



# National Report of Estonia 2013

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# Permanent Reference Stations

- Ongoing weekly combinations
- Bernese 5.0, Bernese 5.2 implementation
- Submission to EUPOS Combination Centre
- Co-operation with NKG Geodetic Commission

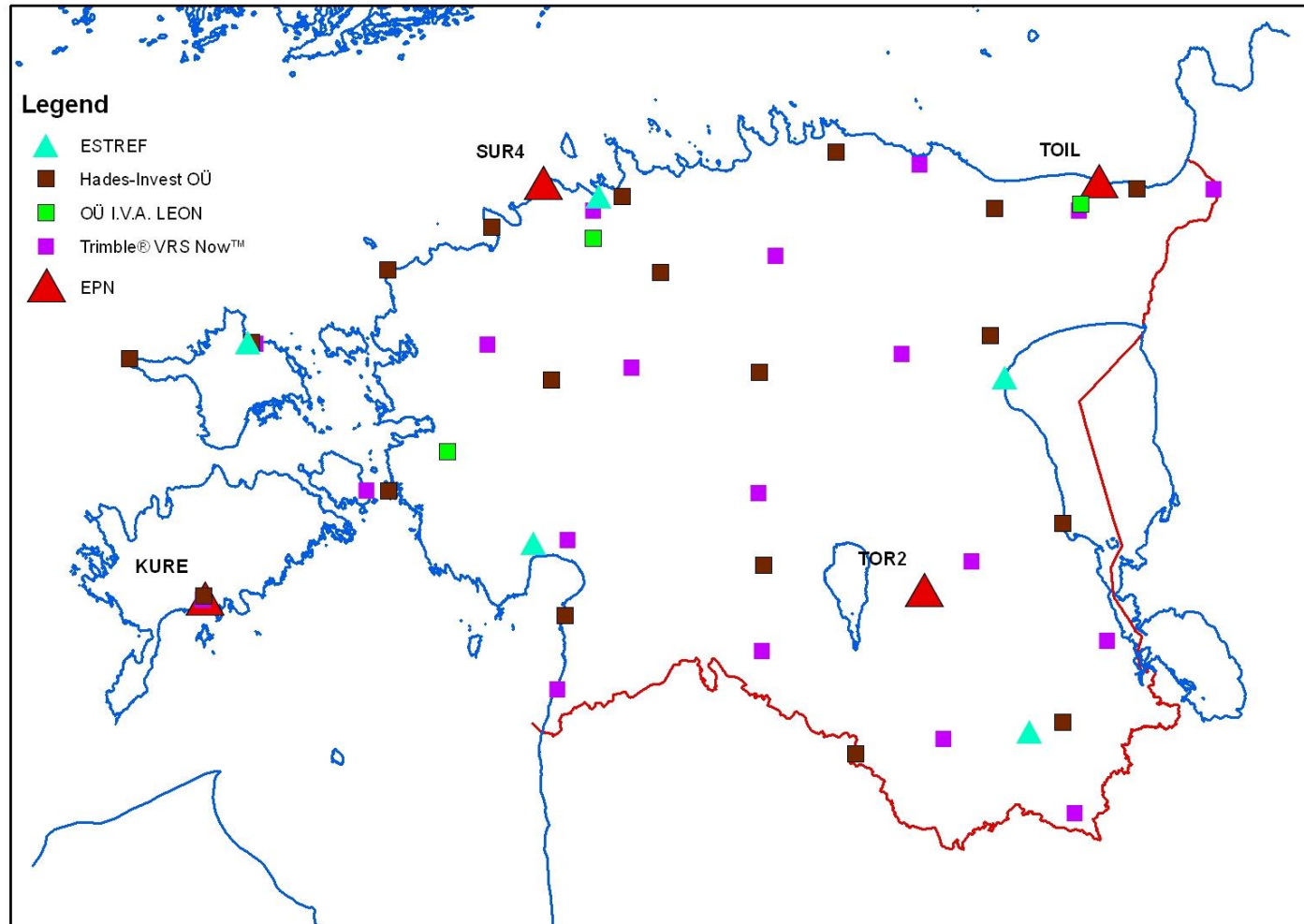


Fig. 1. GNSS Permanent Station Network



# Precise Levelling Network

- 1st order levelling in year 2012 – 345 km
  - Connections to newly established fundamental benchmarks
  - Levelling lines established in polygons, which were too big, in order to establish better connections for municipality networks
- 1st order levelling in year 2013 – ca 210 km

