

Integrated Ocean and Coastal Mapping: Pilot Projects and Initial Results

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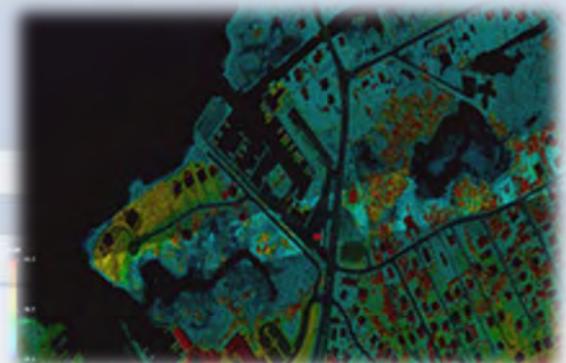


National Oceanic and Atmospheric Administration

Integrated Ocean and Coastal Mapping (IOCM)

The practice of acquiring, managing, integrating and disseminating ocean and coastal geospatial mapping data in such a manner that permits these data and their derivative products to be easily accessed and used by and for the greatest range of users and purposes.

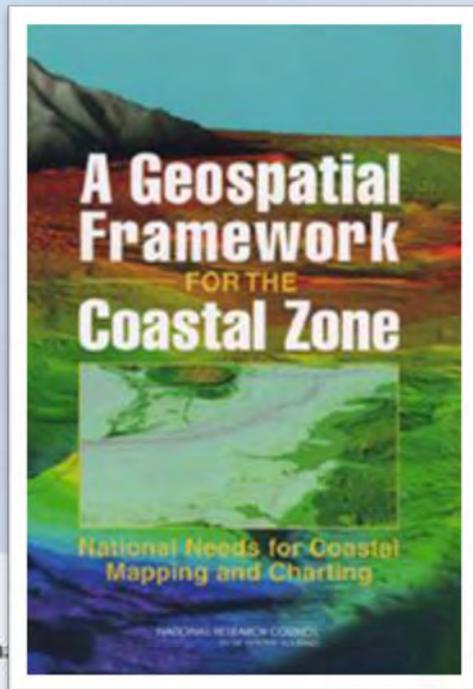
IOCM requires intra- and inter-agency coordination with a focus on streamlining operations, reducing redundancies, improving efficiencies, developing common standards, and stimulating innovation and technological development.



National Research Council Study (2004)

U.S. Ocean Action Plan (2005)

“Coordinate Federal Ocean and Coastal Mapping Activities”



Nation

on

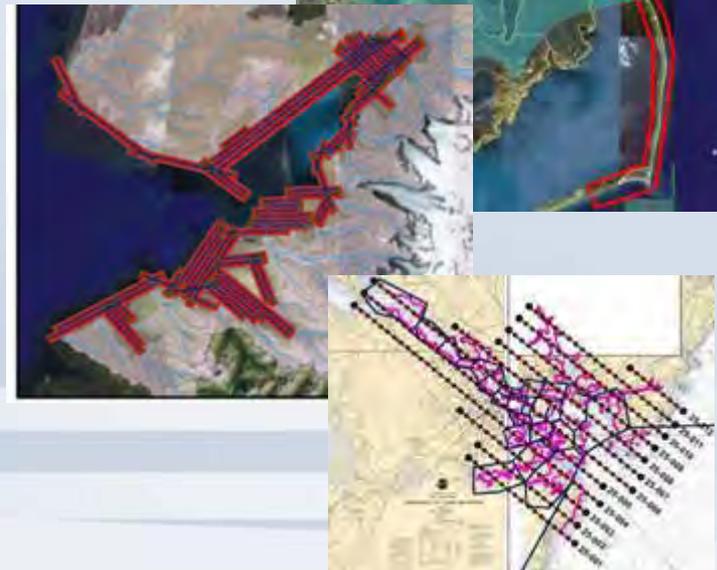
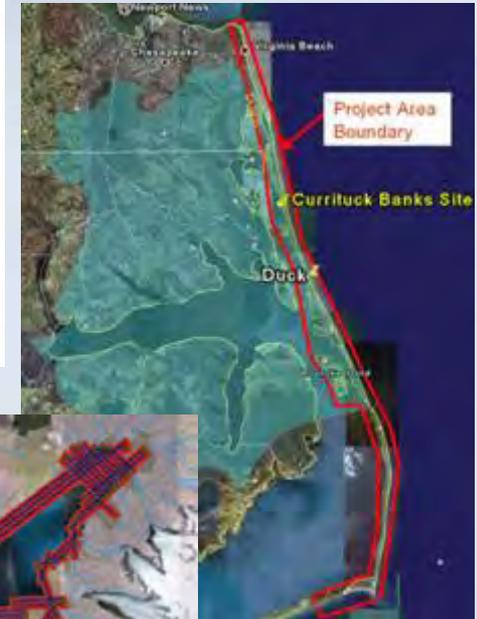
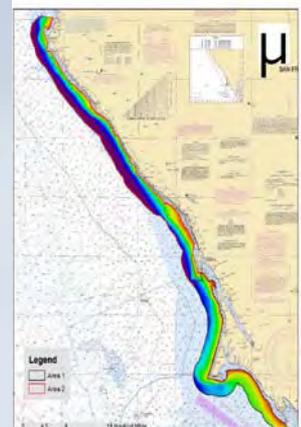
Data Coordination

