

Issue 26 October 2021

# NSRS Modernization News

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

## New Papers

Two new papers were released last quarter, relevant to NSRS modernization:

[Improvement of the GRAV-D Processing](#) (Willberg, Ahlgren, Zingerle, and Pail), NOAA TR NOS NGS 85: Outlines various improvements to the processing of GRAV-D data that will ultimately be considered in the final processing of all airborne gravity used to create GEOID2020.

[Transforming Modernized NSRS Coordinates and Uncertainties from One Frame to Another](#) (Smith), NOAA TM NOS NGS 89: Documents the equations necessary to transform coordinates between modernized NSRS frames or from an NSRS frame to ITRF2020. This is a companion to [NOAA TM NOS NGS 85](#).

## First Joint USA/Canada/Mexico Geoid

Last quarter, the geoid model [xGEOID20](#) was released. Although [previous xGEOID models \(14 – 19\)](#) were released as NGS-only models, xGEOID20 is the first gravimetric geoid model jointly computed by NGS, the Canadian Geodetic Survey (CGS) of Natural Resource Canada and the National Institute of Statistics and Geography of Mexico (INEGI). It covers all of North America, including Canada, Mexico, the contiguous United States, Alaska, Hawaii, the Caribbean (including U.S. territories Puerto Rico and Virgin Islands), Central America, and Greenland. For more info visit the [NGS website](#) or the [International Service for the Geoid](#). Future xGEOID models, and the final GEOID2022 model are expected to continue this tri-agency collaboration.

## Progress in Ongoing Projects

There are currently **27 ongoing projects** related to NSRS modernization around NGS. Here are some highlights:

### OPUS-Projects 4.0 and OPUS-Projects 5.0 (Project Manager: Dr. Daniel Gillins)

[OPUS-Projects 4.0](#), was released in July, providing new tools to streamline the preparation and submission of static GPS surveys to NGS for review and publication on datasheets. NGS has also released [OPUS-Projects 5.0 for BETA testing](#). Using the [GVX file format](#), users may upload GNSS vectors from real-time kinematic (RTK) or real-time network (RTN) observations for inclusion in the adjustment. Once BETA testing is complete, OP5.0 will replace OP4.0.

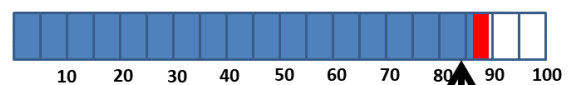
### Geoid Monitoring Service (Project Manager: Dr. Kevin Ahlgren)

NGS field crews were recently in Alaska conducting GNSS, deflection of the vertical, and gravity observations in support of the Geoid Monitoring Service (GeMS). These observations will help quantify geoid change in this region since the USC&GS measured leveling lines after the 1964 Alaska earthquake and provide a basis for monitoring future geoid change in Alaska.

GRAV-D progress last quarter: **up 2.8% to 89.6%**

**AHEAD OF** (new) Schedule!

Recently: Montana, South Dakota



Schedule: 84.0%