NORDISKA KOMMISSIONEN FÖR GEODESI

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MINUTES FOR THE 54th Presidium MEETING

Time: **30 September - 1 October, 2013**
Place: **Gävle, Sweden**

Item 1) Opening of the meeting (Niels)

Niels welcomed everyone to the meeting and thanked Lantmäteriet for hosting the meeting.

Item 2) Approval of the agenda (All)

Since Jan and Torbjørn are not present on the second day of the meeting it was decided to make sure that item 4 and item 8 to be discussed during the first day.

Item 3) Minutes from NKG Presidium meeting No 53 (All)

Minutes were approved without comments. Mikael will upload the minutes to the NKG website.

Action: Mikael to upload the minutes to the NKG Web site.

Item 4) The Importance of NKG

At the last Presidium meeting each institution was asked to present their views on the importance of NKG.

Lantmäteriet started by presenting some thoughts. These were echoed by a number of the present institutions. A summary could be formulated as follows;

To better fulfil our "internal" Nordic needs

- We become stronger and more efficient by combining our limited resources. Geodesy is a small science not in our countries only, but also globally
- Networking is the important tool to successfully solve recent and future problems
- Young scientists have the chance to meet more experienced scientists, introduce their research, discuss and solve problems, and learn about international geodesy
- Some tasks *(like geoid determination)* require data from the whole Nordic area. It is then very efficient and convenient to build the corresponding databases within the NKG, coordinate the collection of data, etc.
- NKG should serve as a link between the mapping authorities and the universities as well as other institutions and policy makers
- Arena for scientists to meet and discuss also without having a clear agenda or goal

Nordic geodesy in the International perspective

- Our challenges in geodynamics are unique internationally. Therefore, to become and be a strong voice internationally we need to have a single point of contact and profound base for our discussions
- We may follow the development on the international arena more efficient if we work together and share the information.
- From the Nordic area we can be involved in more activities than a single country can do. *(E.g. UN-GGIM, GIAC, EUREF, EPOS...)*
- With some coordination we can have a more strong voice in international activities!

GS also presented some ideas and thoughts that were considered to be very much relevant.

The importance of NKG (GS)

- Knowledge
  - Bank of competence
  - Courses, workshops, school
- Networking
  - Discussions on ideas
- Tasks//project execution
  - Common tasks, contributing to the geodetic infrastructure,
- NKG Common component??
  - Voluntary work vs dependence
  - Limited amount of projects

From the discussions and other presentations it was also stressed not to have too many projects running simultaneous since we have limited amount of resources. LMI pointed out that with the limited resources they have, NKG is very important for them. This includes not only the projects but NKG as such. DTU Space pointed out that we should not forget about the knowledge transfer between colleagues, between older and younger and vice versa. The networking among colleagues is also important for successful international impact. NKG is important for the Nordic countries but could be more visible internationally.

A question that was raised is if we need to go through the statues before the NKG General Assembly. If we would like to have any changes in them then these should be identified before January. No decision was made concerning this.

Item 5) NKG Strategy

At the last Presidium meeting each institution was asked to present the most important national strategic goals for the coming years. Based on this information the Presidium should decide on the possibility to create a "NKG Strategy".

The presentations started by Kartverket that presented that the following areas are of importance;

Kartverket

- Climate change
- UN-GGIM and the UN resolution
- By 2016 having a positioning service on the cm-level and quality indicators by 2017. (e.g. troposphere and ionosphere)
- Develop Ny-Ålesund with VLBI latest during 2018, with SLR latest during 2020 and to end the current project latest during 2022.
- Geosat should be in production during 2016.
- Focus on space weather with the aim to establish a service latest during 2018.
- Kartverket mentioned that areas for cooperation within NKG are e.g. climate change detection including ocean currents and ice melting, 5 mm geoid, UN-GGIM resolution, DEM, CPOS Development, Working jointly to secure Geodetic studies at the Nordic level.

