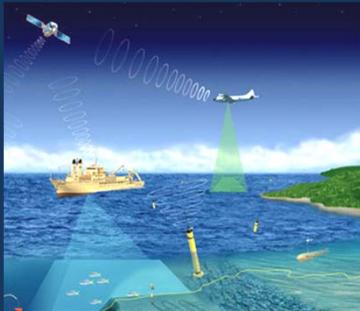


Integrated Ocean and Coastal Mapping



Data Supporting Science
and Sound Decision-Making



Ashley Chappell, NOAA IOCM Coordinator
Hydrographic Services Review Panel Meeting
May 7, 2013



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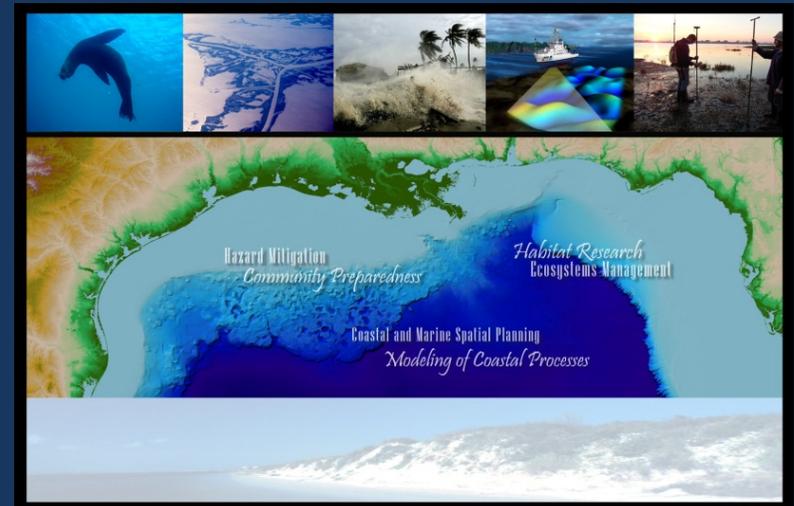
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Use Many Times”*

What is IOCM?

IOCM is *planning, acquiring, integrating, and managing* ocean and coastal geospatial data and derivative products for easy access and use by the greatest range of users.

Three primary tasks:

1. Data Acquisition
2. End-to-End Data Management
3. Maximum Use and Re-Use of data



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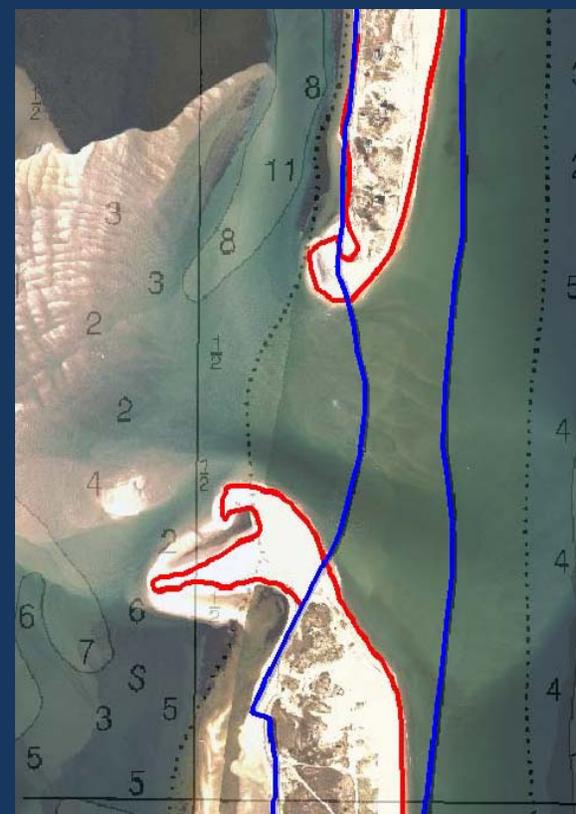
Opportunities

Maximizing Benefits of IOCM

Oceans, coasts = economy...

