

Analuis of Earthquakes Patterns in Iran Based on the Defelection of Vertical Components of the Egm2008 Global Geoid Model

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SUMMARY

Only with satellites it is possible to cover the entire Earth densely with gravity field related measurements of uniform quality within a short period of time. A new Earth Gravitational Model (EGM2008) to degree 2160 has been developed incorporates improved 5 5 minute gravity anomalies and has benefited from the latest GRACE based satellite solutions. Due to the high altitude of the satellite, the effects of the topography and the internal masses of the Earth are strongly damped. However, the deflection of vertical components, are the second order spatial derivatives of the gravity potential, efficiently counteract signal attenuation at the low and medium frequencies. In this article we review the procedure for estimating the deflection of vertical components based on the spherical harmonic coefficients of the EGM2008 global combined geoid model. Then we apply this method as a case study for the interpretation of possible earthquakes patterns in Iran. We found strong correlations between the components of the deflection of vertical, and earthquakes patterns in Iran. It can be used for detecting of possible hidden faults in the study areas for establishment of the deformation monitoring networks based on the GPS.