

## **NKG Working Group for Geodynamics, Ås, March 2006**

### **Report from Lantmäteriet, Sweden for 2005**

Lantmäteriet supported IFE (Hannover) with one operator for 30 days of the on-going absolute gravity campaign. During that time they measured at the following stations: Metsähovi (2 sites), Vaasa, Sodankylä, Kiruna, Arjeplog and Östersund. Lantmäteriet also supported NLH (Ås) with the same operator for 7 days of the same on-going absolute gravity campaign. During that time they measured at the following stations: Smögen and Onsala (2 sites). The stations in Mårtsbo, Skellefteå, Kramfors, Visby and Onsala were also measured by IFE without assistance from Lantmäteriet.

Lantmäteriet are currently investigating the need of having an absolute gravimeter of its own and if so, what type of absolute gravimeter. A decision will be made during 2006.

One of the main tasks of Lantmäteriet the last year has been the computation and release of the new height system RH 2000. To fulfil this task a new land uplift model, called RH 2000 LU, was constructed by modifying and combining the mathematical model of Olav Vestøl (version January 2005) and the geophysical model of Lambeck, Smither and Ekman (1998). Vestøl's model was derived in a purely mathematical way using least squares collocation with unknown parameters and the following observations,

- Absolute land uplift rates at 53 permanent GPS stations computed by Lidberg (2004) together with Onsala Space observatory at Chalmers University of technology.
- Apparent land uplift rates at 58 tide gauges compiled by Ekman (1996)
- Repeated precise levelling observations from Sweden, Finland and Norway.

Lambeck's model, on the other hand, is based on a physical model of the Earth and the ice cap. It has been tuned to tide gauges and ancient shore line observations. Roughly put, RH 2000 LU is equal to a smoothed version of Vestøl's model in the more central parts of the uplift area, while the model approaches Lambeck's model the further one moves from the center. This work has been performed in collaboration with the other countries within the Nordic Geodetic Commission (NKG).