Latvian Geospatial
Information Agency

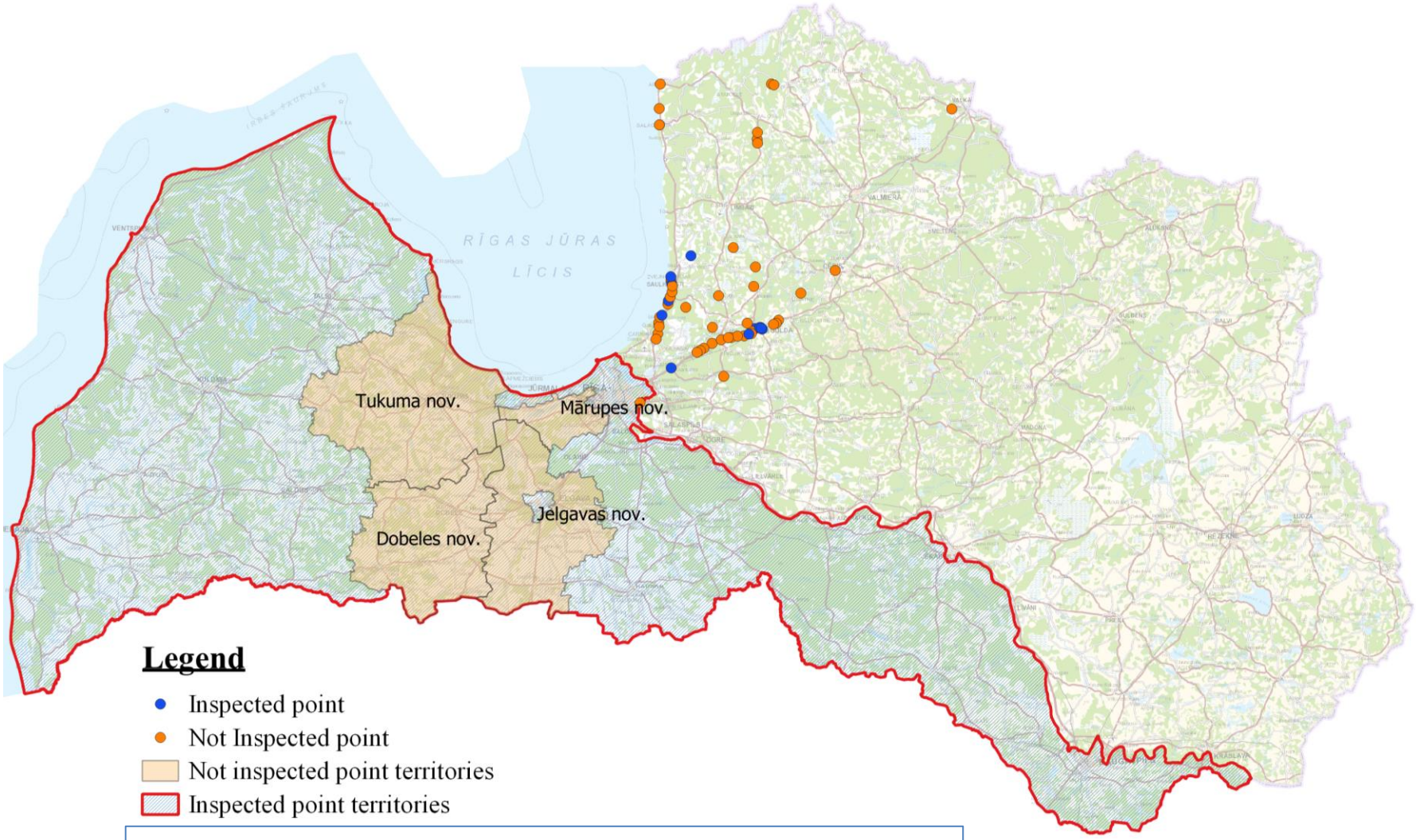
Latvian Geospatial Information Agency national report

NKG Working Group of Reference Frames

Tallinn, Estonia, 30.-31.03.2023.

Department of Geodesy
Geodetic data control division
senior geodetic engineer Aigars Keiselis

