

National Report of Estonia 2017

Karin Kollo, Priit Pihlak, Tõnis Oja

Estonian Land Board, Mustamäe tee 51, 10621, Tallinn, Estonia

1. GNSS permanent reference stations

The Estonian GNSS permanent reference station network (ESTPOS) consists of 28 CORS stations, in 14 locations meteosensors are installed (see Fig.1).

From January 2017 all Estonian EPN stations submit RINEX 3 data. Within the framework of the Nordic Geodetic Commission (NKG) reprocessing of old CORS data has started, in Estonia we have recomputed data for the period 2007-2016.

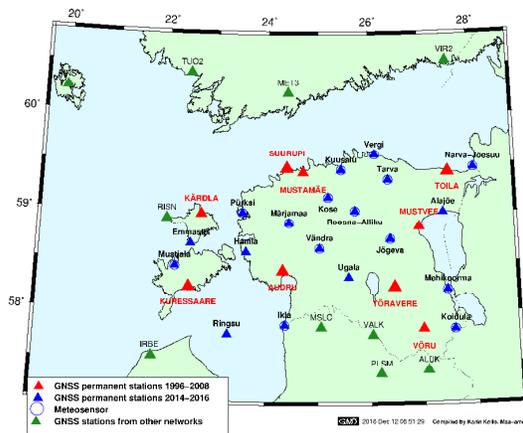


Fig.1. ESTPOS network

2. Levelling network

The Estonian levelling network was reconstructed between 2003 and 2016. Altogether there are ca 4300 km of levelling lines, ca 3100 benchmarks.

The distance between benchmarks is approximately 1.4 km. In Fig.2 the height network is presented.

While connecting the levelling network in mainland and islands, the connections were made in six harbours. The Estonian and Latvian levelling networks were also connected via four levelling lines.

The difference in heights for the whole network was about 0.23 kgal*mm.

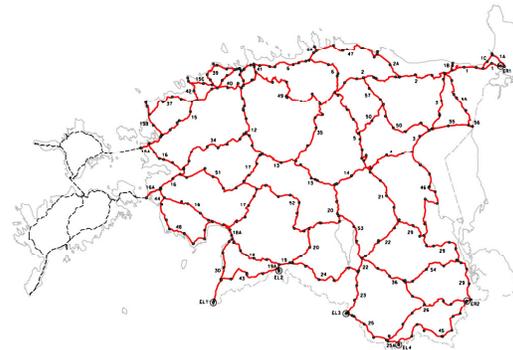


Fig. 2. I order levelling network

In 2018, a new height system will be introduced in Estonia. The new height system will be based on EVRS realisation EVRF2007 and will be known as EH2000, epoch 2000. The new gravity system will also be introduced by the name of EG2000 and epoch 2000. Within the change of height and gravity systems, a new geoid model will be implemented.

For the new height system transformation parameters shall be available, and adjustment and integration of local levelling networks will be performed.

3. Local height networks

In 2014-16, local height networks were reconstructed in 10 municipalities (Fig. 3).

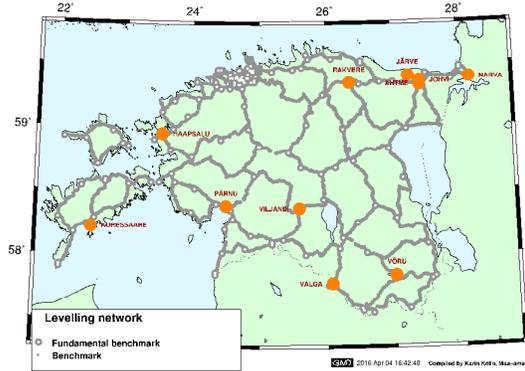


Fig. 3. Reconstructed local height networks

3. Geoid studies

In 2015 about 40 geoid models from the TUT computation centre (modelled by using different gravity anomaly grids, computation methods and software packages) were computed.

From the evaluation of the geoid models with simple 1-parameter fit the standard deviation was ± 0.8 cm (see Fig. 4).

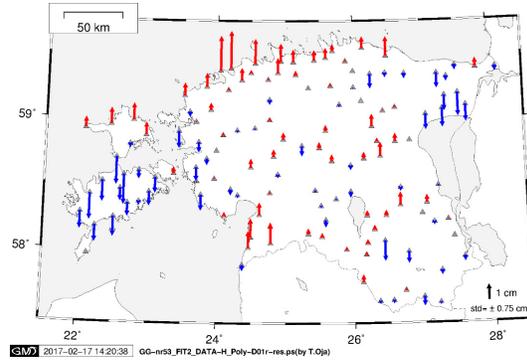


Fig. 4. Estonian quasigeoid model by S.Märdla (2017).

4. Gravity surveys

In coming years we shall check historical data in the region of Gulf of Riga and Lake Peipsi. New surveys will be performed in swamps, areas without roads, border zones, and in coastal areas (~ 5 km from the coast, see Fig. 5).

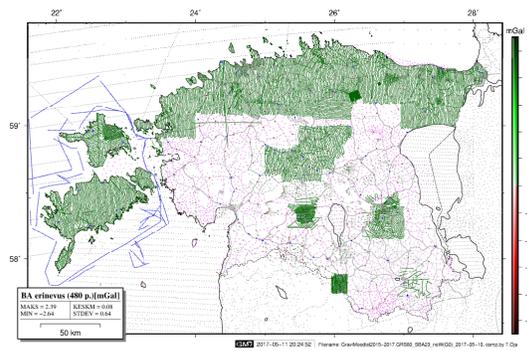


Fig. 5. Gravity surveys