Perfecting Heights in Louisiana
National Surveyor's Week 2014
March 16 – 22, 2014

This year National Surveyors Week will be celebrated from the 16th to the 22nd of March. Events are being planned by the National Society of Professional Surveyors as well as by state societies, local surveying chapters and individual surveyors. Some of the celebrations under discussion include publicity events, educational events and support of the National Geodetic Survey's (NGS) Height Modernization Program.

Each of us has an opportunity to participate in National Surveyor's Week. Surveyors who live in or nearby capital cities or county seats are discussing setting GPS marks, some with state society logos embossed on the mark, and occupying these marks so that the public and politicians can meet them and learn about surveyors. Other surveyors have contacted the press, local schools and scout groups to use National Surveyors Week as an educational opportunity to inform the public about the importance of what we do. They will set up in school yards or other locations with GPS receivers, total stations, and levels to share their love of our profession. Finally, but no less importantly, many are occupying NAVD88 bench marks to assist the NGS efforts to improve the vertical component of the National Spatial Reference System.

We all use GPS in our daily lives with cell phones, vehicle navigation, our hobbies or our work. We, in our professional practices, and the public as our clients depend upon our correct use of GPS for positioning and heights on their projects. The NGS is currently working on a nationwide height modernization program. This program includes many facets including airborne gravity surveys and new geoid models. One of the things most needed for the development of a new height model is precise GPS measurements on NAVD88 bench marks.

Data submitted to the NGS through the *On Line Positioning Service* (OPUS-DB) shared solutions option (http://www.ngs.noaa.gov/OPUS/about.jsp#sharing) will be available for inclusion in the next geoid model (2015 or 2016). It will contribute to the accuracy of a new transformation tool that NGS will develop which will relate NAVD 88 to the new vertical datum scheduled for release in 2022.

The NGS has been gutted by recent budget cuts and attrition. They have few field surveyors and through cooperative programs with the various states only 14 State Advisors, 9 State Coordinators and 1 Regional Advisor to cover the fifty states and all of the US territories. Your participation could be vital to this program and will be much appreciated. For more

information on how to help or how to perform OPUS observations see the box on the right, contact Miss. Geodetic Advisor: Denis Riordan, 601-359-5357 or me 225-802-5677.

Shown below are accuracy estimates covering Louisiana for GEOID12A, our hybrid geoid model useful for determining orthometric heights (NAVD 88) with GPS. The accuracy suffers in areas lacking GPS survey data from bench marks.
DSWorld: http://www.ngs.noaa.gov/PC_PROD/PARTNERS/index.shtml#DSWORLD

