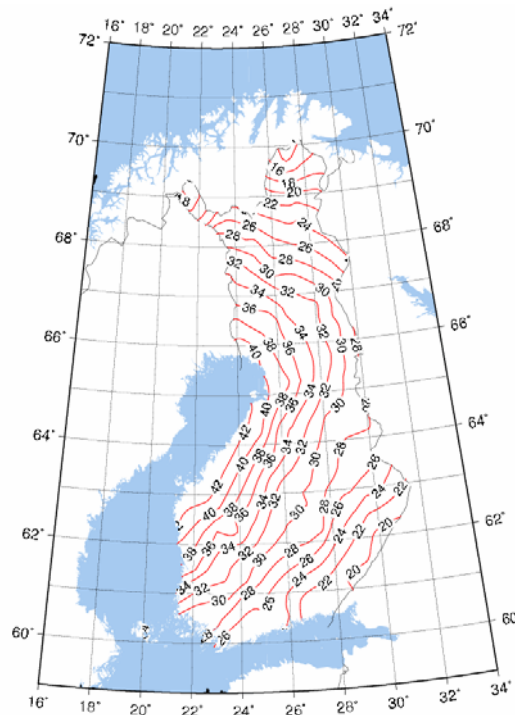




National report of Finland

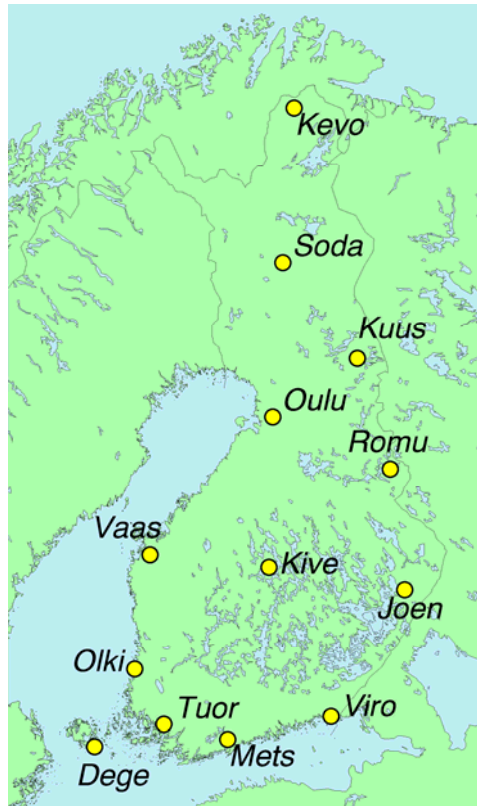
**Matti Ollikainen, Jorma Jokela, Markku Poutanen, Ruizhi Chen and
Jaakko Mäkinen,**

**Finnish Geodetic Institute,
P.O.Box 15,
02431 Masala, Finland**

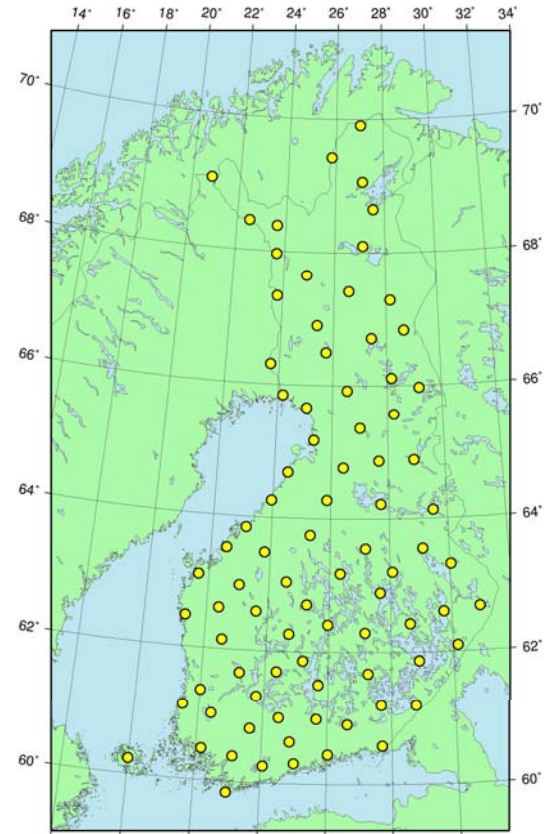


EUREF Symposium 2006, June 14-17, Riga, Latvia .

