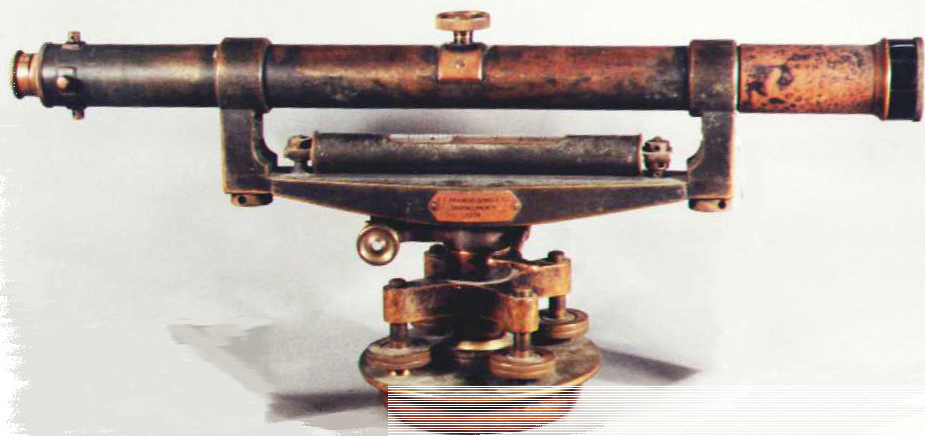




NATIONAL REPORT OF ESTONIA

Raivo Vallner, Andres Rüdja

EUREF 2005 Vienna, June 1 - 4, 2005

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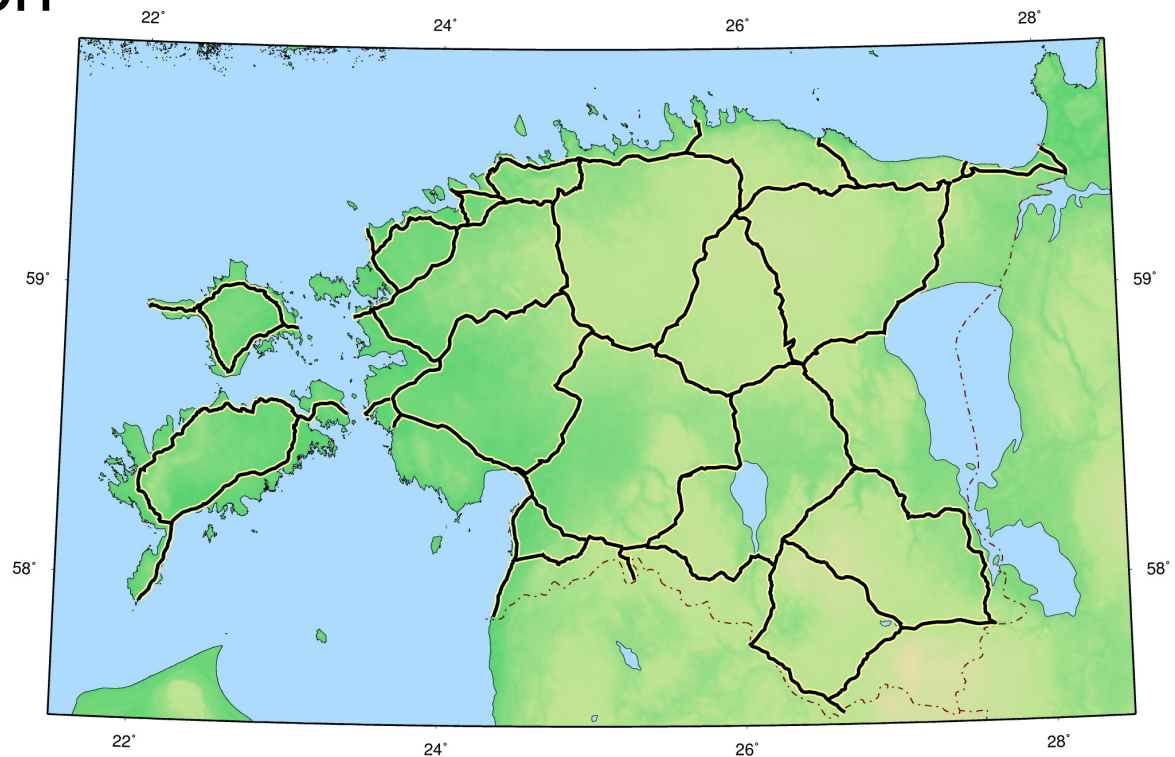


