

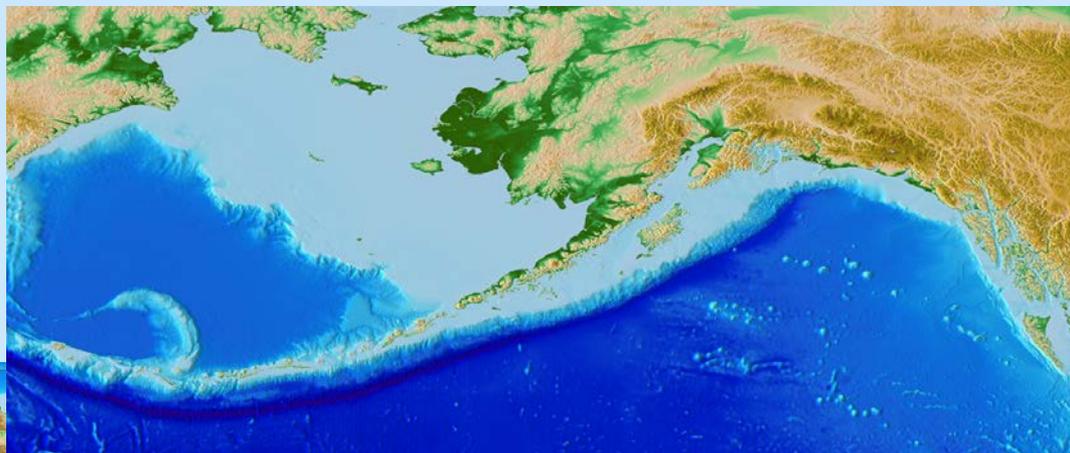
Coastal Digital Elevation Model Development at NOAA NCEI



Mike Sutherland, CIRES/NOAA NCEI
mike.sutherland@noaa.gov

Coastal DEM development at NCEI

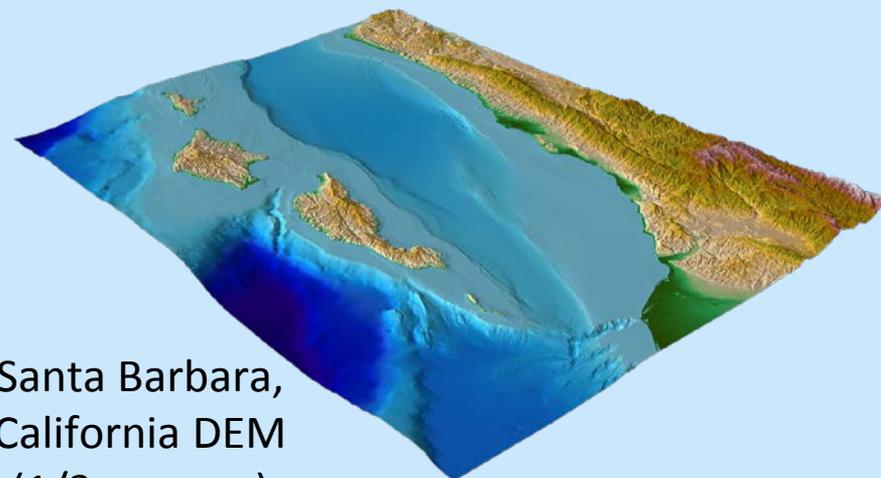
- 2006 – present
- ~200 DEMs created
- Global, **Regional & Local**



Southern AK Coastal Relief Model (24 arc-sec.)



ETOPO1 Global
Relief Model (1 arc-
minute)



Santa Barbara,
California DEM
(1/3 arc-sec.)

Public Data Discovery/Access

NOAA NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION
NGDC Coastal DEMs

Map Search

NGDC Coastal DEMs Search

Search Attributes

Name:

State:

Region:

Advanced Attributes

Status: Planned Completed

Select Project: Select Source:

Select Category: Select Type: Select Vertical Datum:

Select Horizontal Datum:

Year complete: -- Select From -- -- Select To -- (optional)

Year scheduled: -- Select Year --

DEM-specific Attributes

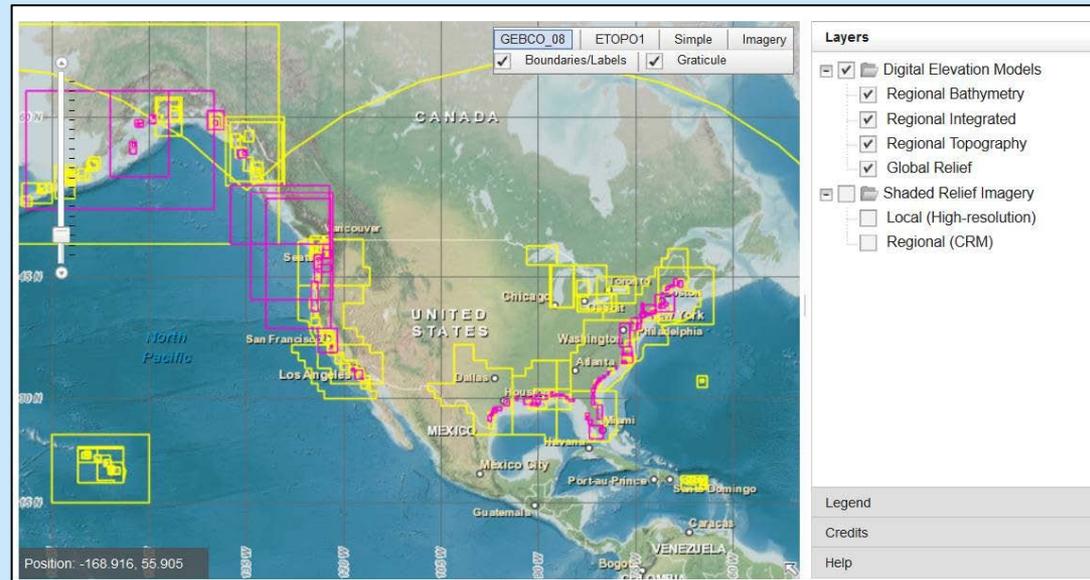
Select Cell Size:

NOAA > NESDIS > NGDC > MGG > Bathymetry & Relief

Questions or Comments: dem.info@noaa.gov

[NGDC Home](#) | [Contacts](#) | [Data](#) | [Disclaimers](#) | [Education](#) | [News](#) | [Privacy Policy](#) | [Site Map](#)

