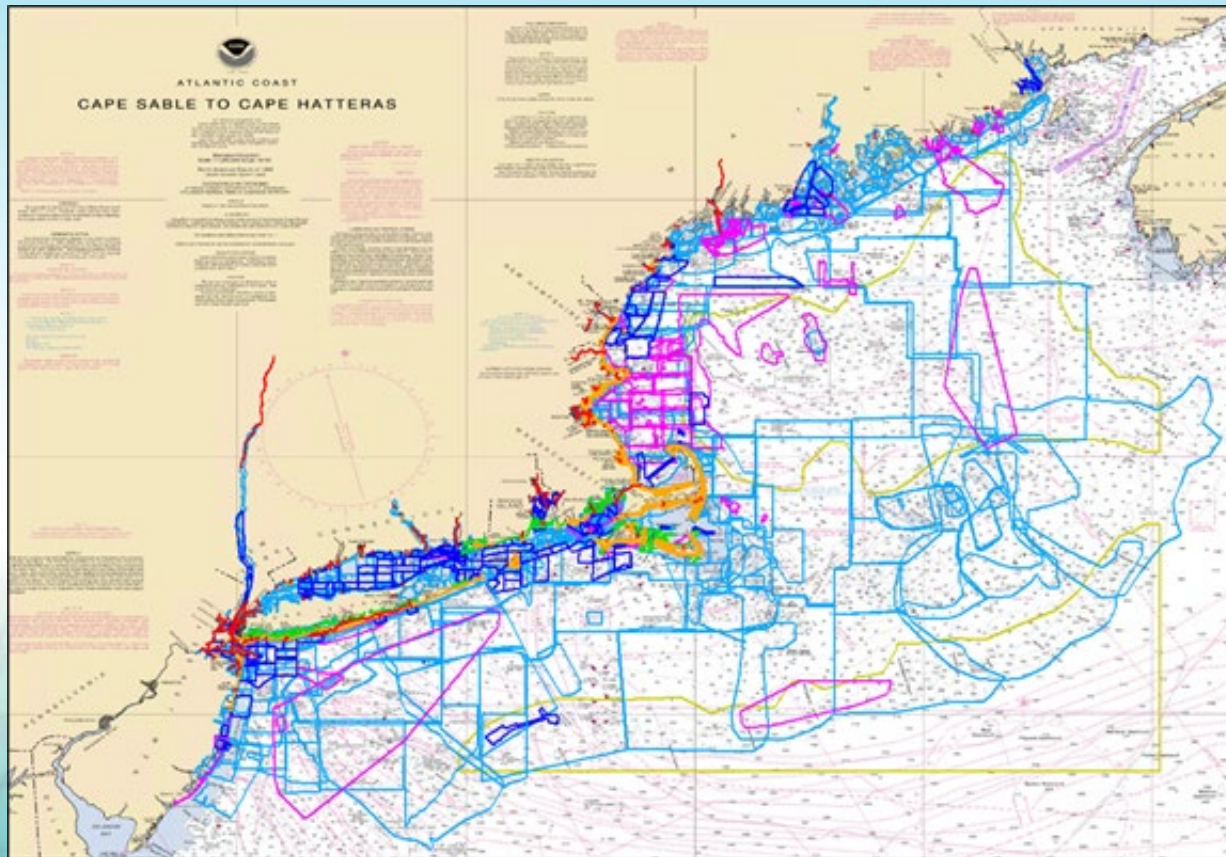
Coast Survey is interested in all ocean mapping data given that sufficient metadata is present to enable quality assessment.