- Need for ocean and coastal geospatial data and products exceeds supply and is growing
 - “Nontraditional users” rapidly realizing potential of geospatial data
- Mapping resources are limited
 - Coordination of efforts, leveraging of capabilities, standardization, etc. are essential
 - “Map once - use many times”
- The IWG-OCM was formed to address these issues

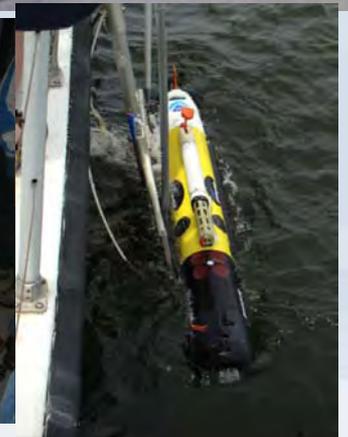


IOCM Pilot Projects

1. California Seafloor Mapping Project (FY08-09)
2. North Carolina Integrated Ocean & Coastal Mapping Project (FY08)
3. Kachemak Bay, AK Integrated Ocean & Coastal Mapping Project (FY08-09)
4. New Hampshire Integrated Ocean & Coastal Mapping Project (FY08)



IOCM Platforms & Sensors



NOAA Partners

National Ocean Service (NOS)

- Office of Coast Survey
- National Geodetic Survey
- Center for Operational Oceanographic Projects and Services
- National Centers for Coastal Ocean Science
- Office of Coastal Resource Management/NERR
- Coastal Services Center

Office of Marine and Aircraft Operations (OMAO)

- NOAA Ship FAIRWEATHER (S-220)
- NOAA Ship RAINIER (S-221)
- NOAA Citation Aircraft (N52RF)

National Marine Fisheries Service (NMFS)

- Habitat Conservation Division, Alaska Regional Office
- Auke Bay Laboratory
- Office of Habitat Conserv

National Environmental Satellite Data and Information Service (NESDIS)

- National Geophysical Data Center

Office of Oceanic & Atmospheric Research (OAR)

- National Undersea Research Program/West Coast and Polar Regions
- National Undersea Research Center



IOCM External Partners

- NCDOT
- NCNERR
- NCGS
- USACE
- FEMA
- City of Homer, AK
- Alaska Sea Grant
- Center for Alaskan Coastal Studies
- CA Coastal Conservancy
- Pratt Museum
- University of Alaska Fairbanks – Kasitsna Bay Lab
- University of New Hampshire
- Alaska Dept. of Fish & Game
- California Geological Survey

