Geophysical Research Abstracts
Vol. 20, EGU2018-813, 2018
EGU General Assembly 2018


# Moho determination by constrained inversion of satellite gravimetric and seismic data

Sahar Ebadi (1) and Abdolreza Safari (2)

(1) School of Surveying and Geospatial Engineering, Research Institute of Geoinformation Technology (RIGT), College of Engineering, University of Tehran, Tehran, Iran (sahar.ebadi@ut.ac.ir), (2) School of Surveying and Geospatial Engineering, Research Institute of Geoinformation Technology (RIGT), College of Engineering, University of Tehran, Tehran, Iran (asafari@ut.ac.ir)

Abstract: The Moho interface known as the Mohorovičić discontinuity represents the boundary between the lowermost crust and the underlying uppermost mantle. We try to recovery Moho by using the isostatic hydrostatic and flexural equilibrium. Hydrostatic equilibrium is based on floating crust on the mantle and flexural model is according to flexural theory of isostasy. Basis of these models is Vening-Meinesz theory which presented a method to estimate the crustal thickness by considering a regional, instead of a local compensation scheme of topographic mass surplus and bathymetric mass deficiency. In some of hydrostatic models like VMM (Vening-Meinesz-Moritz, Sjöberg 2009), regional compensation has not been seen and we intended to solve this difficulty by refining equations and using GOCE satellite gravity-gradiometry data. Also we try to get an isostatic model like VMM by applying an idea used for Mars and the moon (Turcotte et al 1981). In hydrostatic models, mechanical properties of the Earth (like rigidity and elastic thickness) have not been considered too. For applying these properties, flexural models based on loading theories will be investigated. Flexural models have some difficulties too, as an example: these models can not been used in regions with subduction zones because of tectonic plates. Since each of the hydrostatic and flexural models have some advantages and disadvantages, the main issue of this study is combining these models and inversion of them simultaneously by regularization methods like generalized Tikhonov. We specified the study area of Iran between the latitudes 25˚N and 45˚N and the longitudes 40˚E to 65˚E. This region is characterised by a rough topography with a complex geological structure. We try synthesize these models so that final results have the best fit to seismic data of this region. For this purpose we need to reliable seismic data in this region. One of the main goal of our research is gathering and preparing accurate seismic data for improving Moho determination.