

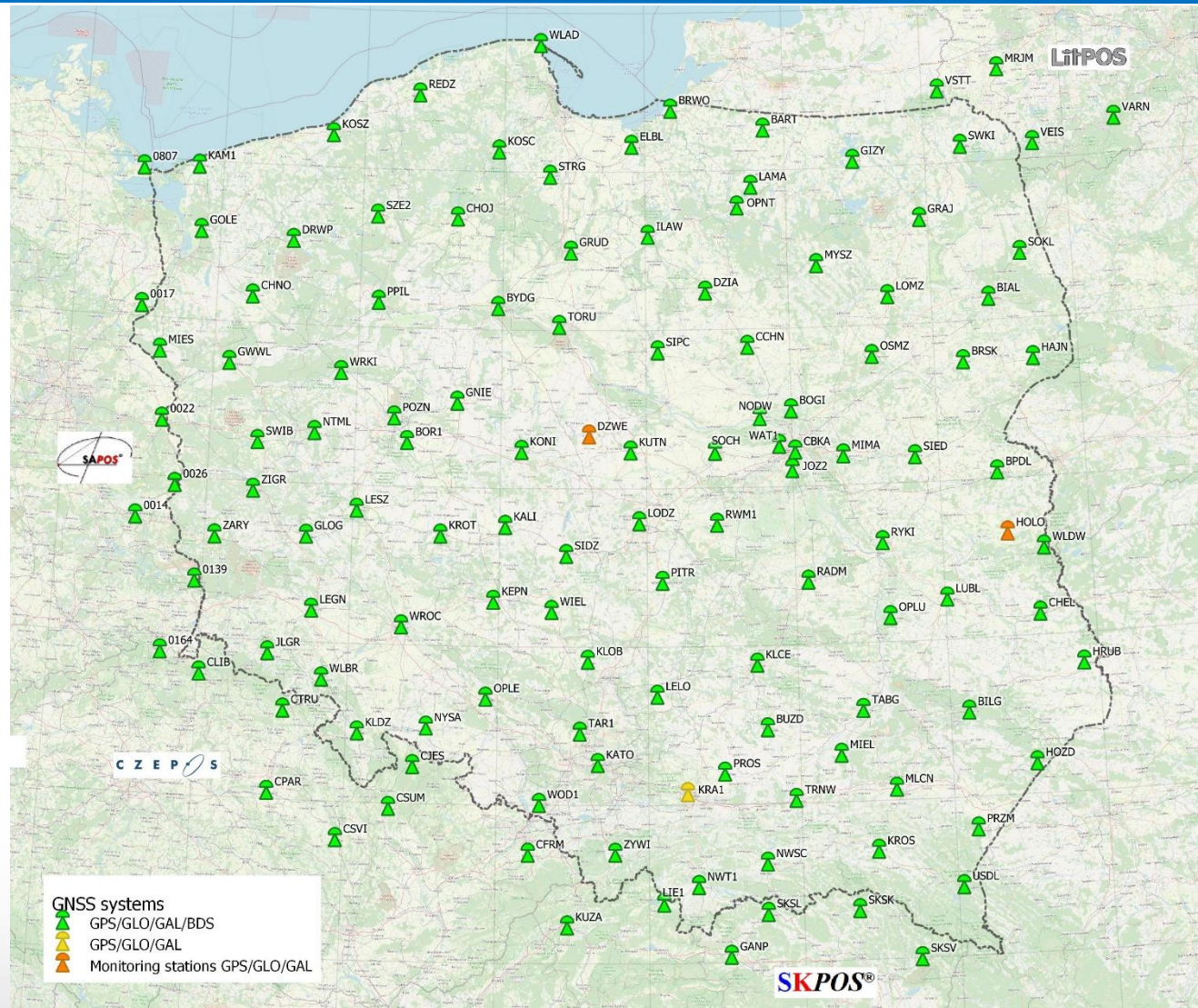
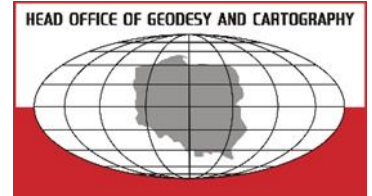
# System ASG-EUPOS

## - state reference GNSS network in Poland

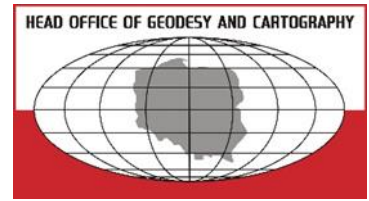
**Szymon Wajda**  
Prime specialist  
Geodesy and Reference Frames Division

