

# Federal Geodetic Control Subcommittee Update to Coordination Group



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*September 11, 2018*

# Topics

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- ❖ FGCS Membership
- ❖ Information on New Datums
- ❖ Recent Activities
- ❖ Geodetic Control Theme Personnel
- ❖ Dataset Updates
- ❖ FGCS Meetings
- ❖ Next Steps

# FGCS Membership

The Federal Geodetic Control Subcommittee helps coordinate the planning and execution of geodetic surveys, developing standards and specifications for these surveys, and exchanging geodetic survey data and technical information among Federal agencies.

<https://www.fgdc.gov/organization/working-groups-subcommittees/fgcs>



# Information on “New Datums”

<https://geodesy.noaa.gov/datums/newdatums/>

- ❖ What to expect
- ❖ How to prepare
- ❖ Track our progress
- ❖ Related projects
- ❖ Educational videos
- ❖ Learn more
- ❖ FAQs
- ❖ Contact us
- ❖ Sign up for updates

The screenshot shows the National Geodetic Survey (NGS) website. The header includes the NOAA logo and the text "National Geodetic Survey Positioning America for the Future". A navigation menu contains links for "NGS Home", "About NGS", "Data & Imagery", "Tools", "Surveys", "Science & Education", and a search bar. The main content area is titled "New Datums" and features a sidebar with links: "Home", "What to expect", "Get prepared", "Track our progress", "Naming Convention", "Watch videos", "Related projects", "Learn more", "New Datums FAQ", "Contact Us", and a "Subscribe for email notifications" button. The main text area is titled "New Datums: Replacing NAVD 88 and NAD 83" and explains that these datums will be replaced in 2022. It includes a "Why is NGS replacing NAD 83 and NAVD 88?" section and a "See our videos!" call to action. A sidebar on the right contains "FAQs" and "Geodetic Datums" sections. The footer includes "Website Owner: National Geodetic Survey / Last modified by NGS Infocenter Feb 22 2018" and a list of links: "NOS Home", "NGS Employees", "Privacy Policy", "Disclaimer", "USA.gov", "Ready.gov", "Site Map", and "Contact Webmaster".

# NSRS Modernization Industry Workshop

Industry needs and concerns in anticipation of Modernizing the National Spatial Reference System in 2022

Debrief of the Workshop given on June 7, 2018

[Webinar Information](#)

The screenshot displays the National Geodetic Survey (NGS) website. At the top, the NGS logo and the text "National Geodetic Survey Positioning America for the Future" are visible. A navigation menu includes "NGS Home", "About NGS", "Data & Imagery", "Tools", "Surveys", and "Science & Education".

The main content area features a "Webinar Series" section with links for "Overview", "Upcoming Webinars", "Recorded Webinars", "User Forums and Q&A Sessions", and "Frequently Asked Questions (FAQ)". Below this is "Contact information" with an "Email us" link and a "Subscribe for webinar notifications" button.

The primary article is titled "Industry Engagement to Modernize the National Spatial Reference System (NSRS)" dated June 7, 2018, by Dru Smith, NGS. The text describes a workshop held in May 2018 to engage industry stakeholders in preparing for the NSRS Modernization effort, which will culminate with the replacement of the North American Datum of 1983 (NAD 83) and the North American Vertical Datum of 1988 (NAVD 88) in 2022. It mentions that the May 2018 meeting facilitated an exchange of information between NGS technical experts and industry counterparts, targeting surveying equipment vendors, GIS/CAD/transformation software vendors, and mobile laser scanning vendors. It also notes that NGS Subject Matter Experts will continue to work with industry software developers, engineers, and customer representatives from target industry groups in the coming years to prepare for NSRS Modernization.

While the May workshop registration was strictly limited to facilitate small group discussions, everyone can join this public webinar to debrief the event on June 7, 2018. Additionally, they plan to host a "more traditional" Geospatial Summit in 2019, and there will be many additional opportunities for direct industry engagement as they continue to prepare for the culmination of NSRS Modernization in 2022.

Join this webinar to learn about the topics discussed and preliminary outcomes from this year's inaugural Industry Workshop.

Below the text is a video player titled "Welcome to the NGS Webinar Series". The video player includes a list of instructions:

1. The audience will be muted, but can submit questions using the "question" function.
2. Complete the evaluation form after the webinar.
3. We'll provide Certificates of Attendance for participants in the webinar.
4. Technical Rating: Intermediate: Some prior knowledge of the topic is helpful.
5. View recordings and download presentations ~1 week after webinar.

The video player shows a timestamp of 0:00 / 46:07 and includes controls for volume, full screen, and a menu. Below the video player are two buttons: "DOWNLOAD VIDEO" and "DOWNLOAD SLIDES".

# NGS Coordinate Conversion and Transformation Tool (NCAT)

NCAT combines several previously separate transformation tools into a single browser-based user interface that supports single- and multi-point conversions, web services, and downloadable software.

