



NORDISKA KOMMISSIONEN FÖR GEODESI

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MINUTES

67th NKG PRESIDIUM MEETING

Time: 4-5 September, 2017, Lunch - Lunch
Place: Grand Hotel Reykjavik, Iceland

Item 1) Opening of the meeting

Niels welcomed us all to this meeting and a special thanks to our host for preparing the meeting. He also had the sad message to all of us the death of two very important Nordic geodesist; Kai Borre and Bernt Rønning.

Gunnar Kristinsson was also welcomed to join the meeting.

Item 2) Approval of the agenda

The agenda was discussed and approved. We decided to ensure enough time to focus on the strategy discussion. Therefore, institutional reports were left out as well as trying to shorten the report from the working groups.

Item 3) Approval of the Minutes from NKG Presidium meeting No 65 and 66

The minutes were accepted and will put on the website

Item 4) NKG Web site

Gunnar informed about the status regarding editors. He has sent out information to the working group chairs so that they can be editors for their respective areas of the webpage. Working group chairs encourage you start upload material. A simple manual on how to manage the webpage is needed and Gunnar will develop. His intention is to have this by mid-October. Thorarinn is the editor-in-chief to ensure that the webpage is up-to-date as well as looking fresh.

There was also discussion on having "closed" areas that would be behind a log-in meaning area that the working group could use to share documents and other important material. Gunnar to investigate the possibility of this.

Our products are very important and we need make them accessible through our webpage. We also need to ensure that our products are visible. Working group chairs to ensure that their respective products are available and Gunnar to ensure that we have a good place to put them.

Landmaelingar Islands is interested to upload more material to the webpage. They are asking for material from the former webpage maintained by FGI. Markku transferred the material that he has saved.



The news section is quickly being obsolete and we were encouraged to send news to Gunnar to ensure that that part is updated continuously. Also, Markku informed us that their intention is to use NKG webpage for the NKG General Assembly.

Sören encourage us to use students in uploading material to the webpage. SDFE often has students at their office and volunteered to use them occasionally for maintaining our webpage but to do so he needs information and material.

Sören also challenge us to start discussing what our long term strategy / vision / idea with the webpage is, what we would like it to look as well to include. When we have that we should start develop it in that direction.

Item 5) Reports from the working groups. A discussion is needed on the progress of the working groups.

Positioning and Navigation (Niels)

The challenge for the working group is to find a new working group leader since Per has stepped down. We discussed some candidates last time. Denmark has continued to consider this and feel the responsibility to lead one of our working groups. Their suggestion is that Niels will take over the chairmanship for the time to NKG General Assembly. His plan is now to invite all working group members to a meeting in Copenhagen as soon as possible to discuss the focus of the future work to the time of NKG General Assembly next year. His thought is that would like to focus on;

- (i) Preparing for Galileo
- (ii) Positioning services

Geodynamics (Matthew)

Matthew presented the status concerning the activities in the roadmap for land uplift work. The intention is to be ready by NKG General Assembly next year. According to Matt, currently we are in good phase with minor changes to the road map and the most important message that we are on time. There were two bigger discussion at this meeting;

- The importance of looking at uncertainties and considered also to be new scientific research.
- The discussion if the use of Bifrost Gamit solution used for NKG2016LU should be a publication by itself or part of another publication. The presidium had problems in guiding the working group and urges them to continue this discussion and make a decision in due time.

Geoid and height systems (Jonas)

Jonas has sent in a presentation to the meeting describing the status of various work item in the working group. Below is the information from the presentation;

- The new land uplift models NKG2016LU_abs and NKG2016LU_lev were released at June 30, 2016.
- The new NKG2015 geoid model was released October 6, 2016



