Update on NOAA's IOCM Sandy Project for Charting & Habitat Mapping using Topobathymetric Lidar surveys

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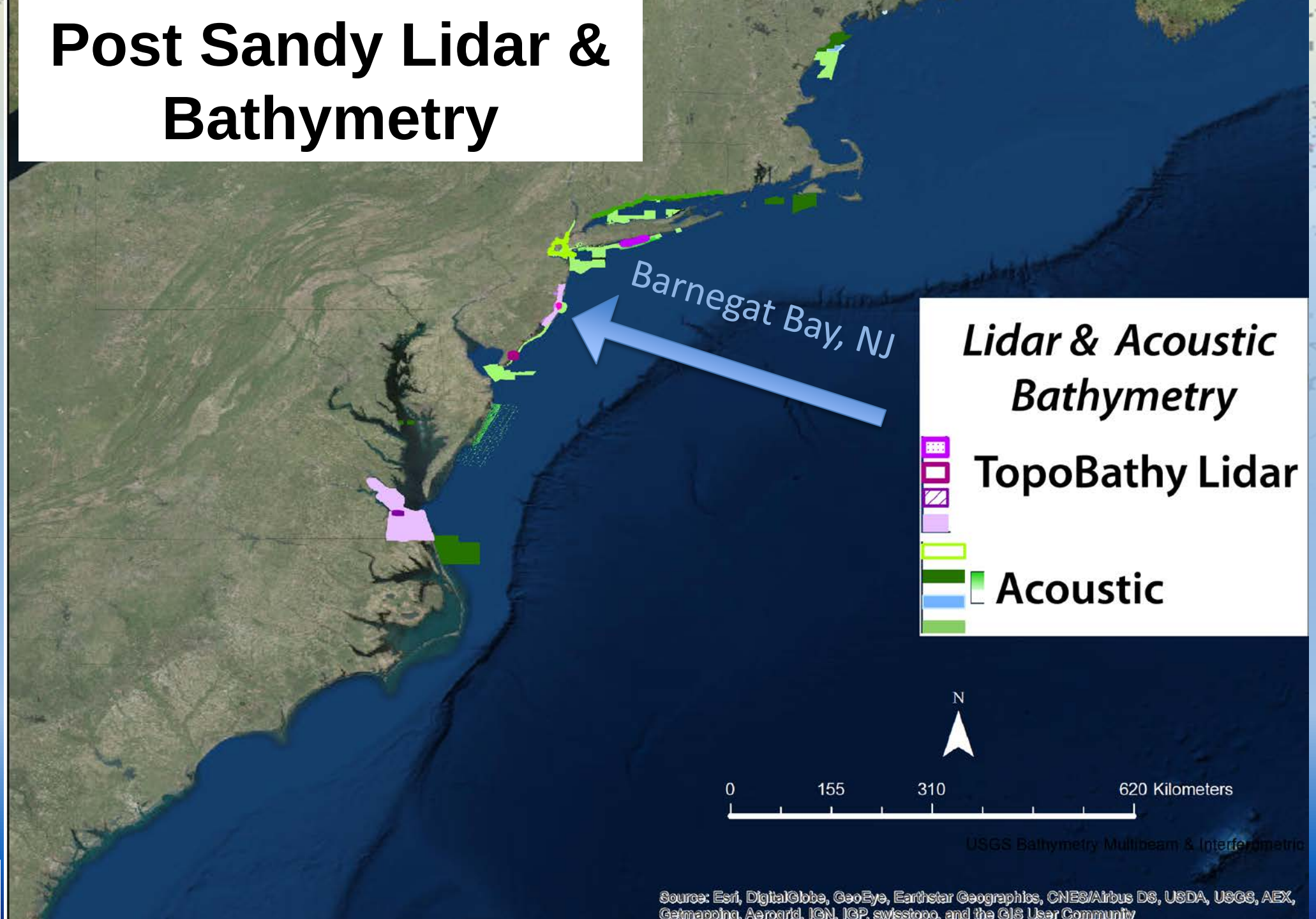
Post Sandy Lidar & Bathymetry



