

National Report of Finland 2007-2010

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Maintenance of EUREF-FIN coordinates at permanent stations

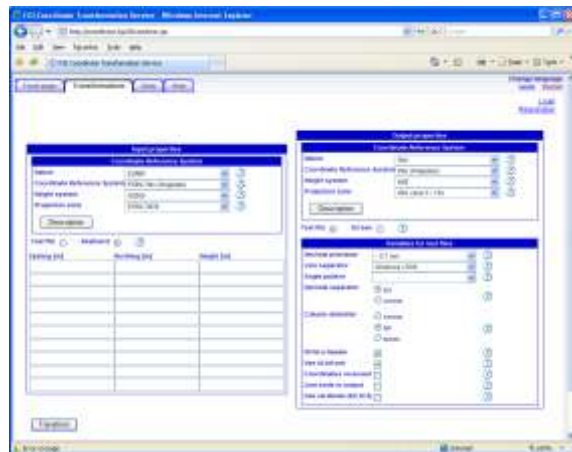
- Several governmental authorities already changed to EUREF-FIN, cities, municipalities underway
- **no changes in instrumentation** (=antennas) since the beginning to avoid jumps in timeseries
- **regular monitoring independently from GPS:** centring measurements of the mast/pillar with precision tacheometry
- **regular precise levellings** of the antennas started 2007
- upgrade to GNSS planned in the future, present plan: *old stations remain untouched – new stations next to the old ones + a few new*



Coordinate transformation web application

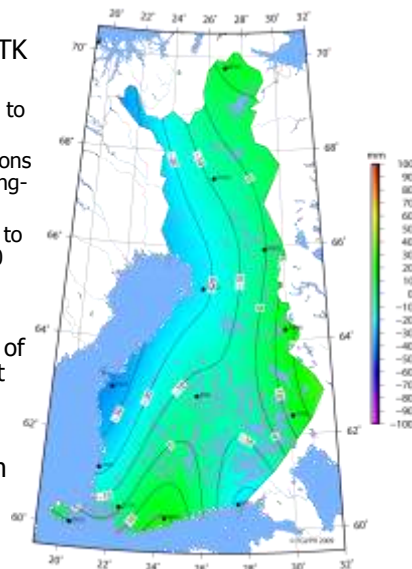
- Transformations between national reference frames
- Data
 - geoid models
 - transformation grids
- Information about Finnish reference frames
- ITRFs not (yet) available
- Free of charge

<http://coordtrans.fgi.fi>



Other GPS-related studies

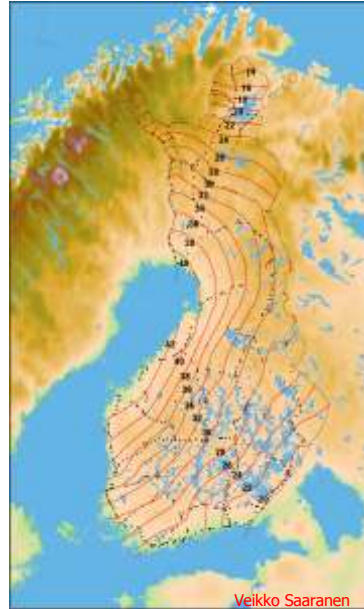
- Accuracy / quality of network RTK (VRS)
 - Network RTK one of the main ways to "realise" ETRS89 in practise
 - 10-month time series of daily solutions of virtual data (zero-baseline) → long-term quality and systematic errors
 - Mainly caused by deformed RF due to **postglacial rebound** (time span ~10 years)
- GPS metrology; Goal: to bring traceable scale (w.r.t. the definition of the metre) to GPS solutions at short distances (e.g. local ties)
- Transformation evaluations from ITRFyy to national ETRS89 realization
 - Tests with velocity models



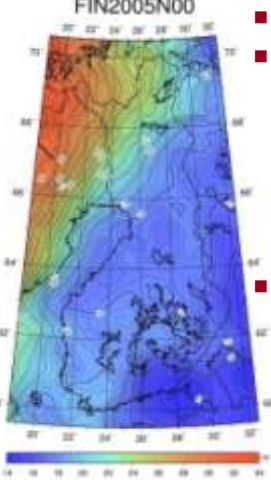


N2000 height system

- 3rd Precise Levelling completed in 2006
- Realization of N2000 follows the guidelines of EVRS and Nordic Geodetic Commission (NKG):
 - Datum: NAP (Normaal Amsterdams Peil)
 - Normal heights computed to the epoch 2000
- Difference between N60 and N2000 up to 40cm, mostly due to the land uplift
- Published Autumn 2007
- Related geoid model FIN2005N00



FIN2005N00 geoid model

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- released in 2007
 - calculated by fitting the GPS-levelling data of the 50 EUVN_DA points to the Nordic geoid model NKG2004
 - links EUREF-FIN heights to the new national height system of Finland N2000





Monument and fundamental benchmark of the Third Precise Levelling

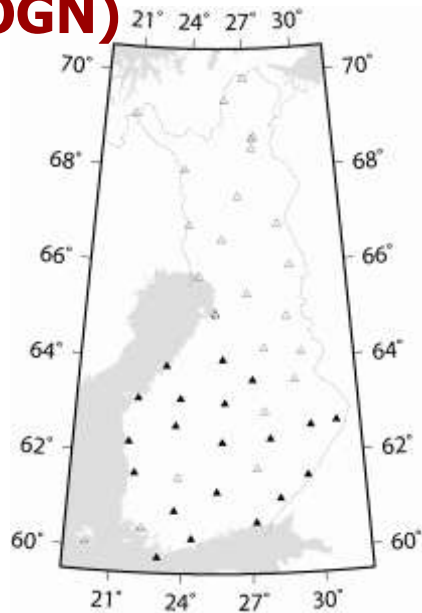
Gravity measurements

- Intercomparisons of AG in Sevres, Luxemburg, St Petersburg, Moscow and Metsähovi
- AG measurements in Finland and abroad; Russia, Iceland, Poland and Lithuania, ...
- Finnish AG network at permanent GPS stations



Renovation of the First Order Gravity Net (FOGN)

- ~50 stations
- First measured in 1962-63 and checked in 1988
- Revision of the FOGN was started in 2009
- **Measurements** in cooperation with the Institute of Geodesy and Cartography (IGiK, Warsaw, Poland) using the A10-020 of the IGiK
 - In 2009 altogether 20 sites were occupied; rest in 2010 (Figure)
 - In addition 10 comparisons at 5 sites measured with the FG5-221 of the FGI were performed
- To be finished 2011 (last auxiliary field measurements)



GPS+GLONASS

+DORIS

Metsähovi

AG

SCG

SLR

geoVLBI



regular measurements



continuous



under renovation



6-8 campaigns annually; local ties

National Standards Laboratory – Length

- Renovation work at Nummela Standard baseline
- EMRP (European Metrology Research Programme)
 - Calibration of the BEV baseline in Innsbruck; tests at Nummela
- EDM/GPS measurements in Kyviskes, Lithuania
- Scale transfer to Vääna, Estonia

