Transitioning to the United States 2022 National Coordinate System Without Getting Left Behind

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The National Geodetic Survey (NGS)
Our Nation’s first science agency

1807
Thomas Jefferson
Survey of the Coast

1807
Ferdinand R. Hassler
First Superintendent

1878
U.S. Coast and
Geodetic Survey

1970
NOAA is
established
U.S. Department of Commerce
National Oceanic & Atmospheric Administration

National Geodetic Survey

Mission: To define, maintain & provide access to the National Spatial Reference System (NSRS) to meet our Nation’s economic, social & environmental needs
Role of National Spatial Reference System

- The **NSRS** is the official coordinate system for all geospatial work done by the U.S. *non-military* federal government. (Latitudes, Longitudes, Heights)
- A geodetic **datum** is an abstract coordinate system with a reference surface (such as NAD83(2011) or GUVD04) that serves to provide known locations to begin surveys and create maps.
- **Geodetic control** provides a common reference system for establishing coordinates for all geographic data on geodetic datum.
- All **National Spatial Data Infrastructure framework data** and users' applications data require geodetic control to accurately register spatial data.
NSRS - Evolved Over Time

Network Accuracy

NOAA's National Geodetic Survey
Positioning America for the Future

geodesy.noaa.gov
These *are* part of the NSRS*

<table>
<thead>
<tr>
<th>Horizontal Datums and Geometric Reference Frames</th>
<th>Vertical Datums</th>
<th>Great Lakes Datums</th>
<th>Geoid Models</th>
<th>Transformations and Conversions</th>
</tr>
</thead>
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<tr>
<td>USSD</td>
<td>NGVD 29</td>
<td>IGLD55</td>
<td>GEOID90</td>
<td>NADCON</td>
</tr>
<tr>
<td>NAD 27</td>
<td>NAVD 88</td>
<td>IGLD85</td>
<td>GEOID93</td>
<td>VERTCON</td>
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<td>NAD 83</td>
<td>PRVD02</td>
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<td>GEOID96</td>
<td>SPCS 27</td>
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<td>GEOID99</td>
<td>SPCS 83</td>
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<td>GEOID12(A,B)</td>
<td></td>
</tr>
</tbody>
</table>

*This not a complete list.
These are *not* part of the NSRS*

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<tr>
<td>WGS 84</td>
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<td>OSU91A</td>
<td>CORPSCON</td>
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<tr>
<td>ITRF</td>
<td></td>
<td></td>
<td>EGM96</td>
<td>Appendix B.6 of DMA TR 8350.2 (WGS 84)</td>
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<tr>
<td>IGS</td>
<td></td>
<td></td>
<td>EGM2008</td>
<td>Oregon Coordinate Reference System</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The Kansas Regional Coordinate System</td>
</tr>
</tbody>
</table>

*This is not a complete list.*
NAD83 Shortcomings

- 2.2 m offset – NAD83 vs.
  - International Terrestrial Reference Frame (ITRF) \(~\text{International GNSS Service (IGS)}\)
  - World Geodetic System 1984 (WGS84)

- CORS <> passive network
Why replace NAD 83 & Vertical Datums?

- **Main driver:** *Global Navigation Satellite System (GNSS)*

- **ACCESS!**
  - GNSS equipment is fast, inexpensive, reliable (and improving)
  - Reduces reliance on finding survey control ("bench marks")

- **ACCURACY!**
  - Insensitive to distance-dependent errors; reliable
  - Immune to bench mark instability (referenced to CORS)

- **CONSISTENCY!**
  - Eliminates systematic errors in current datums
  - Aligned with global reference frames
  - Integrated system for both positions and heights ("elevations")
Support the users of the National Spatial Reference System.

Modernize and improve the National Spatial Reference System. (i.e., Replace NAD83 & NAVD88)

Expand the National Spatial Reference System stakeholder base through partnerships, education, and outreach.

Develop and enable a workforce with a supportive environment.

