



Update on Coastal Mapping Activities in Alaska

2020 Coastal Mapping Summit

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U.S. Department of the Interior
U.S. Geological Survey

National Geospatial Program - Alaska Mapping Initiative

Completed statewide terrestrial elevation collection via Interferometric Synthetic Aperture Radar (IfSAR) at 5-meter resolution

- **Digital Surface Model (DSM)**
- **Digital Terrain Model (DTM)**
- **Orthorectified Radar Intensity Image (ORI)**

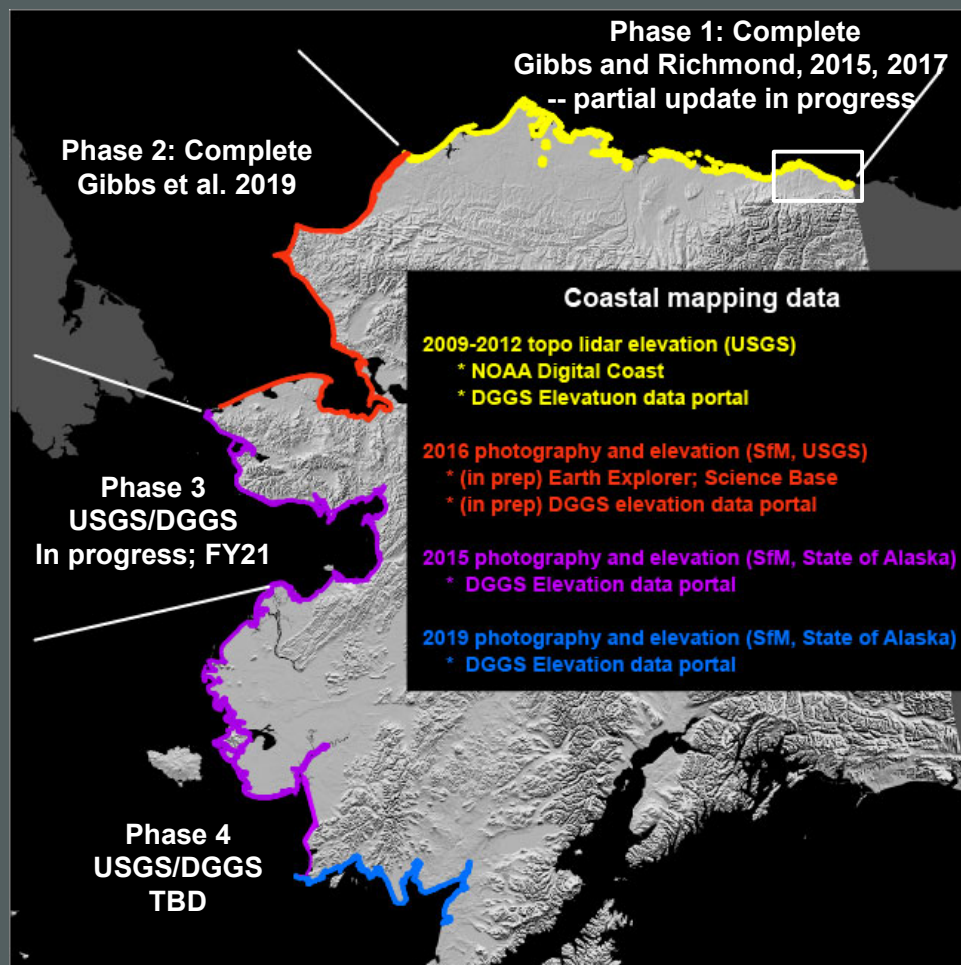
Available via the USGS - The National Map and AK DNR, DGGS - Alaska Elevation Portal

Acquired statewide satellite mosaic, MAXAR (Digital Globe) WorldView II and III

- **Federal participating agencies and State of Alaska licensed for internal use of GeoTiff mosaic**
- **Alaska DNR, DGGS, Alaska Geospatial Imagery Service - Alaska High Resolution Imagery**
- **4-band, 0.5cm, IfSAR orthorectification, sun-angle, summer scenes collection predominantly 2017-2020**