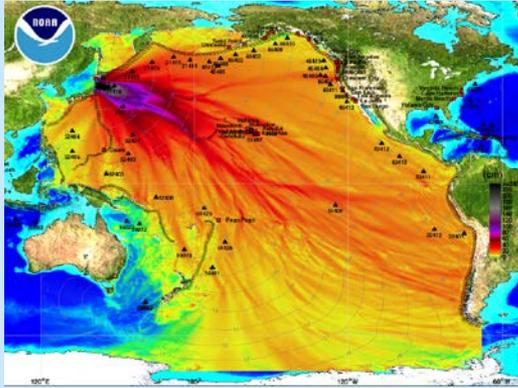
<http://www.ngdc.noaa.gov/dem/squareCellGrid/map?theme=DDP>



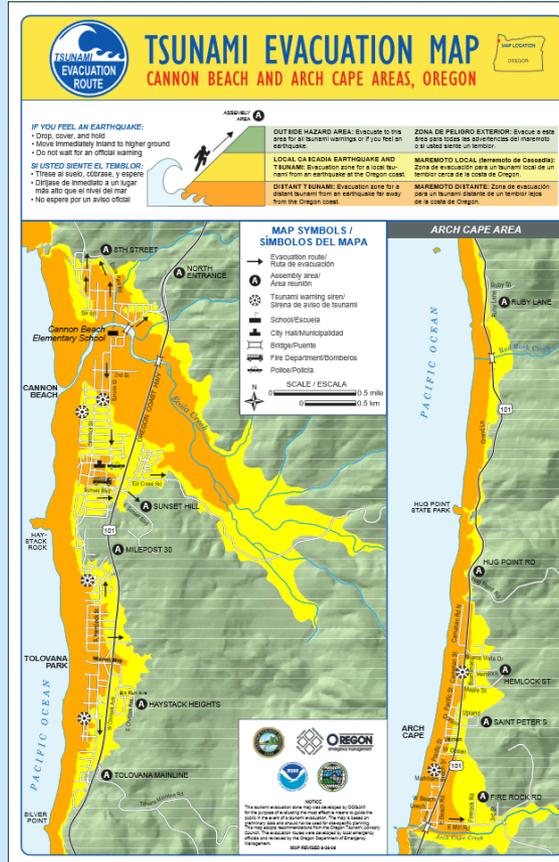
<http://www.ngdc.noaa.gov/dem/squareCellGrid/search>

All products shared with funding partners
for review then posted online for public
access

Application



Modeling
(tsunami/storm surge/circulation)



Hazards Planning

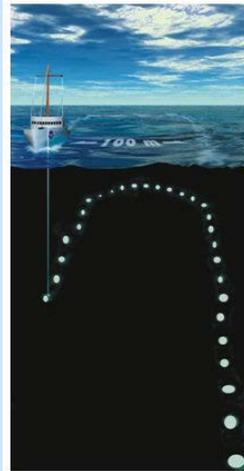


Coastal and Marine Spatial Planning



Ecosystems Research /
Habitat Conservation
Planning

Data types/Data providers



Leadline
Surveys



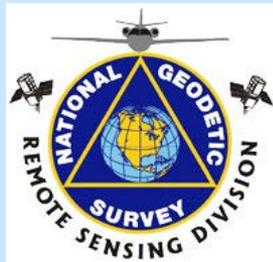
Single Beam Echo
Sounder Surveys



Multibeam Full
Bottom Coverage



Office of Coast Survey
NOAA National Ocean Service



US Army Corps
of Engineers®

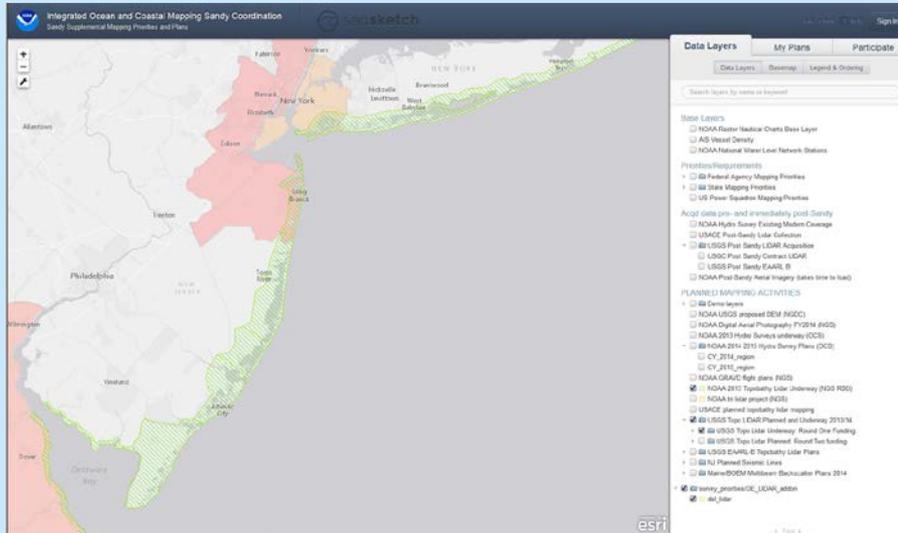
academic, state & local gov't



Cooperative Institute for Research in Environmental Sciences
UNIVERSITY OF COLORADO BOULDER and NOAA



