



Latvian Geospatial
Information Agency

Latvian Geospatial Information Agency national report

NKG Working Group of Reference Frames

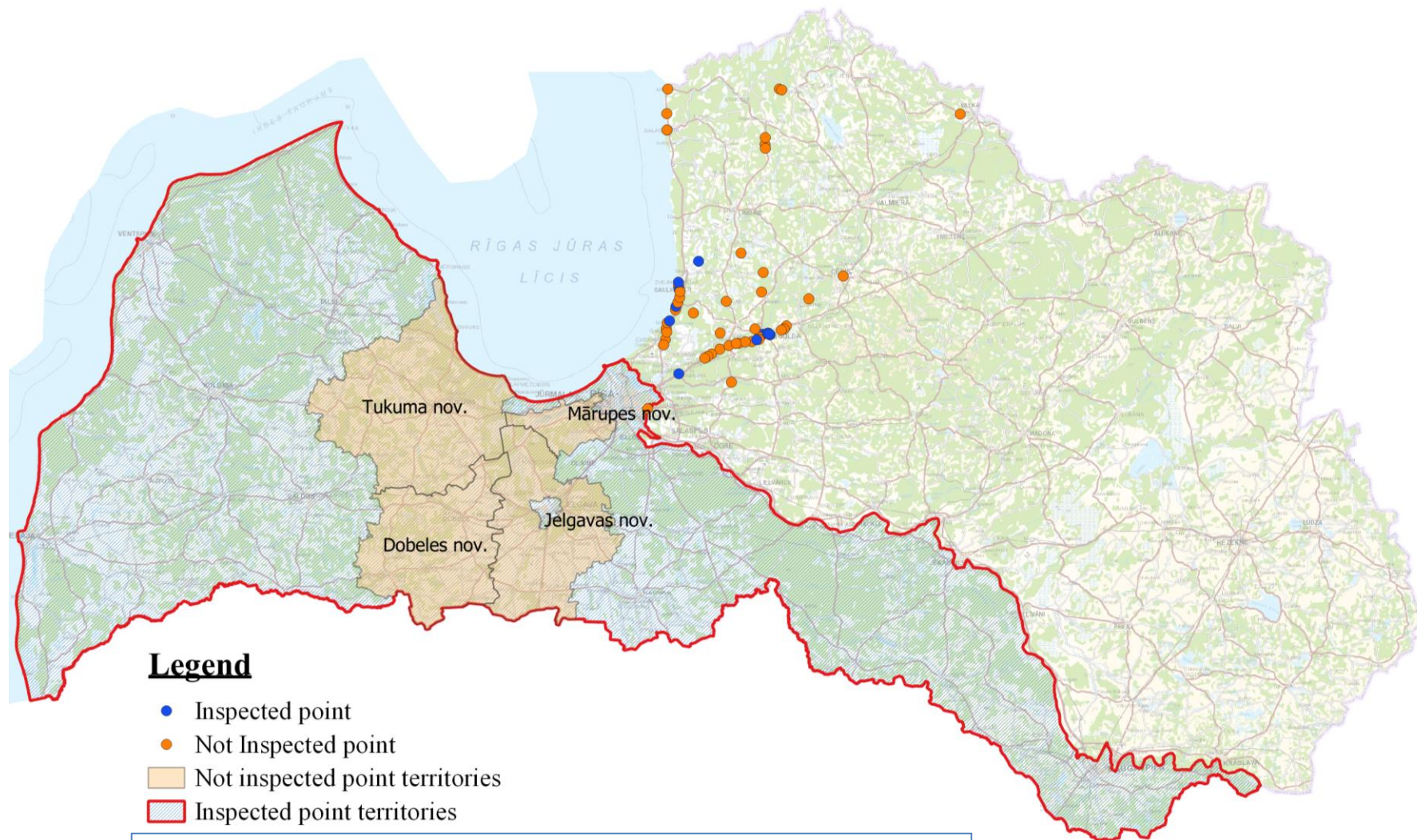
Tallinn, Estonia, 30.-31.03.2023.

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



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State geodetic network database

