



NORDISKA KOMMISSIONEN FÖR GEODESI

Chairman

Markku Poutanen
FGI – Finnish Geospatial Research Institute
Department of Geodesy and Geodynamics
Geodeetinrinne 2
FIN-02430 Masala
Finland

Secretary

Martin Lidberg
Lantmäteriet
Department of Geodetic infrastructure
Lantmäterigatan 2c
SE-801 82 Gävle
Sweden

Minutes

78th NKG Presidium meeting

Time: 11 December, 10:00-12:30 CET

Place: Virtual Zoom meeting

Item 1. Opening of the meeting

The NKG chairman Markku Poutanen opens the meeting and welcomes everyone to this virtual presidium meeting.

Item 2. Approval of the agenda

The agenda is approved.

Item 3. Approval of the minutes from the NKG Presidium meeting 77, March 2020

The minutes of the NKG Presidium meeting 77 is approved.

Item 4. Action items from meeting 77

AI 1, For Martin on the “White Paper Future Positioning Services”, to complement the front page with official approval of the Presidium. Pending.

AI 2, For Holger to prepare a short comparison on CC-BY and other alternatives for license model for NKG documents and products. Pending.

AI 3, For Markku to compile the results from the group work at the last presidium meeting on the NKG SWAT-analysis. Done.

Item 5. National reports

For details, it is referred to the distributed written reports/presentations where available. A summary is given below:

DENMARK

DTU Space:

- New DTU Space director Henning Skriver
- Position as professor in Satellite Geodesy at DTU Space posted

- International geodetic research continued despite the Corona pandemic (AGU; EGS, IAG, IUGG), for example, Abbas Khan's Nature publication on sea level rise and melting of Greenlandic glaciers
- GNET campaign in Greenland accomplished
- New strategic area of interest at DTU Space: Space Safety, including Space Weather and DTU Space now having two space weather projects regarding the Arctic namely SWAN (ESA) and SWADO (Cooperation with Danish defense)
- Agreement and cooperation with SDFE continued and in good shape

SDFE:

- Ambitious Green transition by legislation from the government. Realtime/dynamic positioning to support the transition, authoritative geodetic height information a prerequisite for climate adaptation, and GNETs importance for global climate action
- New organization within SDFE due to that, in place from January 1st, 2021.
- CORS and TAPAS (Testbed Aarhus for Precision positioning and Autonomous Systems); The last of the 15 class one CORS now completed, modernizing IT for the GNSS infrastructure in progress; issue on Spoofing and Jamming and its possible inclusion in national cyber security strategy; question on EPOS and its implication for Nordic GNSS processing, etc.
- Future height infrastructure for Denmark; A thorough strategic, "tactical" and practical work is going on, including (In)SAR CRs and CATs (issues on stability), levelling and GNSS where also maintenance aspects are considered. The 5 mm geoid project is going well!

ESTONIA

The COVID19 pandemia did not affect much the scheduled domestic geodetic activities in Estonia.

Estonia participates in the FAMOS geoid activity with the aim to finalize the "Baltic Sea Chart Datum 2000" (BSCD2000) geoid model, or height correction model. According to plan, the project will be finalized by April 2022.

Estonia also participates in "Geodetic SAR for Height System Unification and Sea Level Research in the Baltic Sea region". The project is currently in the data (SAR transponder data, tide gauges, GNSS, levelling) acquisition and processing stages.

A common application with Latvia on a regional Interreg-project on strengthening the infrastructure connecting the countries is under evaluation.

FINLAND

Latest news of the FGI new location

- We will move to Aalto University Campus by summer 2022

New organizational structure of the NLS 1.3 2020

- All leader positions were open

- Main change from perspective of Reference frames is that we share the responsibility of it with the Production unit of the NLS
 - Meaning that the Production unit will be the layer dealing with the municipalities and customers with any matter related to reference frames
 - FGI takes the lead only when there are some challenging tasks
 - FGI is responsible for science and analysis when necessary and as an advisor for the Production unit and the Ministry
 - Production will take care of practical field measurements

New Laser Scanning and aerial photography program started this year

- Finland is now fully laser-scanned
- In new program whole country will be laser-scanned with rotation of 6 years
- Aerial photography will rotate every 3 years

FinnRef network has 47 stations in Finland.

FINPOS positioning service utilizes data from FinnRef, but more lighter stations will be built to support FINPOS.

Kuusamo will get EGNOS RIMS in 2021.

ICELAND

The NKG science week was carried out in March.

Focus is on IceCORS where 4 new stations was installed in 2020, and 5 additional stations are planned for 2021. New user groups like agriculture, marine navigation, drones and the road administration.

