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A satellite gravimetric approach to the crustal deformation monitoring, Case study: Detection of the crustal deformation caused by Sumatra-Andaman and Nias earthquakes using GRACE data

A. A. Ardalan, G. Joodaki, M. A. Sharifi

Department of Surveying and Geomatics Engineering, Center of Excellence in Geomatics Engineering and Disaster Prevention, College of Engineering, University of Tehran, P.O. Box 11155-4563, Tehran, Iran, (ardalan@ut.ac.ir) (joodaki@ut.ac.ir)

New high-resolution satellite gravimetry missions have proven their capabilities in the gravity field modeling. Besides, repeatability of the satellite observations provides the possibility of monitoring the temporal gravity field variations. In this paper we have shown that: (i) Large earthquakes have sharp signature in the satellite gravimetry observations, and (ii) how from temporal variations in the satellite gravimetry observations we can reach to the crustal deformation caused by the earthquakes. As the case study level-2 GRACE gravimetry satellite data are used and the gravity signature and the crustal deformation associated to the Sumatra-Andaman and Nias earthquakes with magnitudes of 9.3 and 8.7, in Richter scale respectively, are computed.