

Issue 25 July 2021

NSRS Modernization News

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

Updates to Blueprint Documents

[Blueprint for the Modernized NSRS, Part 1: Geometric Coordinates and Terrestrial Reference Frames](#) was updated and released this last quarter.

Geospatial Summit

NGS hosted the completely virtual 2021 Geospatial Summit on May 4–5, 2021. All recordings and presentation slides are now [available here](#).

Progress in Ongoing Projects

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

NOAA Foundation CORS Network, NFCN (Project Manager: Will Freeman)

Collaborating with NGA, NGS has identified locations to install NFCN stations at the VLBA facilities near Fort Davis, Texas, and Pie Town, New Mexico. The plans also include placing radar corner reflectors to calibrate Synthetic Aperture Radar (SAR) satellites, improving the monitoring of the surface movement at and between CORSs.

New Least-Squares Adjustment Code Library (Project Manager: Dr. Dru Smith)

NGS has contracted with Polaris Geospatial Services to produce a comprehensive statistical analysis and least-squares adjustments (LSA) code library. This new library will replace most, if not all, LSA code at NGS including ADJUST, ASTA and CALIBRATE. This new code (working name “LASER” for Least-squares

Adjustments: Statistics, Estimates and Residuals) is written in C++ and relies upon the high-efficiency Eigen linear algebra libraries. In recent tests, LASER replicated the national readjustment of 2011 (which created NAD 83(2011) epoch 2010.00 – 1.2M observations, 240k unknowns) on a 6 core laptop, without Helmert Blocking in under 2 hours. Future tests will include large leveling and gravimetric networks. LASER will be the LSA engine behind OPUS 6.0 and all REC and SEC adjustments.

M-PAGES (Project Manager: Dr. Andria Bilich)

NGS is developing a multi-GNSS replacement for PAGES, called M-PAGES. This software is now capable of GPS and Galileo solutions. Additional capabilities are under active development, and solutions are being compared to the legacy PAGES software currently in production OPUS.

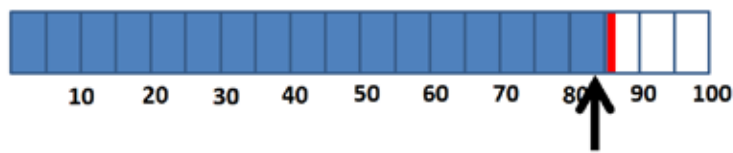
GRAV-D (Project Manager: Jeffery Johnson)

GRAV-D collected data May 7–June 15 over the Alaskan Aleutian Islands with a NOAA WP-3D Orion aircraft normally used for atmospheric or hurricane research. The block over the Aleutians is 52% complete and we will look for an opportunity to return in the next two years to complete the remaining data collection.

GRAV-D progress last quarter: **up 1.5% to 86.8%**

AHEAD OF (new) Schedule!

Recently: Montana, Alaska



Schedule: 83.5%