HSRP Technology Working Group

Ed Saade and Lindsay Gee

Seattle April 18-20, 2017

Technology Working Group Session Summary

- Visualization R&D at the NOAA JHC/CCOM University of New Hampshire - Dr. Larry Mayer and Capt. Andy Armstrong (JHC/CCOM UNH)
- Data as the 5th Modality for 21st Century Ports - Marten Hogeweg (Esri)
- An Introduction to Bathymetric Lidar: Sensors, Capabilities and Limitations - Carol Lockhart (Geomatics Data Solutions)
- Review of Technology Working Group activities and ***discussion***

Visualization R&D at the Joint Hydrographic Center/Center for Coastal and Ocean Mapping

Dr. Larry Mayer and Capt. Andy Armstrong (NOAA, ret.)

Co-directors, Joint Hydrographic Center/Center for Coastal and Ocean Mapping, University of New Hampshire

Data as the 5th Modality for 21st Century Ports

Marten Hogeweg,

Senior Project Manager, Esri Inc.

An Introduction to Bathymetric Lidar: Sensors, Capabilities and Limitation

Carol Lockhart,

President, Geomatics Data Solutions LLC.

Review of Technology WG activities 2016/2017

- Monthly technology WG meetings
- Input to some issue papers
- Technology transfer discussion paper
- What's next for Technology WG?

Technology Working Group TOR

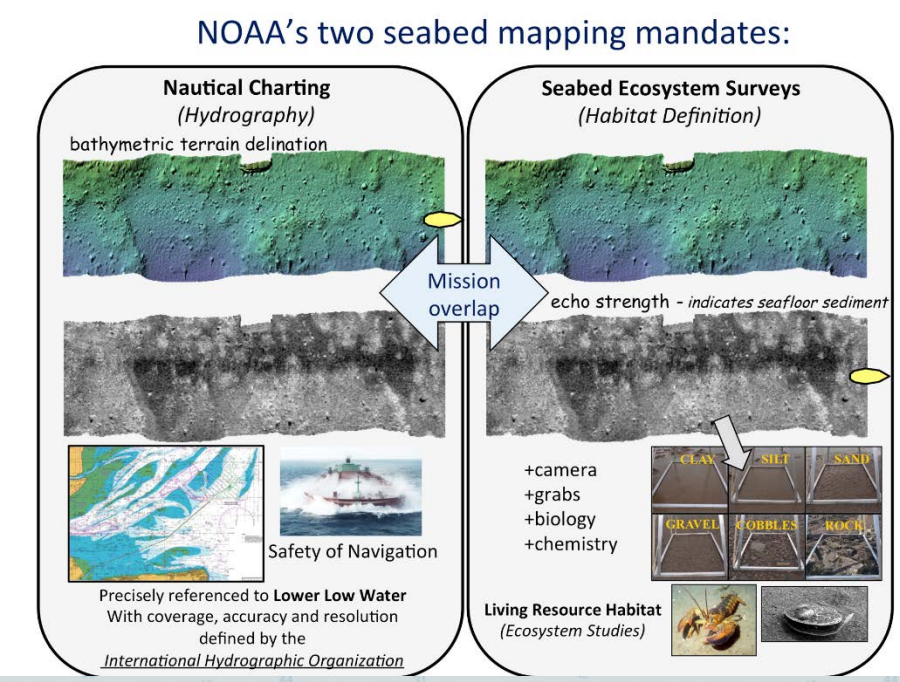
The technology working group will focus on providing advice and recommendations on the use of technology to optimize efficiency and enhance safety across navigation services activities and operations; including observations, processing and analysis, and production and distribution. This should include use of existing technology not currently in operations, and new and emerging technology in research and development. The working group will provide ongoing recommendations at the public meetings.

Monthly Technology WG Meetings

- Initial meeting at JHC/CCOM June 2016
- Monthly meetings for insight to current NOAA processes and technology strategy.
- Limited time to gain knowledge.
- Outside presentations of technology and processes.