- **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

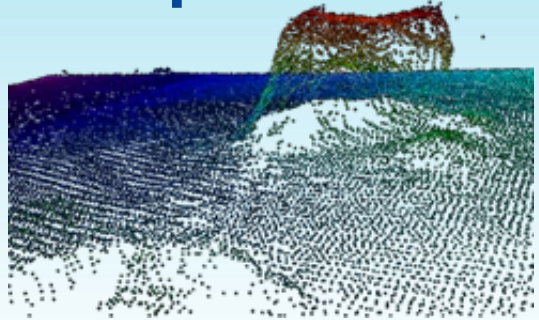


- Historic NOAA
- Modern NOAA
- NOAA LiDAR
- ENC Soundings
- External Sources
- JALBTCX LiDAR
- USACE eHydro
- GMRT >200m

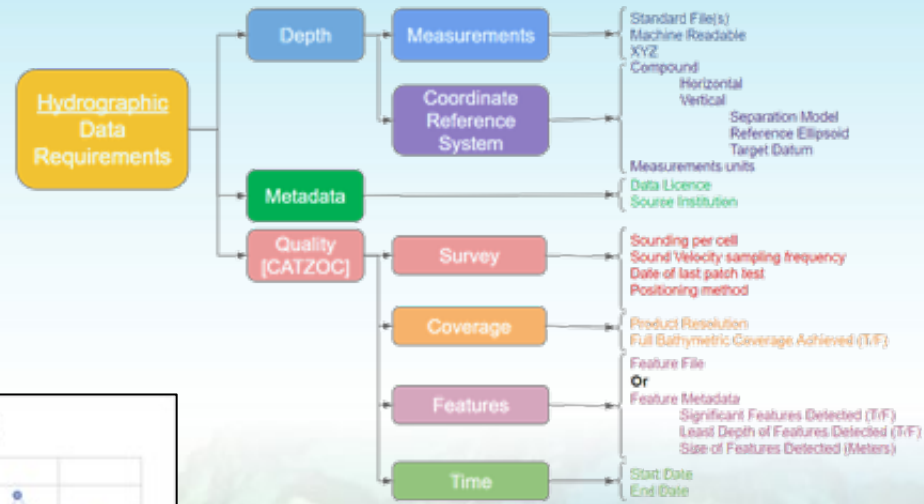
Future External Sources

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

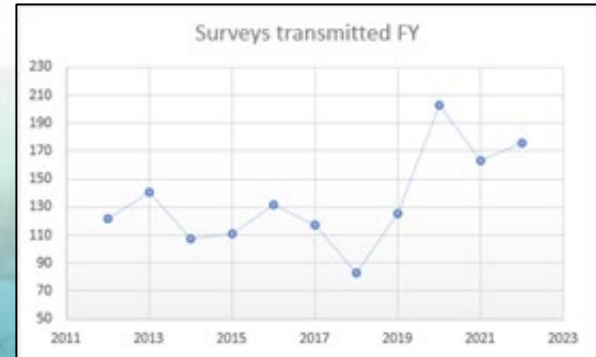
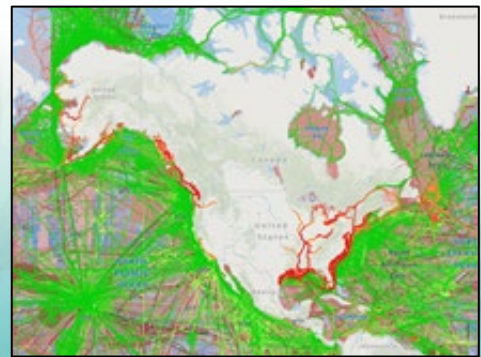
Non-Open Formats



