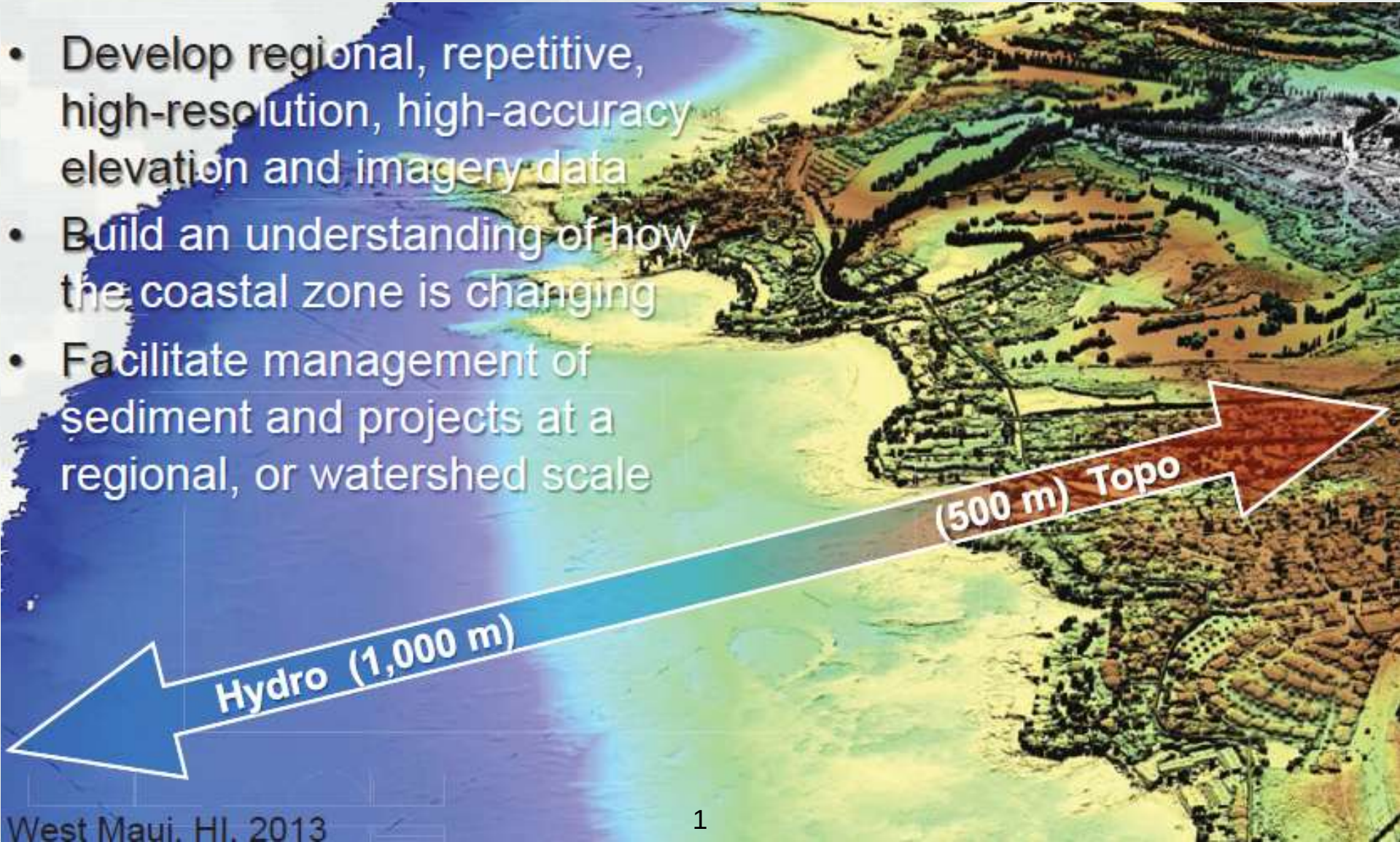
Regional LIDAR Mapping/Benthic Mapping
Lauren Dunkin



