xGeoid16 – what’s new and the results

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Since 2014, the U.S. National Geodesic Survey [NGS] has been computing two experimental geoids annually. These two models, an ‘A’ model and a ‘B’ model, are intended to be identical in methodology and data input, save that the ‘B’ model includes all available airborne gravity data from ‘Gravity for the Redefinition of the American Vertical Datum’ [GRAV-D] mission, and the ‘A’ model does not. In areas where the GRAV-D data have been collected, the xGeoid ‘B’ models are intended to provide a preview of the final geoid model that will serve as the zero height surface for NGS’ new geoid-based vertical datum in 2022. In this paper, we present results from the experimental geoid models computed in 2016: ‘xGeoid16A’ and ‘xGeoid16B’. These models incorporate: the GOCO05S satellite gravity model; all available GRAV-D airborne gravity (for the ‘B’ model); terrestrial gravity data, and; EGM2008. The gravity data of each type is combined according to its spectral contents and error assessment. Validation of each model includes comparisons against GPS/Leveling and astronomical deflection data from each of the two NGS ‘Geoid Slope Validation Surveys’; one in Texas and one in Iowa. Satellite altimetry over the Great Lakes also provides for validation of the models. Additional analysis and discussion will be included.

Keywords: airborne gravity, geoid determination and validation

Session 3: Local/regional geoid determination methods and models