USGS - Alaska coastal mapping dependent projects

- Coastal Change Hazards
 - Quantify shoreline change rates
 - Assess and project/model:
 - Shoreline change
 - Coastal vulnerability (erosion/flooding)
- Coastal NED (CoNED)
 - Build hi-res, seamless topo-bathy products
- Tsunami Hazards
 - Flooding/inundation
 - Barry Arm landslide
 - Subduction zone science



USGS Coastal National Elevation Database (CoNED) Applications Project

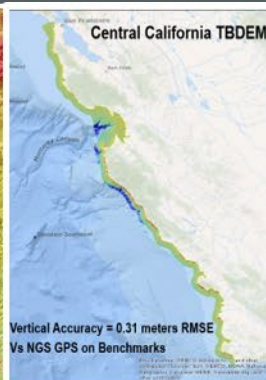
- 1) Support coastal and marine spatial planning, by constructing the Coastal National Elevation Database (CoNED) at select focus regions thereby establishing a topobathymetric elevation model (tbDEM) baseline product for scientific investigations and applications.
- 2) Conduct algorithm remote sensing 3D point cloud (lidar) research to extend the data structure for topobathymetric elevation models and create methods for fostering land change science studies.



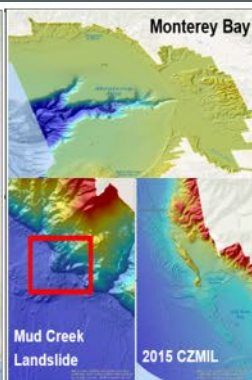
San Francisco Bay



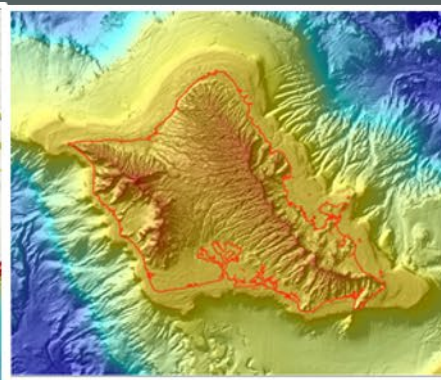
Southern California



Central California



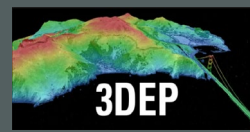
Monterey Bay
Mud Creek Landslide



Hawaii - Oahu

Stakeholders: USGS Coastal Storm Modeling System (CoSMoS), NOAA-OCM Sea Level Rise Viewer, NOAA National Water Model, LA CPRA Coastal Master Plan, ADCIRC Hydrodynamic Model, VIMS SCHISM Model, Nature Conservancy Coastal Resilience Viewer, and DOI Pacific Islands Climate Adaptation Science Center

