



# Update on New Reference Frames

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# Recent Updates...

- January 2015: NGAC briefing
- April 2015: Geospatial Summit
- June 2015: Today

# Terminology (reminder)

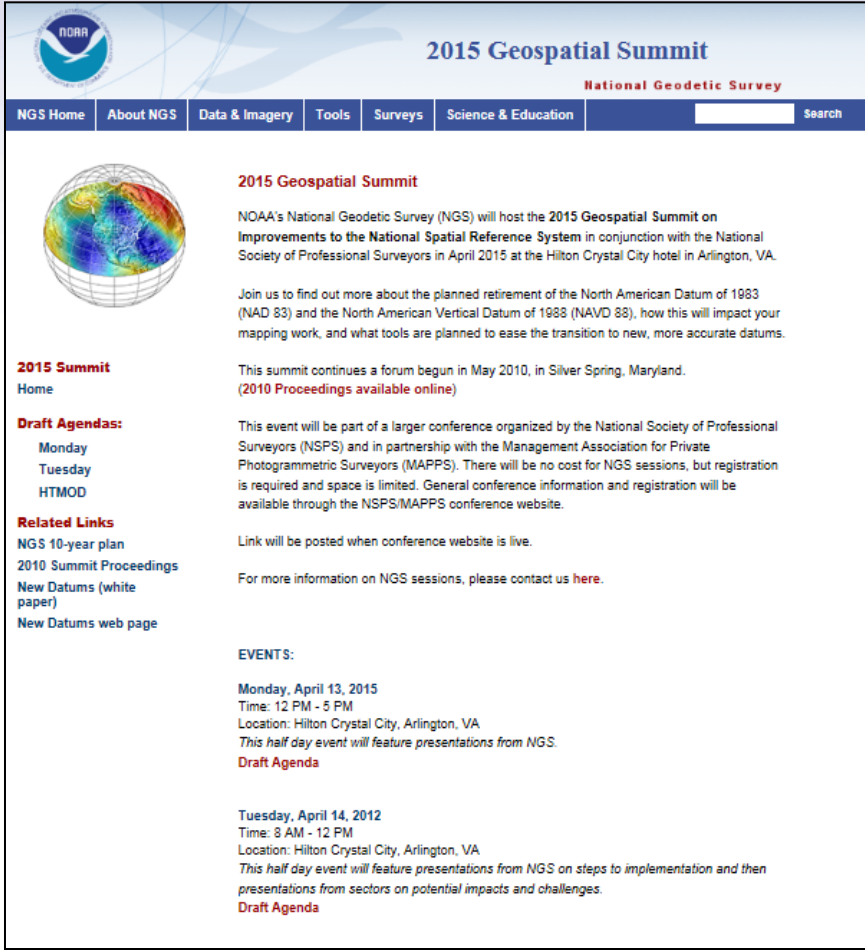
- ~~Horizontal Datum~~
  - Geometric Reference Frame
    - Geocentric X,Y,Z
    - Latitude, Longitude, Ellipsoid Height
- ~~Vertical Datum~~
  - Geopotential Reference Frame
    - Geoid undulation
    - Orthometric height
    - Gravity
    - Deflection of the Vertical

# Since last you were briefed...

- NGS professional discussions on various technical issues
  - **Decision:** GRS-80 will continue as the ellipsoid in the new GeRF
  - **Decision:** Annual periodicity (glacial thaw/freeze) of the geoid will be averaged
    - i.e. there will be no “summer geoid” and “winter geoid” in Alaska
  - **Decision:** Massive (TBD) earthquakes will trigger a new airborne gravity survey
  - **Not yet decided:** Should the geoid rise (and orthometric heights shrink) as sea level rises?
  - **Not yet decided:** How much time dependency will users accept?