<https://geodesy.noaa.gov/NCAT/>

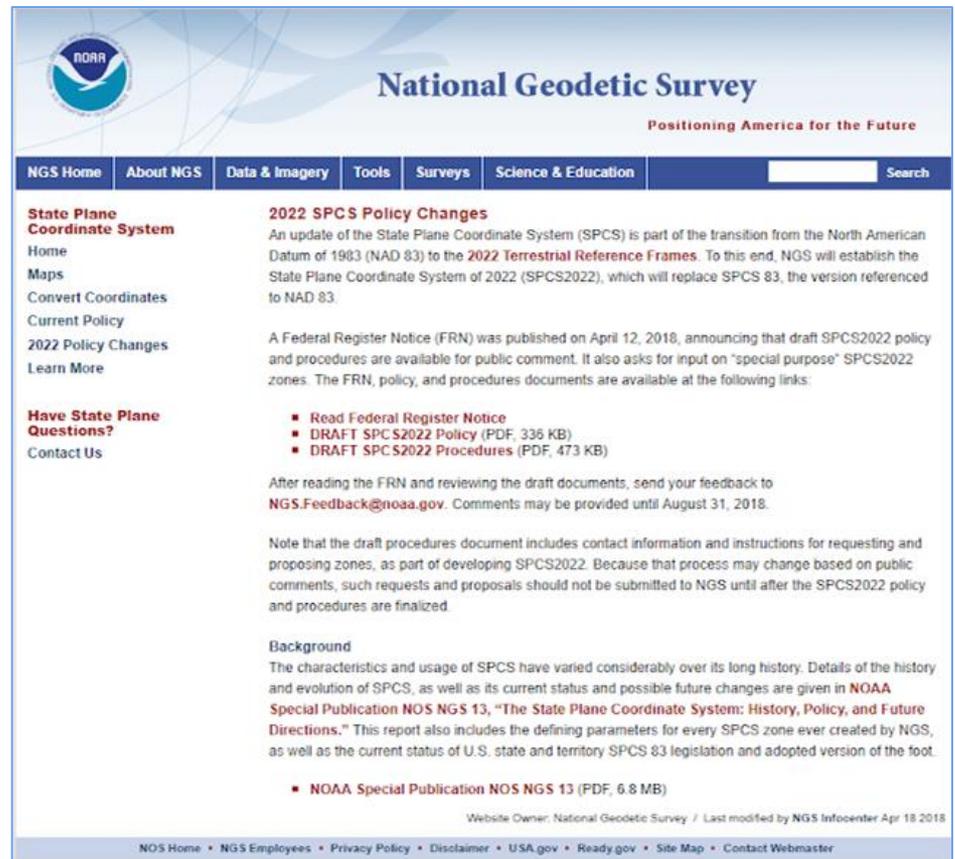
The screenshot shows the NGS Coordinate Conversion and Transformation Tool (NCAT) interface. The header includes the NOAA logo and the title "NGS Coordinate Conversion and Transformation Tool (NCAT)" with the National Geodetic Survey logo. The navigation menu contains "NGS Home", "About NGS", "Data & Imagery", "Tools", "Surveys", "Science & Education", and "National Geodetic Survey". The main content area has tabs for "Single Point Conversion", "Multipoint Conversion", "Web services", "Downloads", and "About Conversion Tool". The "Convert from:" section has radio buttons for "LLh" (selected), "SPC", "UTM", "XYZ", and "USNG". Below this, there are input fields for "Enter lat-lon in decimal degrees" (Lat: 39.2240867222, Lon: -98.5421515000) and "or degrees-minutes-seconds" (Lat: N, 39-13-26.71220, Lon: W, 098-32-31.74540). A map of the United States shows a location marker in Kansas. The "Ellipsoid Height (m)" field is empty. The "Input datum" is set to "NAD83(2011)" and the "Output datum" is also "NAD83(2011)". A "Convert" button is present. Below the button, there are "Export Results to" options for PDF, CSV, XLS, and KML. At the bottom, there are radio buttons for "LLh", "SPC", "UTM (m)", "XYZ (m)", and "USNG". A footer note states: "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." The footer also includes "NOGS Home • NGS Employees • Privacy Policy • Disclaimer • USA.gov • Ready.gov • Site Map • Contact Webmaster".

# State Plane Coordinates for 2022

A Federal Register Notice solicited comments on Draft Policy and Draft Procedures documents concerning changes to the State Plane Coordinate System (SPCS).

SPCS 83 (tied to NAD 83) will be replaced by SPCS2022, which will be related to the 2022 Terrestrial Reference Frames.

