



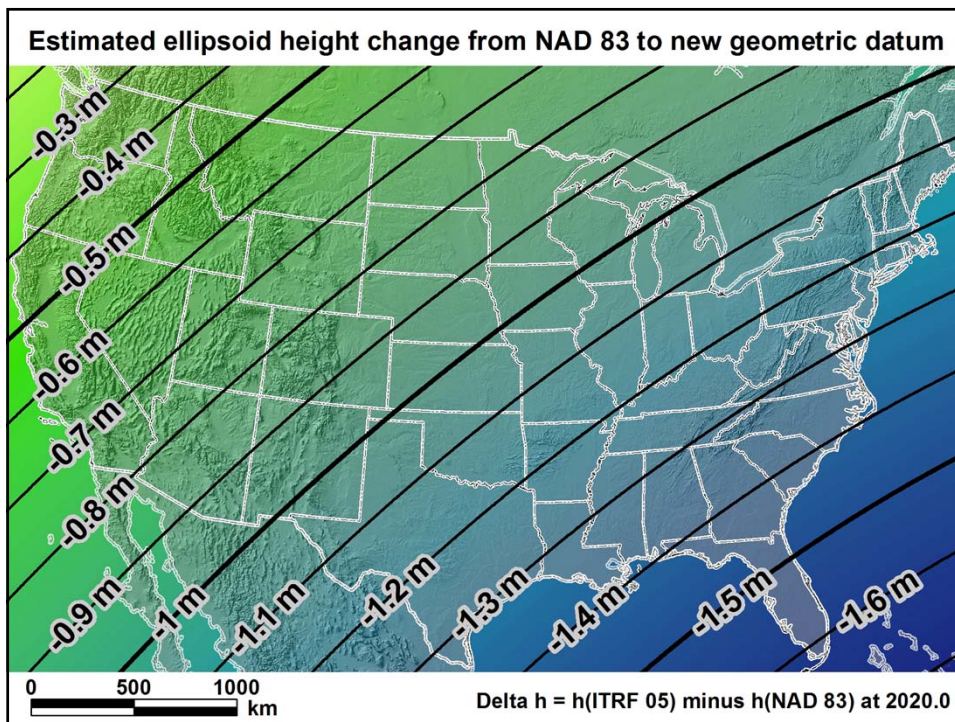
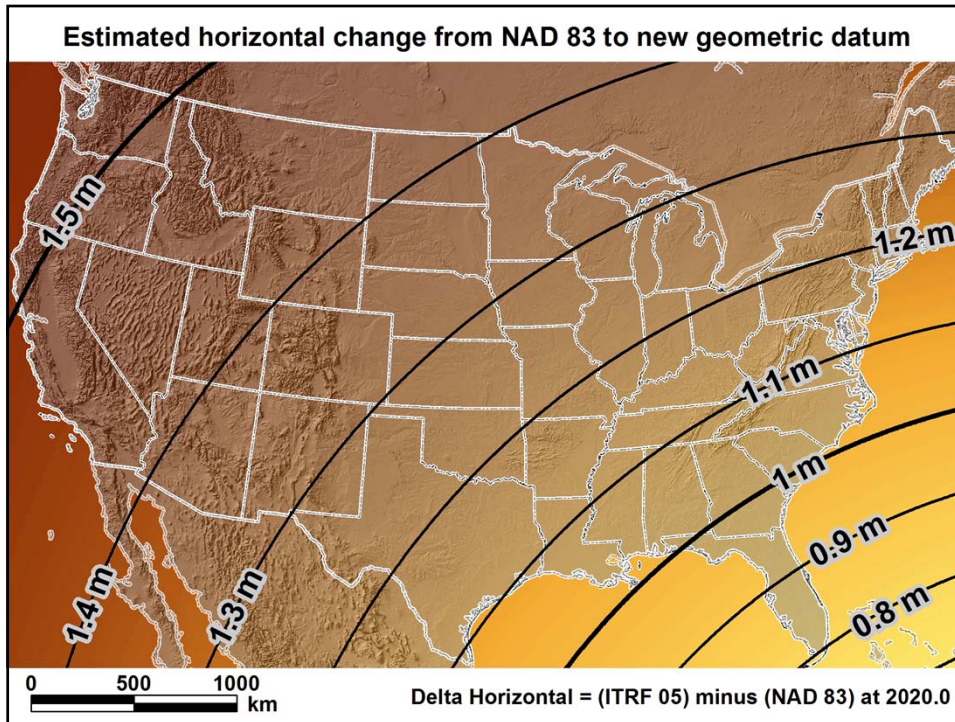
Making it more efficient and more accurate