Benchmark inspection in territories on left cost of river Daugava in 2022



1277 benchmarks in total:
776 ground benchmarks and 501 wall benchmarks

State geodetic network database

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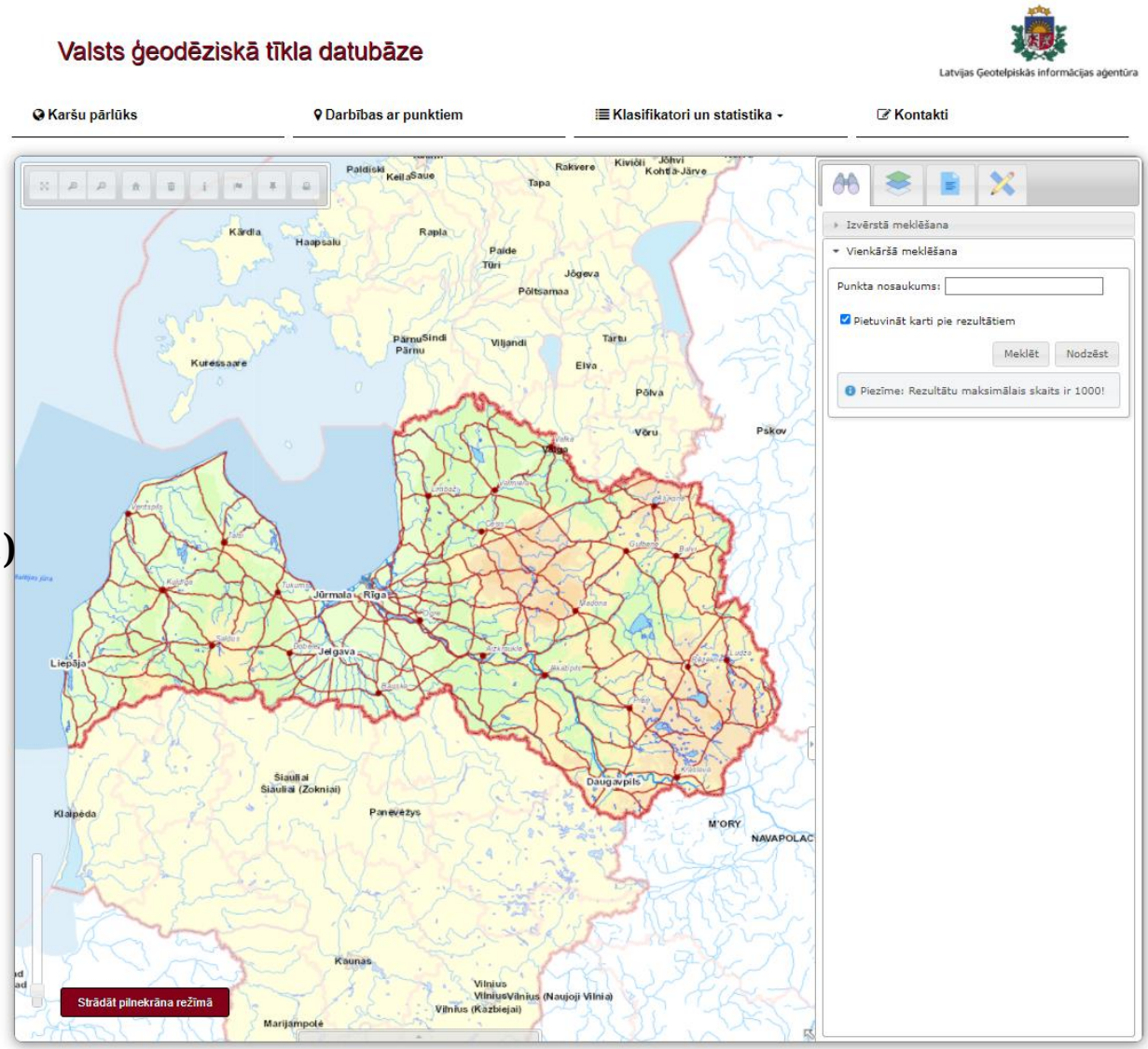
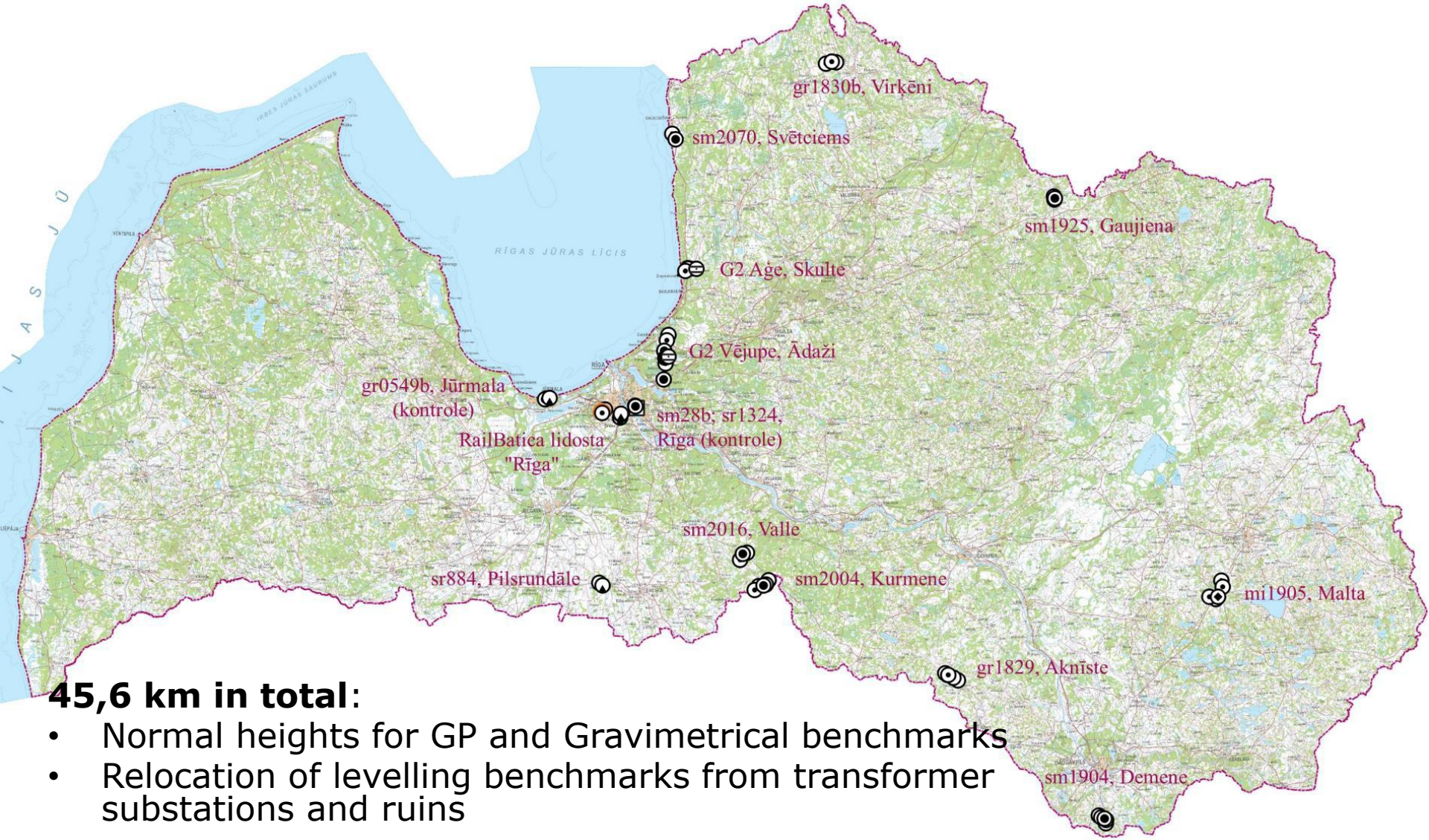
Link: http://geodezija.lgia.gov.lv



<u>In total</u>: 2965 points
(data on 23.03.2023.)