- Navigation, transportation, security
- Climate change and hazard resiliency
- Ecosystem-based management
- Energy siting and resource extraction

...Overlapping data requirements



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Recent Mandates

Ocean and Coastal Mapping Integration Act, 2009:

- Validated NOAA's vision for IOCM
- Provided focus for interagency coordination
- Authorized previously ad-hoc efforts

Natl Ocean Policy Implementation Plan, 2013:

- Identifies mapping actions to meet OCMIA
- Provides long term road map
- Coordinates across mapping agencies

Administration/Congressional Budgets

- FY12 Approps supported IOCM approach
- Sandy Supplemental takes IOCM approach
- FY14 PresBud pushes collaboration

The term “ocean and coastal mapping” means the acquisition, processing, and management of physical, biological, geological, chemical, and archaeological characteristics and boundaries of ocean and coastal areas, resources, and sea beds through the use of acoustics, satellites, aerial photogrammetry, light and imaging, direct sampling, and other mapping technologies.



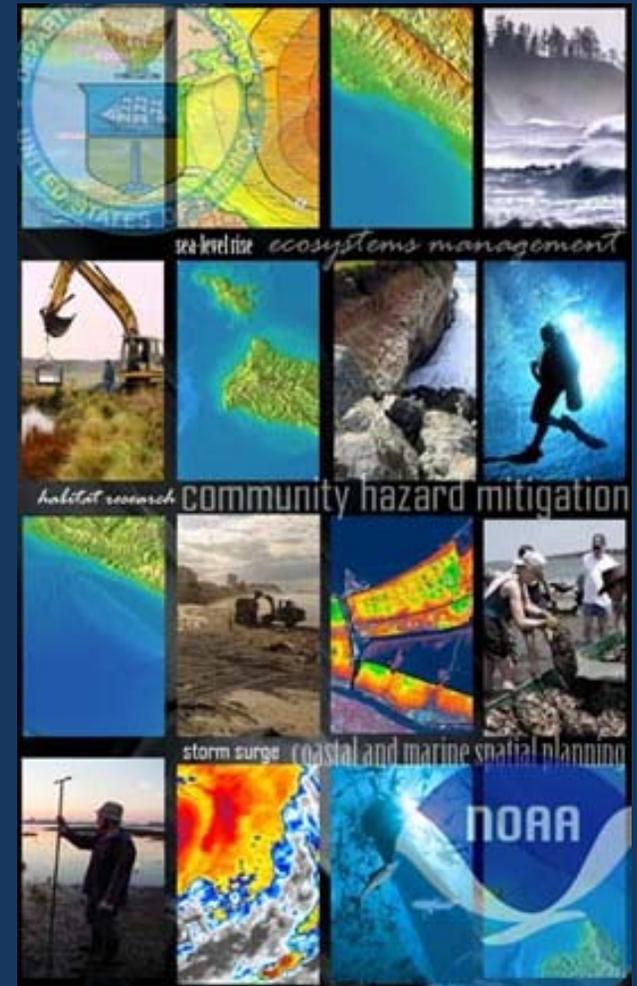
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Who is IOCM?

- NOAA IOCM Coordination Team
 - Core staff to coordinate/promote IOCM efforts
 - 21 programs/offices across NOAA
 - Reports to NOAA Oceans and Coasts Council
- IOCM ROAD MAP
 - NOAA R2R
 - IOCM std, Geophysical Data Stewardship Policy
 - Benthic habitat maps
 - Multi-mission cruises
 - Shoreline mapping/LIDAR
 - Baseline data for coastal Digital Elev. Models
 - Modeling (tsunami, ports and estuaries)
 - Developing methods to reprocess data for additional uses
- Foundation for external collaboration



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IOCM Balanced Scorecard: Maturity Index

CURRENT IOCM BSC:	FY	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Performance Measure:	2011	Target	Target	Target	Target	Target	Target
Initial datasets processed for IOCM seafloor/water column mapping data products (annual snm)	Actual						
	226	352	17,100	22,800	37,000	47,950	47,950