- On-going work in the NKG2015 geoid model project:
 - ✓ Main publication will be written during the autumn with Jonas as the main author (submission planned October/November 2017)
 - ✓ Silja Märdla et al. has published two papers concentrating on two different aspects of the NKG2015 geoid project:
 - ✓ Märdla S, Ågren J, Strykowski G, Oja T, Ellmann A, Forsberg R, Bilker-Koivula M, Omang O, Parseliunas E, Liepins I, Kaminskis J (2017) From discrete gravity survey data to a high-resolution gravity field representation in the Nordic-Baltic region. Marine Geodesy DOI 10.1080/01490419.2017.1326428
 - ✓ Märdla S, Ellmann A, Ågren J, Sjöberg L E (2017) Regional geoid computation by Least Squares Modified Hotine's formula with Additive Corrections. Accepted for publication in Journal of Geodesy.
- Much geoid related work is now going on in the FAMOS project,
 - ✓ 4 new marine gravimetry campaigns so far performed in 2017.
 - ✓ New Swedish marine gravimeter (ZLS) delivered in May 2017. Initial delivery test campaign successfully conducted + one piggy-back campaign.
 - ✓ Etc... (very much is going on, for instance real time GNSS, satellite altimetry and tide gauges)
- The work in the empirical land uplift modelling project is made according to the roadmap:
 - ✓ Estimation of uncertainties of the empirical model and of NKG2016LU_abs/lev (2017-09).
Work has started (Olav and Jonas), hopefully to be finished in September.
 - ✓ Publication of NKG2016LU (submission 2018-03)
Since the last meeting, Olav Vestøl agreed to be the main author of this paper (presently working on a first draft).
- Next WG meeting in Helsinki, Finland, week 11, as always together with the WG of Geodynamics.
- Work with WGGHS part of the NKG Webpage has not yet started... (but will start soon... Any experiences from the other WGs on how this works?)

Reference frames (Pasi)

- NKG GNSS AC (project):
 - Reprocessing of data history completed – ready to proceed.
 - New “production line” for GNSS velocities discussed and concluded in the Skype meeting on time series analysis in June 28 (to limit the work and not to analyze all combinations of solutions for the full network):
 - 1) Processing of subnets by each LAC: 3, 10, 25° solutions
 - 2) Combination of repro solutions (ADDNEQ + CATREF: 3° and 10° sols)
 - 3) Time series analysis
 1. Selection of approx. 20-40 stations for comparison of ADDNEQ/CATREF 3/10° sol



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2. Comparison of them and selection of the final solution for time series analysis
 3. Analysis of stations by each LAC (Tsview) + stations outside Nordic/Baltic area → breaks, snow editing, bad data
 - 4) Final velocities + uncertainties
 1. Hector (no coordinate solution, no spatial correlation): only velocities with uncertainties
 2. CATREF (cumulative solutions: coordinates + velocities)
 3. Other software (for personal interests)
- The concluded time schedule for NKG AC:
 - National Repro – end of July 2017 (*completed*)
 - Combination of subnetworks with iterations – end of October
 - Comparison of ADDNEQ/CATREF sol. (20-40 stns) – end of November
 - Decision of final solutions
 - Distribution of mb files
 - Pre-analysis of roughly 20 stations (only final solution) by all LACs (to verify consistency of Tsview analysis) – ?
 - National analysis of time series by each LAC – mid-January
 - Uncertainties using Hector – end of February
 - Coordinates and velocities using CATREF – end of April
 - Compare velocity field to BIFROST – end of August (before NKG GA)
 - EPN densification (coordinated submissions)
 - EUREF resolutions in 2010 and 2015 requesting submission of national GNSS solutions to the EUREF. Dense station velocity field to be used as input in the EUREF WG of Deformation models led by Martin Lidberg.
 - Nordic region “empty” (only EPN stations) → requests from the EUREF several years already. Earlier discussed within the NKG and either BIFROST or NKG AC identified as potential submissions. Eventually NKG AC solution chosen/recommended to be a common Nordic/Baltic submission.
 - Discussions on coordination in the WGRF meeting in April – contact to the EPN densification coordinator (Ambrus Kenyeres) in the EUREF2017 symposium in May 2017: representatives from Denmark, Estonia, Finland and Sweden - everybody positive for submission, schedule summer 2017
 - Again discussed in the NKG AC Skype meeting in June 2017: WGRF recommendation to submit national solutions of the NKG AC but each nation to decide themselves. Submissions so far: Estonia, Finland, Lithuania, Sweden (Denmark and Norway working on this).
 - Another (new) EUREF project: EPN velocity field (led by Elmar Brockmann) – discussion on that too but no hurry → to be decided later in the WGRF
 - ITRS-ETRS89 transformations (project):



- EUREF2017 symposium: new ETRF2014 → to be considered in the update of the transformation
- New PGR model NKG_RF17vel (see details in the NKG LU roadmap): on schedule
- Paper+presentation in the FIG 2017 Working Week
- PROJ.4 (study group):
 - First initial steps taken, progress to be reported later

Conclusion from the working group reports and discussions is that three out of our four working groups are doing a tremendous work according to plans and always moving forward. We know about the challenges regarding the working group on positioning and navigation and we taking actions on that.

