



DANISH NATIONAL
SPACE CENTER

The Danish National Report 2005 – 2006

Danish National Space Center (DNSC)

EUREF Symposium 2006, Riga

Copenhagen 2006

Niels Andersen



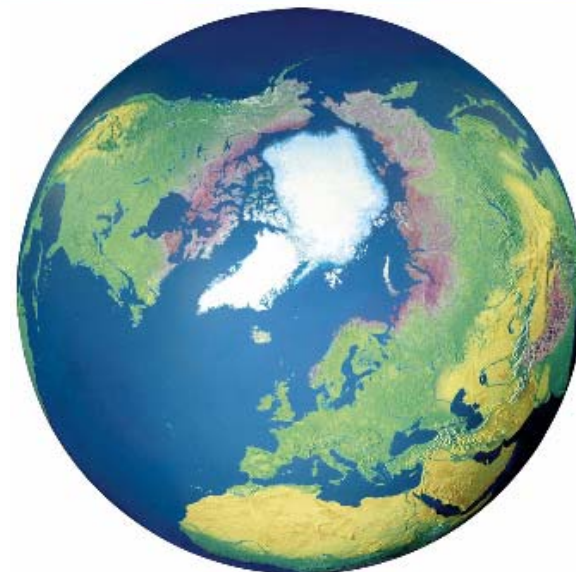
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DNSC formed at January 1st 2005

Geodesy integrated in space research

More focus on

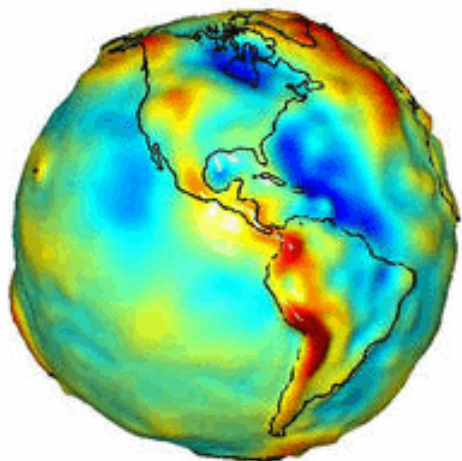
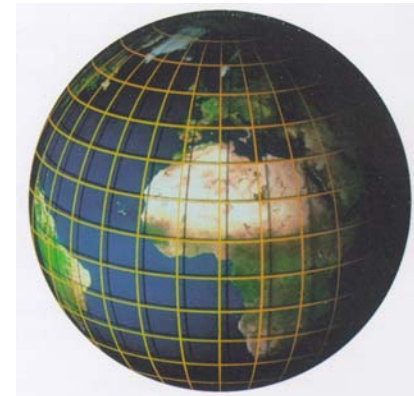
- Earth observation – remote sensing**
- Advising**



Geodesy and infrastructure

DNSC research in geodesy

- Earth's shape and gravity
- Reference systems for
 - Surveying and mapping
 - Navigation



Support infrastructure and public
authorities:

Kort & Matrikelstyrelsen

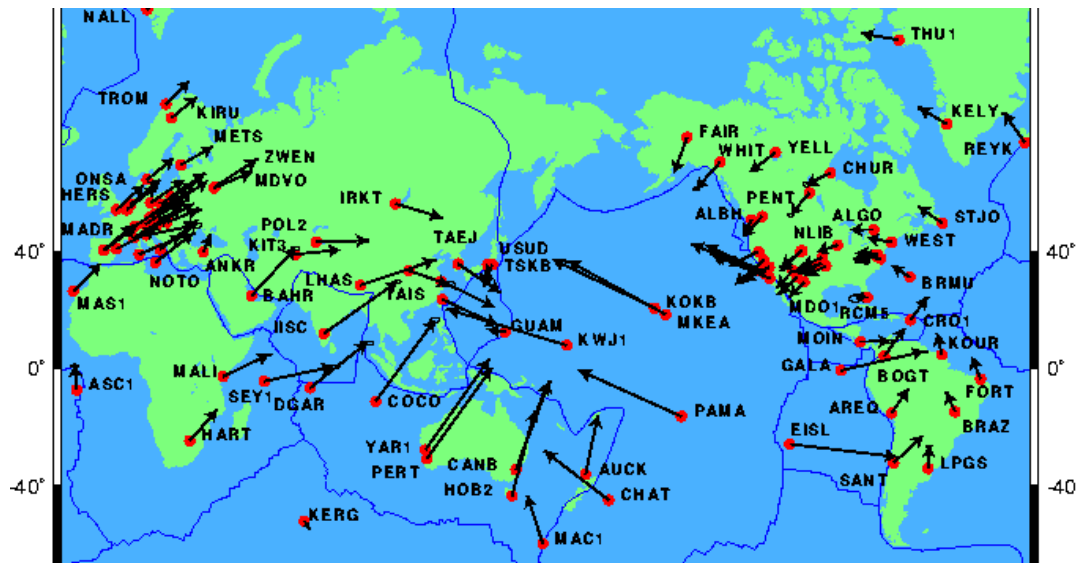
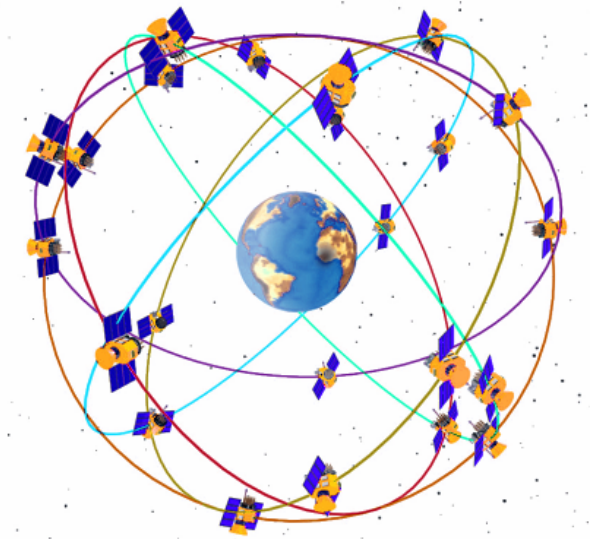
Geodesy advising