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

Valsts ģeodēziskā tīkla datubāze



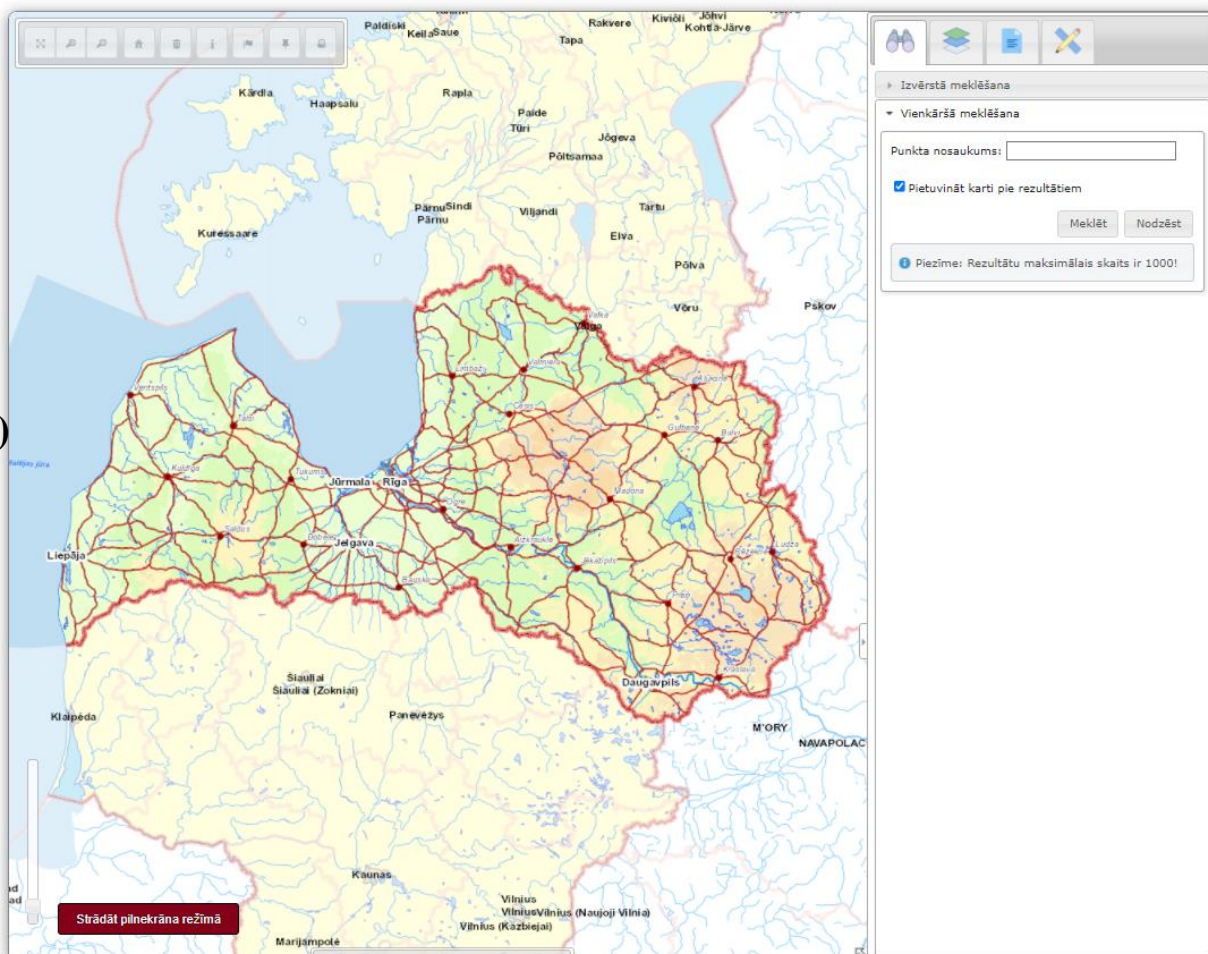
Latvijas Ģeotelpiskās Informācijas aģentūra

