

Orthometric Height Derivation from GPS Observations

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ABSTRACT

In order to obtain Helmert orthometric height of a point which already has GPS coordinates, difference between the gravimetric geoid and the GPS/leveling geoid heights at 187 points that are uniformly spread all around the country have been modeled by least squares collocation (LSC) and 3' x 3' size grid output file have been formed.

Initially, FORTRAN IV code and, for ease of use, also a MATLAB script has been prepared by using the Graphical User Interface (GUI) tool kit of MATLAB 5.3 software.

Several tests have been applied with different data sets. Accuracy of the height determination have been resulted with ± 12 cm RMS at major part of the country and is degraded to ± 20 cm at mountainous region lying along the borders and coastline due to data discontinuity and gravity data insufficiency.

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