

NGS program updates and outlook for the Pacific. A review of the National Spatial Reference System, GRAV-D, and the Coastal Mapping Program.

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Hydrographic Services Review Panel Virtual Meeting
September 20, 2022

Infrastructure and Supplemental Funding Opportunities

- Coastal Mapping Program: (Hx IDA and IIJA NOAA/NWS/NWC)
 - Shoreline imagery
 - Topobathy lidar surveys
 - Shoreline
- Additional support for GRAV-D
- Vertical Land Motion: (CO-OPS collaboration)
 - Foundation CORS
 - Deformation Model



Issue 29 July 2022

NSRS Modernization News

For all issues of **NSRS Modernization News**, visit:
geodesy.noaa.gov/datums/newdatums/TrackOurProgress.shtml

NGS has recently begun to re-stack the priorities for NSRS modernization.

The following decisions were recently approved for public release:

- NGS will release all data for the modernized NSRS before all tools are built.
- NGS will focus on updating tools like OPUS-S and OPUS-Projects to work with the modernized NSRS before building new tools.
- NGS will adopt TRANS4D (v0.3.3 or later) as IFDM2022 version 1.0 (initial crustal motion model that will be replaced by an updated model)
- The new estimated timeline for release of the modernized NSRS (data + limited tools) is mid-2025.

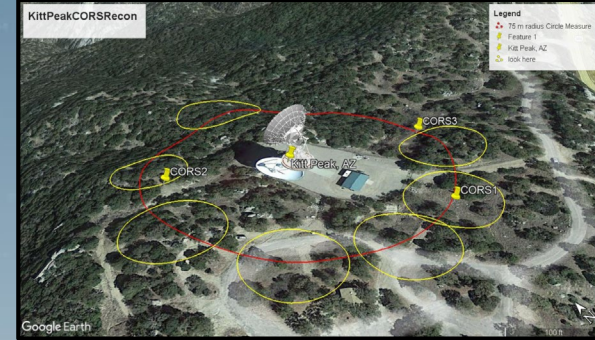
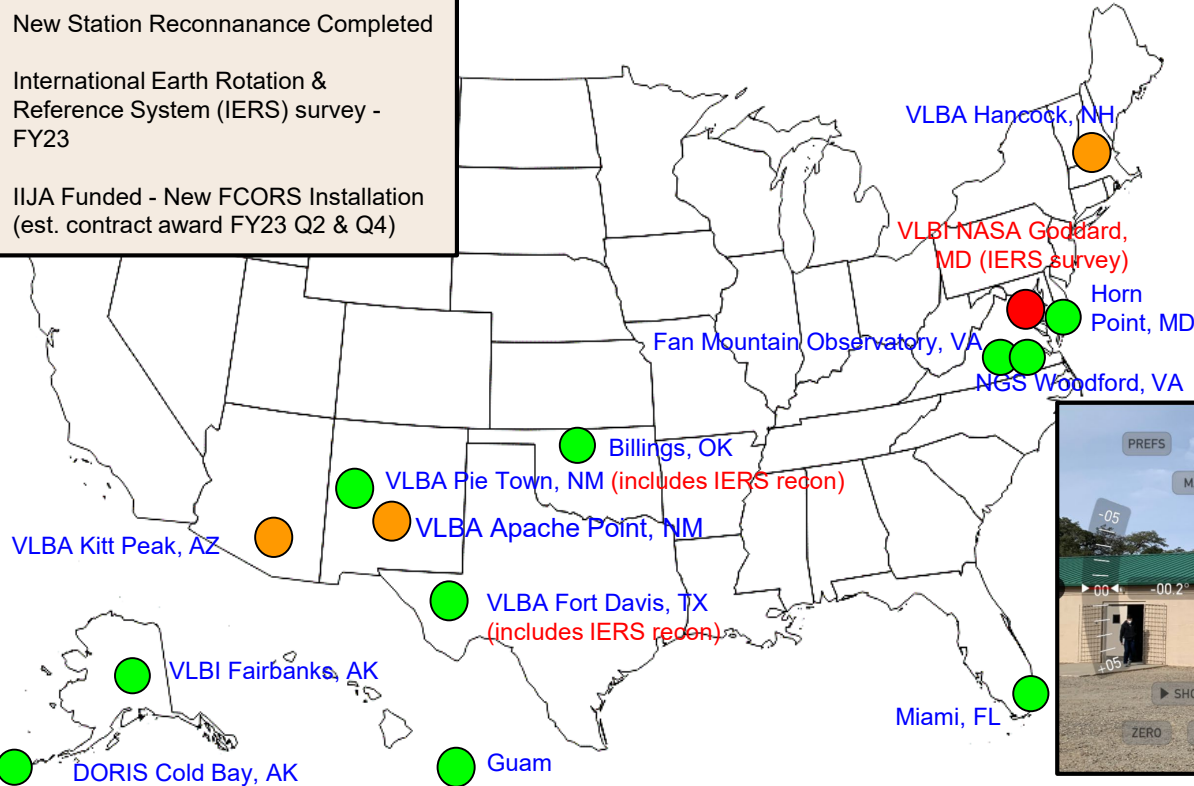
June 2022 NGS Webinar Series: It's 2022 - Are You Done Yet?