# 2015 Geospatial Summit

- April 13-14, 2015, in the Washington, DC Area
- As part of a broader “conference of conferences” with National Society of Professional Surveyors and Management Association for Private Photogrammetric Surveyors (MAPPS)
- Follows the successful 2010 Geospatial Summit. More info at the 2015 Geospatial Summit website.
- **200 in person / 100 online**
- **Live feedback polls**



The screenshot shows the NOAA National Geodetic Survey website for the 2015 Geospatial Summit. The header includes the NOAA logo and the title "2015 Geospatial Summit National Geodetic Survey". A navigation bar contains links for NGS Home, About NGS, Data & Imagery, Tools, Surveys, and Science & Education, along with a search bar. The main content area features a globe icon and a "2015 Summit Home" link. Under "Draft Agendas", it lists "Monday Tuesday HTMOD". Under "Related Links", it lists "NGS 10-year plan", "2010 Summit Proceedings", "New Datums (white paper)", and "New Datums web page". The "2015 Geospatial Summit" section describes the event, its location (Hilton Crystal City hotel in Arlington, VA), and its purpose (planned retirement of the North American Datum of 1983). It also mentions that the summit continues a forum begun in May 2010 in Silver Spring, Maryland, and that 2010 proceedings are available online. The "EVENTS" section lists two days: Monday, April 13, 2015 (12 PM - 5 PM) and Tuesday, April 14, 2012 (8 AM - 12 PM), both at the Hilton Crystal City hotel in Arlington, VA. Draft agendas are provided for both days.

**2015 Geospatial Summit**

NOAA's National Geodetic Survey (NGS) will host the **2015 Geospatial Summit on Improvements to the National Spatial Reference System** in conjunction with the National Society of Professional Surveyors in April 2015 at the Hilton Crystal City hotel in Arlington, VA.

Join us to find out more about the planned retirement of the North American Datum of 1983 (NAD 83) and the North American Vertical Datum of 1988 (NAVD 88), how this will impact your mapping work, and what tools are planned to ease the transition to new, more accurate datums.

This summit continues a forum begun in May 2010, in Silver Spring, Maryland. ([2010 Proceedings available online](#))

This event will be part of a larger conference organized by the National Society of Professional Surveyors (NSPS) and in partnership with the Management Association for Private Photogrammetric Surveyors (MAPPS). There will be no cost for NGS sessions, but registration is required and space is limited. General conference information and registration will be available through the NSPS/MAPPS conference website.

Link will be posted when conference website is live.

For more information on NGS sessions, please contact us [here](#).

