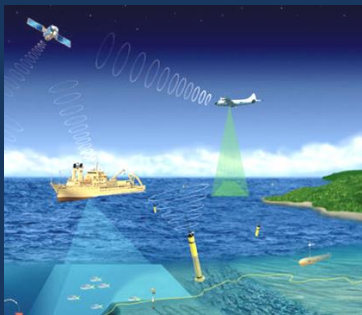




INTERAGENCY WORKING GROUP ON
Ocean and Coastal Mapping

Alaska Coastal Mapping Summit 2.0



**Data Supporting Science
and Sound Decision-Making**



Ashley Chappell

February 9, 2018

Alaska Coastal Mapping Summit 2016



June 14, 2016
Girdwood Alaska

- 4 hour inaugural coordination meeting
- Over 75 attendees from over 50 stakeholder entities

2016 Alaska Coastal Mapping Summit

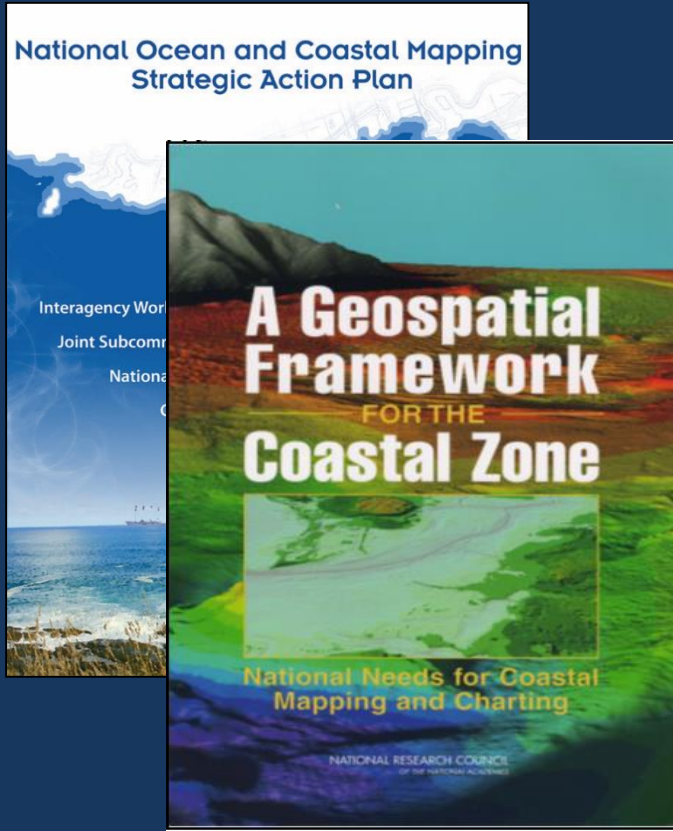


The Interagency Working Group on Ocean and Coastal Mapping (IWG-OCM)

WHO:

- NOAA
- USGS
- USACE
- NAVO
- BOEM
- NSF
- NGA
- USCG
- EPA
- FEMA
- NASA
- USDA

*and other appropriate
Federal agencies
involved in ocean and
coastal mapping.*



- Co-chaired by NOAA, USGS, and USACE
- Charged with facilitating “the coordination of ocean and coastal mapping activities and avoid[ing] duplicating mapping activities...”



INTERAGENCY WORKING GROUP ON *Ocean and Coastal Mapping*

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

SOST implementation plans (stemming from NOP)

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

National Strategy for the Arctic Region

- Identifies charting as an objective
- Coordination role

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.



INTERAGENCY WORKING GROUP ON *Ocean and Coastal Mapping*

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



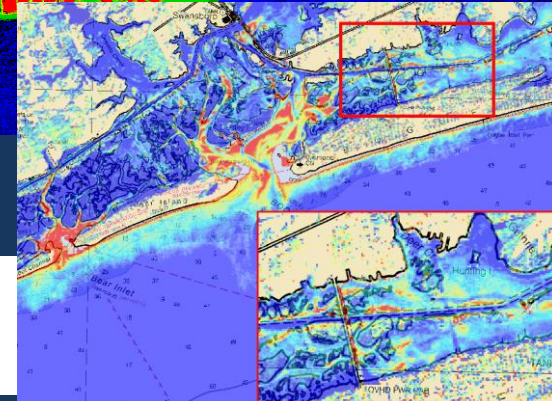
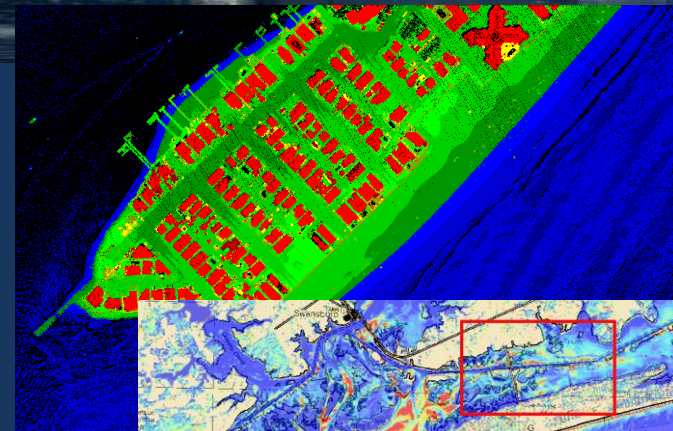
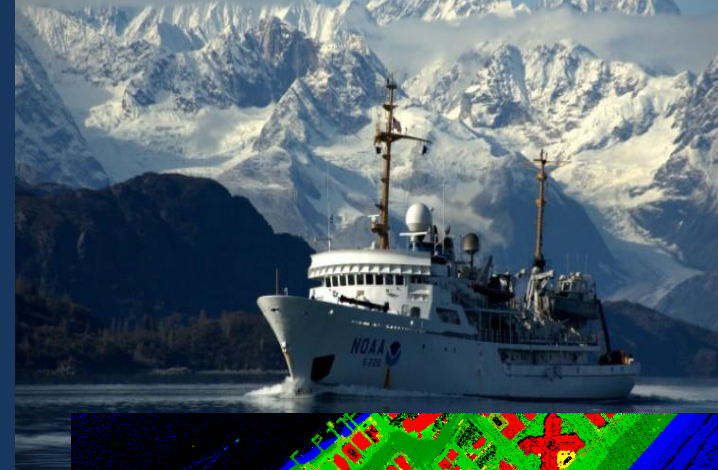
Ocean and Coastal Mapping Integration Act of 2009

Why coordinate & collaborate on Data Acquisition?

- Avoid costly duplication of effort
- Maximize survey time
- Meet science & mission requirements
- R&D on technology, techniques

IOCM:

- Identifies mapped areas
- Improves planning
- Enables cross-agency collaboration



NOAA

INTEGRATED OCEAN AND
COASTAL MAPPING (IOCM)
UNITED STATES DEPARTMENT OF COMMERCE

Why manage data?