Foundation CORS Update



- New Station Reconnaissance Completed
- International Earth Rotation & Reference System (IERS) survey - FY23
- IJJA Funded - New FCORS Installation (est. contract award FY23 Q2 & Q4)

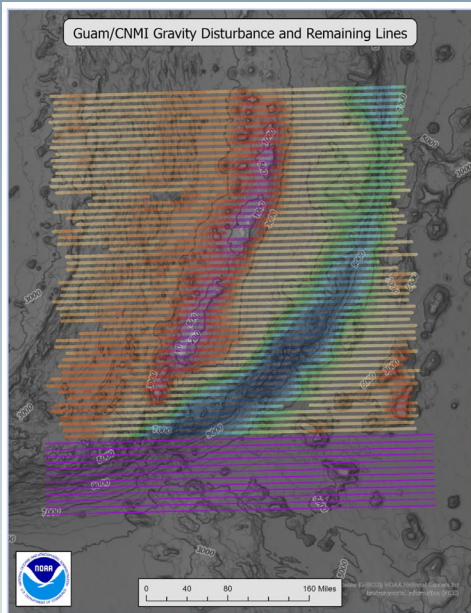


Site Reconnaissance at Very Long Baseline Array (VLBA) Kitt Peak, AZ



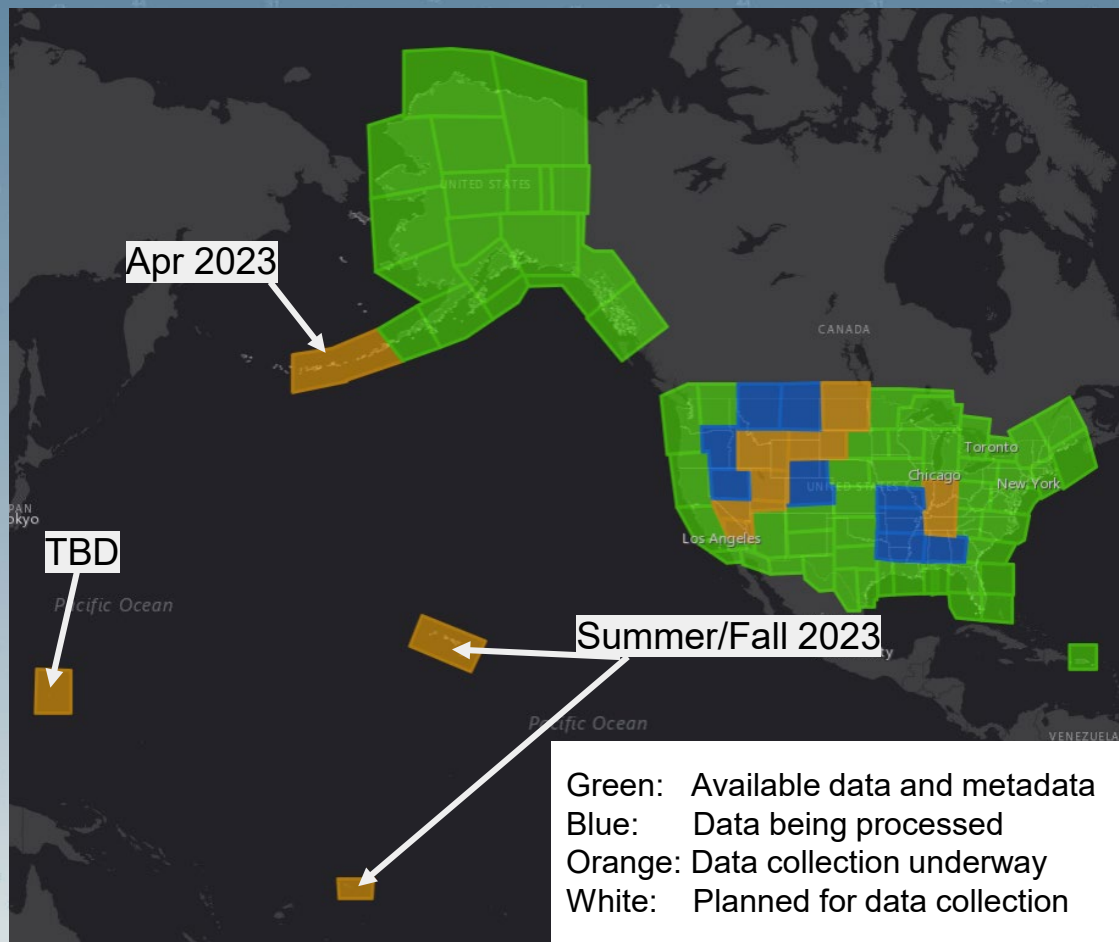
GRAV-D Update

95.72% of Target Area
Collected as of
August 2022



Guam/CNMI 2022

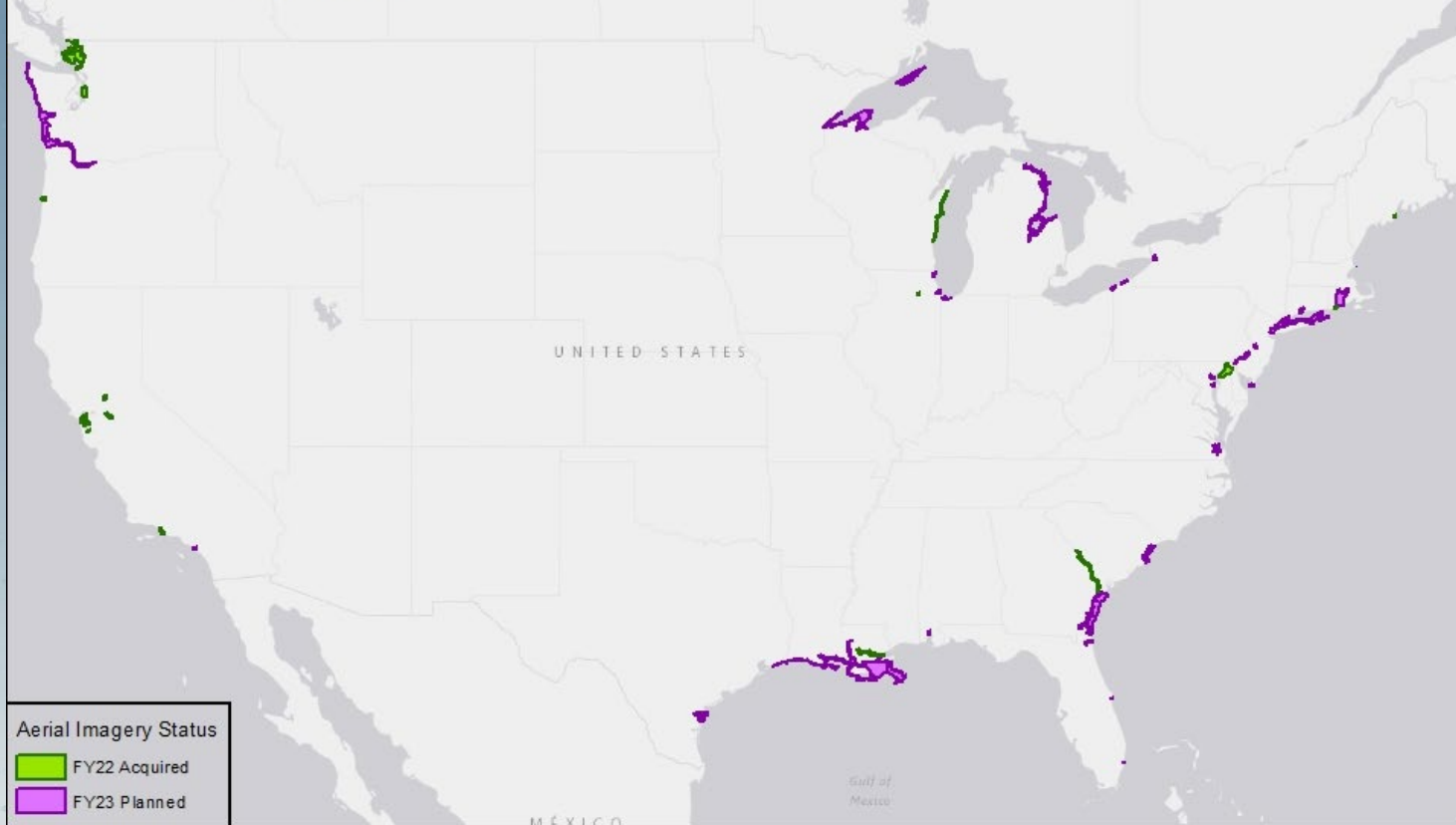
- 82% Complete
- 12 lines to the south remain
- NOAA to determine if/when to return