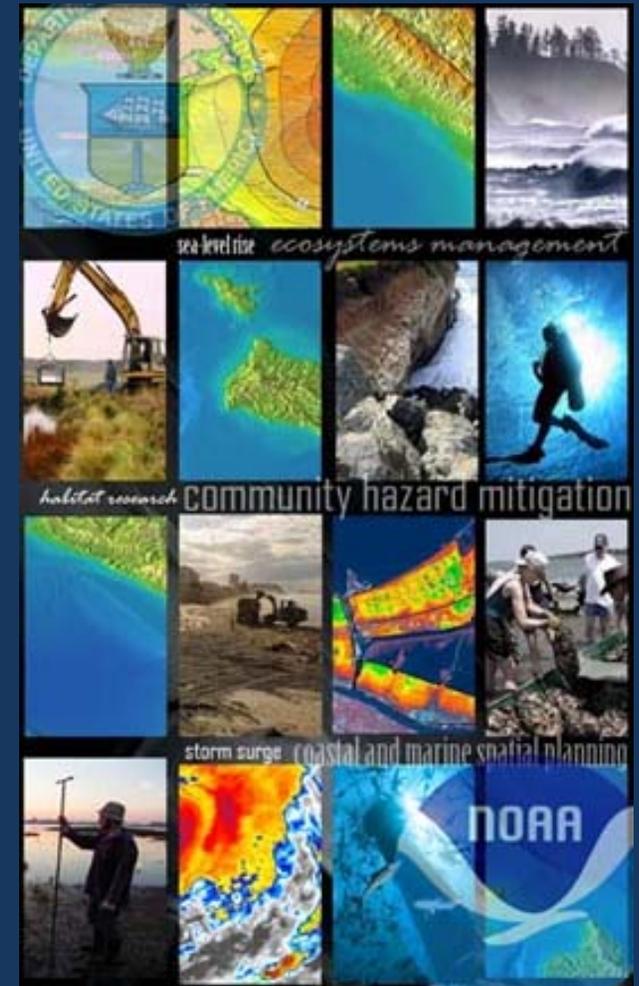
Description: This measure highlights existing datasets that the IOCM center will focus on re-processing. The metric illustrates the large quantities of data available but not accessible for multiple uses. These datasets were collected for a single purpose, but can be rendered more useful to other applications such as Marine Geospatial Products, habitat mapping, tsunami and storm surge models, and nautical chart updates in areas less critical for navigation than above.

PROPOSED: Percent progress made toward implementing NOAA's IOCM vision for "Map Once, Use Many Times" to increase efficiency, maximize value, and enable greatest range of use	<u>FY13 Target</u>	<u>FY14 Target</u>	<u>FY15 Target</u>	<u>FY16 Target</u>	<u>FY17 Target</u>	<u>FY18 Target</u>
<u>Data Acquisition</u>	20%	40	60	80	100	100
<u>Illustrative Milestone A</u>	Met? Yes	Met? No	Yes	Yes+ (caught up with target)	Yes	Yes
<u>End to End Data Mgmt</u>	33%	66	100	100	100	100
<u>Milestone L</u>	No	Yes	Yes	Yes+	Yes	Yes
<u>Maximum Use/Re-use</u>	15%	25	40	65	80	100
<u>Milestone X</u>	No	Yes	Yes	Yes	Yes+	Yes
<u>Total Actual (rate of progression to IOCM maturity)</u>	15%	32%	55%	76%	93%	100%



Interagency Coordination

- IWG-OCM
 - coordinate and promote OCM efforts
 - share information
 - Sits under SOST
 - NOAA co-chairs with USGS, USACE
- Heavy focus on OCM Inventory
 - 2007, 2011 workshops
- OCM outcomes
 - Shoreline mapping/LIDAR
 - National Ocean Policy Obs/Infra/Mapping
- Now working to build more direct collaboration
 - Sandy Supplemental, SeaSketch
 - National Coastal Mapping Strategy



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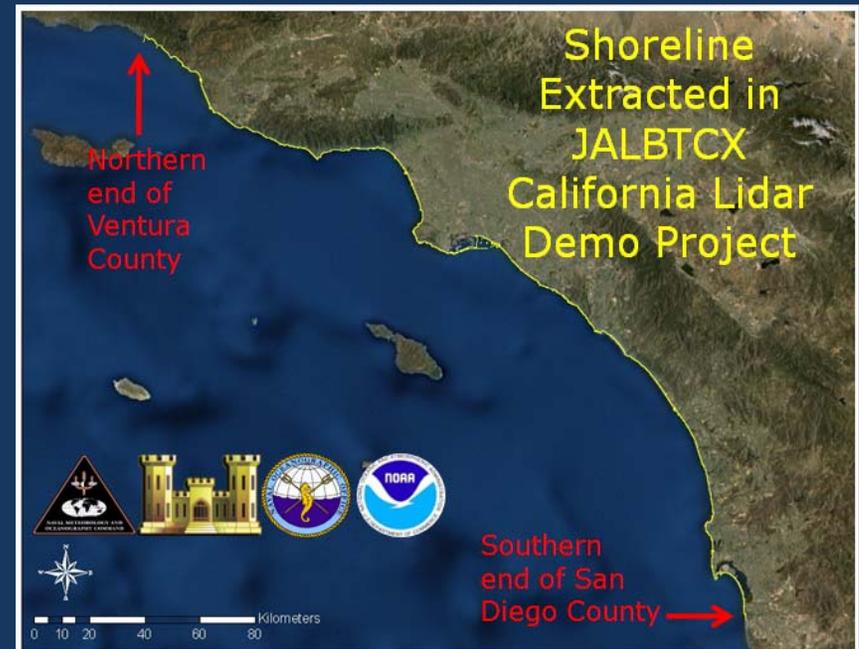
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Shoreline Mapping

