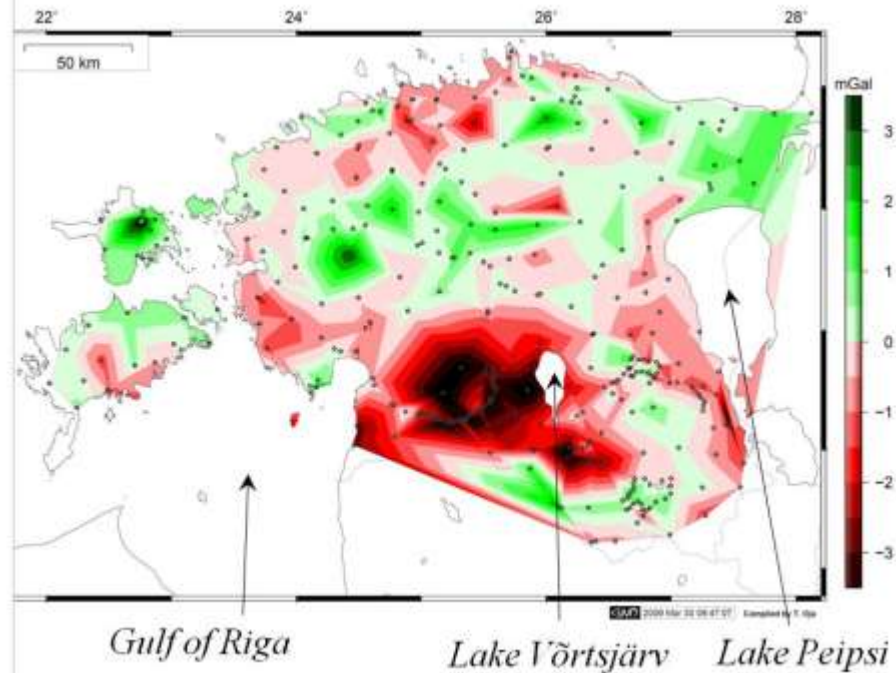
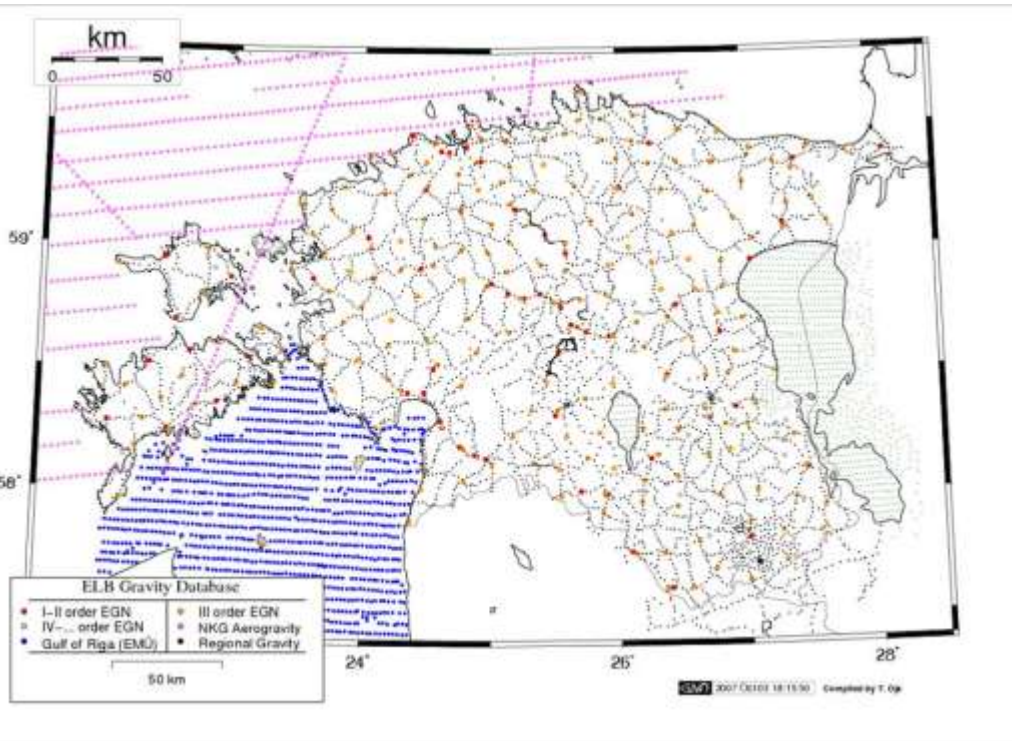