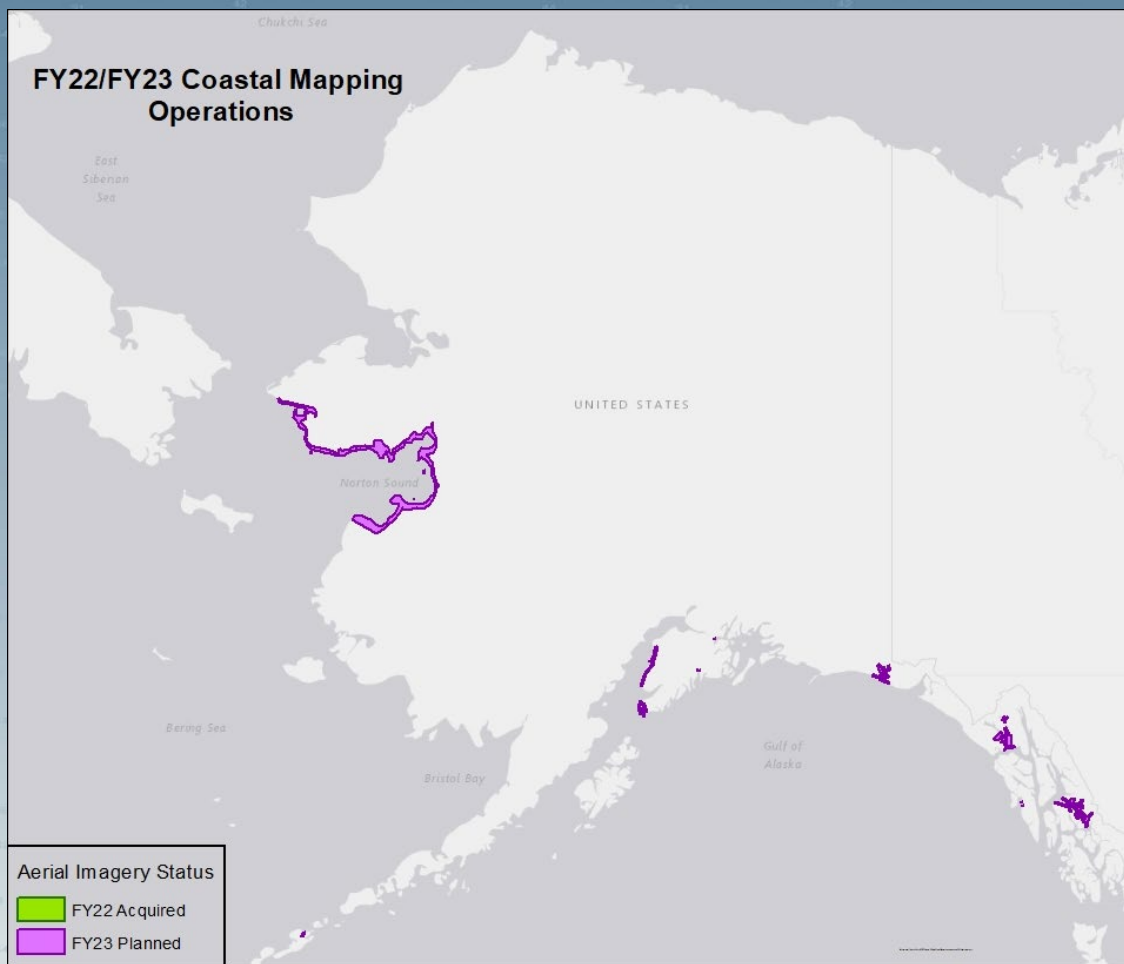
CMP FY22 Metrics

- **Updated 7.0% of the National Shoreline** with current/new aerial imagery and elevation data to improve navigational safety
- **Updated the shoreline in priority ports: 58 ports** (33% of 175 ports)
- **Analyzed priority ports for changes (CSCAP): 50** (29% of 175 ports)
- **Updated 554 statute miles of Alaska Shoreline** with current/new aerial imagery and elevation data to improve navigational safety
- **Delivered 6,503 square miles of Topographic/Bathymetric Lidar data** to OCM for inclusion in Digital Coast
- **Updated 3% of the Continually Updated Shoreline Product (CUSP)**