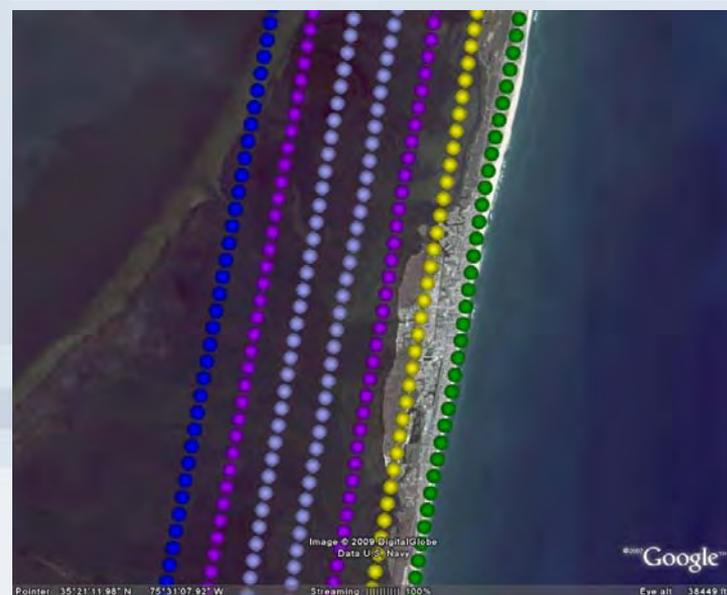
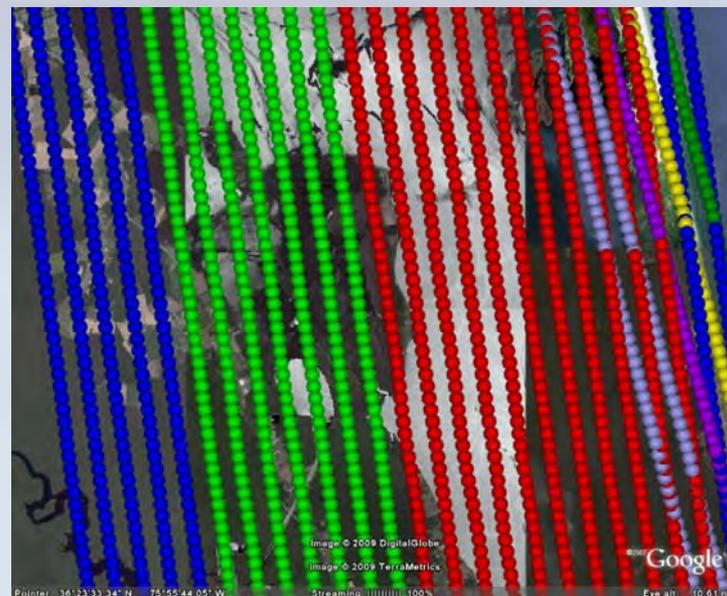


NC IOCM Planning Meeting

- February 11-12, 2008 @ USACE Duck FRF
- 1st day: tour of key project sites, including: FRF, ground truth sites, and Currituck Banks NERR
- 2nd day: project partners and beneficiaries engaged in joint discussion of goals & objectives
- Meeting Participants
 - NCDOT
 - NCGS
 - USACE
 - FEMA
 - NCNERR
 - NOAA (NCBO, CSC, ERD, NGS)



North Carolina IOCM Project



Distribution of Aerial Data

DIGITAL COAST Digital Coast : Data Access Viewer

Legend Data Search Results Help

Area Search Results

High Resolution Imagery
Digital Sensor System - NGS

- Infrared
- RGB

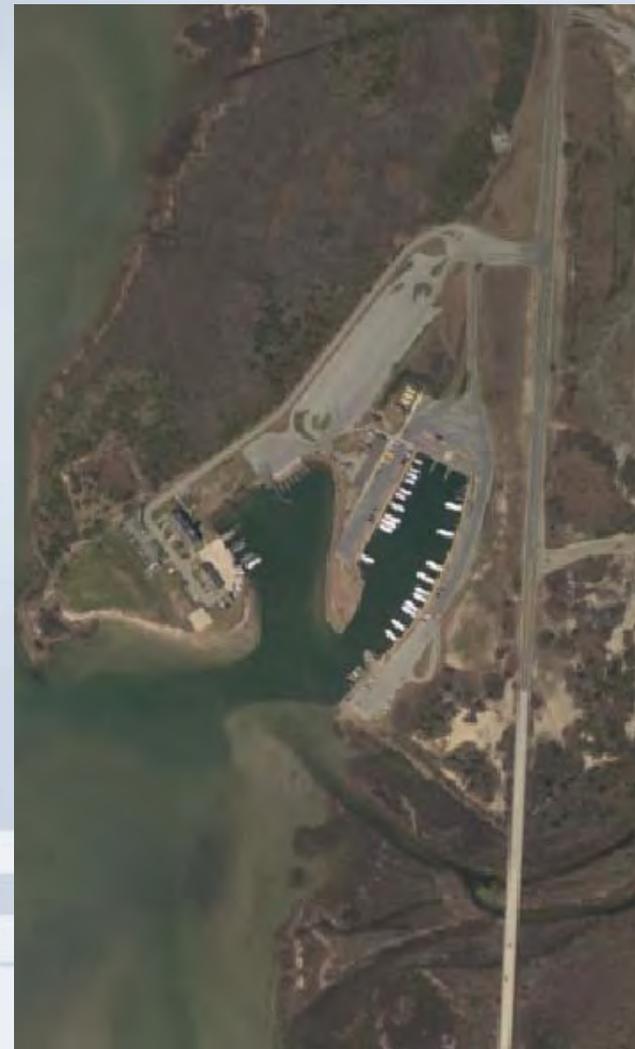
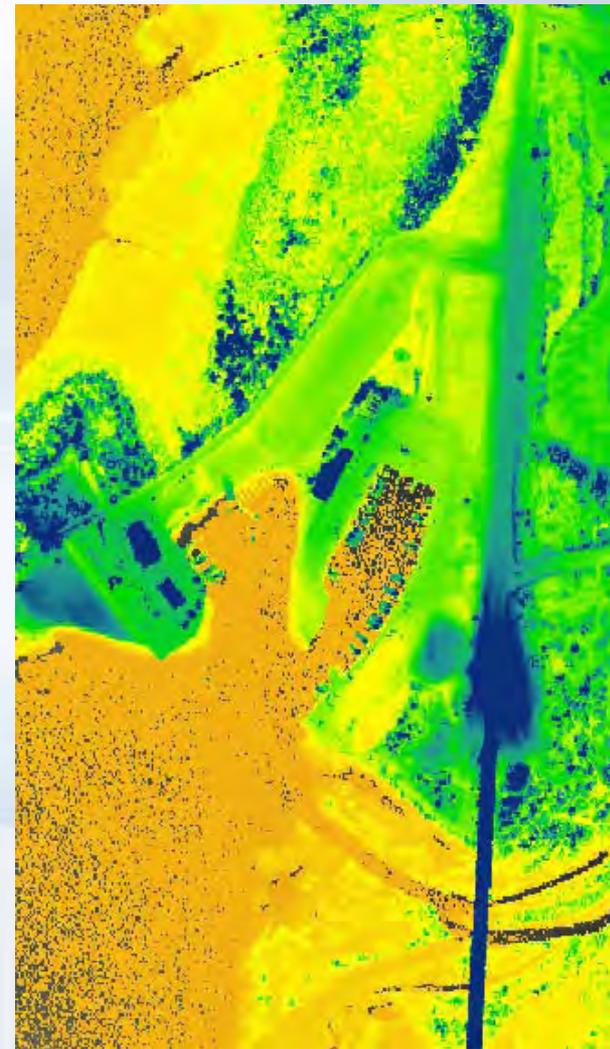
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(RGB_455000e3917500n.tif)					
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Refresh Map Est. Data Size = 0MB

