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Estonian Land Board

GNSS Applications in Estonia

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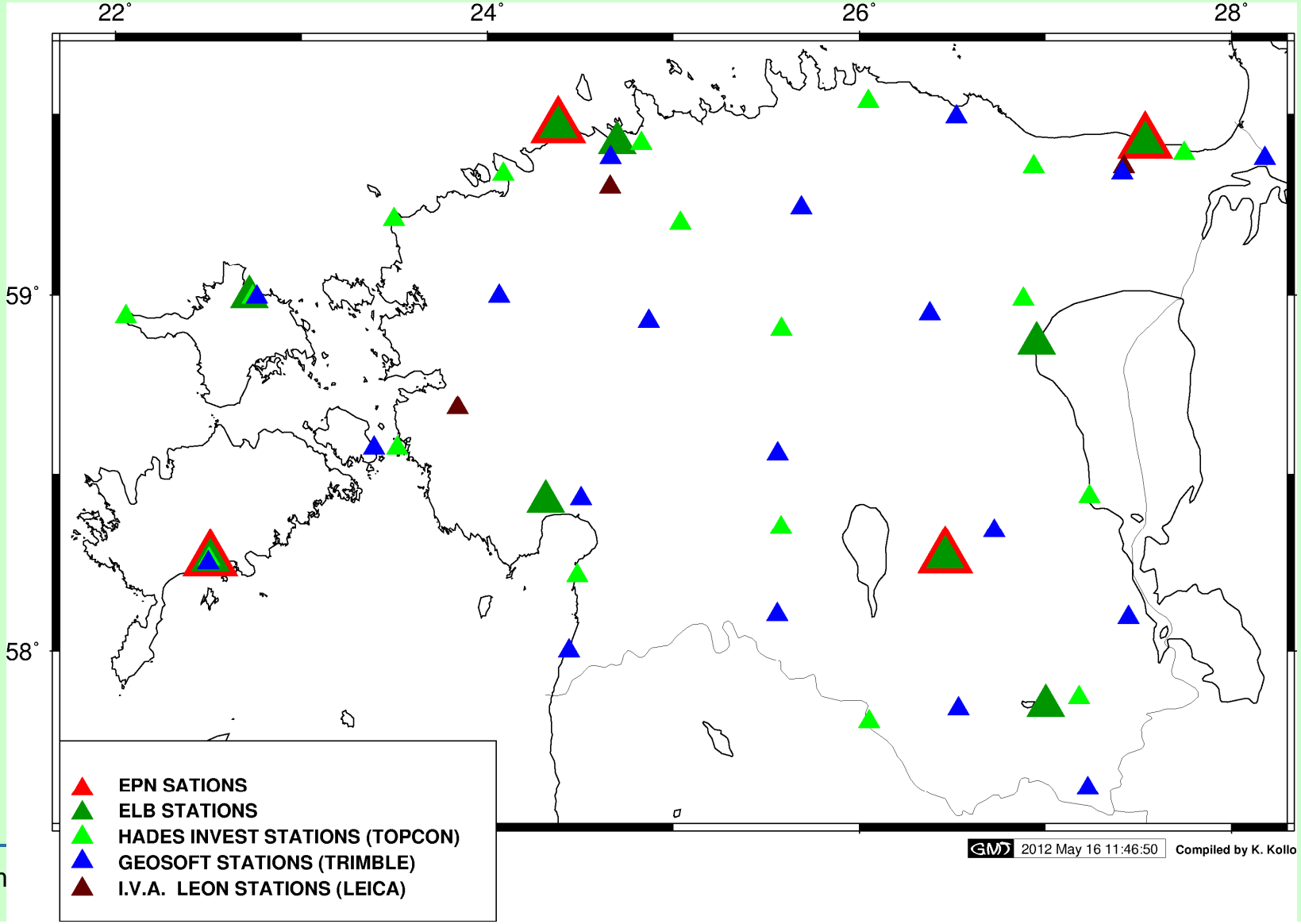
Legislation

- Spatial Data Act from 17th February 2011
- Implementing legislation
  - Decree of Geodetic System 26.10.2011
  - Statute of Geodetic Point Database from 15.12.2011

  Preparation:
  - Decree of Geodetic Point Marking and the Extent of the Protecting Zone
  - Decree of Geodetic Works

GNSS permanent stations in Estonia



Establishment 1996-2006

- In 1996 first permanent station SUURUPI established
- In 2006 experimental GPS station in ELB main house (Tallinn) established

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Suurupi GNSS Station

Tallinn GNSS station

Establishment 2007

- In 2007 4 new permanent stations established – Tõravere, Toila, Kuressaare and Audru
  - Leica GRX1200GG PRO receivers and Leica AT504GG antennas together with LEIS dome

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stations

Toila GNSS station

Audru GNSS Station

Tõravere GNSS station

Kuressaare GNSS station

Establishment 2008

- In 2008 3 stations established – Kärdla, Võru and Mustvee
  - Leica SR520 receivers and AT504 antennas
- Changes in antenna position due to construction works:
  - Tõravere, Suurupi, Mustamäe

