

# National Report of Finland

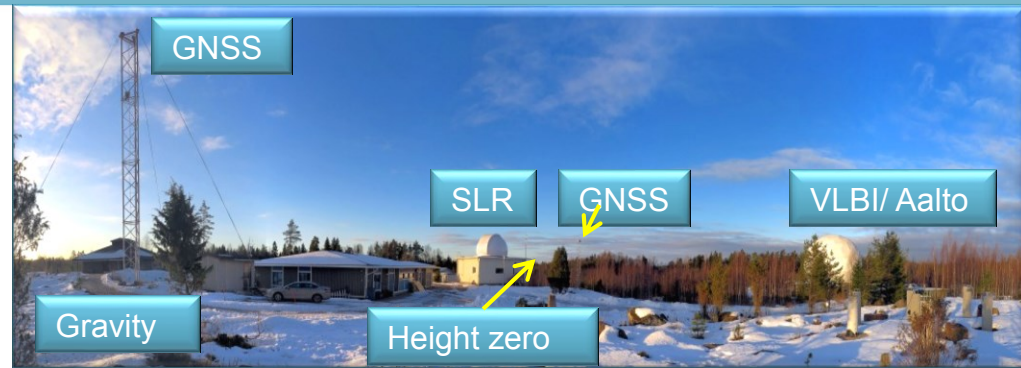
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Poutanen and J. Virtanen

25-27 May, 2016, EUREF symposium, San Sebastian, Spain



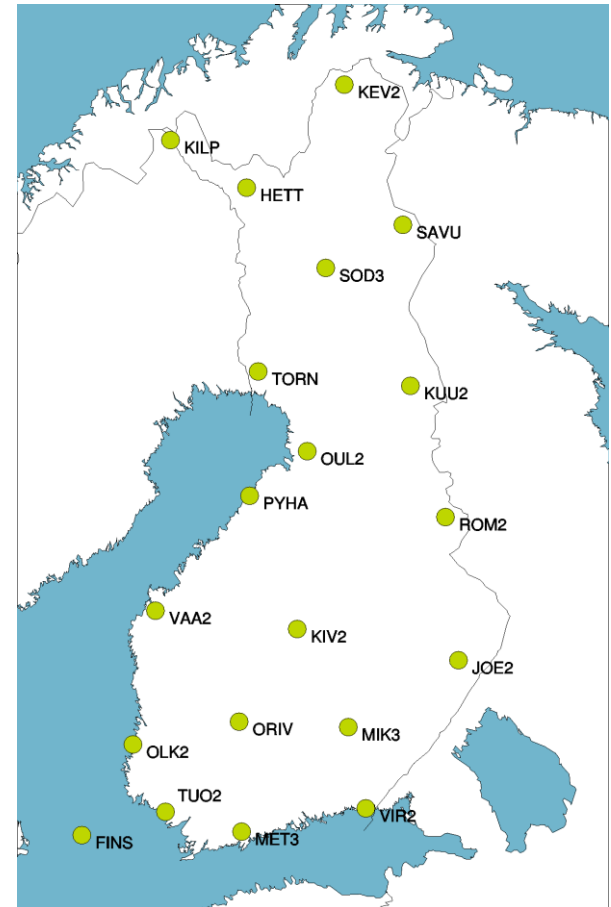
# Metsähovi modernization 2012-2018

- State-of-the-art **SLR**:
  - Telescope installed in the beginning of 2016
  - Current plan:
    - Testing of the system (2016)
    - Calibration of the system (2016/2017)
    - "Routine" observations (2017)
- VGOS-compatible **VLBI**:
  - Procurement of the system is ongoing
  - Operational in 2018/19