Nonstandard Metadata



Increased Quantity

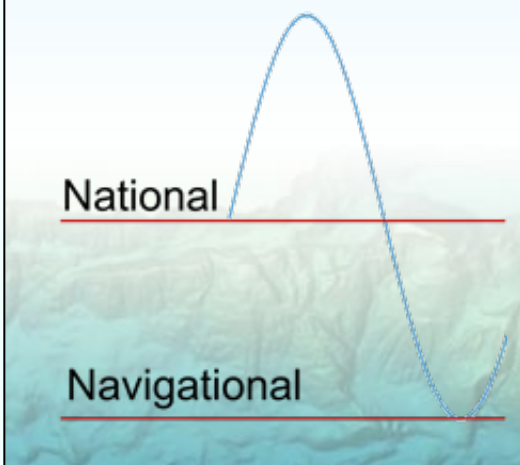
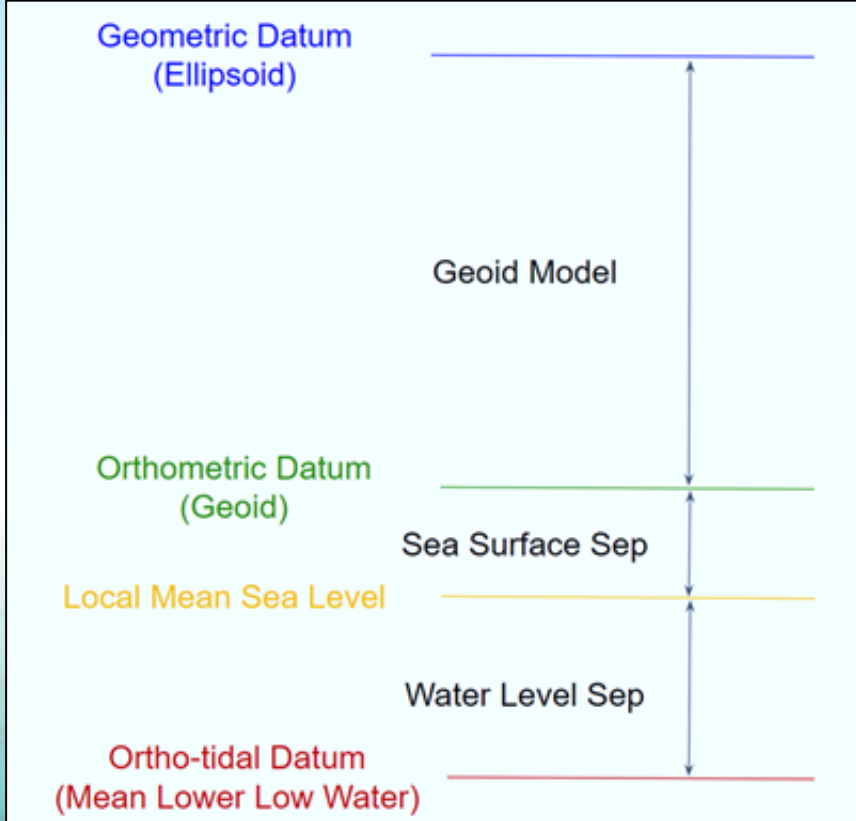