Issues/Challenges

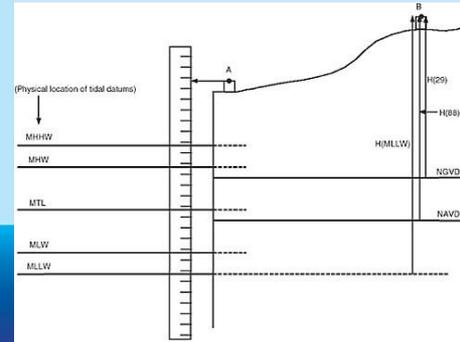
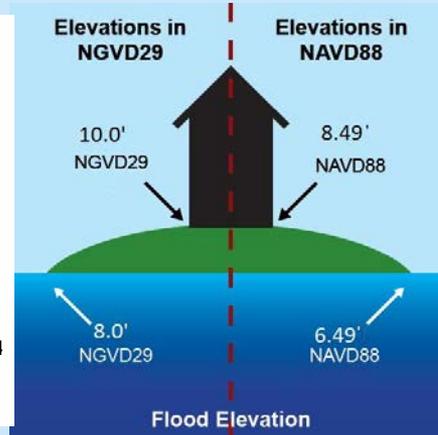
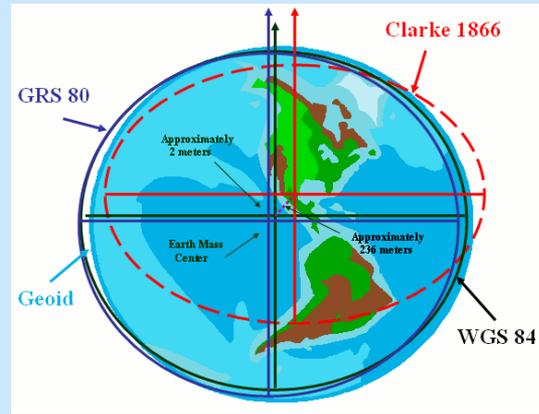


1. Data Discovery:
Where does data exist?
Status of recently acquired data?



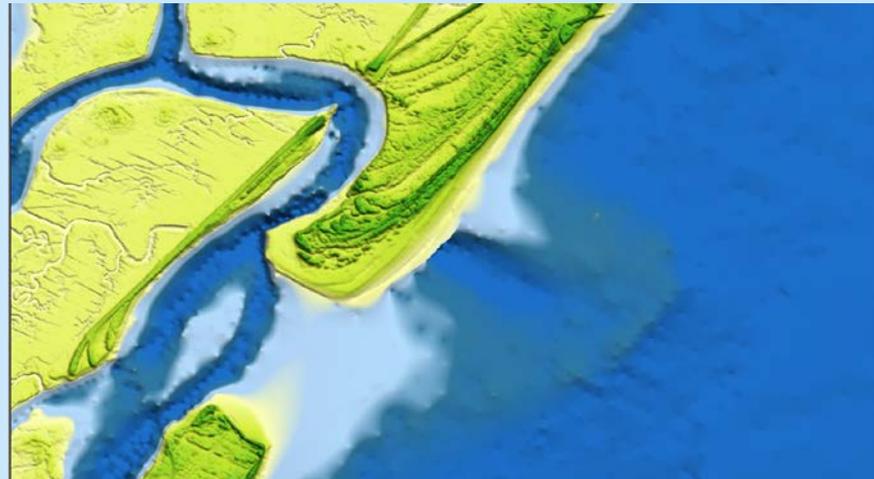
2. Timely data access:
Can we get what we need when we need it?

Issues/Challenges



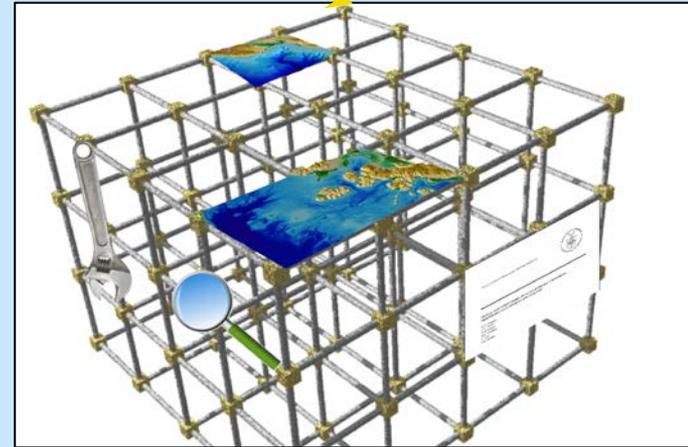
3. Disparate nature of source data: Source data is referenced to a variety of datums, projections, etc.

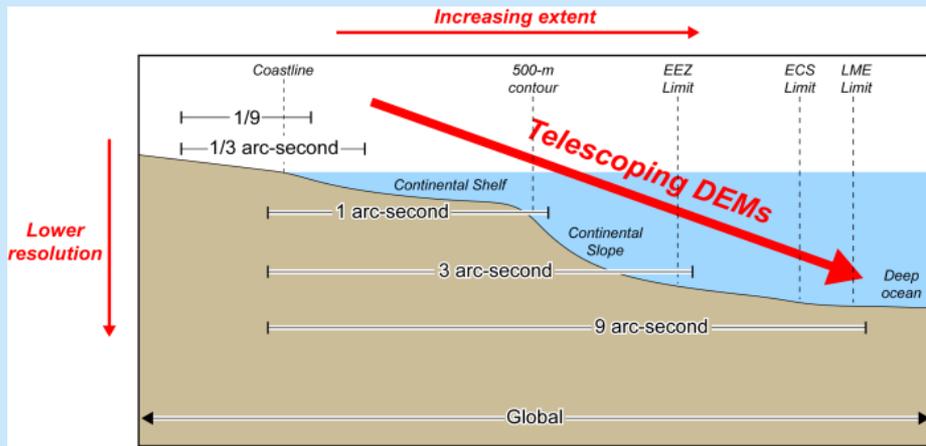
4. Legacy data: Best available data often doesn't always reflect present day morphology



Hurricane Sandy DEM project

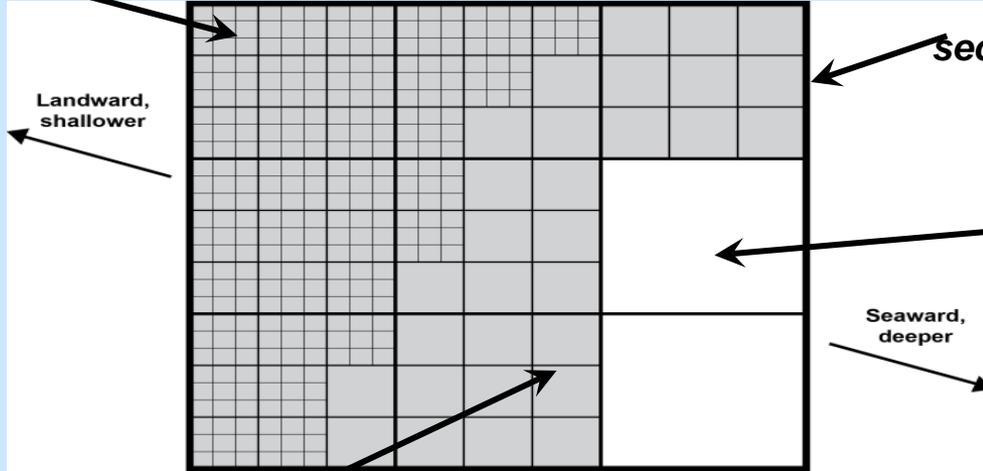
- Funded by Disaster Relief Appropriations Act of 2013 (“Sandy Supplemental”)
- Multifaceted project goals





