NKG 2010 General Assembly

WG Geodynamics Activity Report

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LANTMÄTERIET

NKG w.g. geodynamics
Term of references

Key words: gravity change, crustal motion

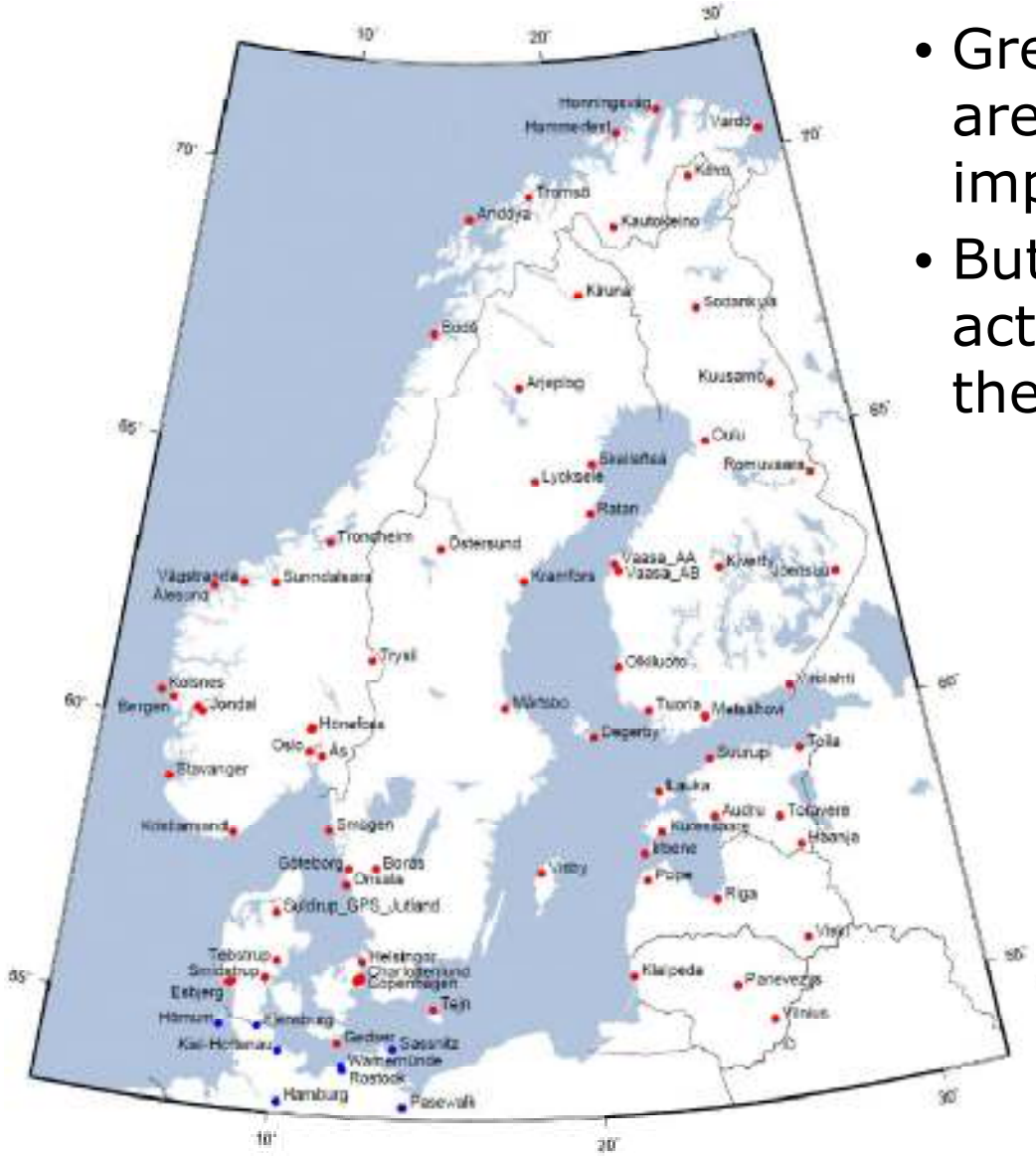
Objectives:

Geodynamics studies of the deformation of the solid Earth and changes of the gravity field with emphasis on the earth's crust. Surface based measurements are used to derive geodetic and geophysical parameters of the earth interior. Phenomena are studied with the aim to understand their causes and consequences, and the mechanisms involved. The phenomena include: Land uplift and glacial isostatic adjustment, plate tectonics, earth tides and loading effects due to variations in the ocean, the atmosphere, and the hydrosphere, local tectonic and man-made deformations.