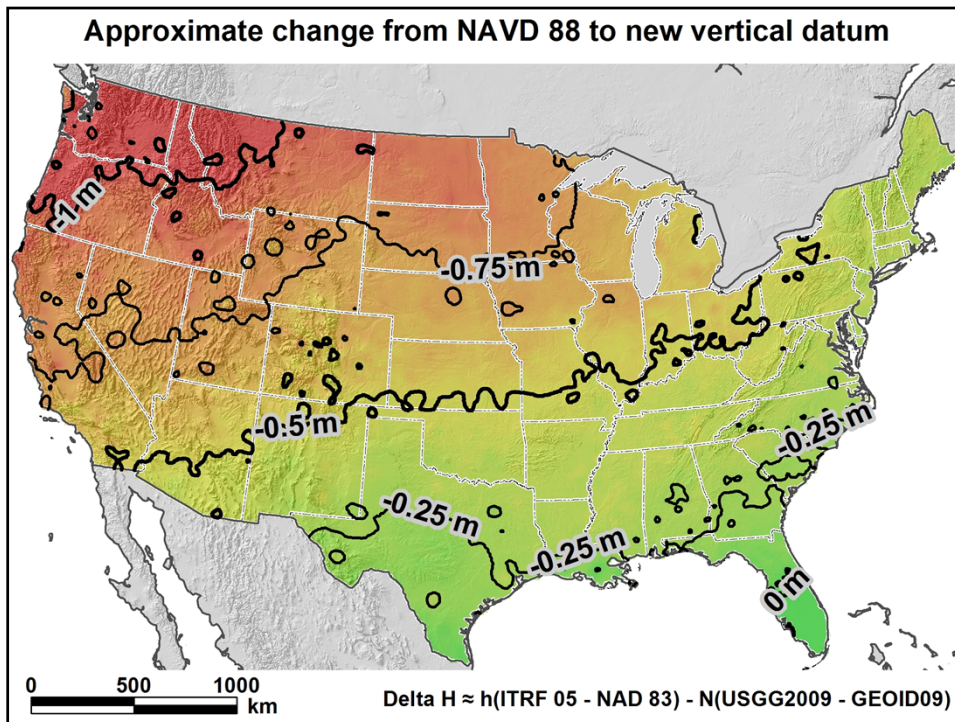
Modernizing the U.S. National Spatial Reference System

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Why a new & improved NSRS?

- NSRS is the framework for positioning in US and its territories
- Why replace North American Datum of 1983 (NAD 83)?
 - Non-geocentric (inconsistent with GNSS positioning)
 - NAD 83 coordinates of the CORS network inconsistent with passive marks
 - No velocities for passive marks
- Why replace North American Vertical Datum of 1988 (NAVD 88)?
 - ~0.5 m bias in NAVD 88 reference surface with respect to geoid
 - Cross-country systematic error of ~ 1 m ("tilt" or "slope") from geodetic leveling
 - Passive marks inconveniently located, vulnerable to disturbance and destruction
 - Heights can be invalidated by subsidence, uplift, freeze/thaw, etc.
 - Gravity model and modeling techniques not consistent with those used for geoid
- *Replace NAD 83 with a global geometric datum, similar to ITRF*
- *Replace NAVD 88 with a gravimetric geoid model as datum surface*





NOAA's National Geodetic Survey Positioning America for the Future geodesy.noaa.gov

Benefits, Progress... and Challenges

- **Benefits**
 - Facilitates direct use of GNSS for positions and “physical” height determination
 - More closely aligned with CORS and global reference frames (e.g., ITRF)
 - More efficient, less reliance on passive control
 - Better monitoring/modeling of temporal change in coordinates, heights, and gravity
- **Progress**
 - Multi-Year CORS Solution and new adjustment of passive GNSS control
 - Gravity for the Redefinition of the American Vertical Datum (GRAV-D) project underway
 - Federal geospatial summits to communicate change to users (2010, 2012, more in future)
- **Challenges**
 - Coordination with neighbors (Canada and Mexico)
 - Fix new geometric datum to North American plate?
 - Integration of GNSS heights (using geoid model) w/geodetic leveling; Dynamic heights
 - Providing means/best practices for users to move data to new datums
 - Depends on full funding for GRAV-D (and schedule)
 - Original completion target 2018, now by 2022...