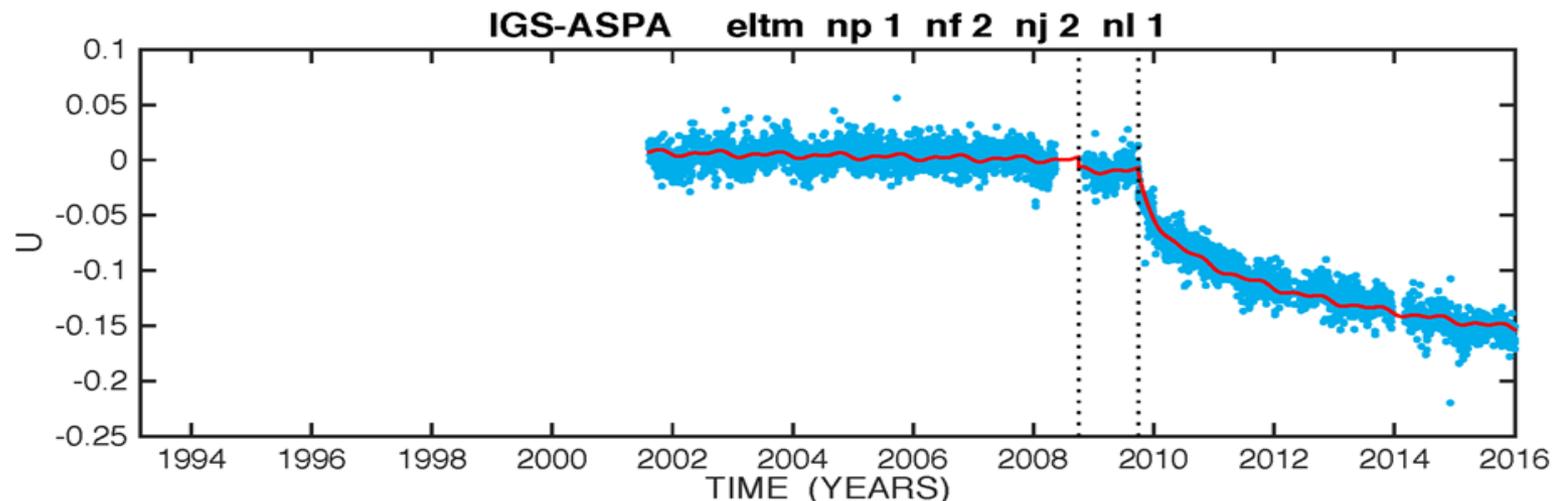
<https://geodesy.noaa.gov/SPCS/index.shtml>



The screenshot shows the National Geodetic Survey (NGS) website. The header includes the NOAA logo and the text "National Geodetic Survey" with the tagline "Positioning America for the Future". A navigation bar contains links for "NGS Home", "About NGS", "Data & Imagery", "Tools", "Surveys", and "Science & Education", along with a search box. The main content area is titled "State Plane Coordinate System" and "2022 SPCS Policy Changes". It provides an update on the transition from the North American Datum of 1983 (NAD 83) to the 2022 Terrestrial Reference Frames. A Federal Register Notice (FRN) was published on April 12, 2018, announcing draft SPCS2022 policy and procedures for public comment. Links are provided for "Read Federal Register Notice", "DRAFT SPCS2022 Policy (PDF, 336 KB)", and "DRAFT SPCS2022 Procedures (PDF, 473 KB)". A feedback email address, [NGS.Feedback@noaa.gov](mailto:NGS.Feedback@noaa.gov), is listed with a deadline of August 31, 2018. A "Background" section explains the history and evolution of SPCS. The footer includes "Website Owner: National Geodetic Survey / Last modified by NGS Infocenter Apr 18 2018" and a list of links: "NOS Home", "NGS Employees", "Privacy Policy", "Disclaimer", "USA.gov", "Ready.gov", "Site Map", and "Contact Webmaster".

# Geodetic Control in American Samoa

- ❖ An earthquake occurred in 2009
- ❖ All vertical control has been degraded by decimeters
- ❖ The lone CORS site demonstrates magnitude



Recommendations:

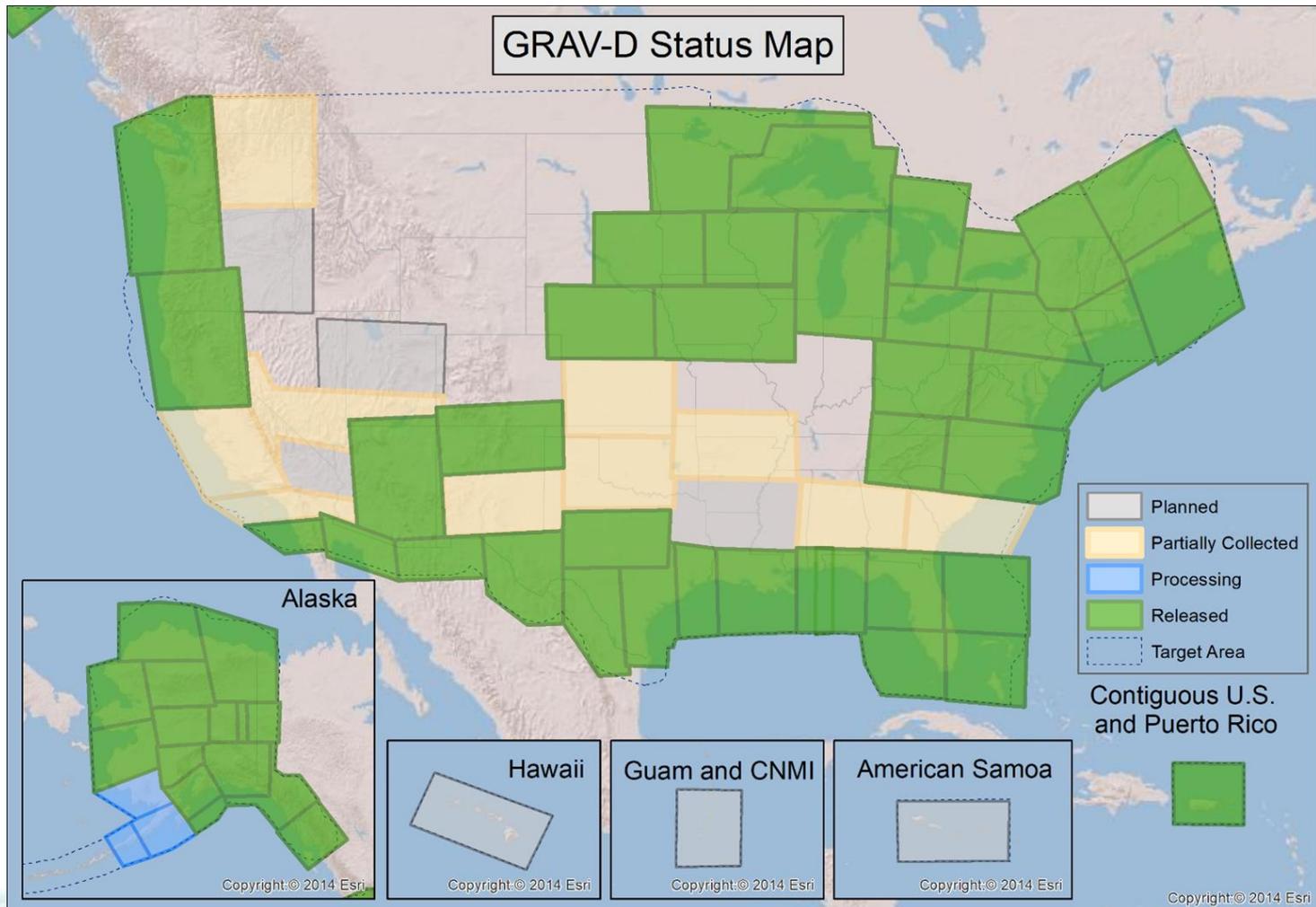
1. **Deprecate** ASVD02
2. Investigate possible replacement

# Geodetic Control Theme Leadership

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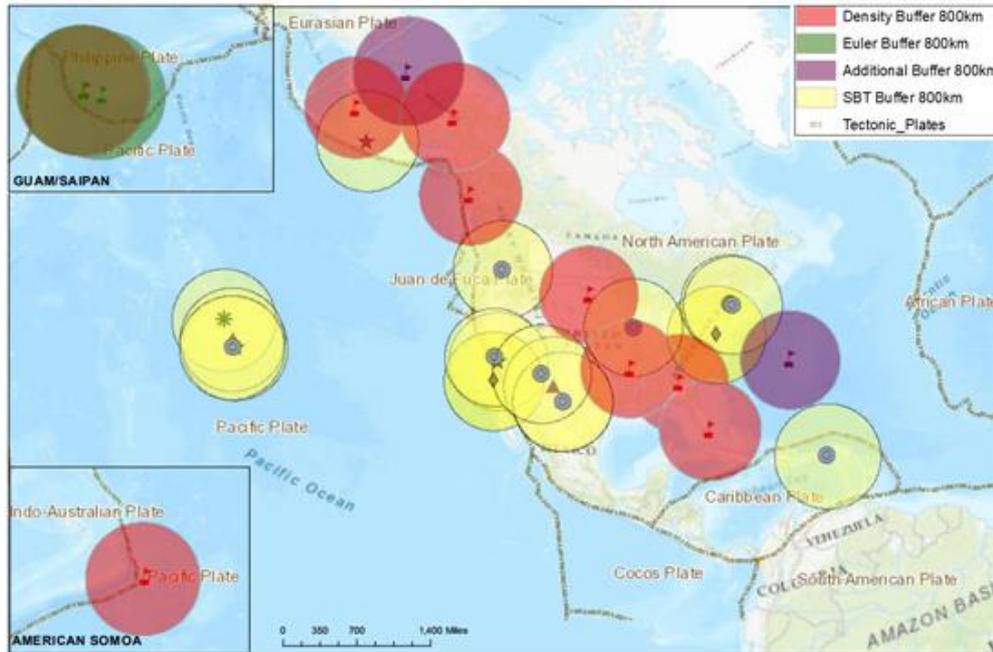
- ❖ FGCS Subcommittee Chair and Executive Champion
  - Juliana Blackwell, Director, National Geodetic Survey (NGS)
- ❖ FGCS Secretariat
  - Erika Little, NGS (Acting while Brian Shaw is on extended leave)
- ❖ Theme Lead
  - Dan Roman, NGS
- ❖ Data Sets and Managers
  - Airborne Gravity – Jeffrey Johnson, NGS
  - Continuously Operating Reference Stations (CORS) – Kevin Choi, NGS
  - Geoid Models – Yan Wang, NGS
  - Geodetic Control Information on Passive Marks – Godfred Amponsah, NGS