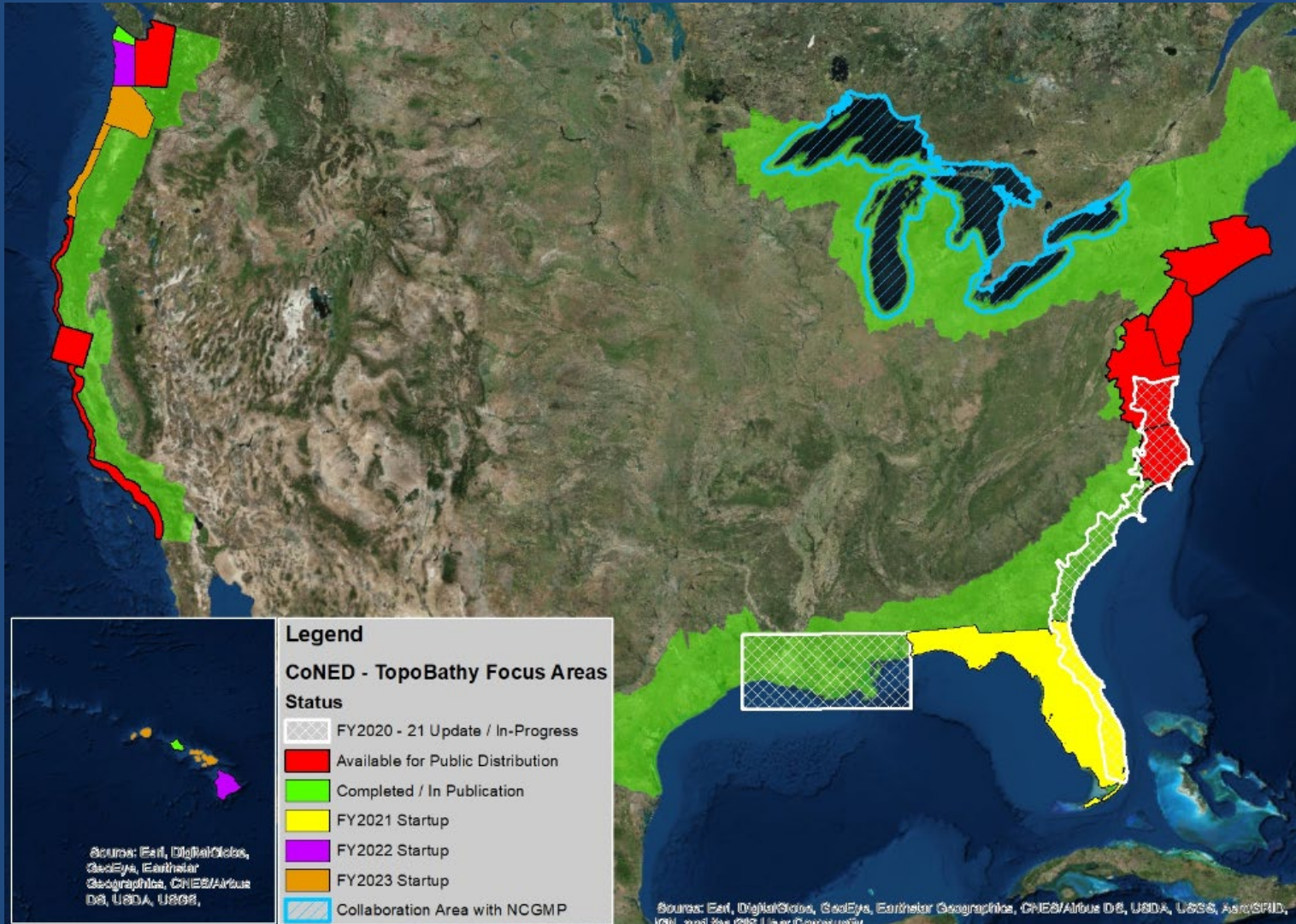
Point of Contact: Jeffrey Danielson, CoNED Applications Project Chief, daniels@usgs.gov



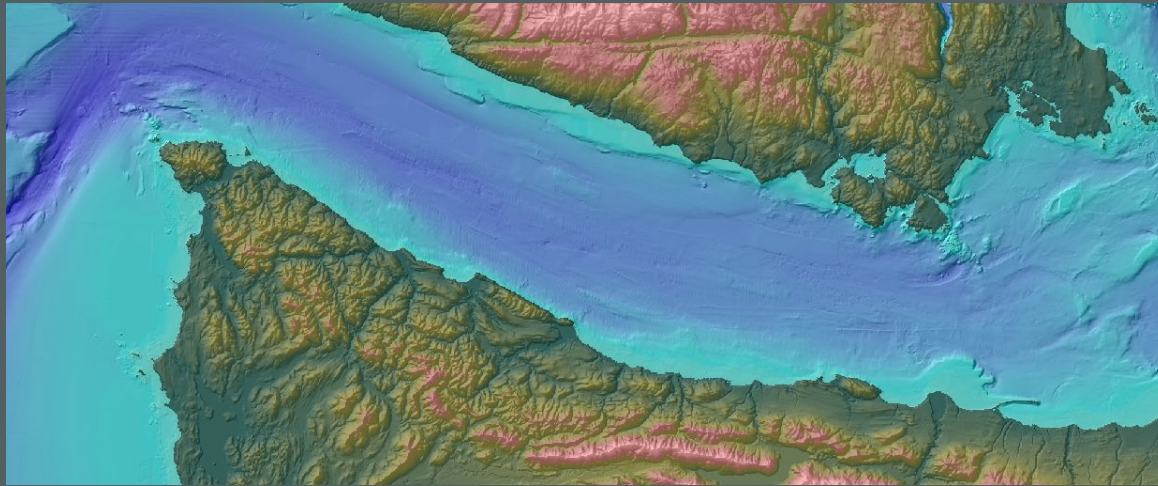
INTERAGENCY WORKING GROUP ON *Ocean and Coastal Mapping*