Improve organizational and administrative functionality.
2022 Datums Goals

- **“Replace NAD83”** - By 2022, reduce all definitional & access-related errors in geometric reference frame to 1 cm when using ≤30 min of GNSS data

- **“Replace NAVD88”** - By 2022, reduce all definitional & access-related errors in orthometric heights, relative to sea level, in geopotential datum to 2 cm when using ≤30 min of GNSS data

- Provide tools to easily transform between new old datums
Four Tectonic Plates NGS Monitors

In 2022, the entire National Spatial Reference System (NSRS) will be modernized and will contain **four new reference frames**:

- North American Terrestrial Reference Frame of 2022 (NATRF2022)
- Pacific Terrestrial Reference Frame of 2022 (PATRF2022)
- Caribbean Terrestrial Reference Frame of 2022 (CATRF2022)
- Mariana Terrestrial Reference Frame of (MATRF2022)
Guiding Principles

- The 2022 Datum will be modernized with Continuously Operating Reference Station (CORS) becoming the foundational component.

- The International Earth Rotation and Reference Systems Service (IERS) International Terrestrial Reference System (ITRF) will continue to be the worldwide standard reference system.

- NGS will continue to support the ITRF through International GNSS Service (IGS) reference sites.

- The NSRS will continue to be defined in relation to the ITRF.
Foundation CORS tentative target

Criteria

1. Co-located with space-based technology
2. Density
3. Euler pole
4. Additional site (Bermuda)
All coordinates and heights will change!
Approximate Horizontal Change
North American Plate

- Mariana Plate (Meters)
  - High: 1.4 m
  - Low: 1 m
- North American Plate (Meters)
  - High: 2 m
  - Low: 0 m
- Pacific Plate (Meters)
  - High: 4.3 m
  - Low: 2.3 m

Tectonic Plate Boundaries
How Geodesists View the World

- Earth's Surface
- Sea Level (geoid)
- Ellipsoid
ELLIPSOID - GEOID RELATIONSHIP

H = Orthometric Height  (NAVD88 or Local Mean Sea Level)
h = Ellipsoidal Height (NAD 83)
N = Geoid Height (GEOID12A, EGM08)

\[ H = h - N \]

Geoid = Equipotential (level) surface, which defines best, in a least-square sense, the global mean sea level.
Problems in Different Vertical Datums

Earth’s Surface

GPS-OH

Errors: ~50 cm average, 100 cm CONUS tilt, 50/70 cm in Hawaii, 1-2 meters average in Alaska

H (GPS-OH)

H (LMSL)

Leveled reference level

HNL BEN

Geoid12A

5.894 = 21.090 – (+15.196)m

5.894 = 5.320m (LMSL)

Difference ~ 0.574m or 1.87ft
Gravity for the Redefinition of the American Vertical Datum (GRAV-D)

- Changing from a leveling-based to a geoid/GNSS-based (gravimetric) vertical datum
- Orthometric heights accessed via GNSS accurate to 2 cm
- Three thrusts of project:
  - Airborne gravity survey of entire country and its holdings
  - Long-term monitoring of geoid change
  - Partnership surveys
- Working to launch a collaborative effort with the USGS for simultaneous magnetic measurement

Gravity and Heights are inseparably connected
Extent of Gravimetric Geoid Model
NAPGD2022

Guam and Northern Marianas Islands

American Samoa
**Vertical: Out with the old, in with the new**

The Old:
- NAVD 88
- PRVD 02
- VIVD09
- ASVD02
- NMVD03
- GUVD04
- IGLD 85
- IGSN71
- GEOID12B
- DEFLEC12B

The New:
- The North American-Pacific Geopotential Datum of 2022 (NAPGD2022)
  - Will include GEOID2022
  - DEFLEC2022
  - SGRAV2022

**Orthometric Heigths**
- Normal Orthometric Heigths
- Dynamic Heights
- Geoid Heights
- Deflections of the Vertical

*Estimated change in orthometric heights from NAVD 88 to NAPGD2022*
What to do with historic maps/charts?

Is the accuracy expected to be better than a few meters?

Stop. You won’t likely gain much by transforming.

Do you have trusted metadata which puts the map/chart in the NSRS?

Stop. Transformation tools only work in the NSRS and only if you trust the metadata.

