

The Determination of the Geoid-Spheroid Separation for GPS Levelling and Applications

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Abstract

The heights which are obtained from global positioning system (GPS) satellite observations are measured with respect to an earth-centred ellipsoid and are not, as a result, generally useful for surveying and engineering. In order to become useful they must be transformed into orthometric heights, that is, heights which are measured with respect to the actual level reference surface termed the geoid. The parameter which enables this transformation is N , the geoid height or geoid-ellipsoid separation.

This paper reviews the capabilities of the GPS system for height measurements, describes the various methods used to evaluate N from gravimetry, and explores the suitability of these methods in the various applications in which height measurements from the GPS may be used.