Geophysical Research Abstracts,
Vol. 10, EGU2008-A-06688, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-06688
EGU General Assembly 2008

Fennoscandian land uplift observed by GRACE and absolute gravity measurements

H. Steffen, O. Gitlein, H. Denker, J. Müller and L. Timmen

Institut für Erdmessung, Leibniz Universität Hannover, Schneiderberg 50, 30167 Hannover (steffen@ife.uni-hannover.de)

Fennoscandia is a key region for studying effects of glacial isostatic adjustment. The associated mass variations can be detected by absolute gravimetry field campaigns as well as by the Gravity Recovery and Climate Experiment (GRACE) satellite mission, which observes the Earth's gravity field since April 2002. Since 2003, annual absolute gravity (AG) measurements have been performed by members of the Nordic Geodetic Commission (NKG) in Fennoscandia at more than 30 stations covering Norway, Sweden, Finland and Denmark. This offers a unique opportunity for validating and evaluation of the GRACE results.

We compare results of absolute gravimetry based on the surveys from 2003 to 2007 with the FG5-220 gravimeter of our institute with results from monthly GRACE solutions provided by different analysis centres. The GRACE data clearly show temporal gravity variations in Fennoscandia, and secular variations are in good agreement with former studies. The uplift centre is located west of the Bothnian Bay, and the uplift affects Northern Europe. Secular gravity disturbance changes derived from observations fit well with results from GRACE at selected stations. The results of the AG measurements reach an overall accuracy of ± 3 μGal for one single absolute gravimeter and one station determination.