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

- 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
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)
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