



A New Geoid Model for Iran based on the Combination of the Gravity and Recent GOCE and ASTER data.

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The modification of Stokes' formula allows the user to compensate the lack of a global coverage of gravity data by a combination of terrestrial gravity and a global geopotential model. The new geoid model (IRG11) was computed based on the least-squares modification of Stokes' formula, the GOCE global geopotential model, ASTER high-resolution digital terrain model and the Iranian gravity anomaly database. The IRG11 was fitted to 400 GPS/levelling points by cubic Spline approach. The fit is even smaller than the estimated internal accuracy for the geoid model. Also, we found some improvements between the IRG06 and IRG11 models in rough topographic areas. As the ground data were almost same in the two models, we believe that there are different reasons that come into play for interpreting the discrepancies between them, comes from using the interpolated denser gravity observations using the high-resolution ASTER digital elevation model before Stokes' integration and using of GOCE global geopotential model. We results strongly recommend using of recent GOCE global geopotential model and ASTER high resolution digital elevation model in future geoid computation.