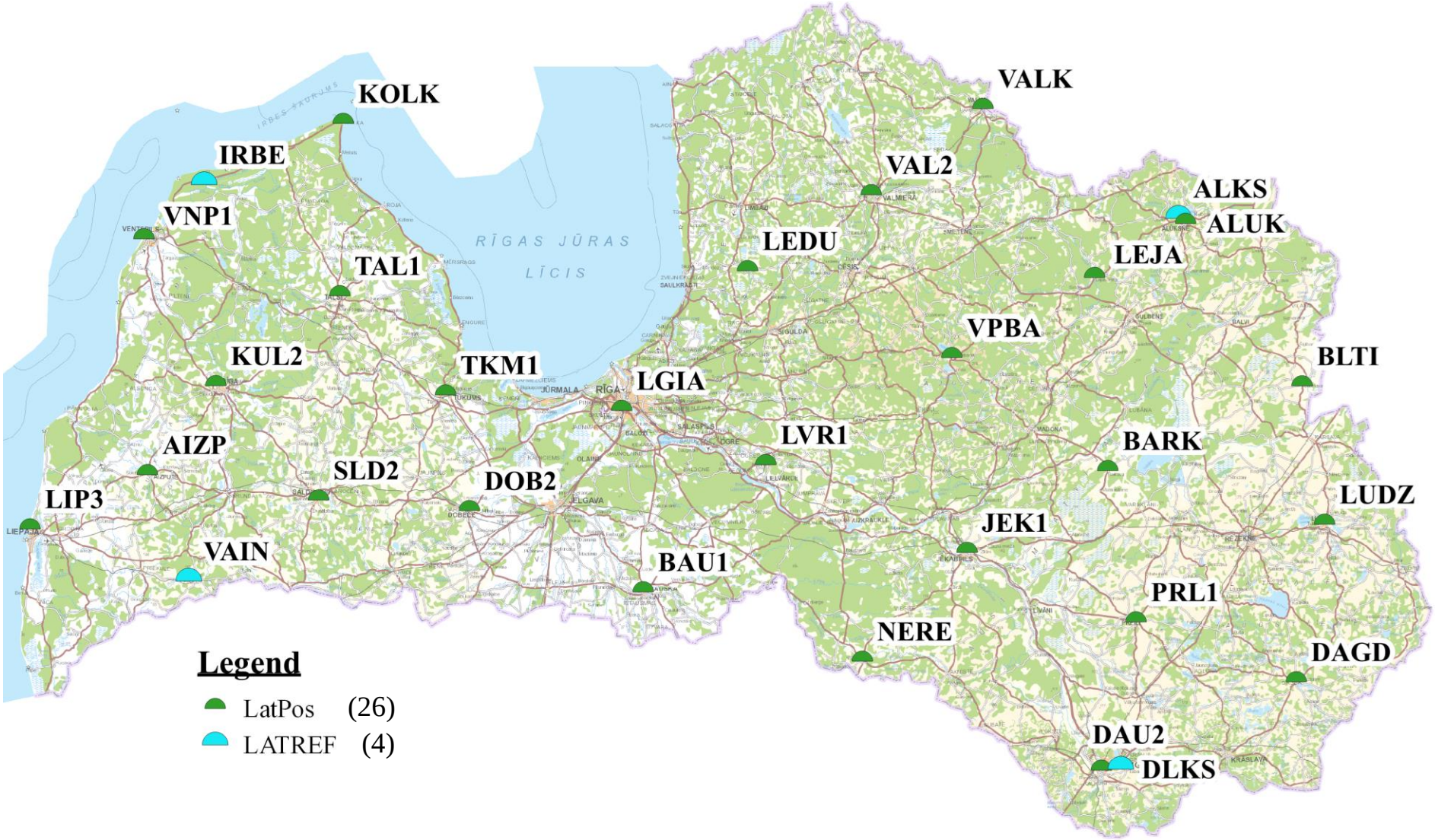
Levelling in 2022



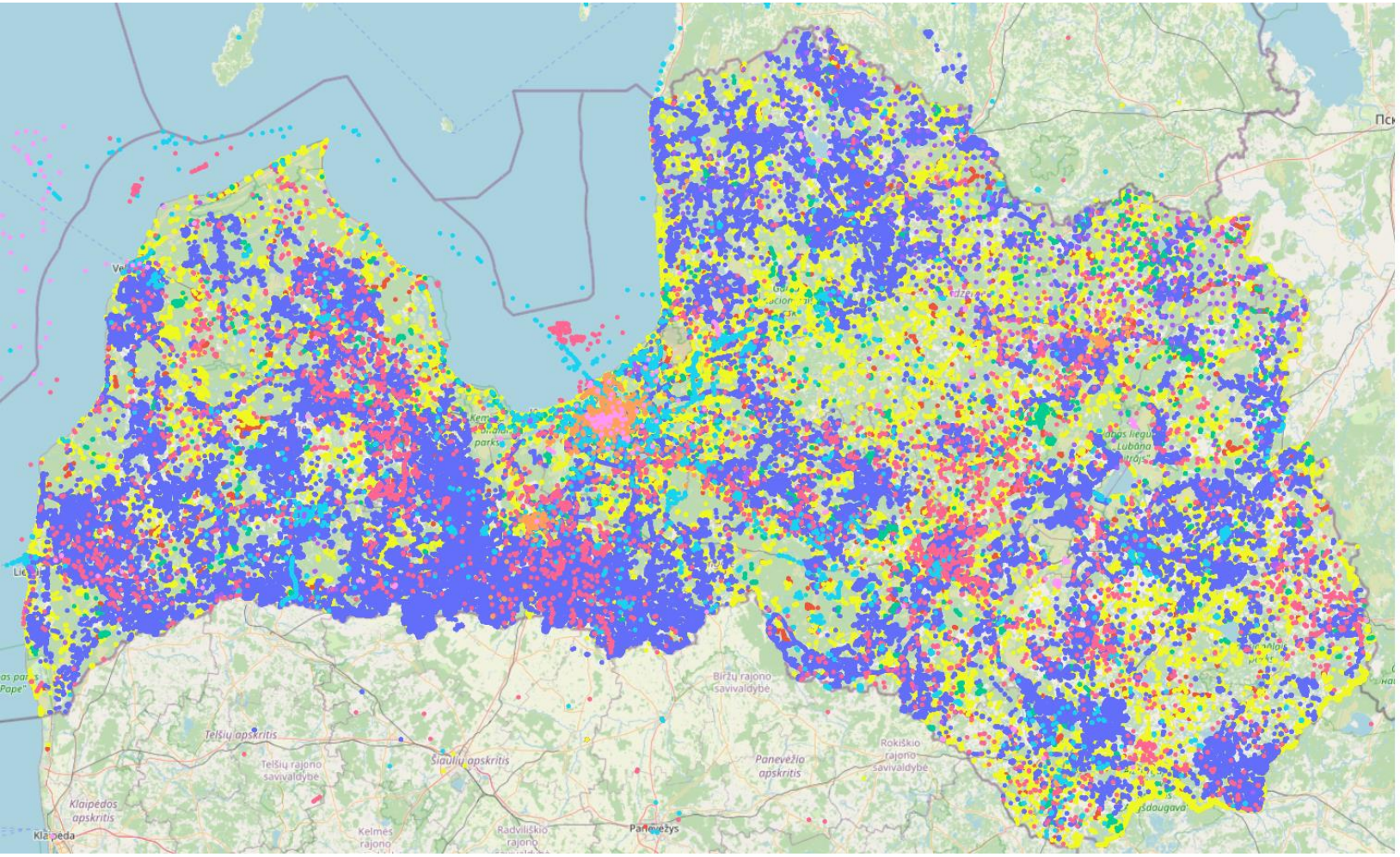
45,6 km in total:

- Normal heights for GP and Gravimetrical benchmarks
- Relocation of levelling benchmarks from transformer substations and ruins

LatPos and LATREF base stations 2022



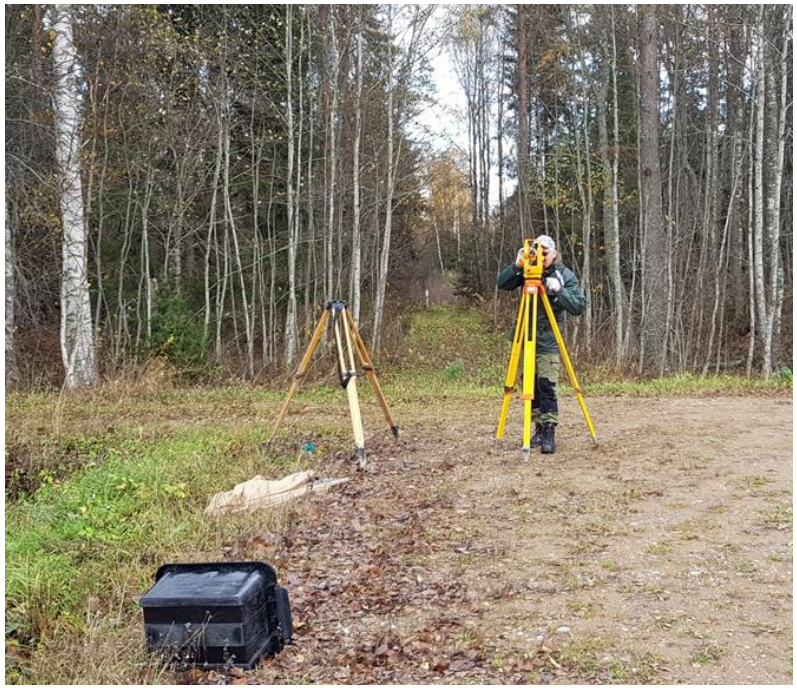
LatPos RTK users statistics
(data about all 2022)

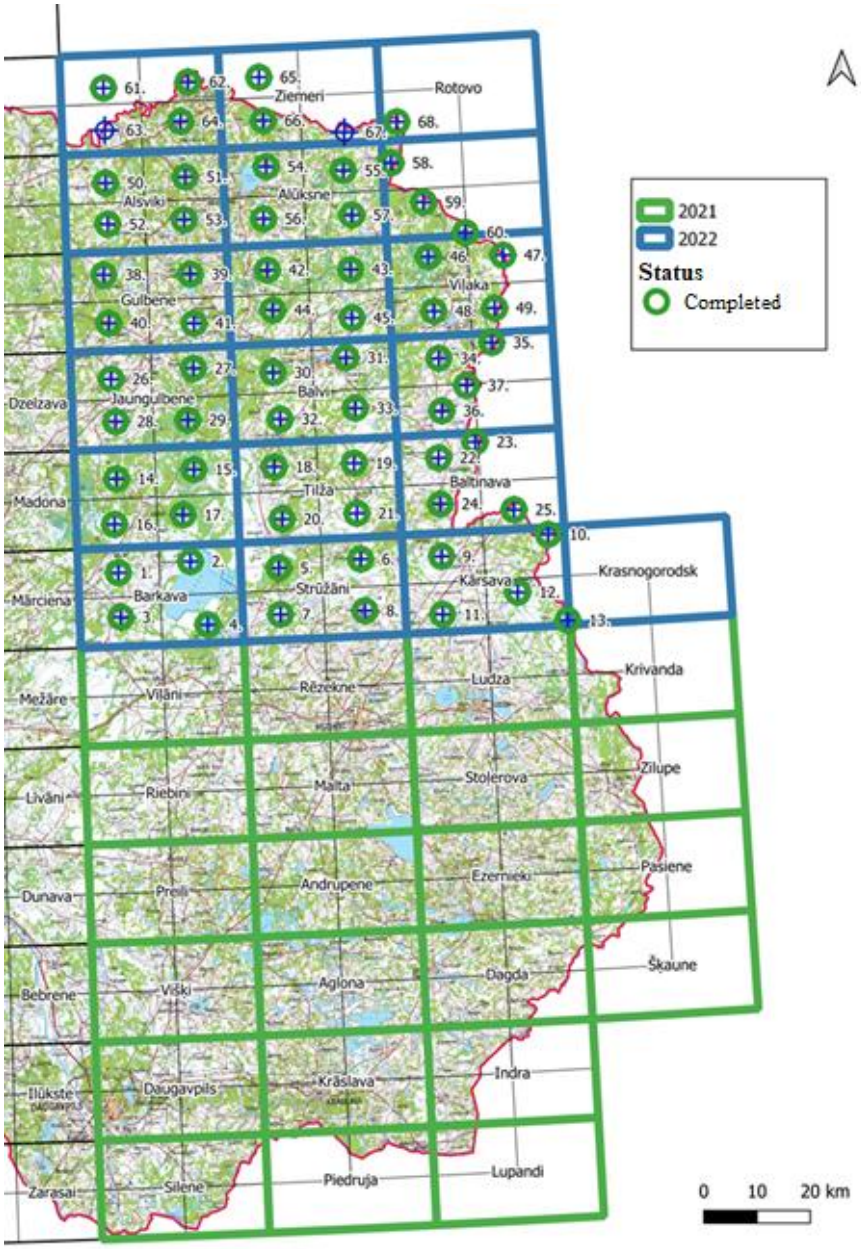


942 955 connections to LatPos network in total

Observations and calculations of geomagnetic parameters in 2022

- Observations and calculations for 1:25k map sheets (66 points);
- Observations and calculations for airfields and helipads;
- Repeated measurements on 1st order geomagnetic network (Mg1) points





