Geophysical Research Abstracts
Vol. 14, EGU2012-7306, 2012
EGU General Assembly 2012

Assessment of the possibility to observe gravity changes due to the Japan-Tohoku 2011 earthquake by GOCE gravity gradiometry

M. Fuchs (1), T. Broerse (2), J. Bouman (1), B. Vermeersen (2), and P. Visser (2)
(1) DGFI, Munich, Germany (fuchs@dgfi.badw.de), (2) TU Delft, Delft, Netherlands

The Japan-Tohoku earthquake is the second largest earthquake in the history of recent seismic records and has left signatures in the earth's gravity field as shown by analysis of data of the GRACE mission. As the GOCE mission aims at high spatial resolution, its derived gravity information could lead to improvements in the current understanding of these large seismic events.
We show that the gravity change after the Tohoku-earthquake is close to the detection capabilities of the GOCE mission considering the amount of pre- and post-earthquake collected data. Because of the small size of the earthquake signature at satellite altitude, the gradiometer measurements derived from the GOCE on-board gradiometer have to be carefully processed in a regional gravity field analysis.
We will show our data processing procedure and regional gravity field analysis. First results of the gravity field recovery before and after this major seismic event indicate that its signal might be visible in the GOCE data.