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STATE LEVELLING NETWORK

- Length of the lines: *ca* 3000 km
- 15 polygons, average perimeter: 250 km
- Distance between the benchmarks:
ca 1.5 km



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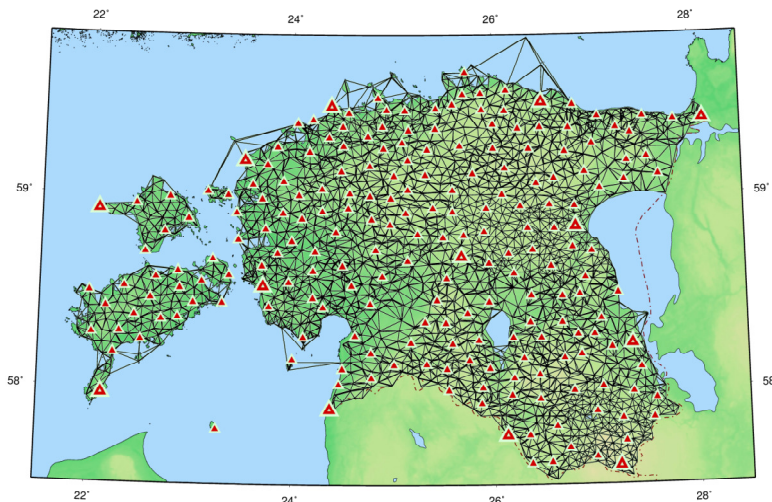
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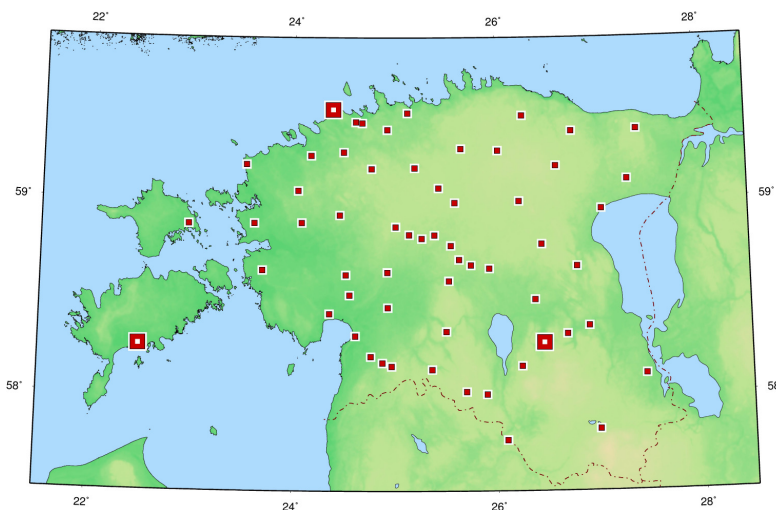
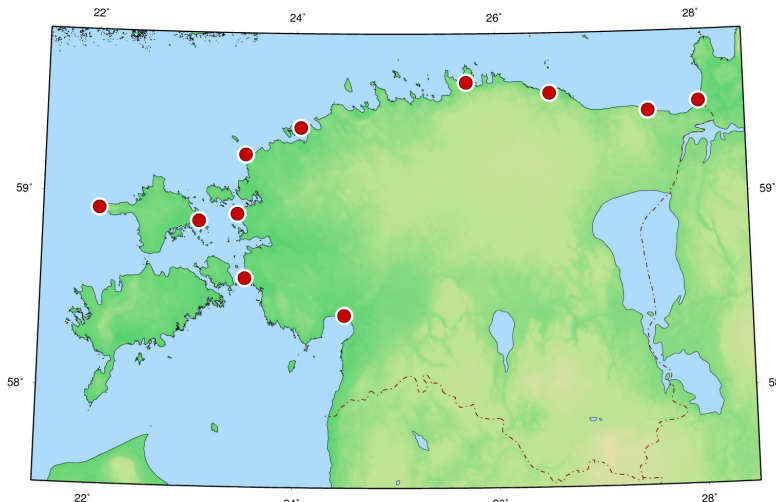
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- Integrated network



