



A Comparison of Filtering Techniques for Airborne Gravity Data

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NGS's Gravity for the Redefinition of the American Vertical Datum (GRAV-D) program will incorporate satellite, airborne and terrestrial gravity data to build a geoid with centimeter-level accuracy. The first phase of this program is to collect airborne gravity data across the entire U.S. and its holdings. This data will provide the medium-wavelength information for the geoid. In order to achieve GRAV-D's required precision and accuracy, different filter techniques are evaluated for the airborne gravity data using data lines which have been re-flown during the course of GRAV-D. These re-flights occur over a wide variety of latitudes from 15N to 65N and at altitudes from 6 km to over 11 km allowing a comprehensive comparison of filter techniques. Low-pass frequency-domain filters with a variety of window shapes are compared with time-domain Gaussian filters and with spatial filters. Filter performance will be judged on data loss due to edge effects and filter length and retention of high frequency signal. Combinations of filters will also be examined and results from wavelet based filters may be presented.