NOAA Seabed Mapping Requirements & Technological Development Impacts on Fleet Recapitalization needs

John Hughes Clarke - JHC/CCOM



SUMMARY

NOAA Access to Sea to support:

- Nautical Charting (Hydrography)
- Habitat Mapping (Ecosystem Surveys)

Specialized Needs:

- Coastal/Shelf Focus
- Defined Resolution (IHO or habitat)
- Deliver inshore/restricted water platforms

High at-Sea Staffing:

"mission tailored platforms"

- Launch/Recovery
- Data Handling/QC
  (even with alternate technologies)
- Commensurate hotel demands

Not Currently Clearly Defined:

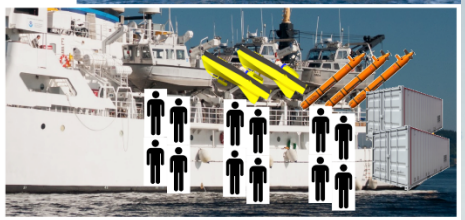
Benefits of ASV/AUVs

Changes in Ship Requirements?

- Staffing
- Loading

Arctic Capability:

- an additional role ? or
- a replacement role?

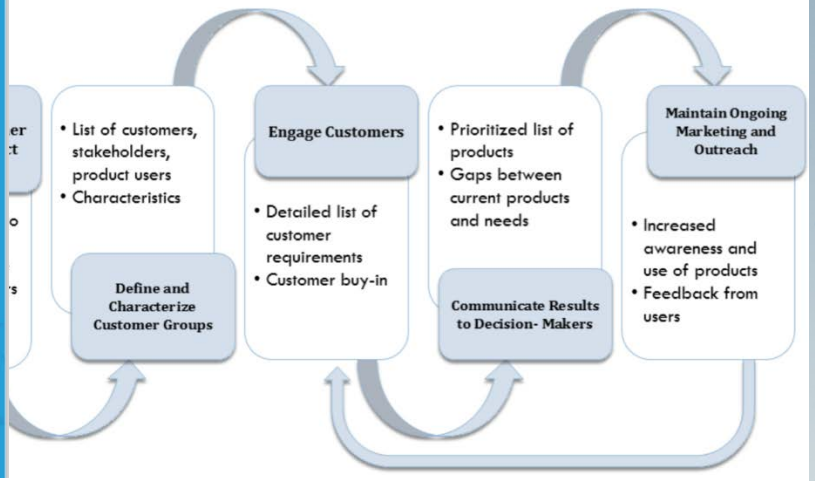


The Next Generation of Precision Navigation: Products and Services to Support Real Time Decision-making for Coastal Marine Transportation. Neil Weston - NOAA