Hyperspectral imagery

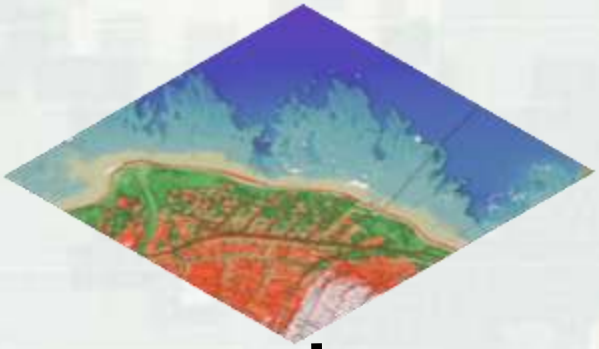
1 m pixel resolution, 36 spectral bands
375-1050 nm

Olowalu, Maui, HI
2013

Metrics/Parameters

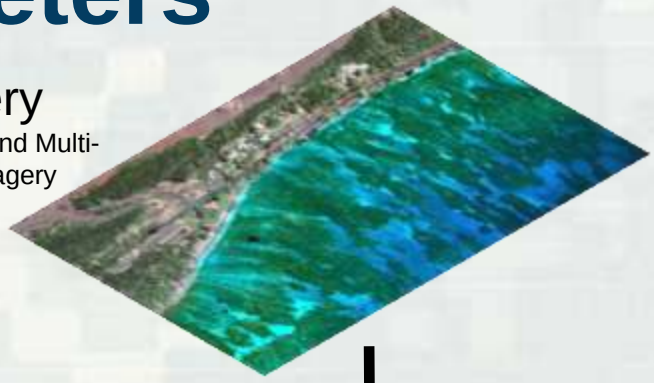
Elevation

Change (elevation/volume)
Contour (change)
Shoal



Imagery

Hyperspectral and Multi-Spectral Imagery

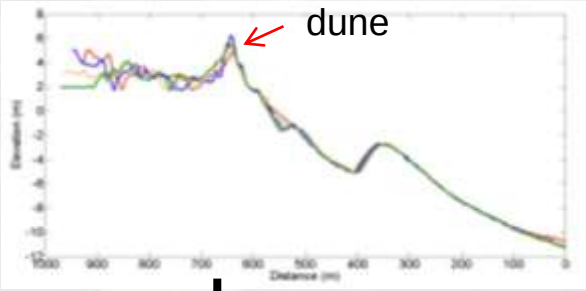


Dune

Elevation (crest/toe)
Continuity
Slope
Volume

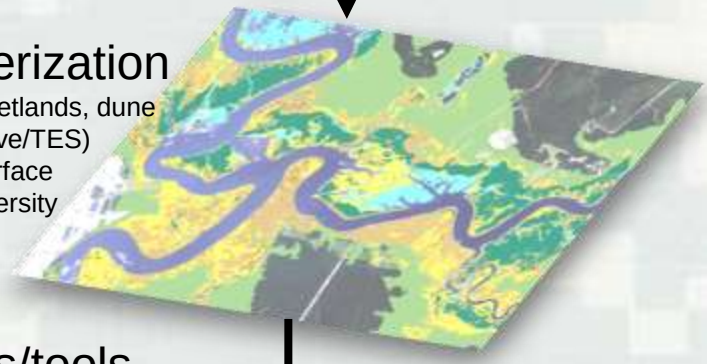
Beach

Width
Slope



Land characterization

Critical habitat (SAV, wetlands, dune vegetation, invasive/TES)
Impervious surface
Landscape diversity