- Enable Agency missions 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



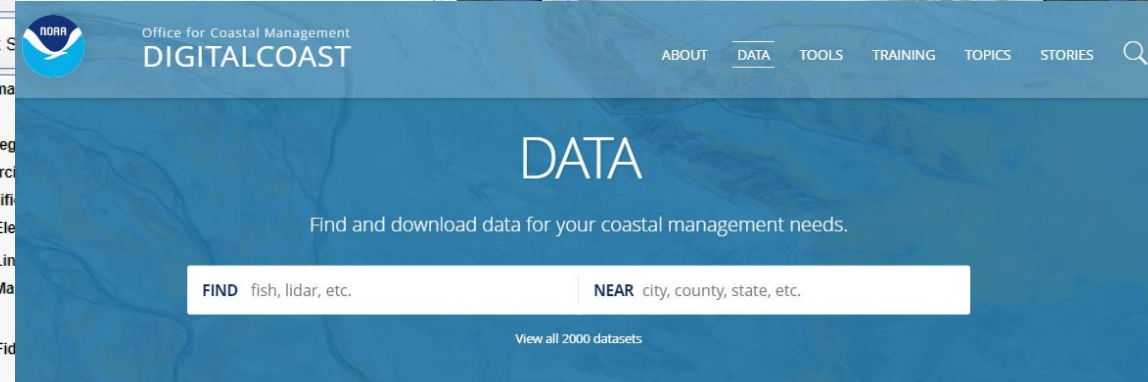
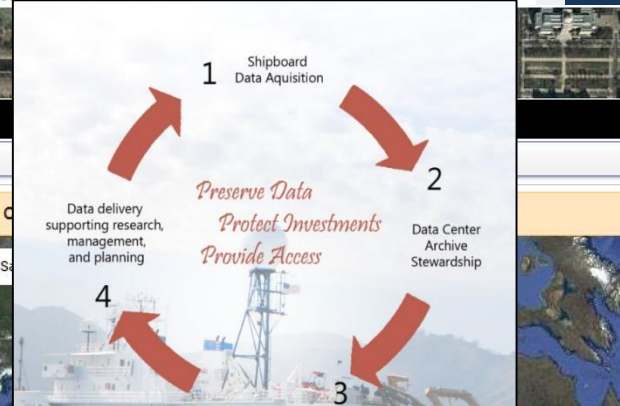
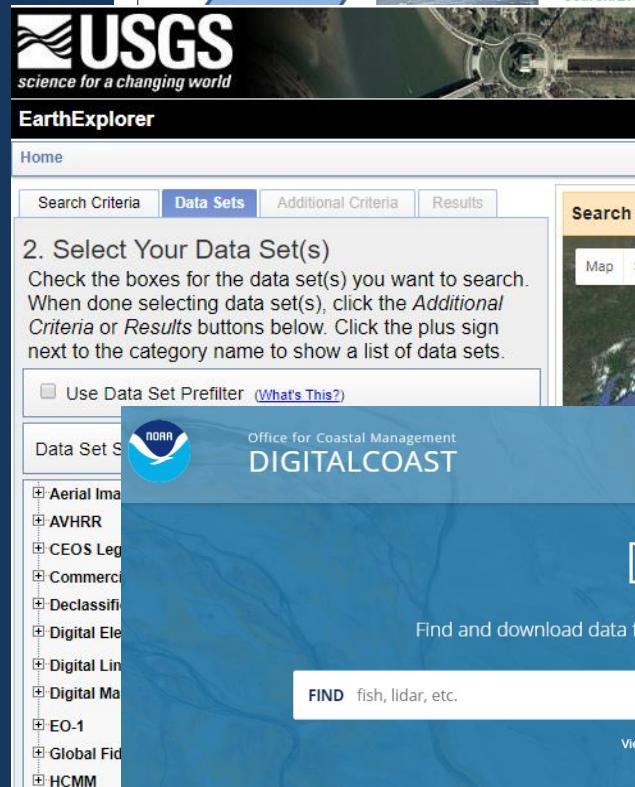
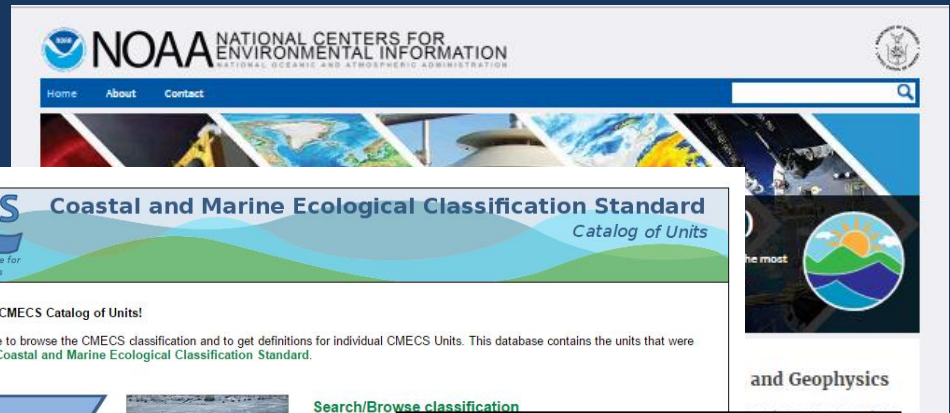
NOAA

INTEGRATED OCEAN AND
COASTAL MAPPING (IOCM)
UNITED STATES DEPARTMENT OF COMMERCE

*“Map Once,
Use Many Times”*

Data Stewardship, Access

- National Centers for Environmental Information
- Digital Coast
- Earth Explorer
- Rolling Deck to Repository
- Coastal and Marine Ecological Classification Standard
- Crowd-sourced Bathymetric Database



Why re-use data?

- Scientifically sound decisions require data
- Data expensive to collect
- Scientific data management is cost-effective
 - 3-month study, 2000% return on investment
- IOCM:
 - Ensures data are available
 - Enables use/re-use of data
 - Supports scientific and management missions

MarineCadastrre.gov
Maps Data Uses Tools News About
An Ocean of Information
A joint BOEM and NOAA initiative providing authoritative data to meet the needs of the offshore energy and marine planning communities.

United States Interagency Elevation Inventory
IDENTIFY BASEMAP SHARE
TOPONOMIC BATHYMETRIC CLEAR
HIDE LAYERS HELP

NOAA ENC Direct to GIS
Office of Coast Survey
Home | How-To | FAQ | Contact Us

PURPOSE
ENC Direct to GIS allows users to display, query, and download all available base editions of NOAA ENC® data in a variety of GIS/CAD formats, using Internet mapping service technology. Nautical chart features contained within a NOAA ENC provide a detailed representation of the U.S. coastal and marine environment. The data, updated weekly, is organized using S-57 object classes. Features in a single NOAA ENC are limited in that they only represent the geographic region that is depicted in that particular NOAA ENC cell. By aggregating nautical features from all NOAA ENC in the creation of GIS data, a continuous depiction of the U.S. coastal and marine environment is achieved.