Surveying:

DNSC research in **GPS**

- Surveying and navigation
- Reference systems
- Permanent GPS stations



Estimation of

- Geodynamics
- Continental drift

to ensure consistence
between the GPS-system and
the reference systems

Continental drift estimated by GPS

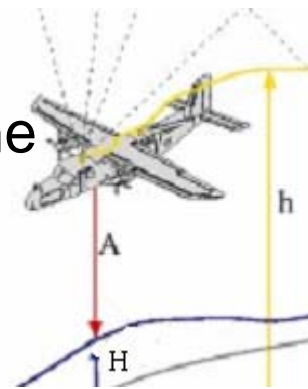
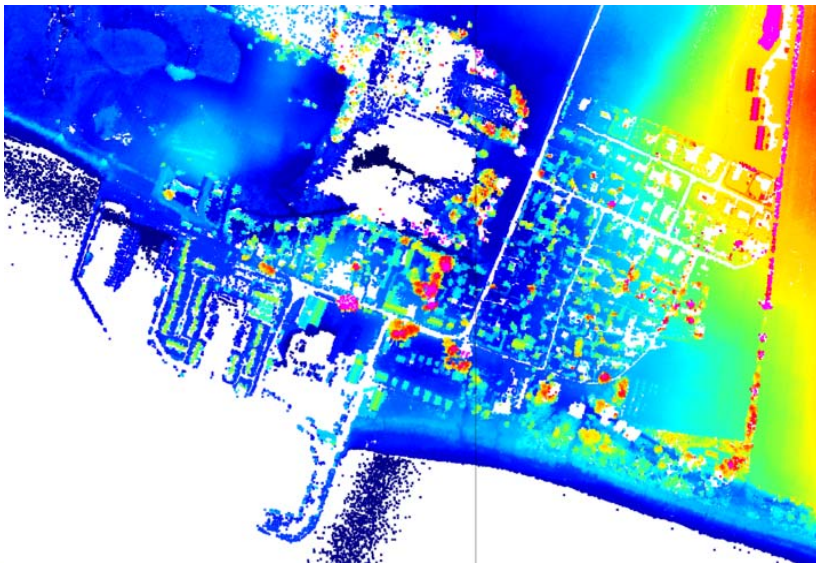


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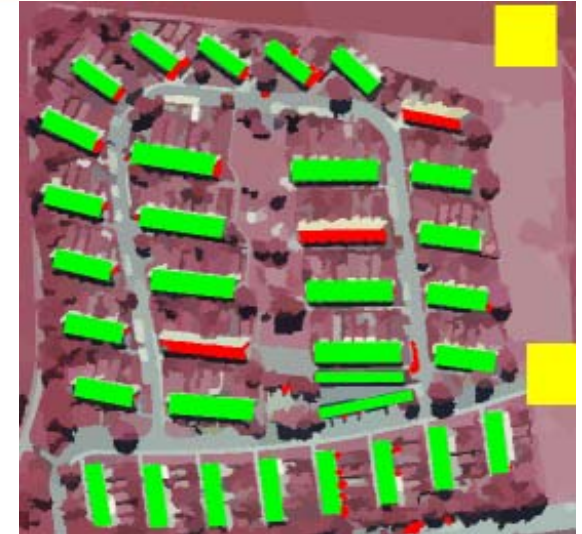
Mapping:

DNSC research in use of satellite
and aerial data

- Change detection
- Digital height models
- Urban mapping, coastal zone



Laser scanner - DHM



Change detection by aerial photo

DNSC develops aerial systems to

- Gravity surveying
- Laser scanning

Earth observation and global change

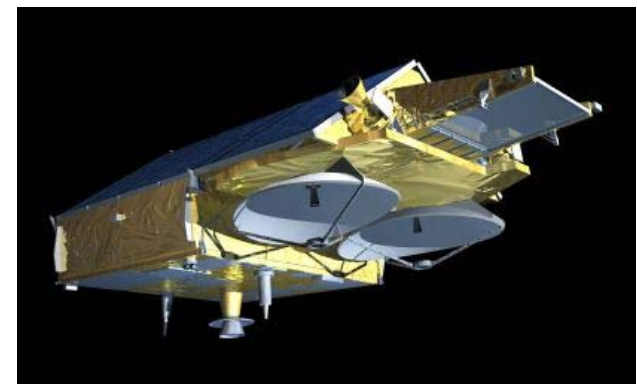
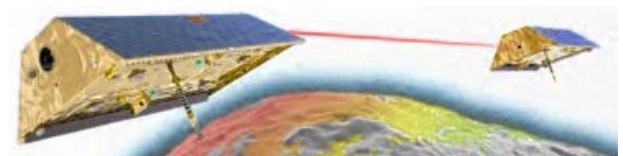
DNSC research in global change and effects of climate changes:

- Sea level change
- Ice cap changes
- Sea ice cover in the Polar Sea

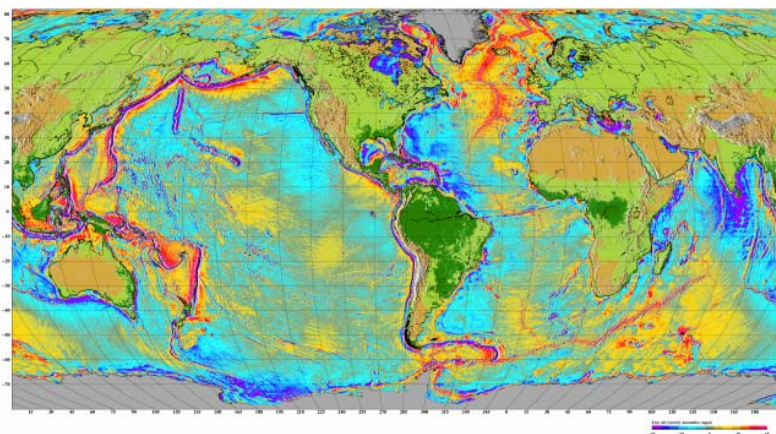
and participate in satellite missions through

- Pre studies and in situ data monitoring
- Calibration / validation
- Development of analysis methods

Actual satellite missions: Envisat, GRACE, GOCE, Icesat, Cryosat ...

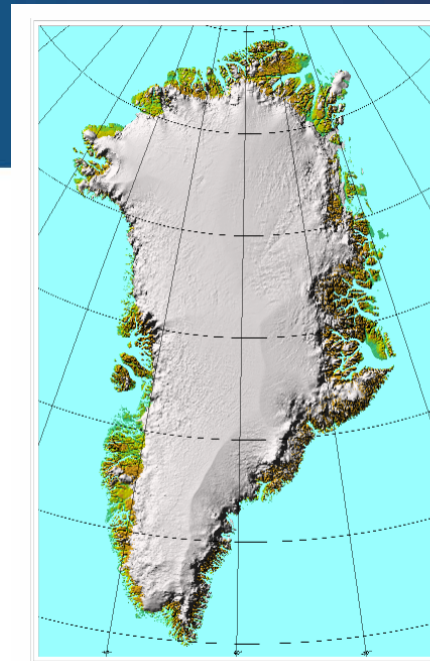
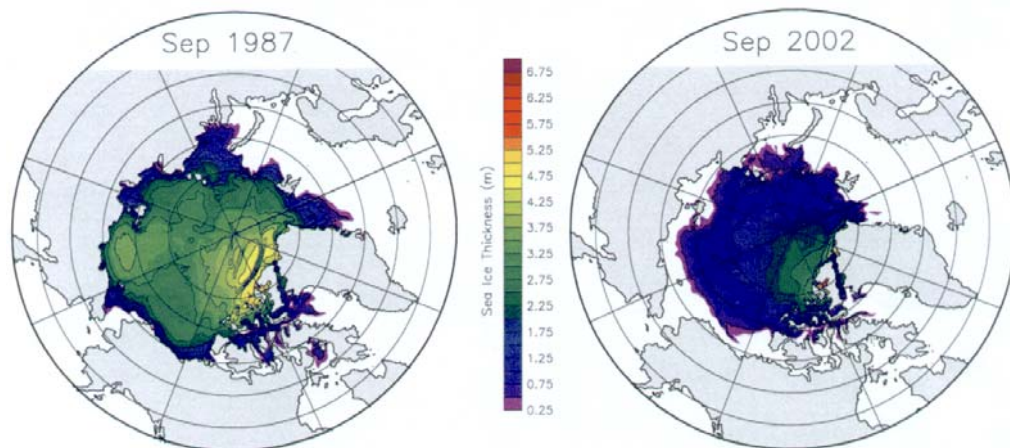


