Geophysical Research Abstracts
Vol. 12, EGU2010-14715, 2010
EGU General Assembly 2010

The Effect of Numerical Differentiation Methods on the Earth's Gravity Field Recovery

Mahrooz Khademi, Mehdi Najafi Alamdari, and M. Ali Sharifi
(mahrooz.khademi@gmail.com)

The Effect of Numerical Differentiation Methods on the Earth's Gravity Field Recovery

M. Najafi Alamdari[1], M. A. Sharifi[2], M. Khademi[3]

Abstract

Calculation of velocity and acceleration vectors is a necessary stage in Earth's gravity field recovery using GRACE observations. Different numerical differentiation methods have been proposed to compute the acceleration vector. In this paper, Newton, spline and Taylor methods have been implemented. The effect of outliers has also been investigated in different differentiation techniques. The numerical analysis of the recovered solutions shows that the Newton method yields the optimal solution. The comparison is performed based on the difference in the simulated and recovered gravity anomalies and the geoidal heights.

Keywords: Outlier, Gravity, GRACE, Numerical differentiation

---

[1]Surveying and Geomatics Engineering Department, Faculty Engineering, K.N.Toosi University of Technology, Iran

[2] Surveying and Geomatics Engineering Department, Faculty Engineering, University of Tehran, Iran

[3] Surveying and Geomatics Engineering Department, Faculty Engineering, K.N.Toosi University of Tech-

nology, Iran