📍 Karšu pārļūks

📍 Darbības ar punktiem

📄 Klasifikatori un statistika ▾

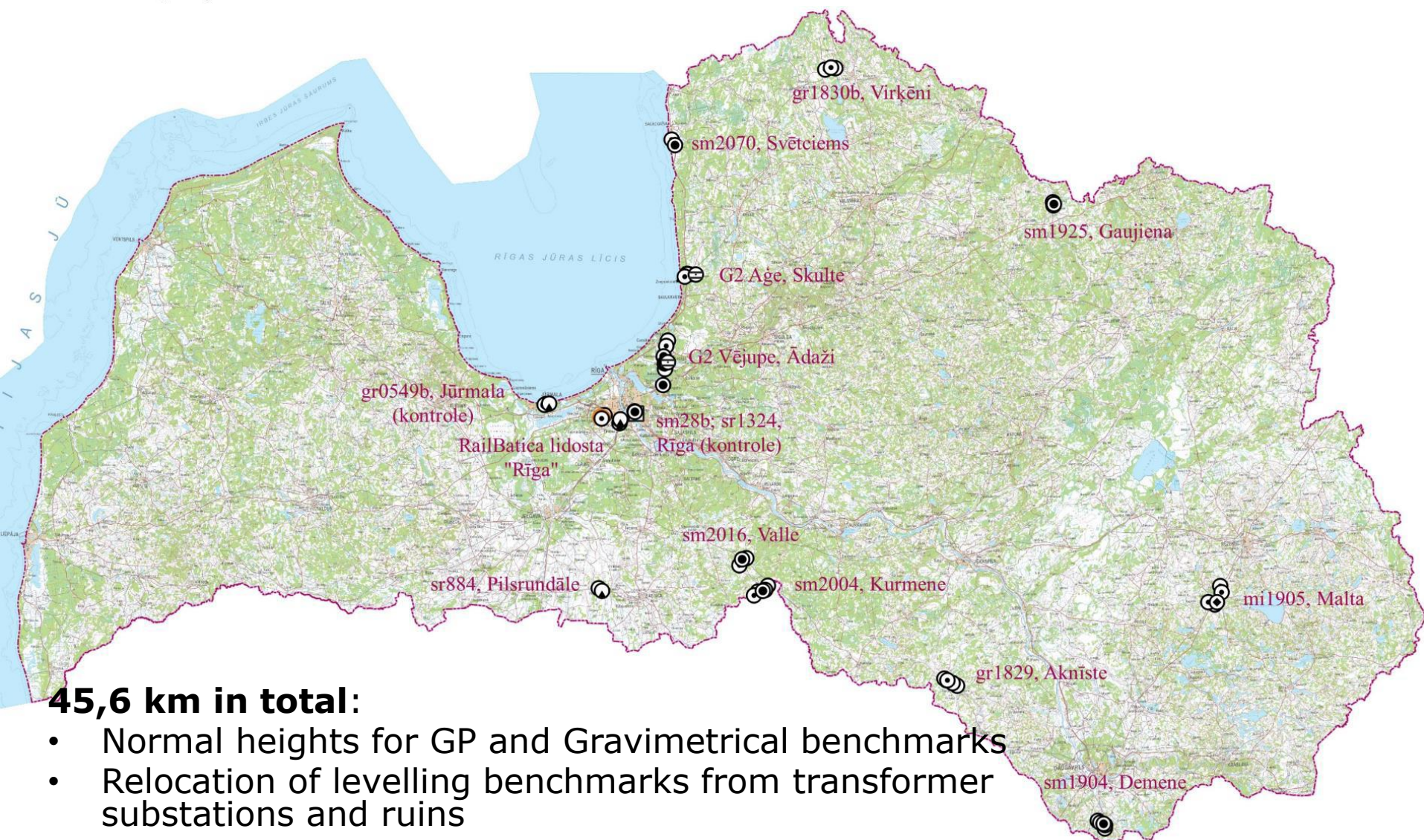
📧 Kontakti



**In total: 2965
points**
(data on 23.03.2023.)

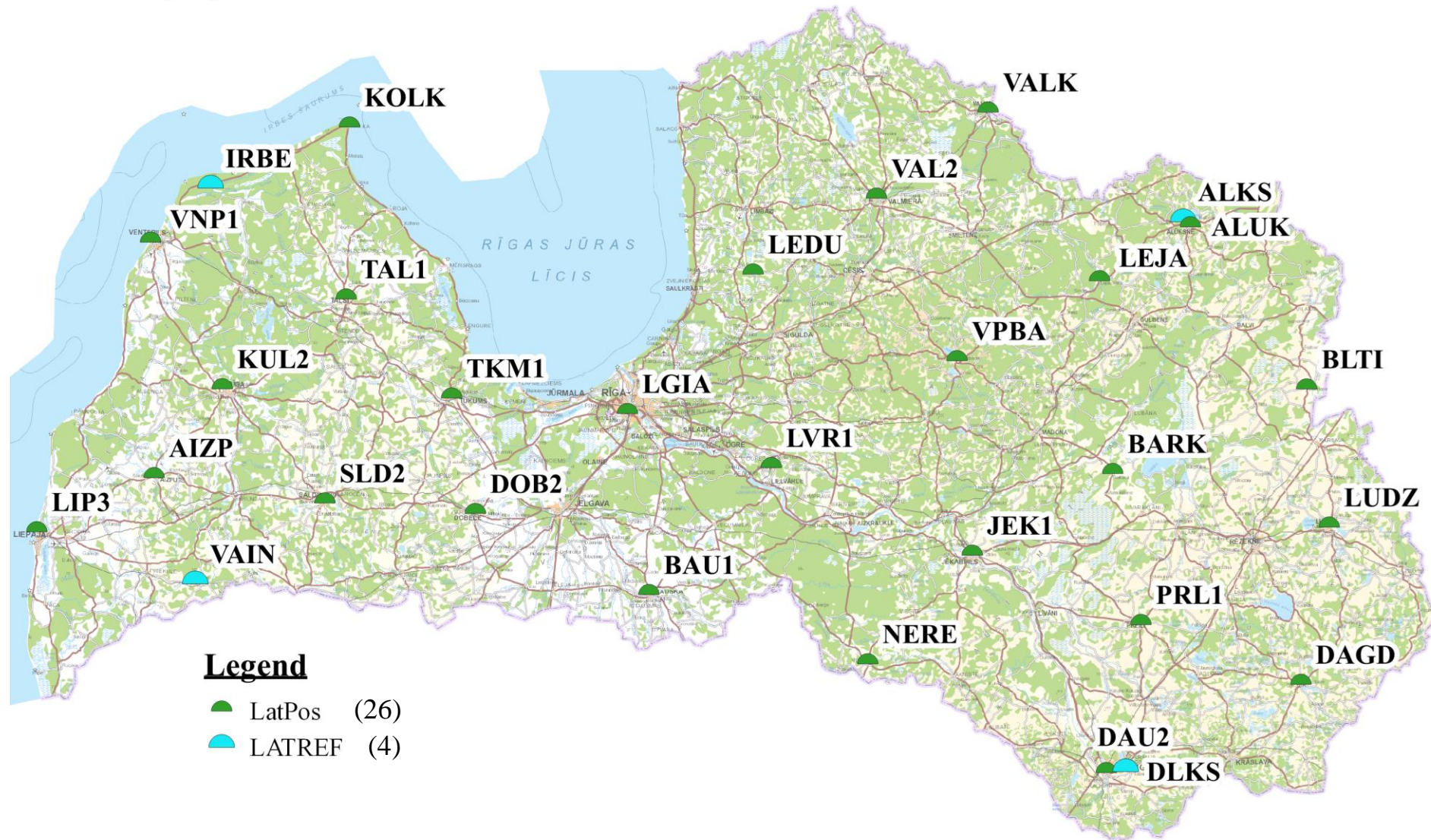