# Geodetic Control Datasets – Airborne Gravity





# Foundation CORS



A set of federally-operated, ultra-high-quality, high-reliability stations with the longevity to guarantee citizens access to official NSRS positions and support international positioning consistency efforts.

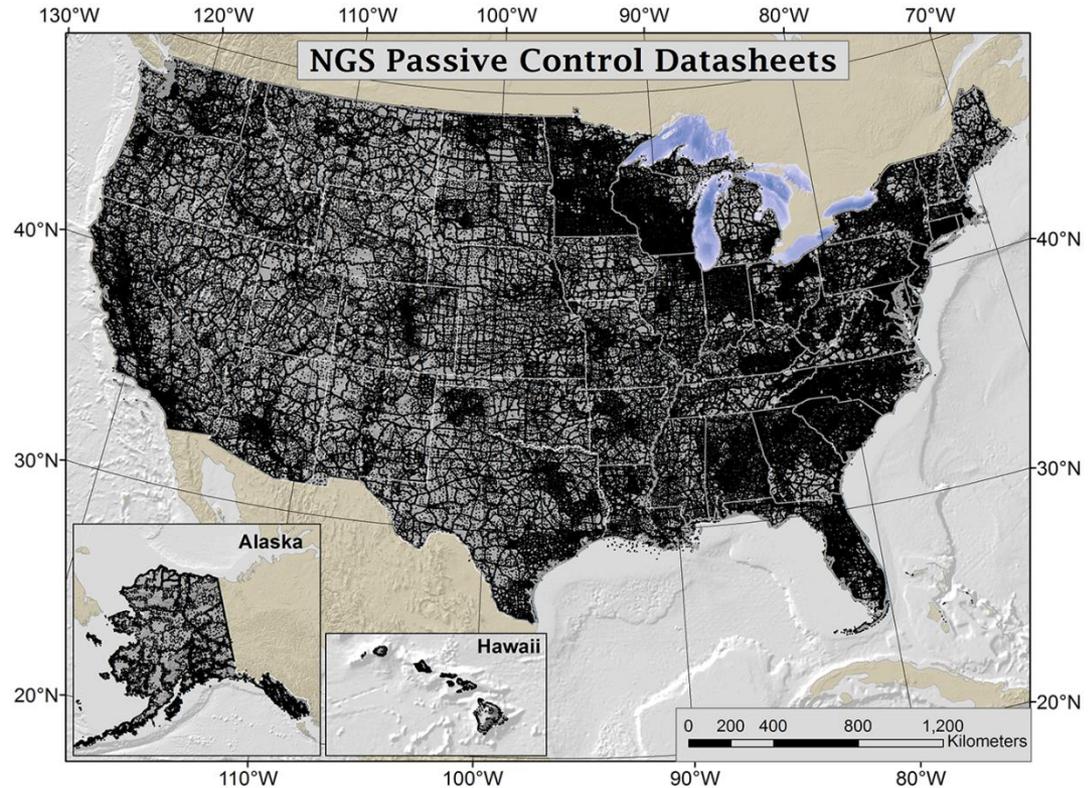


Federal Partners	Site ID	Location
<b>National Science Foundation (NSF)</b>	AB09	Wales, AK
	P777	Dennard, AR
	P804	Georgia
<b>Existing Sites</b>	AB51	Petersburg, AK
	ATQK	Atkasuk, AK
<b>Program EarthScope Plate Boundary Observatory (PBO)</b>	P043	Wyoming
	CRO1	Saint Croix, VI*
<b>National Aeronautics and Space Administration (NASA)</b>	BREW	Brewster, WA*
	FAIR	Fairbanks, AK
<b>Existing Sites</b>	GODE	Greenbelt, MD*
	GOL2	Goldstone, CA*
<b>Program Global Geodetic Network (GGN), operated by Jet Propulsion Laboratory</b>	MDO1	McDonald Observatory, Texas*
	MONP	Mount Laguna, CA*
<b>NASA or Pacific GPS Facility</b>	NLIB	North Liberty, IA*
	PIE1	Pie Town, NM*
<b>NOAA- National Geodetic Survey (NGS)</b>	GUAM	GUAM
	KOKB	Kauai, HI*
<b>Existing and New Sites</b>	MKEA	Mauna Kea, HI*
	HAL1 or MAUI	Haleakala, HI*
<b>Program Continuously Operating Reference Stations (CORS)</b>	ASPA	American Samoa
	CNMR	Saipan, TQ
<b>TBD</b>	GUUG	GUAM*
	BRSB	Bermuda
<b>TBD</b>	FLF1	Richmond, FL*
	WES2	Westford, MA*
<b>TBD</b>	TMG2	Boulder, CO
	NEW	Apache Point, NM*
<b>TBD</b>	NEW	Fort Davis, TX*
	NEW	Fort Irwin, CA*
<b>TBD</b>	NEW	Hancock, NH*
	NEW	Los Alamos, NM*
<b>TBD</b>	NEW	Kitt Peak, AZ*
	NEW	Owens Valley, CA*
<b>TBD</b>	NEW	Cold Bay, AK*
	TBD	Existing location in Caribbean
<b>TBD</b>	TBD	Existing location in Caribbean