Distance between the
GPS-levelling points:
ca 5 km



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- Old benchmarks



	[tk]	[%]
Preserved	643	53
Damaged	71	6
Not found	324	27
Destroyed	164	14
Total	1202	100

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Selection:

- stability
- levelling



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- New ground benchmarks



Sedimentary bedrock

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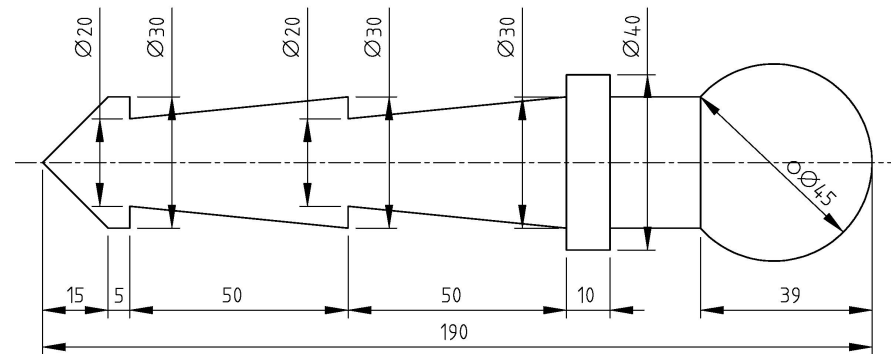
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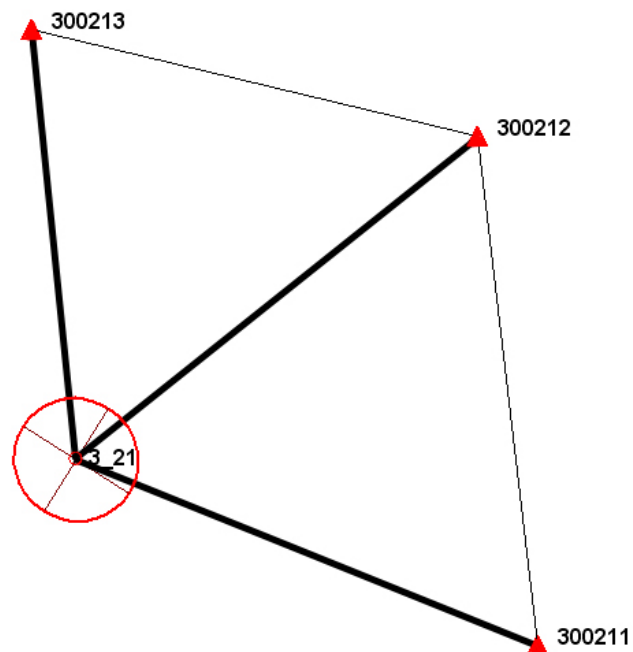
- New wall benchmarks
- Stainless steel



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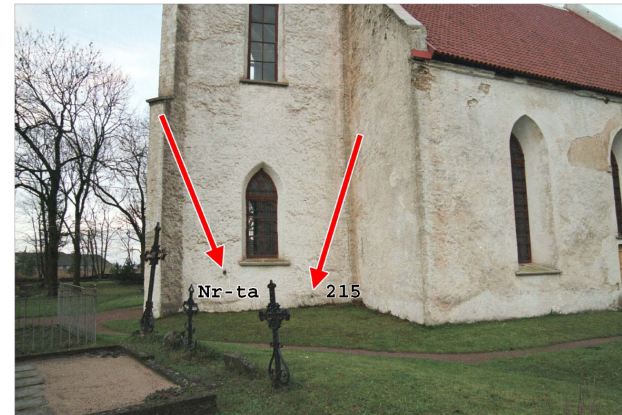
- Sketches

Coordinates:
RTK + line sections



ID nr:	63-961-90215	Märgi tüüp:	9319
Punkti nr:	215	Kõrgus maapinnast:	+0.43 m
Tsentri nr:	215	Välisvormistus:	
Punkti nimi:		Koordinaadid:	x= 6590312 y= 563761

Asukoha kirjeldus: Harju maakond Jõelähtme vald Rebala küla. EELK Jõelähtme kiriku kellatorni lõunaseinas.