Levelling in 2022





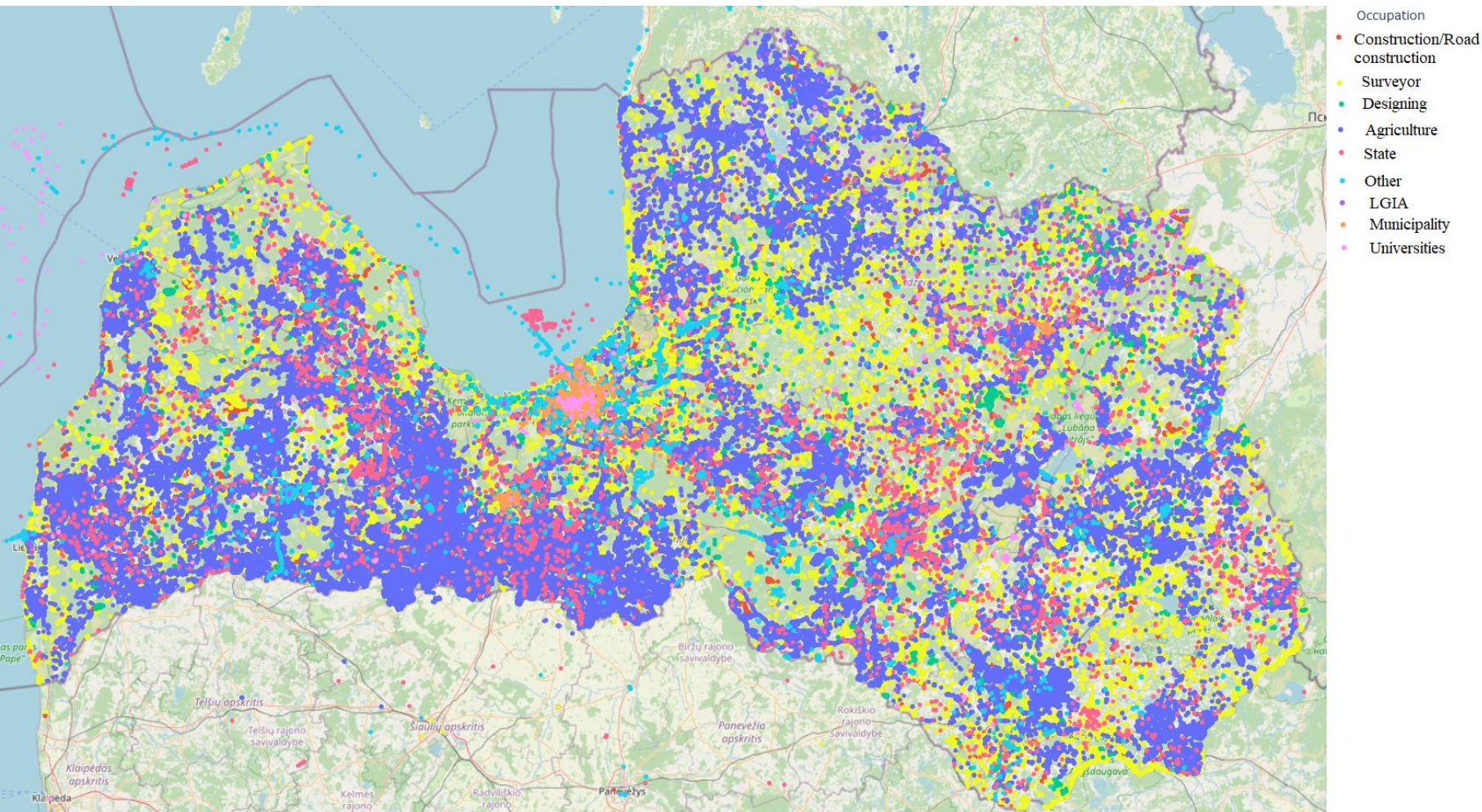
LatPos and LATREF base stations 2022





LatPos RTK users statistics

(data about all 2022)

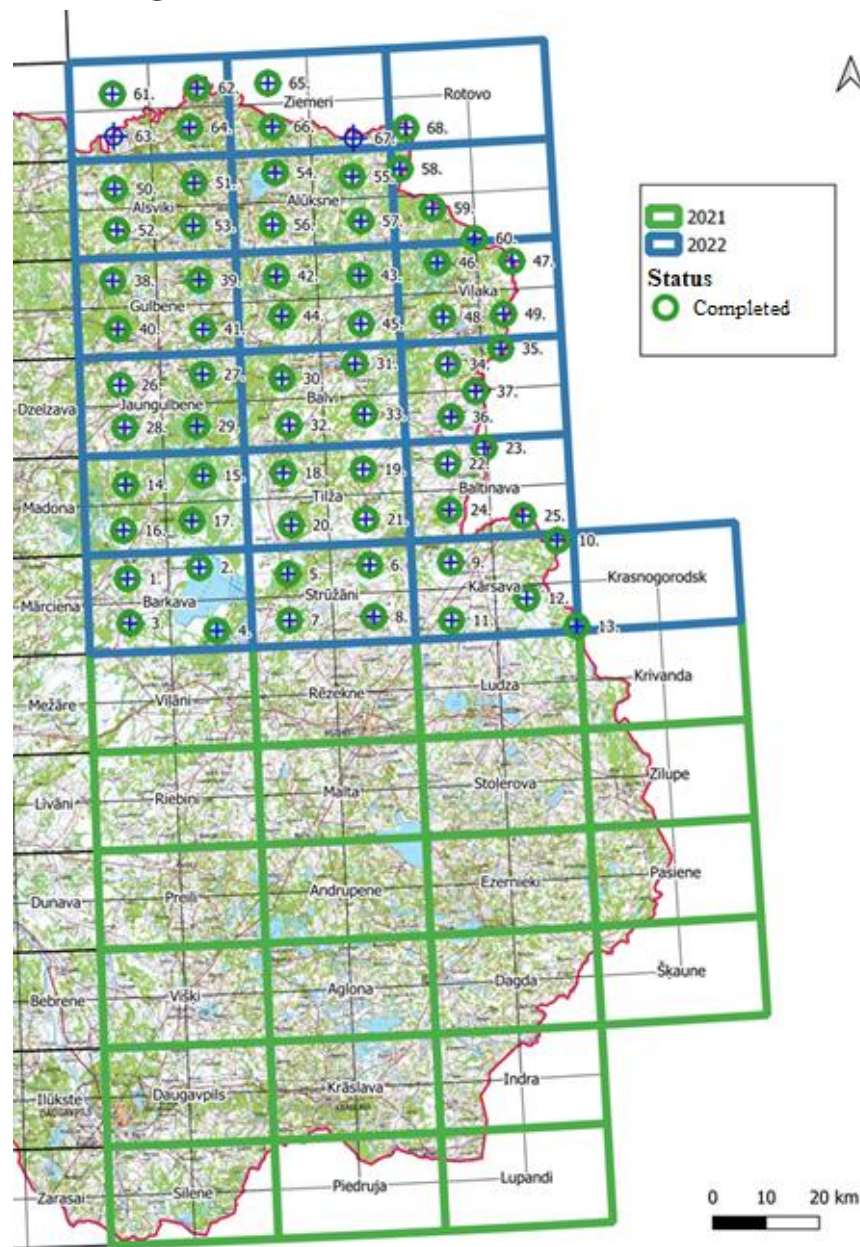
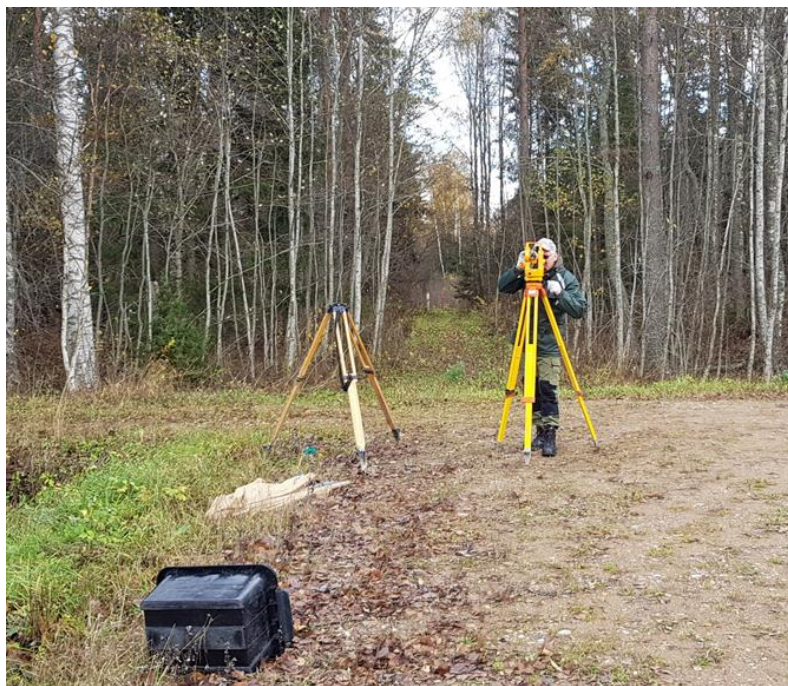


