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National Spatial Reference System

The **National Spatial Reference System** (**NSRS**), managed by the National Geodetic Survey (NGS), is a coordinate system that includes latitude, longitude, elevation, and other values. The NSRS consists of a National Shoreline, the NOAA CORS Network[2] (a system of Global Positioning System Continuously Operating Reference Stations), a network of permanently marked points, and a set of models that describe dynamic geophysical processes affecting spatial measurements. The system is based on the datums NAD 83 and NAVD 88.[3]

A (relatively prominent) survey monument that is part of the NSRS[1]

In 2025 or 2026, the NSRS will be modernized with a focus on Global Navigation Satellite Systems (GNSS) and geoid use. It will use the following four frames of reference, each representing a tectonic plate:[4][5]

- North American Terrestrial Reference Frame of 2022 (NATRF2022)
- Pacific Terrestrial Reference Frame of 2022 (PTRF2022)
- Caribbean Terrestrial Reference Frame of 2022 (CTRF2022)
- Mariana Terrestrial Reference Frame of 2022 (MTRF2022)

Datum of 2022

The **North American-Pacific Geopotential Datum of 2022 (NAPGD2022)** is a new geodetic datum set to be produced by the U.S. National Geodetic Survey in 2025 or 2026 to improve the National Spatial Reference System (NSRS).[6][7][8] It will replace the North American Datum of 1983 (NAD 83) and the North American Vertical Datum of 1988 (NAVD 88) with a new geometric reference frame and geopotential datum.[9] In association with this release, a new, time-dependent geoid model, **GEOID2022**, will also be released.[10] The release date for both of these was initially planned to be 2022, hence the names, although they have been delayed.

The new reference frames will rely primarily on GNSS, such as the Global Positioning System (GPS), as well as on a gravimetric geoid model resulting from NGS' Gravity for the Redefinition of the American Vertical Datum (GRAV-D) Project. These new reference frames are intended be easier to access and to maintain than NAD 83 and NAVD 88, which rely on physical survey marks that deteriorate over time.[9]

See also

- Altitude
- Geodesy
- Sea Level Datum of 1929
- Topographic elevation
- Topography
- Reference ellipsoid
- Geoid

References

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3. "The National Spatial Reference System" (http://www.ngs.noaa.gov/INFO/OnePagers/NSRS.html). National Geodetic Survey. Retrieved April 3, 2013.
4. "How to Transition to the United States 2022 National Coordinate System Without Getting Left Behind" (https://www.unoosa.org/documents/pdf/psa/activities/2019/UN_Fiji_2019/S5-24.pdf) (PDF). United Nations Office for Outer Space Affairs.
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6. "Updated Implementation Timeline for the Modernized National Spatial Reference System (NSRS)" (https://www.federalregister.gov/documents/2024/10/09/2024-23347/updated-implementation-timeline-for-the-modernized-national-spatial-reference-system-nsrs). *Federal Register*. 9 October 2024. Retrieved 20 November 2024.
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10. US Department of Commerce, National Oceanic and Atmospheric Administration. "Naming Convention - New Datums - National Geodetic Survey" (https://geodesy.noaa.gov/datums/newdatums/naming-convention.shtml). *geodesy.noaa.gov*. Retrieved 2024-04-16.

External links

- Doyle, David R. "Development of The National Spatial Reference System" (http://www.ngs.noaa.gov/PUBS_LIB/develop_NSRS.html). National Geodetic Survey.
- "United States Geological Survey home page" (https://www.usgs.gov/).
- "U.S. National Geodetic Survey home page" (http://www.ngs.noaa.gov/).
- "Geodetic Glossary" (http://www.ngs.noaa.gov/CORS-Proxy/Glossary/xml/NGS_Glossary.xml). United States National Geodetic Survey.
- "Orthometric Height Conversion tool" (https://geodesy.noaa.gov/NCAT/). United States National Geodetic Survey.