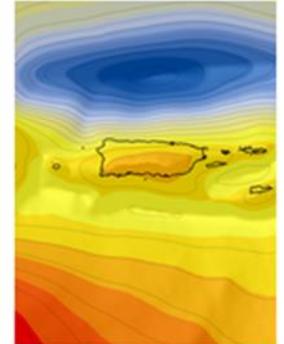
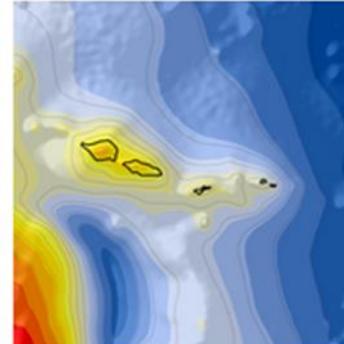
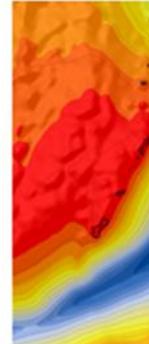
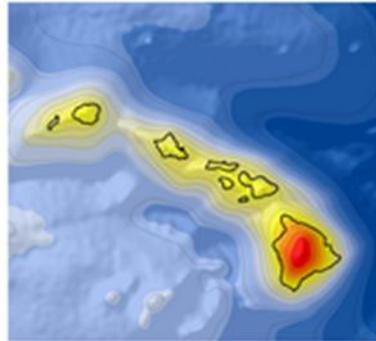
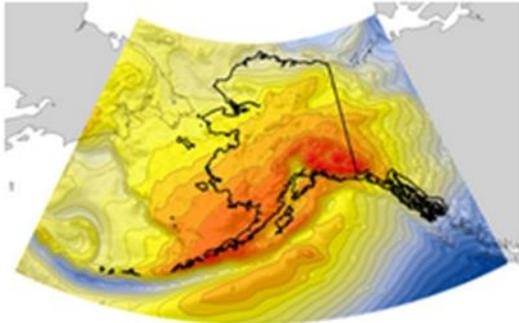
# Geodetic Control Datasets – Passive Marks

The screenshot shows the National Geodetic Survey (NGS) website interface. At the top, there is a navigation bar with links for 'NGS Home', 'About NGS', 'Data & Imagery', 'Tools', 'Surveys', and 'Science & Education'. The main heading is 'Survey Marks and Datasheets' with the sub-heading 'National Geodetic Survey'. Below this, there are several sections: 'Finding Survey Marks and Datasheets' which explains that NGS provides information about survey marks and datasheets; 'Select a data format:' which offers options for 'Datasheets' (viewable in word processors or as text files) and 'Shapefiles' (usable in GIS software); 'Select a retrieval method:' which includes 'Interactive Map' (for zooming and searching), 'Archived Control' (for downloading data for an entire state), and 'Search By:' (for submitting queries based on location or mark information). There is also a 'Mark Recovery' section and a 'Tidal Bench Marks' section. At the bottom, there is a footer with 'Website Owner: National Geodetic Survey / Last modified by NGS Information Center Dec 10 2014' and a list of links including 'NGS Home', 'NGS Employees', 'Privacy Policy', 'Disclaimer', 'USA.gov', 'Ready.gov', 'Site Map', and 'Contact Webmaster'.