942 955 connections to LatPos network in total

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

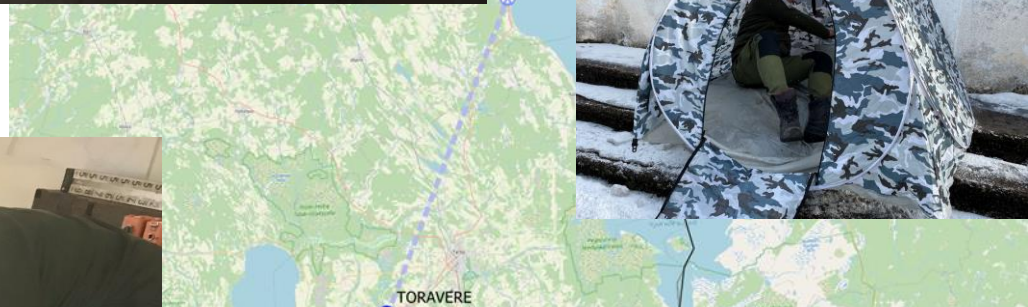




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Calibration of gravimeters

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

GeoRepository Home EPSG Dataset Support Documentation About Us Contact GIGS IOGP Geomatics Login / Register

Geodetic Parameters

Search Database

Text Search GO

LKS-2020 Clear all

Search Results (5 Objects Found) Export

Search results only display valid entries. Please login or register to include deprecated and invalid objects.

Report Selected Results

CRSs (4) Transformations (0) Point Motion Operations (0) Concatenated Operations (0) Conversions (0) Datums (1) More...

<input type="checkbox"/>	NAME	CODE	TYPE	EXTENT	DATA SOURCE	REMARKS	REVISION DATE
<input type="checkbox"/>	LKS-2020	10303	geocentric	Latvia	EPSG	Replaces LKS-92 (CRS code 4948...	March 1, 2023
<input type="checkbox"/>	LKS-2020	10304	geographic 3D	Latvia	EPSG	Replaces LKS-92 (CRS code 4949...	March 1, 2023
<input type="checkbox"/>	LKS-2020	10305	geographic 2D	Latvia	EPSG	Replaces LKS-92 (CRS code 4661...	March 1, 2023
<input type="checkbox"/>	LKS-2020 / Latvia TM	10306	projected	Latvia	EPSG	Replaces LKS-92 / Latvia TM (C...	March 1, 2023