Item 6) NKG strategy

A discussion regarding a NKG strategy is something that has been discussed several times. We have noticed at several occasions that we need it for both ourselves but also to be used internally in our organisations. We now have one year to go before the NKG General Assembly and that is a place where we define the internal structure for the coming period. This structure should be based on what we want NKG to accomplish. It is true that the by-laws for NKG are old and they also need to be modernized. Therefore, the time to the next General Assembly is very important.

At this meeting, we had a first brainstorming on items that should be further discussed and perhaps implemented in a strategy. We also discussed challenges that we meet back in our organisations. We decided that we need to continue this work as soon as possible and agreed to meet again the 4th of October in Copenhagen. Currently we have the DG attention and also the possibility to be in the driver's seat. Important that we can keep it that way.

Below is a summary of the discussion but not near to cover all discussions;

- Current constraints that we see or believe will happen in each country;
 - Decreasing economic situation
 - Competence and especially a robust competence level
 - Countries independence and pride.
 - Financial model for the NMCAs geodetic departments varies. Universities and their participation. Agendas at the NMCAs are different.
- Discussion / brain storming / Key words for the coming work;
 - Who are we writing for?
 - Linking the UNGGIM sub-committee to the unique Nordic profile. What is the Nordic profile?
 - UNGGIM focusing on working globally and regional. We should show the world a good example. Our work with Iceland is such.



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- What is characteristic for the Nordic geodesy?
 - Post-glacial rebound of course but what else
 - Tradition
 - Culture
 - Good cooperation
 - Good and open discussions.
 - High developed countries
 - High developed infrastructure
 - High develop education, health care etc
- NMCA's taking part in research and development
- Coordinate competence and observations
- Ensuring competence in the Nordic area. Joint operation on the three “core-stations” Onsala, Metsähovi and Ny-Ålesund?
- Application: Autonomous vehicles, mass market and our role.
- What can we achieve? What should we achieve? What must we achieve?
- Working groups working towards “same” goal. Clear picture on what we want to achieve or where we want to be. Working groups working better together today than before but can we make this even better?
- How do we establish working groups? What is the driving force? What are the common / joint objectives?
- Focus for NKG in the future
 - Precise, reliable and up-to-date reference frames (e.g. Dynamic Reference Systems / frames, uncertainties (reliability))
 - Common Nordic positioning service (positioning today is an everyman-business. What is our role in this? Autonomous vehicles)
 - Becoming a stronger voice on the international arena as e.g.
 - UNGGIM subcommittee on Geodesy, our contribution and our implementation of the UN resolution
 - ESA/Galileo
 - Visibility through our products
 - Stronger and closer cooperation between Onsala, Ny-Ålesund and Metsähovi. Analysis focus at least. Operational perhaps not as easy.
 - Going through the by-laws, internal rules, organization and more in order to develop NKG. How to improve our cooperation. What is the NKG constitution? Commission? Culture. Outreach and visibility. “Sponsoring” seminars.
 - Understanding the “outside” and their expectations.
 - Competence, ensuring a bulk of competence and a close cooperation between NMAs / NMIs and universities. Describe / define future competence needs. Using students more in NMA projects also cross-border.



- University cooperation and outreach.
- Timetable:
 - Have a focused NKG Presidium / working group meeting on “Strategy”. Positioning paper prepared by Niels and Mikael (at least) based on this discussion. Meeting 4th of October at Kastrup, Denmark. 10-15.
 - Lillchefsmötet, May 2018. Status report presenting development since Storchefsmötet as well as direction for the coming NKG.
 - NKG GA, September 2018

Item 7) Dynamic datum (Per-Erik)

Per-Erik presented on the status of the project as well that this was presented at Storchefsmötet. He mentioned that milestone 4 has passed and that the only milestone left in the pre-study is milestone 5.