Number of Surveys



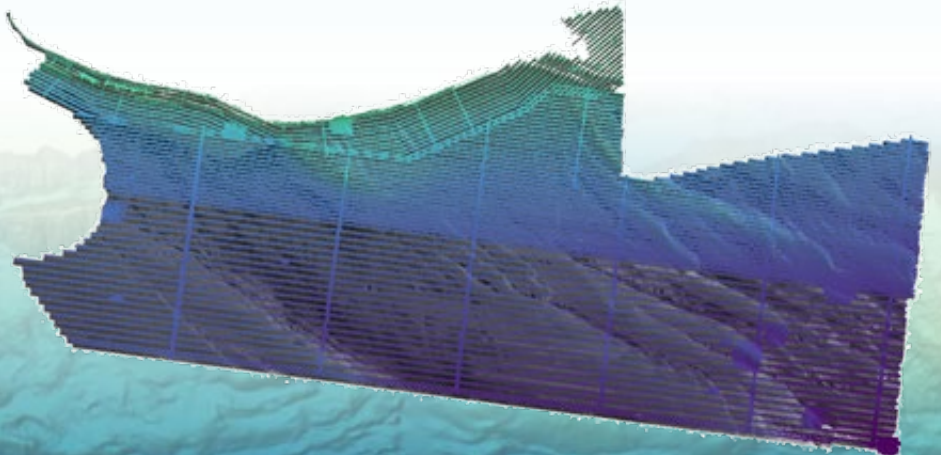
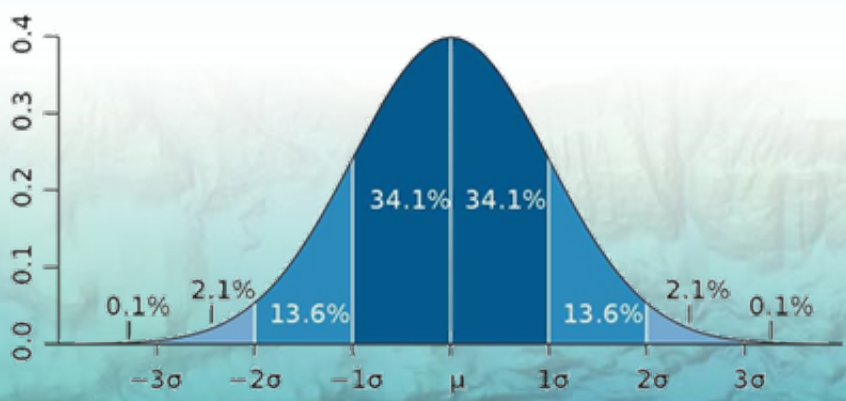
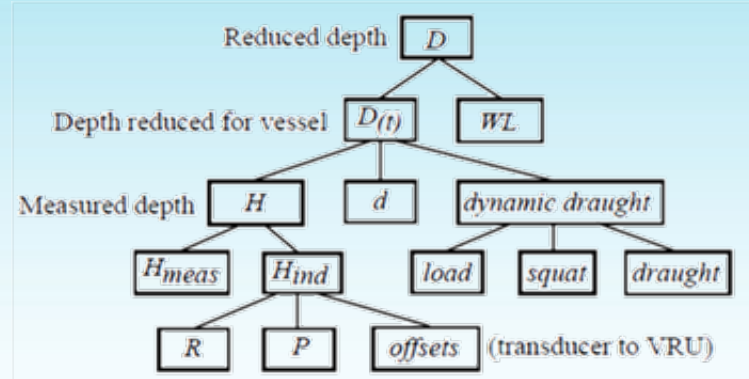
7,673

Datums



Uncertainty

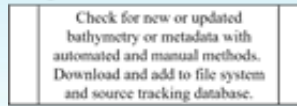
ZOC ¹	Position Accuracy ²	Depth Accuracy ³		Seafloor Coverage	Typical Survey Characteristics ⁵
A1	± 5 m + 5% depth	= 0.50 + 1% d		Full area search undertaken. Significant seafloor features detected ⁴ and depths measured.	Controlled, systematic survey ⁶ achieving high position and depth accuracy
		Depth (m)	Accuracy (m)		
		10	± 0.6		
		30	± 0.8		
		100	± 1.5		
		1000	± 10.5		



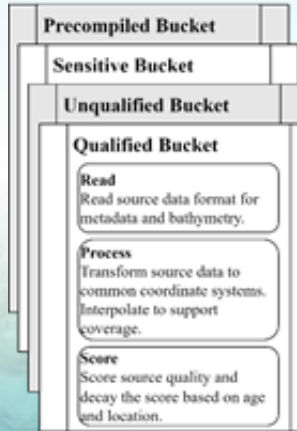
The NBS is a series of algorithms reflecting a compilation of the best available sources created to deliver purpose-built bathymetric products.