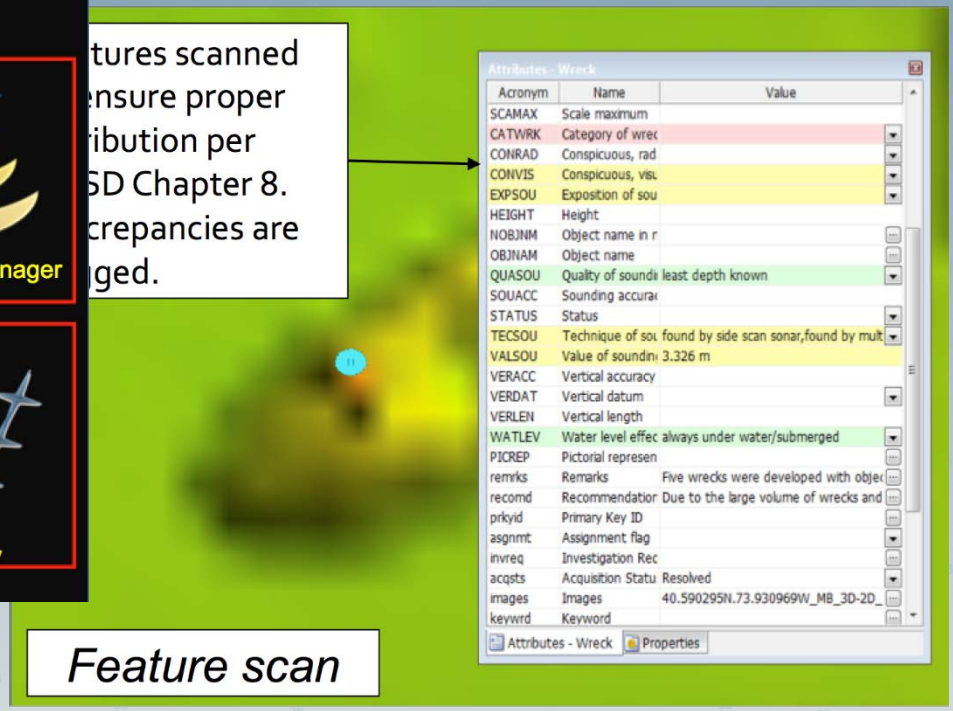
Precision Navigation

The ability of a vessel to safely and efficiently navigate and operate in close proximity to the seafloor, narrow channels, and other hazards.