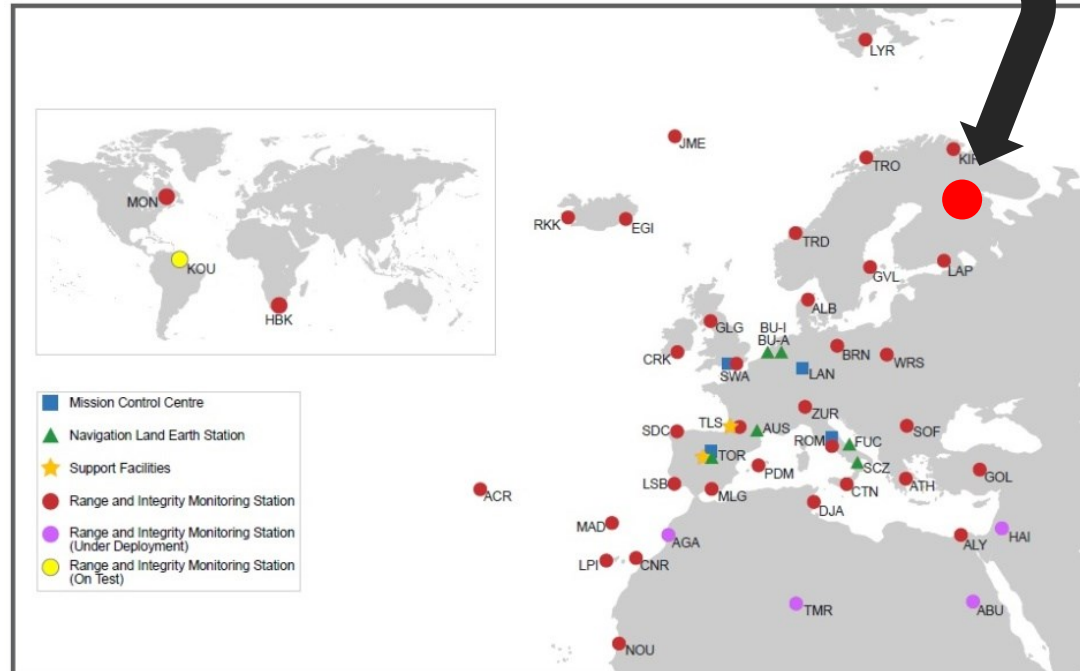
# FinnRef permanent GNSS network

- Renewed in 2012-13, 20 new GNSS stations
  - Old FinnRef stations (13) still running parallel with the new stations, 11 twin stations
  - Inter-station distance on average 200 km
- Positioning service(s), GNSMART (Geo++):
  - DGNSS free-of-charge 2014-
  - (network RTK service pilot 2014-15)
- **Development project 2015:** how FinnRef network and its network-RTK services should be developed that it would **fulfil NLS internal needs for cadastre work (~10cm)**
  - **Outcome:** Current network works under favourable conditions (open sky, good pdop), but in more challenging environment denser network is needed.



# EGNOS RIMS (Ranging and Integrity Monitoring Stations)

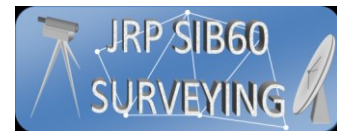
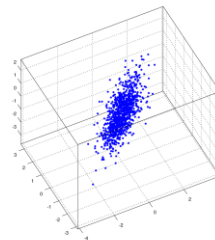
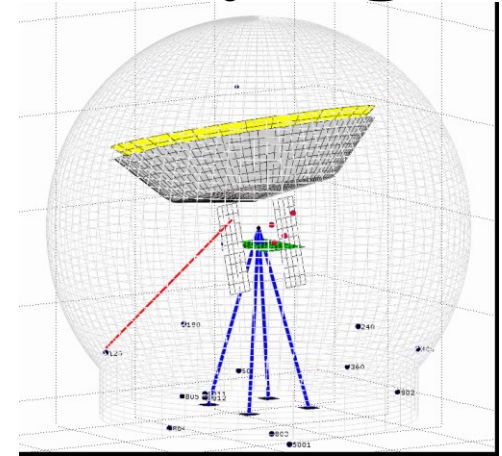
- FinnRef permanent GNSS network supports Galileo
- FGI begins utilize FinnRef to monitor EGNOS with Pegasus software by Eurocontrol
- **Second RIMS station to Finland in 2018/2019**



# EMRP JRP SIB60 Broader Scope

## "Metrology for long distance surveying"

- **Nummela standard baseline**
  - Test: TeleYAG distance meter (PTB)
  - Test: Telediode distance meter (CNAM)
  - Test: Laser spectroscopy for temperature over long distances (VTT-MIKES)
  - Scale transferred to Metsähovi, PTB and UniBW Baselines
- Facility for **validating GNSS antenna calibrations** "Revolver" was developed
- **Metrologically optimum processing strategy** for baselines <200m was created
- **Local tie** vector between CORS and VLBI using GNSS and Robot tacheometer
  - Total uncertainty of the local tie
- **Guidelines** will be written



**EMRP**  
European Metrology Research Programme  
► Programme of EURAMET



The EMRP is jointly funded by the EMRP participating countries within EURAMET and the European Union

# FAMOS Freja Project Gravity Survey in Bothnian Sea

Finnish Transport Agency - participant in FAMOS Freja

- Contract with Meritaito Oy  
Airisto Survey vessel
- Contract with NLS-FGI  
Local ties on vessel, harbour ties, 10 Hz GNSS data collection on land

GFZ → Gravimeter (Chekan-AM) operation



26.9. Pori



7.10. Umeå



12.10. Pori