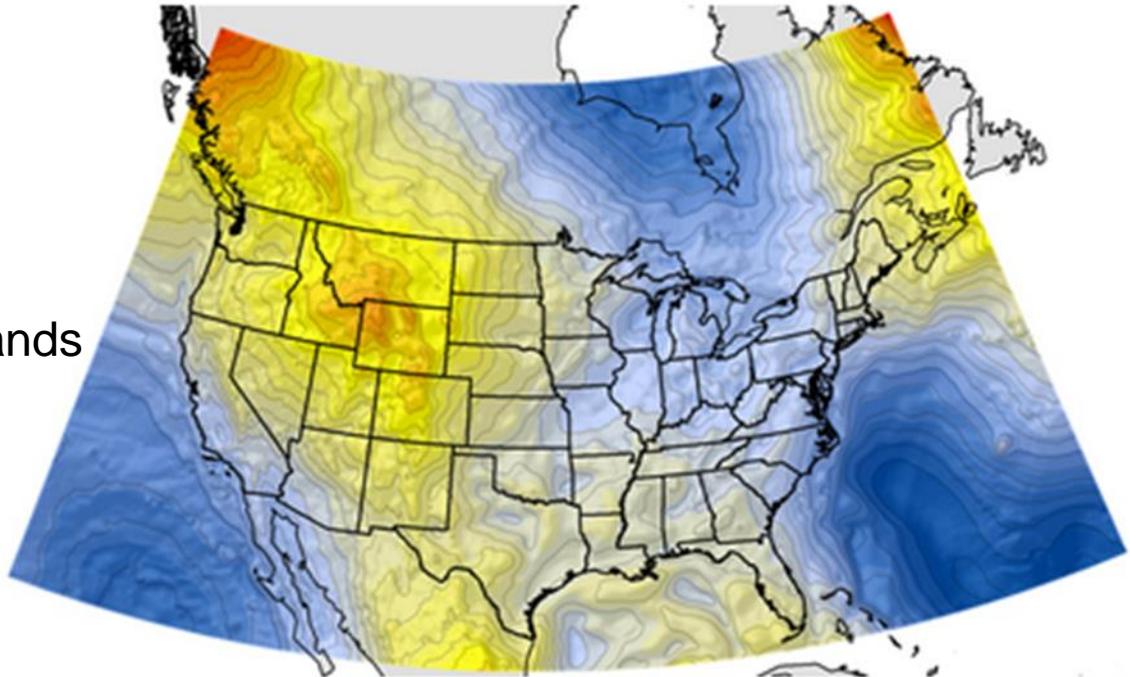


Over 800,000 geodetic control datasheets

# Geodetic Control Datasets – Geoid Models

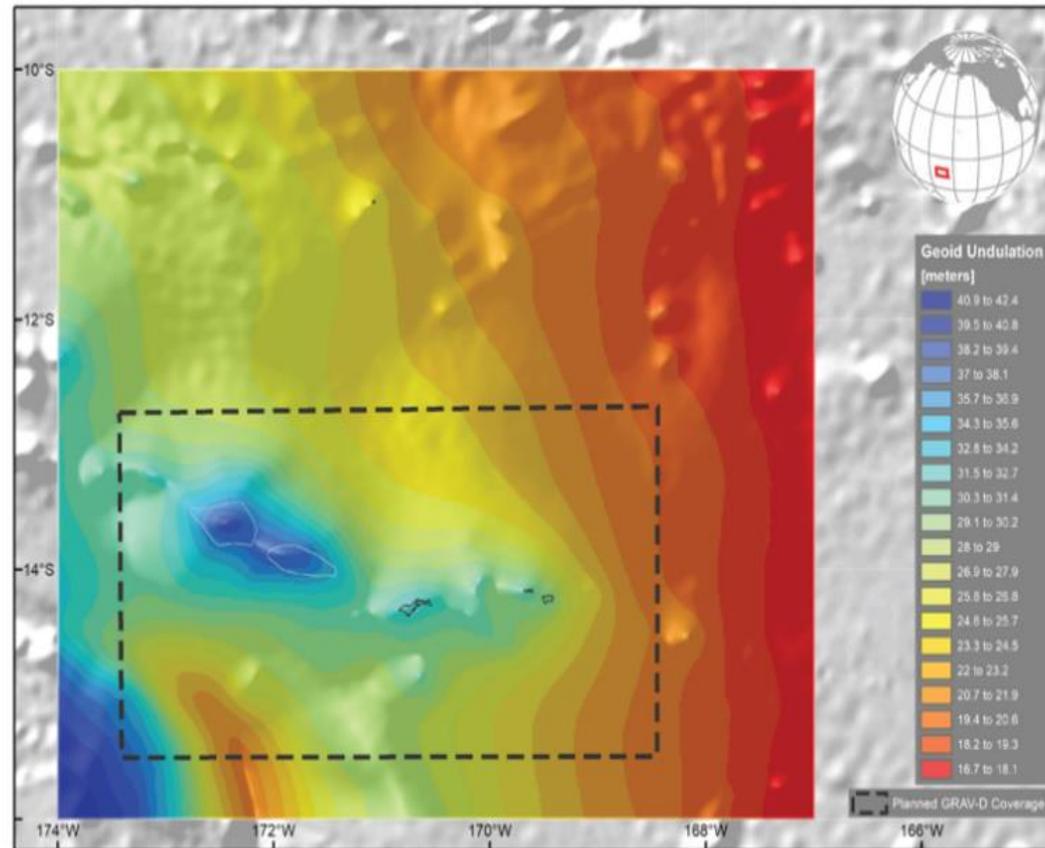


CONUS  
Alaska  
Hawaii  
American Samoa  
Puerto Rico & US Virgin Islands  
Guam and Northern Mariana Islands