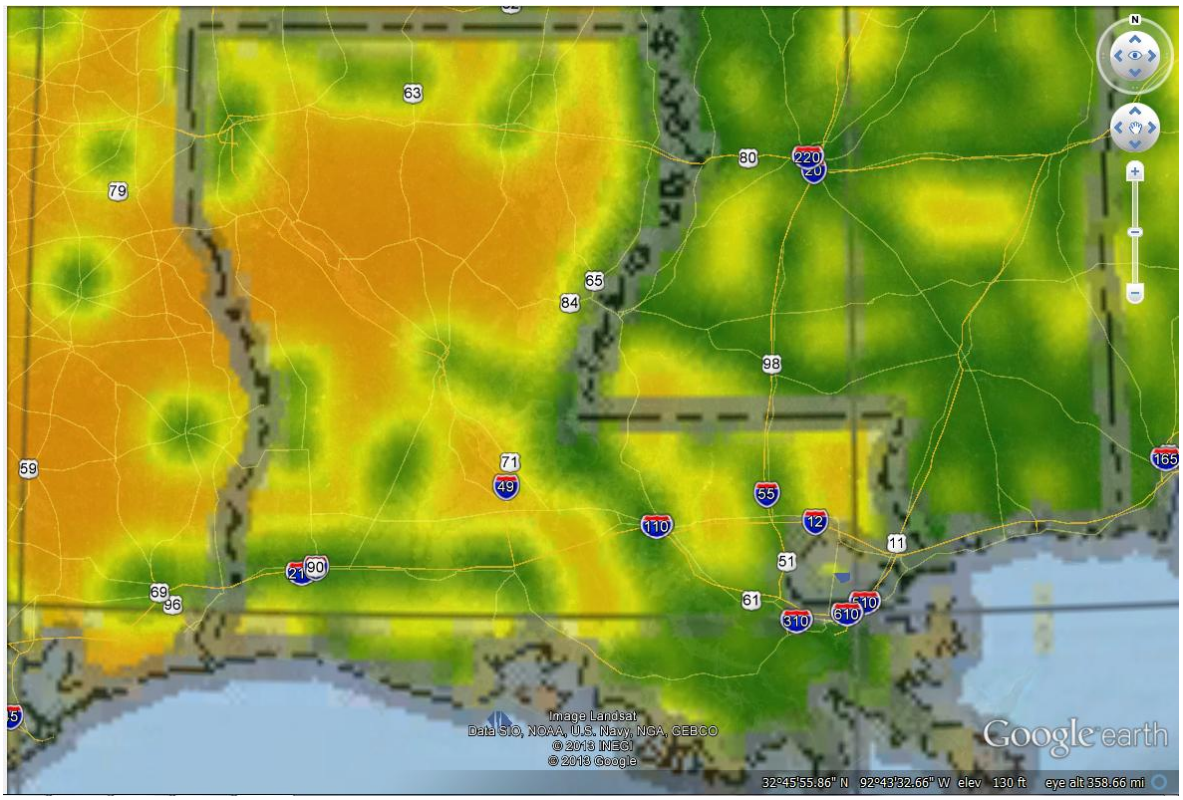
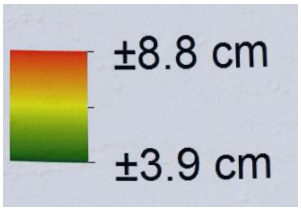


Figure 1 GEOID12A accuracy estimate (95% confidence)



YOU CAN HELP IMPROVE EVERYONE'S GPS HEIGHTS by sharing new GPS survey data acquired on published bench marks. Most valuable are stable 1st- or 2nd-order NAVD 88, located farthest from the green areas, near populated areas, or wherever you suspect the model's validity.

Share Your OPUS Solution. It's simple, upload to OPUS using Options 'share my solution' and the following criteria:

Careful field procedures

- verify antenna type, height, and plumb
- fixed-height tripod recommended, brace the legs with sandbags or chain

High-Quality OPUS Solution

- 4+hour GPS data file
- ≥ 70% observations used
- ≥ 70% ambiguities fixed
- ≤ 3 cm RMS
- ≤ 4 cm peak-to-peaks, lat. & lon.
- ≤ 8 cm peak-to-peak, el. hgt.

Permanent mark of public interest

- durable, stable setting, with good satellite visibility
- add description & photos to aid future recovery
  see observer field log (optional) and preview the upload form

Advice for National Surveyors Week Activities

From David Doyle

Surveyors should be encouraged to download DSWorld from NGS. One of things that works inside of this program is a GEOID12A accuracy map which shows the areas where the geoid model is the most challenged (a piece is posted below). Those who plan to participate in this effort should try and find an existing 1st- or 2nd-Order NAVD 88 bench mark that has not previously been GPSed and submitted to NGS and especially in the areas that are more yellow/orange on the map. DSWorld also allows them to access the vertical control in the NGS database by country and be displayed against the map so where those marks might be is easier to estimate. Of course that doesn't mean the marks are still there and/or are good for GPS. There is a nice webinar that describes many of the features of DSWorld. This webinar was presented before the geoid map was available but none the less is a very good overview of the numerous applications available in the program.

-- Tony Cavell