Auto refresh



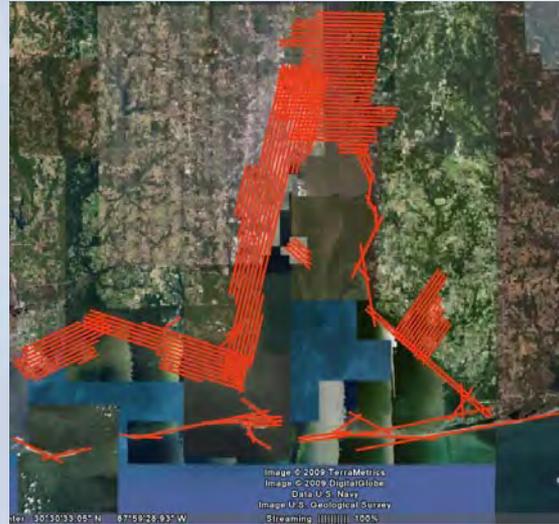
NC Airborne Data Products



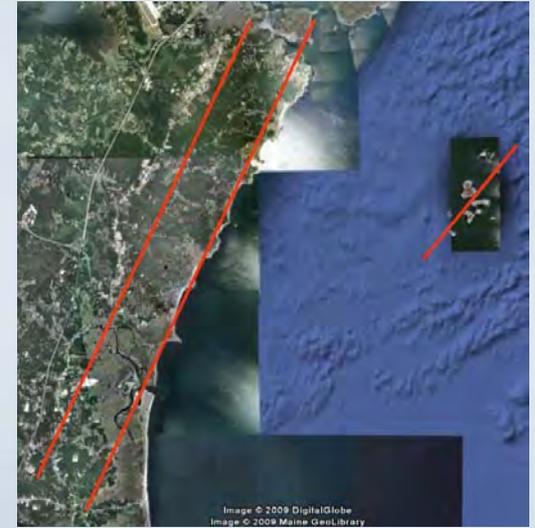
FY09 Planned IOCM Projects



Kachemak Bay, AK



Mobile Bay, AL



Great Bay Area, NH



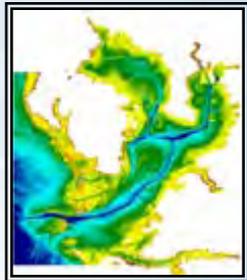
Data Applications

- Beach Processes (erosion, accretion, renourishment)
- Analyzing storm impacts
- Emergency response & impact assessment
- Habitat restoration
- Shoreline change analysis
- Storm surge planning
- Marine Boundary determination
- Permitting
- Tsunami Modeling
- Climate Changes
- Sea-level rise models