Mapping Activities: TBDEM Mapping Plans

USGS CoNED – TBDEM Integration Plans (FY20 – FY23)



Pacific Northwest Topobathymetric DEM - CoNED Puget Sound and Juan de Fuca: 1-Meter TBDEMs



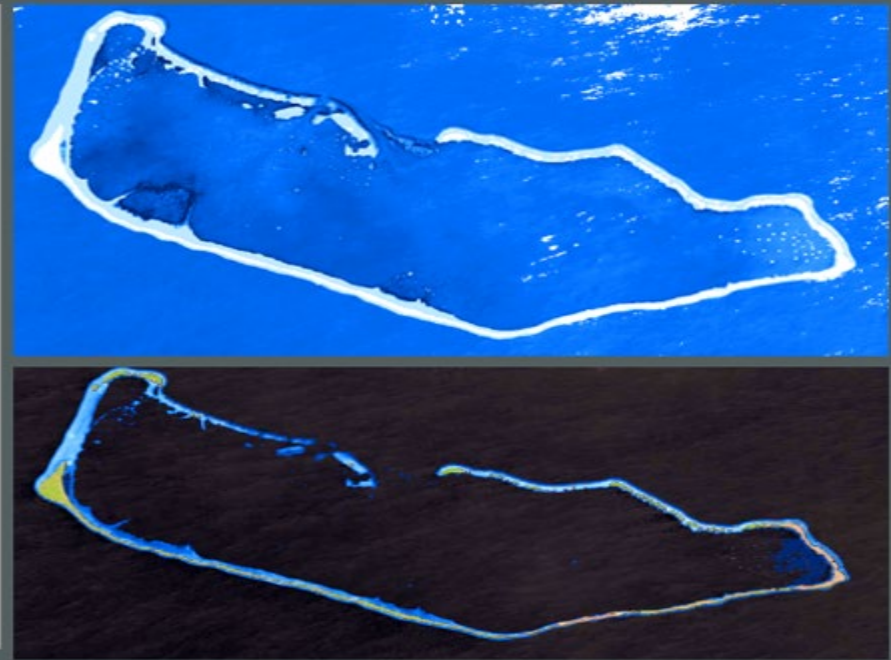
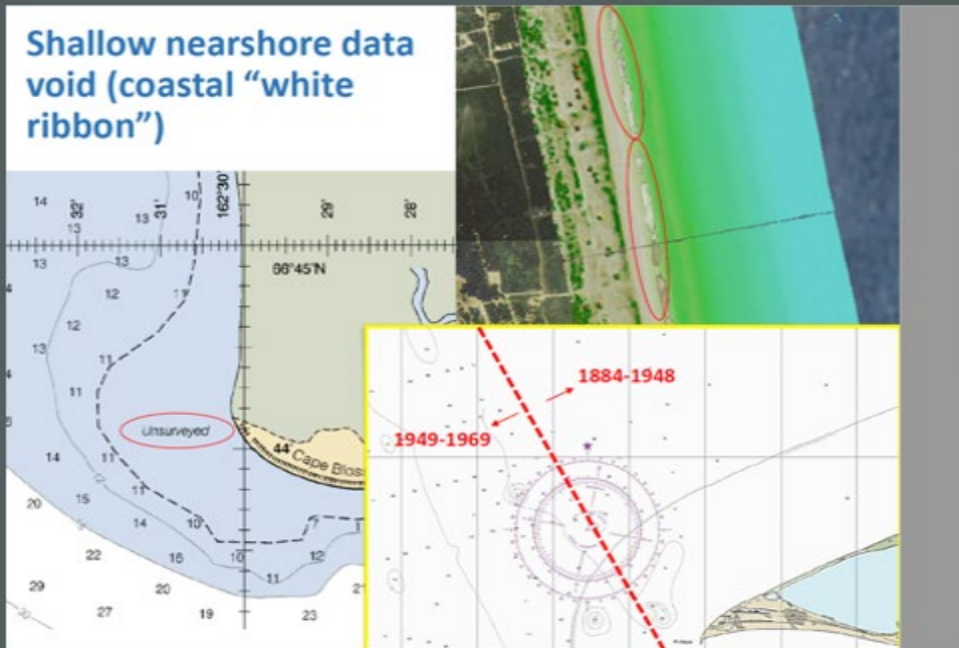
Strait of Juan de Fuca



