

NORDISKA KOMMISSIONEN FÖR GEODESI

Chairman
NIELS ANDERSEN
DTU Space
National Space Institute
DK-2100 KØBENHAVN
Danmark

Secretary
MIKAEL LILJE
Lantmäteriet
Geodesienheten
SE-801 82 GÄVLE
SVERIGE

Proposal for Project within the Nordic Commission of Geodesy

Investigations of the requirements for a future 5 mm (quasi)geoid model

Project

Version November 2, 2011

Accepted by the NKG Presidium January 17, 2012

Aim/motivation

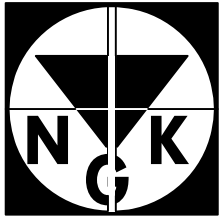
It is likely that the accuracy of GNSS height determination will continue to improve. The GNSS community will then ask for the corresponding improvement for the (quasi)geoid model. It is not unreasonable to believe that a geoid model with 5 mm standard error will more or less be required in 10–20 years. To be able to meet these demands, it is important to know in which cases it will actually be realistic to compute a 5 mm geoid, what kind of computation method that is required and what data (gravity, DEM, etc.) that will have to be in place. Since it takes a long time and much work to improve the data sets, it is important to answer the above questions today. For instance, we need to start to improve the gravity data now to be able to compute a 5 mm geoid model in 10-20 years.

The purpose of the present study project is to investigate what is required in theory and in practice (what data is needed?) to reach the goal of a (quasi) geoid model with 5 mm standard uncertainty in the future. This task was given to the WGGHS as resolution number 5 at the NKG General Assembly in 2010.

Outcome /Deliverable

The main deliverable of this study project is a published article in a geodetic journal that contains

- a clear definition of what is meant by “5 mm geoid”,
- a treatment of theoretical obstacles and limitations,
- recommendations for in what way the geoid determination methods need to be improved to reach the goal in different situations and
- recommendations concerning what data that is required (gravity, DEM, etc.) in different cases.



NORDISKA KOMMISSIONEN FÖR GEODESI

Chairman
NIELS ANDERSEN
DTU Space
National Space Institute
DK-2100 KØBENHAVN
Danmark

Secretary
MIKAEL LILJE
Lantmäteriet
Geodesienheten
SE-801 82 GÄVLE
SVERIGE

Working Groups and Officers Involved

The project involves the NKG WG of Geoid and Height Systems.

Project leader: Lars Sjöberg, Sweden.

Participants: René Forsberg, Denmark
Gabriel Strykowski, Denmark
Mirjam Bilker-Koivula, Finland
Ove Omang, Norway
Jonas Ågren, Sweden
Martin Vermeer, Finland (?)
Christian Tscherning, Denmark (?)

Milestones, Completion Dates

Activity	Short Description	Responsible	Completed
1	Project preparation	Lars Sjöberg	November 2011
2	E-mail discussion concerning project specification: definitions, limitations, assumptions, work packages, etc.	Lars Sjöberg	March 2012
3	Workshop (?)	Lars Sjöberg	Autumn 2013
4	Theoretical work, numerical computations/simulations, paper writing	Lars Sjöberg	March 2014
5	Submission to scientific journal, review process	Lars Sjöberg	September 2014
6	Presentation at the NKG GA	Lars Sjöberg	September 2014

Proposed Meeting Schedule

- WGGHS meeting in March 2012: Decide on specifications (see activity 2 above).
- Workshop in Autumn 2013 (?)

Project Monitoring and Reporting

- The specifications (activity 2) are presented in a brief report in March 2012
- Progress report at the WGGHS meetings in March 2013 and 2014.
- Final paper submitted to a scientific geodetic journal in March 2014, followed by review process.
- Presentation/paper at the NKG General Assembly in Finland 2014.



NORDISKA KOMMISSIONEN FÖR GEODESI

Chairman
NIELS ANDERSEN
DTU Space
National Space Institute
DK-2100 KØBENHAVN
Danmark

Secretary
MIKAEL LILJE
Lantmäteriet
Geodesienheten
SE-801 82 GÄVLE
SVERIGE

Resources required

Activity	Short Description	Estimation of resources
1	Project preparation	Lars Sjöberg: 1 day Jonas Ågren: 1 day
2	Specifications (including writing a very brief report)	Lars Sjöberg: 1 week Each active project participant: 2 days
3	Workshop (noon to noon)	Each participant: 2 days (including travel)
4	Work + write paper	Lars Sjöberg: 3 weeks Each active project participant: 2 weeks
5	Submission + review process	Lars Sjöberg: 1 week Each project participant: 2 days
6	Joint presentation/paper at the NKG GA	Lars Sjöberg: 1 week Each project participant: 1 day

Comments:

- The time needed to take part in yearly WG meetings or in more general e-mail discussions is not counted.

Sent in by

Suggested by the NKG WGGHS at the meeting in Gävle, May 30-31, 2011.