Koostas: x. xxxx
Kuupäev: kk.aaaa

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- Levelling
 - Trimble/Zeiss DiNi12
 - NEDO LD (1m, 2m, 3m)
 - September → November



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- Regular calibration of rods at FGI



- Rod
- System
- Thermal expansion

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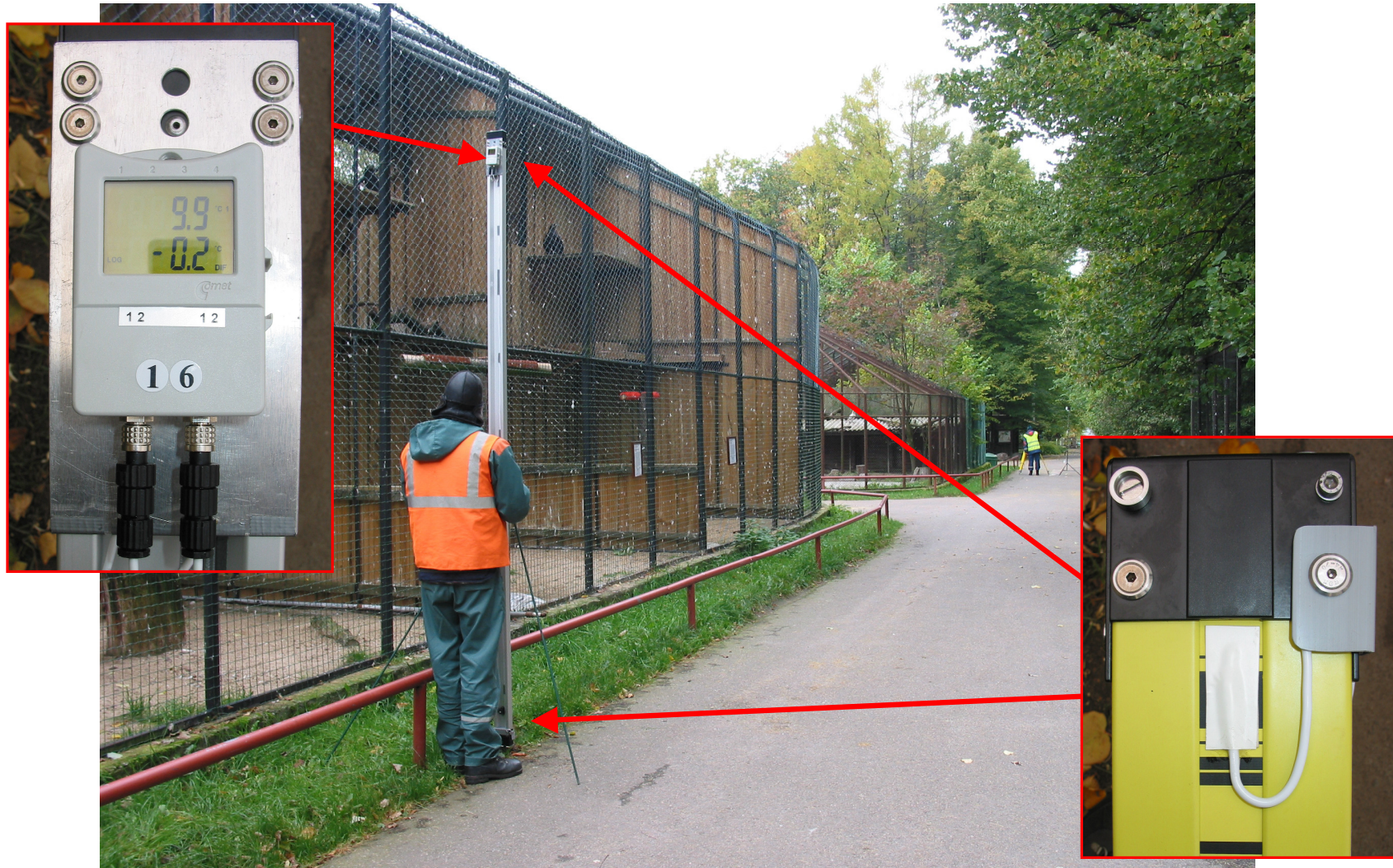


