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# bout possibility of linear interpolation interval extension for total terrain reduction in processing of massive arrays of gravimetric data

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Highly accurate quasi-geoid modeling requires free-air gravity anomaly with dense distribution of gravimetric information in modeling regions. Due to strong correlation between free-air gravity anomaly and topography, topographic reduction is necessary for indirect anomalies interpolation for areas where gravimetric information is scarce. Processing of large amounts of points by numerical integration is time-consuming and requires significant computational power. Selection of correction parameters, which linearly change in certain interval, allows simplification of total terrain reduction processing. This approach extends linear interpolation interval of intermediate layer correction, according to performed experiments. Thus interval may be increased tenfold without loss of computational accuracy. Digital terrain model ETOPO1 was used in the experiments for terrain reduction. Profile was located between 55° and 40° parallels with longitude 90°. The profile crosses foothill and mountain areas with significant heights alterations. Total terrain correction for farther domain was computed by numerical integration method for points of regular grid with 1'step as well as integral correction parameters. Then changing step, which aliquots 2, for 2 to 12 angular minutes on regular grid points, theintegral correction parameters were interpolated between current and subsequent points. The value of terrain correction for farther domain obtained using integral correctional parameters was compared with directly computed correction. Obtained correction errors belong to interval from 0.56 to 2 $\mu$Gal. Step of 10 angular minutes corresponds to root-mean-square error of 1.35 $\mu$Gal. In other words, linear interpolation interval extension by means of integral correction parameters is feasible, and errors of linear interpolation do not exceed gravimetric measurements errors. This approach allows reducing computation time and keeps high accuracy of numerical integration method in topographic reductions.