THREE SEARCH OPTIONS:

- ◆ **Graphical Interface**
Learn about the new graphical interface:
[Find out what enhancements are available in version 10.1!](#)
All object classes that are available in ENC Direct to GIS can be viewed and extracted in a variety of GIS/CAD formats. The download function is designed to provide seamless data in the geographic region of your view frame. If a feature extends beyond the view frame, the feature is clipped and exported to reflect what is in the view.
- ◆ **Textual Extraction Form**
If you know the layers and the bounding box of the area you wish to obtain, use this extraction form to obtain your information.
- ◆ **Theme Layers**
Six specific theme layers can be viewed or obtained for the entire United States.

Caution Note: The ArcGIS 10.1 server has known issues with the extraction tools that may cause a failure in obtaining data. Recommend selecting multiple smaller areas rather than one large area when extracting coastal features. If you need assistance in obtaining ENC data for your GIS project please send an inquiry and we will work with you on obtaining the dataset.

Please let us know if you have any comments, questions, or concerns by [submitting an inquiry](#). We will respond as soon as possible.

User Survey | Privacy Policy | Disclaimer | NOAA's National Ocean Service | NOAA | U.S. Department of Commerce
Web site owner: NOAA Office of Coast Survey



NOAA

INTEGRATED OCEAN AND COASTAL MAPPING (IOCM)
UNITED STATES DEPARTMENT OF COMMERCE

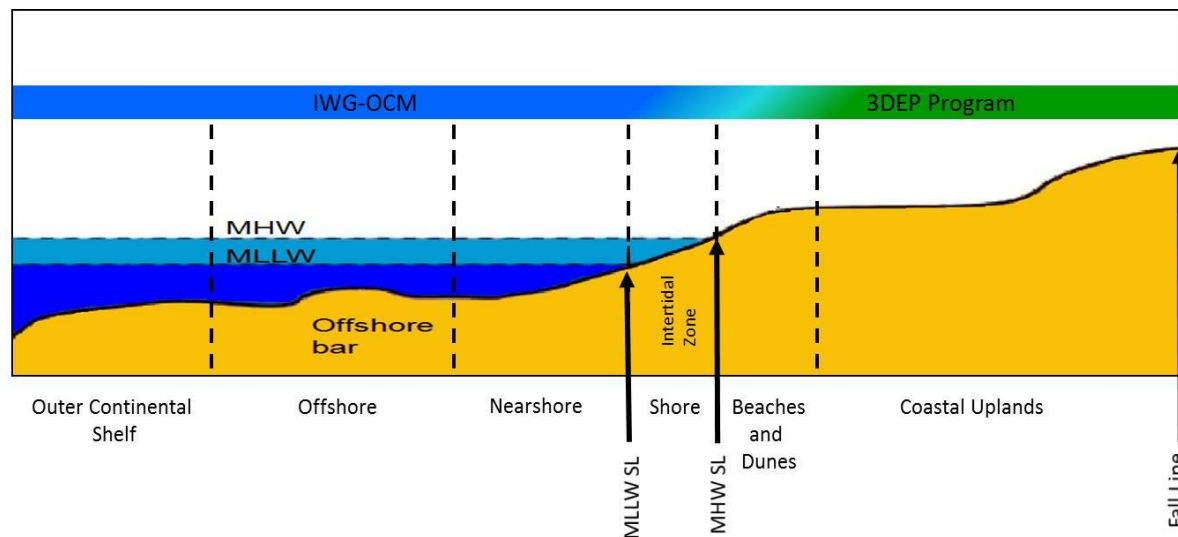
*“Map Once,
Use Many Times”*

National Coastal Mapping Strategy 1.0

Coastal Lidar Elevation for a 3D Nation

Components:

- Regional Coastal Mapping Summits for coordination
- Common standards – Bathymetry Quality Levels aka 3DEP topo QL's
- Whole life cycle approach to data
- R&D on new tools/techniques for data collection and use.

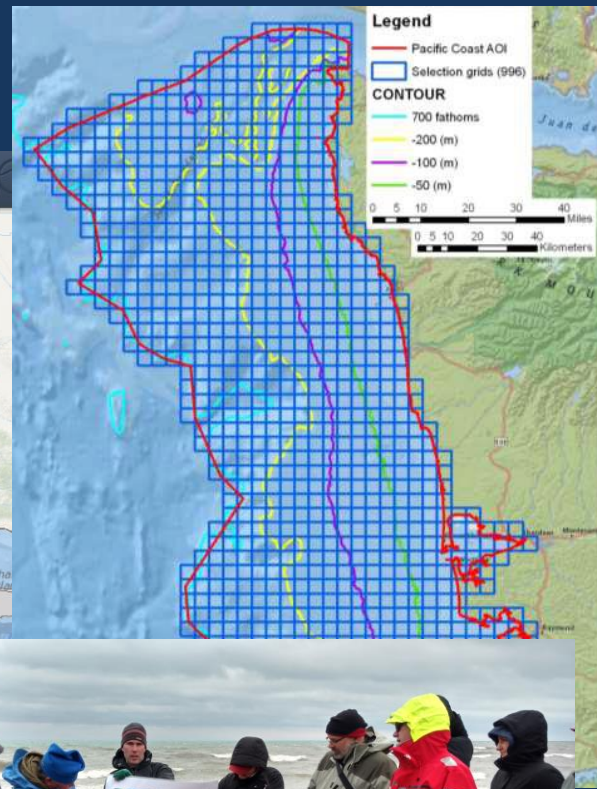
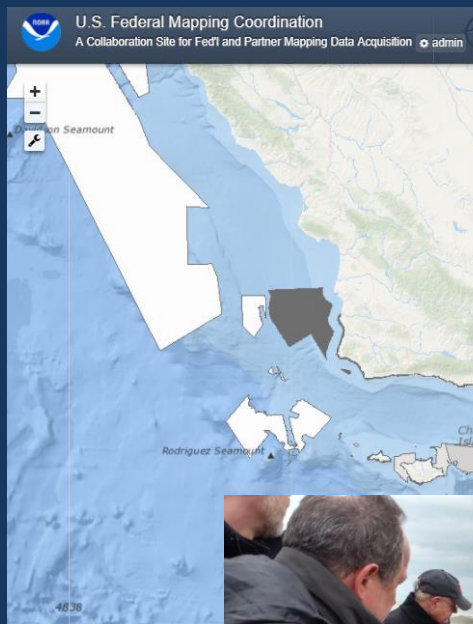




INTERAGENCY WORKING GROUP ON Ocean and Coastal Mapping

Regional/State Summits

- JALBTCX meetings -- national (Mobile 2014, Corvallis 2015)
- California 2014
- Washington 2014, 2016, 2018
- Northeast 2015, 2016, 2018
- Alaska 2016, 2018
- Great Lakes 2017
- Southeast 2016, 2018
- Florida 2018
- Gulf 2018





Florida Coastal Mapping Program

Vision

Accessible, high resolution seafloor data of Florida's coastal waters to support infrastructure, benthic habitat mapping, restoration projects, resource management, emergency response, and coastal resiliency and hazard studies for the citizens of Florida.