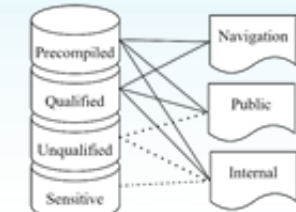
Acquire



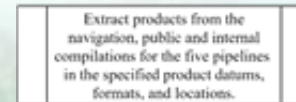
Normalize



Compile

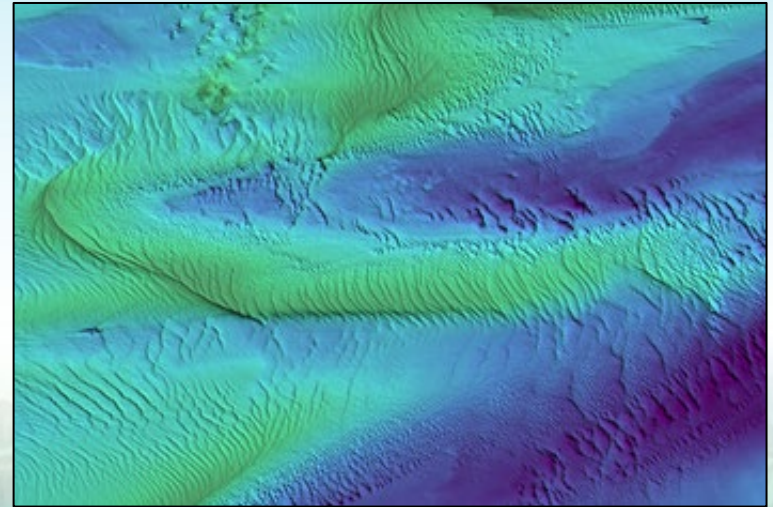
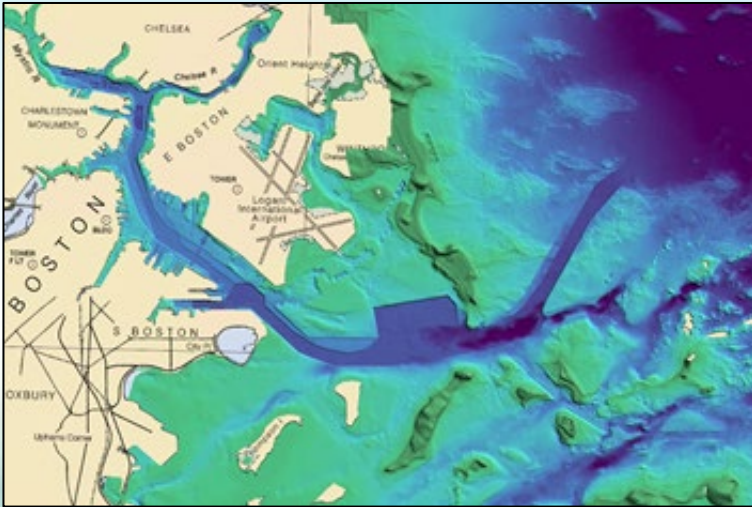


Extract



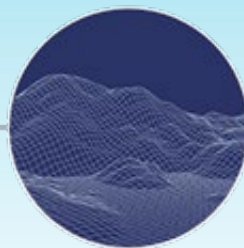
The best bathymetry is not always the most recent bathymetry.

Throughput matters.





