



Local Geoid Determination in Istanbul Metropolitan Area

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Many great and important engineering projects have been realised in the city of Istanbul, which is one of the largest metropolises in the world. Fundamental geodetic infrastructure created for the diverse nature of these projects is of vital importance. Determination of a geoid model with high accuracy through the use of GNSS technology and levelling measurements in this context is an important component of the geodetic infrastructure works. Today many studies are conducted based on GNSS/Levelling geoid modelling. Such geoid models to be used for many of the engineering works should ensure high accuracy. Established in 2006, Istanbul GPS Triangulation Network (IGN) and the Istanbul Levelling Network (ILN) provide reliable data for the determination of a local geoid model. The IGN consists of more than 1900 control stations while about 1005 of them are also stations of the ILN. Following the establishment of IGN and ILN, in some engineering projects additional valley cross levelling measurements were conducted between Asian and European sides of the Bosphorus strait. As part of this study, the network has been readjusted using the ILN data and the newly collected valley cross levelling data. The study mainly focuses on the determination of a local geoid model using the mentioned GNSS/Levelling data for Istanbul metropolitan area covering 6000 km². In this context, different modelling techniques have been applied and the results have been discussed.