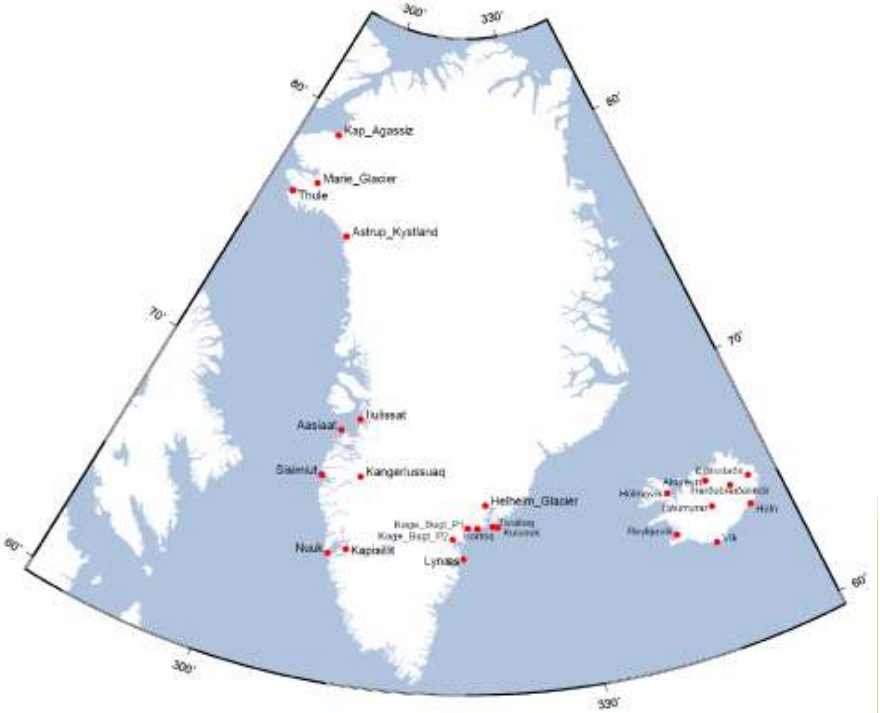
Activities:

- The phenomena are studied with a wide range of techniques, comprising **classical positional geodesy, precise levelling, satellite positioning, absolute gravimetry, precise recording gravimetry, monitoring of the sea level, and satellite altimetry**.
- Co-ordination of investigations of **gravity change**, in particular **absolute gravity** campaigns and measurements on the gravity lines.
- Local studies of the **temporal gravity field** and associated perturbing parameters (oceanic, hydrological, meteorological effects, crustal loading, etc.)

Absolute gravity sites



- Greenland, Iceland, Svalbard are highly interesting and important areas
- But during this period the w.g. activities have been focused on the Fennoscandian/Baltic are



Progress in summary

- Number of AG sites: 77
- AG observations (2006-2010): 168 + 54 (Mets,Trys,Onsa)
- AG observing teams: FGI, UMB, LM, DTU (A10), IfE, BKG
- Participation at the w.g. meetings: 23+15+20+25

- SSG on "Supplemental installations at AG sites", e.g.:
  - soil moisture
  - ground water
  - climate control of the observation cabin

- COST ES0701 "Improved Constraints on Models of Glacial Isostatic Adjustment"
  - GIA training school: 20 Nordic/Baltic participants
  - "Workshop on hydrological and other local effects in gravity measurements"; Members from w.g. geodynamics involved

5 PhD thesis related to geodynamics

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Challenges

- Resources for observations are decreasing

⇒ continue observations at sufficient level
⇒ maximizing its scientific value
⇒ with a long term perspective (it's an observing system!)

- Keep the good co-operative attitude while …

⇒ the aim of observations may be scientific publications!

- We have a verbal agreement on a common NKG data archive for AG observations – needs to get operational!

⇒ to secure that data will be preserved for the future
⇒ and its availability to our scientific work

- Possibly increase the amount of scientific results from the working group (or observations in the w.g., and science done back home, but reported at the w.g. meetings??)