NOAA using USACE-collected LiDAR, along with V-Datum (NOAA's vertical datum transformation tool), to map the National Shoreline.

- Data meets multiple agency requirements
- NOAA taking advantage of USACE 5-year shoreline mapping cycle
- Efficiency gains and cost savings.



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Arctic Mapping

Working with USCG on Trackline Surveys

- Buoy Tenders as mapping Vessels of Opportunity
- Technical support and expertise
- Hands-on direction and training
- Ship Trackline Guidance
- Abbreviated Survey Reporting documents
- Future planning for expanding USCG capabilities in Arctic surveying efforts



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Long Island Sound

LIS Study requested NOAA assistance

- Led mapping prioritization workshop
- Providing expertise
- Common data acquisition guidelines
- Standards facilitate data re-use
- Map products:
 - Benthic habitats and ecological processes
 - Physical and geochemical sedimentary environments
- Efficiency gains and cost savings



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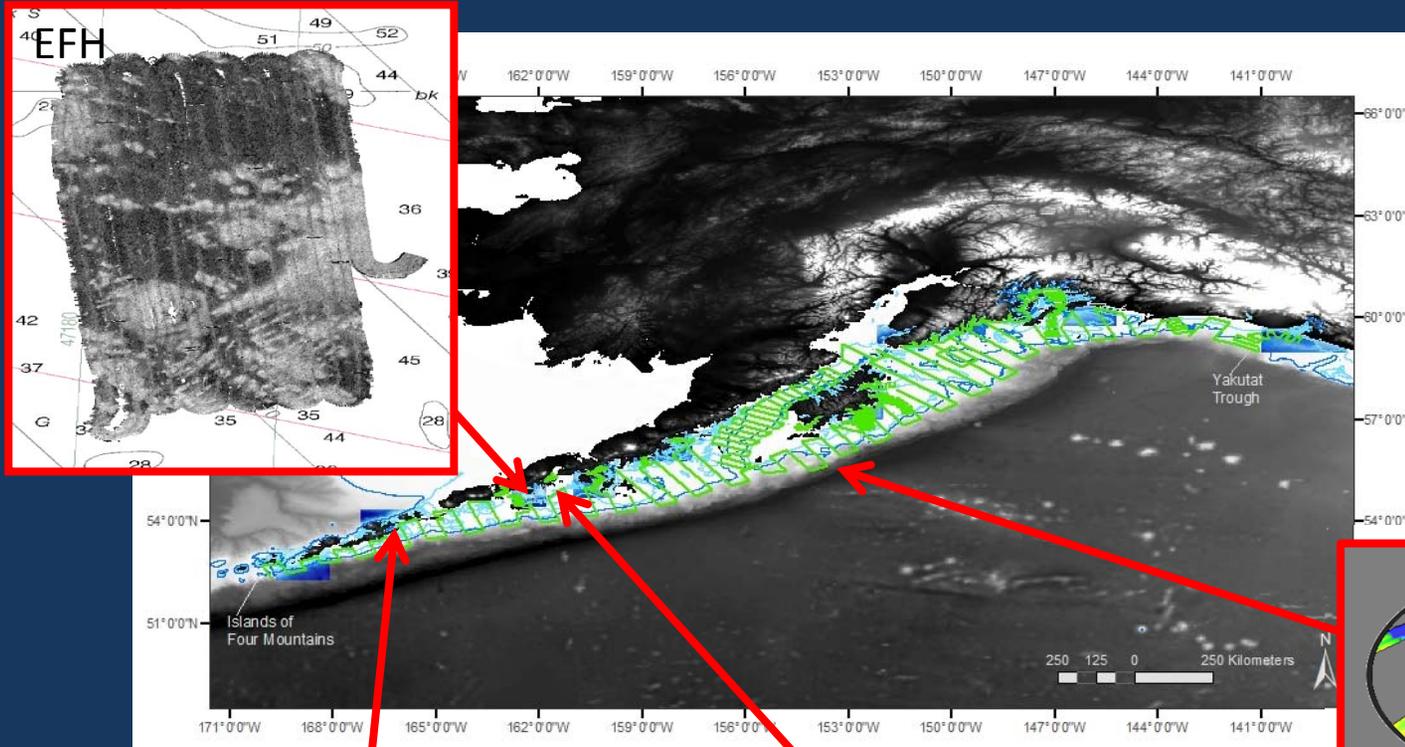
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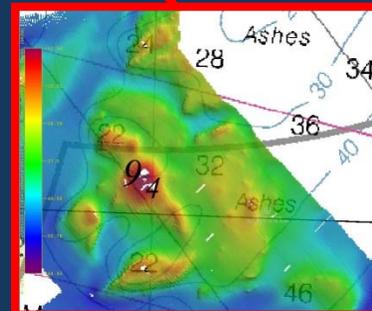
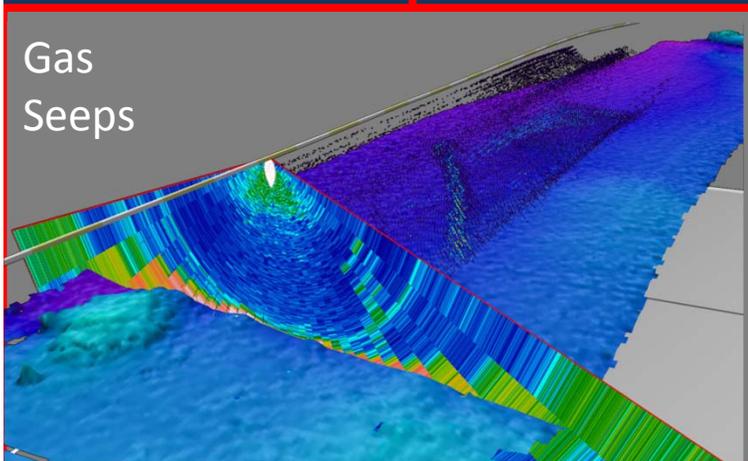
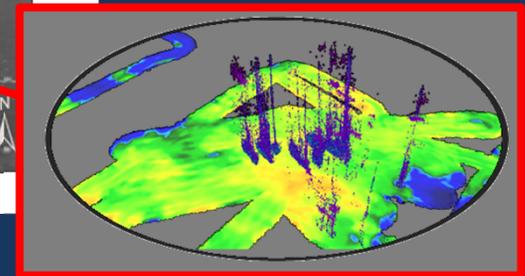
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Oscar Dyson - Multipurpose Surveying