FY22/FY23 Coastal Mapping Operations



FY22/FY23 Coastal Mapping Operations



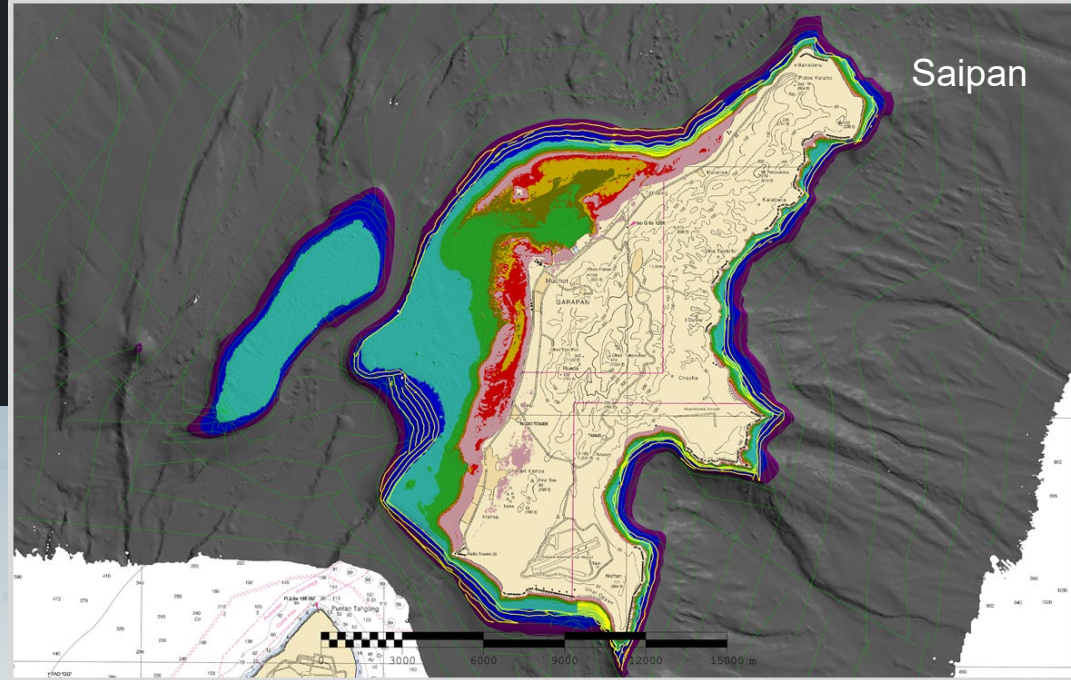
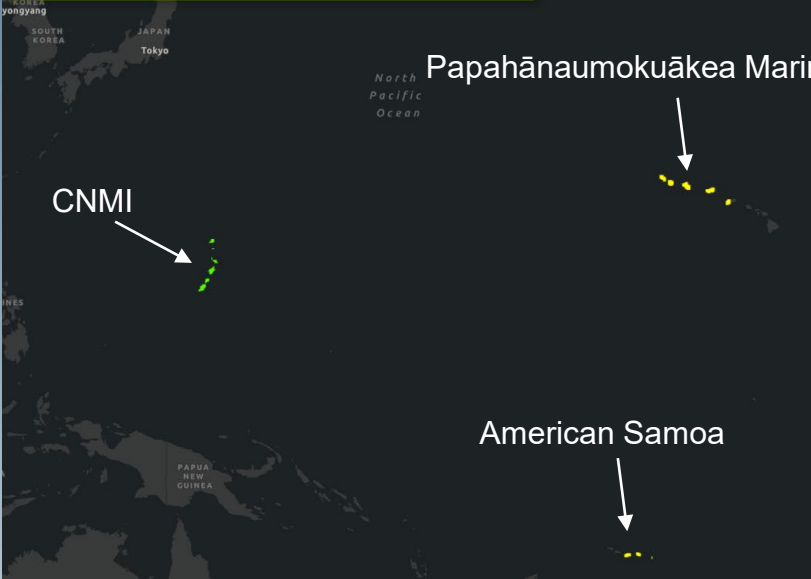
FY23 Topobathy Lidar Operations

