

**NOAA, National Geodetic Survey  
HEIGHT MODERNIZATION COORDINATION MEETING  
DRAFT NOTES**

**Date:** Thursday, December 13, 2012

**Time:** 2:00-3:30 pm East Coast time

**Attendees:**

*Call-ins from:* AK (Tom Heinrichs), CO (Jonathan Kobylarz), IL (Sheena Beaverson, Amy Eller), KY (Wolfgang Ziegler), NC (Dave Zilkoski), NGS (Jim Richardson, Vicki Veilleux, Dan Winester), NPS (Tim Smith), SC (Dick Woods), WA (Dave Steele), WI (Leonard Perfetti)

*Silver Spring:* NGS (Christine Gallagher, Joe Evjen, Ajit Singh, Renee Shields, Gilbert Mitchell, Michael Dennis, Courtney Lindo, Dave Doyle); CO-OPS (Michael Michalski)

*Advisors/Coordinators:* Marti Ikehara (CA), Pam Fromhertz (CO), Dave Rigney (MI), Scott Lokken (NC), Dave Conner (OH), Mark Armstrong (OR), Bill Stone (SW region), Dan Prouty (TX), John Ellingson (WI), Dan Martin (VT)

**Note:**

It is NGS' habit to only capture names of attendees who speak up at the initial roll call or during the meeting. We respect those who may wish to attend anonymously. If you want your name captured in the recorded notes, and you do not see it listed here, email [Christine.Gallagher@noaa.gov](mailto:Christine.Gallagher@noaa.gov), or [ngs.htmod@noaa.gov](mailto:ngs.htmod@noaa.gov).

**1. NGS and Height Mod related announcements:**

- **OPUS** (Joe Evjen):  
In the past, we have published OPUS solutions using whatever geoid model was available at the time. Now we have reprocessed solutions with Geoid12A (approximately 5,000), and they are now published. We are working on providing access to the now superseded positions.

**2. Other announcements / questions (Open to all callers):**

- **Colorado** (Pam Fromhertz): Sent an email to a couple folks requesting participation with a Colorado height team that has just been started. We have contacted WI and IL, and we will appreciate anyone that can help out.
- **Illinois** (Sheena Beaverson): IL just conducted interviews for the year five leveling campaign that will complete the loop around the perimeter of the entire state.
- **Wisconsin** (Leonard Perfetti): WI DOT is beginning to work with Giovanni Sella and Don Haw adding more WISCORS to NGS CORS. Right now only two are part of NGS CORS, and WI DOT is looking to add 19 more.

- **South Carolina** (Dick Woods):  
SC has been testing beta version of ADJUST and trying to get it to work. The instructions are good, and they are currently working with a 250 station job. It is a significantly different program, and it would be helpful if NGS could provide training in the spring. Additionally, SC is working on three smaller (<10 stations) projects, and plans to submit all four projects the same time.

**Michael Dennis** agreed that hosting training is highly desirable. He also added that you should be getting the same results as from previous versions of the program. When you go to the beta site, use the contact information to ask questions.

### **3. Monthly presentation – Results of the Adjustment of NAD 83(2011) Epoch 2010.00**

#### **Height Modernization Program National Plan**

Renee Shields, National Geodetic Survey

The Height Modernization Program National Plan outlines a proactive, detailed approach to ensure a smooth transition to a new geopotential datum. The National Plan will build on NGS mission critical activities and leverage partnerships that have grown from Height Modernization activities to address any gaps in National Spatial Reference System (NSRS), maintain access to the vertical component of NSRS over time, and increase local technical capacity to access the NSRS.

Ms. Renee Shields is a geodesist in the Geodetic Services Division of the National Geodetic Survey. She received a B.A. in Mathematics from the University of Massachusetts, Boston. Ms. Renee Shields has been with NGS since 1980, and has been heavily involved in the geodetic adjustments for the North American Datum of 1983, and integration of new GPS projects into the National Spatial Reference System (NSRS). She has extensive experience in GPS and Geoid Height analysis, and has successfully used this experience to develop and conduct workshops around the country on incorporation of data into the NSRS. Renee is currently Project Manager for the Height Modernization Program, an effort that has 17 states as regular participants and additional activities in a number of other states.