Relative gravity surveys on ice-covered water bodies

T. Oja (1), K. Türk (2), A. Bloom (1), M. Sulaoja (2), A. Ellmann (3)

- (1) Estonian Land Board, Mustamäe tee 51, Tallinn, Estonia,
- (2) Department of Geomatics, Estonian University of Life Sciences, Kreutzwaldi 5, Tartu, Estonia,
- (3) Department of Civil Engineering, Tallinn University of Technology, Ehitajate tee 5, Tallinn, Estonia

Evaluation of historic gravity datasets in Estonia:



Ellmann, A.; All, T.; Oja, T. (2009). Toward unification of terrestrial gravity data sets in Estonia. *Estonian Journal of Earth Sciences*, 58(4), 229 - 245

New gravity surveys over the frozen lakes Vörtsjärv (left) and Peipsi (right) in 2009

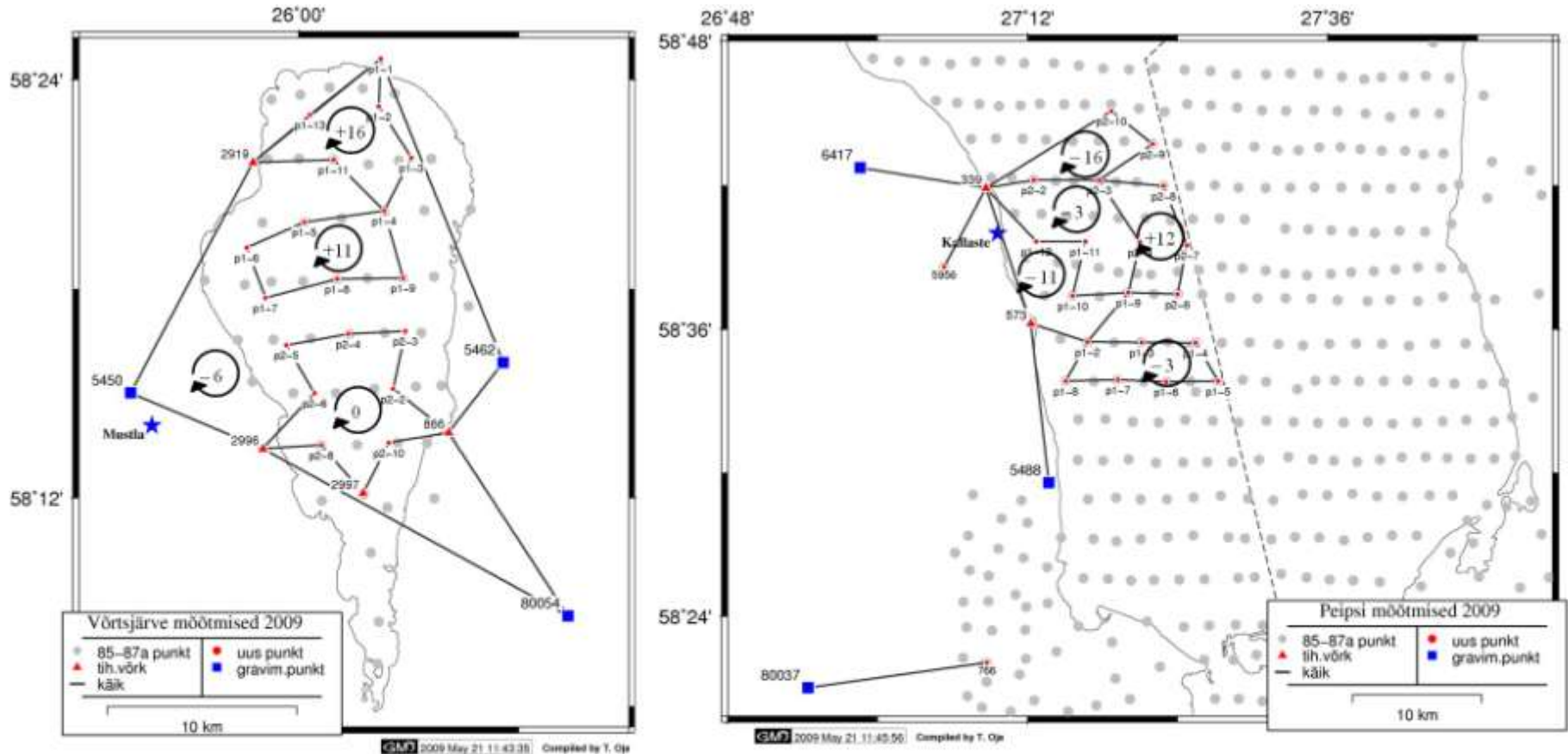


Figure 3. New gravity survey points (red dots) observed over the frozen lakes Vörtsjärv (left) and Peipsi (right) in 2009. Most of the survey points were placed near the historic points (gray dots), reference points of the surveys were connected to the 2nd, 3rd order gravity network points (blue dots). Misclosures are in μGal .

In 2010 on the sea ice along the east coast of the Gulf of Riga

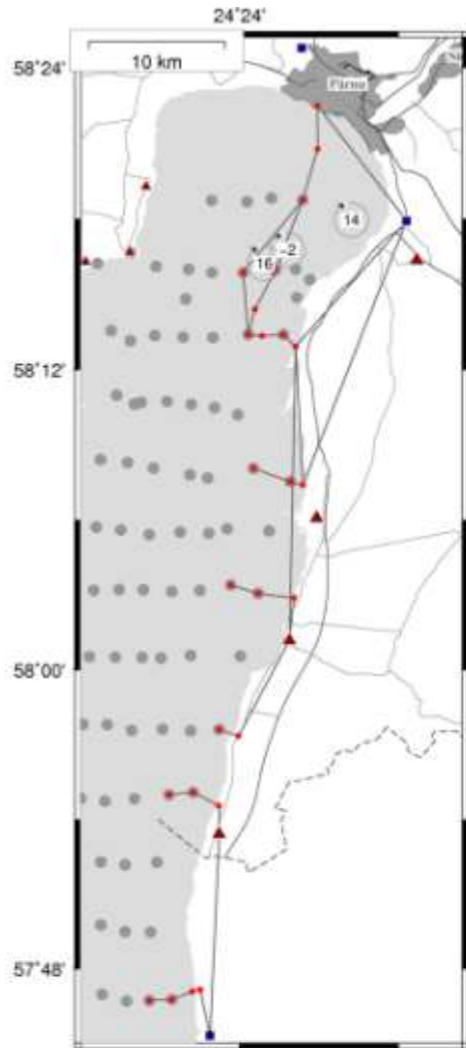


Figure 4. New gravity survey points observed on the ice of sea



Figure 5. Gravity survey at lake Peipsi (a) with a special vehicle "Karakatitsa", in the Gulf of Riga on foot (b) as well as by snowmobile (c). Good consistency of the results of ICR G and