Satellite based "products"



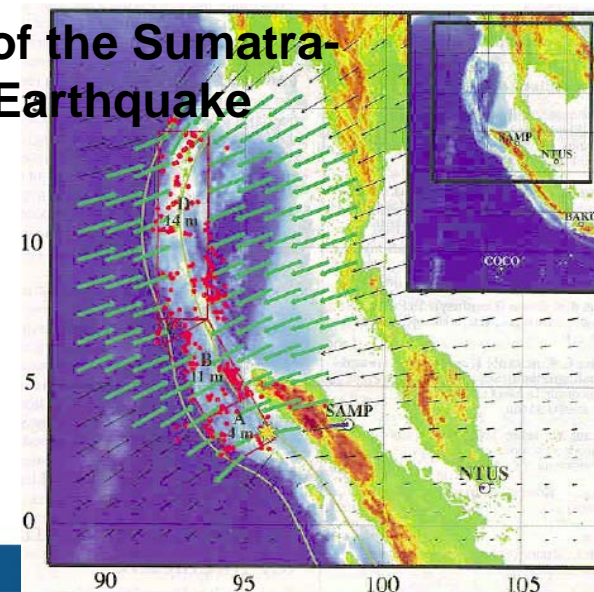
Global marine gravity

Polar ice cover



DHM of Greenland ice cap

GPS analysis of the Sumatra-
Andaman Earthquake



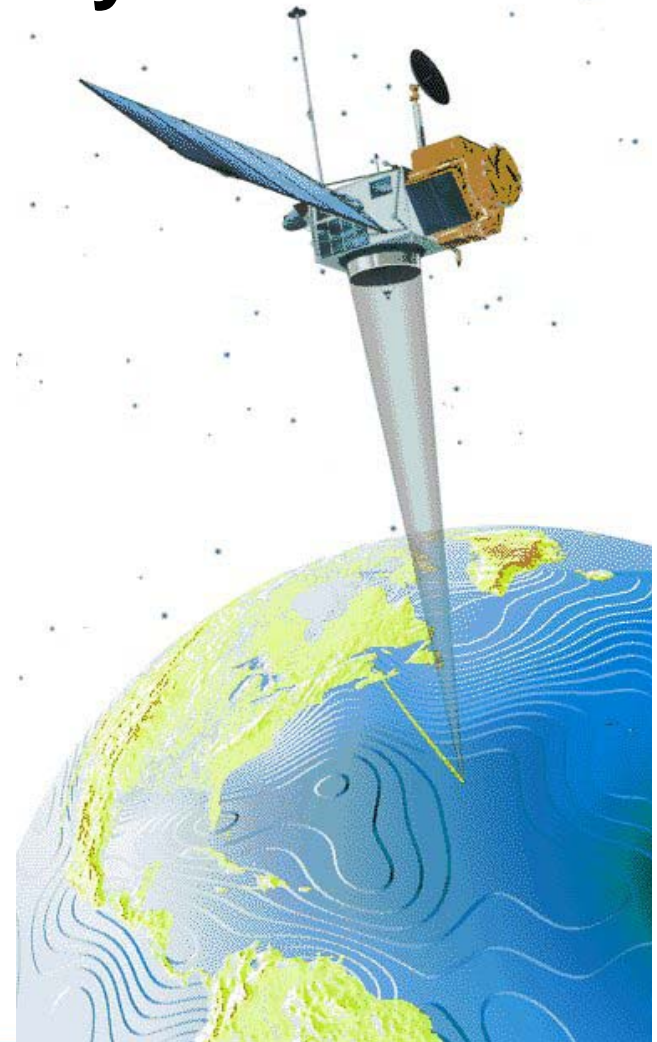
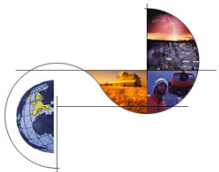