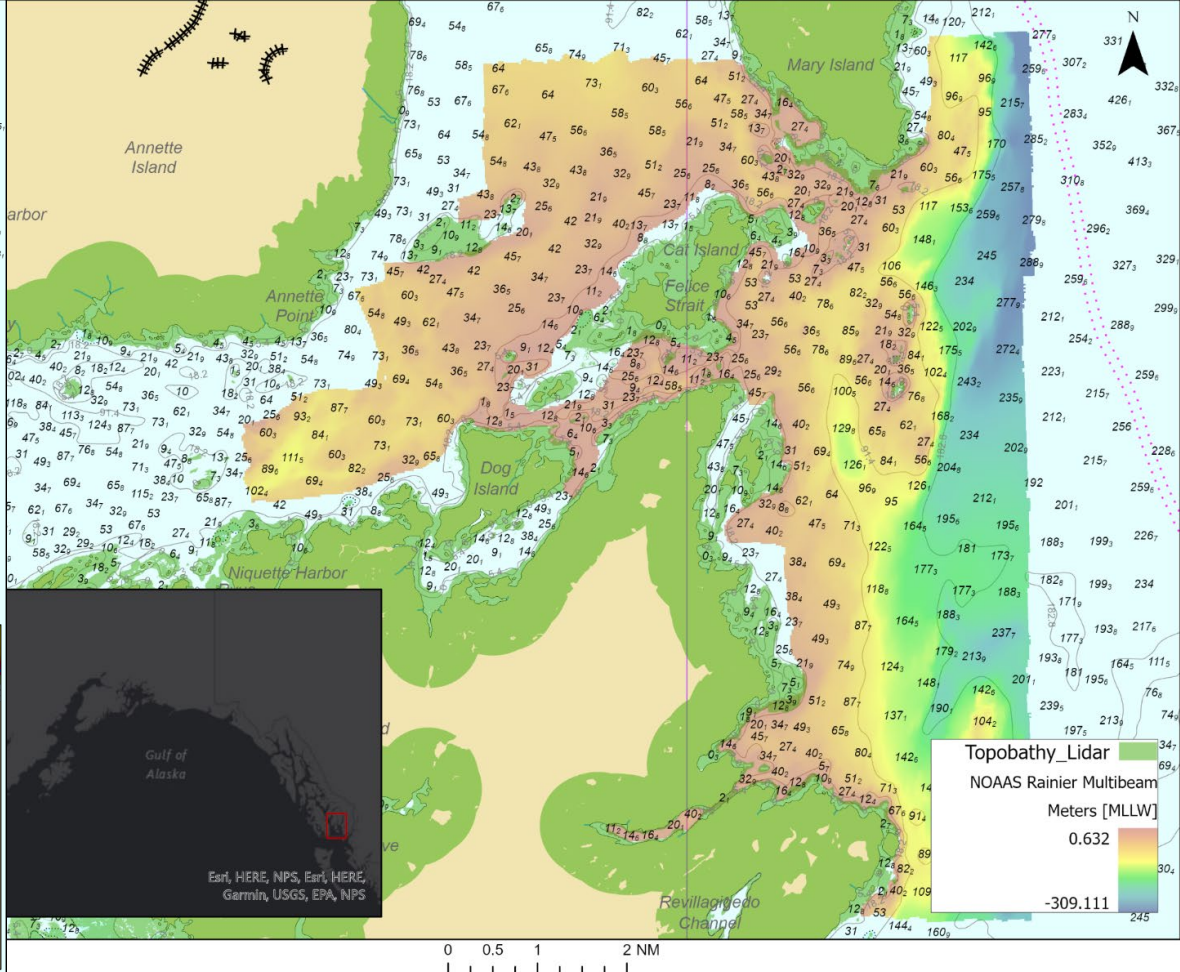
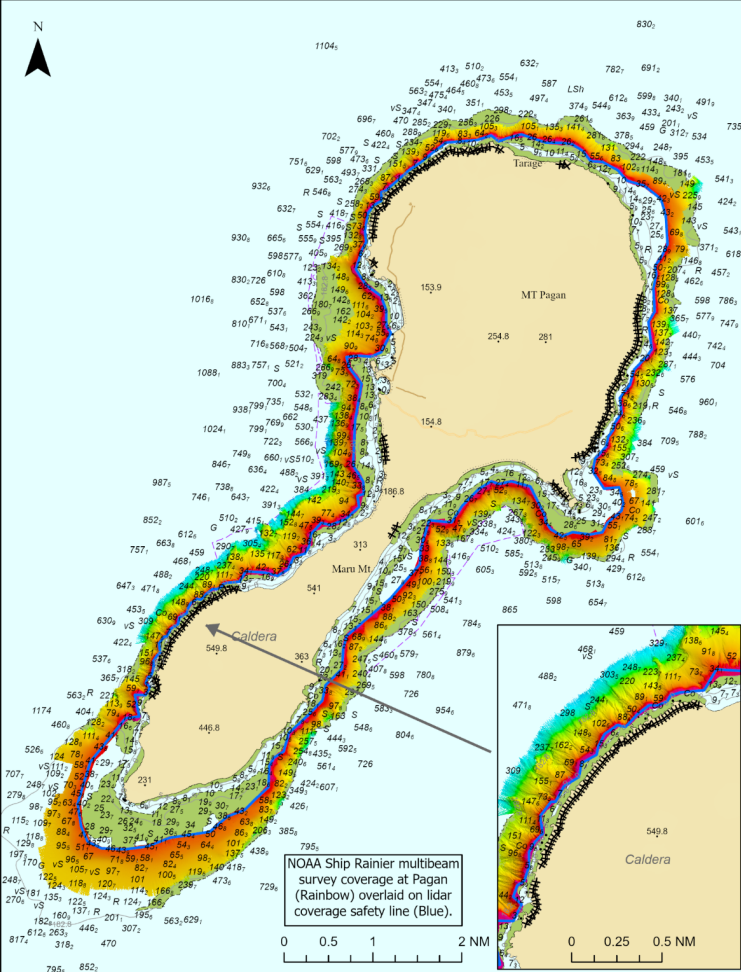
Eastern side of the NWHI

