Estimate of the effective elastic thickness of the lithosphere from satellite-derived gravity and topography data in Iran

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Abstract

The most outer layer of the lithosphere responds elastically against any imposed stress. In general, the strength and thickness of the effective elastic lithosphere are reflected in its free air gravity, topographic, flexural and seismic characteristics. Therefore, it is so great to estimate elastic thickness of the lithosphere, . Gravity anomaly and topography spectral analysis is an appropriate way to estimate .

Satellite derived gravity and topography/bathymetry provide homogeneous and uniformly accurate data, all over the world. In this paper, we used EIGEN-GL04C and ETOPO5 in a grid to generate free-air gravity anomaly and topography, respectively. By Fourier spectral analysis of the data and flexural isostacic model, we estimated in Iran. Finally, we could show there is strong correlation between and crust thickness in many regions which can be used to thermal gradient evaluation of the crust.