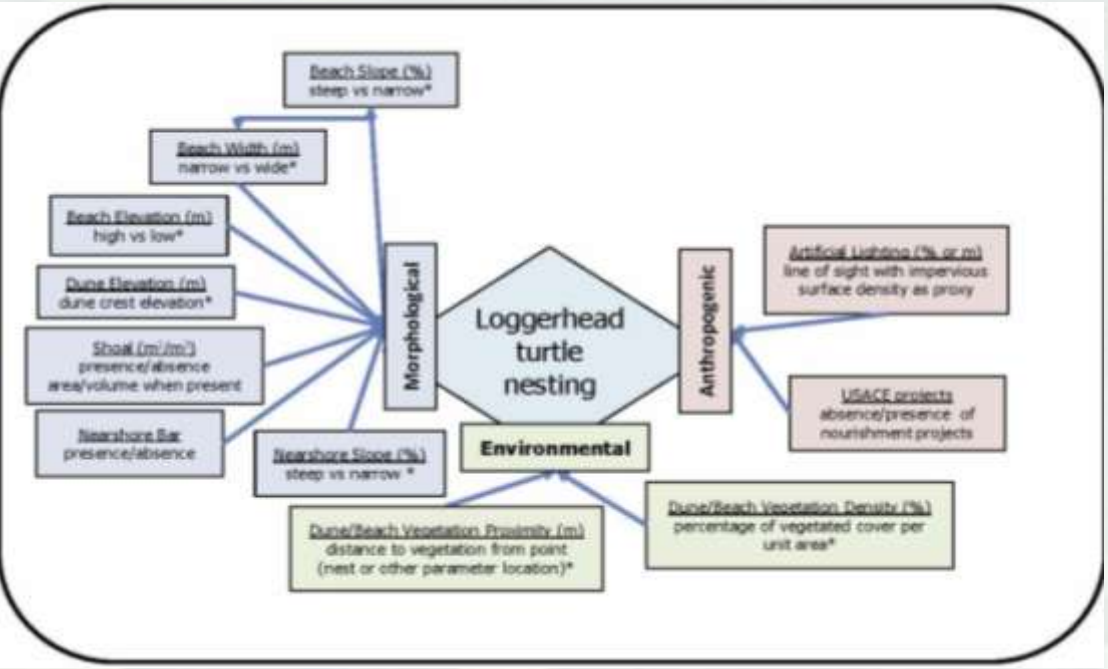
R&D/Value added products/tools

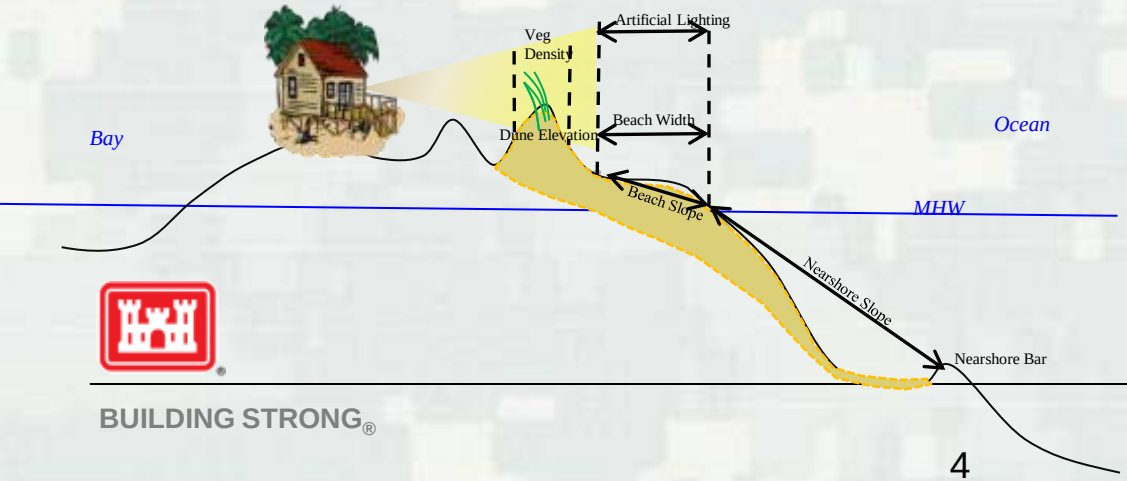
- Change Detection
  - Landscape change modeling
  - Volume/elevation/shoreline change
  - Structure assessment
- Sediment Budgets
- Monitoring Shore Protection
- Defining Coastal Regions

- Coastal Engineering Index
- Coastal Resilience
- Critical Species Detection and Modeling
  - Sea turtle nesting habitat
  - Oysters*
  - Salmonid