National Bathymetry



Navigation

- ENC
- S-102



Internal

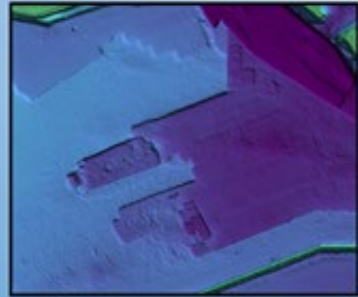
- Planning



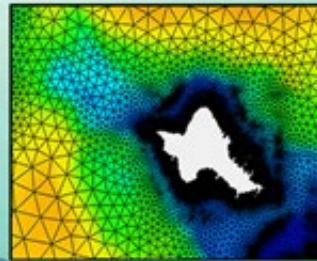
Public

- BlueTopo
- Modeling

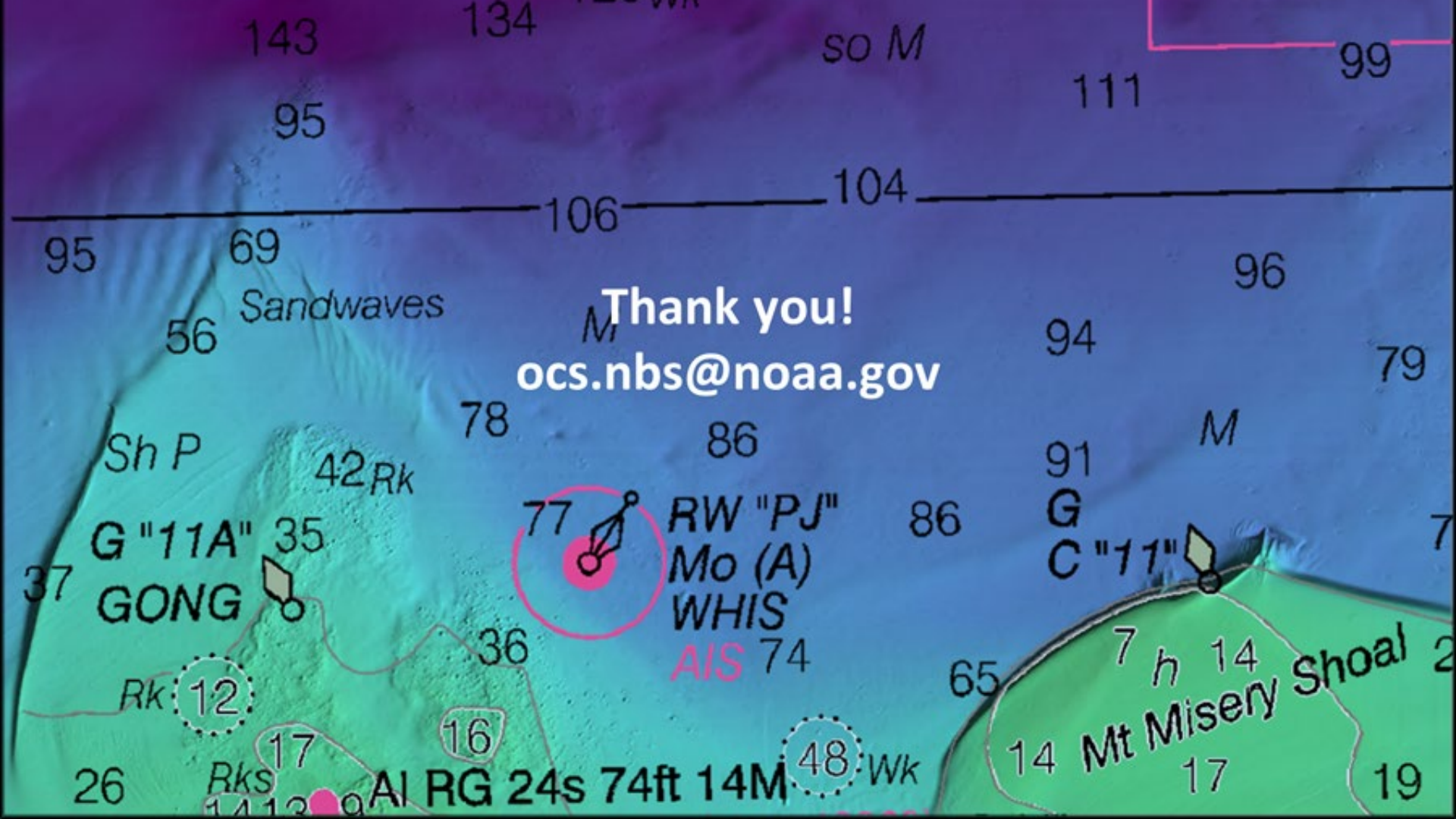
- Metadata is key to automation, efficiency, repeatability, and reliability
- Metadata informs the NBS compilation and downstream product use
- Metadata enables the best bathymetry to be available for the Digital Twin



The New
Blue Economy



Coastal
Resilience



Thank you!
ocs.nbs@noaa.gov

77 RW "PJ"
Mo (A)
WHIS
AIS 74

37 G "11A" 35
GONG

91 G
C "11"

14 Mt Misery Shoal 2
17

Rk 12
26 Rks 17
14 13

16 AI RG 24s 74ft 14M 48 Wk

Sandwaves

Sh P

42 Rk

78

86

86

94

M

79

19

143

134

SO M

111

99

95

104

106

95

69

96

56

91

7

37

77

86

36

65

7 h 14

26

14 13

AI RG 24s 74ft 14M

48

19