Puget Sound

INTERAGENCY WORKING GROUP ON *Ocean and Coastal Mapping*

Satellite-Derived Bathymetry Task Team

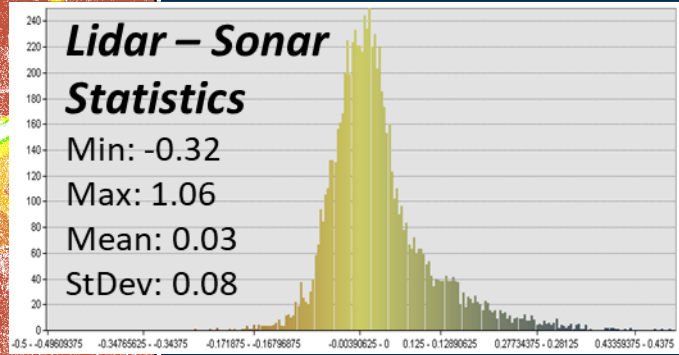


□ Purpose and Goal:

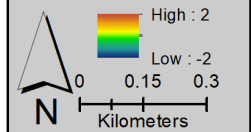
To cooperatively investigate remote sensing methods and techniques for generation of reliable satellite-derived bathymetry mapping products using standardized metadata schema and definition, consistent data formats, and incorporating best practices for long-term science and end-user applications.

Unalakleet Combined Sonar/Lidar

Preliminary data



Lidar/Bathy Elev (m)