Use NCAT to update the datums in 2022.
NGS Coordinate Conversion & Transformation Tool (NCAT)
### Transformed Coordinate

<table>
<thead>
<tr>
<th>Input Coordinate</th>
<th>Output Coordinate</th>
<th>Total Change + Uncertainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude</td>
<td>Latitude</td>
<td>Latitude -11.33696&quot; ± 0.005410&quot;</td>
</tr>
<tr>
<td>N21° 17’ 14.89778&quot;</td>
<td>N21° 17’ 03.56082&quot;</td>
<td>(-348.677 m ± 0.1664 m)*</td>
</tr>
<tr>
<td>21.2874716056</td>
<td>21.2843224502</td>
<td></td>
</tr>
<tr>
<td>Longitude</td>
<td>Longitude</td>
<td>Longitude 9.88061&quot; ± 0.002206&quot;</td>
</tr>
<tr>
<td>E202° 08’ 56.18143&quot;</td>
<td>E202° 09’ 6.06204&quot;</td>
<td>(284.812 m ± 0.0636 m)*</td>
</tr>
<tr>
<td>W1575103.81857</td>
<td>W1575053.93796</td>
<td></td>
</tr>
<tr>
<td>-157.8510607139</td>
<td>-157.8483160994</td>
<td></td>
</tr>
<tr>
<td>Ellipsoid Height (m)</td>
<td>Ellipsoid Height (m)</td>
<td>Ellipsoid Height Not given</td>
</tr>
<tr>
<td>Not given</td>
<td>Not given</td>
<td>Orthometric Height Not given</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Converted Coordinate

Reference Frame: NAD83(PA11)

<table>
<thead>
<tr>
<th>Lat-Lon-Height</th>
<th>SPC</th>
<th>UTM/USNG</th>
<th>XYZ (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude</td>
<td>Zone</td>
<td>Northing</td>
<td>Zone</td>
</tr>
<tr>
<td>N21° 17’ 03.56082&quot;</td>
<td>HI 3-5103</td>
<td>13,034.278 (m)</td>
<td>4</td>
</tr>
<tr>
<td>21.2874716056</td>
<td></td>
<td>42,763.293 (usft)</td>
<td>2,354,050.809</td>
</tr>
<tr>
<td>Longitude</td>
<td>Northing (m)</td>
<td>Easting</td>
<td>Northing (m)</td>
</tr>
<tr>
<td>E202° 09’ 6.06204&quot;</td>
<td></td>
<td>515,740.433 (m)</td>
<td>619.470.970</td>
</tr>
<tr>
<td>W1575053.93796</td>
<td></td>
<td>1,692,058.405 (usft)</td>
<td>00 25 05.18</td>
</tr>
<tr>
<td>-157.8483160994</td>
<td></td>
<td>1,692,061.789 (usft)</td>
<td></td>
</tr>
<tr>
<td>Ellipsoid Height (m)</td>
<td>Convergence</td>
<td>Scale factor</td>
<td>Scale factor</td>
</tr>
<tr>
<td>Not given</td>
<td>(dms)</td>
<td>0.999977638</td>
<td>0.999999306</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Combined factor</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>USNG</td>
<td>4QFJ1947054050</td>
</tr>
</tbody>
</table>

*You may change the default UTM zone. The change is processed interactively once a lat-long is converted; DO NOT click the Submit button.*
Map Projections
History and Future of State Plane

- **SPCS 27**: 1933 – 1986 (53 years, with some changes)
- **SPCS 83**: 1986 – 2022 (36 years, with some changes)
Linear distortion with respect to ellipsoid

This design approach used for SPCS 27 and 83 (minimizes distortion with respect to ellipsoid)
A New State Plane for 2022

- State Plane Coordinate System of 2022 (SPCS2022)
  - Referenced to 2022 Terrestrial Reference Frames (TRFs)
  - Based on same reference ellipsoid as SPCS 83 (GRS 80)
  - Same 3 conformal projection types as SPCS 83 and 27:
    - Transverse Mercator (TM)
    - Oblique Mercator (OM)
    - Lambert Conformal Conic (LCC)
Getting Acquainted with SPCS2022

- Distortion design requirements
  - *Minimize distortion* at topographic surface (not at ellipsoid surface)
  - **Purpose:** to reduce difference between and projected “grid” and actual “ground” distances
Linear distortion with respect to topographic surface

Projection axis \((k_0 > 1)\)

Topographic surface

Ellipsoid surface (non-intersecting)

Projection surface

Ellipsoid distance > ellipsoid distance

\(h\)

Horizontal ground distance ≈ ground distance

\((k > 1 \text{ and } \delta \approx 0)\)

This design approach will be used for SPCS2022 (minimizes distortion with respect to topography)
Changing projection axis to reduce distortion variation

Grid distance = ground distance at many points

Non-intersecting

Projection axis

Ellipsoid surface

Topographic surface

ONLY way to reduce variation in distortion is to change projection axis location (or change projection).