FGI;

- FGI is focussing on four Strategic Research Areas, e.g. Reference Systems and Changing Earth. FGI and other national research institutes are in the process of restructuring. Even though this has been discussed over a long period, no decision has been taken yet. One suggestion that has been discussed is the creation of The Finnish Geospatial Information centre in which FGI of today will probably stay intact. Budget cuts are expected and in 2017 it is expected to be something like 20%.
- Renewal of Metsähovi and FinnRef is vital areas for the improvements of the Finnish Geodetic Infrastructure. Some areas of improvements are
    - FinnRef to expand to 20 stations. Installations are already going-on. Multi-GNSS is of course important to meet. Free data is a reality and what is discussed at the moment is a free navigation service to start early 2014.
    - A new supra conducting gravimeter to be installed at Metsähovi during 2013
    - A new SLR to be installed. The situation is that the six tenders are evaluated at the moment. A decision is expected to be made within a few weeks. The delivery time is about two years.
    - The VLBI is also through improvements with a new telescope expected in 2014-16. The estimated cost is 2.5 mEuro. There is ongoing co-operation with Onsala/Chalmers.
- The absolute gravimeter has been upgraded to a FG5-X 2013.

Chalmers/Onsala

Onsala

- The VLBI twin telescope to be built 2014-15. However, there are discussions regarding the location for one of the two telescopes with the local authorities.

- The current 20 metre telescope is used for Geo-VLBI for about 50 days/yr.
- Local tie measurements is ongoing
- The IGS station Onsala is in "Radome test"
- Other news at Onsala;
  - Additional GNSS installations
  - Gravimeters (SCG etc)
  - Seismograph
  - Tide Gauge

Chalmers

- There is work on "Climate Research" together with SMHI and Lantmäteriet
- Bifrost will continue, together with other institutions
- Continue of course with courses and phd-students.
- Positioning and navigation - e.g. Sensor fusion
- GNSS and indoor positioning (cm-dm)

Lantmäteriet

- The presentation from Lantmäteriet was based on the content of Geodesy 2010 that is the strategic document for geodesy in Sweden. The current NKG working group and projects supports Lantmäteriets needs and that is one reason why they are very active in NKG.
- By 2015 Lantmäteriet will have:
  - Guaranteed the use of GNSS in real-time with measuring uncertainty reduced to the centimetre level both horizontally and vertically.
  - Densified SWEPOS to guarantee a redundancy as well as reducing measuring uncertainty.
  - Released a new three-dimensional model for the post-glacial land uplift phenomenon
  - Been actively engaged in ensuring that municipalities and government authorities have completed the transition to SWEREF 99 and RH 2000.
  - Defined and released a new gravity system, RG 2000, and also established a new gravity network
  - Released a geoid model with an uncertainty less than 10 mm
  - Developed NKG's analysis centre so as to include all permanent reference stations in the Nordic countries.
- By 2020 Lantmäteriet will have:
  - Guaranteed the long-term sustainability of seamless and unified reference systems, that satisfy user demands, through active management policies
  - Developed a geodetic infrastructure that gives users access to reference systems in real-time with an uncertainty of less than 1 cm
  - Released a geoid model for the whole of Sweden that has an uncertainty of less than 5 mm
  - Ensured, through active participation that the European reference systems, ETRS 89 and EVRS, still remain in use for technical applications.

LMI

- LMI has published a Policy marking for the period 2011-15 mentioning;
  - The development and maintenance of geodetic and vertical reference systems for the whole of Iceland
  - The continuation of the development and maintenance of permanent GNSS stations making use of permanent recording systems, for instance in order to monitor the Icelandic geodetic reference system and disseminate new correction signals. In this Iceland is talking about 1-3 new CORS per year. In total, 14 stations are available in the end of 2013. The goal is to have about 25 stations over Iceland
  - The development of a dm-service to be available in 2014
- LMI discussed also the challenge regarding cadastre surveying since anyone is allowed to do cadastre survey on Iceland. LMI needs to contribute more to the cooperation between those who are involved in land surveying on Iceland in order to ensure that the working procedures are as consistent as possible. Therefore LMI needs to try to write a "handbook" for the surveying so that the surveying is done homogenously.