Integrated Bathy/Topo Digital Elevation Model

USGS Topography

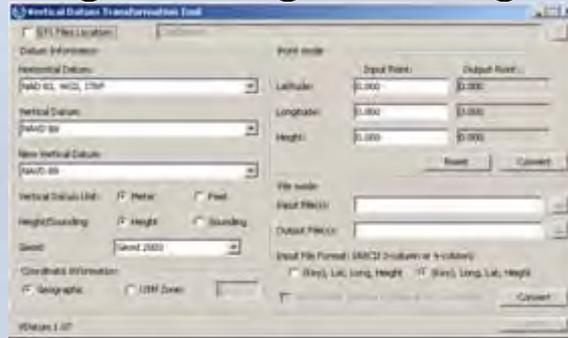


NOAA Bathymetry

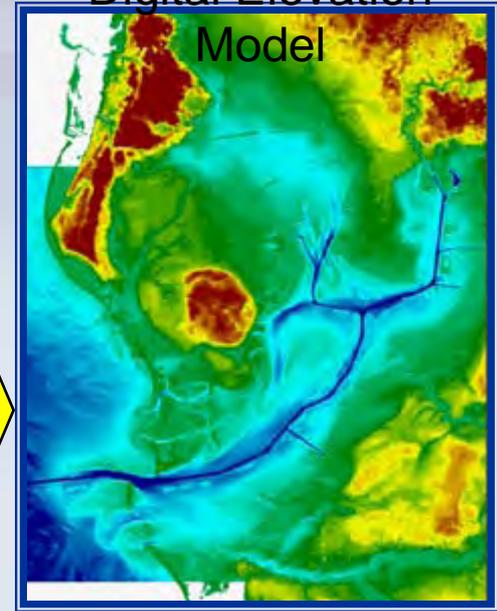
Geoid Model

Tidal Model

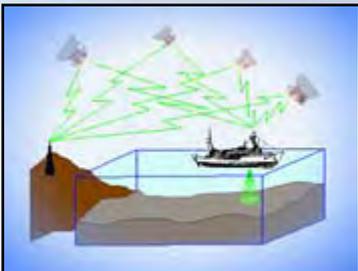
Sea Surface Topography



VDatum
(Vertical Datum Transformation Tool)



RTK-GPS vertical referencing Hydrographic Surveys



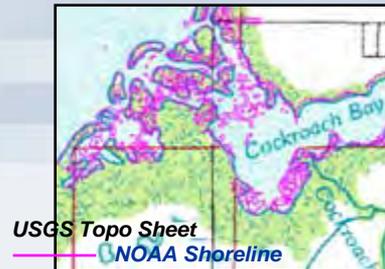
Shoreline from LIDAR in the intertidal zone