Võru GNSS station

Kärdla GNSS station

Mustvee GNSS station

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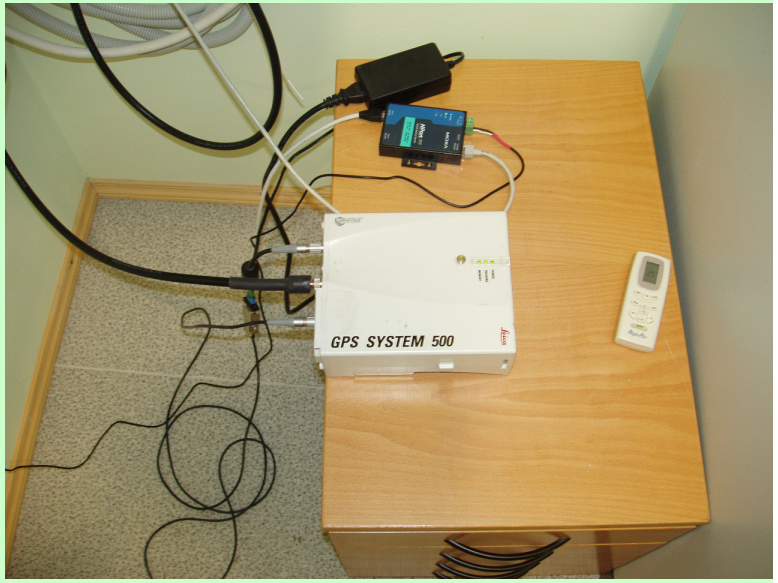
Tõravere GNSS receiver

Toila GNSS receiver



Võru GNSS receiver

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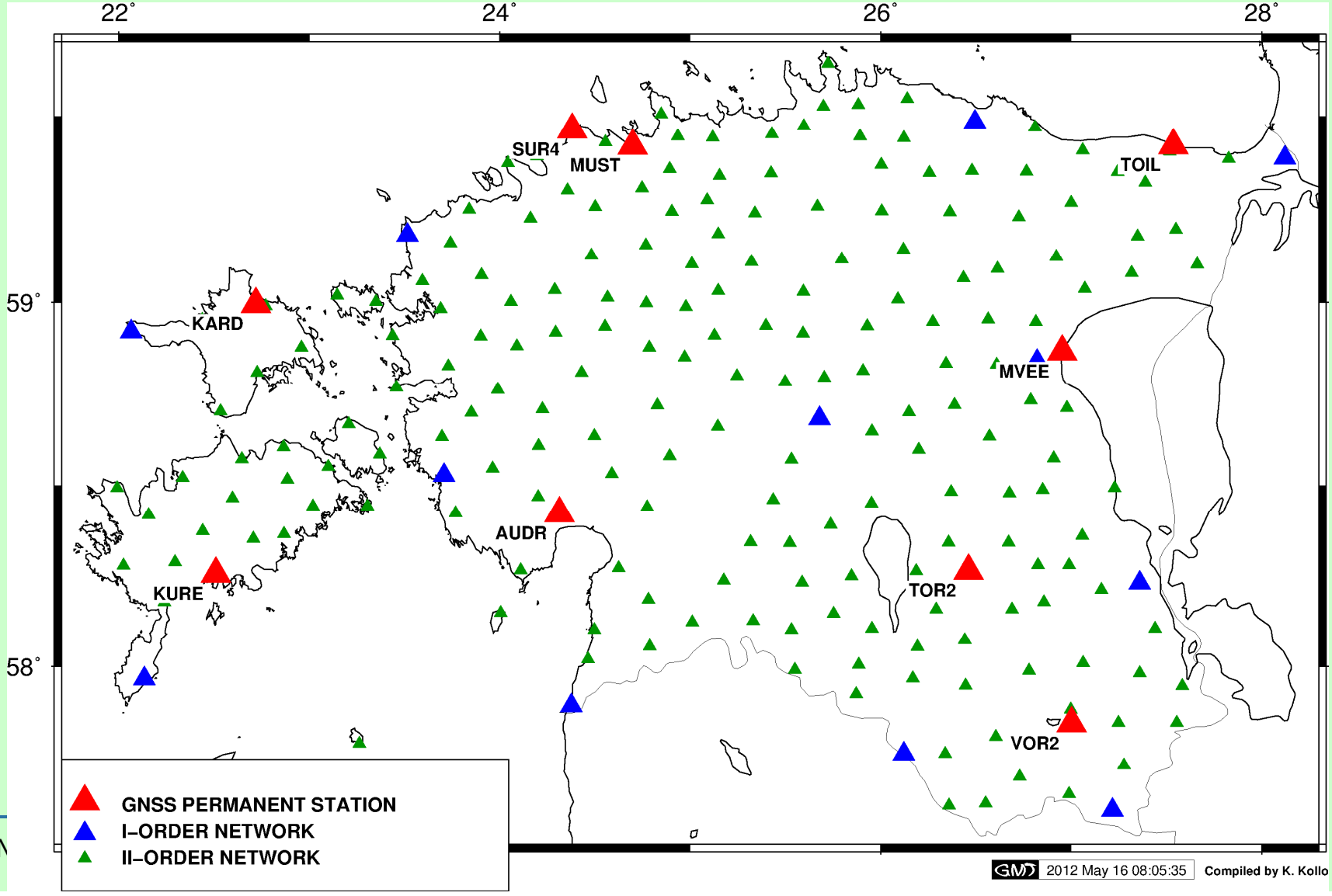
GNSS networks in Estonia