Calibration of gravimeters

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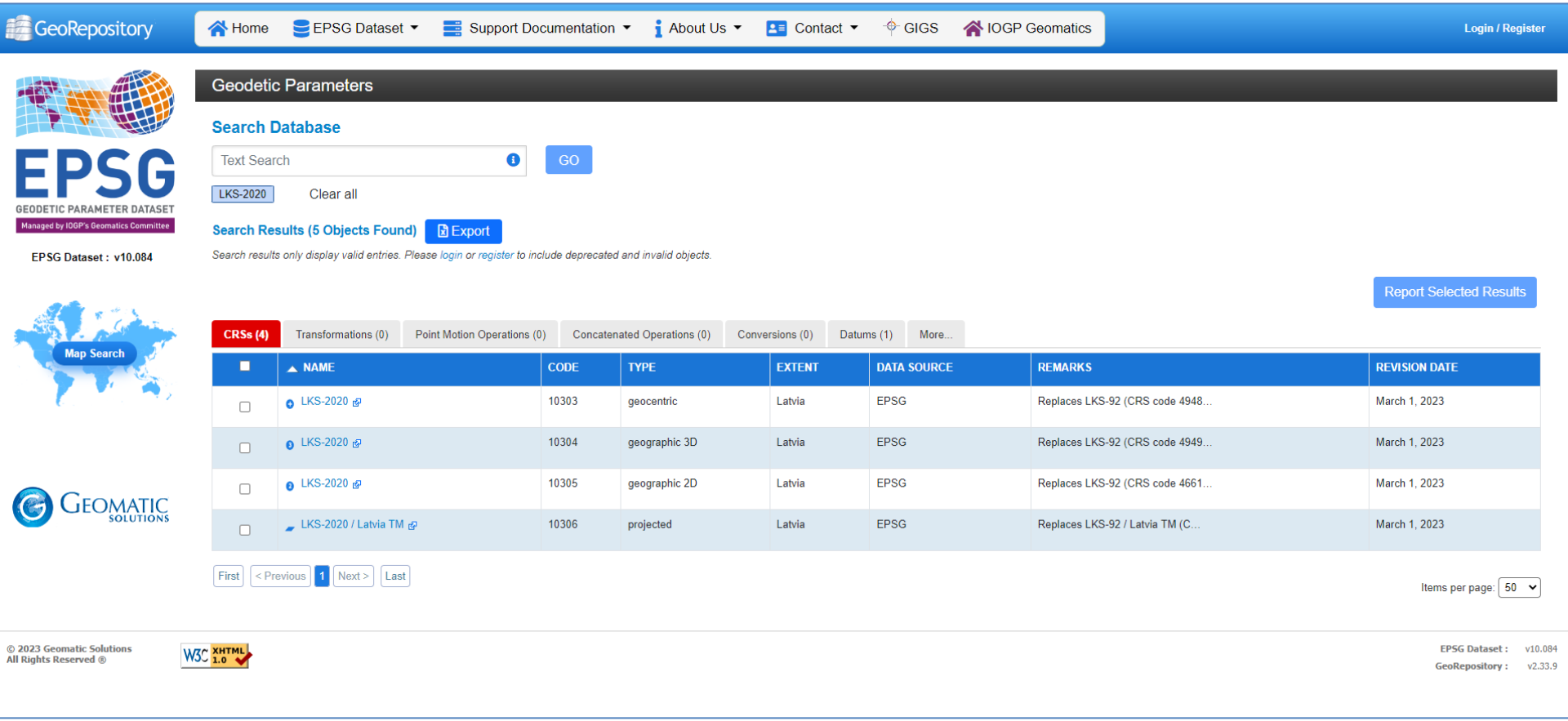
Calibration of the 3 gravimeters were carried out in Estonia in March 2022. Used Estonian Land Board *Maa-amet* calibration line TOILA-TORAVERE-HAANJA