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Global monitoring and security

DNSC contributes to international programs on global monitoring and security:

- GEO System-of-systems – Global, inter-governmental coordination (GEO)
- GMES - Global Monitoring of Environment and Security (EU/ESA)
- FN / UNESCO – UNEP, JCOMM, G3OS
- ICSU/FAGS



Cooperation with private companies

- Monitoring of oil rigs (nedsynkning)
- Sensor-development / navigation (Aerial System)
- Analysis of Earth observations data/images
- Knowledge transfer to Surveying Projects (Bridges)
- Gravity models (oil- and gas exploration)
- Tide models



***Gravity surveying
(Bahrain; COWI)***



***GPS monitoring of
Oil rigs (Mærsk)***

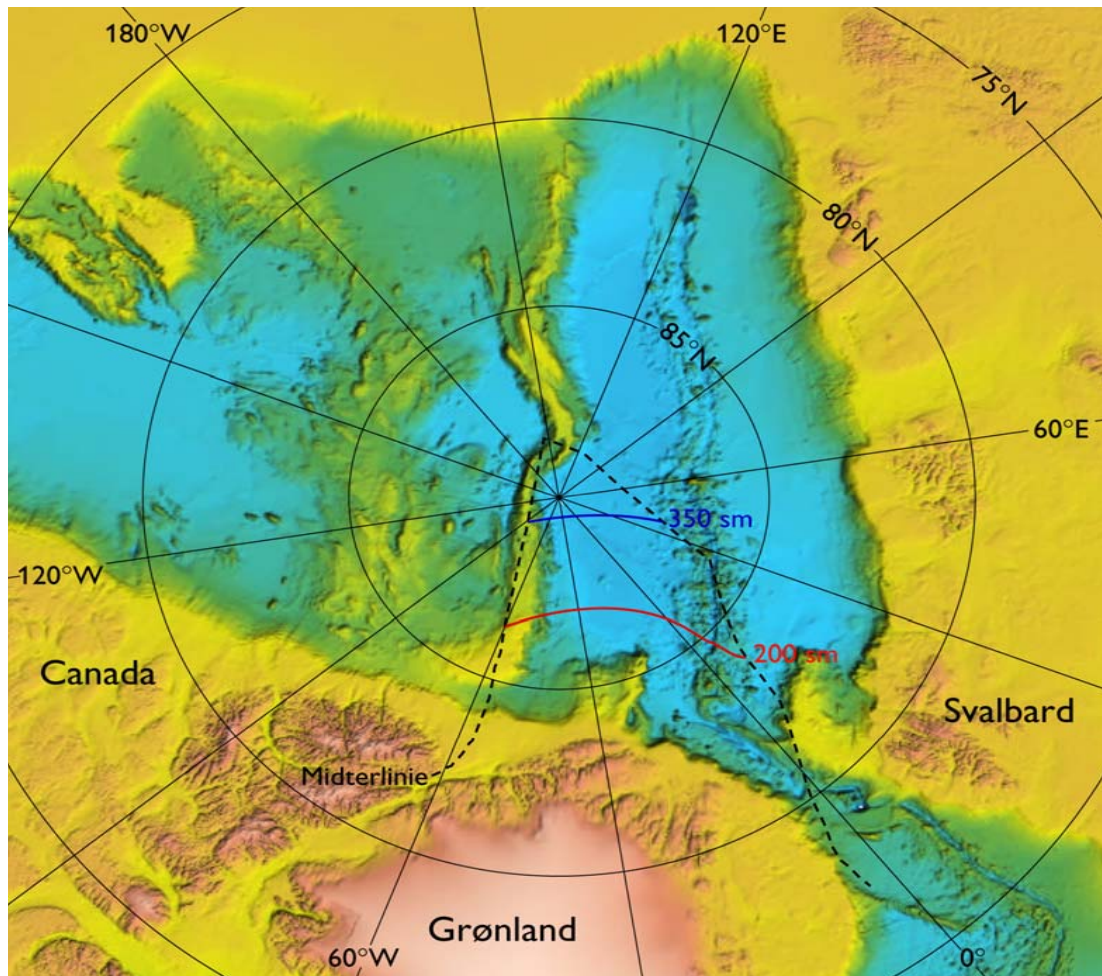


***Geoid models, Mongolia
(NGA, MonMap, Air Greenland)***



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UNCLOS - UN Convention on the Law of the Sea



Is the North Pole Danish?