Mission

Coordinate across Federal and FL State agencies, academics, NGOs, and other stakeholders to evaluate the state and quality of existing data, establish and implement a prioritization for new data collection, and develop and implement a strategy to create a seamless, modern, high resolution topo-bathymetric map for Florida's coastal waters from the shoreline to 200m water depth within 10 years.



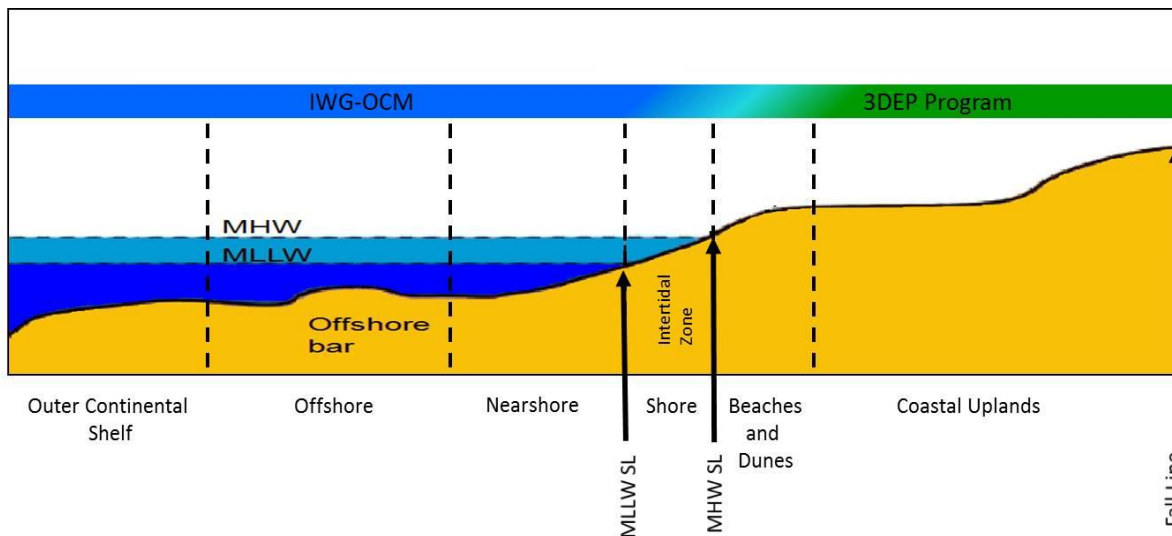
COORDINATOR

National Coastal Mapping Strategy 1.0

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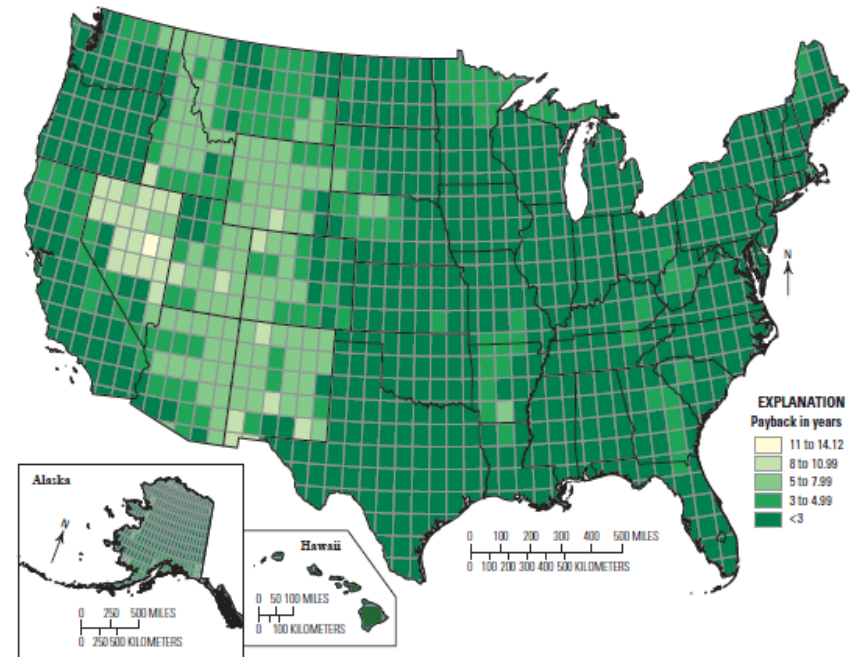


3D Nation?
Refresh cycle?
ROI?
NEEA-like study?

National Enhanced Elevation Assessment (NEEA)

A comprehensive inventory of user requirements and benefits for elevation data

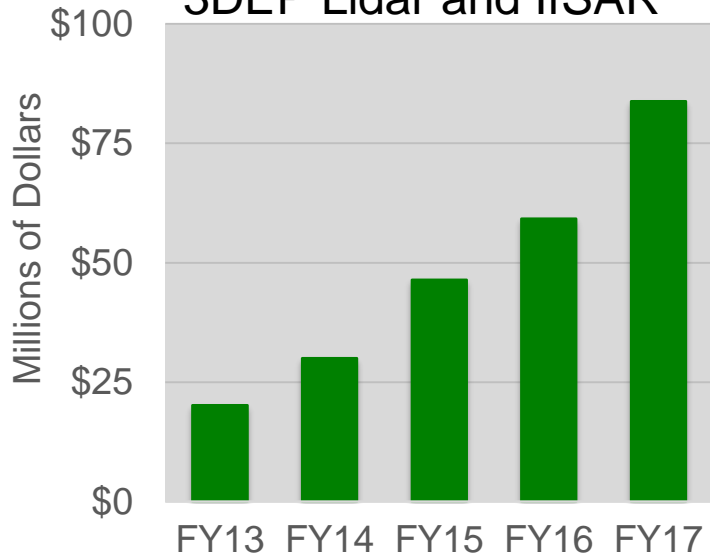
- Conducted in 2010 – 2012
- Data collection
 - 34 Federal Agencies
 - 50 States
 - Local Government, tribal, private, not-for-profits
- Results
 - 602 Mission critical activities that need significantly better data than are currently available
 - Between \$1.2 billion and \$13 billion in benefits annually
 - Increases in President's budget in FY14-17
 - <http://nationalmap.gov/3dep>