NOAA AFSC acoustic/trawl pollock stock assessment



Untrawlable Habitat



Dangers to Navigation



Critical Tools:

- Fisheries Echo Sounder (EK 60)
- Multibeam (ME-70)
- Augmenting w/trained personnel

NOAA R2R

Ensuring Data Availability

- Following successful UNOLS – NOAA R2R
 - Send data direct from ship to archive
 - Use common data description & format
 - Develop common data processing methods
- Accomplishments:
 - Data Stewardship Policy
 - Implemented Geophysical Data Policy
 - Published Oceanographic Data Policy
 - Business Plan
 - Leverages existing programs and resources
 - IOCM Seafloor Mapping Standard
 - Developed and shared with partners
 - **NEW!** NMFS pipeline to archive and access
 - Prototyped fisheries sonar with Oscar Dyson



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Sandy Supplemental: An IOCM Approach

Program	\$50M to NOS for Mapping and Charting: Activities
OCS	Hydrographic survey contracts in Sandy impact area (NC-ME, *NY-NJ)
	Charting backlog reduction in Sandy impact area
	Enhance/transition large scale, hi-res storm surge models to ops (with NWS)
NGS	Shoreline topo/bathy Lidar, imagery acquisition contracts (NC-ME, *NY-NJ)
	Lidar system/camera upgrades for improved topo/bathy response capacity
	GRAV-D: gravity for new vertical datum, avg 50cm error correction (NC-ME)
CO-OPS	Water level support for contracted surveys
NGS/ CO-OPS	Vdatum upgrades to validate model uncertainty (NC to ME)
ORR	Updates and revisions to East Coast Environmental Sensitivity Indices
	Marine debris impact assessments
NGDC	Data management and Digital Elevation Model development (with USGS)
JHC	Temporary IOCM Data Processing Center for Sandy data



