National Geodetic Survey Update

National Spatial Reference System Modernization and Coastal Mapping Activities

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Hydrographic Services Review Panel Virtual Meeting
September 23, 2020
Outline

1. NSRS Modernization Delay Messaging
2. Foundation CORS Infrastructure
3. Emergency Response Imagery - Hx Laura & Hx Isaias
4. 2018 and 2019 Hurricane Supplemental Progress
5. Coastal Mapping Status
6. VDatum Update
7. Socioeconomic Benefit Studies
Delayed Release of the Modernized NSRS

In June 2020, NGS announced a delay in the release of the modernized National Spatial Reference System (NSRS). Decision was driven by difficulties in workforce hiring and retention and numerous challenges meeting GRAV-D data collection milestones.

Outreach includes NGS News announcement, updated webpage, articles in newsletters, updates to federal partners, NGS geodetic advisor network, and NGS webinar (August 2020) - 437 people from 46 states, DC, and PR

- Most people expected the delay.
- Many people and state agencies expressed relief at having more time to prepare.
- The overriding sentiment is that NGS should take the time required to do it correctly and to engage with vendors that can make implementation easier for end users.
The NOAA Foundation CORS Network (NFCN)

Phases of Foundation CORS

1. **Incorporate partner stations**
   Existing NASA and NSF stations brought into the NFCN
   [NASA Agreement signed 12/18/2019. Discussions ongoing with NSF.]

2. **Upgrade existing NGS CORSs**
   Upgrades include fully-GNSS capable equipment, RINEX3 support, and submission to IGS.

3. **Construct ~9 new stations**
   These NGS-owned stations will be co-located at sites with existing space geodetic techniques.

Station Distribution:
- 26 in North America
- 4 in the Pacific
- 3 in the Caribbean
- 3 in the Marianas

Current status: 19 of 36 stations established
Emergency Response Imagery

Hx Isaias - Oak Island, NC

Hx Laura - Sabine Neches Canal, TX
Coastal Mapping: Hurricane Supplemental

2018 Supplemental Extents

Hurricane Florence Supplemental

Typhoon Yutu Supplemental

Hurricane Michael Supplemental

2018 Supplemental Extents

- HARVEY
- IRMA
- MARIA
Coastal Mapping Updates

Exceeded FY20 performance targets:
- Delivered 6.8% of the national shoreline.
- Updated shoreline for 57 of the nation's priority ports, 35 priority ports analyzed for change.
- Collected and delivered 1422 square miles of topobathy lidar which was used to update 270+ ENCs.

FY 21:
- Expect to meet similar metrics to FY20 for shoreline and ports.
- Travel restrictions will impact delivery of topobathy lidar and possibly imagery collection.

Upgraded topobathy lidar system:
- 140K pps
- Full-Waveform
- Depth range of 2.7/Kd

Upgraded camera system:
- 2 x 150mp RGB
- 2 x 100mp NIR
- 123° Field of View
VDatum Update

West Coast Regional Model

AK Exploratory Model Run

Supplemental

VDatum Version 4.1 Released !!

June 26, 2020

New Features Include:

- Integration of VERTCON 3.0 release 20190601
- Support for ITTF 2014
- GEOID16 Incorporation
- vGEOID16 Incorporation
- Spatially Varying Uncertainty (SVU) implementation for limited regional models:
  - New Jersey - coastal embayment - North, Version 1.2
  - New York - The Great South Bay, Version 3.4
  - New Jersey/New York/Connecticut - Northern NJ, NY Harbor, western Long Island Sound, Version 3.4
  - New York/Connecticut/Rhode Island - Outer NY Bight, eastern Long Island Sound, Block Island Sound, Version 3.4

Bug Fixes Include:

- Fixes an issue that could cause Well Kriging to fail
- Fixes NAD27 SPC zone list issue
- Fixes NADCON5 converting issue
- Fixes forward/backward consistency in 3D Paraellization
- Fixes NAD83 (2011) to PRJ92 conversion issue
- Enhancement of vGEOID transform field
- Fix command line issue calling HDF5 with no file
- Fixed NullPointerException when processing Kriging file conversion.

VDatum Version 4.1.1 Released !!

September 10, 2020

New Features Include:

- Added support for NAD83/95 (T1) and NAD83(2011) to work with State Plane Coordinates
- Enhancement of GEOID lot logic and selection

Bug Fixes Include:

- Fixes Geoid/Factor issue
- Fixes Test to Krig conversion issue
- Fixes an issue in the online version that caused the GEOID value to be missing during M2O Conv
- Fixes a broken link for AK - Southast on the downloads page
Socioeconomic Benefit Studies

The NGS Aeronautical Survey Program (ASP) provides airport geodetic control, runway, navigational aid, obstruction, and other aeronautical data critical to operating the National Airspace System.

A new study estimates the ASP provides between $3 billion and $13.2 billion to the U.S. economy over the next decade.

Other studies on NGS’ benefits to the Nation:

- The NGS Gravity Program - $4.2 and $13.3 billion over ten years, with a middle scenario of $8.7 billion.
- The Regional Geodetic Advisor Program - estimated 2018 annual total benefits between $18.6 and $38.7 million.
- NOAA’s Coastal Mapping Program - estimated 2011 annual total benefits to be $241 million.
- The Value of CORS and GRAV-D to the U.S. economy - CORS benefits is estimated as $758 million per year (2008).