- Air temperature and gradient



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- Temperature of the invar band



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- Additional information

Internet Explorer 15:36

Questions

1. Staatus
2. Käigu nr
3. Line nr
4. Sektsiooni algreeper
5. Sektsiooni lõppreeper
6. Vaatleja
7. Varjuhoidja
8. Nivelliiri nr.
9. Logeri nr
10. Mõõtmiste suund

View Tools

Internet Explorer 15:36

Questions

11. Line nr
12. Jaama nr
13. Latioidja 1
14. Latt 1
15. Loger 1
16. Latioidja 2
17. Latt 2
18. Loger 2
19. Statiiv
20. Jaama pinnas
21. Vaia pinnas

View Tools

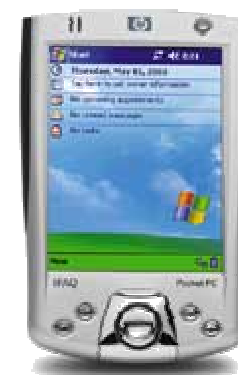
Internet Explorer 15:36

Questions

22. Kujutise stabiilsus
23. Pilvisus
24. Sademed
25. Õhurõhk [mbar]
26. Tuule kiirus [m/s]

<< PREVIOUS [CANCEL] FINISH >>

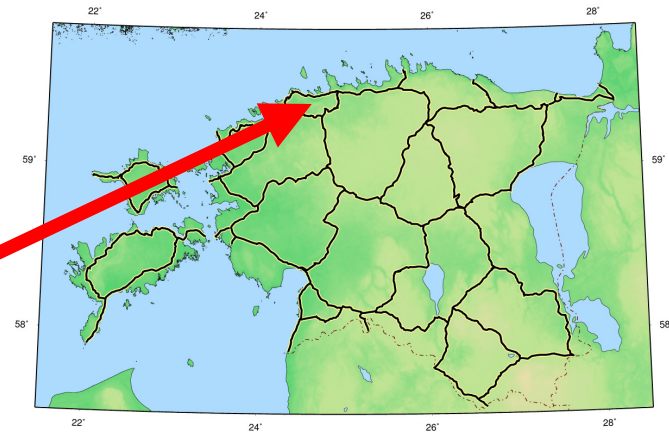
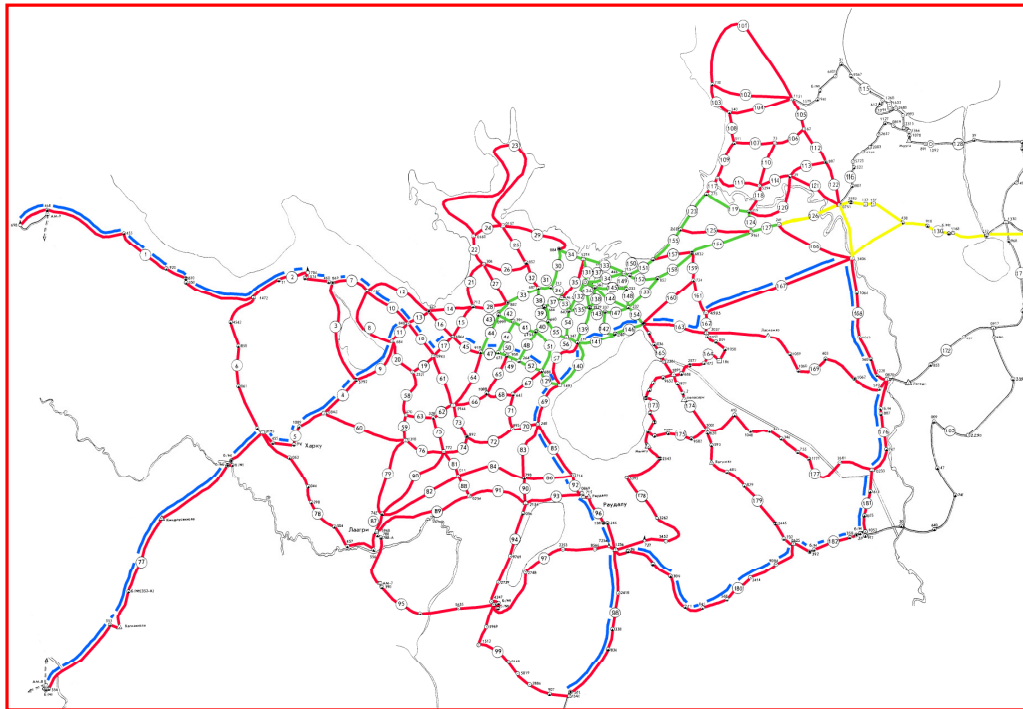
View Tools