First < Previous 1 Next > Last

Items per page: 50

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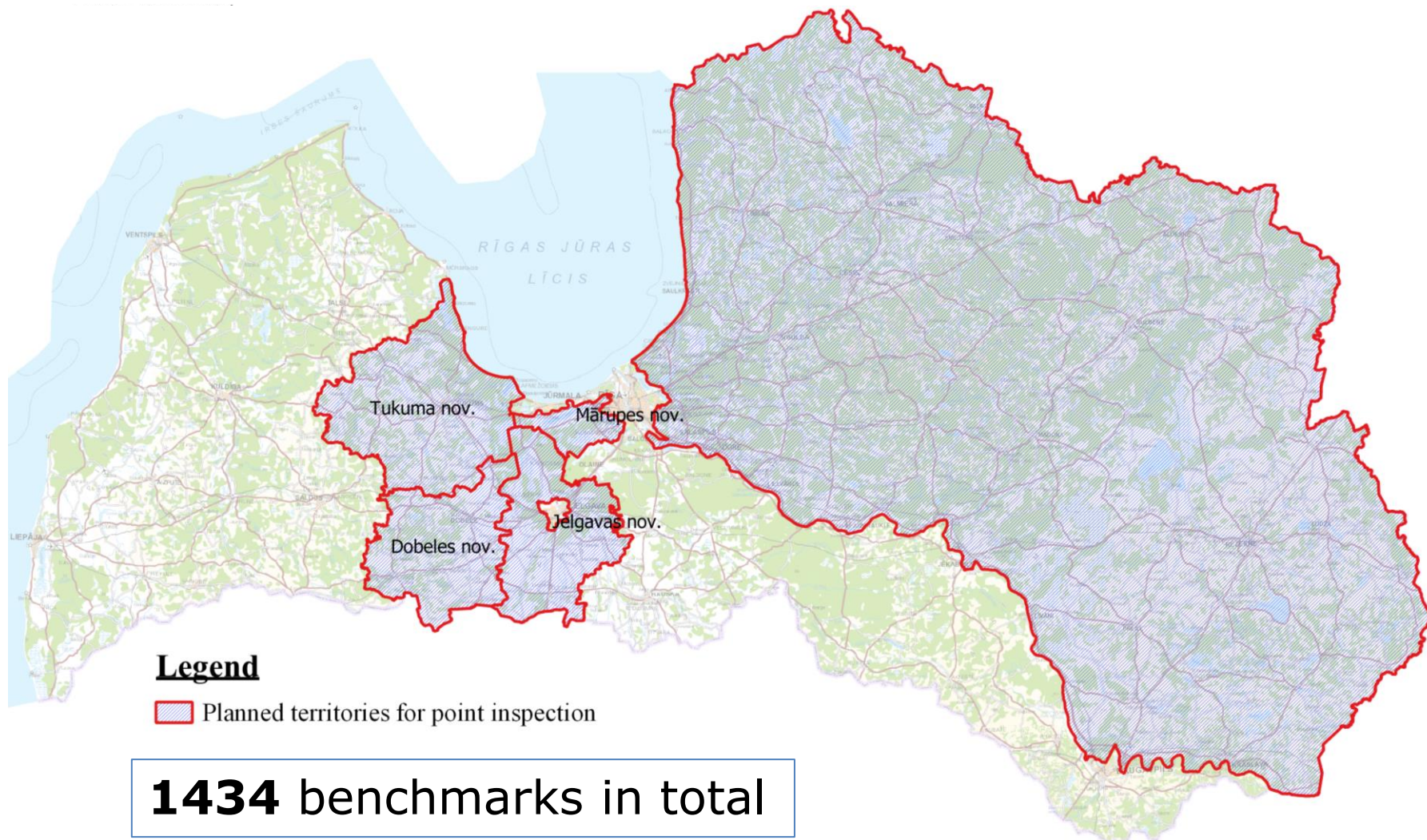
EPSG Dataset : v10.084
GeoRepository : v2.33.9

Source [<https://epsg.org/search/by-name?sessionkey=cxgv7lxpn&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