This design approach is being used for SPCS2022 (minimizes distortion with respect to topography).
More About SPCS2022

- **Statewide zones** created for *all* states
- **Default zones** created as necessary
  - To ensure *all* states and territories covered
  - Modify existing zones to meet policy

States often want statewide *and* small zones

- *Statewide*: Single geometry required for state GIS
- *Sub-zones*: Lower distortion for surveying/engineering
Maps of all SPCS2022 layers

State Plane Coordinate System of 2022 (955 zones in 56 states and territories)

- **Conterminous United States**: 882 zones in 48 states plus DC
  - 1 layer (10 states plus DC)
  - 2 layers (25 states)
  - 3 layers (11 states)

- **Guam and Commonwealth of the Northern Mariana Islands**: 1 zone

- **Hawaii**: 20 zones, 2 layers

- **Puerto Rico & U.S. Virgin Islands**: 1 zone

**Number of SPCS2022 zone layers per state (as of 6/11/2022)**

- **1**: (10 states plus 6 territories)
- **2**: (26 states)
- **3**: (12 states)
**Transverse Mercator projections**
North American Datum of 1983 (Pacific)

<table>
<thead>
<tr>
<th>Zone</th>
<th>Central meridian</th>
<th>Central meridian scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>155° 30' W</td>
<td>0.999 966 667...</td>
</tr>
<tr>
<td>2</td>
<td>156° 40' W</td>
<td>0.999 966 667...</td>
</tr>
<tr>
<td>3</td>
<td>158° 00' W</td>
<td>0.999 99 (exact)</td>
</tr>
<tr>
<td>4</td>
<td>159° 30' W</td>
<td>0.999 99 (exact)</td>
</tr>
<tr>
<td>5</td>
<td>160° 10' W</td>
<td>1.000 000 (exact)</td>
</tr>
</tbody>
</table>

**Areas within ±100 ppm distortion**
(±0.53 ft per mile):
- 45% of combined zone land area
- 94% of all cities and towns
- 96% of population

**Distortion values on land (ppm)**
All zones: Cities and towns:
- Min = -694
- Max = +29
- Range = 723
- Median = -25
- Mean = -163
  (weighted by population)

**Linear distortion at topographic surface**
(parts per million)

- < -400
- to -400
- to -350
- to -300
- to -250
- to -100
- ±50
- to +100
- to +200
- to +250
- to +300
- > +300

Created 07/15/2018

NOAA's National Geodetic Survey
Oblique Mercator projection

Pacific Terrestrial Reference Frame of 2022

Origin latitude: 20° 55' N
Origin longitude: 157° 30' W
Skew axis scale: 1.000 000 (exact)
Skew azimuth: -56°

Areas within ±100 ppm distortion
(±0.53 ft per mile):
54% of entire zone land area
95% of all cities and towns
97% of population

Distortion values on land (ppm)

<table>
<thead>
<tr>
<th>Entire zone:</th>
<th>Cities and towns:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min = -656</td>
<td>Min, Max = -184, +57</td>
</tr>
<tr>
<td>Max = +70</td>
<td>Range = 241</td>
</tr>
<tr>
<td>Range = 726</td>
<td>Median = -2</td>
</tr>
<tr>
<td>Mean = -130</td>
<td>Mean = -6 (weighted by population)</td>
</tr>
</tbody>
</table>

Linear distortion at topographic surface (parts per million)

-900 to 0
-700 to -900
-500 to -700
-300 to -500
-100 to -300
0 to 100
100 to +100
+100 to +200
+200 to +300
+300 to +400