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- Precision estimation

$$\eta = 0.14 \text{ mm/km} \quad \sigma = 0.05 \text{ mm/km}$$



Tallinn 2003 – 2004, length of the lines 320 km

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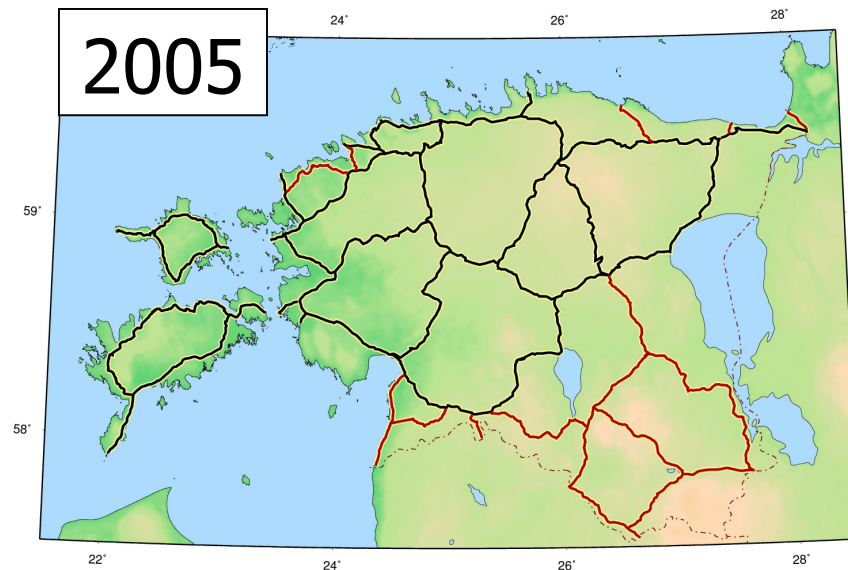
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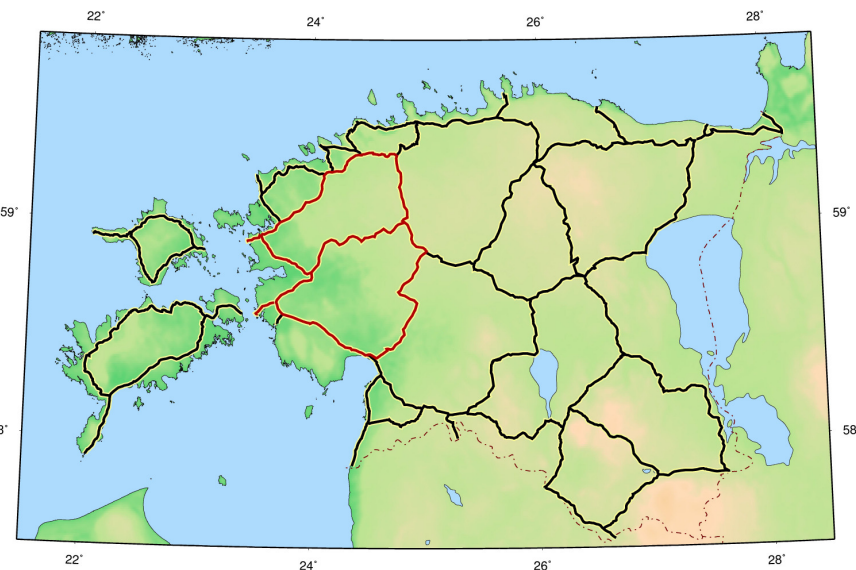
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- Schedule
 - Preparation of lines 2003 - 2006
 - Levelling 2003 – 2009
 - New height system 2010 ?



