

Scientific programme NKG general assembly 2010

Sundvollen hotell 27-30 sept.

Climate change and earth system studies

In this session, NKG turns its focus on how geodetic techniques can be used for analysis of the Earth system. Geodetic observations and methods are today sufficiently accurate for observing many geophysical processes, including effects resulting from climate change. Recent years, geodetic observations have been used for studies of e.g. sea level, ocean circulations, ice mass change in arctic regions, the hydrological cycle of the Earth, the water vapor content of the atmosphere, and sea ice extension and thickness. The NKG general assembly welcomes both theoretical and applied contributions within this field. This session especially addresses applications where recent and future satellite missions like GOCE, GRACE, Jason-1/2, Sentinel, and Cryosat-2 are used to observe the changing Earth system.

Terrestrial reference frames (global and national)

This session is about geodetic infrastructure, important for both scientific analysis and public use. We can separate the terrestrial reference frames in geometrical and geophysical where the first one is three-dimensional and usually satellite based and the latter one is one-dimensional and related to the earth gravity. National realisation of ETRS89 are geometrical reference frames and our new height systems NN2000, RH2000, N2000 and DVR90 are geophysical. In between we have the geoid models describing the distance from the geoid to the ellipsoid, - a connection between geometric height and geophysical height. The earth is not stable and our reference frames are deformed. Information of this deformation is crucial for scientific as well as public use when the need for accuracy is high. The NKG general assembly welcomes both theoretical and applied contributions within all these fields and especially addresses application where reference frames, geoid models and 3D-velocity field within the Nordic and Baltic area are involved.

- Gravity related height systems
 - New national height systems
 - Change of height systems in the municipalities
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- Geometric reference systemes
 - Quality of national ETRS89 realisation
 - Deformation of reference systems and national GNSS real time position systems
 - The future of ETRS89 realisations in relation to global commercial systems
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- Geoid and GPS-levelling
 - Quality of geoid models
 - Fitting of geoid models to geometric and gravity related reference systems
- 3D velocity models

- Time series
- Glacial isostatic adjustment modelling
- Eperical land uplift models
- Combination of GIA models

Outreach and recruitment

Geodesy is an old subject that from the past primarily had only one purpose - to make geodetic reference frames as a basis for mapping. Modern technology has revolutionized the life for a geodesist, and the development of geodetic reference frames has as a result of new technology turned global. As a result of the development, Geodesy contributes to a far greater extent than previously, towards new areas that do not primarily have to do with geodesy. There are many examples of this, and to name a few, we could highlight studies of sea level, ocean circulation, and the water vapor content of the atmosphere. Inside the geodetic communities, this is something that everyone knows. The difficulty lies in getting the community around us to see geodesy as a contributing technique into other research efforts. Researchers in various types of earth observation are entirely dependent on homogeneous global geodetic reference frames as bases for their own research without even understand that it is so. Contribution from Geodesy is often the very first element in a long chain, and it is a challenge to get politicians and other funding authorities to understand the necessity. Another challenge is to make the subject geodesy attractive to young promising students to ensure that we captured of labor for the future.

In this session the NKG general assembly will focus on work that has been carried out to promote the visibility of Geodesy as a subject. We think here on, work against students, politicians, decision makers and the rest of the research community around us who would have benefited greatly from geodesy. The general assembly will in this session also welcome good ideas that could bring the outreach work for geodesy a step forward.