Created 07/15/2018

NOAA’s National Geodetic Survey
SPCS 83 shorter than SPCS2022 by 0.0563 ft, or 10.8 parts per million (ppm)

SPCS2022 longer than ground distance by 0.0001 ft (0.02 ppm)

Compare grid distances: SPCS2022 statewide versus SPCS 83 Hawaii Zone 3 in Honolulu
And now for something completely different...
A tale of two feet

Two versions of “foot” in current use:

“Old” U.S. survey foot $\Rightarrow$ “New” international foot

$1 \text{ ft} = 0.3048006096\ldots \text{ m}$ $1 \text{ ft} = 0.3048 \text{ m exactly}$

differ by

2 parts per million (ppm) or $\sim 0.01 \text{ ft/mile}$

A real problem with real costs
Who is responsible for standards?

*Today:* National Institute of Standards and Technology
Congress is the Authority

Per the U.S. Constitution
(Article I, Section 8, Clause 5)

“The Congress shall have
Power ... To coin Money ... and fix the Standard of Weights and Measures”

Why? To avoid the “toothbrush problem”
The trouble with standards...

Standards are like toothbrushes. Everyone agrees they are desirable...

*Without uniformity, standards are useless*

... but nobody wants to use someone else’s

Image from beyondplm.com
Why make the change?

• That was original intent (60 years ago!)
• Two “feet” is inefficient and causes confusion
  – Leads to errors that cost money
  – Absurd to have “same” unit that differs by 2 ppm
  – Defeats purpose of having a length standard
• Only recognized in part of U.S.
• NGS software can support backward-compatibility

Now is the time
• Many changes already being made for 2022
• Change in foot trivial compared to other changes
• U.S. survey foot problems will never go way if not addressed
**Converted coordinates will be in output datum.**

**Export Results to**
- [PDF](#)
- [Graph](#)
- [Excel](#)
- [CSV](#)
- [Next](#)

<table>
<thead>
<tr>
<th>LLh</th>
<th>SPC</th>
<th>UTM (m)</th>
<th>XYZ (m)</th>
<th>USNG</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SrcLat</strong></td>
<td>21.2874716056</td>
<td>Zone: HI 3-5103</td>
<td>Zone: 4</td>
<td>4QFJ1947054050</td>
</tr>
<tr>
<td></td>
<td>[N21°17'14.8978']</td>
<td>Northing: 13,034.278</td>
<td>Northing: 2,354,050.809</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Northing (utm): 42,763.293</td>
<td>Northing (usft): 42,763.379</td>
<td></td>
</tr>
<tr>
<td></td>
<td>±0.005410</td>
<td>Easting: 515,740.435</td>
<td>Convergence: 619,470.972</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Easting (utm): 1,662,058.410</td>
<td>Easting (usft): 1,662,061.794</td>
<td></td>
</tr>
<tr>
<td>Siglat (arcsec)</td>
<td>±0.002206</td>
<td>00 03:18.22</td>
<td>Scale factor: 0.99977638</td>
<td></td>
</tr>
<tr>
<td>SrcLon</td>
<td>[W157°51'06.972']</td>
<td>Convergence (dms): 00 25 05.18</td>
<td>Combined factor: N/A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[W157°51'03.8185']</td>
<td>Scale factor: 0.99969306</td>
<td>Combined factor: N/A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DestLat</strong></td>
<td>21.2843224502</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[N21°17'03.56082']</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>±0.005410</td>
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<td></td>
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</tr>
<tr>
<td>Siglon (arcsec)</td>
<td>±0.002206</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>SrcEht (m)</strong></td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DestEht (m)</strong></td>
<td>N/A</td>
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</tr>
<tr>
<td><strong>Sight (m)</strong></td>
<td>±N/A</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*You may change the default UTM and SPC zones, where applicable. The change is processed interactively once a lat-long is converted; DO NOT click the Convert button.*
Horizontal difference in coordinates due to difference between international and US survey foot

SPCS 83 AZ Central

UTM 83 12 North

Flagstaff
Prescott
Phoenix
Yuma
Tucson

0 50 100 150 200 Miles
Horizontal error in feet when incorrect type of foot is used for UTM Zone 4N in Hawaii (U.S. survey vs. international foot)

Contour interval = 0.2 foot
How can you prepare for 2022 Datum?