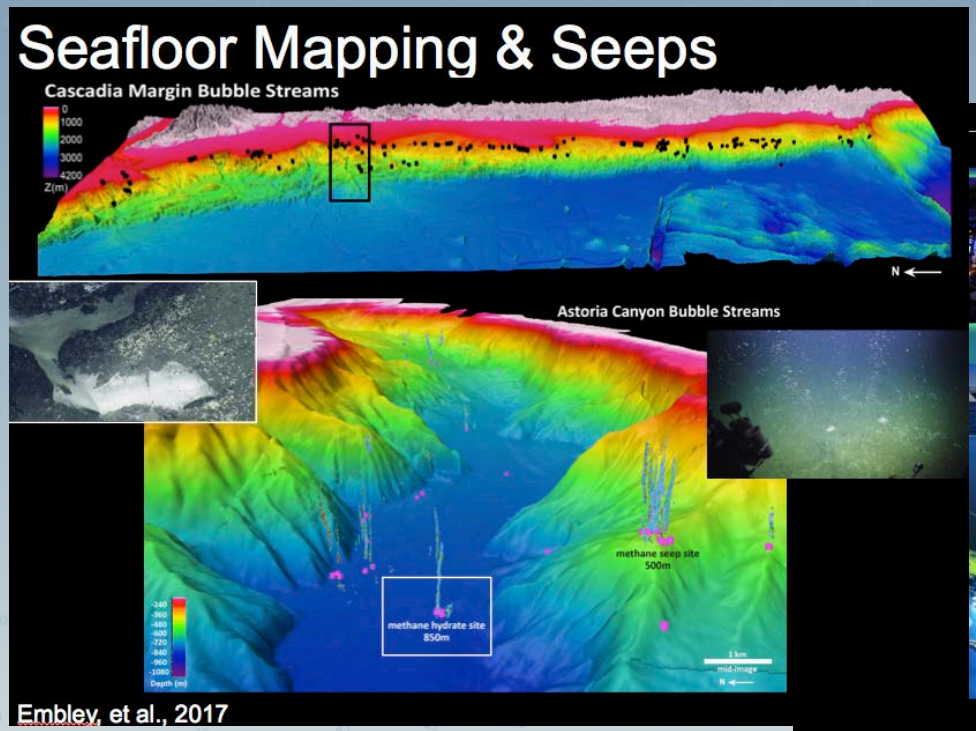
tomer Engagement Strategy

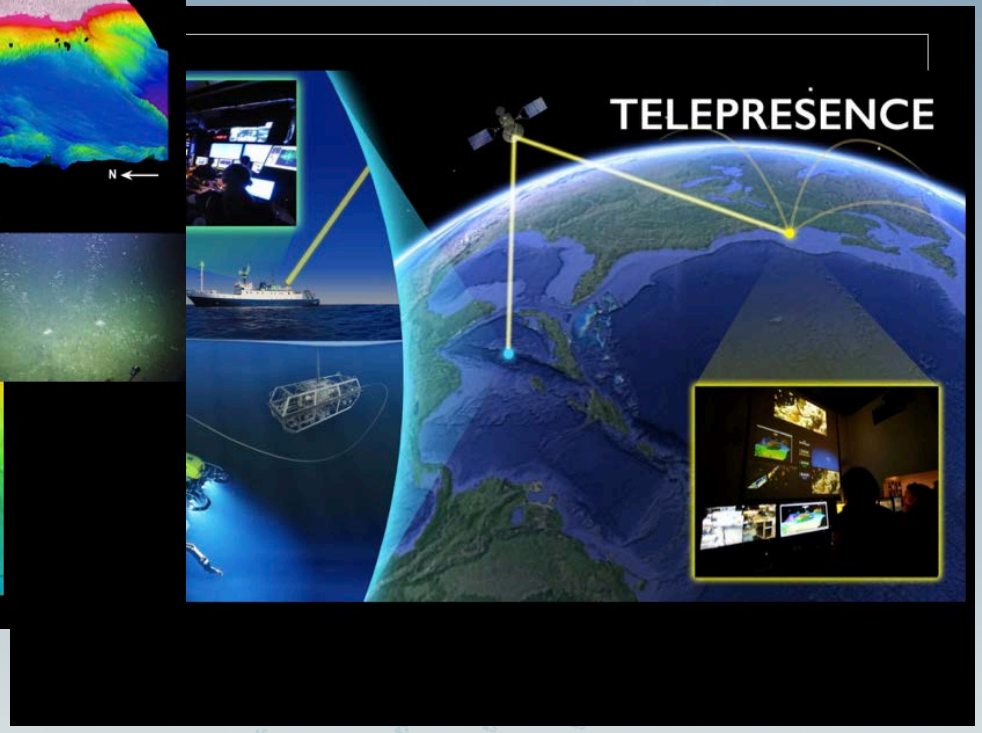


Quality Assurance of Hydrographic Data
Captain Rick Brennan - NOAA

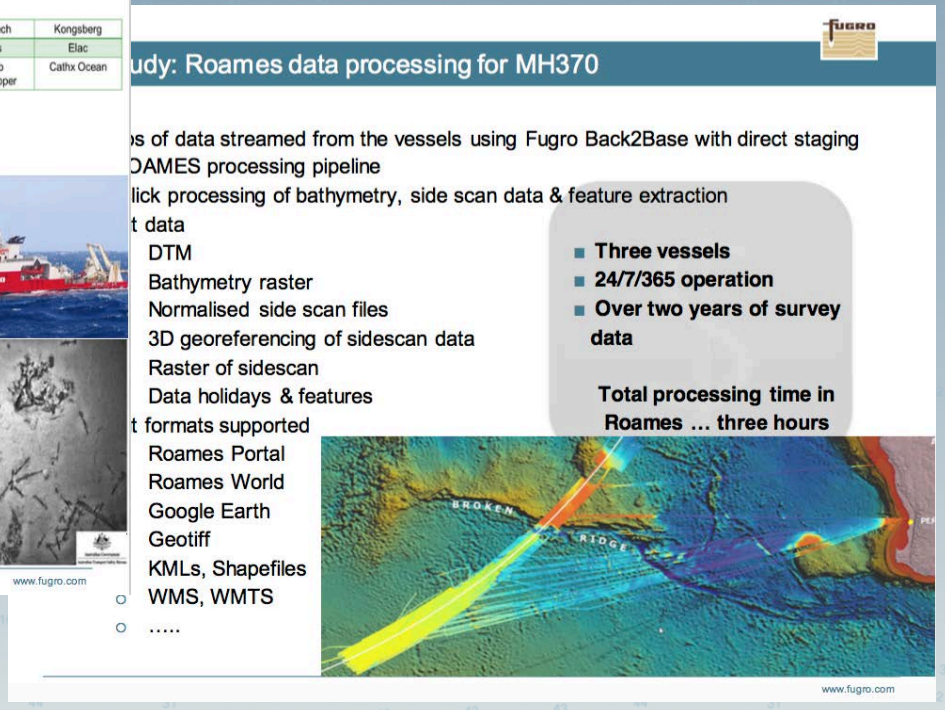


E/V Nautilus Telepresence and Seep Surveys Call to HSRP Cleveland





Big Data, Big Changes in the Marine Mapping World
Dickie Martin - Fugro



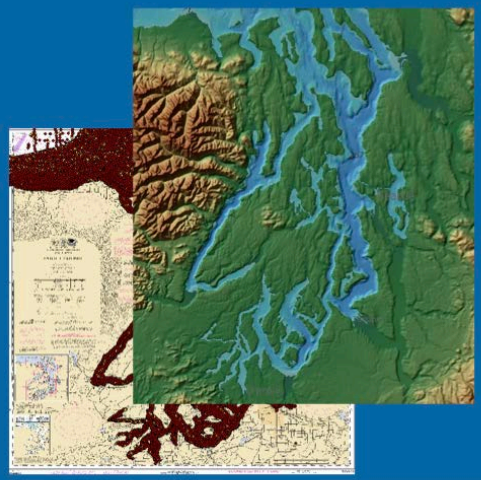
Implementing a Navigational Bathymetric Database within Coast Survey