Geodatastyrelsen

- New height system for Denmark and the preparations, new data and new methods. The new height system should be based on repeated GNSS observations. A good geodynamic model for Denmark is needed in conjunction to this and should be depending on a good Nordic or even European model. A study group has been set up together with DTU to consider how tide gauge, GPS-observations, levelling and other data can be combined into a future new height system.
- Generational change – classic geodesy and programs and algorithms
- Focus on the resources and on the strategic goals (priority)
  - Optimization of our surveys and analyses of data
  - Optimal cooperation with DTU Space (new structure)
- Other strategic goals related to geodesy
  - Bathymetric surveys
  - Digital height model – new data in 2014 and 2015
  - Satellite images (Copernicus)

DTU Space

- Reconsidering the strategies at the DTU Space. One of the strategies will be to have a good balance between science and technology.
- Within research the main goal is to continue to remain among the world leading in the areas of their interest.
- Focus on sustainable Arc Space Infrastructure (define and build)
- To be present at the International Space Station in 2015 by putting an instrument on it.
- To be part of the future major earth observation missions e.g. Grace follow up
- Focus on contribution to the Climate change discussion

- Continue and develop education in geodesy. New courses as well as develop the cooperation between the Nordic Five Universities.
- Part of the privatization of Space (Upstream and Downstream)

Action: A task force with the members Niels (chair), Mikael, Jonas, Markku, Thorarinn and Per-Erik was established to discuss to the next presidium meeting on what is possible and not possible for NKG to accomplish. One product could be a "catalogue of options".

Item 6) Reports from the working groups

- **Geodetic infrastructure** (Per)
  Per was not present at the meeting and no information was given.

- **Geodynamics** (Dagny)
  Dagny reported on Holger Steffens GIA work. No project proposal will be submitted regarding this due to time constraints and also mainly because Holger will do most of the work. He needs however to bounce ideas now and then with resources at other institutes in the Nordic area.

- **Geoid and height systems** (Jonas)
  Nothing to report besides the projects

- **Reference frames, positioning and navigation** (Pasi)
  Pasi was not present at the meeting and no information was given concerning the working group.

Item 7) Reports from the projects

- **Computation of the NKG2014 geoid model** (Jonas)
  Mirjam has computed a new DEM by combining the Nordic part of the EGG08 DEM with the new Finnish and Lithuanian DEMs. It remains to patch the Estonian and Latvian ones. Jonas will fix the legal agreements and Mirjam will help with the patching. Regarding gravity, DTU space has hired a professional programmer who is now working on implementing the NKG gravity database in a new environment. When this work is finished he will contact the country representatives for further instructions.
  ACTION: Each country to make sure that the project members (Computation of the NKG2014 geoid model) have enough time for the update of the NKG gravity database.

- **Investigation of the requirements for a future 5 mm (quasi) geoid model**. (Jonas)
  So far only Lars Sjöberg and Jonas have been active in this project. Their intention is that the project will write a scientific paper (with many co-authors). Since the last meeting in Illulissat, Jonas and Lars have worked on the influence of errors in the DEM (mostly long wavelength). This was presented at the IAG meeting in Potsdam (oral presentation).

- **Review of current and near-future levelling technology** (Jonas)
  The project plans for a Workshop in March 2014, mainly concerning the future.

  ACTION: Finland, Norway and Denmark to make sure that their project members have enough time to fulfil the agreed project missions and time table.

- **Empirical land uplift modelling** (Jonas)
  Olav talked to representatives from the Baltic countries at the EUREF symposium. They promised to send data before March 2014, but so far only Latvia has sent data.

- **Absolute Gravity Measurements in Fennoscandia** (Dagny)
  The deadline for the NKG Absolute Gravity Database was agreed by the project to the 1st of September. At the moment Norway and Finland have not yet sent in data. Finland expects to send in data within a month or two. The situation in Norway is that UMB owns the data and Björn Ragnvald Pedersen has been travelling. There has been progress regarding the Norwegian data but there is probably a need for a publication first. The International Comparison of Absolute Gravimeters 2013 (ICAG-2013) will take place in Walferdange in November and Sweden, Norway and Finland will participate.