United N

ESTREF

- ELB has 9 stations, from which:
  - 4 included to the European Permanent Station Network (EPN)
  - 4 sending corrections to EUREF-IP
  - 5 possibility for RTK corrections (from one base station)
  - NO RTK NETWORK SERVICE FROM ELB

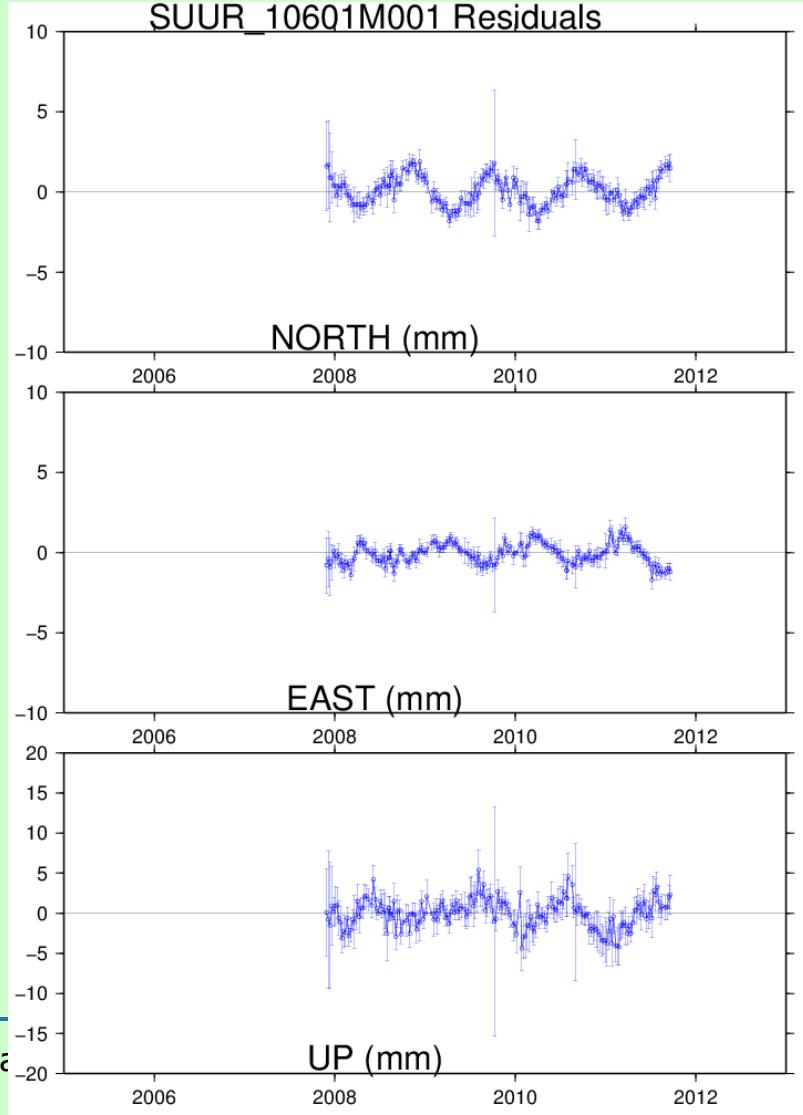
ESTREF Maintenance

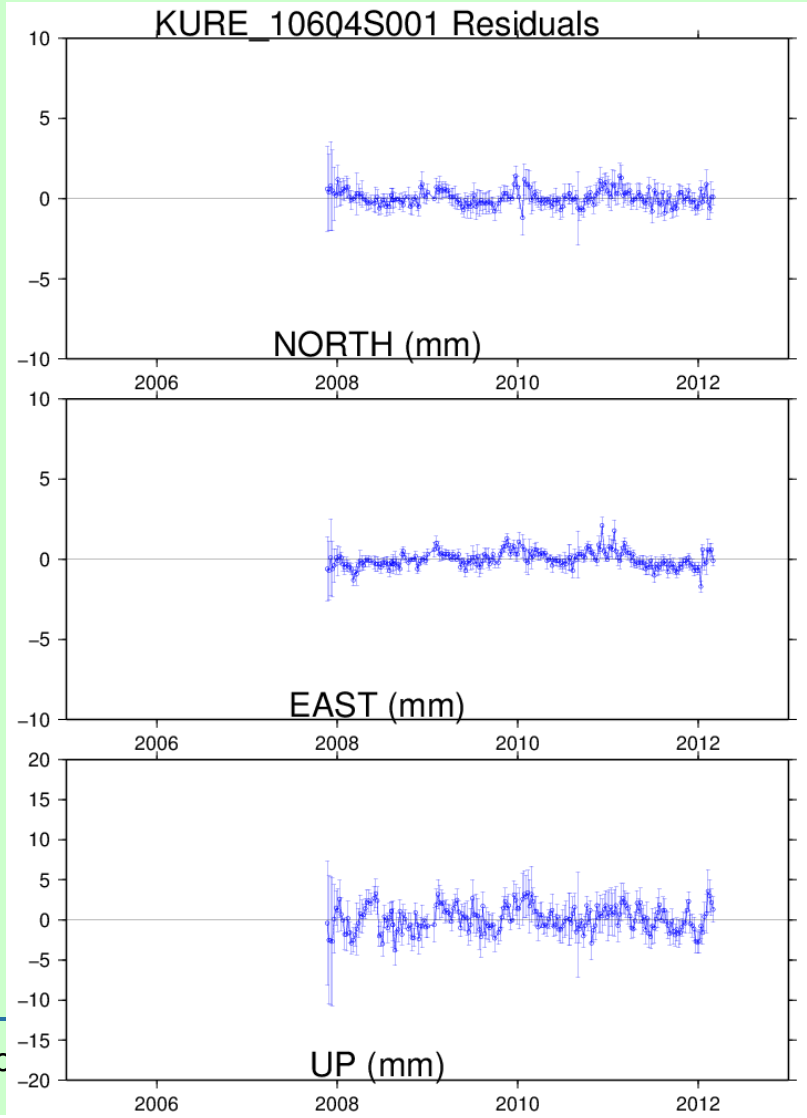
- WEB-interface