Key points in the presentation were:

- Years ago, we (Renee, Gilbert Mitchell and Dave Moyer) began developing a national plan when earmark funding was still available for the Height Mod Program.
- The draft plan focused on expanding Height Mod regionally and expanding Spatial Reference Centers, but it was written with the expectation that funding would continue to be available.
- Some ideas from the earlier draft plans have been captured in this new plan, and we still plan to move forward with some ideas (e.g. capturing stories of savings or benefits from the implementation of Height Mod).
- Since the 2008 NGS Ten Year Plan, Height Mod has evolved into implementing the goal of modernizing the vertical datum. A major part of modernizing the vertical datum is the GRAV-D project, but it is a project that is just part of Height Mod.

- Last year, Renee and Christine Gallagher drafted a plan with this new focus. However, a revised NGS Ten Year will be released in early 2013, so the Height Mod plan was revised to parallel that plan as well.
- This Height Mod plan includes some specific actions, but most of the details will be more fully described in shorter term planning documents and implementation plans.
- The plan is very closely aligned to the 2013 Ten Year Plan, so we do not expect major content changes to occur. However, the comment period is still open (until Dec 14) for minor changes or if items are missing.

### *Questions and Answers*

**Comment (Dave Zilkoski):** I like the plan but have some comments in the details of some specific actions. There may be some opportunities for to accomplish some tasks that are “low-hanging fruit” and could help advance Height Mod in the next few years.

- Strategy 2.1.3: Could add action to implement VTDP in Harris Galveston area using data that has already been collected.
- Strategy 3.1.2: Could add involve spatial reference centers in webinar and training videos, and then they have to train themselves. This will increase capacity at state/regional level.
- Strategy 3.1.3: Could add involve spatial reference centers in development of outreach materials.
- Strategy 3.2.1: Could add the specific call to train employees in leveling network adjustments.
- Page 18: Geodetic Advisor program is being updated, but there is mention of the switch from a state to regional program.

**Comment (Marti Ikehara):** Two comments building on Dave Z’s comments:

- People may have the misperception that Height Mod only refers to GNSS technology. Thus, making sure to distinguish the importance of leveling is important.
- There should be some information about the Geodetic Advisor Program shifting from a state to regional model.

**Question (Renee Shields):** Do you like the NGS puts out draft documents? Is this type of opportunity something that folks appreciate?

**Answer (Many on phone):** YES!

**Answer (Dick Woods):** The plan is nice to read, well written, and it was nice to be part of it.

**Comment (Dan Martin):** Working with the public, folks are in support of these efforts but want to know how to help. Any thoughts on what we should tell people when they ask these questions? They see the timeline on the Ten Year Plan slipping, and they understand why, but they would like to know what they can do to help.

**Answer (Renee Shields):** We can and would like to create a resource identifying specific activities that individuals or companies can do would to help. For example, NGS could share guidance about where we need OPUS-DB solutions on NAVD 88 leveled marks to improve the geoid model.

**Answer (Dave Doyle):** Dan Roman will be developing regional geoid uncertainty maps that could help identify where model is the weakest. [see Dan Roman's September 2012 presentation, slide 20, [http://www.ngs.noaa.gov/heightmod/HTMOD\\_20120913\\_Roman.ppt](http://www.ngs.noaa.gov/heightmod/HTMOD_20120913_Roman.ppt)]

**Question (Tim Smith):** The approach of others contributing to these efforts works with what NPS is doing. Other federal agencies like BLM and NPS have the advantage of having access to more remote areas, too. Getting the information of what marks would be most useful? Would you recommend a full Height Mod survey or just enough to submit to OPUS-DB? When and how could we see the benefits of the effort we put in?