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Levelling in 2023

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

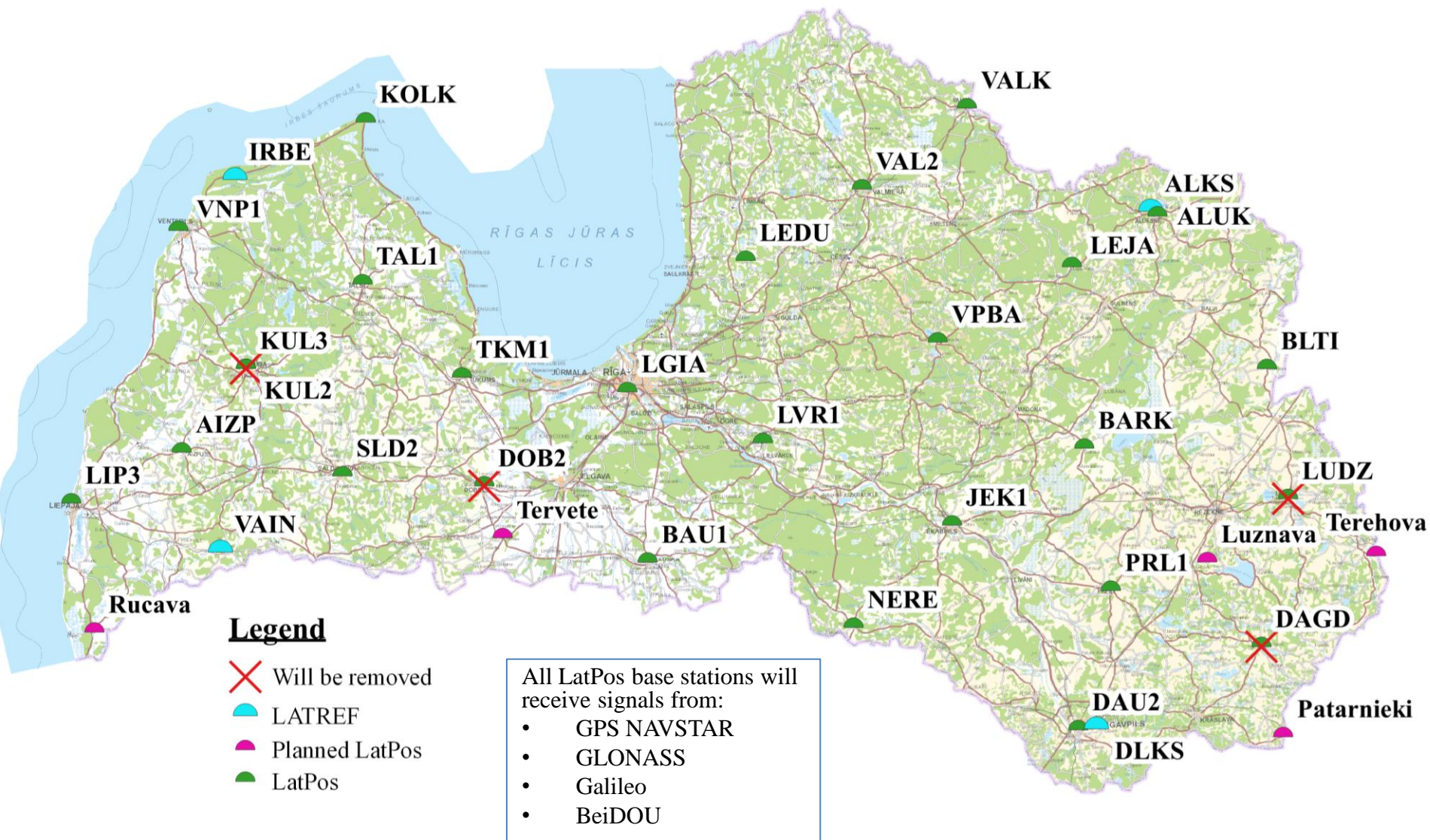


- Continued relocation of levelling benchmarks from transformer substations





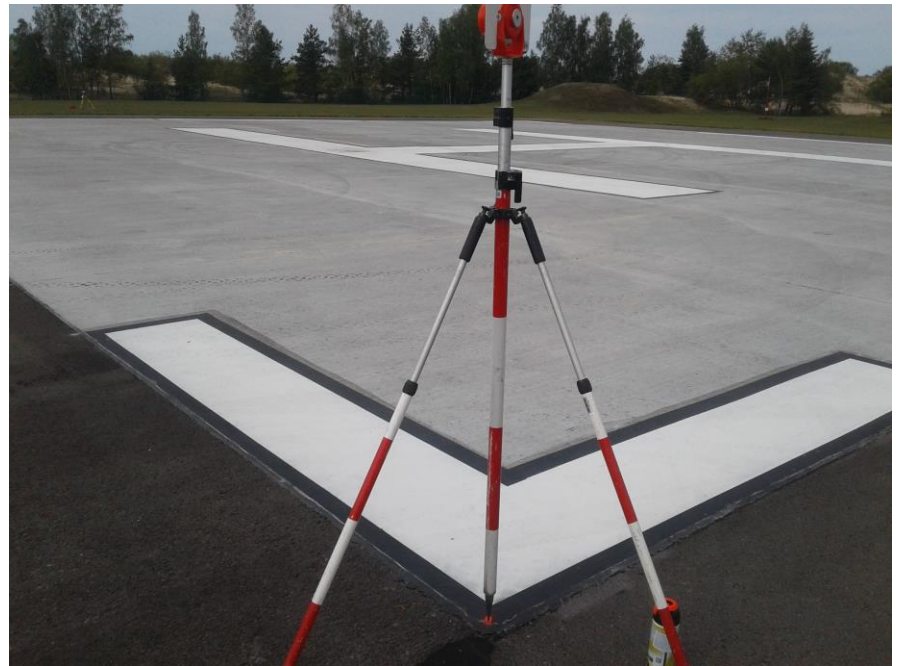
Future plans for LatPos base stations





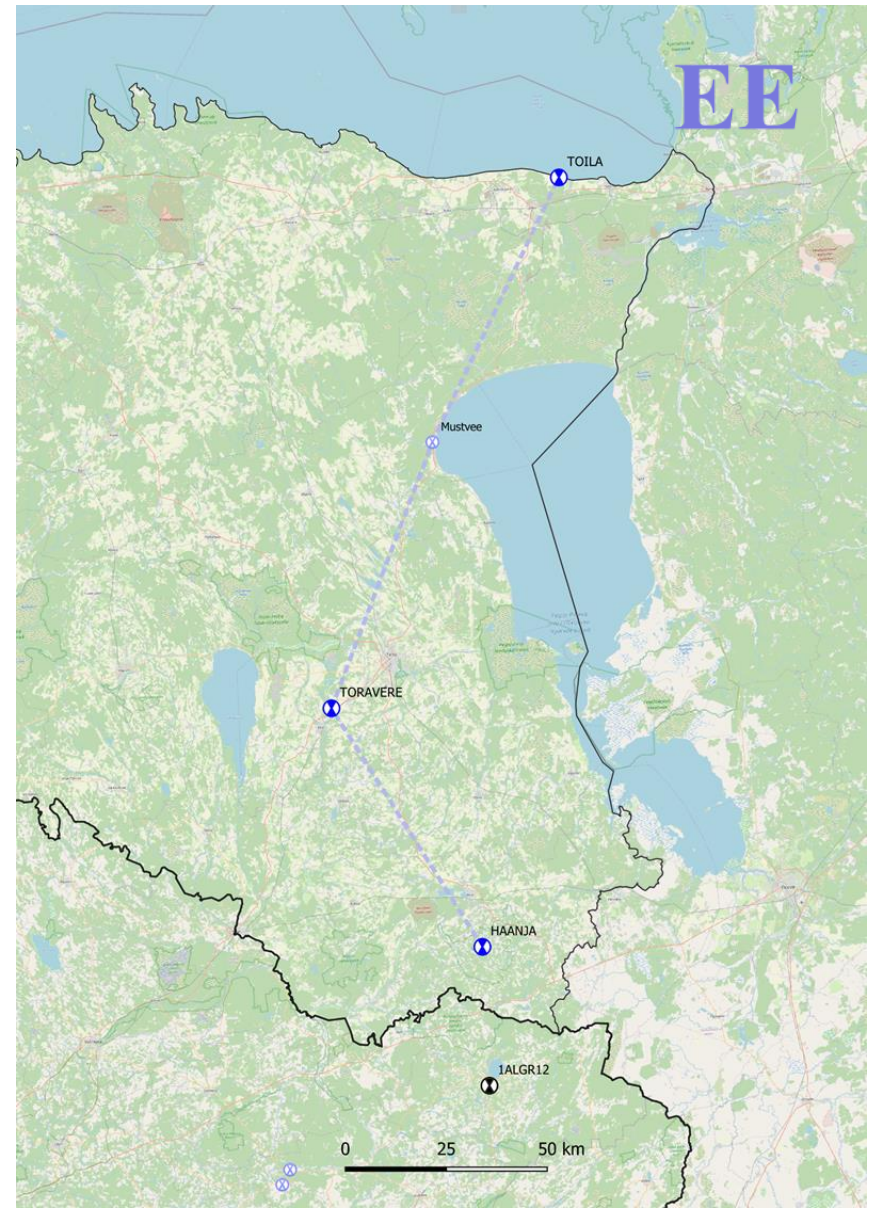
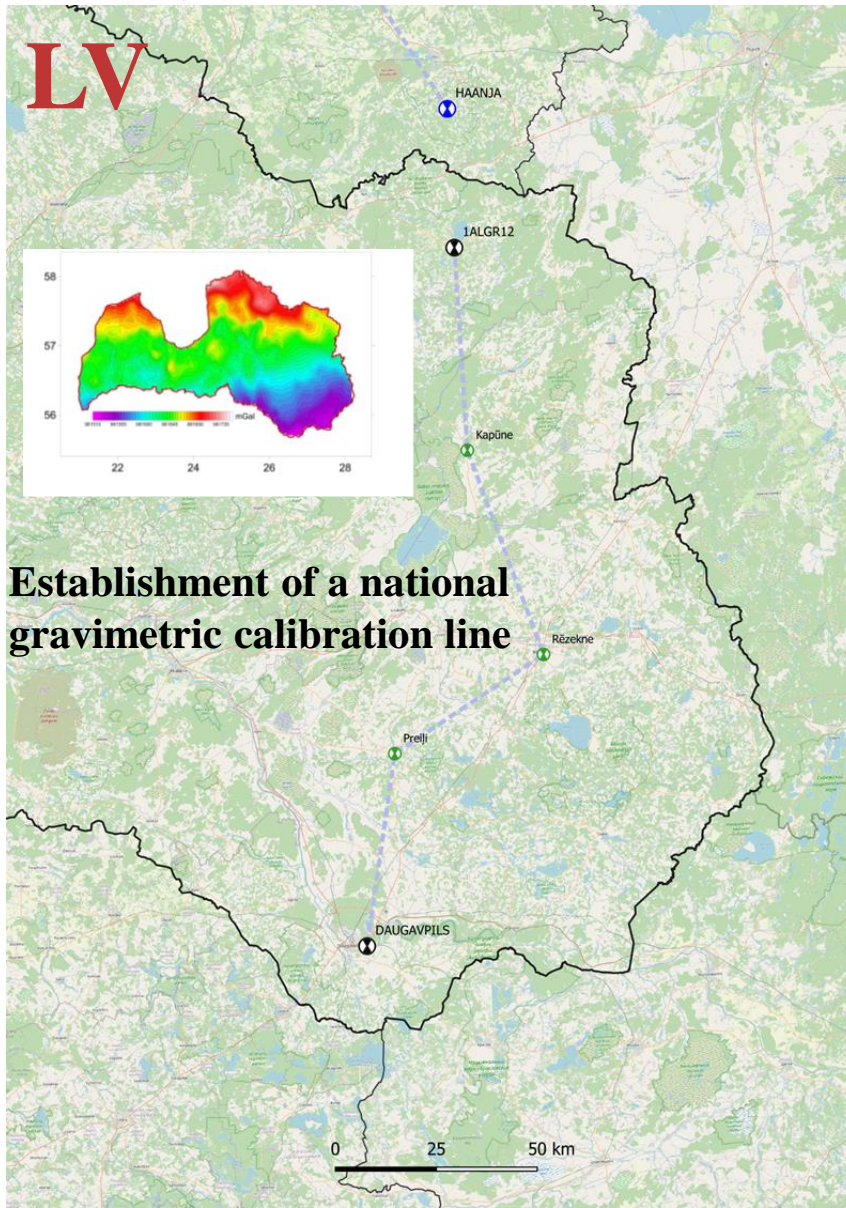
Geomagnetic measurements in 2023

- provide magnetic declination measurements for 78 points for cartographical purposes
- provide magnetic declination measurements for airfields and helipads according to the service order





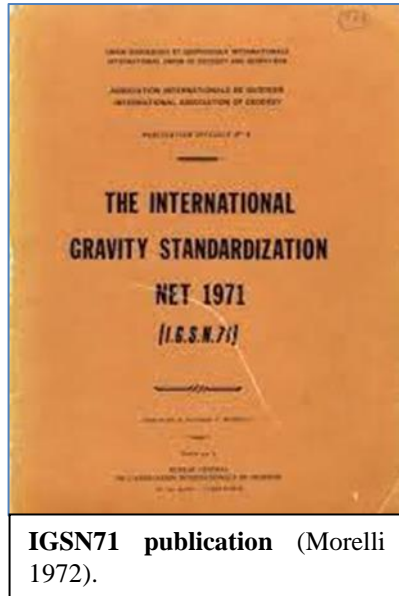
Gravimetry in 2023 and future plans (1)





Gravimetry in 2023 and future plans (2)

- Defining of the Latvian Gravimetric reference system LAG-2019



Reference System The fundamental principles	Reference Frame The realization of the system
<p>The definition of gravity must be stable over time</p> <ul style="list-style-type: none">Instantaneous acceleration of free fall traceable to the International System of Units (SI)Set of conventional corrections for the time independent components of gravity effects<ul style="list-style-type: none">✓ Permanent tide (zero tide system)✓ Standard atmosphere (~ height)✓ Earth rotation axis IERS reference pole	<p>Numbers actually obtained (subject to model improvements or updated requirements)</p> <ul style="list-style-type: none">Observations with absolute gravimeters (epoch, gravity, gravity as a function of height, ref. height)Comparisons of absolute gravimeters Common level, traceability, compatibility of the observations and processing, assessment of systematic effectsSet of conventional models for correction of temporal changes (tides, ocean loading, atmosphere, polar motion)Compatible infrastructure (markers, points) and documentation (database)
<p>GGRF Workshop IUGG IASPEI IAG</p>	<p>Axel Rülke The International Gravity Reference System 17.09.2019 Slide 6</p>
IGRS system and system realization terminology and principles. (Rulke 2019).	

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



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Thank you for your attention!

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