GIS users in the Coastal Community



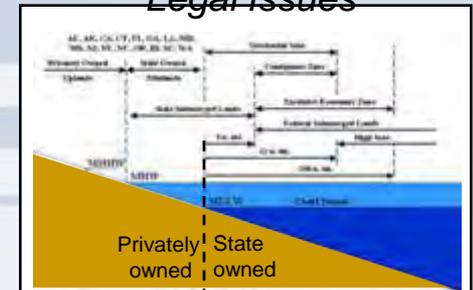
NOAA-USGS shoreline inconsistencies



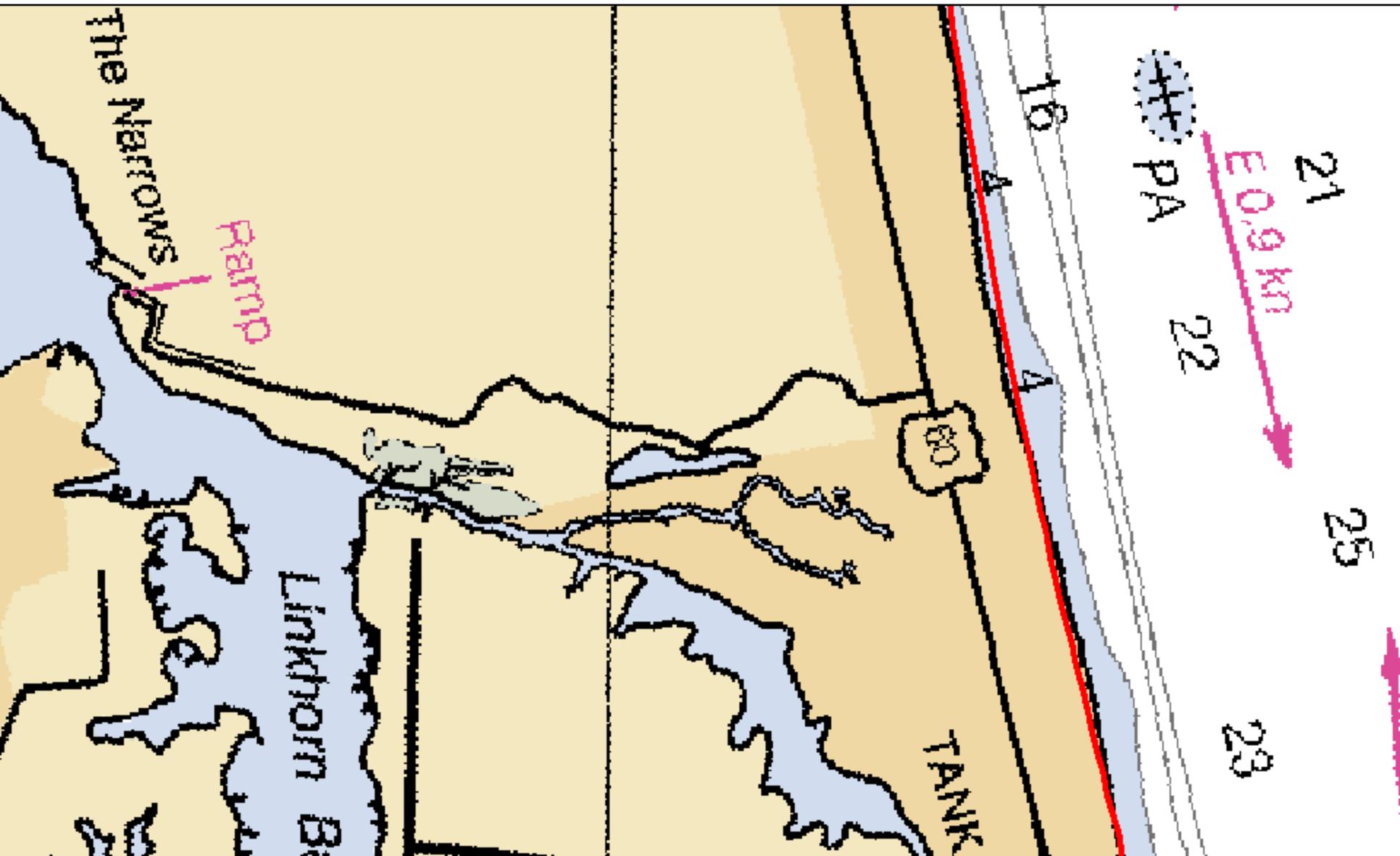
National Bathymetric Database

Allows transformation to a common datum for the blending of different data sets (including 3rd party data).