Ljubljana, 15–16 November 2022

# ASG- EUPOS – current status



# ASG- EUPOS – current status



127 reference stations connected:

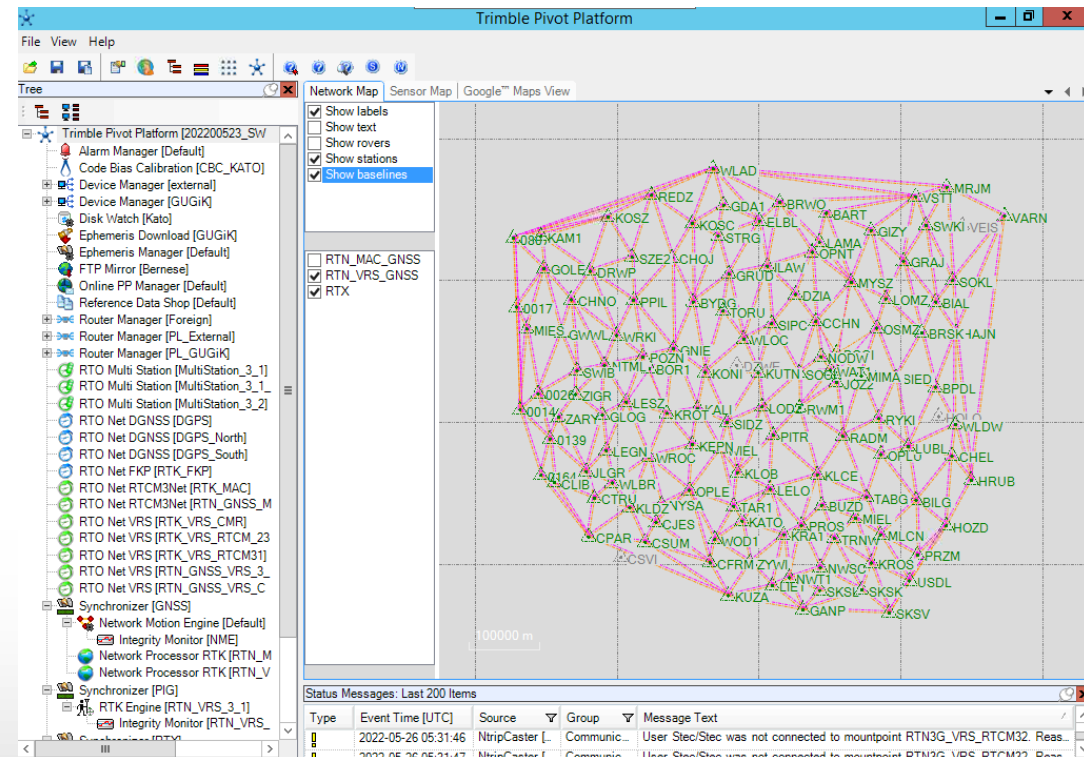
- 93 stations owned by GUGiK
- 11 associated stations (cooperation between scientific institutes, universities etc.)
- 23 foreign stations from neighboring countries (D, CZ, SK, LT)

Two management centers:

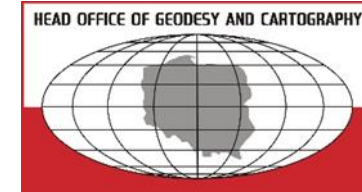
Warsaw and Katowice

GNSS software: Trimble

Pivot Platform v. 4.3.2

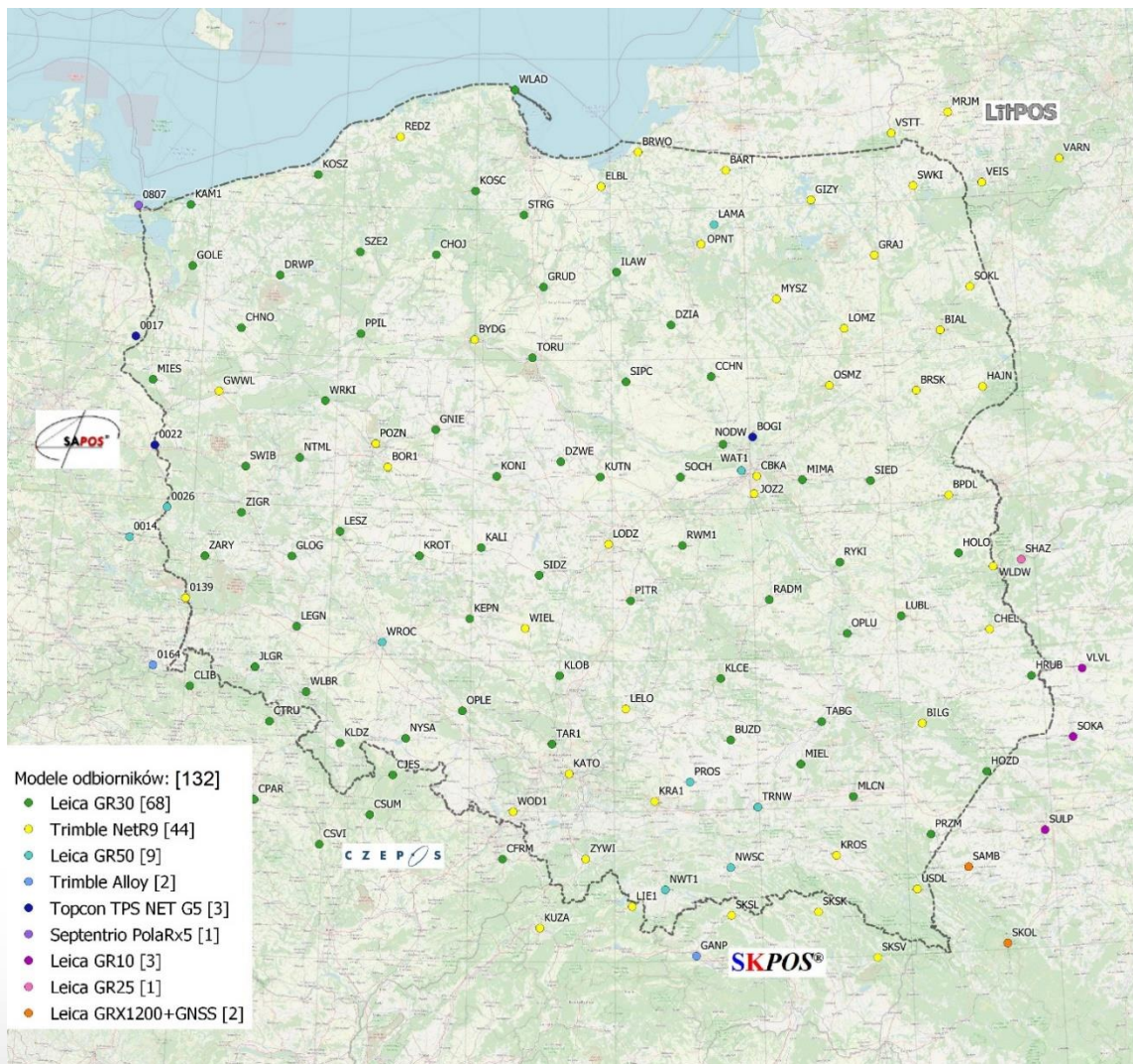


# ASG- EUPOS – current status

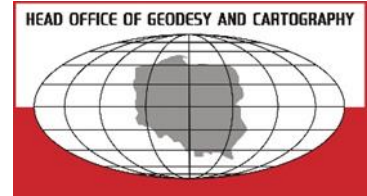


## GNSS hardware:

- Leica GR30/GR50
- Trimble NetR9



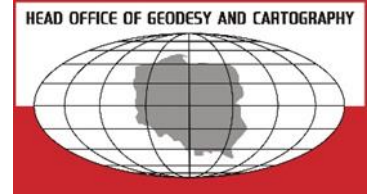
# ASG- EUPOS – current status



## Choke Ring type precise GNSS antennas with individual absolute calibrations



# ASG- EUPOS – current status



Type of measurements	Service	Method	Carrier	Accuracy	Minimum requirements
Real-time surveying	NAWGEO-RTN	Real Time – Network	Internet/ GSM/ GPRS	0.03 m (hor.) 0.05 m (vert.)	L1/L2 GNSS RTK receiver, communication device
	NAWGEO-RTK	Real Time – Single Station			
	KODGIS	Kinematic DGNSS		0.2 – 0.5 m	L1 GPS (GNSS) receiver, communication device
Post-processing	POZGEO	Static	Internet/ CD-ROM	0.01-0.10 m	L1/L2 GNSS receiver L1 GPS /GNSS receiver
	POZGEO D				