**Answer (Dave Doyle):** You can look at what marks were used in Geoid12A as a starting point (see <http://www.ngs.noaa.gov/GEOID/GEOID12A/GPSonBM12A.shtml>). Height Mod surveys submitted via blue booking are still most desirable. While that is the only way to get a network adjustment published right now, OPUS Projects may provide more options in the future. Otherwise, two separate four hour sessions offset by 3-4 and submitted to OPUS-DB are also helpful. The benefits you will see can become apparent in the next geoid model, and Dan Roman is loosely on a 3 year schedule for a new model, although there are many variables.

**Answer (Michael Dennis):** To get more information on existing vertical control, you can download "Archived Shapefiles by State" at <http://www.ngs.noaa.gov/cgi-bin/datasheet.prl>. Also, the process for submitting projects for network adjustments will get better, so save all your data from any campaign style surveys that you complete. They could be submitted in the future.

**Comment (Kevin Kelly):** Kevin and Jay Satalich presented a poster at this year's AGU meeting that shows how NGS data can be used by partners, analyzed, and information shared/gained. In the leveling world, HGZ and phase one files are both very useful for analysis, but that NGS data is not easily publically available. NGS making more data available would help the public, and NGS would benefit from the analysis completed by partners.

**Comment (Pam Fromhertz):** NGS continues focusing on and addressing the science end of things when talking about the transition to the new datum - and only one or two parts of the science portion, such as GRAV-D and the geoid. But for our stakeholders what does that mean - what do they need to do to be ready - what do we need to do to properly implement? I think that a team, made up of folks from NGS but also our stakeholders to begin, would be a good approach to look at the entire picture.

#### 4. Other Business

- **2013 Height Mod Partner Meeting** will be April 30 – May 1, but the location is not set.
- Email any upcoming events to [Christine.Gallagher@noaa.gov](mailto:Christine.Gallagher@noaa.gov) and [Vicki.Veilleux@noaa.gov](mailto:Vicki.Veilleux@noaa.gov)

**Important Links:** Previous months' meeting notes and a list of future meeting presentations can be found at: <http://www.ngs.noaa.gov/heightmod/MeetingNotes.shtml>

**Next meeting: January 10, 2012**

**Guest Speaker: Joe Evjen will present on "Improvements to OPUS"**

### **Recent Past Events**

**Dec 3-7, 2012, San Francisco, CA** – American Geophysical Union Fall Meeting

### **Upcoming Events**

**Jan 9-11, 2013, Saratoga Springs, NY** – New York State Association of Land Surveyors

**Jan 22-25, 2013, Ellensburg, WA** – 2013 Washington Council of County Surveyor (WCCS) Survey Camp

**Jan 23-25, 2013, Salem, OR** – 2013 Professional Land Surveyors of Oregon Conference

**January 25-26, 2013, Clovis, CA** – CSU Fresno Geomatics Engineering Conference

**Jan 27-31, 2013, Miami Beach, FL** - MAPPS 2013 Winter Conference

**Jan 31-Feb 1, 2013, Bangor, ME** – Maine Society of Land Surveyors Annual Conference

**Feb 7-8, 2013, Corvallis, OR** – 2013 Oregon State University – Geomatics Workshops – Basic GNSS and Using the ORGN

**Feb 11-13, 2013, Denver, CO** - International LiDAR Mapping Forum

**Feb 19-22, 2013, Bellaire, MI** – 72<sup>nd</sup> Annual Meeting of the Michigan Society of Professional Surveyors

**Feb 20-21, 2013, Missoula, MT** – 2013 Montana Association of Registered Land Surveyors (MARLS) Conference

**Feb 25-27, 2013, Washington, DC** - Esri Federal GIS Conference

**Feb 26-28, 2013, Sandy, UT** – Utah Council of Land Surveyors Annual Convention

**Feb 28-Mar 3, 2013, Arvada, CO** - Annual Rocky Mountain Surveyors Summit

**Mar 12-13, 2013, Washington, DC** - MAPPS Federal Programs Conference

**Mar 15-17, 2013, Albuquerque, NM** - New Mexico Professional Surveyors Conference

**Mar 24-28, 2013, Baltimore, MD** - ASPRS Annual Conference

**Sept 16-19, 2013, Providence, Rhode Island** – GIS-PRO '13 (URISA Annual Conference)