IOCM SANDY MAPPING PROJECT

LIDAR

NOAA, USGS, USACE

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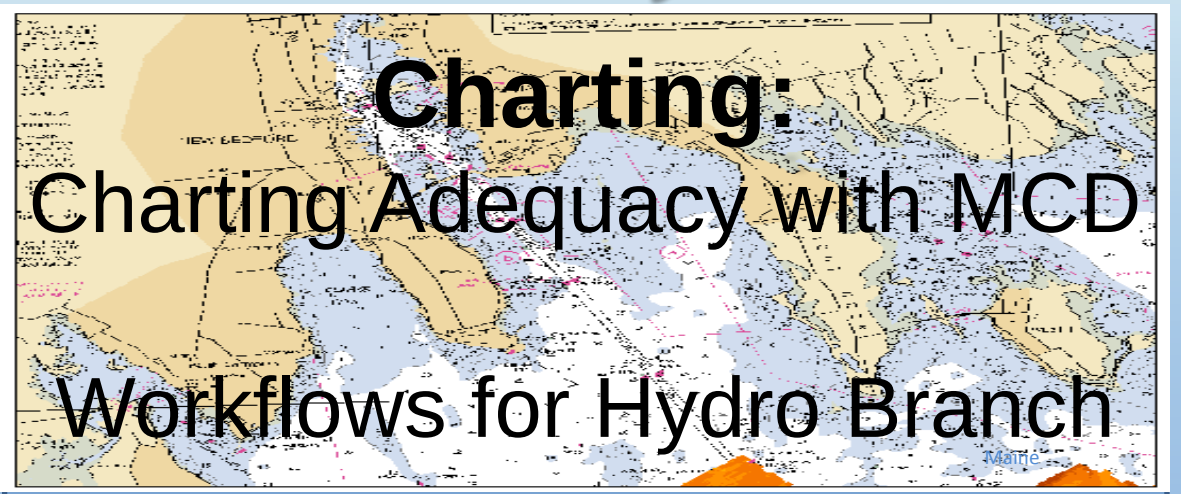
Topo-Bathy Lidar Systems:

Riegl (NOAA RSD)
EAARL-B (USGS)
CZMIL (USACE JABLTCX)
Chiroptera
(NOAA OCS contractor)



Intensity / Waveform Statistics & Derivative Map Products:

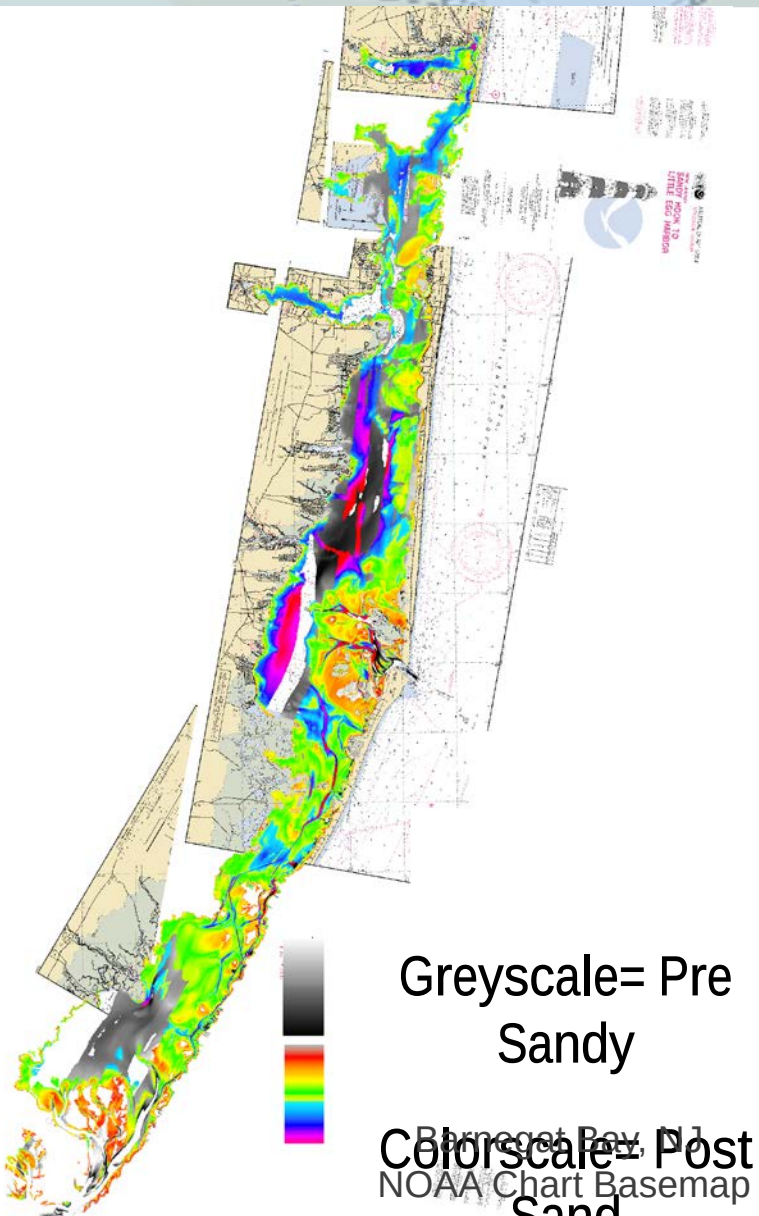
Habitat Maps

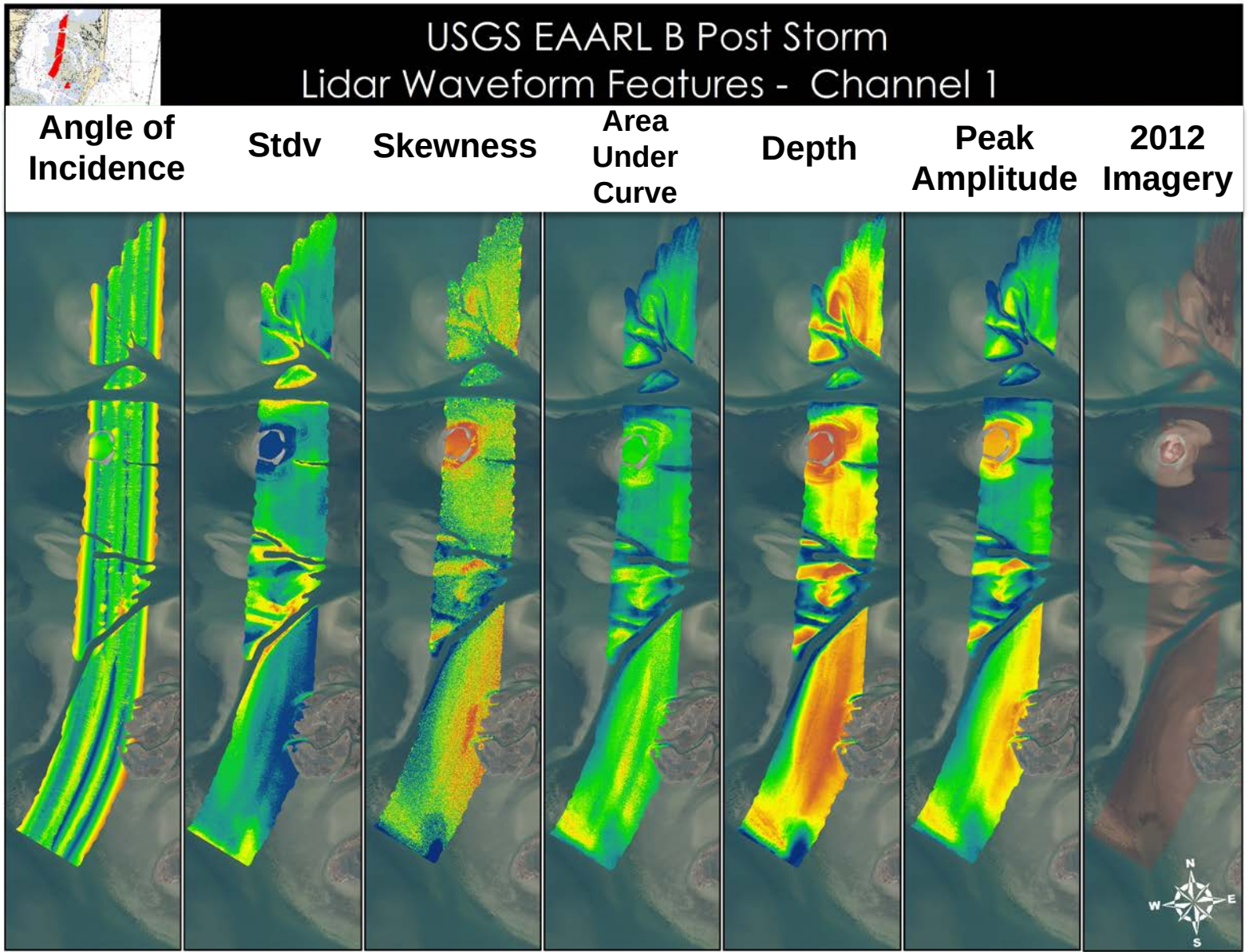
Parrish, C.E., J.A. Dijkstra, J.P.M. O'Neil-Dunne, L. McKenna, and S. Pe'eri, 2015. Post-Sandy Benthic Habitat Mapping Using New Topobathymetric Lidar Technology and Object-Based Image Classification. *Journal of Coastal Research*, SI (in review).

