EGU22-650, updated on 14 Aug 2022
https://doi.org/10.5194/egusphere-egu22-650
EGU General Assembly 2022

Investigation of different geoid computation techniques in the frame of the ModernGravNet project

Vassilios Grigoriadis[1], Vassilios Andritsanos[2], Dimitrios Natsiopoulos[1], and **Georgios Vergos**[1]
[1]Laboratory of Gravity Field Research and Applications - GravLab, Department of Geodesy and Surveying, Aristotle University of Thessaloniki, Thessaloniki, Greece
[2]Department of Surveying and Geoinformatics Engineering, University of West Attica, Aigaleo, Greece

In the frame of the "Modernization of the Hellenic Gravity Network" project, we aim at computing a high resolution and accuracy geoid for Greece. For this reason, we selected initially two test areas in northern and southern Greece covering an area of about 100 km^2 each, where gravity and GNSS/leveling measurements were carried out. Based on these recent, well documented and reliable measurements, we investigate the use of different techniques for the determination of the geoid, including Least-Squares Collocation, FFT and Input-Output Systems, following the Remove-Compute-Restore approach. For the remove/restore part, we examine different Residual Terrain Modeling schemes along with the use of older and recent Global Geopotential Models. Moreover, we compute the geoid-quasigeoid separation term using different approaches. We then validate the results obtained against the new GNSS/leveling measurements across the test areas and draw conclusions towards the determination of a regional geoid for Greece.