Procedures and Workflows:

• Analyze current procedures and workflows
• Create plans for adjusting future data collection, including contract language

Data:

• Maintain raw data collected today for transformations to the new datums in the future
• Ensure *proper metadata for current data* and planned data collection to ensure the proper transformations will be used in the future (datum, foot)
• Share information with NGS so we can understand agency challenges in converting current data to new datums
What to expect: Your coordinates will change

The magnitude of change will vary based on the datum you are using and your geographic location. View the maps below to see the approximate horizontal and height changes when the new reference frames are adopted.

You can use xGEOID models to approximate vertical change in your area.

- **Approximate Ellipsoid Height Change**
- **Approximate Orthometric Height Change**

**Blueprint for the Modernized NSRS**
- **Part 1: Geometric Coordinates (PDF, 1.2MB)**
- **Part 2: Geopotential Coordinates (PDF, 2.4MB)**
- **Part 3: Working in the Modernized NSRS (PDF, 1.2MB)**
State Plane Coordinate System (SPCS)

SPCS is a system of large-scale conformal map projections originally created in the 1930s to support surveying, engineering, and mapping activities throughout the U.S. and its territories. As a reminder, a map projection is a systematic transformation of the latitudes and longitudes of locations on the surface of a sphere or ellipsoid representing the Earth to grid coordinates (x, y or easting, northing values) on a plane.

Since its inception, SPCS has served as a practical means for NGS customers to access to the National Spatial Reference System (NSRS). These web pages will help you convert coordinates, find related NGS policies and other documents, read about the history and status of current SPCS, and learn about how SPCS will change in 2022.

The map below shows the full extents and all zones of the 1927 and 1983 versions of SPCS (select the map for a higher resolution version). View more detailed maps or a map depicting SPCS 83 legislation.

Full extents and all zones of the 1927 and 1983 versions of SPCS. Map High Res Version
Delayed Release of the Modernized NSRS

NOAA’s National Geodetic Survey (NGS) is announcing a delay in the release of the modernized National Spatial Reference System (NSRS).

In 2007, NGS began planning for the modernized NSRS, acquiring its first airborne gravimeter, creating and initiating the Gravity for the Redefinition of the American Vertical Datum (GRAV-D) project and by 2008 had codified its modernization plans into a Ten Year Plan. At that time, the target completion date was 2018. By 2013, that date seemed unlikely, due to both the broadening of the GRAV-D project coverage area and the experience of five years of operational planning and execution.

In 2013, NGS revised its 2007 Strategic Plan, and targeted 2022 as the date of the release of the modernized NSRS. This date was reinforced with a 2018 Strategic Plan revision. By 2017, confidence in hitting the 2022 target was high enough to reach final agreement with Canada and Mexico on a naming convention for certain components, to include “2022” in their names.

Since 2017, operational, workforce, and other issues have arisen and compounded, causing NGS to recently re-evaluate whether a successful roll-out by 2022 is possible. The most significant impacts have been in workforce hiring and retention, and in meeting GRAV-D data collection milestones, which underpin the NSRS modernization efforts.

NGS is currently conducting a comprehensive analysis of ongoing projects, programs, and resources required to complete NSRS modernization and will continue to provide regular updates on our progress. To get the latest news on NSRS modernization and track our progress, subscribe to NGS News or visit our “New Datums” web pages.

Here are brief answers to some expected questions:

Q) How long will the delay be?
A) We don’t know. At best, it now looks like the 2024–2025 timeframe.

Q) Will the names stay the same?
A) Yes, terms containing “2022” such as “GEOD2022” and “NATRF2022” will remain the same.

Q) How will this affect deadlines, such as for SPCS and GPS on BM data submittals?
A) Those deadlines will not be changed.

Further details, and more answers are available on this FAQ.
Summary or Bottom Line

If you do geospatial work in the United States and its territories, and you work in the National Spatial Reference System, then every product you’ve ever made…

– every survey
– every map
– every lidar point cloud
– every image
– every DEM

… WILL have NEW coordinates in 4/5 years.
Mahalo
Questions ????

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