1/9 arc-second cell

Landward, shallower



3 arc-second cell

1 arc-second cell

Seaward, deeper

1/3 arc-second cell

- Generally speaking, the “telescoping” nature of tiling scheme mimics the density of source data
- Nested tiling allows for efficient updates; updating highest resolution tile updates coincident coarser resolution data

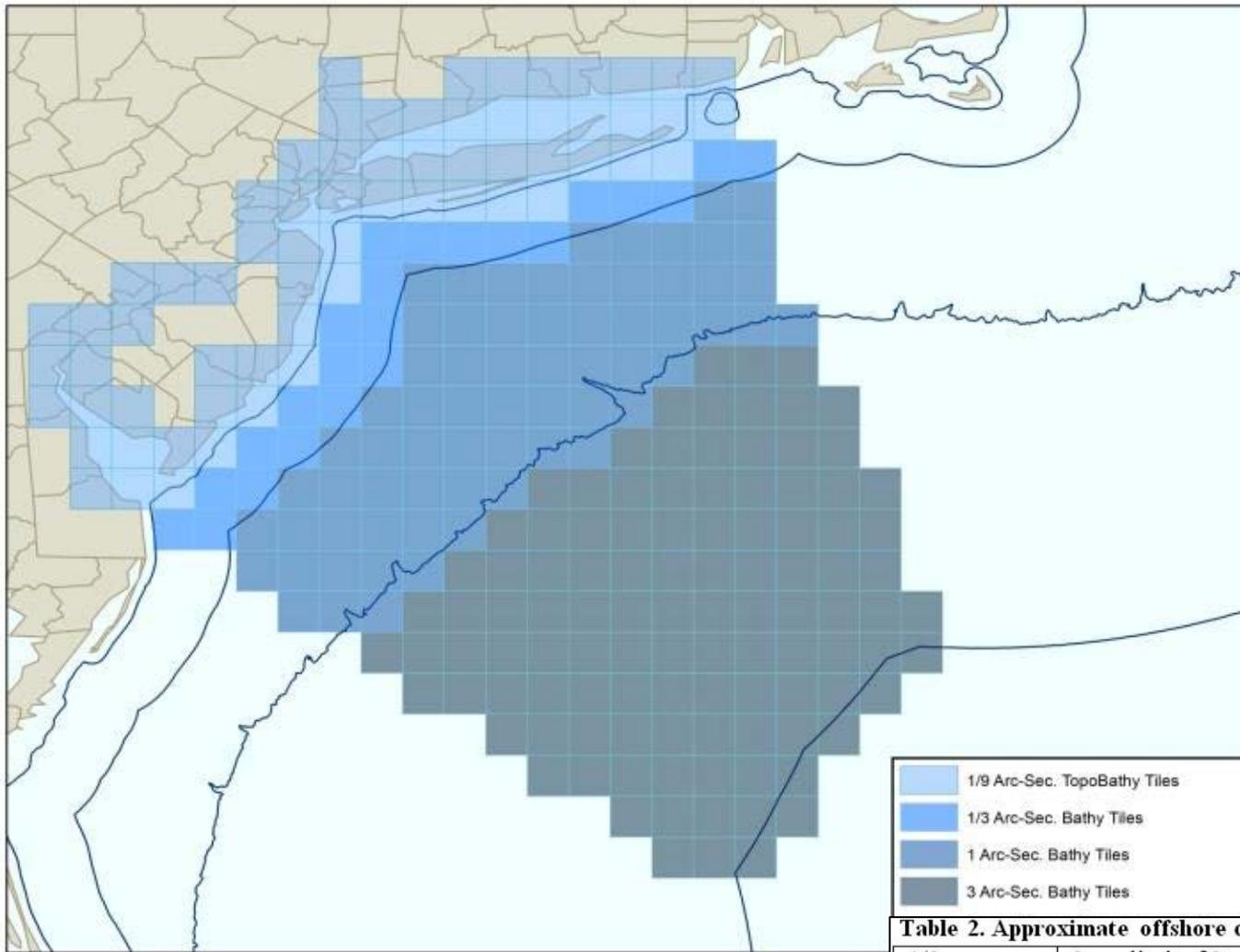
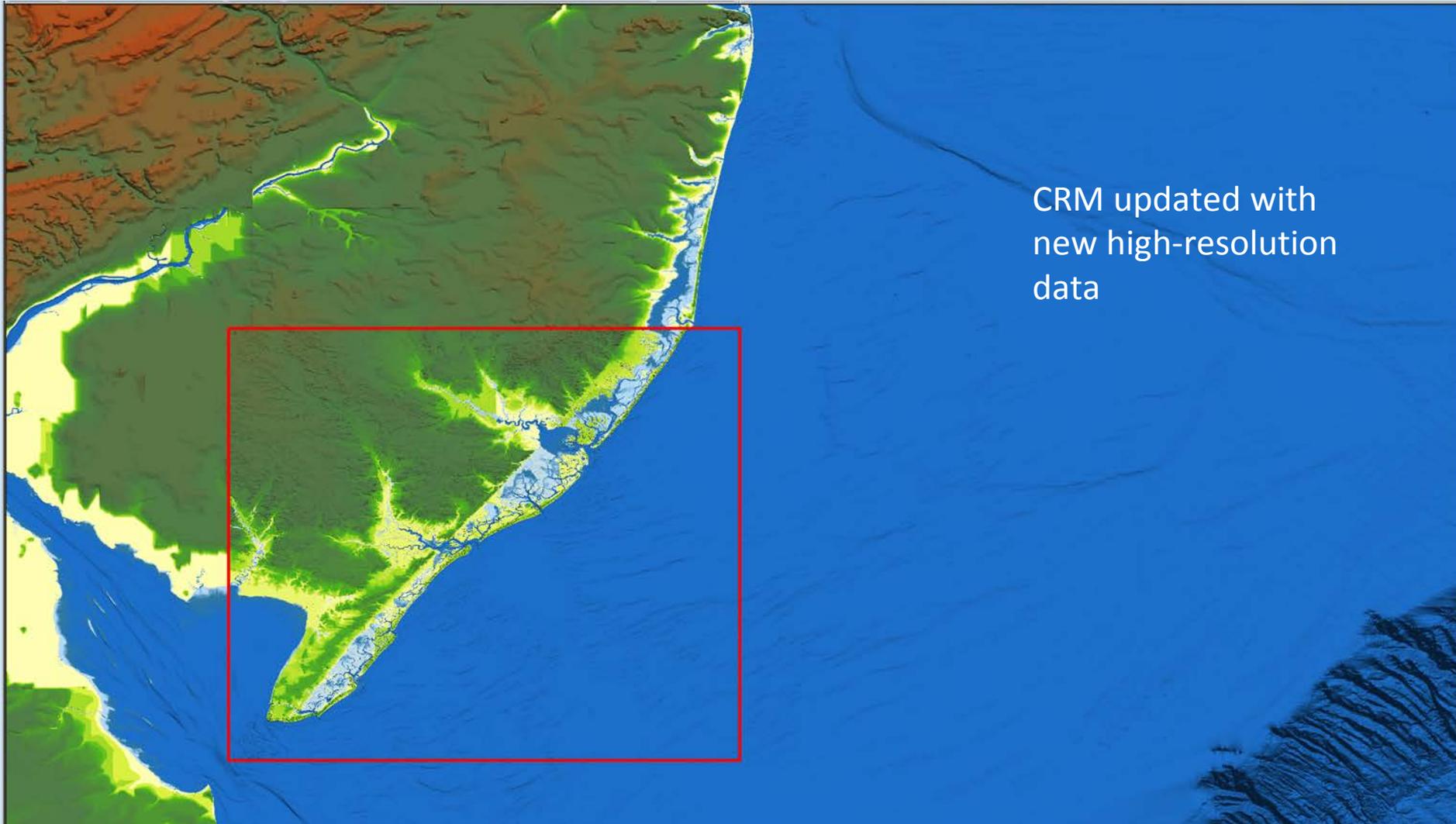
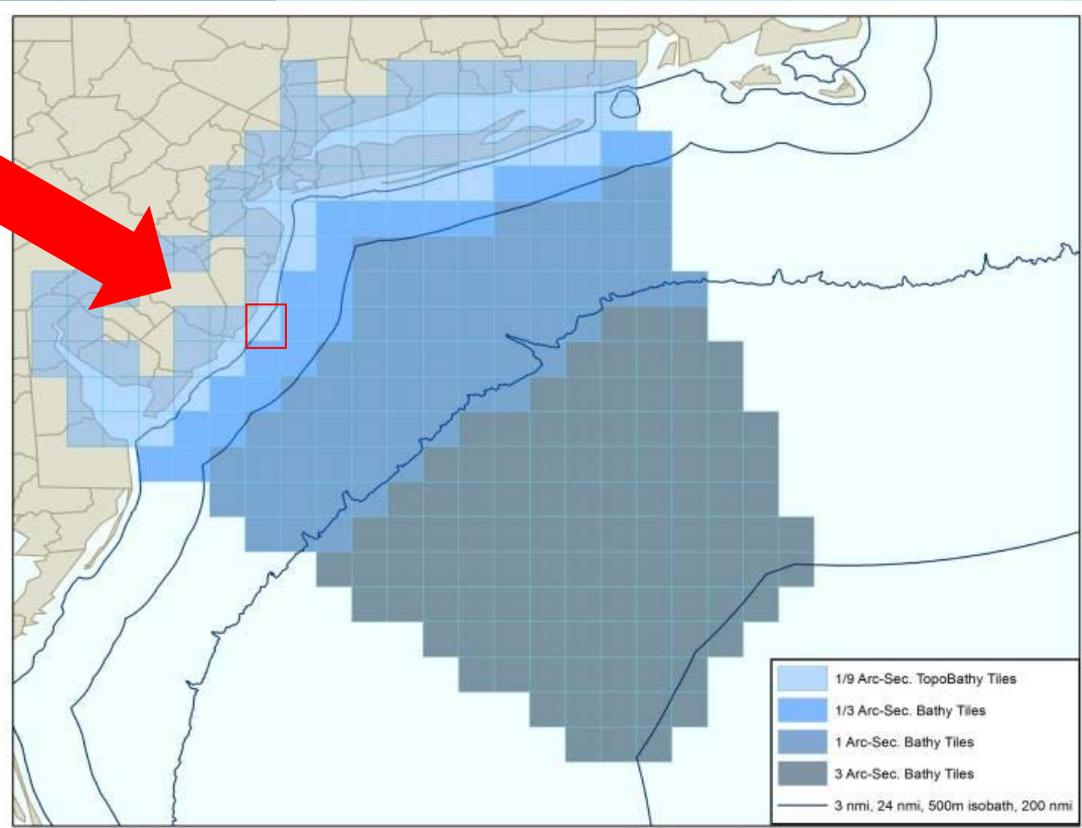
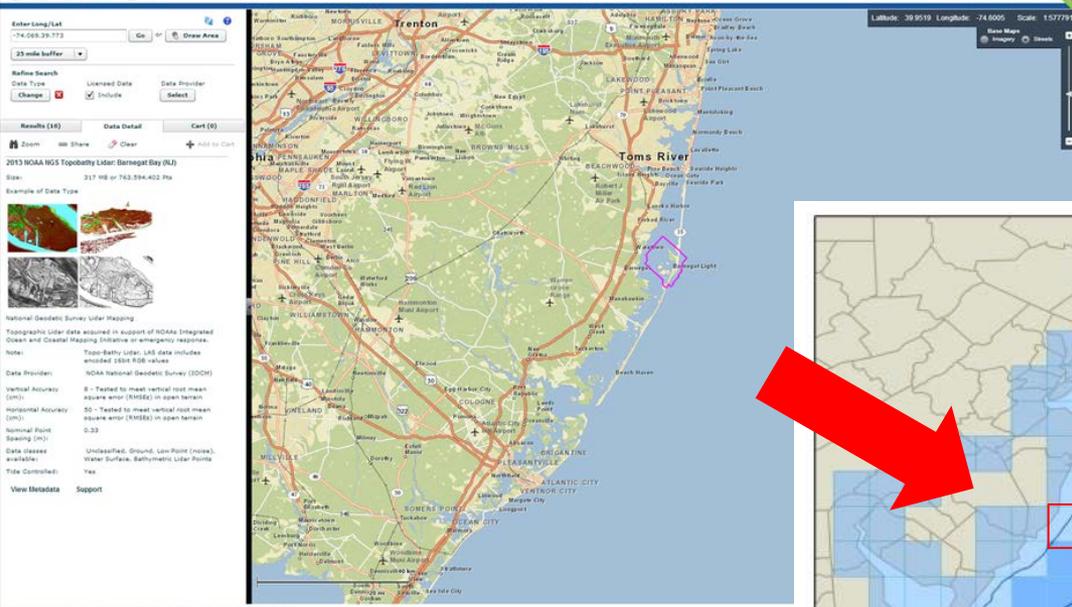