3DEP Growth - Partnerships To Date

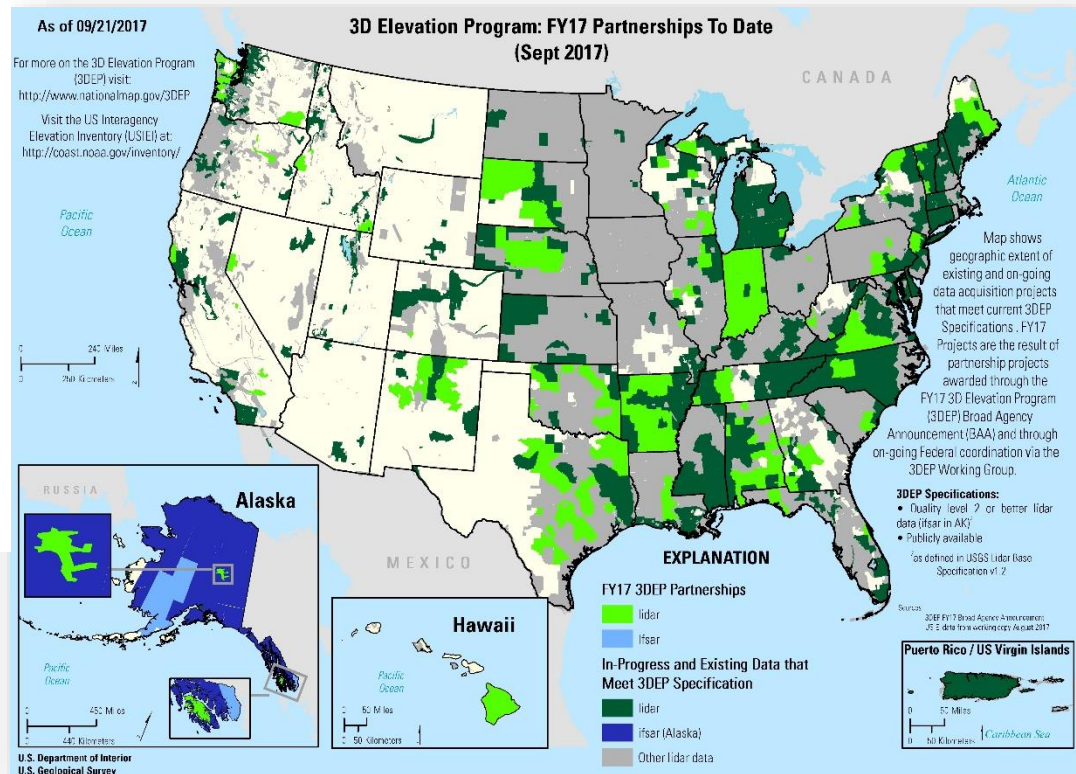
Strong coordination and increasing investments (FY13-17)

3DEP Lidar and IfSAR



- Between FY13 and F17, 3DEP data (lidar and IfSAR) have been contracted for 37% of the entire US
- Alaska IfSAR – 92% of state available or in work to date in FY17

Map shows lidar from FY13 – FY17



In FY17, 3DEP data have been contracted for 11.4% of the Nation

Updating User Requirements and Benefits for 3DEP



- Be able to assess new technologies against user requirements and identify the tradeoffs between different approaches
- Plan for the next round of 3DEP after nationwide coverage has been completed
- Improve our understanding and data about requirements and benefits at the state level for the existing and future program
- Improve our understanding of needs to guide development of the next generation of 3DEP Products and Services

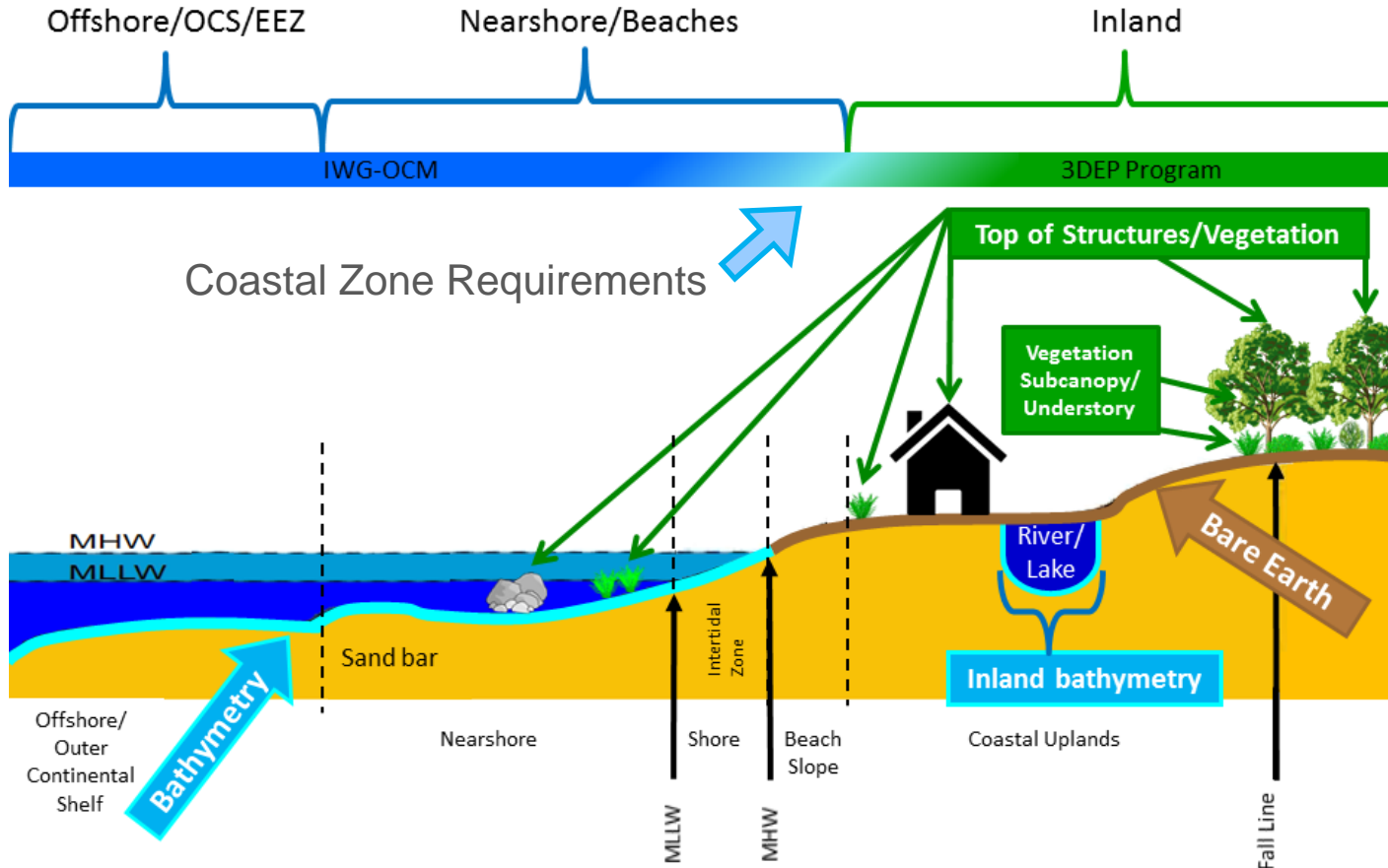
Mapping a 3D Nation: Requirements and Benefits Study Goals

Understand 3D Data Requirements

- Refresh NEEA for the years beyond the initial 8-year acquisition program
- Understand inland, nearshore, and offshore bathymetric data requirements and benefits
- Understand how requirements and benefits dovetail in the coastal zone
- Sensor agnostic/Technology Neutral
 - Focused on need for, and value of, elevation data