NAWGEO



KODGIS



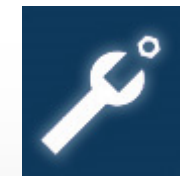
NAWGIS



POZGEO



POZGEO D

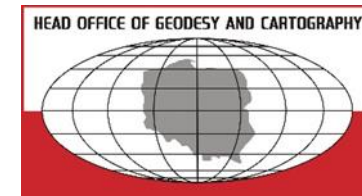


POMOC

## All ASG-EUPOS services available for free since October 2nd 2022

- amendment of geodetic and cartographic act
- cancellation of all fees
- only website registration needed

# ASG- EUPOS – current status



## ASG-EUPOS – legal status:

- Regulation of Ministry of Economic Development and Technology of July 6th 2021 on geodetic, gravimetric and magnetic control networks:
  - ASG-EUPOS reference stations belong to the state fundamental geodetic network (highest order)
  - Realisation of national reference frame



## DZIENNIK USTAW RZECZYPOSPOLITEJ POLSKIEJ

Warszawa, dnia 22 lipca 2021 r.

Poz. 1341

ROZPORZĄDZENIE  
MINISTRA ROZWOJU, PRACY I TECHNOLOGII<sup>1)</sup>

z dnia 6 lipca 2021 r.

w sprawie osnów geodezyjnych, grawimetrycznych i magnetycznych

Na podstawie art. 19 ust. 1 pkt 6 ustawy z dnia 17 maja 1989 r. – Prawo geodezyjne i kartograficzne (Dz. U. z 2020 r. poz. 2052 oraz z 2021 r. poz. 922) zarządza się, co następuje:

Rozdział 1

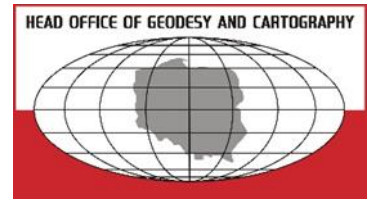
Przepisy ogólne

§ 1. Rozporządzenie określa:

- 1) organizację, tryb i standardy techniczne zakładania i utrzymywania podstawowych osnów geodezyjnych, grawimetrycznych i magnetycznych oraz szczegółowych osnów geodezyjnych;
- 2) szczegółowy zakres informacji gromadzonych w bazie danych państwowego rejestru podstawowych osnów geodezyjnych, grawimetrycznych i magnetycznych oraz w bazie danych szczegółowych osnów geodezyjnych;



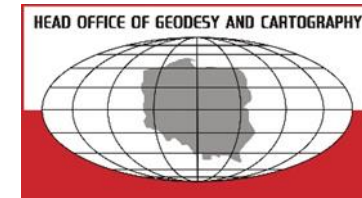
# ASG- EUPOS – current status



## Last minor changes:

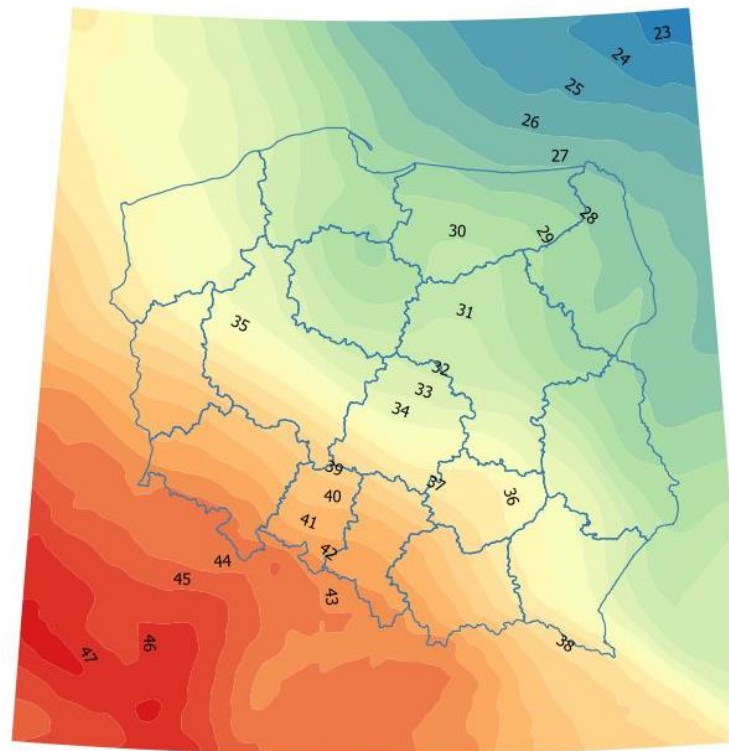
- Unification of technical standards :
  - Modernization of GNSS receivers to 4xGNSS
  - Implementing the RINEX 3.04 format (4xGNSS) for observation data
  - Implementing 4xGNSS real time corrections (RTK & RTN)
  - Upgrading the IT infrastructure
  - Densification of CORS network – 4 new stations installed in 2021