Kurt Nelson - NOAA

Initial Bathymetric Database

Understanding the Technology

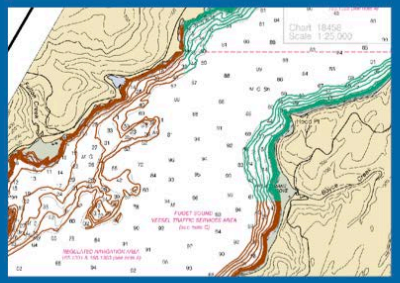
Puget Sound Test Area



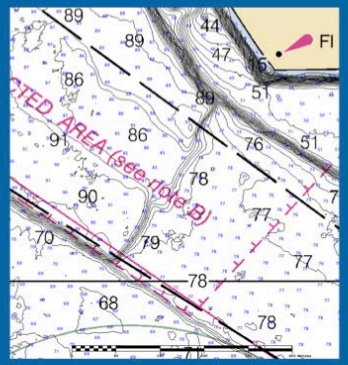
- Picking a Region
- Gathering the Bathymetry
- Selecting the Software
- Selecting the Hardware
- Developing Processes for Managing the Data

Office of Coast Survey 11

Contour Development



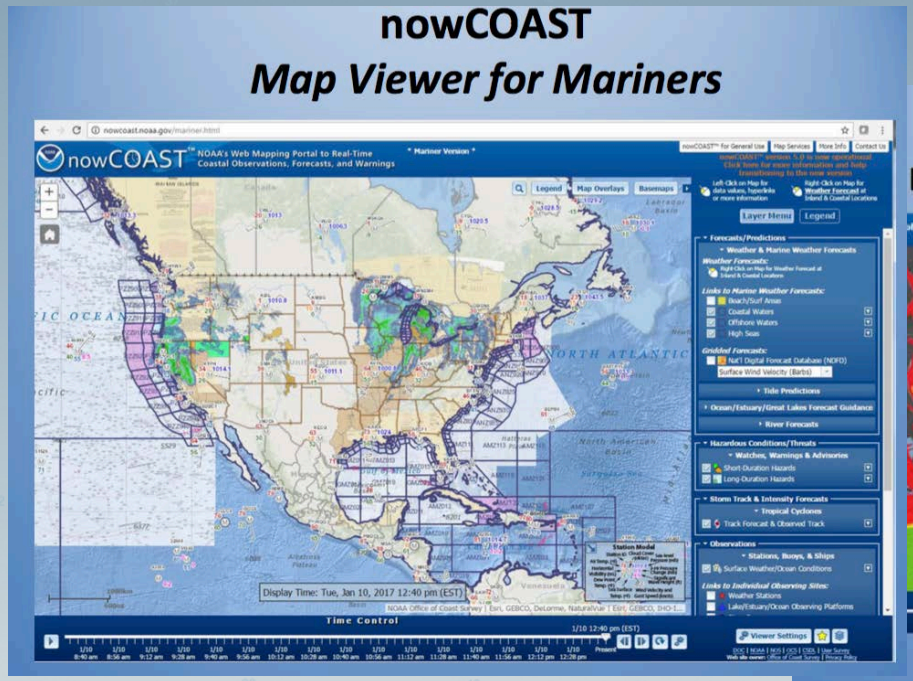
Puget Sound Continuous Contours

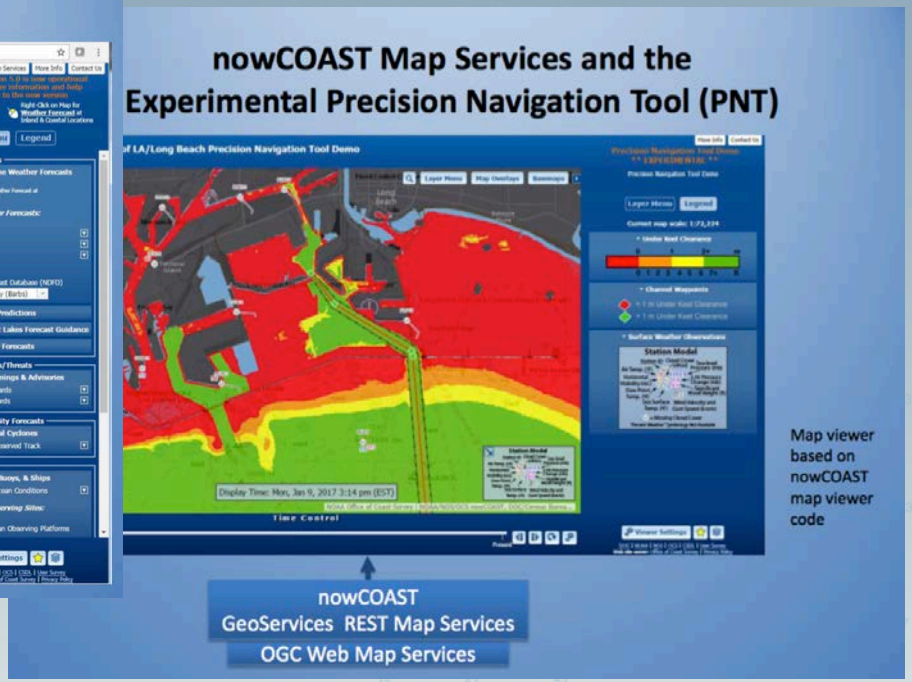


Long Beach Precision Navigation

Office of Coast Survey 13

NOAA/NOS nowCOAST Web Mapping Portal
John Kelly - NOAA

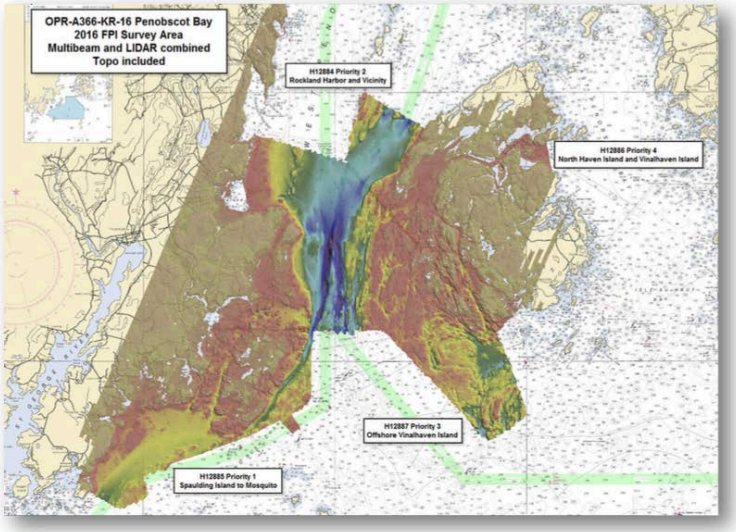




Fugro Integrated Approach to Survey of Penobscot Bay, Maine
David Millar - Fugro

MBES / LIDAR / SDB Integration

Combined SDB, Bathy LIDAR, Topo LIDAR and MBES



Challenges of Area