topobathy_tracking_inhouse projects

- Planned
- Acquired
- Completed

American Samoa

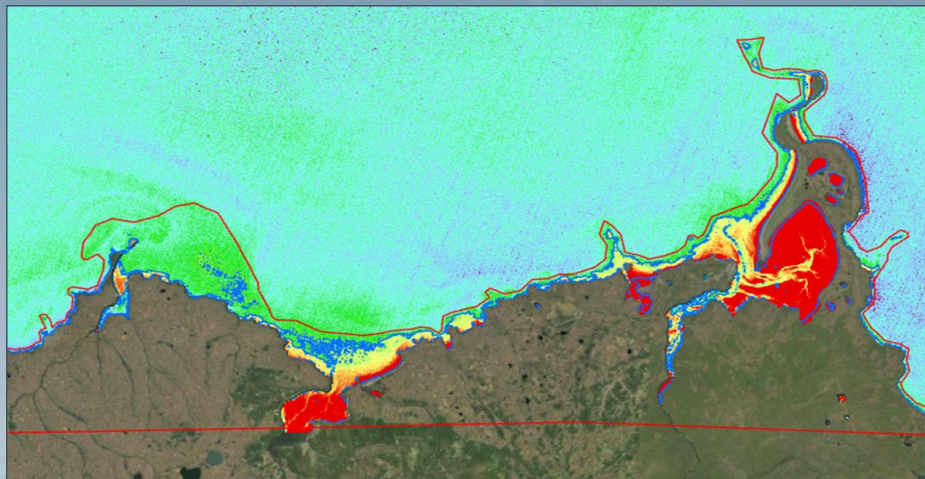
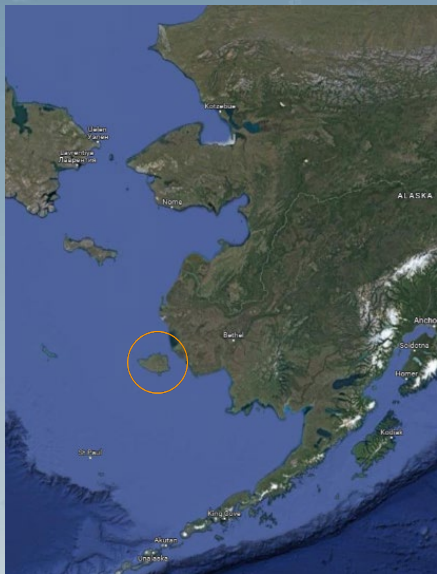




HYDROGRAPHIC SERVICES REVIEW PANEL



Satellite Derived Bathymetry Reconnaissance



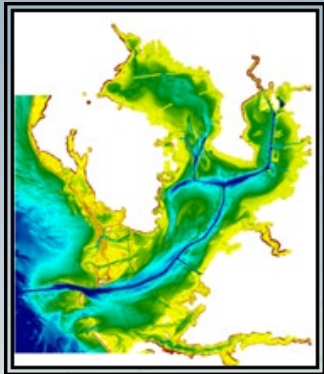
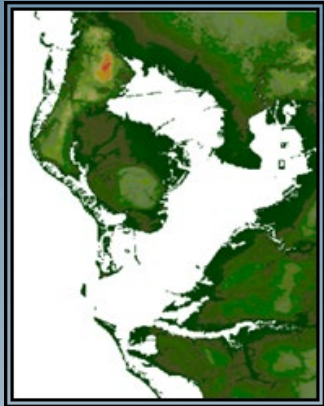
5m depth contour to keep OCS hydro contractor field unit safely offshore - away from **3 potentially dangerous un-charted features**

Still a lot of research is needed for SatBathy to work well in AK - there are a lot of challenges...

