

PAIGH U.S. National Section Monthly Meeting – February Meeting Notes

Tuesday, February 14, 2023

Meeting attendees:

Deirdre Bishop, Emily Carlson, Lynda Liptrap, Julia Lopez, Dana Caccamise, Dan Roman, Gustavo Maldonado Davila, Eric van Praag, Paul Riley, Sergio Rodriguez, David Salisbury, Dan Winester, Roger Payne, Roxana Rodriguez Coriano, Lidia Lopez, Alejandra Magallanes, Patricia Solís, Christopher Hanson, Erick Langer

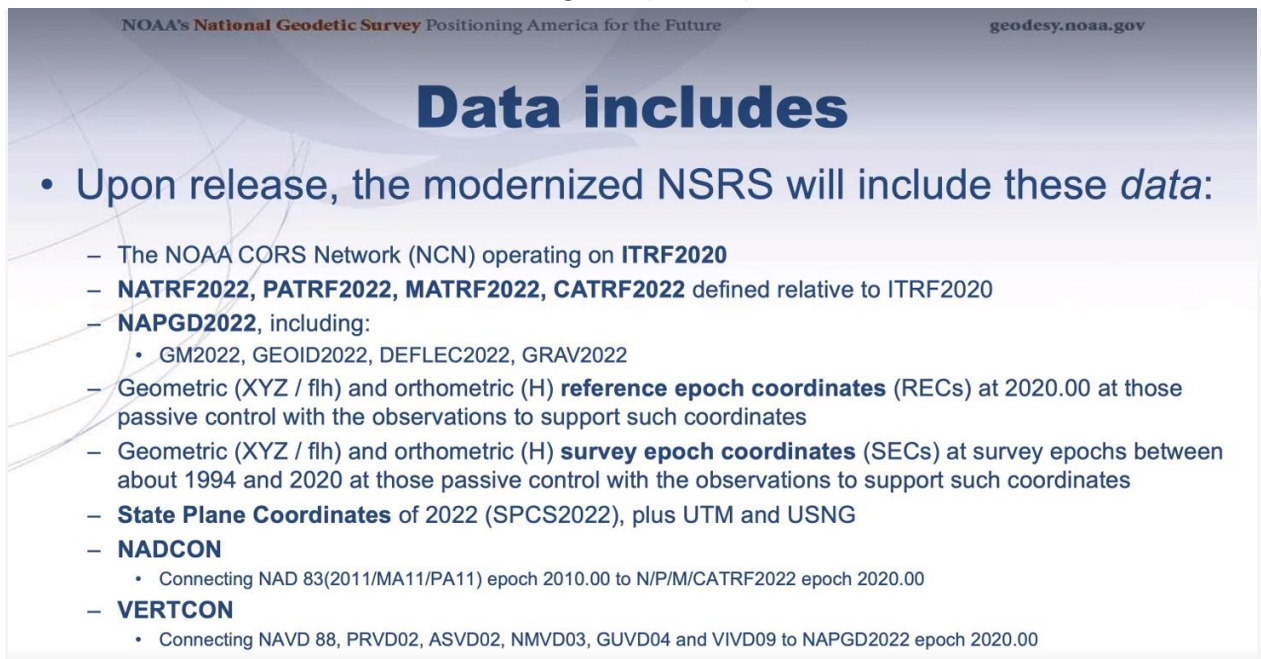
1) Welcome

- Lynda and Deirdre welcomed the group. Deirdre noted that it was wonderful to see some of us in person at the Esri Federal GIS Conference, Feb 7 and 8. She also noted that she hopes many of us will be able to attend our in-person USNS Annual Meeting on March 30-31.
- Dan Roman announced that Dana Caccamise would be taking over for Dan Winester as the National Geodetic Survey representative at PAIGH.
- Deirdre introduced Dan Roman, Dana Caccamise, and Dan Winester from the National Geodetic Survey (NGS) who are working on upcoming changes to the National Spatial Reference System here in the United States and that Dana Caccamise would be presenting on that work at today's meeting.

