Nordiska kommissionen för Geodesi
Nordic Geodetic Commission

Working Group for Geodynamics

Minutes of the 32nd meeting of the Working Group for Geodynamics within the Nordic Geodetic Commission

Danish National Space Centre, Copenhagen, April 23-24, 2008

Participants:

Denmark	Gabriel Strykowski	DTU Space
Finland	Jaakko Mäkinen	FGI
	Hannu Ruotsalainen	FGI
Norway	Ove Christian Dahl-Omang	Statens Kartverk (NMCA)
	Bjørn Ragnvald Pettersen	UMB
Sweden	Hans-Georg Scherneck	Chalmers
	Andreas Engfeldt	Lantmäteriet
	Martin Lidberg	Lantmäteriet
	Per-Anders Olsson	Lantmäteriet
	Jonas Ågren	Lantmäteriet
Estonia	Tõnis Oja	Estonian Land Board
Germany	Olga Gitlein	IfE, Leibniz Universität Hannover
	Holger Steffen	IfE, Leibniz Universität Hannover
	Ludger Timmen	IfE, Leibniz Universität Hannover
	Herbert Wilmes	BKG, Frankfurt/M.

1. Opening

Chairman Martin Lidberg opened the meeting and Per-Anders Olsson and Hans-Georg Scherneck were appointed as the secretaries.

2. Institute reports

All institute reports are available at the home page of the meeting and are therefore not summarised here (see http://www.oso.chalmers.se/~hgs/NKGWG/M2008/PrelProg.html.)

DK: KMS / Danish National Space Center (Gabriel Strykowski)

FI: Finnish Geodetic Institute, FGI (Hannu Ruotsalainen)

NO 1: Norwegian Mapping and Cadastre Authority (Ove Omang)

NO 2: University of Life Sciences, UMB (Bjørn Ragnvald Pettersen)

SE 1: National Land Survey, Sweden (Andreas Engfeldt and Jonas Ågren)

SE 2: Chalmers, Onsala Space Observatory (Hans-Georg Scherneck) not presented

EE: Estonian Land Board, (Tönis Oja)

DE 1: Institut für Erdwissenschaften (Olga Gitlein)

DE 2: BKG (Herbert Wilmes)

3. Scientific presentations

No summary is given of each individual presentation. Most of them are available at the website; see http://www.oso.chalmers.se/~hgs/NKGWG/M2008/PrelProg.html.

Andreas Engfeldt: *The first years experience with the Swedish FG5*.

Hannu Routsalainen: *Recording crustal tilt with the new NSWT in Lohja*

Per-Anders Olsson: *Baltic loading effects and the effect on apparent sea level change on observed gravity*

Tõnis Oja: *New results by absolute gravimetry in Estonia and vertical gradient problem*

Herbert Wilmes: *Establishment of a database for absolute gravity observations at BGI and BKG* [länk!]

Herbert Wilmes: *Tasks of a new working group on absolute gravimetry* [länk!]

Martin Lidberg: *Geodetic reference Frames in Presence of Crustal Deformations (or current status of BIFROST)*

Hans-Georg Scherneck: *Contemporary Strain Rates in Fennoscandia from BIFROST GPS*

Gitlein, O., Timmen, L.: *First IfE results of absolute gravimetry surveys in the Fennoscandian Land Uplift area.*

L. Timmen, O. Gitlein: *The measuring offset between the absolute gravimeters JILAg-3 and FG5-220.*

H. Steffen, O. Gitlein, H. Denker, J. Müller, L. Timmen: *Does GRACE really see GIA in Fennoscandia?*

Bjørn Ragnvald Pettersen: *The postglacial rebound signal of Fennoscandia - observed by absolute gravimetry, GPS, and tide gauges*

Jaakko Mäkinen: *Absolute Gravimetry on Iceland 2008*

4. Study Group Presentation

Special study group on "Supplemental installations at AG sites". Bjørn Ragnvald Pettersen

Despite little specific input, the discussions in this meeting have highlighted several questions that are addressed by the study group and contributions for measures to consider in the AG network, particularly for monitoring the local station environment.

Points of consideration:

- Use Micro-g's Gphone for monitoring temporal changes of g?
- Install ground humidity sensors like in Canada?

- Use core drilling and analyse sediment and rock properties when preparing ground water observing wells.
- Wettzell has sensors for soil moisture and groundwater level; work is in progress.
- Ground water and soil moisture effects are most probably dominated by very small-scale effects from some 10's of meters around the observation point. From Metsähovi is reported a ratio of 2:1 in near-field to far field effects.
- Temperature and cabin climate cause changes of the reference frequency. Therefore:
- Should the cabins be heated? In many situations the cabins are too hot, so cooling is a matter as important as heating, and therefore air conditioning appliances should be considered.

The special study group aims at a written report for the next meeting. Contributions are welcome.

5. Business matters

5.1 Report from the NKG Presidium

The NKG Presidium expressly encourages continued efforts to archive the gravity observations.

5.2 The Fennoscandian Land Uplift Gravity Lines

Status report on scientific publication, and FGI publication. The deadline, May 8, for a publication of an article Jaakko Mäkinen et al. in the special issue of Journal of Geodesy (D. Wolf, editor) appears too tight. The next opportunity will be the special issue for the project DynaQlim (ILP) in Journal of Geodynamics (M. Poutanen, ed.), which appears feasible. The author list will include anyone having been involved in the profile measurements since the start and still being alive.