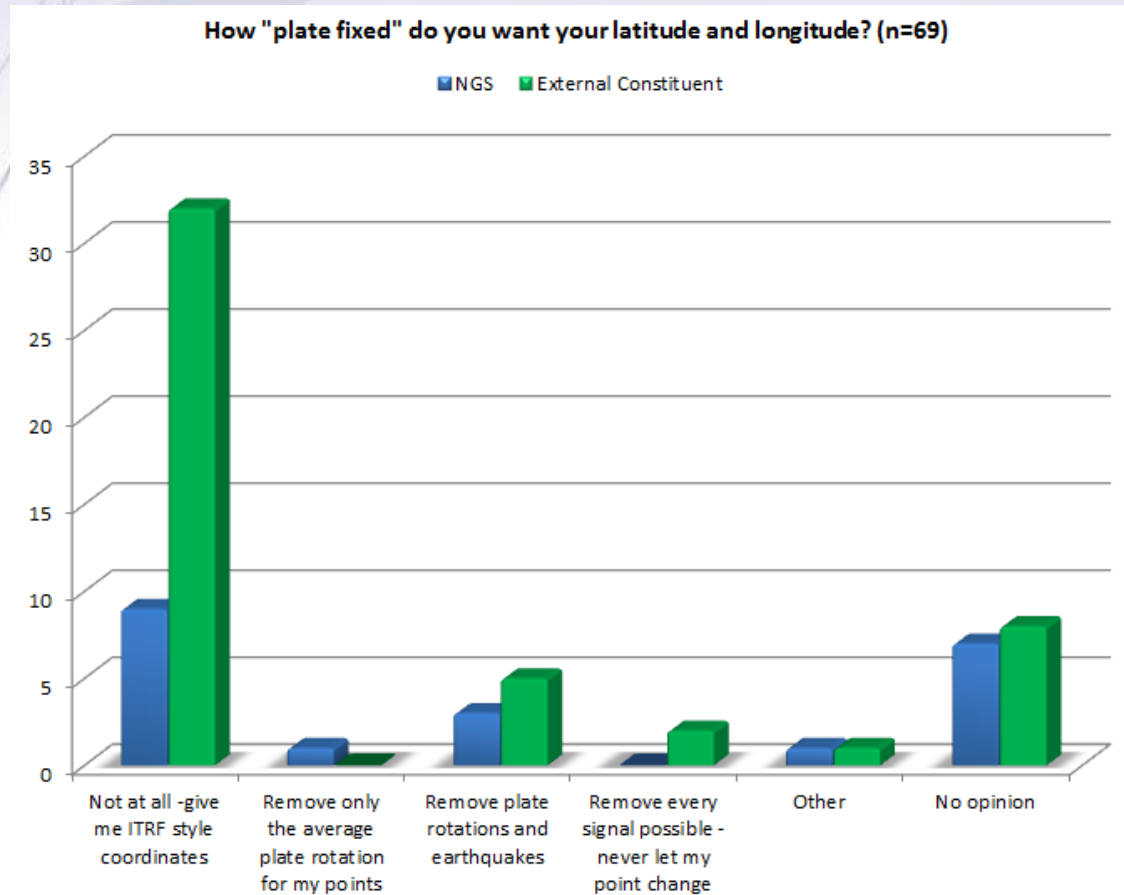
**EVENTS:**

**Monday, April 13, 2015**  
Time: 12 PM - 5 PM  
Location: Hilton Crystal City, Arlington, VA  
*This half day event will feature presentations from NGS.*  
[Draft Agenda](#)

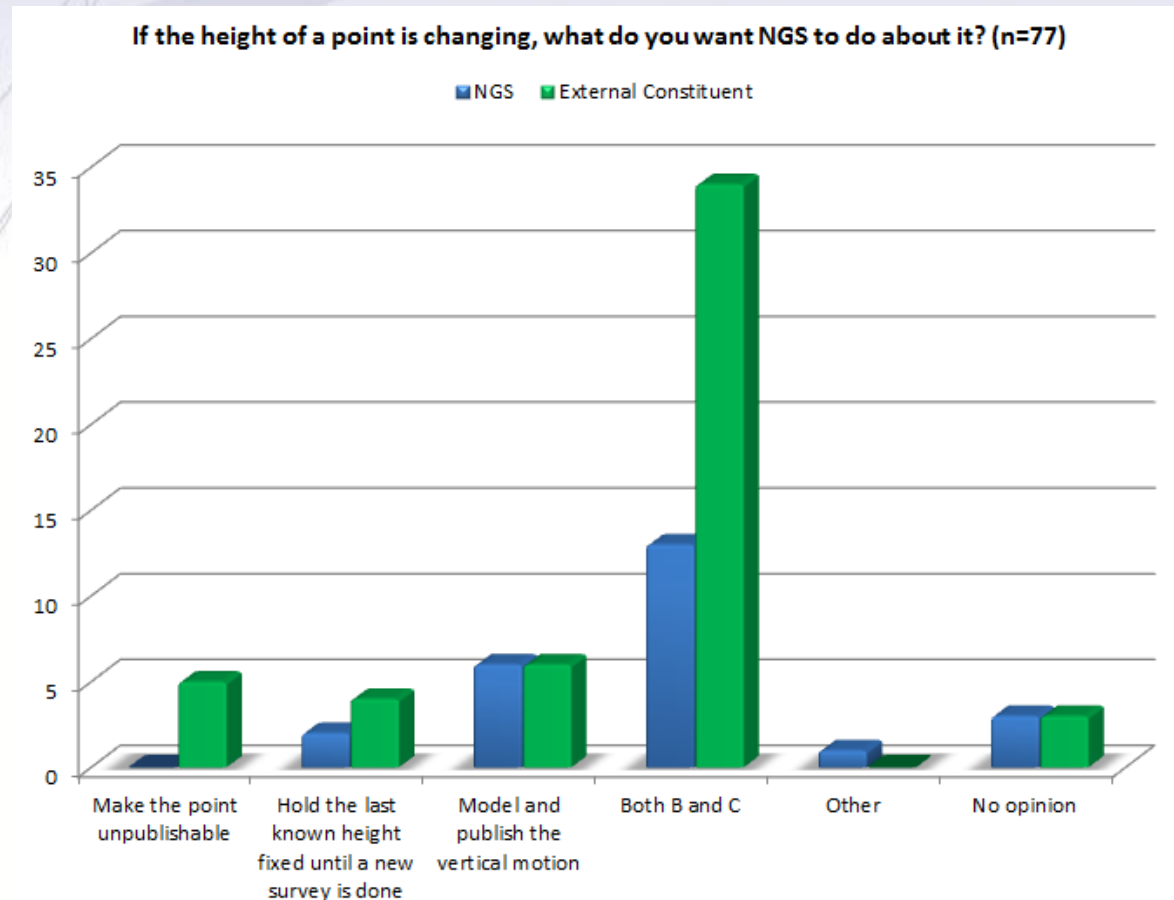
**Tuesday, April 14, 2012**  
Time: 8 AM - 12 PM  
Location: Hilton Crystal City, Arlington, VA  
*This half day event will feature presentations from NGS on steps to implementation and then presentations from sectors on potential impacts and challenges.*  
[Draft Agenda](#)