The permanent GPS networks



FinnRef, FGI
13 stations
4 EPN stations
1 IGS station
Recording interval 30 sec



GPSNet.fi, Geotrim Ltd.
84 stations (11.6.2006)
Recording interval 1 sec
RTK, VRS and DGPS solutions

EUVN_DA activity

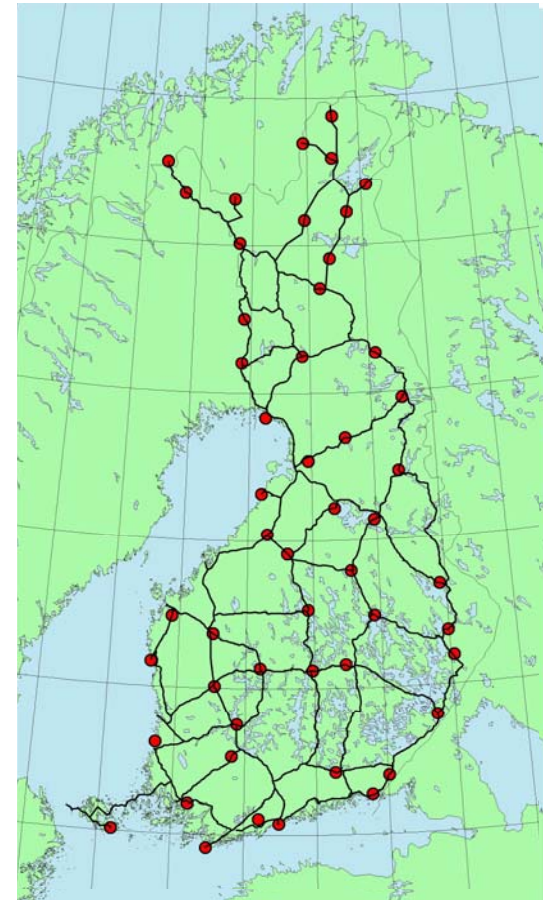
The number of the accepted EUVN_DA stations is 20.
The network is too sparse to fulfill the EUVN_DA requirements.

30 precise levelling benchmarks were selected for GPS densification.

The densification stations will be connected to ETRF89 via FinnRef, but because the distances from the permanent stations are long ...

... we will use the data from GPSNet-stations in the solution, in order to strengthen the solution.

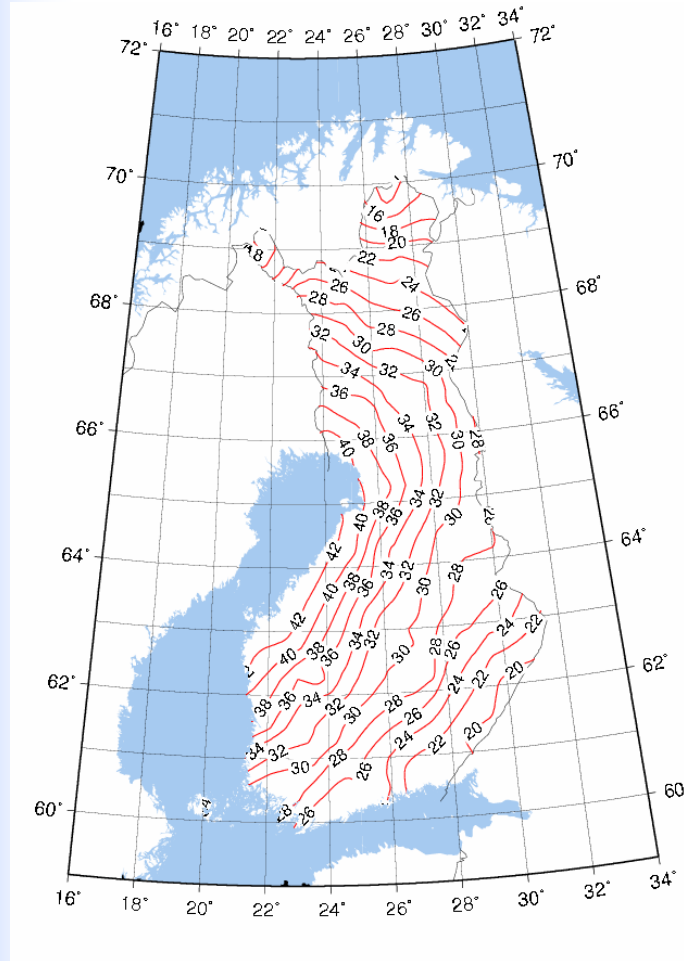
The final EUVN_DA network consists of 50 stations.





EUREF 2006 Symposium
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Precise Levelling and the new height system



The field work of the Third Precise Levelling was completed in 2004.