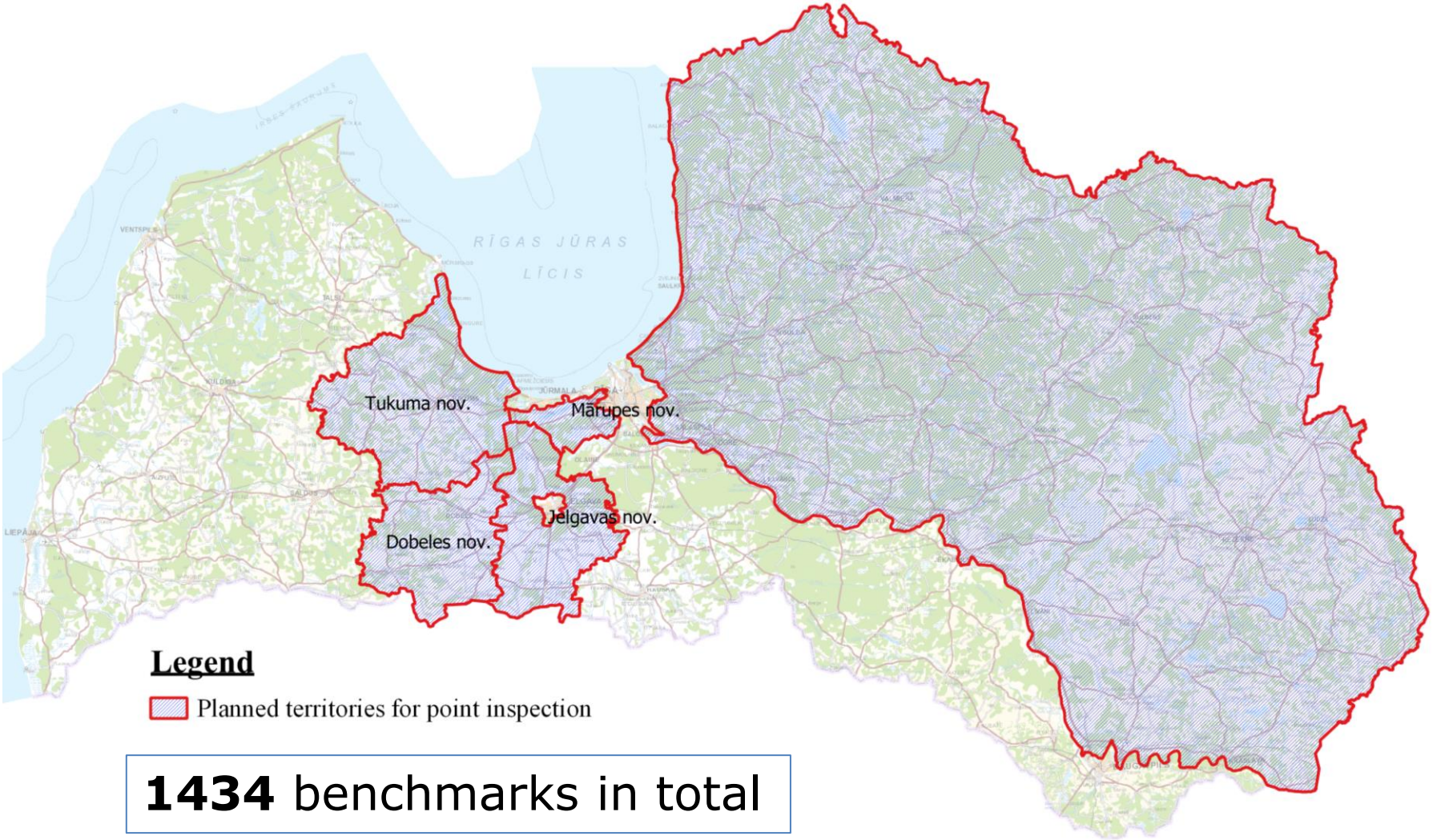
In EPSG Geodetic Parameter Dataset registry assigned code for LKS-2020



Source [https://epsg.org/search/by-name?sessionkey=cxgv7lxpnb&searchedTerms=LKS-2020&displayTabs=more]

- **Work on nTV2 surface (based on adjusted GNSS observation data on State geodetic network points performed from 2019 till 2021) file for conversion between geodetic reference systems/realizations**

Benchmark inspection on right cost of river Daugava in 2023



1434 benchmarks in total

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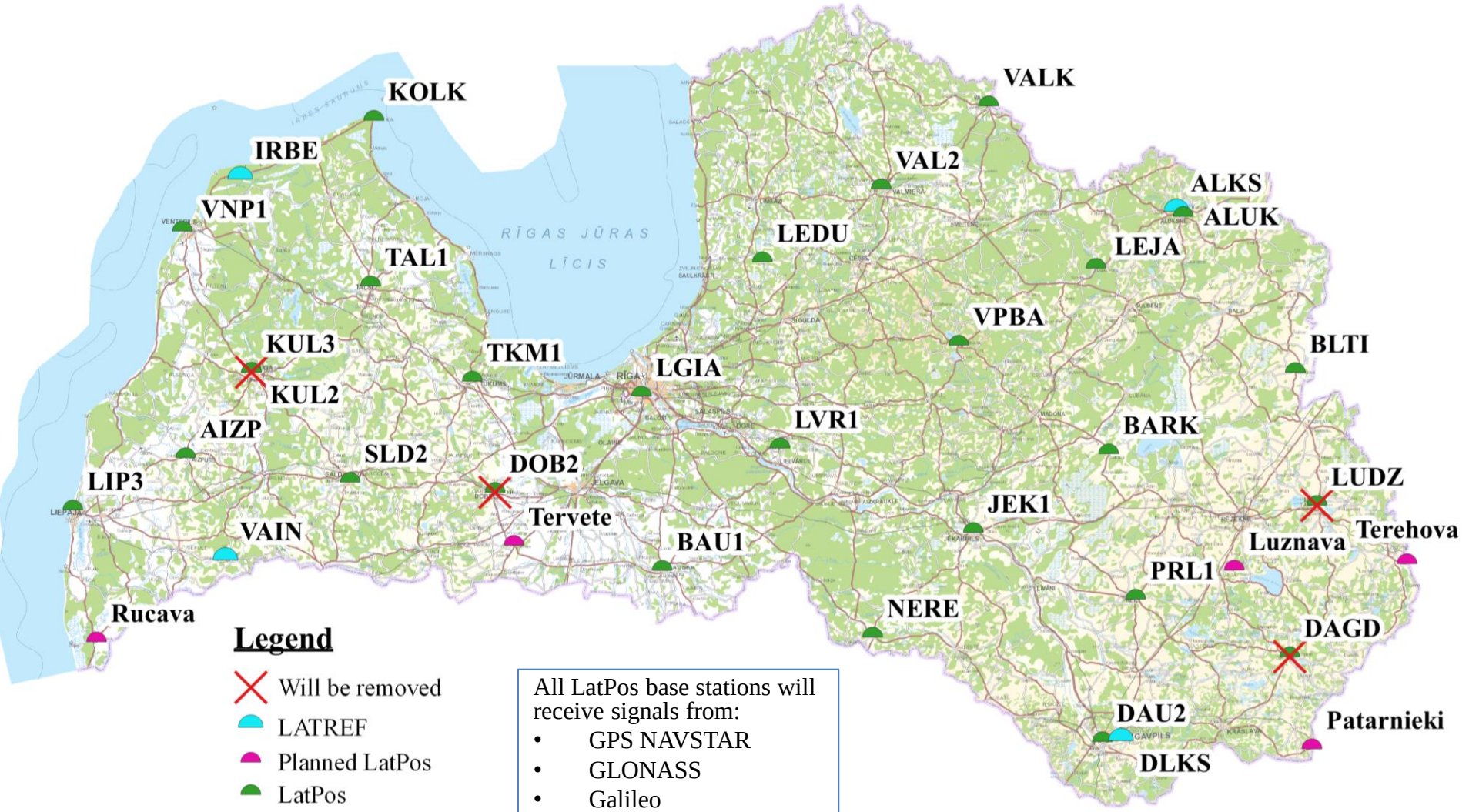
Levelling in 2023