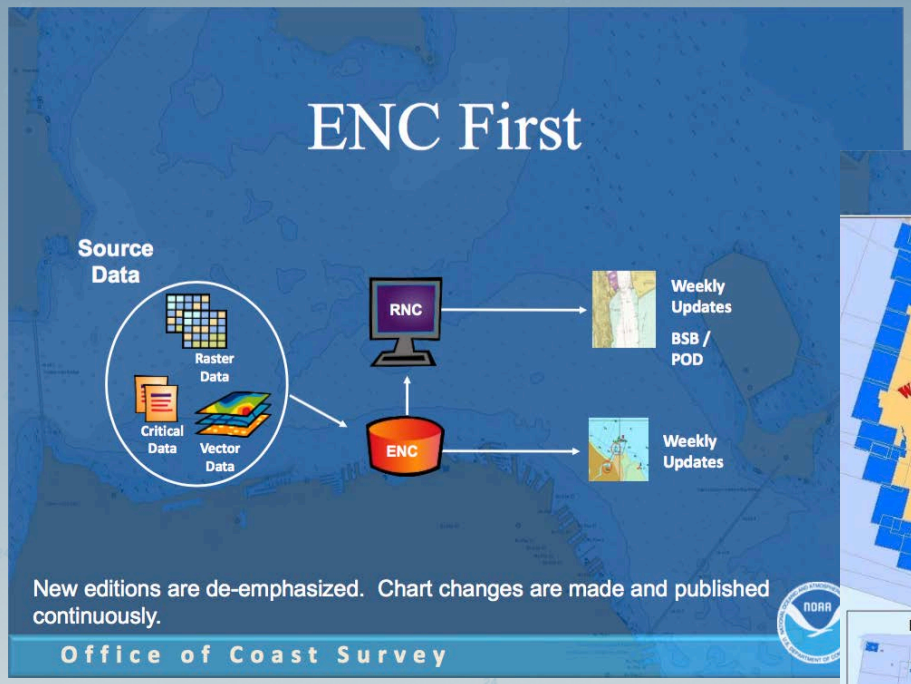
Environmental Issues / Challenges

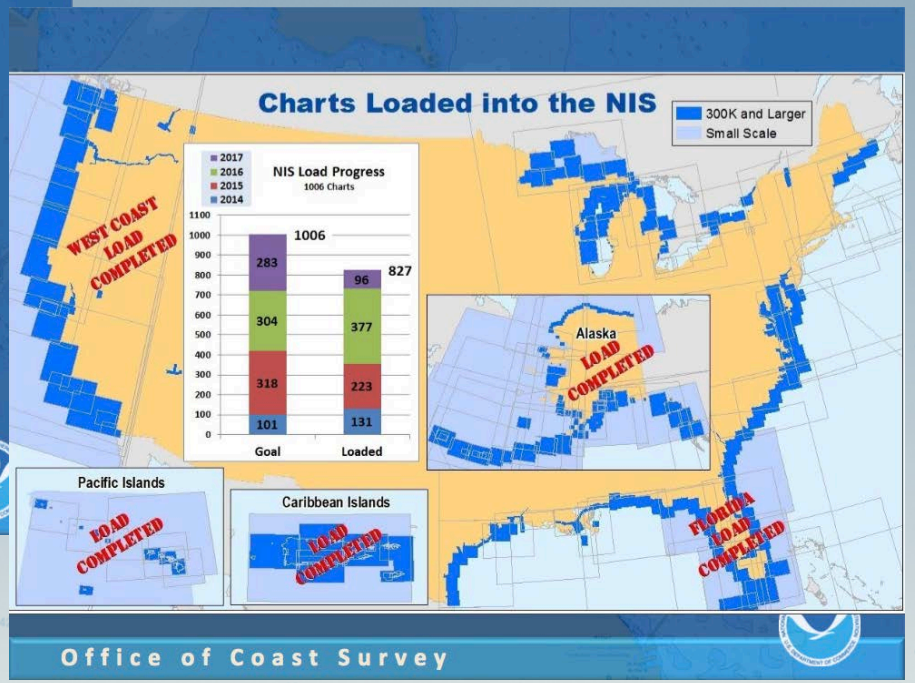
- Thousands of islands, rocks, shoals and drying reefs
- High volume of vessel traffic (commercial fishery and recreational boaters)
- Active lobster fishery (thousands of buoys)
- Variable water clarity (best in winter)
- Dark substrate
- Limited survey window (best in summer)
- Dense fog

Other Issues / Challenges

- Limited accommodations (due to high tourist activity)
- Limited availability of suitable vessels

NOAA OCS Charting update
John Nyberg - NOAA





Monthly Technology WG Meetings

- Automation and autonomous systems
  - Development
  - Industry Collaboration
  - Future support of autonomous navigation
- Future products and data
  - Beyond ENC and RNC
  - Supporting data infrastructure
- Future ECDIS
- Industry collaboration