Item 8) NKG General Assembly 2014

Jan reported as chair of the LOC and Scientific Committee. NKG General Assembly is planned to the first week of September, 2014. It will be held at Chalmers, Gothenburg and Jan has booked conference rooms. The Scientific Committee consists of Jan Johansson (S and chair), Oddgeir Kristiansen (N), Per Knudsen (DK), Markku Poutanen (FIN), Jonas Ågren (S), Martin Lidberg (S), Gudmundur Valsson (Iceland) and Anna Jensen (DK and representing NNF). The first meeting will be held 25th of October in Gothenburg. The discussion with NNF (Nordic Navigation Forum) is to hold joint sessions during one of the days. RNN (Radionavigeringsnämnden) will also be involved. The presidium agreed that the common day could be on the Wednesday? NKG is to handle the registration as well as program and Anna Jensen from NNF is to be asked to be part of the scientific committee. The General Assembly will probably be held Monday lunch to Thursday lunch but the Scientific Committee is to decide. Poster sessions are important and there is no probable in finding could place for them at the premises. These should also be included in the proceedings. Jan reported that there exist several options concerning hotels with different price categories.

A budget will be prepared when more information from the Scientific Committee is available.

Action: Jan to invite Anna Jensen to be a member of the Scientific Committee to NKG General Assembly.

Item 9) UN-GGIM and GIAC

A report from the UN-GGIM meeting in Cambridge in July 2013 was given by Anne and Per-Erik. At the meeting in July, large interest regarding Reference Frame was shown. The UN-meeting agreed on the preparation of a UN-resolution to be presented during 2014. A working group has been established that includes Norway. There were about 28 countries interested and there is a discussion on how to use all these interested countries in the process.

The presidium members are asked to follow the work of UN-GGIM on ggim.un.org.

Item 10) EUREF

Martin gave a report from the EUREF meeting in June and focused on the resolutions from the meeting. These are available at http://www.euref.eu/euref_symposia_meetings.html. Especially resolution No 5 concerning INSPIRE should be monitored by each country.

Item 11) NKG Web site

There is no possibility for others than FGI personal to update the NKG website and this is not a good solution. We need a more flexible solution to encourage the working groups and projects to update on their progress as well as information sharing. The NKG website is very important for our visibility but also as an archive for e.g. proceedings etc. We are also using it as a portal. We need a solution before General Assembly. To prepare the discussions at the next Presidium meeting it was decided that Mikael together with Niels will be responsible.

Action: A long term solution concerning the NKG-webpage including possibility for external updating needs to be secured. Each institution is asked to seek the possibility to host the web site in the future. To prepare the discussions at the next Presidium meeting it was decided that Mikael together with Niels will be responsible and a decision no later than at the next General Assembly.

Item 12) Other Business (All)

- **Russian participation in NKG**. FSBI Centre for Geodesy and Cartography and SDI has been established in Russia. The Nordic countries projects with the Russians are on hold at the moment. V Kaftan, FSDI, is interested in starting cooperation with NKG and has asked about the possibility to be invited as the Baltic countries to NKG meetings. The presidium agrees that FSDI should be invited in the future to working group meetings as well as General Assembly next year.

Item 13) Next meeting of the Presidium (All)

55th Presidium Meeting; March 31 – April 4, Ny-Ålesund, Norway
56th Presidium Meeting; Sept 1-5, At the NKG General Assembly, Gothenburg, Sweden

Invited:

Denmark:	Niels Andersen, DTU Space (Chair) Per Knudsen, DTU Space Lola Bahl, GS
Finland:	Markku Poutanen, FGI Jarkko Koskinen, FGI Pasi Häkli, FGI
Iceland	Gudmundur Valsson, LMI Thorarinn Sigurdsson, LMI
Norway:	Torbjørn Nørbech, Kartverket Per Erik Opseth, Kartverket Anne Jørgensen, Kartverket Dagny Lysaker, Kartverket
Sweden:	Mikael Lilje, LM (Secretary) Jan Johansson, Chalmers Jonas Ågren, LM

Apologies

Denmark	Per Knudsen, DTU Space
Finland:	Jarkko Koskinen, FGI Pasi Häkli, FGI
Sweden	Jan Johansson, Chalmers (Tuesday)
Iceland	Gudmundur Valsson, LMI
Norway:	Torbjørn Nørbech, Kartverket (Tuesday)