Table 2. Approximate offshore coverage of geographic DEMs.

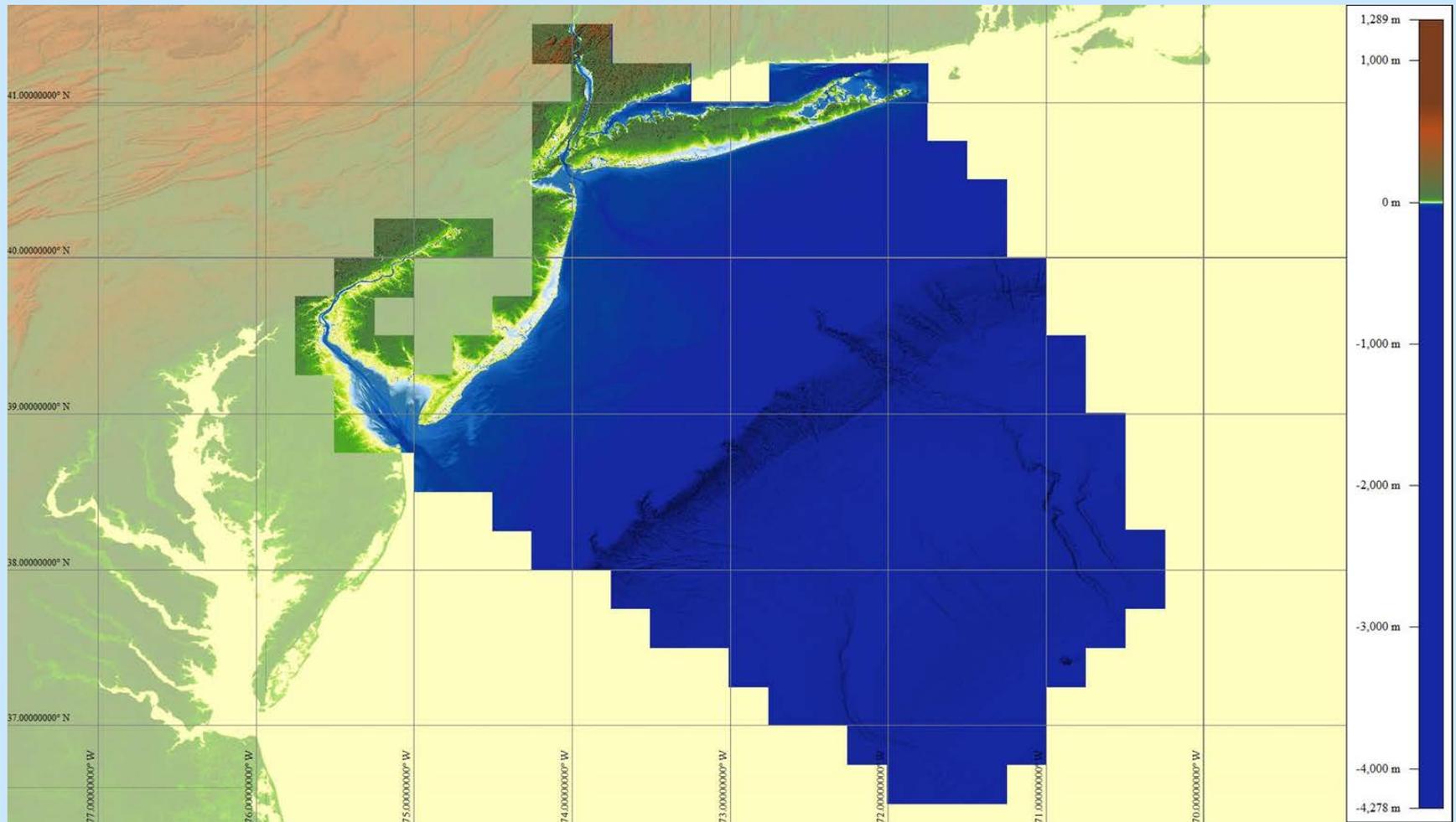
1/9 arc-sec	3 nm limit of State waters
1/3 arc-sec	24 nm limit of U.S. contiguous zone
1 arc-sec	500-m depth contour
3 arc-sec	200 nm limit of U.S. EEZ