The oscillation of ice surface

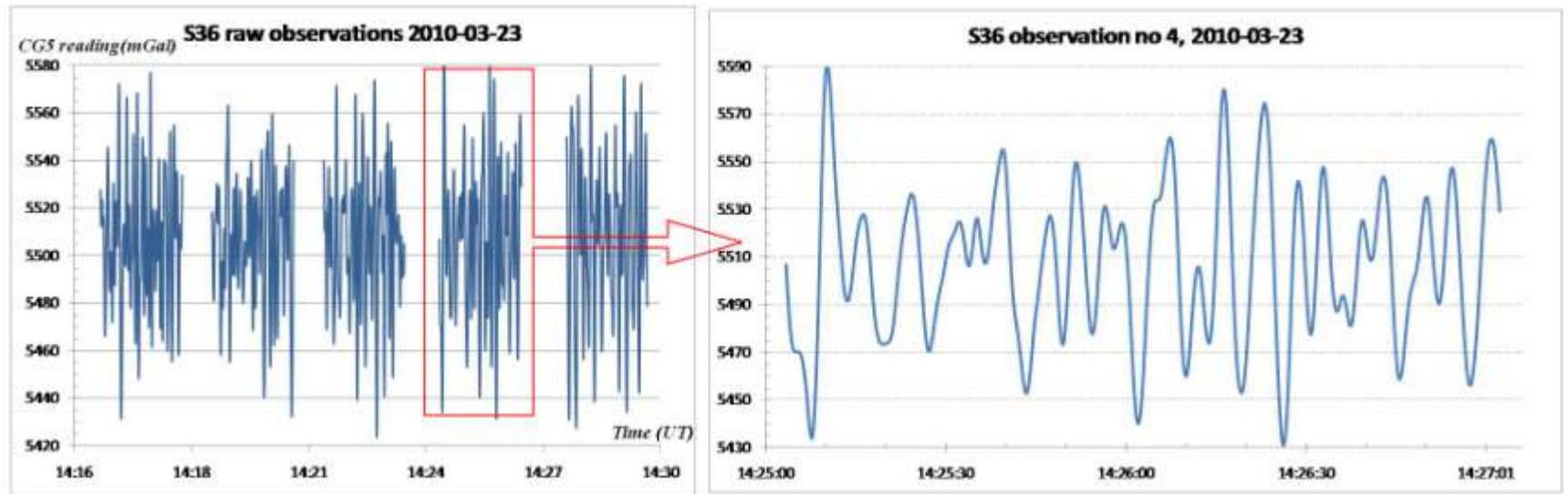
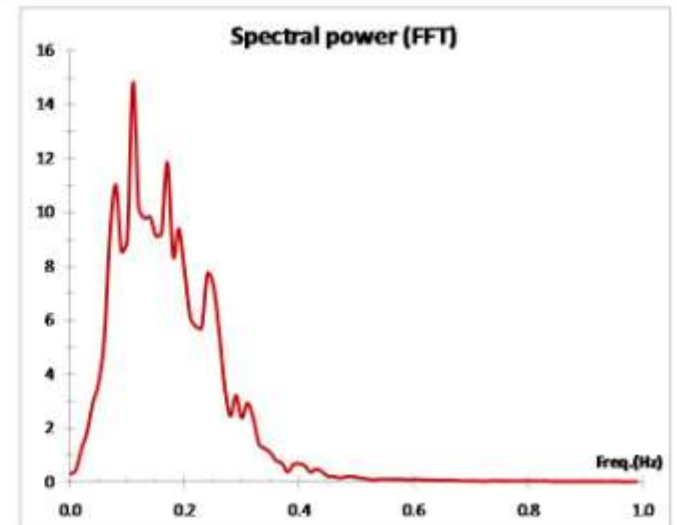


Figure 6. Raw signal (6 Hz, converted to mGal) of Scintrex CG5 gravimeter (five 120 s readings) on the ice covered Gulf of Riga on March 23, 2010, when the most extreme oscillations of ice surface were observed.

Right: the spectrum of five 120 s readings. The peaks can be observed near the frequencies 0.11, 0.17 and 0.08 Hz (the waves with periods 9, 6 and 12.5 s respectively).



Comparison of historic and new data:

Acknowledgements

This study and T. Oja participation in the assembly is funded by the Estonian Science Foundation grant ETF 7356.