* ECO-PCX model certification

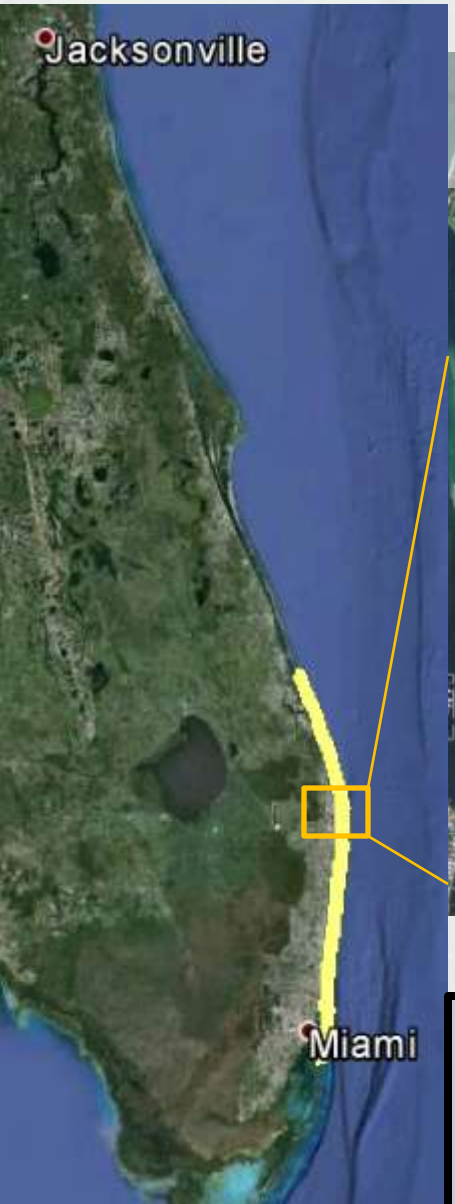
Critical Habitat Modeling of Physical Parameters for Endangered Sea Turtle Nesting Habitat

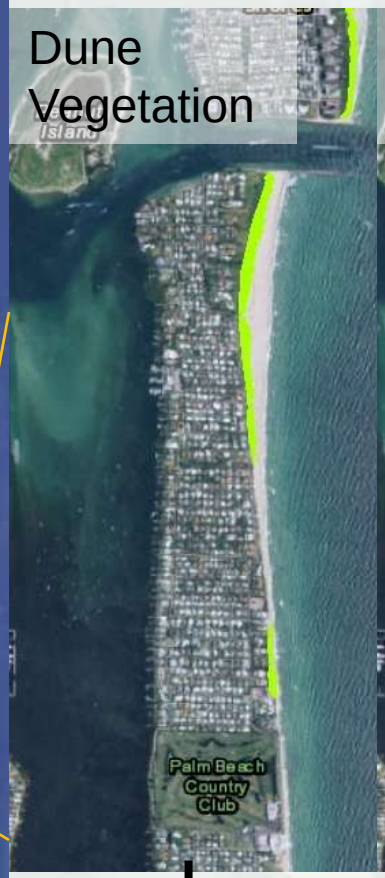


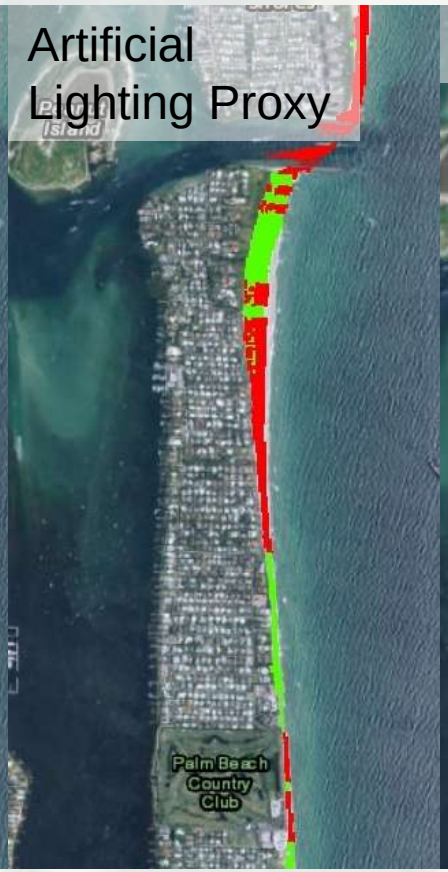


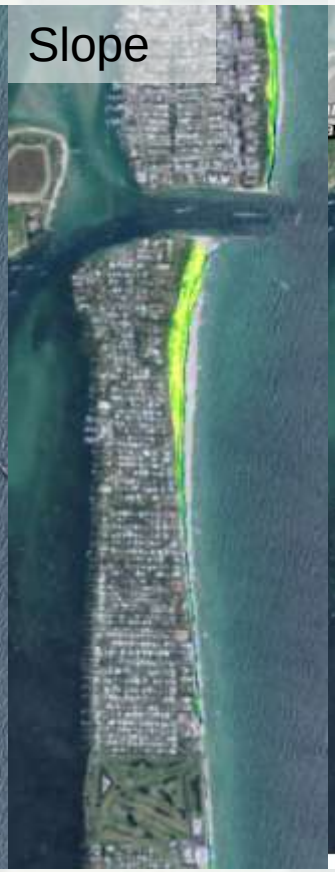
- Mappable/spatial parameters identified through literature review.
  - important for nesting habitat
  - correlates with the resolution of the spatial datasets
- Value ranges are relative functions based on regional data values.
- The process/methods for the model will be transferable to other sites.