Nunivak, AK in support of FY22 OCS hydrographic operations

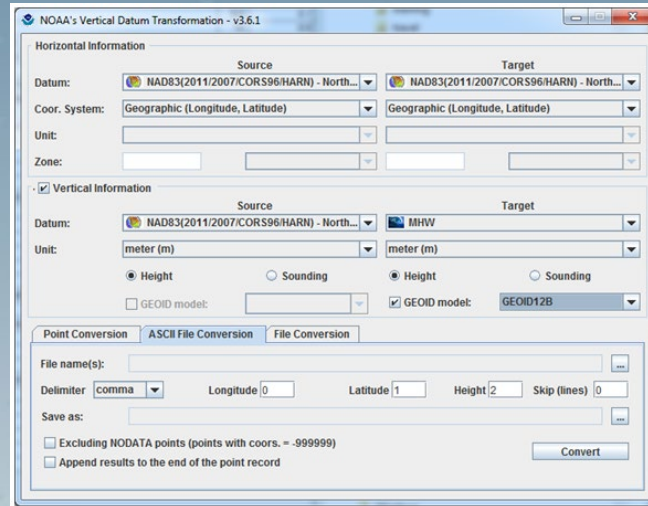
VDatum

USGS Topography



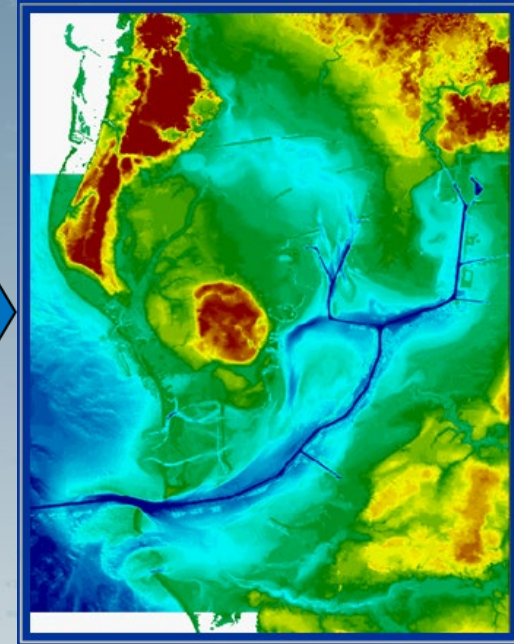
NOAA Bathymetry

Mapping the Land-Sea Interface: VDatum converts elevation data (heights and soundings) among different vertical datums



VDatum is a Java application developed jointly by :

- National Geodetic Survey (NGS)
- Office of Coast Survey (OCS)
- Center for Operational Oceanographic Products & Services (CO-OPS)



VDatum Version Updates: vdatum.noaa.gov

(Version 4.4.2 Released, May 13, 2022) Notable updates since COVID

3.9:

- Availability of Low Water Datum transformation for the Great Lakes

4.0:

- Integration of NADCON 5.0 release 20160901
- xGEOID18B incorporation
- Southeast Alaska Regional Model Release
- New York Bight/Long Island Sound Regional Model Update
- Ordinary High Water Mark (OHWM) relative to IGLD 1985

4.1:

- Integration of VERTCON 3.0 release 20190601
- Support for ITRF 2014
- GEOID18 incorporation
- xGEOID19b incorporation
- Spatially Varying Uncertainty (SVU) implementation for NY/LIS regional models

4.2:

- New support for xGEOID20b (BETA)
- New support for GEOID18 Spatially Varying Uncertainty
- New support for varying uncertainty associated with individual hybrid GEOIDs
- Opened up NGVD29 to NAVD88 conversions in Alaska, Local Tide “LT” conversion with PRVD02, VIVD09, ASVD02, NMVD03, and the GUVDD63 conversion to GUVDD04 associated with the VERTCON 3.0 release 20190601.
- Full VDatum API (BETA) Release

4.3:

- Updated Chesapeake and Delaware Bay Regional Model, that includes Spatially Varying Uncertainty
- Added Spatially Varying Uncertainty Availability layer into the online map

4.4:

- Updated Continental United States West Coast Regional Model, that includes Spatially Varying Uncertainty (SVU)
- Updated website to include information on Interpolation usage
- Partial Implementation of new HTDP version 3.4.0 (the following regions have been implemented, with additional to be incorporated in the near future)



VDatum: Moving Forward

Version 4.5:

- Columbia River Datum implementation
- Additional HTDP 3.4.0 regions
- NCAT (NADCON5), changes NGS is making

Regional Model Development and Updates Schedule:

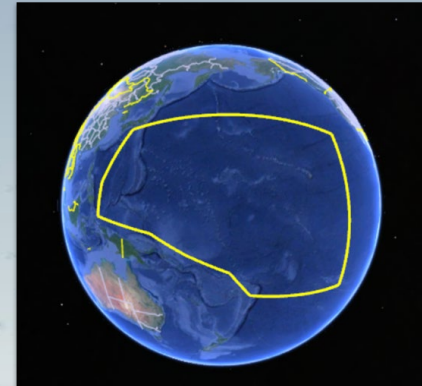
- PR/USVI (FY24)
- TX/Western LA (FY24)
- Statewide AK Model (FY24) - *High Uncertainties may be present due to known data gaps*
- HI and Pacific Model (2027)
- Regional Model, Gulf of Mexico, Caribbean, East Coast (2027)

Moving towards Regional Modeling Approach:

❖ 4 Regional Models

- West Coast CONUS
- Gulf of Mexico/Caribbean/East Coast
- Alaska
- Pacific Islands

❖ Allows us to be agile in updating more frequently, ingesting new data, and fixing any issues





HYDROGRAPHIC SERVICES REVIEW PANEL



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