2) Presentation - The modernization of the United States National Spatial Reference System (NSRS)

- The NSRS supports all the physical infrastructure in the U.S. and its territories, utilized by agencies including the National Oceanic and Atmospheric Administration (NOAA), the Federal Emergency Management Agency (FEMA), the United States Army Corps of Engineers, the United States Geological Survey (USGS), and the National Geospatial Intelligence Agency (NGA).
- Its mission is to define, maintain and provide the framework for all positioning activities in the Nation. The modernization effort continues; there are some delays and the link provided on slide 3 provides more information on those delays. The rollout for all new products is set for 2025. GPS on Benchmarks project has extended its deadline to September 30, 2023.
- The future reference frames are tectonic based and will be based on a densified ITRF model (an example would be SIRGAS).
- The NAD 83 will move forward in the same order, with the exception of NAD 83 (2011), where it will be split into the North American Terrestrial Reference Frame of 2022 (NATRF2022) and the Caribbean Terrestrial Reference Frame of 2022 (CATRF2022), which recognizes the Caribbean plate.
- The NSRS will also have the first-ever joint geoid model, vertical datum that includes Canada, Mexico, and all of the U.S. territories, about 1/3 of the globe. It's called the North American Geopotential Datum (NAPGD2022).
- The old heights system (NAVD 88, etc.) will now be replaced by the Geopotential Datum of 2022 as the geopotential data. A huge component of this effort is the Gravity for the Redefinition of the American Vertical Datum (GRAV-D). The GRAV-D project is about 98% complete.
- Once the 2022 Datum is complete, it's expected that there's about a 1 to 1.5 meter shift vertically and 2.5 to 4 meters, horizontally, in the Pacific.
- The modernization is taking two independent systems and conforming it to one system where everything will be accessed to the geometric control through GNSS.

- There will be new types of coordinates: reference epoch coordinates and survey epoch coordinates. The reference epoch coordinates will be an estimated snapshot of the entire network, updated every 5 to 10 years, to consistently check and update the network. The survey epoch coordinates are the coordinates that you get at the time of the observation, so it can be multi survey epoch coordinates. They can show changes if you were to plot series of these survey epochs over time and how it's moving in the reference frame.
- There will be new tools available on the NGS website. Dana demonstrated using NCAT, the coordinate conversion transformation tool, used for point conversions, singular or multi-point. He noted that the data passes through transformations and errors can occur in those calculations. NGS is available to reprocess Global Navigation Satellite System (GNSS) observations if needed and is happy to work with anyone needing help assessing the geospatial data outcome.
- There are two types of survey foot, the U.S. survey and the international foot, and the international foot is more accurate. The U.S. survey foot will continue to be supported in the SPCS 83 system indefinitely but moving forward the international survey foot will be used.
- Some recent accomplishments: a rotation model for the Mariana plate was released; a decision to replace all least-squares adjustment (LSA) software to a single suite called the Least Squares Adjustment: Statistics, Estimates and Residuals (LASER); M-PAGES is still under development but it can now process data from all existing constellations (integrated into OPUS-S for testing).
- The Online Positioning User Service (OPUS) is the NGS flagship GNSS product. NGS is incorporating the kinematic type observations and so had to develop a GNS vector exchange format so that they could work with the industry. This will be replaced by the GDX in early 2023. OPUS-Projects 5.1.2 is the current version, but it's soon going to be moved to this production system (see link on slide 21), and it will work with the current NSRS.
- The modernized NSRS will include the following data (slide 22):



NOAA's National Geodetic Survey Positioning America for the Future geodesy.noaa.gov

