



GRAV-D 2021-2022: Aerogravity Survey Planned for North Dakota

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The National Geodetic Survey (NGS), a part of the National Oceanic and Atmospheric Administration (NOAA), is sponsoring a new potential fields data collection project across North Dakota. The project will consist of gathering new airborne gravity measurements across the state along a (10 km) grid spacing to support the creation of a new nationwide vertical datum. This new vertical datum will be accurate at the 2-cm level as opposed to the vertical datum created in 1988 (NAVD 88) which can be inaccurate by 50-cm and contains a 1-m tilt across the conterminous U.S. (NOAA-NGS, 2018).

This new airborne gravity survey will also provide opportunities for a geophysical re-mapping of North Dakota, as well as surrounding states and Canadian Provinces that has not been completed since 2003 by the U.S. Geological Survey. In addition, a comprehensive gravity geophysical mapping and modeling study of the entire Williston Basin will be possible with consistently acquired gravity measurements.

This survey started this past summer and will likely be completed sometime in the summer of 2022.

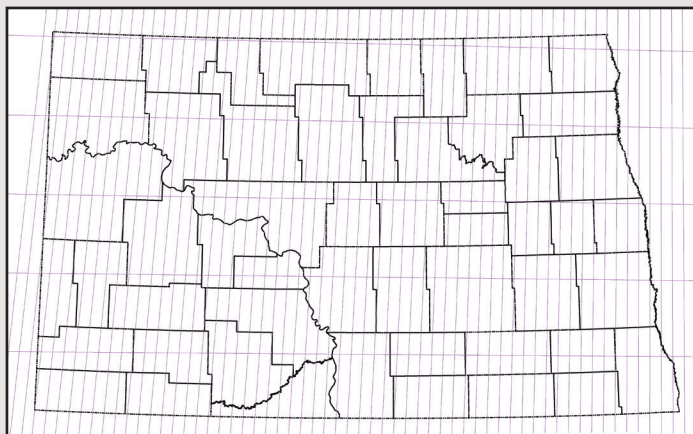


Figure 1. The GRAV-D project consists of collecting airborne gravity measurements along 6.2 mile (10km) spaced flight lines like these. The measurement collection spacing (or density) along N-S flight lines would be similar to the distances between township boundaries across North Dakota.

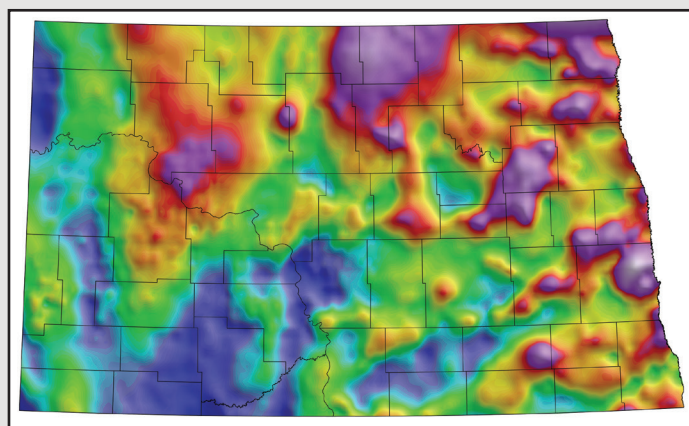


Figure 2. Gravity (Bouguer) map of North Dakota as completed by the author with the 2003 USGS data set. Warmer colors are areas of higher gravity where cooler colors are areas of lower measured gravity. At the completion of the GRAV-D survey a new more detailed interpretation of this data will be possible across the entire state in addition to the project's primary purpose of generating a more accurate model of mean sea level.

NOAA-NGS, 2018, GRAV-D: Gravity for the Redefinition for the American Vertical Datum, NOAA One-Pager: <https://www.ngs.noaa.gov/INFO/OnePagers/OnePagerGRAVDFinal.pdf>