- Normal heights for 2nd order Gravimetrical network (Gr2) benchmarks

- Continued relocation of levelling benchmarks from transformer substations

Future plans for LatPos base stations



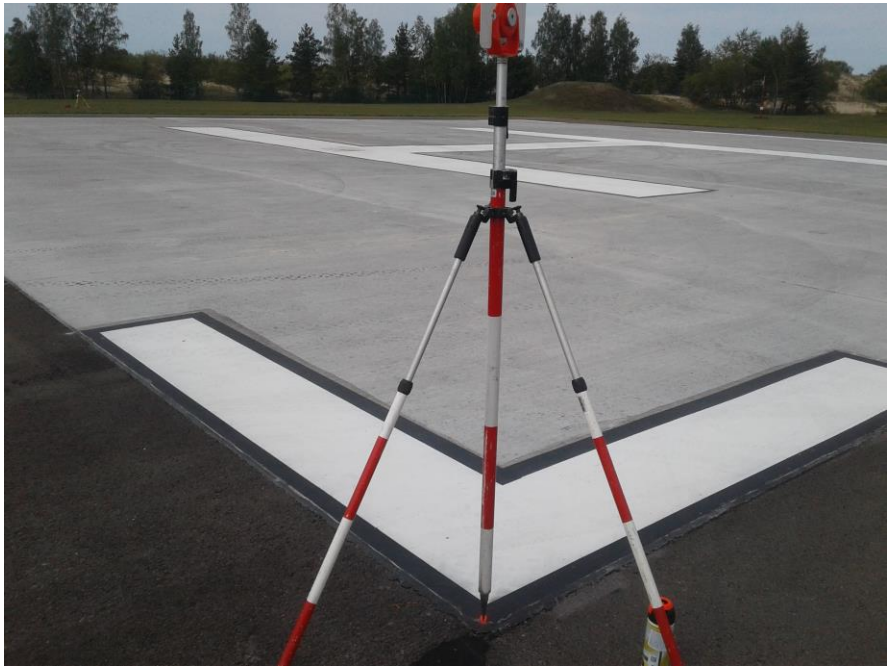
All LatPos base stations will receive signals from:

- GPS NAVSTAR
- GLONASS
- Galileo
- BeiDOU

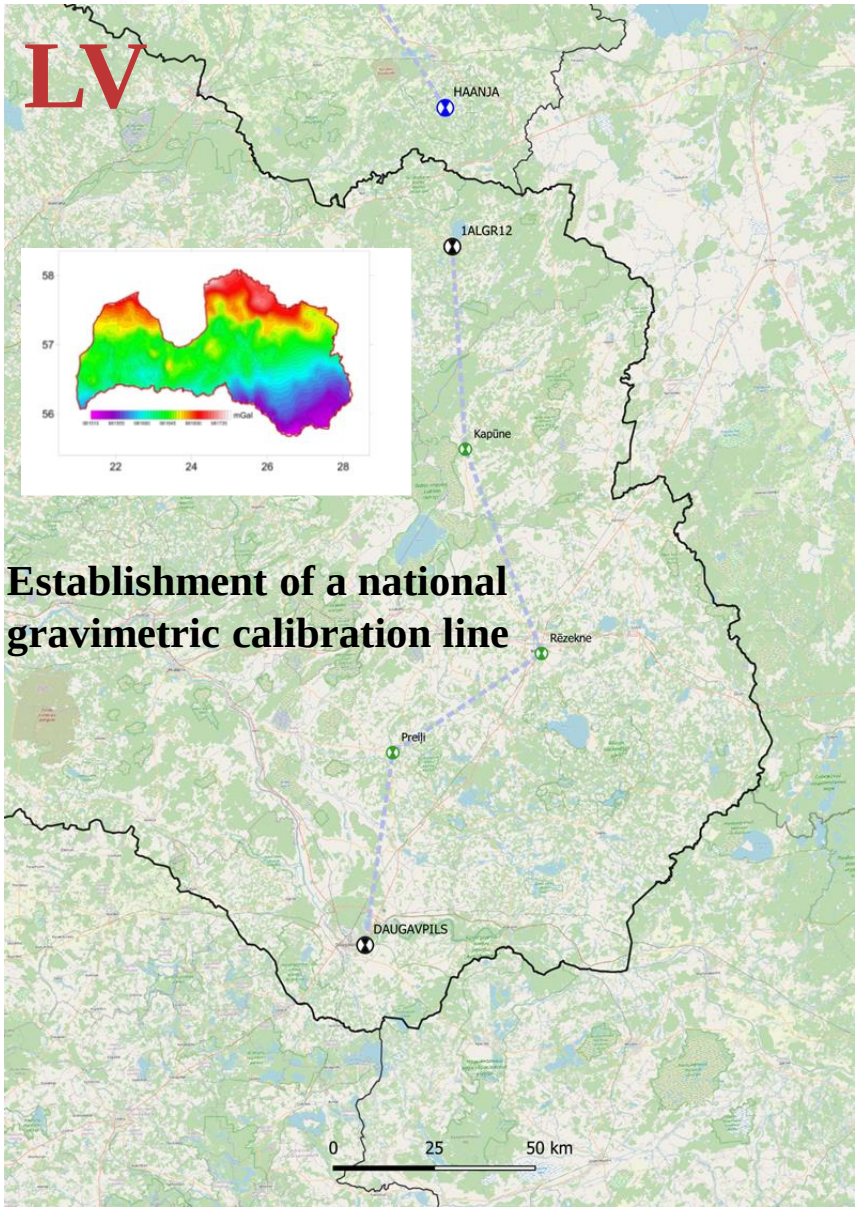
Geomagnetic measurements in 2023

- provide magnetic declination measurements for 78 points for cartographical purposes