Reprocessing of all GNSS data from CORS is planned, and then modelling of deformations.

LATVIA

Latvian Geospatial Information Agency

Latvian geodetic reference frame working group plan for a “new reference frame LKS-20”, which is a “two frame approach” with both static and dynamic frame. The concept includes combination stations where GNSS and levelling are connected, and ECR-C transponders. However, for the active InSAR transponders there is a license fee for frequency to be payed monthly.

Riga Technical university:

Cooperate with Vilnius Technical University (VGTU) on international accreditation for study programs in geodesy and geomatics.

Work for a “digital twin” of the Riga city area in cooperation with the Riga municipality. This also implies adaptation and development of BIM principles.

LITHUANIA

New law that regulates Geodesy and Cartography.

Responsibility of LitPos will be transferred to the Land Survey (from the ministry). 5 new stations established during 2020. Some delay in communication connections etc. due to Corona.

More than 30 000 gravity points observed so far. Old fashioned Bouguer gravity maps created in scale 1:200 000.

Geoid statistics easily fulfil the 5 mm level!

Gravity survey in the Baltic Sea.

NORWAY

Kartverket:

New director General, Johnny Welle, in place since April.

Strategic work with inspiration from UN GGIM report “Future trends in geospatial information management: the five to ten years vision”; developments on Digital twins, BIM and Geospatial technology will likely converge, ITS (Intelligent Transport Systems) are foreseen.

The draft report of “geodetic reference frames for the future” concludes that flexibility is needed to support multiple geodetic reference frames; replace Euref89 with a global reference frame with a fixed epoch; gradually introduce a dynamic reference frame.

The current height system NN2000 does have weaknesses, especially in coastal areas. Thus, the height system, sea level observations and the chart datum do not comply and do not meet user requirements. This is more difficult to deal with in Norway compared to flatter countries. Observations (levelling, sea level, gravity) need to be improved, and eventually a new height frame will be introduced.

The GNSS infrastructure now includes some 270 stations and the positioning services have some 15 000 end users. Through a cooperation with BaneNOR, 50 new CORS have been installed along rail roads with ~20 km spacing.

University of life science:

Bjørn Ragnvald Pettersen formally retired in June.

All education is currently digital, which makes labs etc. difficult. Also, examination is more complicated.

SWEDEN

A new national geodata strategy for 2021-2025 has been developed (<https://www.lantmateriet.se/en/webb/the--swedish-national-geodata-strategy>).

At University of Gävle, a new 5 yr program in surveying and mapping (Lantmäteriteknik) started in August.

Duplicated SWEPOS centers (at different location) have been introduced in order to increase redundancy and robustness, which may be asked for by new user groups, (e.g. autonomous units).

We are involved in several external projects in which developed and future use and applications of precise GNSS are explored for surveying, “cars”, “ships” and “drones”, as well as digital communication aspects.

Financing of the geodetic infrastructure at Onsala Space Observatory will be done through Lantmäteriet from 2021 onwards but continues to be hosted by Chalmers Technical University.

Item 6. Report from the Working Groups

For details it is referred to the presentations, but a summary is given below.

REFERENCE FRAMES

Status of the NKG GNSS AC: The operational processing is ongoing and in general going well. The NKG Repro 1 solution (data up to 2017) is updated with the operational analysis with data up to June 2020. The software CatRef is used for combination of national solutions into coordinates and velocities, while Hector is used for uncertainties.

The NKG_RF17vel 3D land uplift model was released 2019-12-16. Documentation and model uncertainties are in progress.

Updated NKG transformations between each country’s national realization of ETRS89 and ITRF2014 (any epoch) are very close to be finalized. Goal is to have them implemented in next release of the transformation package PROJ 7.2.1 of January 1 2021.

FUTURE HEIGHT SYSTEMS AND GEOID

Status of the FAMOS project; The 2nd formal FAMOS project (Oden) ended in 2020, and the expected 3rd project (Thor) will not happen. However, it has been decided between the partners (and formally coordinated by the Baltic sea Hydrographic commission, w.g. on chart datum - BSHC-CD) to finalize the FAMOS geoid model and “height correction surface” to agree with the BSCD2000 (Baltic sea chart datum). According to plan, the work will be completed in 2022.

The NKG gravity data base – Mirror site in Norway in 2021 (for safety)!

Next NKG geoid model. Wait for new global model EGM2020, and then finalizing of the work with the FAMOS geoid model.

The International Height Reference System and Frame (IHRF/IHRF) is the next challenge but will also serve global geodesy and make it possible to connect height systems between continents.