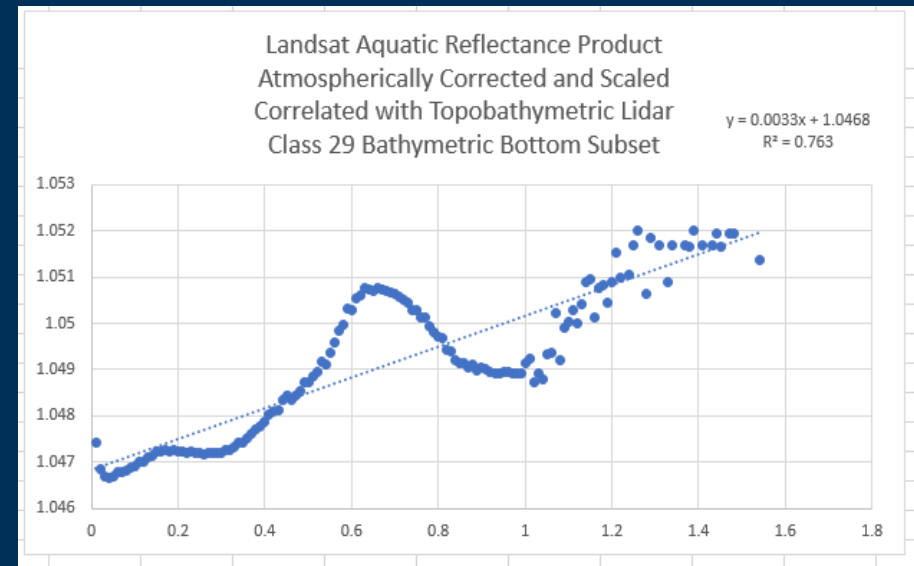
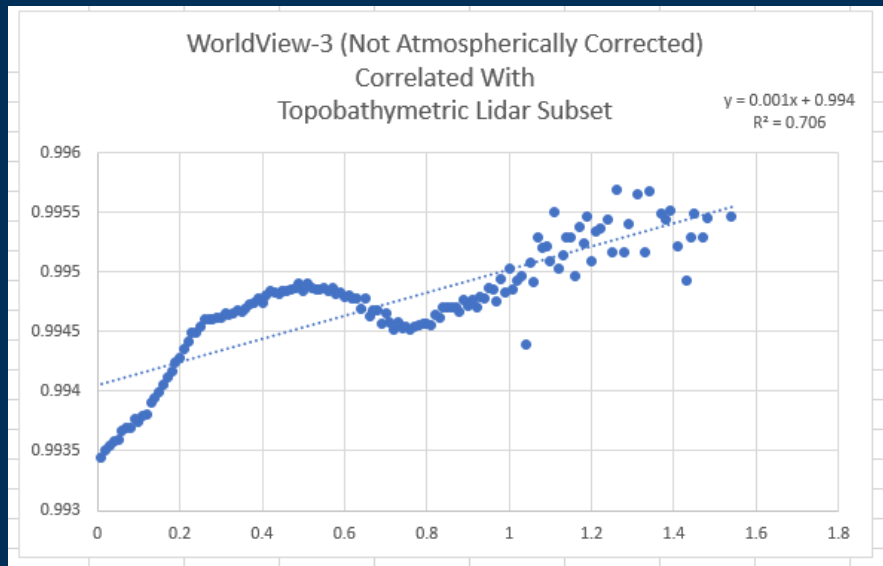
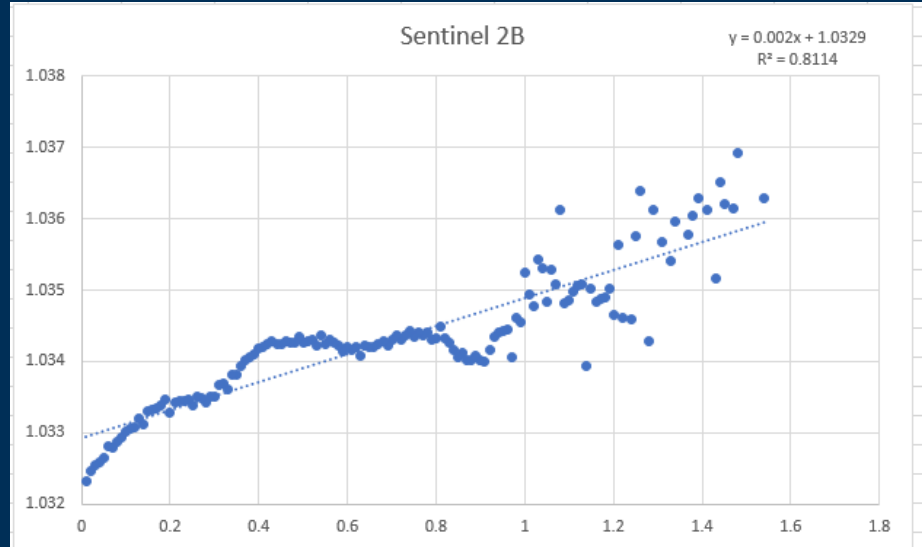
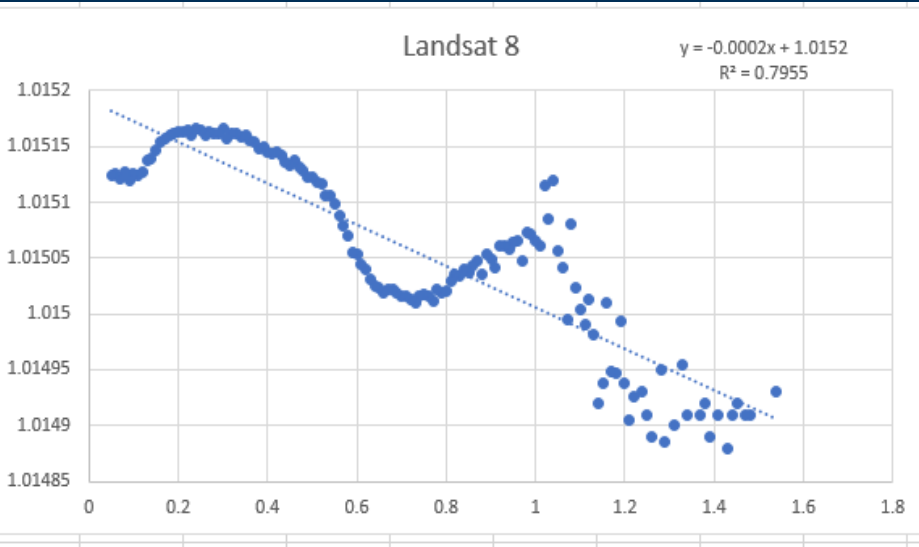


Lidar/Bathy Elev (m)



SDB Correlation with Topobathy Lidar Landsat 8, Sentinel-2B, WorldView-3 & L8 Aquatic Refl.

Preliminary data



SDB Correlation w/ Sonar - Comparisons

Landsat 8, Sentinel-2B, WorldView-3 & L8 Aquatic Refl.

Preliminary data