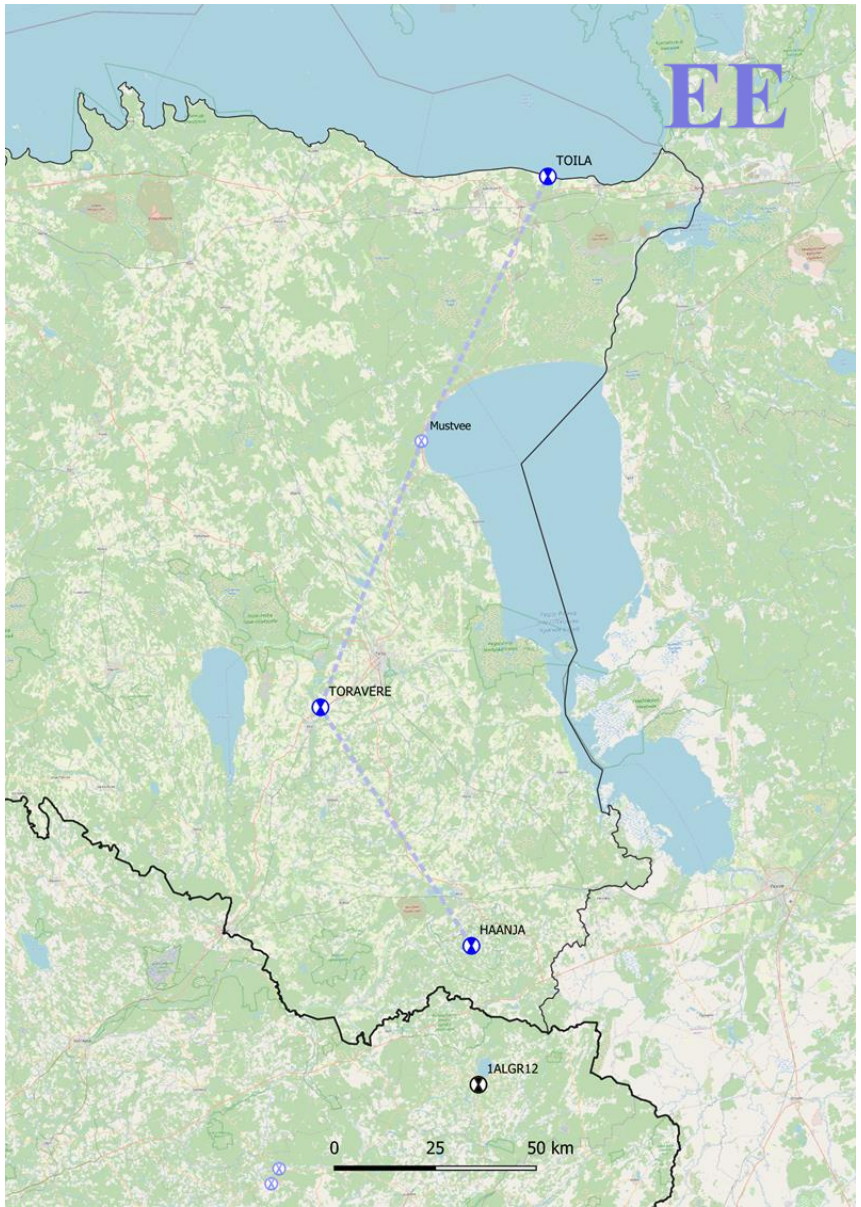
- provide magnetic declination measurements for airfields and helipads according to the service order



Gravimetry in 2023 and future plans (1)

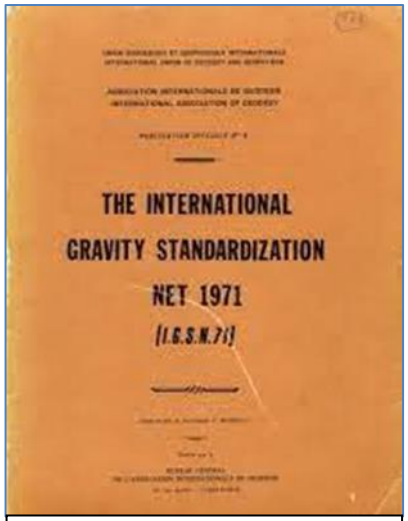


Establishment of a national gravimetric calibration line

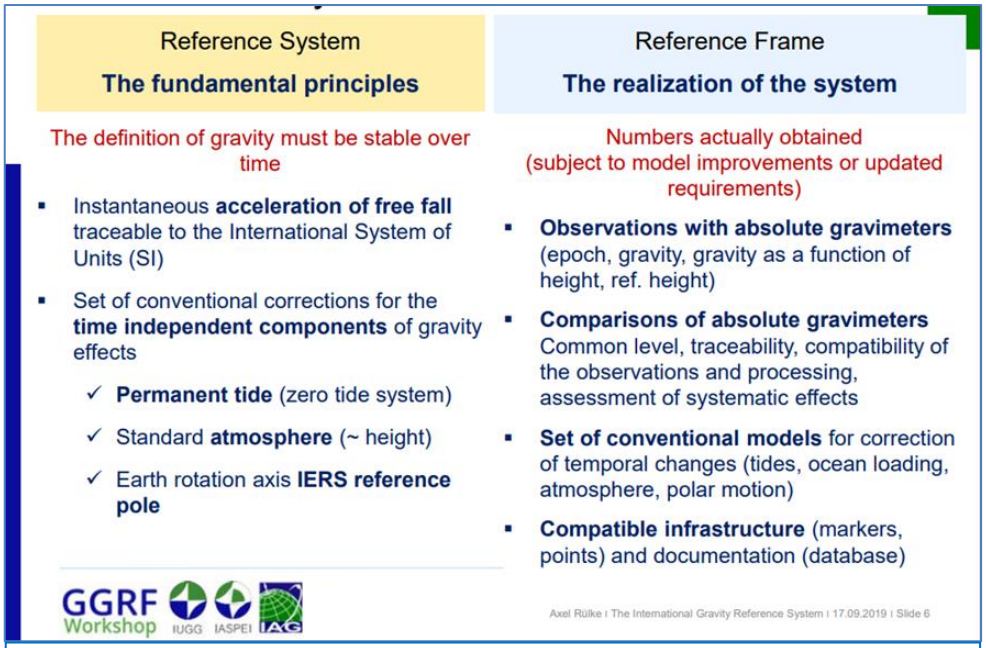


Gravimetry in 2023 and future plans (2)

- **Defining of the Latvian Gravimetrical reference system LAG-2019**



IGSN71 publication (Morelli 1972).



IGRS system and system realization terminology and principles. (Rulke 2019).

- **Continued relative gravimetrical measurements in West and South-East part of Latvia**

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Thank you for your attention!

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