— Preparation of lines: 837 km



— Levelling: 519 km

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Relative gravity measurements

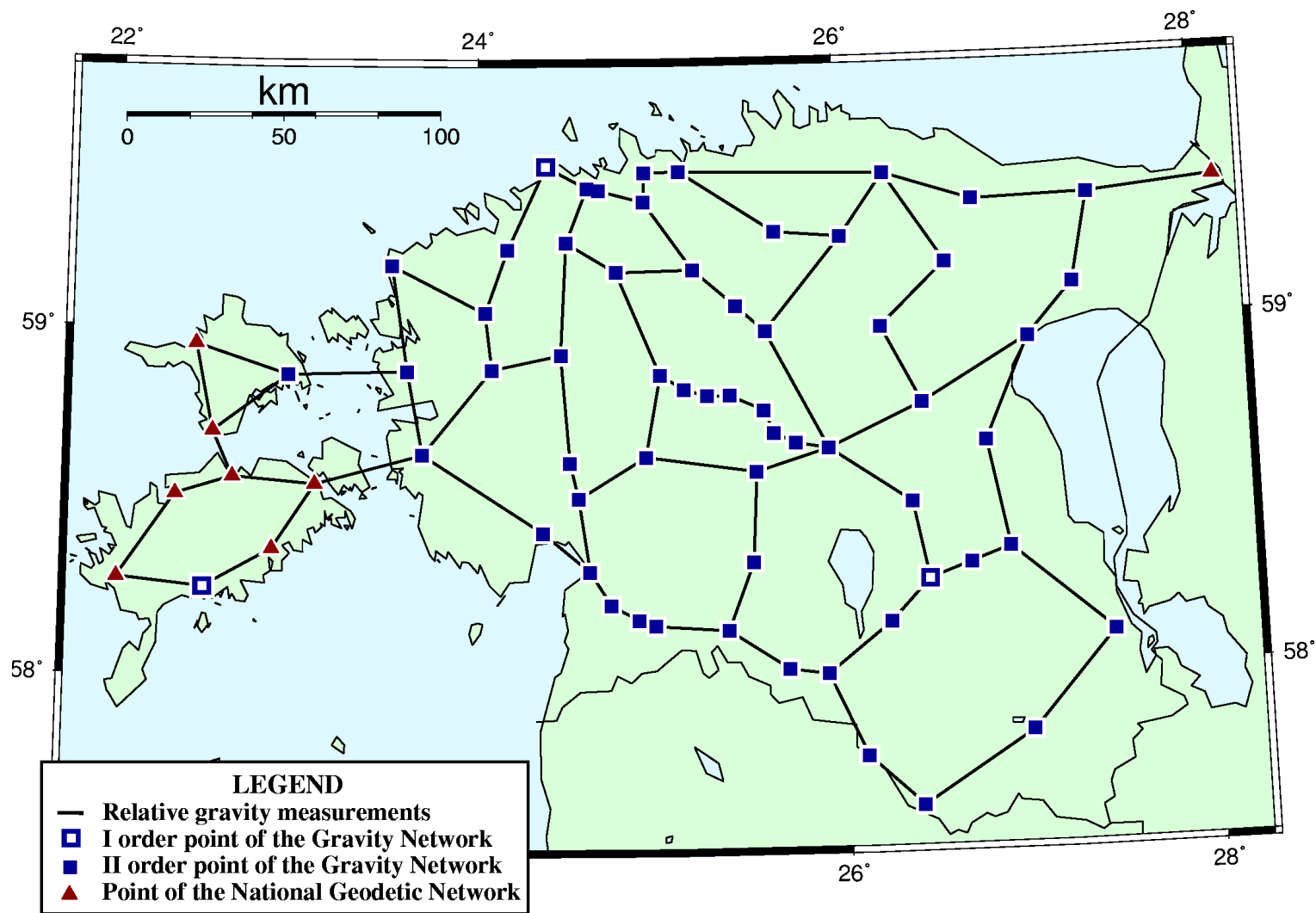
- LaCoste&Romberg gravimeters loaned from NGA, USA, 2001-2004
- Accuracy $\pm 10 \dots \pm 30 \mu\text{Gal}$ on average
- Scintrex CG-5 gravimeters since 2004