# Quasi-geoid model PL-geoid2021



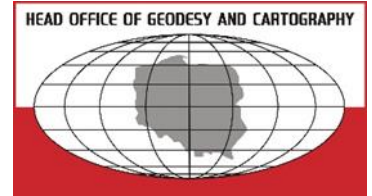
## New quasi-geoid model:

- developed in 2021 (Wrocław University of Environmental Sciences)
- published on GUGiK website and on the ISG (International Service for the Geoid)
- official model of Poland since April 2022
- necessary for GNSS vertical measurements (conversion of ellipsoidal heights)
- available for free



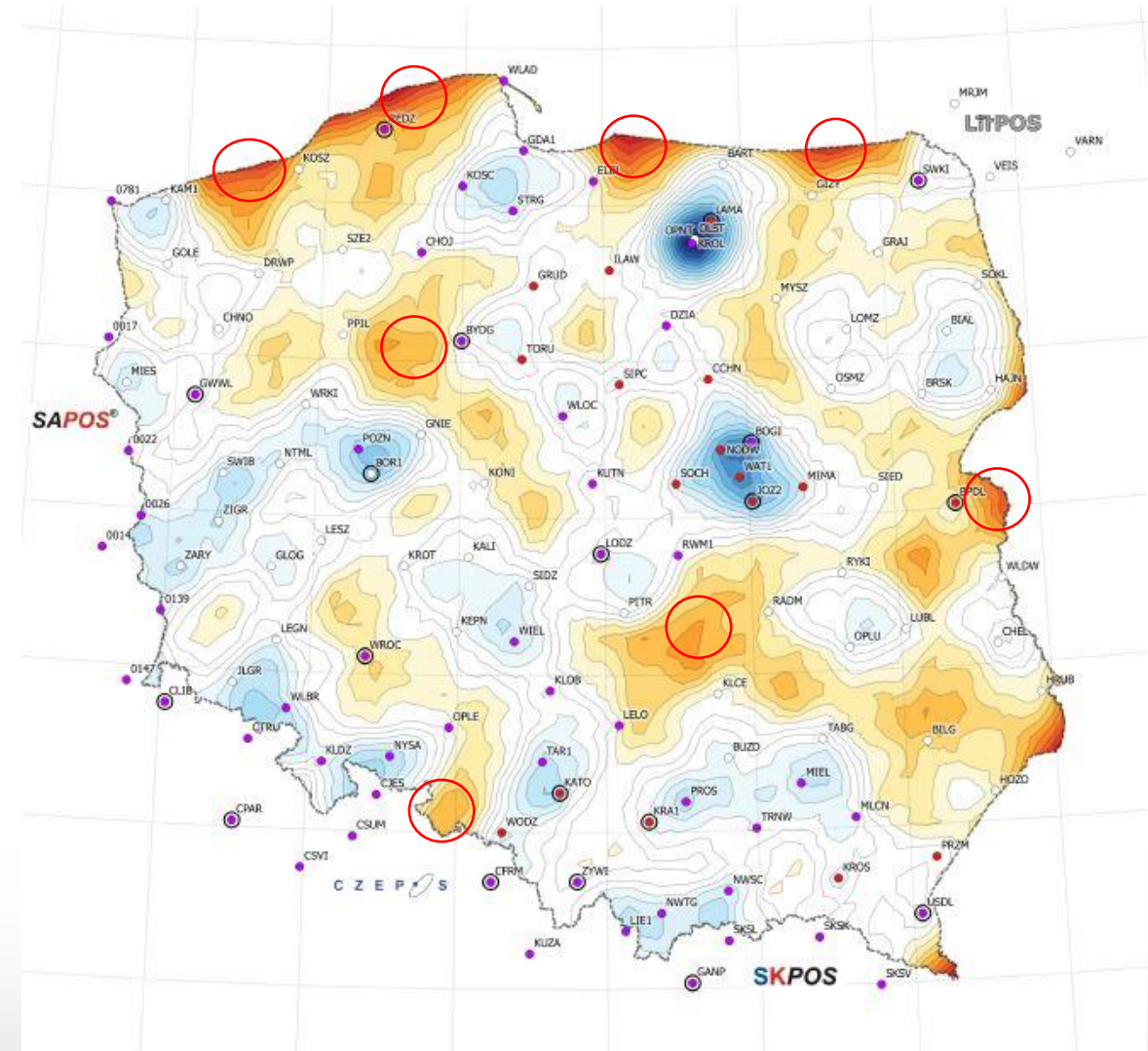
	PL-geoid2021
Mean [m]	-0,012
Std. Dev. [m]	0,026
Min [m]	-0,074
Max [m]	0,054