- SPIDER for monitoring the status of the stations
- RTK-corrections

Data processing

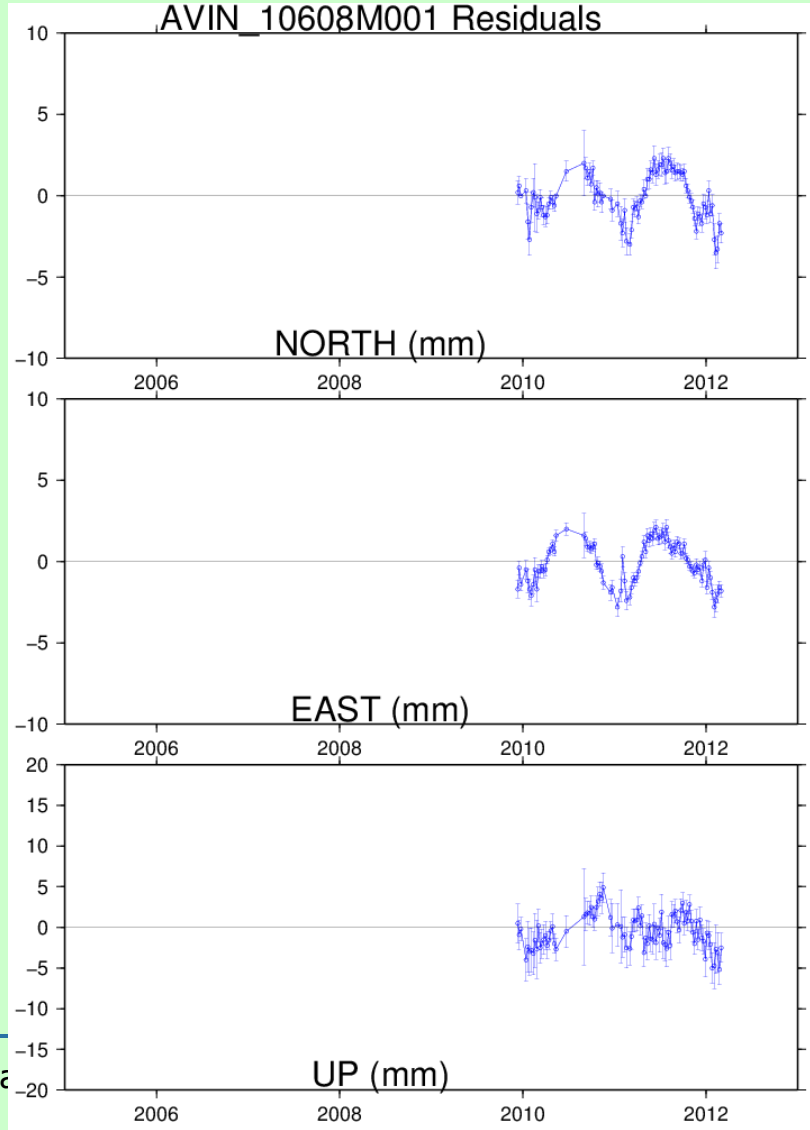
- Weekly processing with BERNESE 5.0 since 2008
- Time series analysis with CATREF since spring 2011
- Altogether about 50 stations (ELB + EPN + private GNSS stations)
- Coordinates included to Estonian Geodetic Point Database