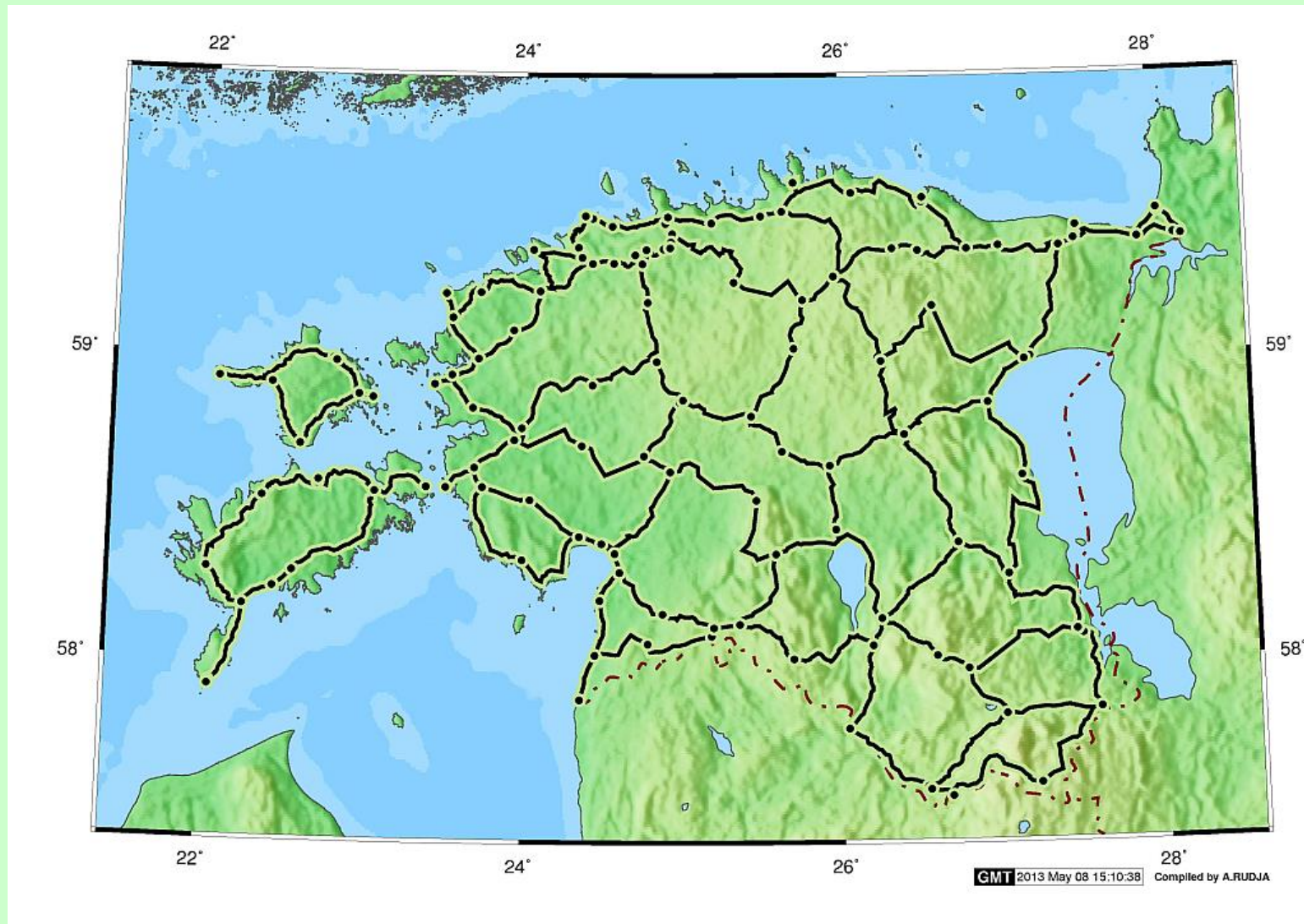


Fig. 2. The I order levelling network



# Gravity activities

- The main works in 2012-2013:
  - Dense gravity surveys in Western Estonia
  - Gravity surveys ice-covered large lakes and marine areas near the coast
  - Preparation of the Estonian gravity database (Fig. 3)
- In 2012 a joint cooperation project was initiated between the Nordic and Baltic countries for the computation of new regional geoid model NKG2014