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SeaSketch and Sandy Supplemental

www.seasketch.org/#projecthomepage/510a7b17b64014e92e298ce2

Integrated Ocean and Coastal Mapping Sandy Coordination
Sandy Supplemental Mapping Priorities and Plans admin

seasketch

ashley chappell

Data Layers My Plans Participate

Data Layers Basemap Legend

- Interim High Resolution Surge Area for NY, NJ, a
- JFO NY NJ 10KM buffer survey priorities
- NERRS LIDAR Priorities
- NGDC EROS DEM Lidar and Hydro priorities
- NJ Department of Transportation Mapping Prioriti
- NOAA Aerials
- NOAA East Coast ESI Boundaries -- mapping pri
- NOAA Hydro Survey Critical/Priority 1 Priorities
- NOAA Hydro Survey Existing Modern Coverage
- NOAA Hydro Surveys Planned 2013
- NOAA Marine Chart Div LIDAR/Survey Priorities
- NOAA Marine Debris/Stakeholder Priorities
- NOAA NGS Survey Priorities
- NOAA RNC
- NOAA Storm Surge Mapping Priorities
- NOAA Survey Users Request
- State -- DE priorities
- State -- MA survey priorities
- CZM_MappingPriorities

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Back-up Slides



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Why coordinate & collaborate on Data Acquisition?

- Avoid costly duplication of effort
- Maximize survey time
- Meet science & mission requirements
- IOCM:
 - Identifies mapped areas
 - Improves planning
 - Enables cross-agency collaboration



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Why manage data?

- Enable NOAA's mission requiring scientific data
- Maximize use of data for multiple purposes
- Avoid costly data loss



- IOCM:
 - Ensures data collected are available for use
 - Processes data for multiple uses
 - Delivers bang for the buck



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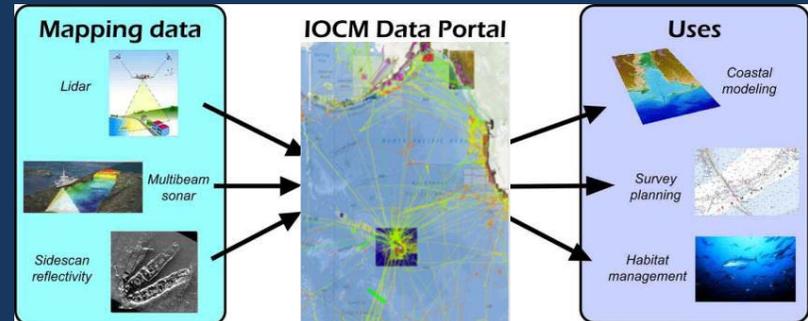
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Why re-use data?

- Scientifically sound decisions require data
- Data are expensive to collect
- Scientific data management is cost-effective
 - 3-month study, 2000% return on investment

- IOCM:
 - Ensures data are available
 - Enables use and re-use of data
 - Supports scientific and management missions



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Why Do We Need IOCM?

IOCM addresses multiple issues:

- Data Collection
 - Data acquisition standards
 - Maximize use of platforms
 - Coordinate efforts
 - Identify common priorities
- Data Management
 - Ensure proper data archive
 - Use common data processing
 - Describe with standard metadata, vocabularies
- Data Access & Use
 - Data discovery
 - **Cost effective**
 - Common formats
 - Consistent science products



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NOAA IOCM Coordination Team Members

National Environmental Satellite, Data and Information Service:

- National Coastal Data Development Center (NODC)
- National Geophysical Data Center

National Marine Fisheries Service:

- Chesapeake Bay Office
- Office of Habitat Conservation
- Office of Science and Technology
- Regional Science Centers

Office of Marine and Aviation Operations

Office of Oceanic and Atmospheric Research:

- Climate Program Office
- Office of Ocean Exploration and Research

National Ocean Service:

- Center for Operational Oceanographic Products and Services
- IOOS: Integrated Ocean Observing System Program
- NOAA/UNH Joint Hydrographic Center
- National Centers for Coastal Ocean Science
- National Geodetic Survey
- NOAA Coastal Services Center
- Office of Coast Survey
- Office of National Marine Sanctuaries
- Office of Ocean and Coastal Resource Management
- Office of Response and Restoration
- Special Projects Office
- NOAA Coral Reef Conservation Program



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