Critical Habitat Modeling of Physical Parameters for Endangered Sea Turtle Nesting Habitat





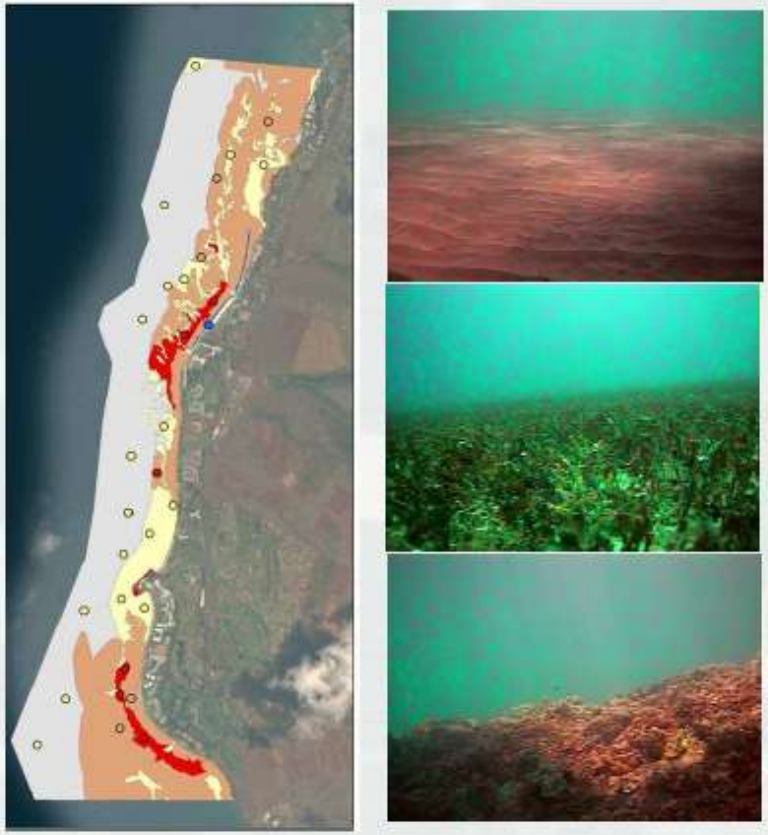




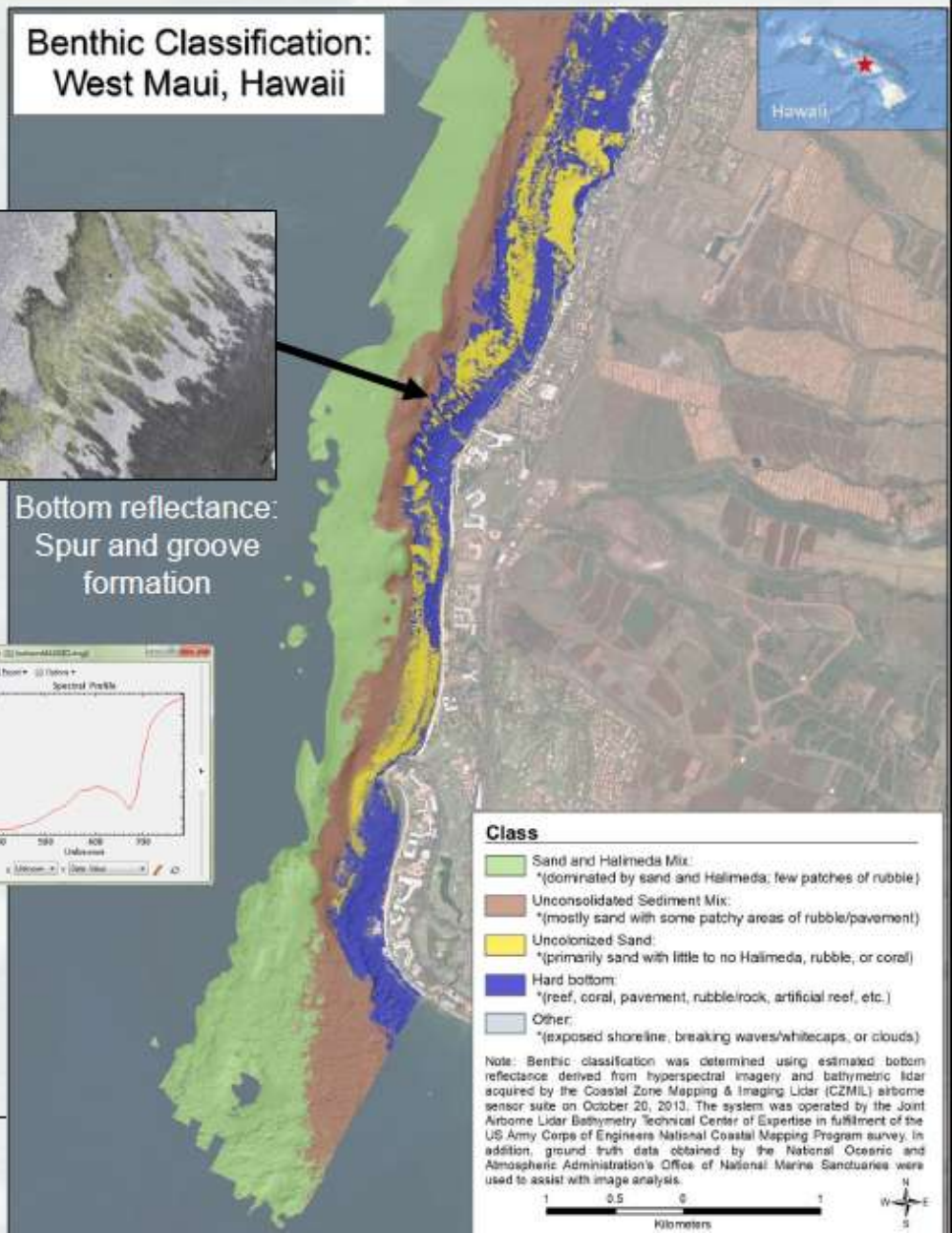
- Map of relative suitability based on spatially derived parameters
  - Regional value ranges (transferable to other sites)

Benthic Classification

- Develop enhanced seafloor data products to assist with identification of hard bottoms (e.g. corals) and sand fields in support of RSM and dredge material management



NOAA field sites and drop camera photos



Questions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JALBTCX
National Coastal Mapping
Tech Workshops
Specifications
Publications
CZMIL
Welcome to JALBTCX
The Joint Airborne Lidar Bathymetry Technical Center of Expertise (JALBTCX) mission is to perform operations, research, and development in airborne lidar bathymetry and complementary technologies to support the coastal mapping and charting requirements of the US Army Corps of Engineers (USACE), the US Naval Meteorology and Oceanography Command, and the National Oceanic and Atmospheric Administration (NOAA). JALBTCX staff includes engineers, scientists, hydrographers, and technicians from the USACE Mobile District, the Naval Oceanographic Office (NAVOCEANO), the USACE Engineer Research and Development Center (ERDC), and NOAA National Geodetic Survey.
JALBTCX executes survey operations using the Compact Hydrographic Airborne Rapid Total Survey (CHARTS) system and industry-based coastal mapping and charting systems. CHARTS is our in-house survey capability that includes an Optech, Inc., SHOALS-3000 lidar instrument integrated with an Itres CASI-1500 hyperspectral imager. CHARTS collects either 20 kHz topographic lidar data or 3 kHz bathymetric lidar data, each concurrent with digital RGB and hyperspectral imagery. Survey operations support the USACE National Coastal Mapping Program and NAVOCEANO nautical charting missions. Survey personnel include contracted employees of Northrop Grumman.
JALBTCX research and development supports and leverages work in government, industry, and academics to advance airborne lidar and coastal mapping and charting technology and applications. Collaborations currently include the US Geological Survey, NASA Wallops, US Naval Research Lab, ERDC System Wide Water Research Program, NOAA NGS, Optech International, Office of Naval Research, ERDC Topographic Engineering Center, the University of Southern Mississippi, Ohio State University, the University of Florida, University of New Hampshire, and Duke University.
For questions, contact: jalbtcx@usace.army.mil.
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