3D Nation Study Context

Inland, Nearshore, Offshore and Topo, Bathy, Topo/Bathy



Technology Neutral Approach

+ Study Phases Timeline



Study Preparation (7 months)

Study Design

Questionnaire Development

OMB Approval

Initial Data Collection (6 months)

Identify Fed POCs/
State Champions

Questionnaire Open

Summary Reports
for Interviews

Data Validation (6 months)

Conduct
Interviews

Validate Interview
Results (Reports &
Geodatabase)

Aggregate/ Report (3 months)

Aggregate Benefits
by Business Use

Final Report &
Geodatabase

Analysis/ Development (6 months)

Develop Program
Scenarios

Analyze Benefit/Cost
and ROI

Determine Program
Direction

9/2017 – 3/2018

1/2018 – 6/2018

7/2018 – 12/2018

1/2019 – 3/2019

4/2019 – 9/2019

2017

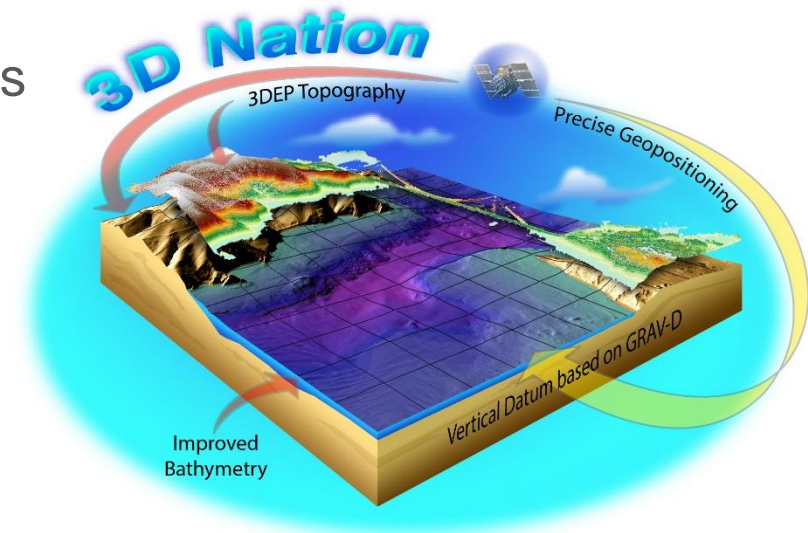
2018

2019

3D Nation Stakeholders

Federal, State, Local, Non-Profit, Private, & Academia

- Federal departments and agencies
- Federal commissions or committees
- 50 states plus D.C. and territories
- Local, regional, and Tribal stakeholders
- Non-profits
- Private/commercial
- Academia



State Agency Participant Types

- Archaeology/cultural heritage
- Biological survey
- Coastal resource management/Coastal zone management
- Economic and community development
- Emergency management
- Energy
- Environmental protection/management
- Fisheries management/aquaculture
- Forestry/rangeland management
- Geology
- GIS
- Habitat management
- Mining
- Natural resources/conservation
- Oil and gas
- Permitting/planning
- Recreation
- Regulatory
- State university
- Transportation
- Water management/resources
- Water quality
- Wildlife management

State Champions will help identify participants

Local and Regional Participant Types

- Tribal entities
- Local government agencies
- Integrated Ocean Observing System (IOOS) regional associations
- Metropolitan and/or regional councils/districts
- Port authorities
- Regional commissions or councils
- Scientific and research organizations
- Non-profits

What We Need Your Help With

- Take the survey
- Get the word out to your colleagues and associates
- Identify study participants and their contact information
- Help with questionnaire – invitations and follow ups with non-respondents if needed
- Participate in follow up interviews/workshops
- Help gain consensus on responses
- Review and sign off on validated responses



U.S. Federal Mapping Coordination Site

- IWG-OCM and 3DEP agencies are using Seasketch tool to share info on acquisition plans, data needs, coordination
- Additional tools available for use – forums, sketching

The screenshot displays the U.S. Federal Mapping Coordination Site interface. At the top, the NOAA logo is on the left, followed by the text "U.S. Federal Mapping Coordination" and "A Collaboration Site for Fedl and Partner Mapping Data Acquisition" with an "admin" link. The "seasketch" logo is in the center. On the right, there are links for "English", "take a tour", "? help", and a user profile icon.

The main map area shows the North Pacific region, including the East Siberian Sea, Chukchi Sea, Bering Sea, Aleutian Basin, Aleutian Trench, and Gulf of Alaska. The map is overlaid with various data layers, including red and blue hatched areas, green lines, and blue dots. A search bar on the left side of the map contains the text "East Siberian Sea".

On the right side, there is a "Data Layers" panel with a "My Plans" tab. Below the tabs are buttons for "Data Layers", "Basemap", and "Legend &". A search bar for layers is present with the text "Search layers by name or keyword".

The "Mapping Priorities: Proposed" section includes the following items:

- Topographic Lidar 3DEP Areas of Interest
- Topobathymetric Lidar Areas of Interest
- Acoustic/Sonar (bathy, etc.) Areas of Interest
 - Marine Protected Areas - Inventory
- Federal
- State/Local/Academic/Other Interest Areas
- Digital Imagery (in conjunction with Topo/topob)
- Other (eg. HTEM, DEM, CSCAP, EPA NCCA)

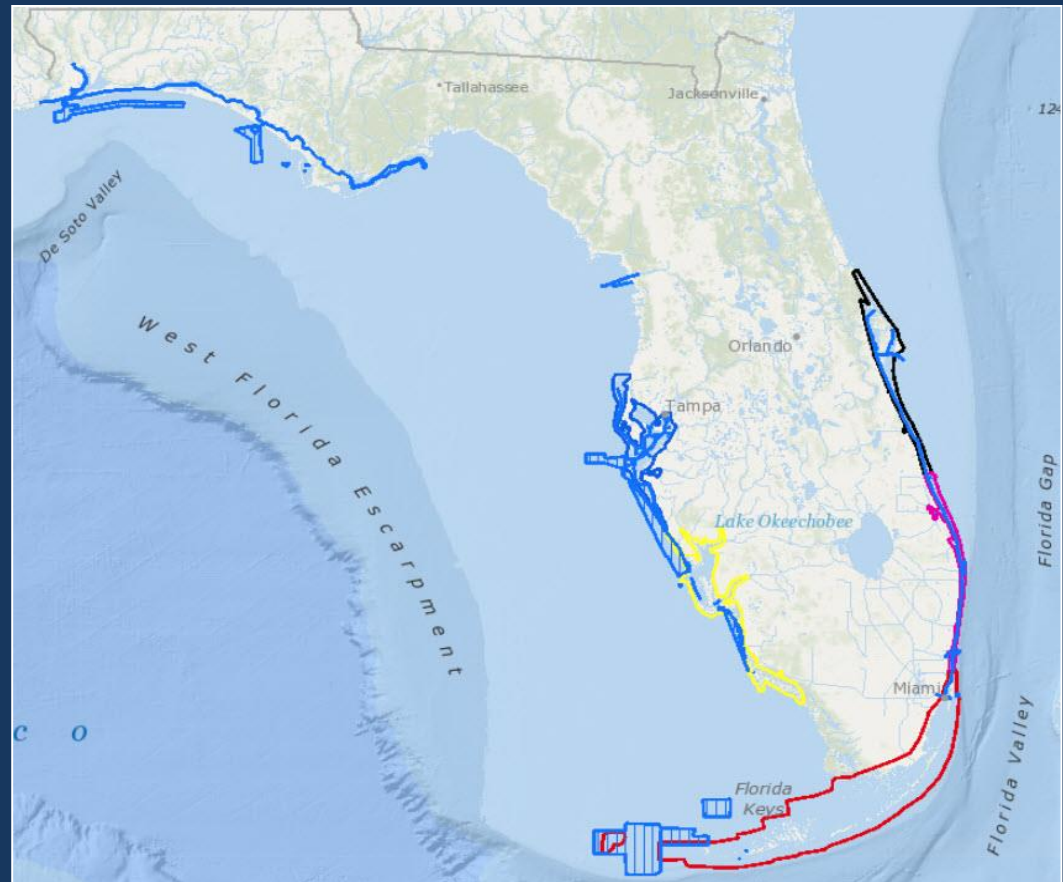
The "Mapping Projects: Planned (Funded) and Ong" section includes the following items:

- Topographic Lidar
- Topobathymetric Lidar
- Acoustic/Sonar (Hydro, Bathy, Water Column, etc.)
- Digital Imagery
- Other (eg. HTEM, DEM, CSCAP, EPA NCCA)
- NOAA FY16-17 Fleet Allocation Plans
 - NOAA OCS Survey Plans 2018-20
 - GOM Hypoxia Monitoring Cruise FY16-17
 - FY17 CCMA NY
 - NOAA P18 Pacific Ocean Cruise FY17
 - NMML FY16

Hurricane Season 2017

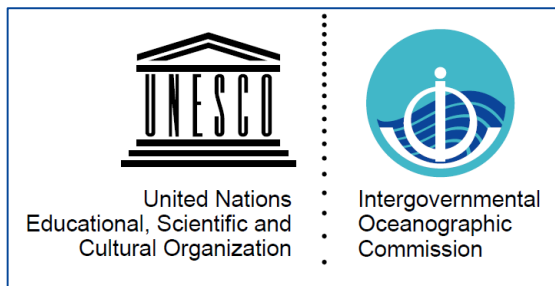
Hurricane Supplemental Funding Request-- *Pending*

- NOAA Hurricane Supplemental Funding Request pending approval through Congress
 - \$20M Pres Request
 - \$40M House Mark
- Outlined/highlighted areas in graphic represent impacted areas from Hurricane Irma and interagency priorities for mapping
- Collaborative effort involving NOAA's OCS, NGS, CO-OPS, IOOS and other partner agencies and stakeholders
- Coordinated recovery mapping effort that brings the full suite of NOAA navigation, observation and positioning capabilities to impacted areas



SEABED 2030

Seabed 2030 is a global initiative led by the General Bathymetric Chart of Oceans (GEBCO) Guiding Committee and The Nippon Foundation with the aim to facilitate *the complete mapping of the ocean floor by the year 2030.*



TARGET RESOLUTIONS

Depth range	Grid-cell size	% of World Ocean
0-1500 m	100 x 100 m	13.7
1500-3000 m	200 x 200 m	11
3000-5750 m	400 x 400 m	72.6
5750-11000 m	800 x 800 m	2.7

Feasible resolution based on state-of-the-art 2 deg x2 deg deep water multibeam installed in surface vessels, calculated at 60 degree from nadir



Bathymetric Gap Analysis



Office of Coast Survey
National Oceanic and Atmospheric Administration

HOW CAN YOU CONTRIBUTE

U.S. Mapping Agencies and Partners will be KEY:

- U.S. is responsible for U.S. waters – EEZ, shelf
- U.S. leadership recognized: Will continue mapping international unknown ocean to explore & discover
- 24 govt/research institutions, universities, businesses already participating, and this number is growing
- First big step – Discovery, sharing of existing data to fill gaps
 - Anything not already at NCEI or other accessible site
 - Agency, partner, stakeholder data with good metadata
- Agreement on, and use of, common standards
- Sharing of plans at FEDMAP and collaborative mapping campaigns to fill more gaps
- IHO Crowdsourced Bathymetry initiative



Alaska Mapping Executive Committee

Updated AMEC Charter:

New AMEC charter runs 2018 through 2022

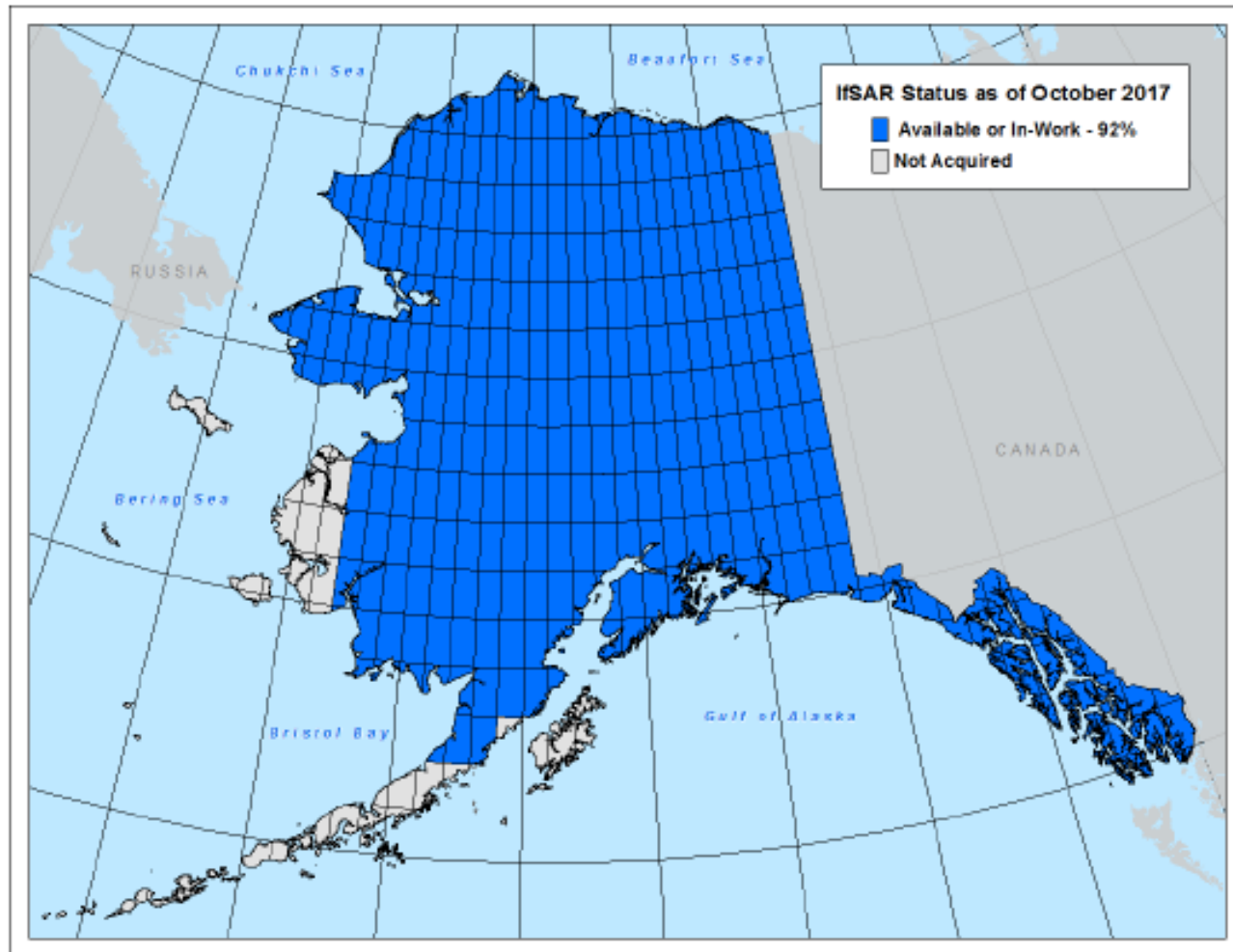
Language expanded to note additional Alaska mapping requirements that AMEC can consider in the future:

- imagery
- bathymetric mapping
- targeted lidar acquisitions
- continued improvements to hydrography
- geologic mapping
- geophysical surveys
- land classification

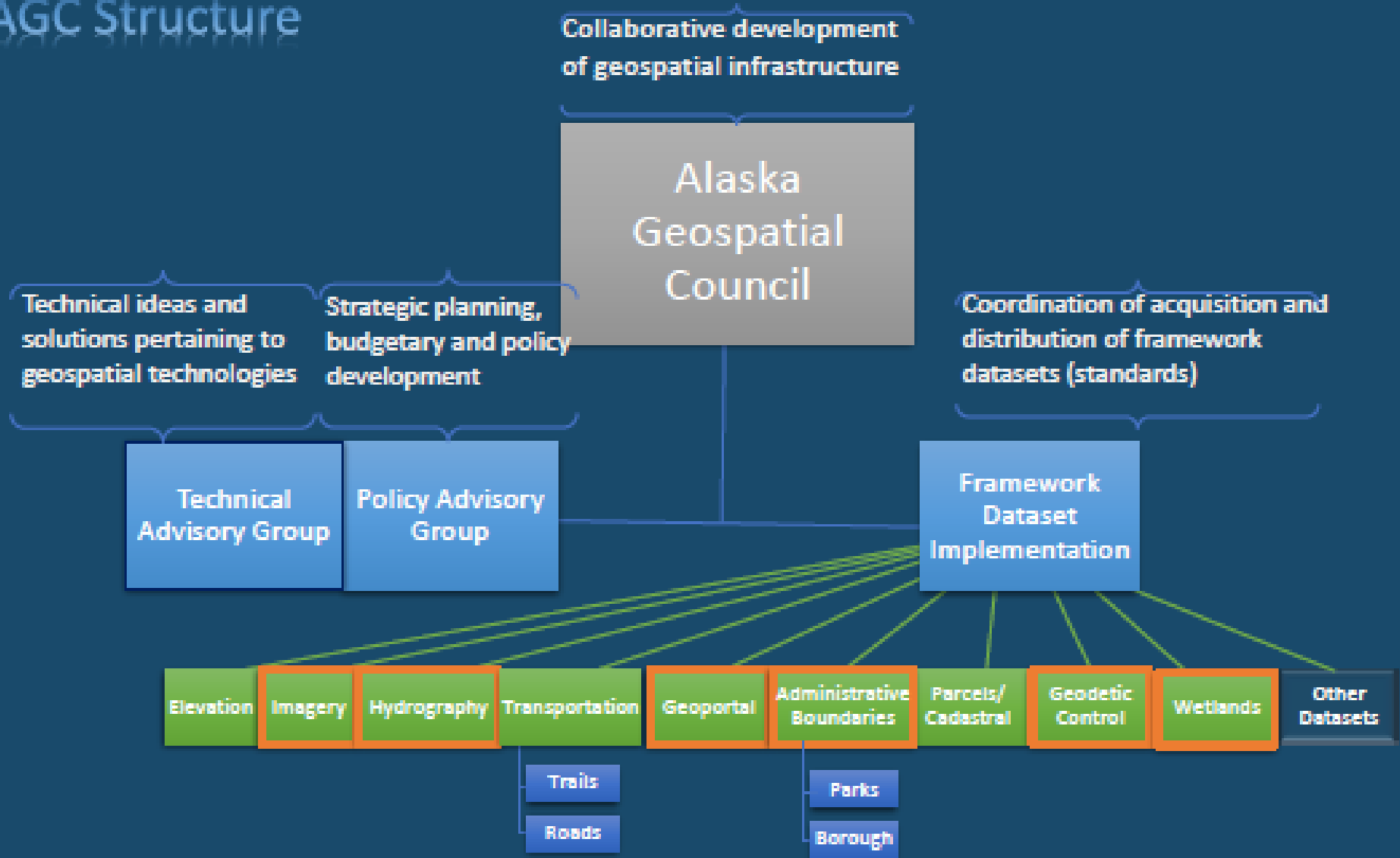
Theme	Metric	2013 Goal	October 2017 Status
Elevation	% IFSAR acquired	Complete in 4 years	92% statewide coverage achieved
Hydrography	% NHD updated	Complete in 6 years	20% updated
Transportation	% of State completed and publicly available	Complete in 5 years	Baseline AK DOT roads dataset 100% complete; ongoing maintenance
GRAV-D	% GRAV-D acquired	Complete in 2019	78.4%
Coastal Mapping	% AK shoreline updated	Complete in 5 years with budget increase, longer term if no budget increase	48.5%

Alaska IfSAR Status EOY FY2017

- 15% Statewide coverage acquired in FY2017
- 92% of the State Available or In-Work at end of FY2017



AGC Structure



Working Groups: develop strategic plans and implementation plans for data acquisition, maintenance and distribution, set data standards, and define data models. Additional working groups and subgroups can be deployed as needed. Orange border indicates groups with approved charters.

TODAY – Set Some Goals for Alaska Coastal Mapping

- 2016 Alaska Coastal Mapping Summit
- Strategist position jointly funded by State of Alaska and NOAA – Marta Kumle
- 2nd Alaska Coastal Mapping Summit (Feb 9, 2018)
- Alaska Coastal Mapping Roadmap, Strategy, Prioritization, Standards, Leveraging -- ACTION





INTERAGENCY WORKING GROUP ON
Ocean and Coastal Mapping

Questions?

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240.429.0293