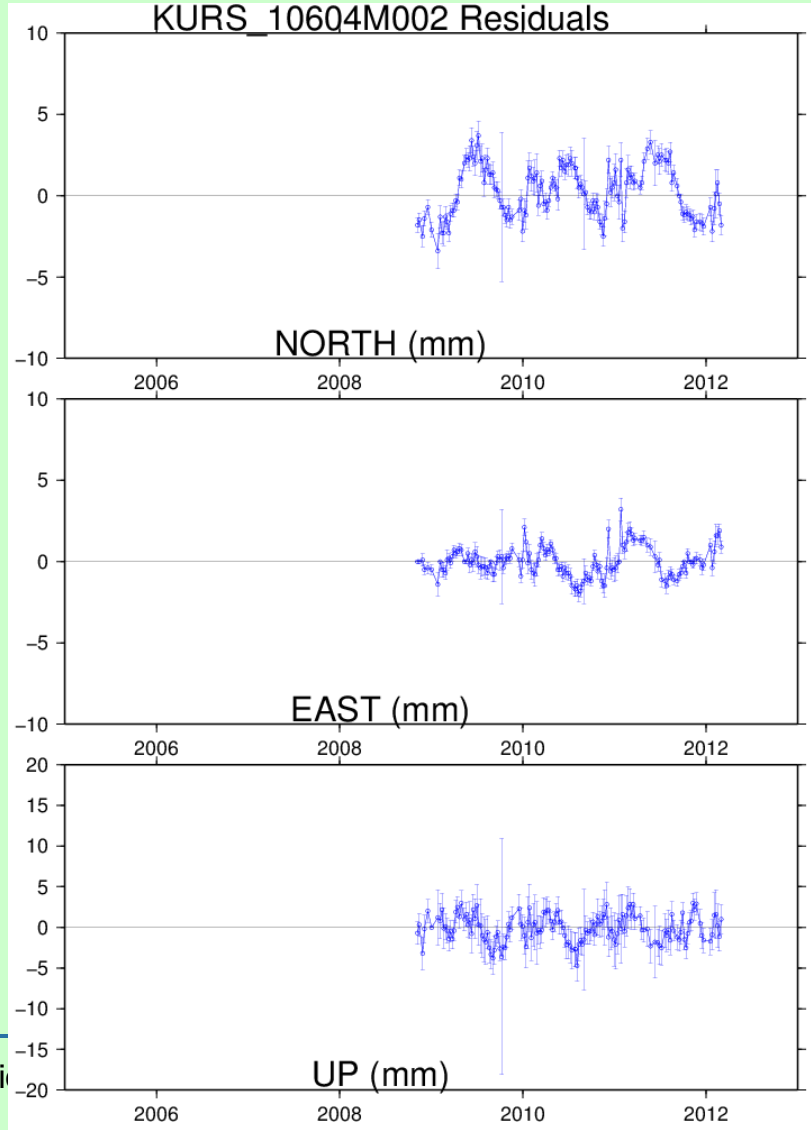
Time series: SUUR and KURE



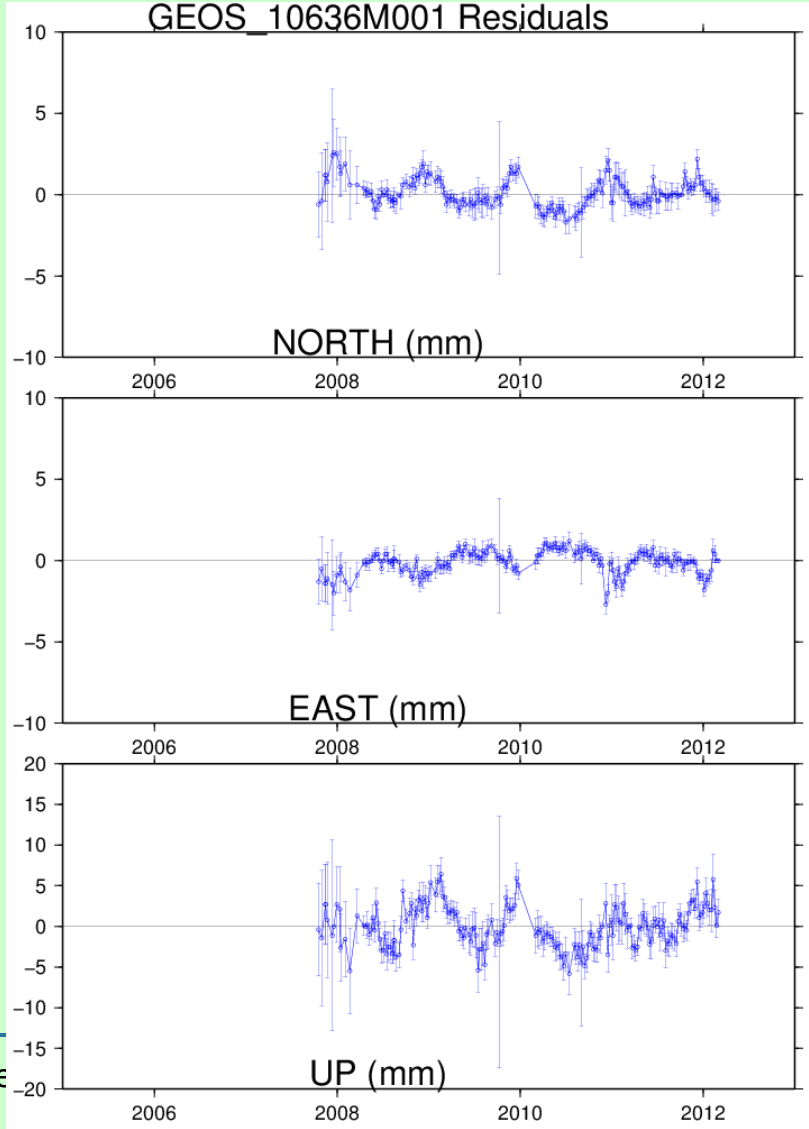


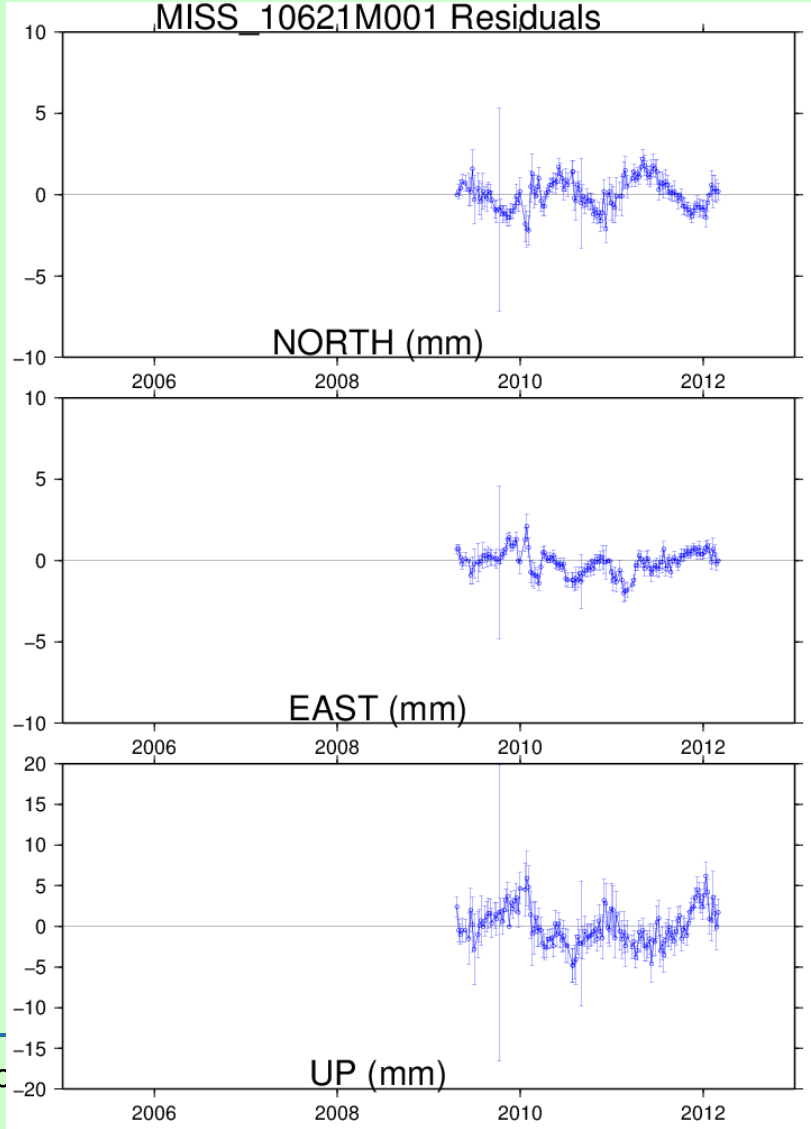
Time series: AVIN and KURS



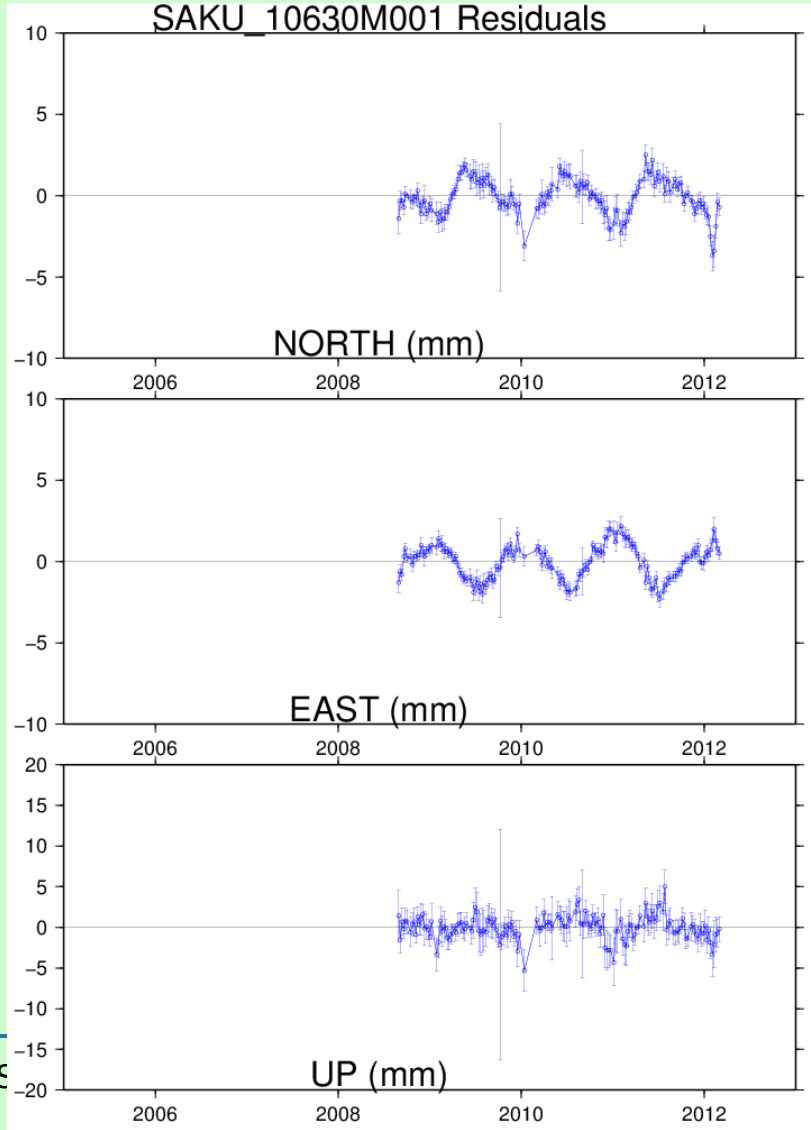


Time series: MISS and GEOS

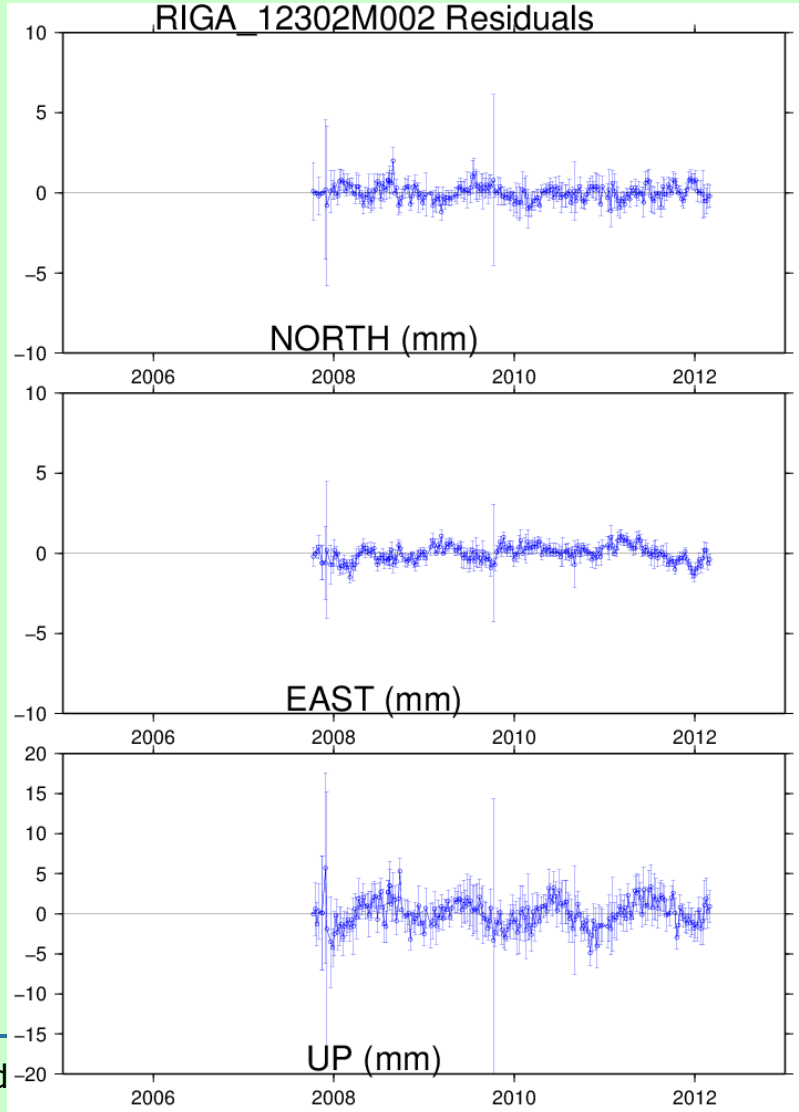


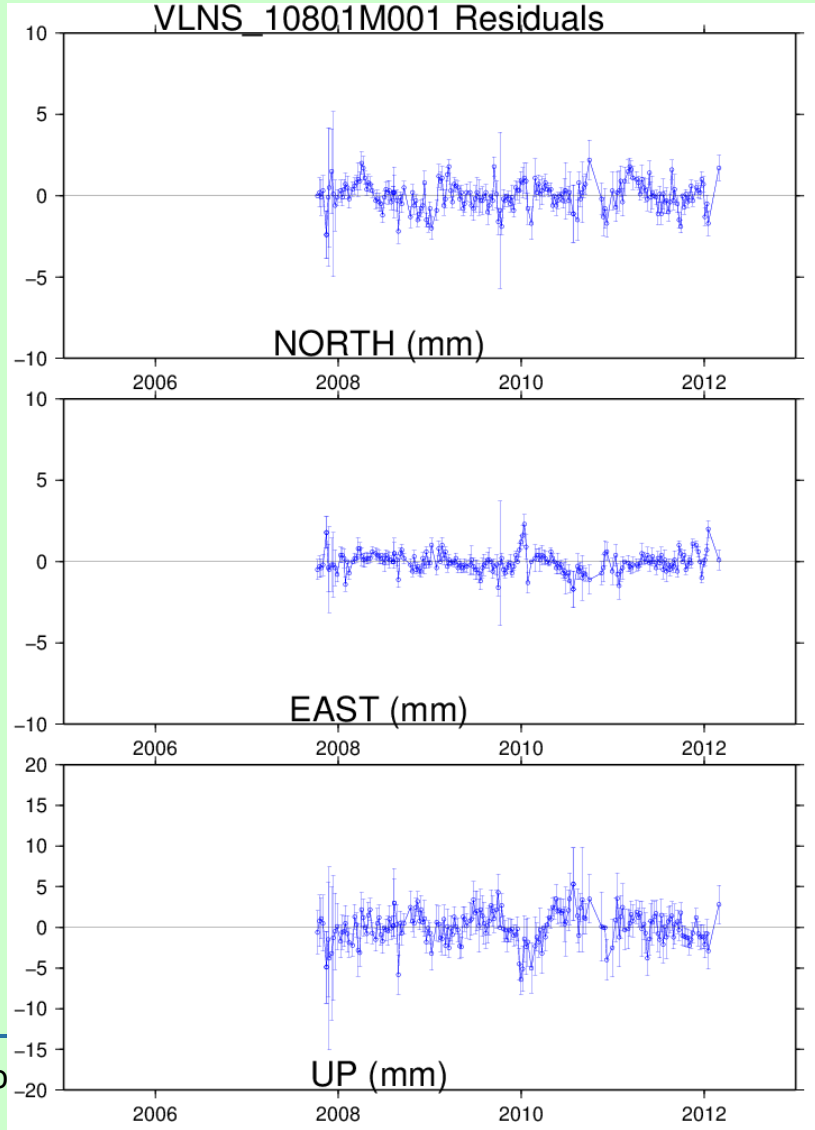


Time series: SAKU



Time series: RIGA and VLNS





GNSS data availability

- Data from GNSS permanent stations
  - Static 30 sec interval data