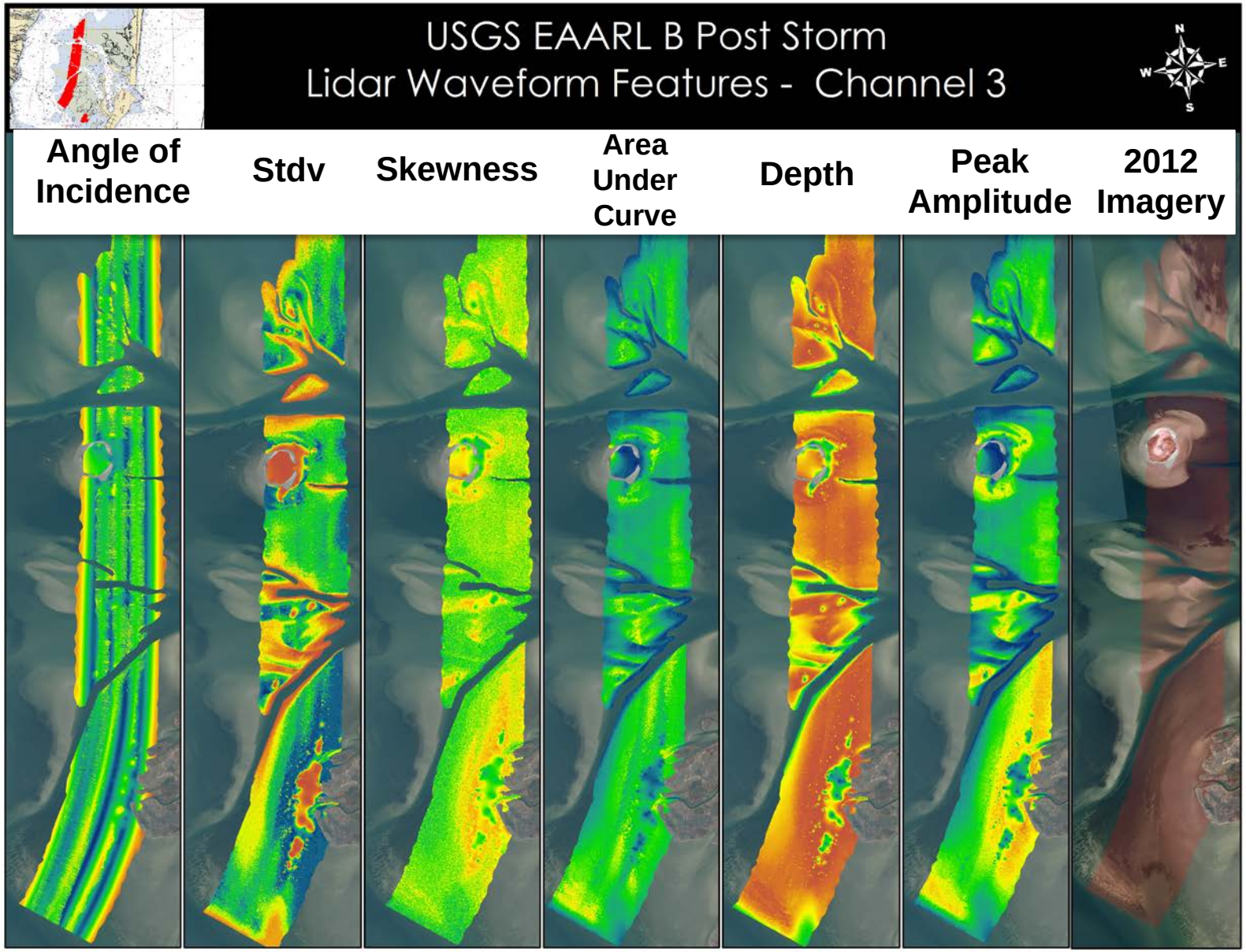
Seafloor Characterization

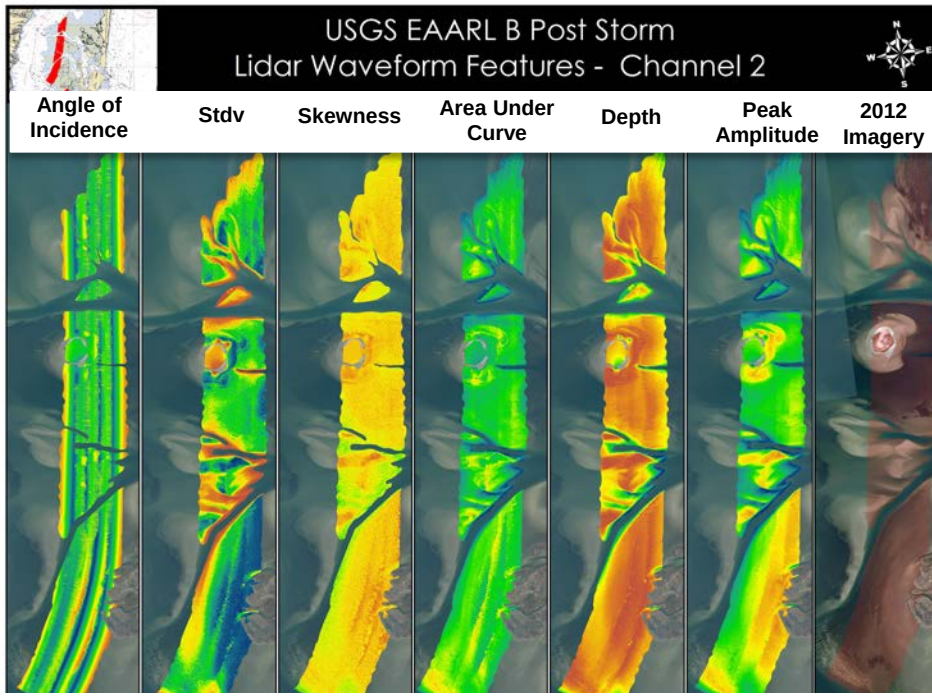
Extraction of waveform statistics of USGS EAARLB LIDAR from Barnegat Bay for Pre and Post Sandy