GEODYNAMICS AND EARTH OBSERVATIONS

An updated GIA model, NKG2022GIA is planned and preparatory work is ongoing.

A new BIFROST 2020 and NKG202xLU was introduced at the last presidium meeting. More data from south of the Baltic sea have been obtained (both GNSS and leveling) which motivate a new analysis. The work will be coordinated with the NKG GNSS AC.

Planning for an AG comparison in May/June 2021 in Onsala, but depends on the Pandemic. Mirjam is appointed as metrological responsible for the comparison.

Work on the Relative gravity lines seems to be still on track!

FUTURE POSITIONING SERVICES AND APPLICATIONS

Michael report on the status.

Basically, the assignment was completed during the leadership of the working group by Anna.

The plan is to have pending chairman until the new professor in Satellite Geodesy is in place. Meanwhile, all communication may go through Michael and he can redirect to Per Knudsen and Daniel Olsson.

Item 7. Report from the Science week in Iceland

The meeting was well organized and was conducted in a very nice atmosphere with fruitful discussions. Thanks to Iceland and the local organizers.

Item 8. NKG Summer School 2021

All preparations for the NKG Summer School 2021 are in place! It is planned for August 30 to September 2 at Klækken close to Hønefoss. The theme for the school will be “*Space Geodesy in Support of the Future Autonomous Society*”.

The possibility for arranging the school in perspective of the pandemic is discussed, and it is concluded that we will have the summer school, but the format (on-site, virtual or hybrid) is pending.

Item 9. Reports

a) Meeting of the heads of the Nordic NMA authorities

The meeting in December 2019 was very informative, but no further meetings are planned so far.

b) EUREF

As a basis for a new EUREF strategy, a work on “Scientific challenges in Geodesy” has been done where a short list of seven topics are identified.

The EUREF Symposia 2021 is scheduled for May 26-28 in Ljubljana, Slovenia. However, there is a high probability for a virtual, or maybe a “hybrid” meeting.

c) IAG

The Geodesists handbook is now available on-line.

The Scientific assembly 2021 will not be real. Options are virtual or postponement

d) UN-GGIM

A Global Geodetic Center of Excellence (GGCE) will be established with Germany as host country - see the last slides of the national report from Norway.

Two papers, *draft “Concept Paper on Establishing a Global Geodetic Center of Excellence”* and *draft “Position Paper on Sustaining the Global Geodetic reference Frame”* are out for consultation and comments are welcomed. (Available at the web site of the UN-GGIM Sub Committee of geodesy, and on the Google Drive.)

Item 10. The NKG website

Currently there is a problem with the NKG website because there has been a malware attack of the web site. After the transfer of the website from Denmark to Iceland there has been a “shared ownership” which made the situation difficult to solve. A solution is, however, foreseen soon and includes transfer of the complete ownership and responsibility of the site to Iceland.

Note from after the meeting: Website is online again (February 2021).

Item 11. The NKG SWOT analysis from Riga, and tasks for the by-law renewal group

The NKG SWOT analysis has been compiled by Markku and distributed to the Presidium. Unfortunately, the limited time does not allow a discussion of the topic at this meeting.

It is noted that proposals for changes of the by-laws should be available to the presidium in January of the NKG General Assembly years. Markku plans for a meeting on the by-laws early next year with the appointed group (Markku, Per-Erik, Sören, Niels, Martin, Ivars, Holger).

Item 12. AOB

There will be an open EPOS GNSS webinar January 18-19. (Documentation from the meeting available at <https://gnss-epos.eu/webinar-2021/> .)

It is noted that circulating information among us is very welcomed.

Item 13. Next meeting of the Presidium

Last meetings: Latvia - Iceland – Sweden – Finland – Norway – Denmark

The date and format of next presidium meeting will however be affected by the situation with the pandemic.

Item 14. Closing

The chairman thanks everyone for their contribution to this virtual meeting and wishes everyone a nice end of the year, and hopefully a better 2021!

Participants

PRESIDIUM

Markku Poutanen (chair)
Martin Lidberg (secretary)
Niels Andersen
Søren Fauersholm Christensen
Guðmundur Valsson
Pasi Häkli
Anna B.O. Jensen, excused
Holger Steffen
Jan Johansson, from ~11:30.
Jarkko Koskinen, excused
Hannu Koivula
Ove Omang
Per Erik Opseth
Ola Øvstedal
Þórarinn Sigurðsson, excused

GUESTS

Artu Ellmann, Estonia
Janis Kaminskis, Latvia
Ivars Liepins, Latvia
Eimuntas Parseliunas, Lithuania
Michael Schultz Rasmussen, Denmark
Simonas Valotka, Lithuania