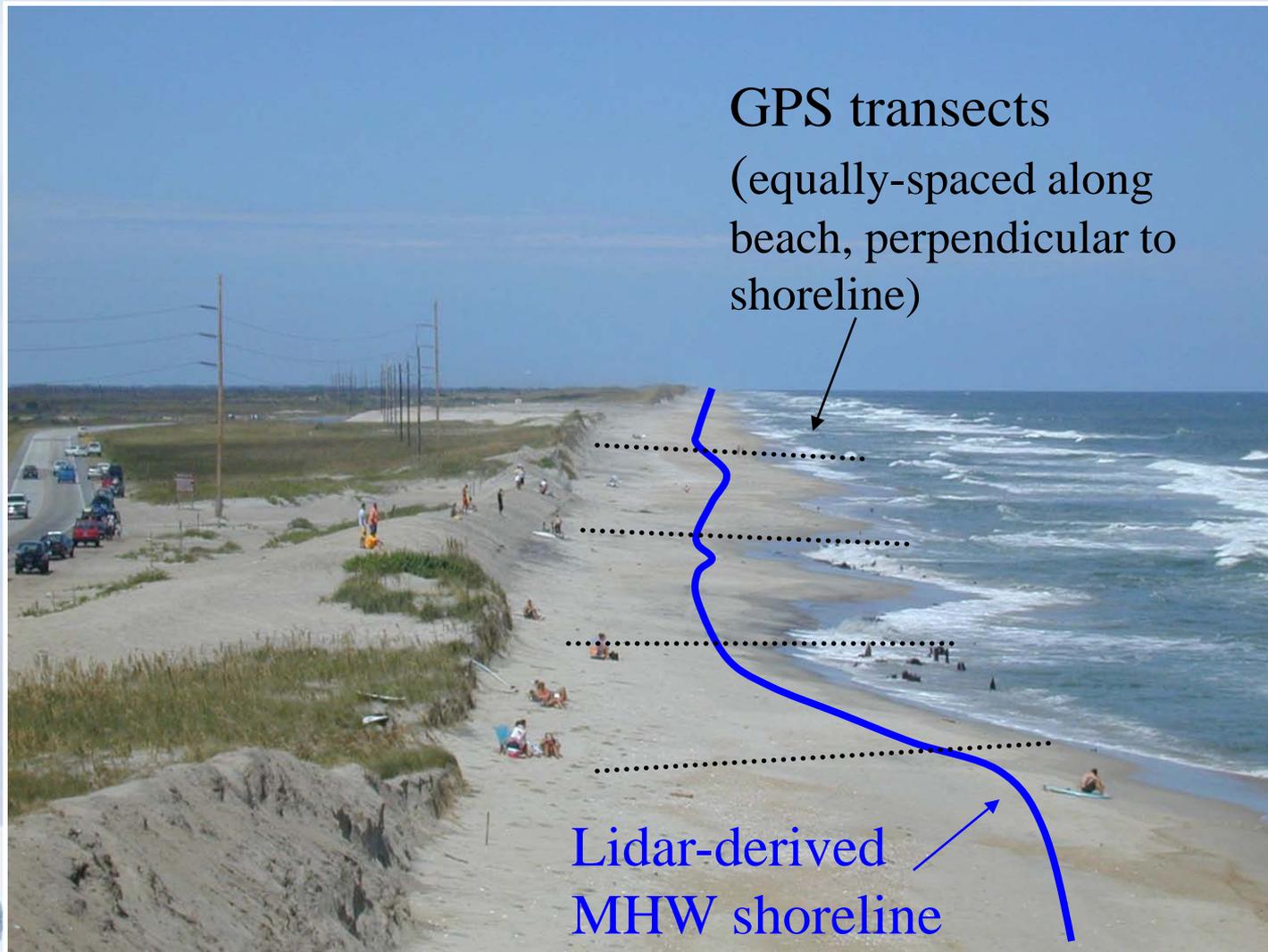
Marine Boundaries & Legal Issues



VDatum MHW lidar-derived Shoreline



Lidar Shoreline Contour Accuracy

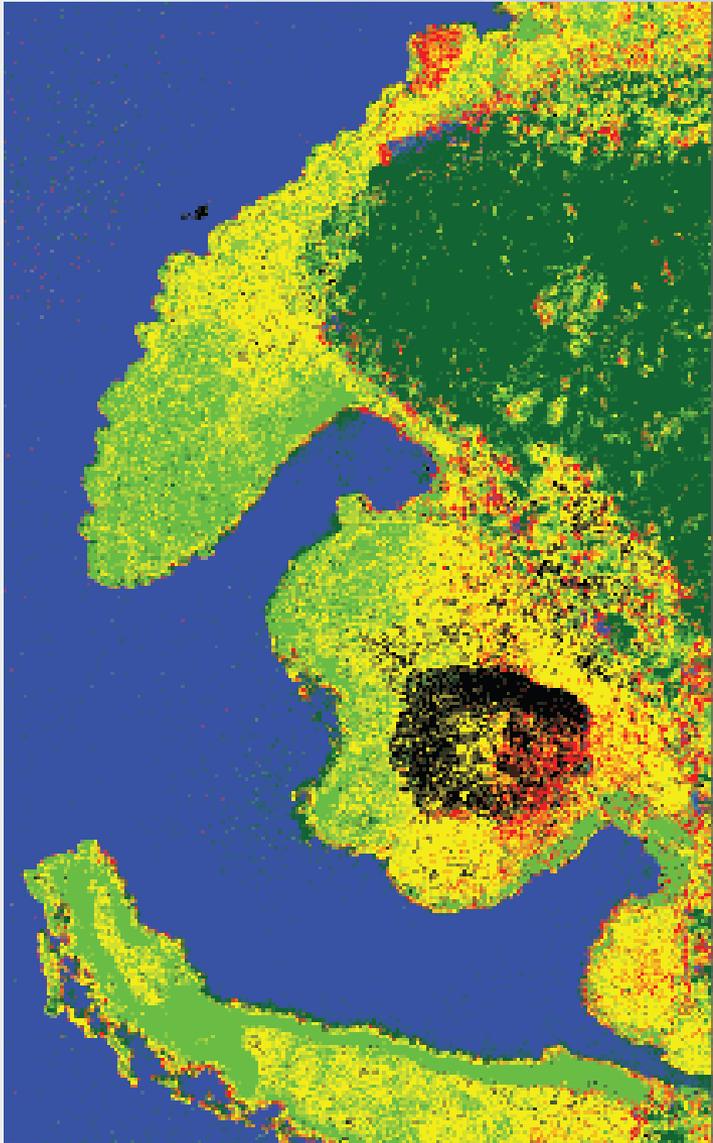


Duck Field Research Facility Site



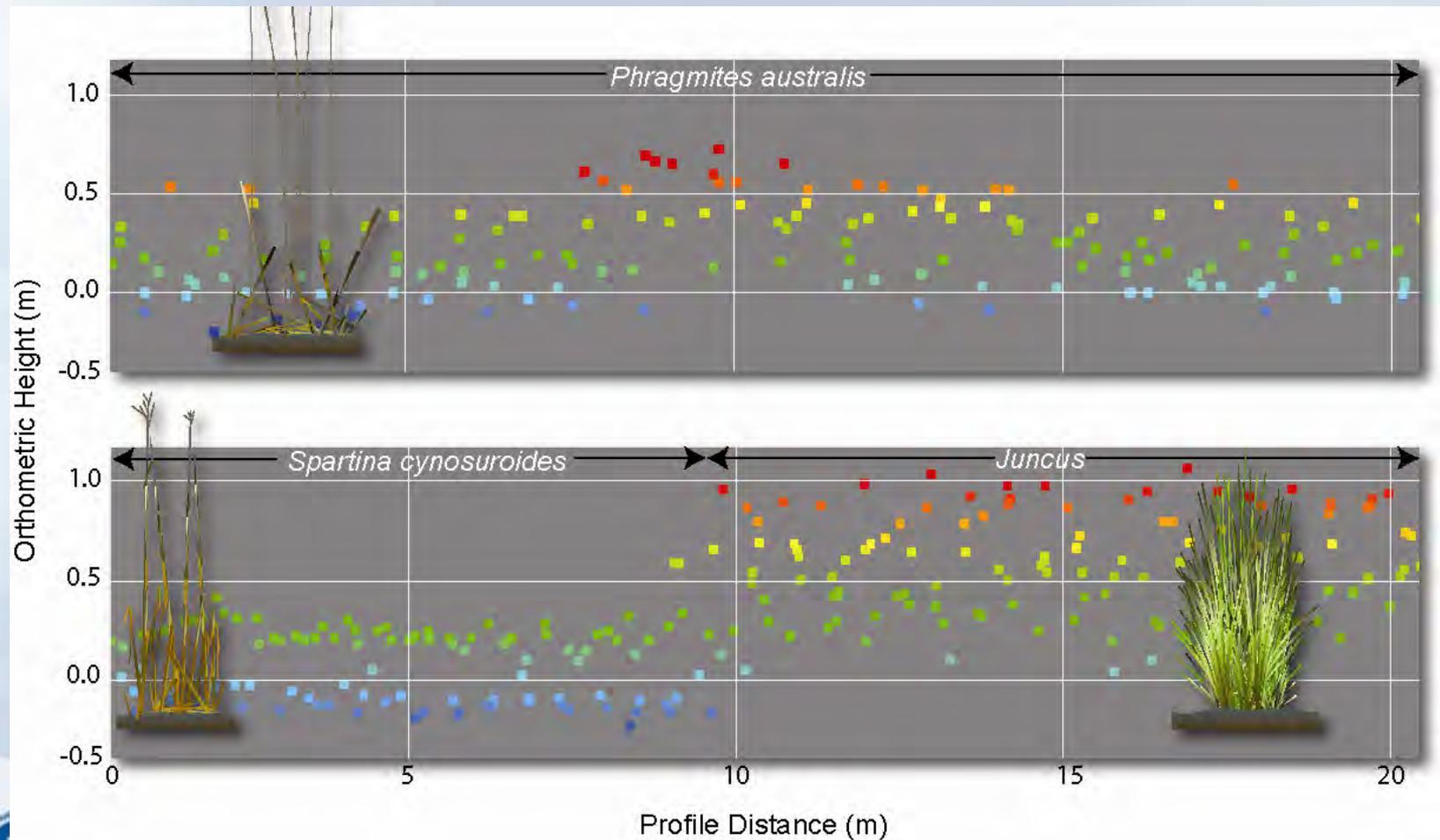
20 Transects
National Oceanic and Atmospheric Administration

Marsh Plant Distribution Pattern



-  *Phragmites australis*
-  *Spartina cynosuroides*
-  *Juncus*
-  *Phragmites australis* (irradiated area)

Marsh Accuracy Assessment



Summary

- NOAA is bringing together requirements from multiple partners to exponential increase applications for the data
- Continued collaboration and strategic planning between Federal, State, and local government, the private sector, and academia will further enhance the usefulness of our geospatial infrastructure
- Airborne data (Lidar and DSS) collected for IOCM projects will be made available on the Digital Coast website