# Geodetic Control Datasets – Geoid Models

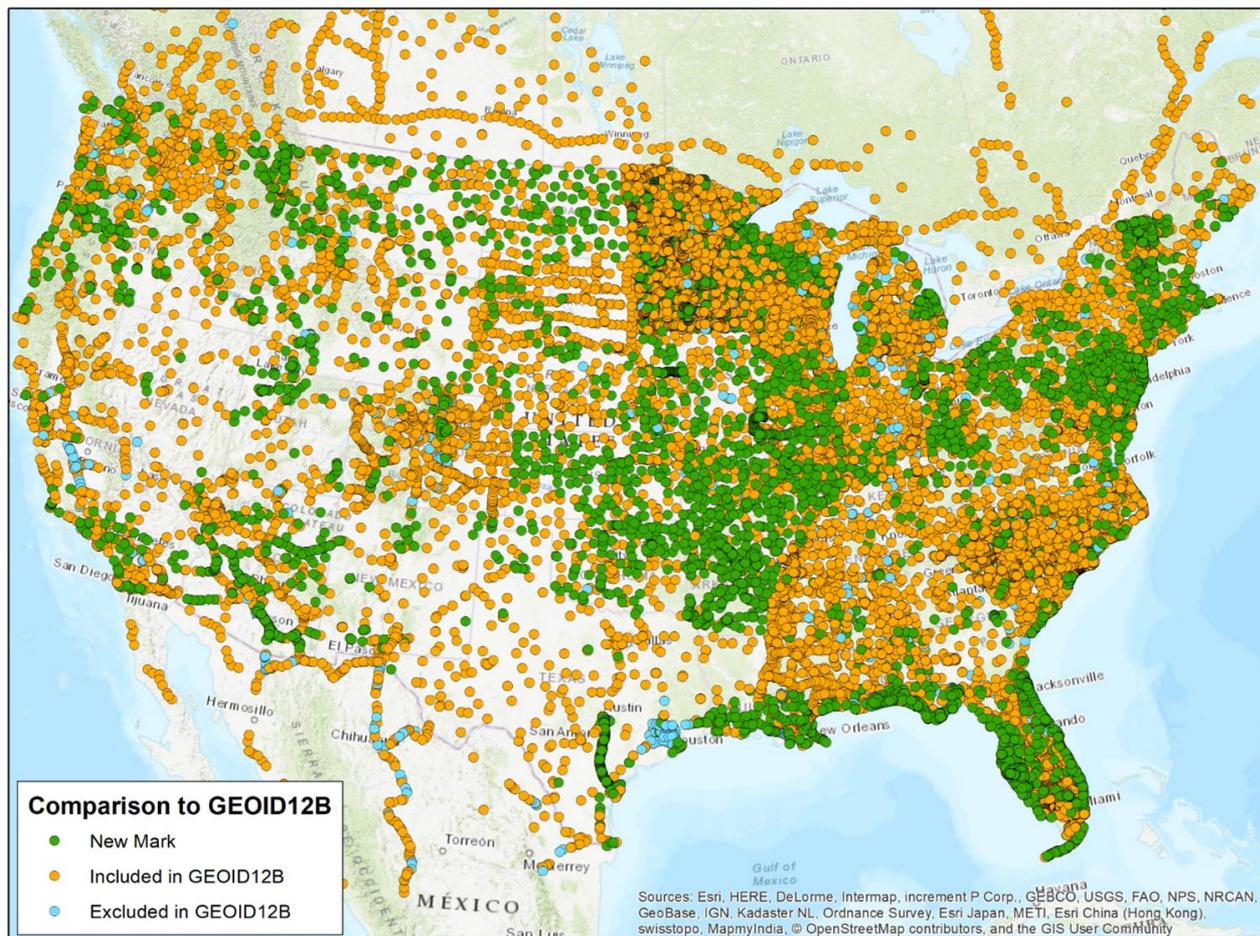
xGEOID18 - American Samoa



# Geodetic Control Datasets – Geoid Models

## Prototype Hybrid Geoid (v5.1)

- ❖ Planned release 2019
- ❖ Similar construction as GEOID12B
- ❖ Gravimetric Geoid Model: xGEOID17B
- ❖ GPS on bench marks



# FGCS Meetings

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- ❖ The last FGCS meeting was February 22, 2018.
  - International coordination
  - NSRS modernization efforts
  - GEOID18 update
  - State Plane Coordinates for 2022
  - Discussion on NADCON approval
  - Work group discussions
- ❖ The next FGCS meeting will be held October 25, 2018.

# Next Steps

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In the coming months, the FGCS plans to:

- ❖ Continue to prepare for the new geometric and geopotential datums
- ❖ Plan for next FGCS meeting
- ❖ Continue to inform constituents about the new datums coming in 2022
- ❖ Develop education lessons to help inform the public about geodetic principles
- ❖ Deprecation of American Samoa Vertical Datum of 2002 (ASVD02)