DETERMINATION OF MEAN HELMERT'S ANOMALIES ON THE GEOID

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In this paper the definition of mean Helmert's anomaly is reviewed and the theoretically correct procedure for computing this quantity on the earth surface and on the geoid is suggested. This includes a discussion of the role of the direct topographical effect, direct atmospherical effict, secondary indirect effect, ellipsoidal corrections to gravity anomaly, downward continuation and other effects. An efficient technique is then proposed for determining the mean Helmert anomalies from sparse gravity data observed on the earth's surface. This technique is based on the widely held belief that complete Bouguer anomalies are generally fairly smooth and thus particularly useful for interpolation, approximation and averaging. Some numerical results are shown.