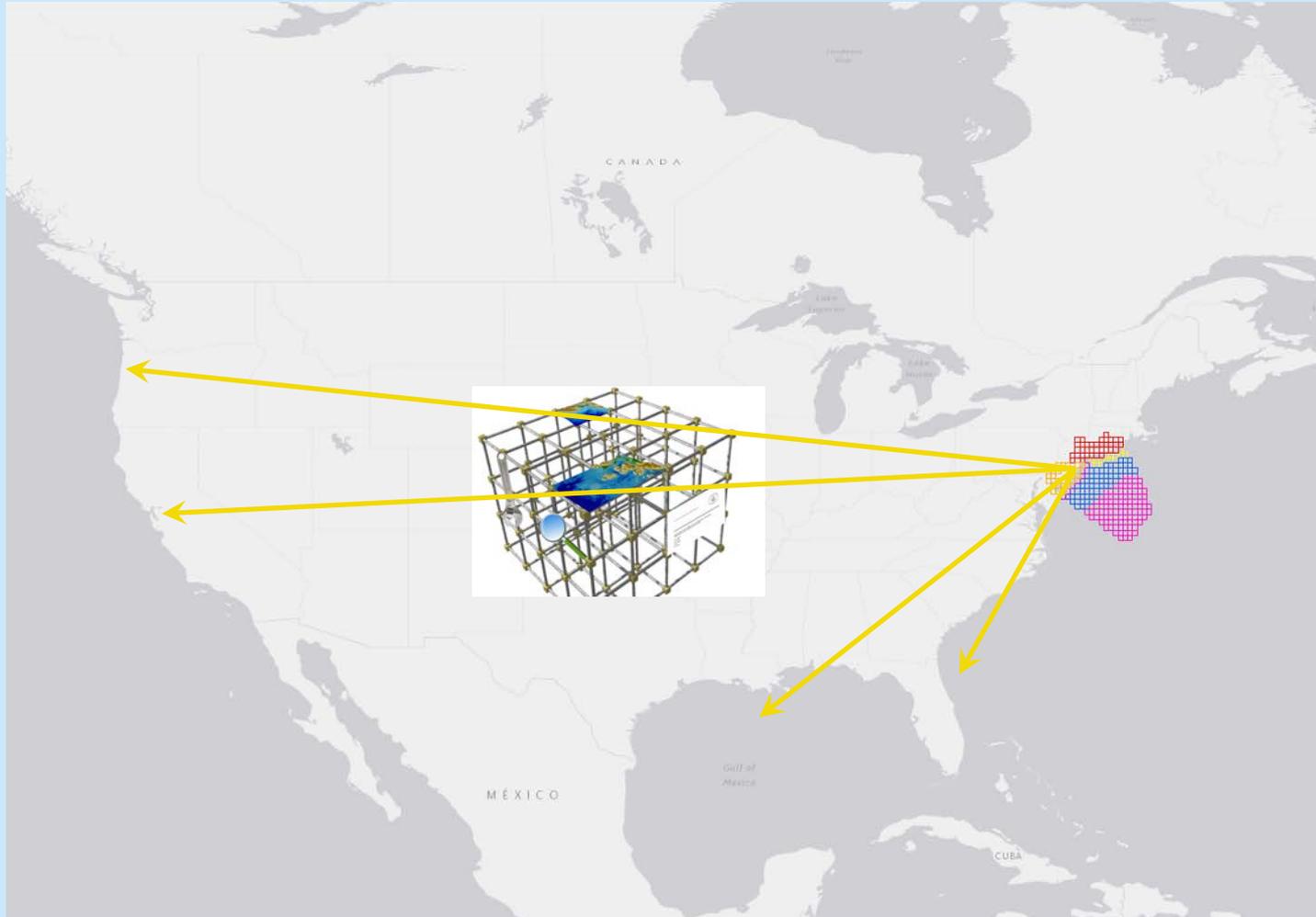
CRM updated with
new high-resolution
data



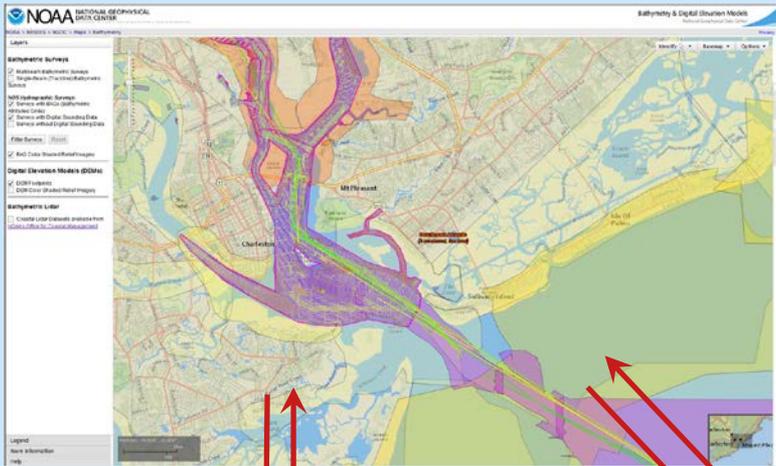
Ensures DEMs are more up-to-date



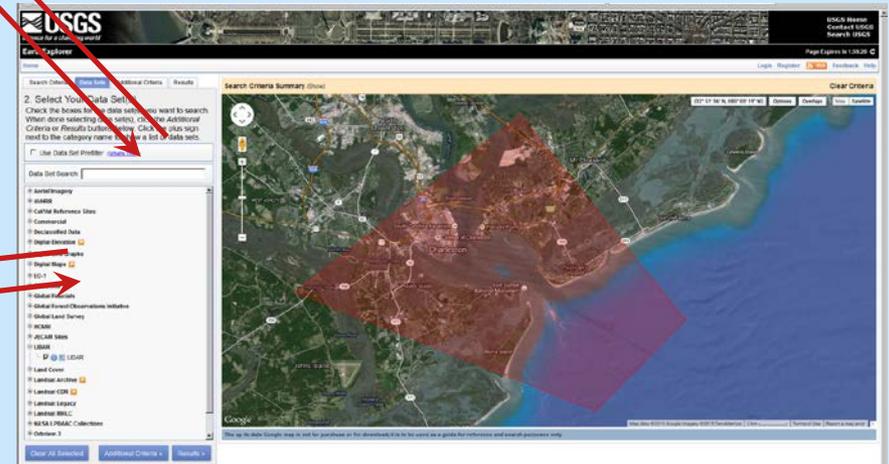
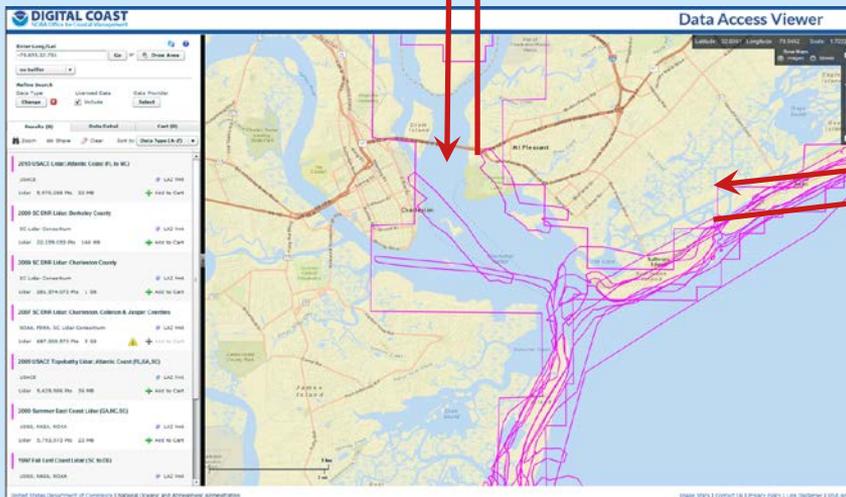
Where we want to be....

