

Moho Depths in the Indian Ocean Based on the Inversion of Satellite Gravity Data

DIMITRIOS ARABELOS¹, GEORGIOS MANTZIOS¹, DIMITRIOS TSOULIS¹

¹*Department of Geodesy and Surveying, Aristotle University of Thessaloniki,
GR-54124 Thessaloniki*

An experiment for the estimation of the Moho interface was carried out in a part of the Indian Ocean, stretching over the high seismicity area between the east coasts of Africa and the west coasts of Sumatra. The estimation was based on the inversion of satellite-deduced gravity data using Least Squares Collocation and a statistical model consisting of two layers. The parameters for the construction of the necessary covariance functions were selected taking into account the statistical characteristics of the global elevation model DTM2002 and the global crustal database CRUST 2.0. The latter were treated in the frame of the prediction algorithm as a-priori values, which were tuned on the basis of a good agreement between the covariance function of the gravity anomalies and the covariance function of the gravity response of the two layers. An assessment of the estimated Moho depths was attempted, comparing the results of isostatic reduced sea surface heights from Jason-1 satellite altimetry. The isostatic reduction was computed using the DTM2002 topography and Moho depths resulting from (a) the Airy isostatic model, (b) the CRUST 2.0 database and (c) the estimated Moho interface obtained from the present prediction method. The results showed a better smoothing of the ssh when the estimated Moho depths were used.