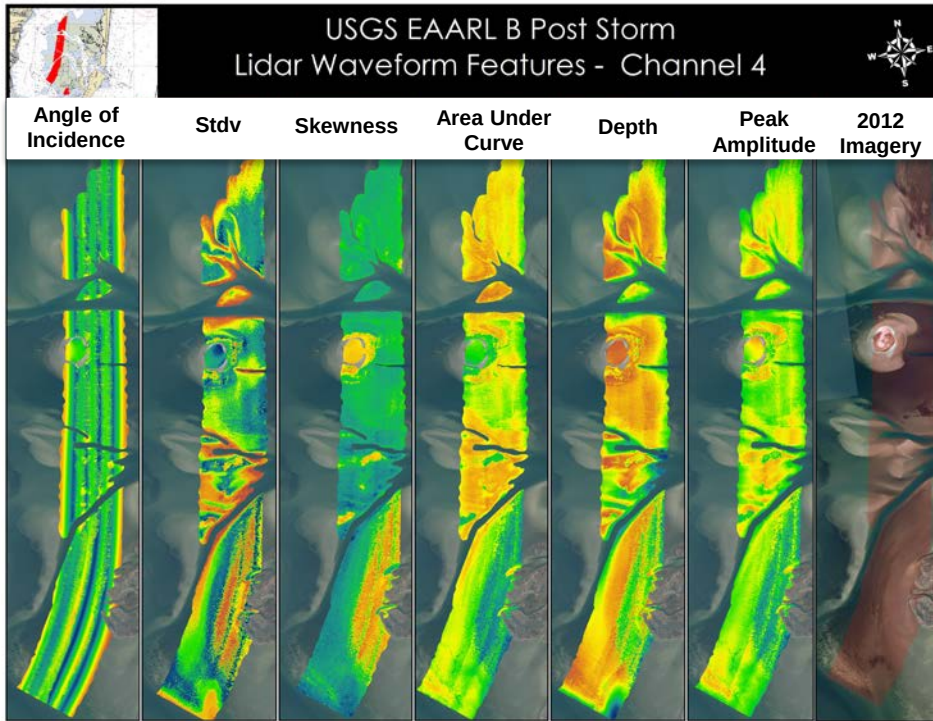
USGS EAARLB Coverage for Barnegat Bay






USGS EAARL B Post Storm
Lidar Waveform Features - Channel 3
N
W
E
S
Angle of Incidence
Stdv
Skewness
Area Under Curve
Depth
Peak Amplitude
2012 Imagery


USGS EAARL B Post Storm
Lidar Waveform Features - Channel 2
Angle of Incidence
Stdv
Skewness
Area Under Curve
Depth
Peak Amplitude
2012 Imagery


USGS EAARL B Post Storm
Lidar Waveform Features - Channel 4
Angle of Incidence
Stdv
Skewness
Area Under Curve
Depth
Peak Amplitude
2012 Imagery

Charting Adequacy:

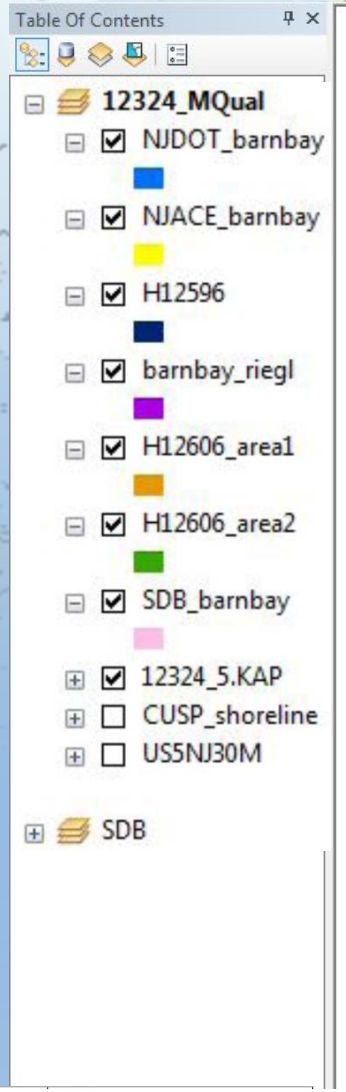
Test project to work on workflows for improving charting adequacy work, and prepare data to be brought to chart.