Availability of A10 gravimeters will make the remeasurement of the land uplift lines possible, adding to 42 years worth of data and continue increasing its value. DTU-Space will probably be ready to participate in 2009, BKG may join earliest in 2010.

UMB is embarking on a test field project in conjunction with GOCE and glacial mass monitoring in Norway. Renting of an A10 instrument is part of this project.

5.3 Update of the Absolute Gravity campaign database and AG Plan

Martin Lidberg: An update of the AG Plan is needed in order to add the new stations.

5.4 Contribution to information in the BKG/BGI data base on AG observations

It is concluded that meta-data from the AG-observations in the Nordic (and Baltic) area should be submitted to the BKG/BGI data base.

Submission of AG stations should preferably be done by the site owner, while submission of meta data on observations should be done by those who performed the observations. (Although some coordination and help between our groups while adding information to the data base probably would be fruitful, this was not really discussed during the meeting.)

Every group is of course free to add also observations to the BKG/BGI data base. So far the NKG w.g. for geodynamics is not prepared to generally recommend that all observed data are given away freely. (However, exchange of data on a cooperative basis within scientific cooperation is encouraged.)

In analogy to IGS (the International GNSS service), a compromise regarding data availability was discussed where e.g. AG-observations at some (few?) "fundamental" geodetic stations could be made public available. So far, no conclusion from this discussion was made.

5.5 Participation in the new working group on absolute gravity

Herbert Wilmes. A new, international working group on absolute gravimetry has been created as a joint intercommission effort of IAG (Commission 2, SG 2.1 and IGFS). Need arises since AG comparison are arranged by BIPM and IAG Comm. 2, while standards are an issue concerning all three groupings. At present no agreed-upon standardisation exists but is badly needed for a long-term participation in GGOS.

The duties for the new working group are summarised in keywords

a) standard and conventions
    a. observation procedures
    b. data reduction
    c. exchange format and archive
    d. associated data
    e. processing methods
    f. gravity reference systems to replace IGSN71
    g. …

b) networks and communications

a. design and realise global gravity networks
b. …
c. gravity field parameters at tide gauge
d. integrate gravity + levelling
e. contact with oceanographic, atmospheric and hydrographic networks
f. data availibility

Proposed objectives and tasks

1. design and promote AG networks for repeated observations
2. devise standards
3. create a database
4. combine AG and superconducting gravimetry
5. combine gravity and geometric observations
6. improve gravity reference systems
7. devise data policy

The NKG Working Group of Geodynamics will participate in the first meeting on Crete in June 2008 on a per-institute basis. Names of participants are to be sent to Herbert Wilmes.

5.6 Establishment of a common NKG archive for absolute gravity observations

LMV is prepared to collect and archive the data in a Nordic Absolute Gravity Data Base, while adhering to the agreements with the contributors in order to warrant against undesired disclosure. Access for prospective users of the data bases will have to be requested and, if possible, will be granted in a formalised procedure including a careful examination of the request. No data will be given away without the expressed acknowledgement from the owner of the data (the organisation that performed the observations). The measurements will be incorporated as they are made available from the different participants. There are no time limits imposed. LMV and LUH/IfE are ready for delivery. Meta data, however, should be contributed as soon as possible.

LUH/IfE is prepared to share their raw data from the Fennoscandian campaigns with those organisations that are representative of the country where the measurements were taken. LUH/IfE is also prepared to contribute their "cooked" data to an interim internal NKG data base. Wider access to the data will be permitted after the ongoing PhD-Thesis work at IfE, but latest after 2 to 5 years.

BKG data will be available via the AG data base that is currently in progress as a joint effort between BIPM and IAG-IGFS.

6. Field Campaign Planning

2008:
IfE: Metsähovi May, 21-25; Vaasa May, 26-29; Skellefteå May, 31- June, 03; Arjeplog June, 04-07; Kramfors June, 09-12; Mårtsbo August, 05-09; Östersund August, 10-13, Onsala August, 15-19; København August, 20-23.

LMV: Skellefteå, Lycksele, Kiruna, Ratan in weeks 22-24; Smögen week 26; Kramfors and Östersund week 32; Mårtsbo together with IfE week 33; Örebro and Bornholm weeks 40-41, Onsala weeks 42-43, Metsähovi maybe in September.
UMB: Hønefoss, Vågstranda, Ålesund, Tromsø, Kautokeino, Ås, Trysil, Onsala, Smögen (?), Kiruna, Arjeplog, Östersund, Trondheim.

FGI: Estononian, Latvian and Lithuanian stations, 22 total, 7 in Estonia

2009
LMV about the same as in 2008, UMB about the same as in 2008. FGI will conduct A10-work and measure with the FG5 at Finnish stations only.

Ife: 2009 is beyond the end of their funding.

BKG plans reoccupation of the stations of their previous visits. Plan is preliminary.

7. Next Meeting

March 10-11, 2009 at the new Superconducting Gravimeter site at Onsala Space Observatory, Sweden (we hope).

8. Closing

The WGG thank their host, the Danish National Space Centre, and in particular Gabriel Strykovski for excellent organisation, service and treatment food-wise.