



## **Local Geoid Modelling using Astro-geodetic Camera System and GNSS/Leveling Data**

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Geodetic astronomy provides regional and local interpretations of the gravity field of the earth with deflections of the vertical components. Recently astro-geodetic data is used with combination of leveling, GNSS, and gravity (aerial, terrestrial) observations for validation purposes. Modern tools were developed in Europe and Asia as digital zenith camera systems (DZCS) and now it is possible to determine precise deflections of the vertical data with an accuracy of  $\pm 0.1 - 0.3$  arc seconds. GNSS/Leveling geoid of Istanbul was modeled in 2005 with an accuracy of  $\pm 3.5$  cm and needs to be improved using additional data such as astro-geodetic deflections of the vertical. This study presents the recent observations performed using DZCS of Turkey. The accuracy of the system was tested with GNSS/Leveling geoid model and the results were compared with geoid height differences and global geopotential models. We also introduce a new project that includes modernization of current astro-geodetic camera system, and the observations that are planned on a larger test network. In this respect, new observations are going to be performed on a test network with 25 points using astro-geodetic data, and the geoid height differences will be obtained in order to improve local geoid model of Istanbul.