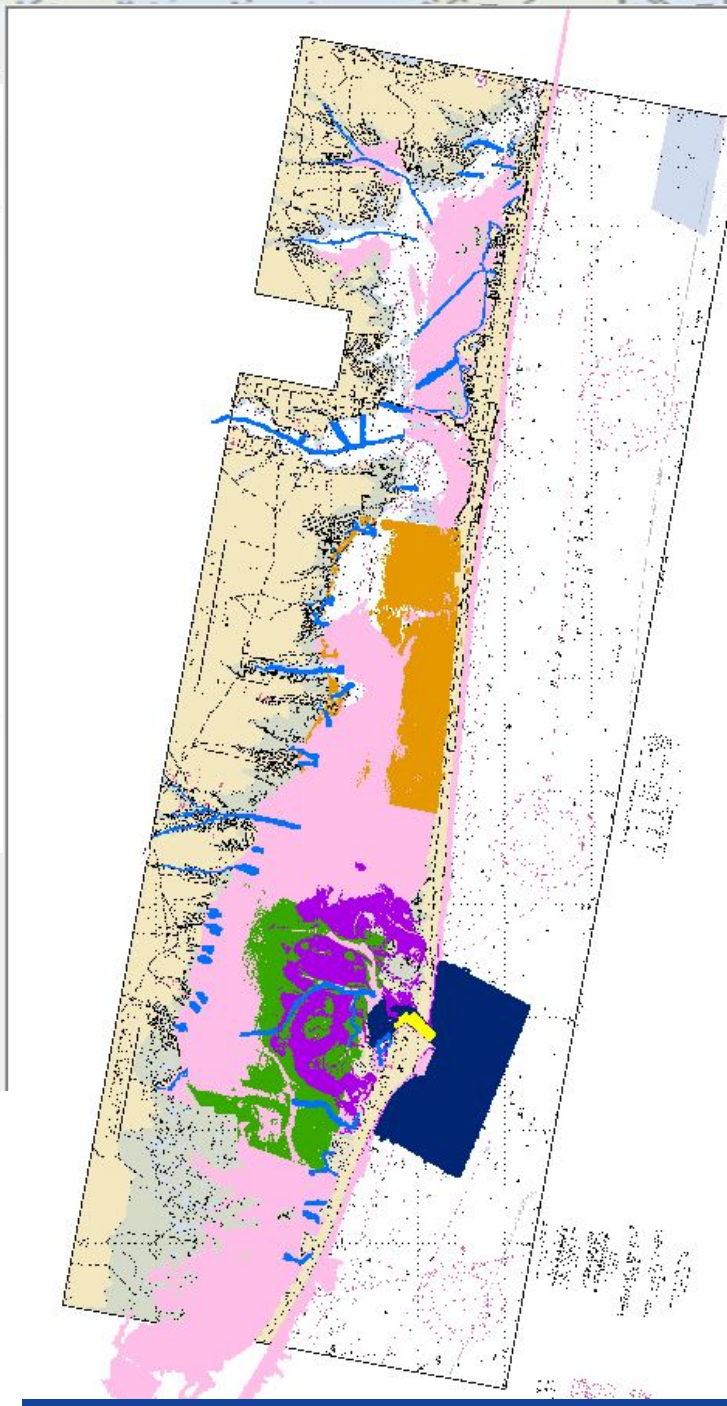
Generate:

1) Source Diagrams

2) MQUAL *(IHO S-57 attribute related to CATZOC)*

Goal to prepare system for integration of large amounts of data from RSD through the hydrographic branches. Test Area: Barnegat Bay, NJ





Shapefile Name	CATZOC	DRVAL1	DRVAL2	POSACC	SOUACC	SUREND	SURSTA	TECSOU	VERDAT	INFORM	TXTDSC	SORDAT	SORIND	remarks
H12606_area1	3	-0.14	3.27	1	0.122	20140402	20140401	7	12	H12606, ORP-C308-KRL-13, David Evans and Associates, Inc., Chiroptera Lidar System	OPR-C308-KRL-13_DAPR	20140402	US, US, graph, H12606	Start date for entire H12606 survey was 20140327, end date of entire H12606 survey was 20140403; calibra-
H12606_area2	3	-0.15	12.34	1	0.122	20140402	20140402	7	12	H12606, ORP-C308-KRL-13, David Evans and Associates, Inc.	OPR-C308-KRL-13_DAPR	20140402	US, US, graph,	Start date for entire H12606 survey was 20140327, end date of entire

Charting Adequacy:

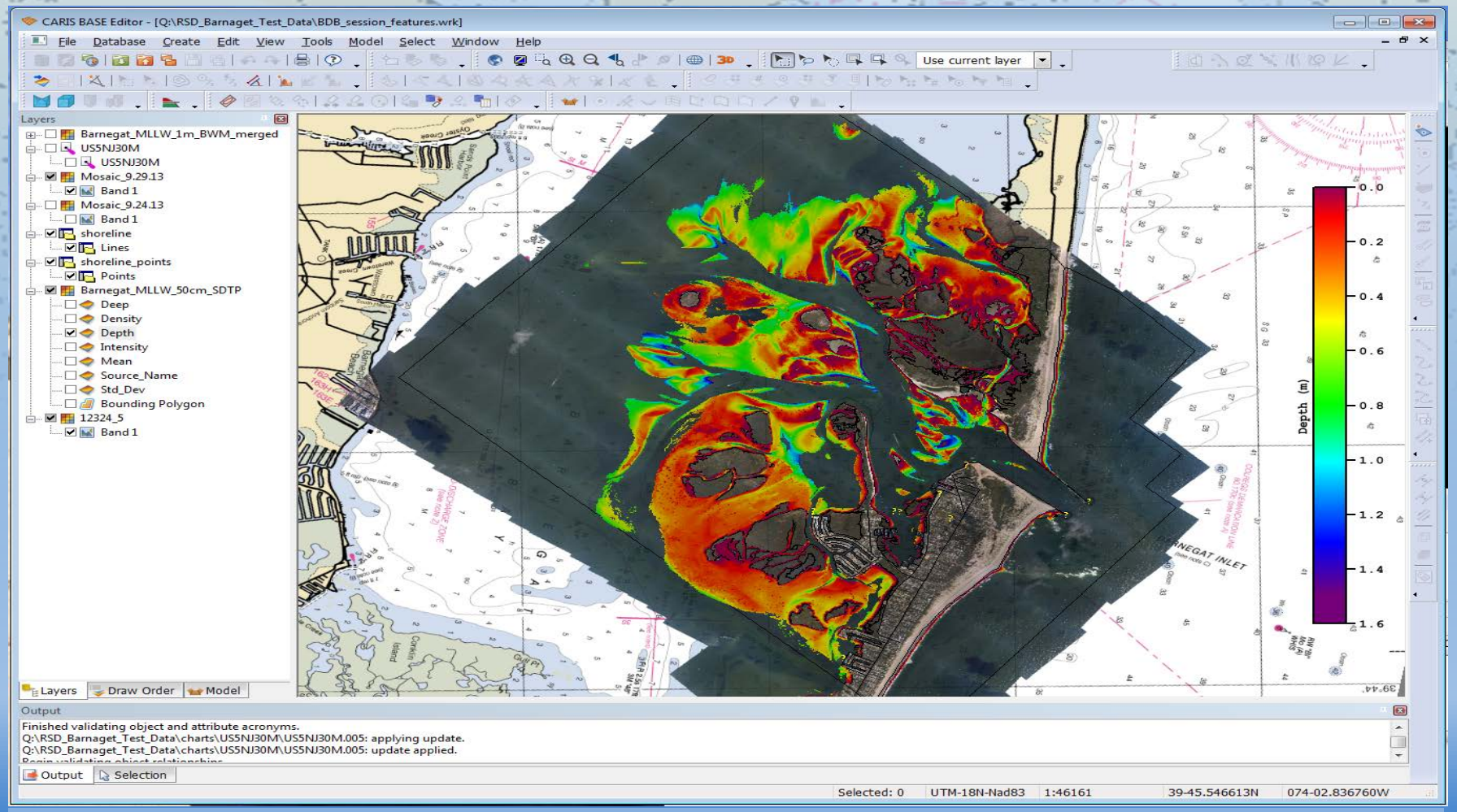
Use Satellite Derived Bathymetry to show variability in shallow areas, such as areas with rapid shoaling/ dynamic areas

Generating grids for MCD, and contours to continue to iterate as next phase.

Currently adding EAARLB data, more USACE data to present Barnegat Bay, NJ iterations for test area.

Will add other data sets to the test area such as RSD Lidar and USGS interferometric sonar data when we get them.

Recommendation of Tools and Processes to Assist Hydrographic Branch in Processing RSD Bathymetric Lidar Data for Charting



NOAA's RSD bathy Lidar collected in response to Hurricane Sandy at the entrance to Barnegat Bay, NJ. AHB processed to the chart.

Stage One Completed: Data Organization and Gridding

Next: Assist in Feature Identification

Data supplied by RSD -> CCOM processes + RSD/ AHB experience -> develop tools to streamline use of Lidar by Hydrographic Branch

Acknowledgements:

NOAA RSD (esp. Gretch Imahori, Stephen White, Mike Aslaksen)

USGS EAARLB (Coastal & Marine Program) (esp. Wayne Wright, David Nagle, Christine Kranenburg, David Zawada), **USGS EROS data center**

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NOAA Marine Charting Division (John Nyberg, Anthony Klemm,Guillaume Auclert)

NOAA AHB (Gene Parker, Tyanne Faulkes, Matt Jaskowski)

Everyone who's been helping us with Lidar and nontraditional data sources