  - Static 1 sec interval data (Dept. Of Photogrammetry)
  - RTK correction from one base station, only for our own use (Dept. Of Cadastral Surveying and Control)
  - Coordinates from Geodetic Point Database – online, free of charge

Geodeetiliste punktide andmekogu

<< otsing **lihtkaart** globaalne translaator kohalik translaator geoidiarvutus

refnr_id	226971
	Suurupi küla / Harku vald / Harju maakond
nimi	**SUR4_MA_GNSS_püsijaam_210911**
koodnumber	63-921-5086
x y B L	6591817.361 521561.277 PYS Tihendusvõrk, GPS nädala 1655 arvutus 2011 59°27'48.86" 24°22'48.92"
kõrgus, ellips.	65.943 84.365 Tihendusvõrk GPS nädala 1655 arvutus 2011
maapind kõrgusmudelist	43.10 *(kontrollimata)* infoallikaks 1m sammuga GRID mille algallikaks on laserandmetest automaatselt klassifitseeritud maapind
klass	3 - Tihendusvõrk
raskuskiirendus	
seisukord	
GNSS sobivus	
märgi tüüp	
horisondi avatuse joonis	
kaitsevöönd	
kirjeldus	Suurupi MA GNSS püsijaam alates 21.09.2011 14.26

Lihtkaardi avamiseks klõpsa pildile või ava siit punkti asukohaga suur lihtkaart.
Kaardil klõpsamine leiab lähima punkti ja punktid mis jäävad leitu vahetusse lähedusse (olenevalt suurendusastmest).
Ja seda ka siis kui suurendusastme tõttu pole mõningaid punkte kaardil näha, või on kiht kinni pandud.

Cooperation

- EUREF (EPN)
- EUPOS
- NKG

- FGI, LGIA

Future

- In 2012-2014 new permanent stations will be established
- Works are ongoing
- Results available from 2015

- Thank you for attention!

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