The Ministry of Agriculture and Forestry authorized the FGI to set up a working group to propose a new national height system to replace the old one (N60).

According to the report given by the working group the Finnish national height system (N60) should be replaced by a new one, which is based on the following main principles:

The datum shall coincide with the datum of the European height system.

Normal heights shall be adopted.

The zero tidal system shall be used.

The height difference between the new (N2000) and the old (N60) height system varies from 20 cm to 42 cm.

Navigation

EGNOS RIMS Station

The EGNOS (European Geostationary Navigation Overlay Service) RIMS (Ranging and Integrity Monitoring Station) station at **Virolahti**, was fully deployed during 2004.

Virtual DGPS based on EGNOS signal

The basic concept is to convert the EGNOS signal to RTCM signals, and broadcast the converted RTCM signals over wireless Internet using Internet Radio technology.

Two test cases have been carried out with the prototype system. The test results show that the positioning accuracy of the virtual DGPS solution is about 1-2 meters at 95%,





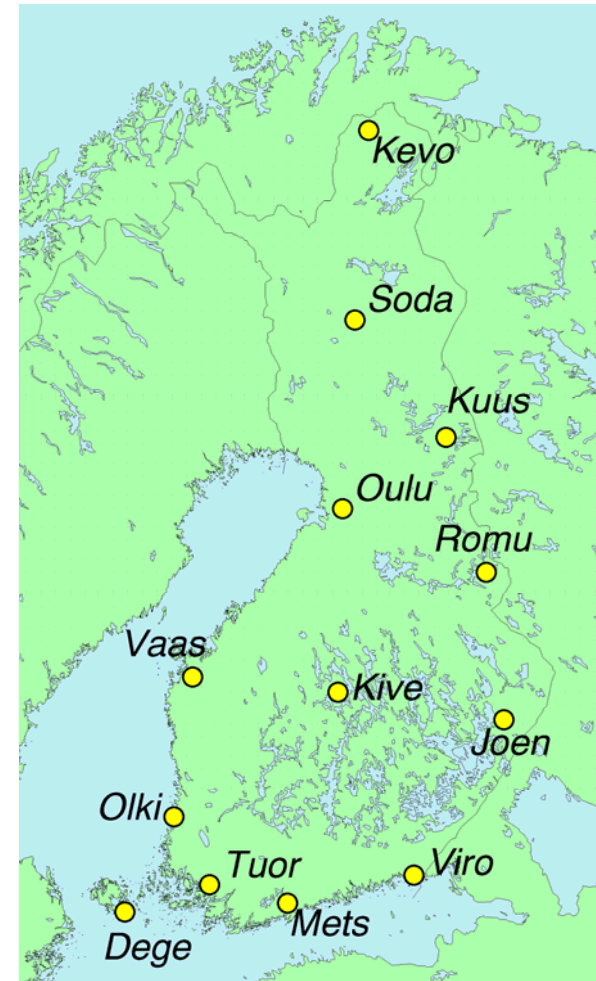
Real-time Data Communication System for FinnRef

Developing a new data communication system for the FinnRef has been ongoing since 2004.

Hourly data is automatically downloaded from 10 stations.

The data server automatically sends the data from the EUREF stations, namely Metsähovi, Sodankylä, Vaasa, Joensuu, to the EUREF data processing centres.

At the end of 2005, real-time data transfer was accomplished at the Metsähovi station. The real-time is transmitted and handled separately by the Internet broadcaster developed by the FGI.





Metrology

The FGI is the National Standards Laboratory of **acceleration of free fall** and **length**.

Gravity

National gravity network,
Absolute and relative gravity measurements
Recording of temporal gravity variations

Calibrations

Height determination instruments
EDM instruments

Nummela Standard Baseline

The new office and store building and
roofed observation pillars
were build up in 2004.



The quartz metre system with interferometrical comparisons in the Tuorla Observatory of University of Turku. (Photo: Pasi Häkli)

Metsähovi Research Station

Instrumentation:



SLR

During 2004 a total of 294 orbits of 18 satellites were observed.

A new laser system was got as a loan from the SLR station of the Austrian Academy of Sciences at Graz.

GPS & GLONASS

Station belongs to IGS, EPN and FinnRef networks and takes part to IGLOS project.

DORIS

The Doris beacon continued its operation.

Superconducting gravimeter:

Vertical motion due to loading by the atmosphere and by the Baltic Sea were studied using the observations of the superconducting gravimeter

Geodetic VLBI

The VLBI observations were started in co-operation with the Metsähovi *Radio Observatory of the Helsinki University of Technology.*