(ELB, T.OJA 2003)

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- Second order net



(ELB, T.OJA 2003)

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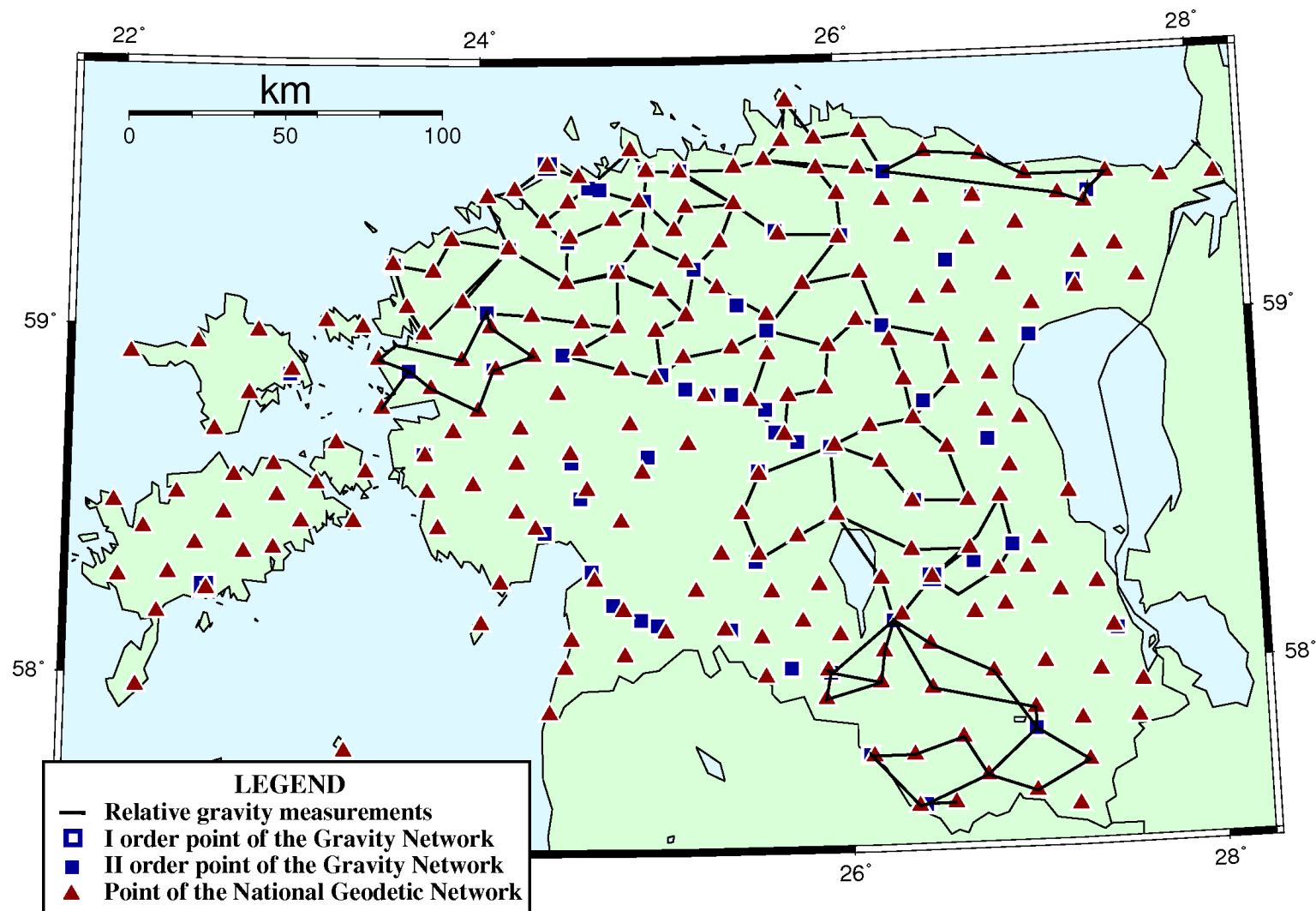
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- Third order net



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THANK YOU FOR YOUR ATTENTION !

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