<http://www.geodesy.noaa.gov/2015GeospatialSummit/>

# Time Dependency (horizontal)



# Time Dependency (vertical)





Graph: Min. Avg. Max. Elevation: 6174, 7713, 10860 ft.  
 Range Totals: Distance: 220 mi, Elev. Gain/Loss: 10767 ft., -11081 ft., Max Slope: 8.7%, -12.2%, Avg Slope: 1.8%, -1.5%  
 Imagery Date: 4/9/2013 38°52'37.73" N 105°13'02.34" W elev. 7878 ft. eye alt. 707.63 mi  
 Tour Guide: 25 mi, 50 mi, 75 mi, 82.0 mi, 100 mi, 125 mi, 150 mi, 175 mi, 200 mi, 220 mi

June 9, 2015



# A taste of tools to come...

## Options:

- Online point by point
- Upload and convert a whole file
- Web Services
- Download and Run locally

<http://beta.ngs.noaa.gov/gtkweb/>

← beta.ngs.noaa.gov/gtkweb/

**BETA** Coordinate Transformation  
This is a BETA Release Site  
National Geodetic Survey

NGS Home About NGS Data & Imagery Tools Surveys Science & Education

Conversion from lat-long Conversion to lat-long Conversion of multiple coordinates Web services Downloads

Choose a location to generate projected coordinates  
Enter decimal degrees or drag map marker

Lat   
Lon

or degrees-minutes-seconds

Lat   
Lon

Enter an Ellipsoid Height  (optional, affects XYZ and Combined Factors)

Choose a datum ☒ NAD83 ☐ NAD27

Convert

Projected Coordinates			
SPC	UTM (m)	XYZ (m)	USNG
Zone <input type="text" value="MO C-2402"/>	Zone		
Northing (m)		X	
Northing (usft)	Northing		
Northing (ift)			
Easting (m)		Y	
Easting (usft)	Easting		
Easting (ift)			
Convergence	Convergence		
Scale Factor	Scale Factor	Z	
Combined Factor	Combined Factor		

You may change the default SPC zone, datum, or ellipsoid height. These changes are processed interactively once a lat-long is converted; no need to click the Convert button.

