Topobathy Lidar

NOAA's National Geodetic Survey (NGS)

The National Geodetic Surveys' Remote Sensing Division (RSD) is responsible for mapping the national shoreline. For over 10 years, RSD has moved from creating the national shoreline using photogrammetric methods to deriving shoreline from topographic and bathymetric (topobathy) lidar using procedures developed by NOAA. New advances in topobathy lidar sensors help RSD efficiently fulfill NOAA's need to update the Nation's shoreline with an added benefit of providing nearshore depths to aid Office of Coast Survey's mandate to update NOAA Nautical Charts. In addition, topobathy lidar data supports numerous coastal resilience, intelligence and place-based conservation applications such as, coastal inundation modeling, habitat mapping and wetland restoration.

Support of Charting Activities

RSD's goal is to acquire nearshore topobathy lidar data, prior to NOAA Ship Operations. In some instances, depth penetration will greatly exceed our goal of 4m and in others not, due to water clarity. The data will be used ultimately to update the shoreline and near shore bathymetry for nautical charts, but initially this data will be provided prior to NOAA Ship surveys to assist Hydrographic Operations in the planning of surveys and allow for increased efficiency and safety of operations.
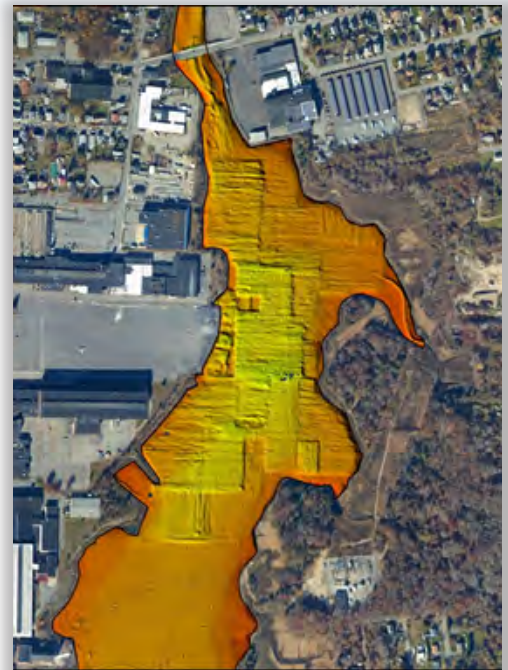

Image of bathymetric lidar data collected by RSD of New Bedford Harbor near Buzzards Bay, MA using the Riegl VQ-880-G topobathy lidar sensor. Dredge marks of the harbor can be seen even in this raw, unfiltered and unrefracted data.

Multi-Use of Data

RSD's topobathy supports the "Map Once-Use Many Times" paradigm through such applications as: Inundation Modeling (storm surge, tsunami, sea level rise, floodplain), Coastal Engineering, Coastal Change Analysis, Coral Reef Mapping, Habitat/Wetland Restoration, Evacuation Route Mapping and Emergency Response.

To download RSD topobathy lidar:

Digital Coast: https://coast.noaa.gov/dataviewer/#/lidar/search/where:projectid=25