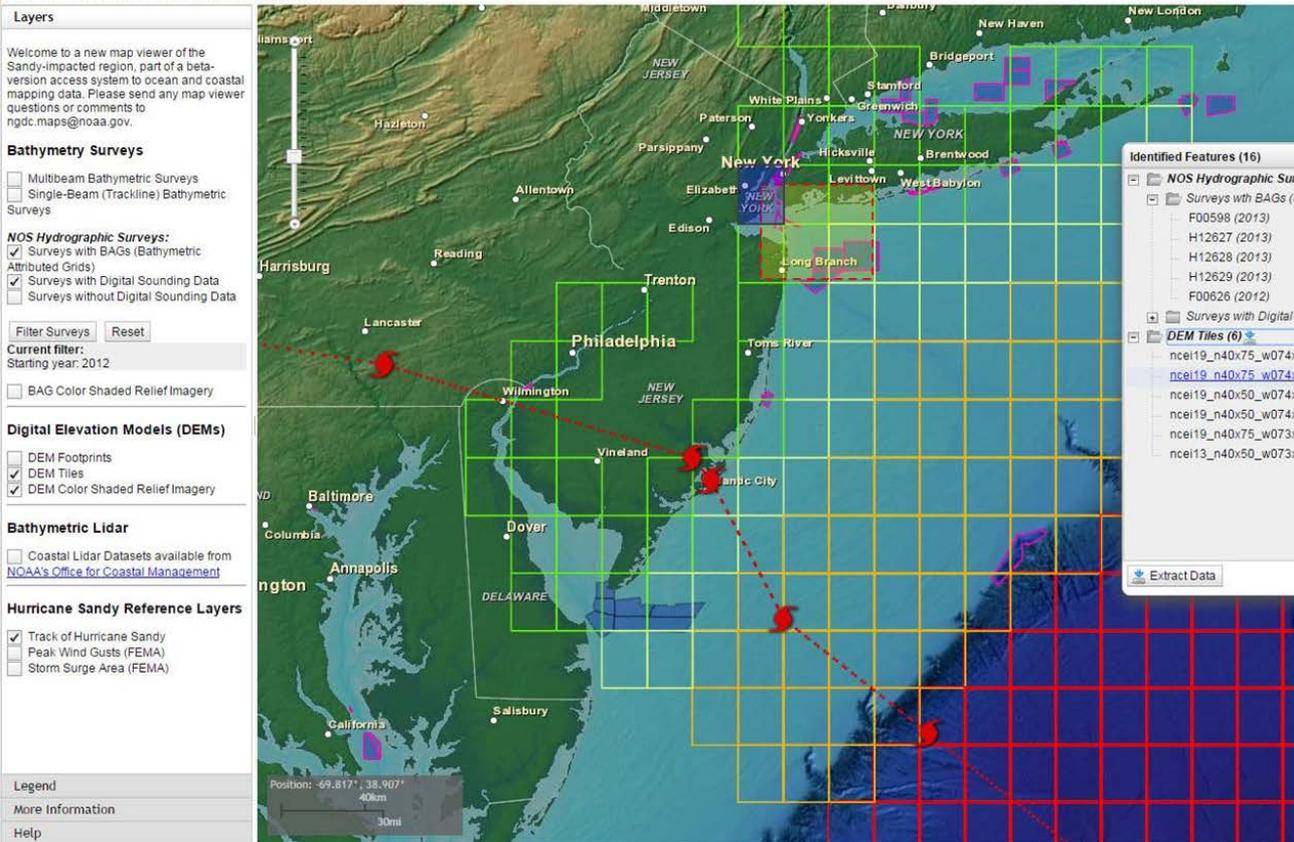


Extend DEM framework to other locations



Improve Data Discovery and Access working with intra- and inter-agency partners





Identified Features (16)

- NOS Hydrographic Surveys
 - Surveys with BAGs (5)
 - F00598 (2013)
 - H12627 (2013)
 - H12628 (2013)
 - H12629 (2013)
 - F00626 (2012)
 - Surveys with Digital Sounding Data (5)
 - ncel19_n40x75_w074x00_2015v1.tif (1/9 arc-second)
 - ncel19_n40x75_w074x25_2015v1.tif (1/9 arc-second)
 - ncel19_n40x50_w074x00_2015v1.tif (1/9 arc-second)
 - ncel19_n40x50_w074x25_2015v1.tif (1/9 arc-second)
 - ncel19_n40x75_w073x75_2015v1.tif (1/9 arc-second)
 - ncel13_n40x50_w073x75_2015v1.tif (1/3 arc-second)

Extract Data

NOAA NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION

Request Summary | DEM 4 | NOS 5 | NOS Hydrographic Surveys 11

Search Criteria: DEM IDs: 02b45647-cc71-428-9ba2-de5585ab9378, Start Year: 2012, End Year: Present, Platforms: All

Top: 39.203, Left: -72.8903, Bottom: 38.8359, Right: -72.5443

Data Available	ID	Name	Cell Resolution	Vertical Datum	
▶	d2367711-d47d-420c-9ba2-de5585ab9378	ncel1_n39x00_w073x00_2015v1.tif	1 arc-second	Instantaneous Water Level height	☑
▶	37183145-8646-4136-b0c3-14aa11a9b415	ncel1_n39x25_w072x75_2015v1.tif	1 arc-second	Instantaneous Water Level height	☑
▶	02b45647-cc71-428-9ba2-de5585ab9378	ncel1_n39x25_w073x00_2015v1.tif	1 arc-second	Instantaneous Water Level height	☑
▶	eecc978f-d56b-4799-abf1-ac67bcd59183	ncel3_n39x00_w072x75_2015v1.tif	3 arc-second	Instantaneous Water Level height	☑

10 25 50 100

“One stop shop” for discovering and accessing coastal elevation data