# Legal Issues

- NGS and NSPS joint effort
- 48 states have legislated the words “NAD 83”
- Move to generic text: “Most recent coordinates in the National Spatial Reference System”

# A website for updates



The screenshot shows the NOAA National Geodetic Survey website's 'New Datums' page. The header includes the NOAA logo and the title 'New Datums'. A navigation bar contains links for 'NGS Home', 'About NGS', 'Data & Imagery', 'Tools', 'Surveys', and 'Science & Education', along with a search bar. The date 'June 5, 2015' is displayed. On the left, a globe icon is next to a 'New Datums Quick Links' menu with items like 'Home', 'What to expect', 'Get prepared', 'Track our progress', 'Related projects', 'Watch videos', 'Learn more', 'New Datums FAQ', 'Contact Us', and 'Sign up for list-serve'. Below this is an 'Events' section listing '2015 Summit' and '2010 Summit'. The main content area features a section titled 'Replacing NAVD 88 and NAD 83' with a paragraph explaining the transition to 2022 and a link to the 'NGS Ten-Year Plan'. Below this are six buttons: 'What to Expect', 'Get Prepared', 'Related Projects', 'Track Our Progress', 'Watch Our Videos', and 'Learn More'. To the right of the buttons are three promotional banners: 'FAQs frequently asked questions', 'NGS 2015 Geospatial Summit', and 'Geodetic Datums See our videos!'. A section titled 'Why is NGS replacing NAD 83 and NAVD 88?' explains the shortcomings of the old datums and the need for new ones. The bottom of the page features a URL and a footer with the date 'June 9, 2015', the event 'NGAC Meeting, Washington D.C.', and a page number '11'.

**New Datums**

National Geodetic Survey

NGS Home About NGS Data & Imagery Tools Surveys Science & Education Search

June 5, 2015

**Replacing NAVD 88 and NAD 83**

NAD 83 and NAVD 88 will be replaced in 2022, and there are many related projects to make sure the transition goes smoothly. Read the **NGS Ten-Year Plan** to learn more and continue to visit this web-page for more information.

**What to Expect** **Get Prepared**

**Related Projects** **Track Our Progress**

**Watch Our Videos** **Learn More**

**Why is NGS replacing NAD 83 and NAVD 88?**

NAD 83 and NAVD 88, although still the official horizontal and vertical datums of the National Spatial Reference System (NSRS), have been identified as having shortcomings that are best addressed through defining new horizontal and vertical datums.

Specifically, NAD 83 is non-geocentric by about 2.2 meters. Secondly, NAVD 88 is both biased (by about one-half meter) and tilted (about 1 meter coast to coast) relative to the best global geoid models available today. Both of these issues derive from the fact that both datums were defined primary using terrestrial surveying techniques at passive geodetic survey marks. This network of survey marks deteriorate over time (both through unchecked physical movement and simple removal), and resources are not available to maintain them.

**FAQs**  
frequently asked questions

**NGS 2015 Geospatial Summit**

**Geodetic Datums**  
See our videos!

**New Datums Quick Links**

- Home
- What to expect
- Get prepared
- Track our progress
- Related projects
- Watch videos
- Learn more
- New Datums FAQ
- Contact Us
- Sign up for list-serve

**Events**

- 2015 Summit
- 2010 Summit

<http://www.geodesy.noaa.gov/datums/newdatums/index.shtml>

# NGS Webinar Series

- Began May 14, 2015
- An expansion of the monthly presentations sponsored by the National Height Modernization Program.
- Visit the Webinar Series Web-site to register, sign up to receive monthly webinar notices, and learn more:  
[http://www.ngs.noaa.gov/web/science\\_edu/webinar\\_series/](http://www.ngs.noaa.gov/web/science_edu/webinar_series/).

A stylized graphic on the left side of the slide features a wireframe globe with latitude and longitude lines. Overlapping the globe is a large, light blue, abstract shape that resembles a bird in flight or a wing, extending towards the top right of the slide. The background is a light blue gradient.

# Thank you!