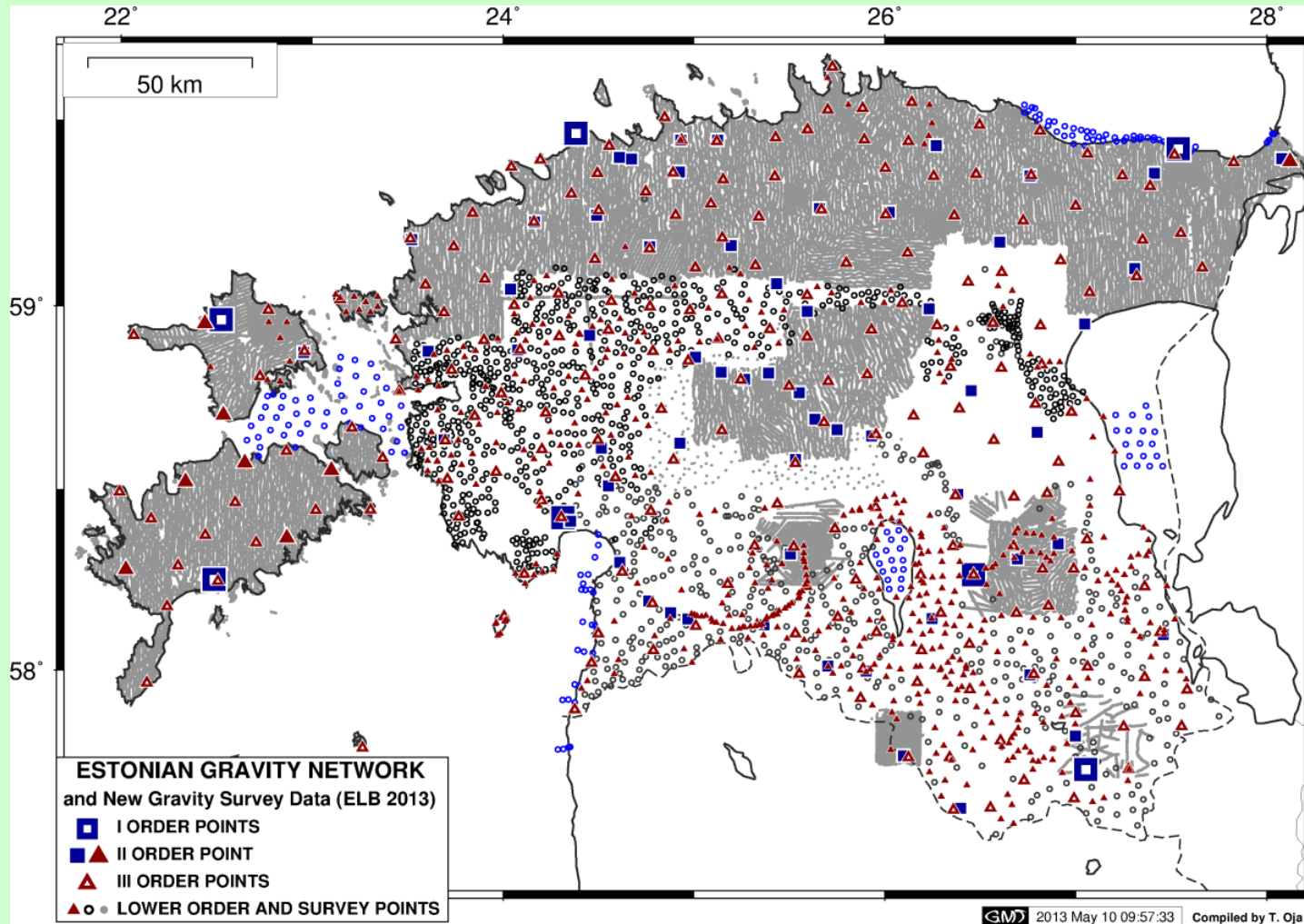


Fig. 3. The database of gravity network and survey points (May 2013)

- In Winter 2012/2013 gravity measurements on frozen sea were carried out in Väinameri area and along the North-Eastern coast (Fig. 4)



Fig. 4. Gravity survey in Väinameri in Winter 2013. Special lightweight crawler was used for transportation of 3-person team and equipment on ice with thickness of about 40 cm



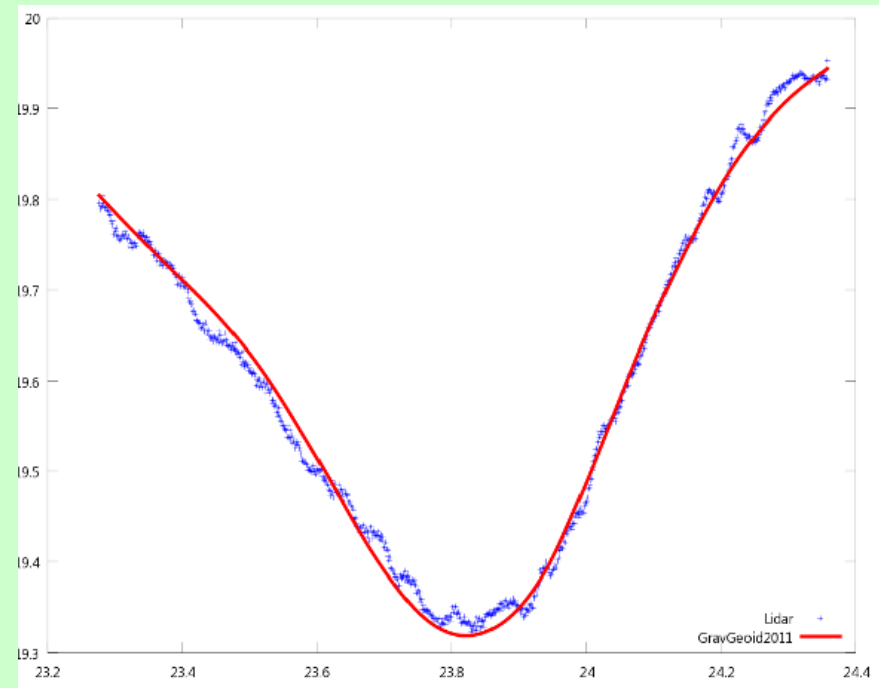


# Laser scanning

- In 2012 airborne laser scanning (ALS) was used for measuring sea surface topography in West-Estonia
- Two test areas were chosen where the anomalies in gravimetric geoid were significant and the gravimetric data were sparse
- The ALS measurements for sea surface determination will continue in 2013 in North-Estonia



- Tests showed that the ALS measurements can determine the sea surface within 20 cm



**Fig. 5.** ALS measurements are marked with blue colour and gravimetric geoid surface with red



# Local networks, maintenance of geodetic marks and legislation

- 1st order local network reconstructed in 1 community
- In 2012 about 250 points inspected
- Recognition of new locations for GNSS permanent stations
- In connection of Spatial Data Act
  - Decree of Geodetic Works is in progress



# Thank you for the attention!