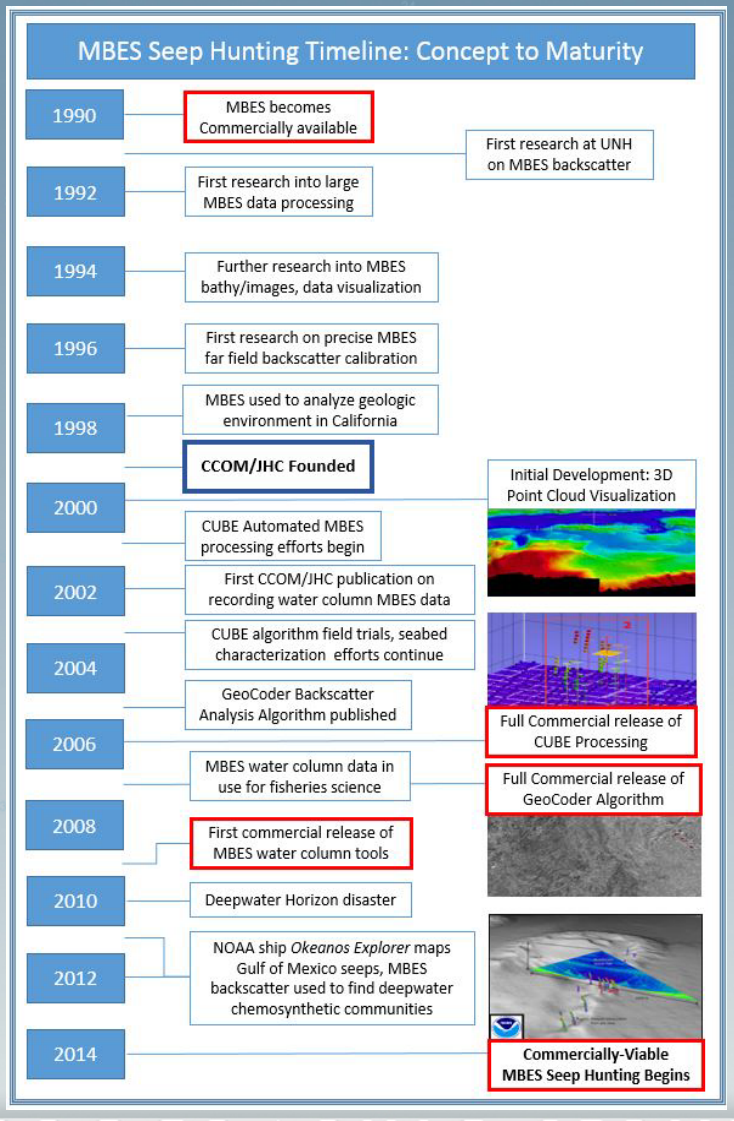
Technology Transfer Discussion Paper

- Joint Hydrographic Center/Center for Coastal and Ocean Mapping
- Established 1999
- Ocean Mapping Science R&D
- Train hydrographers and ocean mappers
- R&D success - map the world under the water better, faster, and cheaper.

Technology Transfer Discussion Paper

- CCOM/JHC Research Benefits
  - Safety of navigation and better coastal zone management
  - Long-term risks from sea level rise
  - Return of investment via transfer of technology to industry
  - Economic activity related to tourism, fisheries, energy, infrastructure development, and mineral resources worth many times investment
  - Train skilled professionals to be innovators of the future, bringing value to government and competitive edge to U.S. businesses

Case Study - Natural Hydrocarbon Seep Detection



- Combination of R&D projects
- Long term R&D cycle
- Technology transfer leads to significant economic impact

Technology Transfer Discussion Paper - Recommendations

- Increase R&D funding at CCOM/JHC for clearly-defined goal of improving the safe, efficient pursuit of hydrographic and charting tasks
- Cost benefit analysis of the contributions CCOM/JHC technology transfer makes to industry, to better understand the return on investment.
- Process to ensure industry fully aware of the R&D at to maximize technology transfer
- Optimize the processes to enable the rapid transfer of technology to support U.S. competitiveness and economic growth.

Technology WG – what's next?

- Feedback from the Panel
- Discussion and issue paper
- Continued monthly meetings?
- Future topics to cover
  - Next technology focus after ALB at HSRP meeting
  - Monthly meeting subjects of interest