Data includes

- Upon release, the modernized NSRS will include these *data*:
 - The NOAA CORS Network (NCN) operating on **ITRF2020**
 - **NATRF2022, PATRF2022, MATRF2022, CATRF2022** defined relative to ITRF2020
 - **NAPGD2022**, including:
 - GM2022, GEOID2022, DEFLEC2022, GRAV2022
 - Geometric (XYZ / flh) and orthometric (H) **reference epoch coordinates** (RECs) at 2020.00 at those passive control with the observations to support such coordinates
 - Geometric (XYZ / flh) and orthometric (H) **survey epoch coordinates** (SECs) at survey epochs between about 1994 and 2020 at those passive control with the observations to support such coordinates
 - **State Plane Coordinates** of 2022 (SPCS2022), plus UTM and USNG
 - **NADCON**
 - Connecting NAD 83(2011/MA11/PA11) epoch 2010.00 to N/P/M/CATRF2022 epoch 2020.00
 - **VERTCON**
 - Connecting NAVD 88, PRVD02, ASVD02, NMVD03, GUV04 and VIVD09 to NAPGD2022 epoch 2020.00

- The modernized NSRS will include the following tools:

NSRS Tools upon release

- At a minimum, NGS is targeting these tools upon release:
 - A **Data Delivery System** capable of yielding:
 - RECs on some kind of datasheet
 - Information on CORs
 - A downloadable version of LASER
 - A **browser-based online multi-GNSS service**:
 - Like OPUS-S
 - Like OPUS-Projects 5.x
 - **NCAT and Vdatum** capable of invoking **NADCON**, **VERTCON** and **SPCS2022**
- The NGS work is still ongoing. It will continue during the rollout of the modernized NSRS. The tools released after that initial release include: integrating leveling, classical data and gravity into OPUS, full integration of all old tools into the NCAT and Vdatum, the survey epochs prior to GPS and then the years after GPS up to 2020. As work completes, we'll keep reprioritizing.
- Timeline:
 - Resources are being diverted from tool building to the assurance of quality data
 - NGS anticipates the release of all data and limited tools by the middle of 2025.
 - Additional tools will continue in the out-years.
- NGS is happy to provide and help display how points on earth have moved, as we're on a dynamic earth that is moving.

3) 95th Anniversary of PAIGH

- Patricia Solís went to the anniversary celebration in Mexico City. There was a great turnout; about 40 people online and 56 in person. She counted 13 countries with representation, including about 7 ambassadors from those countries to Mexico. The OAS representative and the representative from the Ministry of Foreign Relations and Mexico also attended. She also noted that Dra. Patricia Galeana, former President of the History Commission, was present.
- A number of the resolutions for preparing historic celebrations were carried out.
- Patricia's photograph was added to the wall of Secretary Generals and Presidents, the first woman among all the former Presidents.
- They also unveiled a separate wall of just the women who have been authorities- Presidents or Vice Presidents, the Commission Presidents as well; Jean Parcher Wintemute was a part of that wall, about a dozen women who have been in those positions.

- Patricia had a tour of the building with a historical restorer who Secretary General Campuzano has engaged, who works for the cultural and historic ministry. They have been doing an analysis of the building; there's a lot of disrepair in the building and they're trying to find small ways of using personnel and smart ways to just make sure that that's taken care of. It's a good opportunity to think through what could be done for the 100th anniversary in a few years, to make sure that it's not in disrepair. It already looks a lot better.
- Ecuador and Peru donated portraits for the gallery of historians and geographers, now a total of six portraits of women.
- There are some dates that Patricia shared, although noted that they aren't all official yet:
 - Authorities meeting (Presidents of the Commissions)- Guatemala, June 26-30. That's when the technical assistance projects will be reviewed and decided upon by the authorities.
 - General Assembly- Dominican Republic, October 2-6 (tentative dates).
 - Centro Panamericano De Estudios E Investigaciones Geográficas (CEPEIGE)- Ecuador, November 28-30, celebrating their 50th anniversary this year. www.cepeige.org

4) Planning for the USNS Annual Meeting

- The meeting will take place virtually and in person at the Department of Commerce, March 30 and 31. More information will be coming on logistics, meeting room number, etc.
- Lynda stated that thoughts on topics will be collected via email this year. We'll be following up after the meeting to see who would like to speak, and we're going to get working on our agenda in the next couple weeks in earnest.
- Lynda introduced Julia Lopez and shared that members should expect to see email correspondence from Julia as she takes on more responsibilities for the USNS.

5) Walk on items

- There were no walk on items.

6) Next Meeting: Annual Meeting at the Department of Commerce, March 30 - 31, 2023