For the way forward the project group suggest that we divide the project in two parts;

- Short term to NKG-GA, August 2018. Velocity model over a restricted area. GIS-part excluded. Project organisation with same project owner and project members. New is the NKG presidium as steering committee and advisory board with Magnus G (DG, Iceland), Per-Erik and representatives from Land Mapping Group (Mikael to discuss with Anders Sandin, Lantmäteriet as he is leading Land Mapping Group). Discussion on outreach activities concerning DRF and GIS but we decided not to do anything more in the project.
- Long term DRF -program (Next NKG-period, 2018-2022): Should end up with a plan for a fully implemented dynamical reference frame in Iceland. Including an automatically updated deformation model based on “all” relevant geodetic and geophysical data.)

NKG Presidium approved the short-term plan and the work can begin (advisory board still to be decided).

Item 8) NKG General Assembly 2018

Markku presented on the current situation with the preparations. The proposal is to hold the meeting in Pasila (Helsinki, Finland) and the dates 3-6 September 2018. An auditorium for 120 persons is available. Pasila is easy accessible from the airport and only 5 minutes to downtown. Arvo Kokkonen, DG of NLS has already agreed to open the meeting. Markku now asks all countries to send in their candidates to the Scientific Committee.

Item 9) European Navigation Conference 2018

Jan presented on the current situation with the preparations for the conference ENC2018. It is held May 14-17 next year at Chalmers in Gothenburg, Sweden. The organisers are Chalmers,



Lantmäteriet, RI.SE (Research institute Sweden) and RNN with NKG as one of the conference sponsors.

The theme is “Autonomous transports” and papers to the conference has the possibility to be published on IEEE. The webpage will open soon and will have the following address: www.enc2018.eu. The call for papers opens at October 15, 2017 with abstracts deadline January 31, 2018.

The Presidium believes that this conference is very interesting for future aspects on the importance of geodesy and NKG. We also urge the working group on Positioning and Navigation to seriously consider to have a paper / presentation at this event.

Item 10) UN-GGIM and UN Resolution on Global Geodetic Reference Frame (Per-Erik), UN GGIM Europe: Geodesy (Markku)

UNGGIM had in annual meeting in August in New York. Unfortunately, it collided with the IAG meeting in Kobe, Japan. The major outcome for us is that the UNGGIM sub-committee on Geodesy is now established and will have its first meeting in November in Mexico.

In the preparations for the sub-committee there are five writing teams. Mikael is leading the group on Education, Training and Capacity Building. Norway leads two groups (Governance and Outreach)

Markku is leading UNGGIM Europe : Geodesy. The group will have its first meeting on the 11th September. This group is an interface group between the expert level and the policy making level.

Item 11) EUREF

Report from EUREF-TWG and ongoing activities within EUREF and how NKG could be involved.

- EUREF terms of Reference accepted at the latest symposium
- Evaluation of questionnaire regarding ETRS89
- New working group on “European dense velocity”
- Resolutions

Technical Working Group changes name to Governing Board. The next meeting will take place late October.

Item 12) Other Business (All)

No other business

Item 13) Next meeting of the Presidium (All)

4th October, 2017: Strategy meeting, Kastrup, Denmark

67th Presidium Meeting, 22-23 March, 2018, Copenhagen, Denmark



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Current order; Iceland – Denmark – Norway – Sweden – Finland

Invited:

Denmark:	Niels Andersen, DTU Space (Chair) Per Knudsen, DTU Space Sören Fauerholm Christensen, GST
Finland:	Markku Poutanen, NLS Jarkko Koskinen, NLS Pasi Häkli, NLS
Iceland	Gudmundur Valsson, LMI Thorarinn Sigurdsson, LMI Gunnar Kristinsson, LMI
Norway:	Torbjørn Nørbech, Kartverket Per Erik Opseth, Kartverket Matthew Simpson, Kartverket
Sweden:	Mikael Lilje, LM (Secretary) Jan Johansson, Chalmers Jonas Ågren, LM
Faroe Island	Stein Fossá

Apologies

Per Knudsen, Jarkko Koskinen, Jonas Ågren, Stein Fossá, Thorarinn Sigurdsson