# Plans for the future



## Densification of the reference stations network.

- 4 additional stations installed in 2021 (operational in 2022)
- next 12 stations planned to instalation in 2022-2023



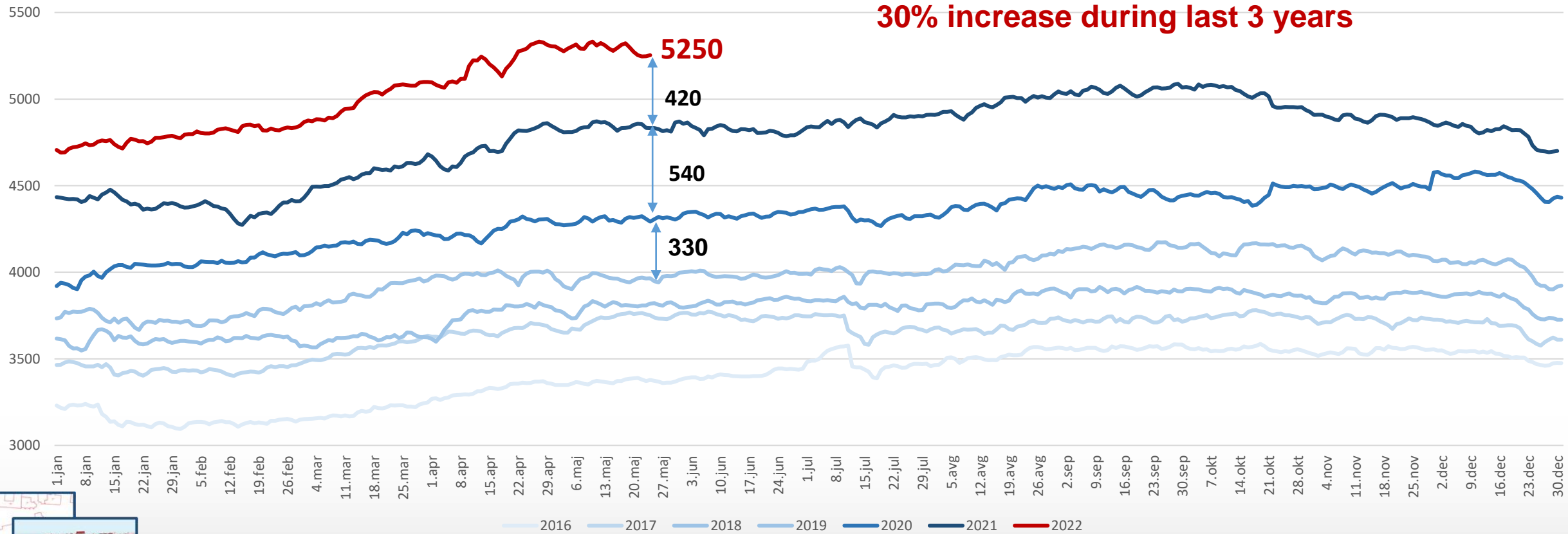
## How many users do we have?

- Number of registered users (since 2014): **15 000**
- Number of registered users, at least once logged to the real-time services: **11 500**
- Number of registered users, active during last month: **5300**
- Number of registered users, active every week: **4200**
- Number of registered users, active everyday: **3000**

## Constant growth of interests of real time services :

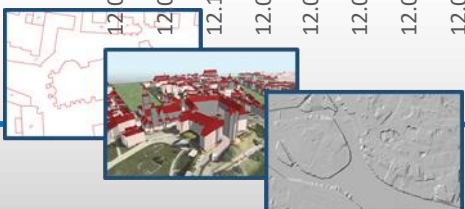
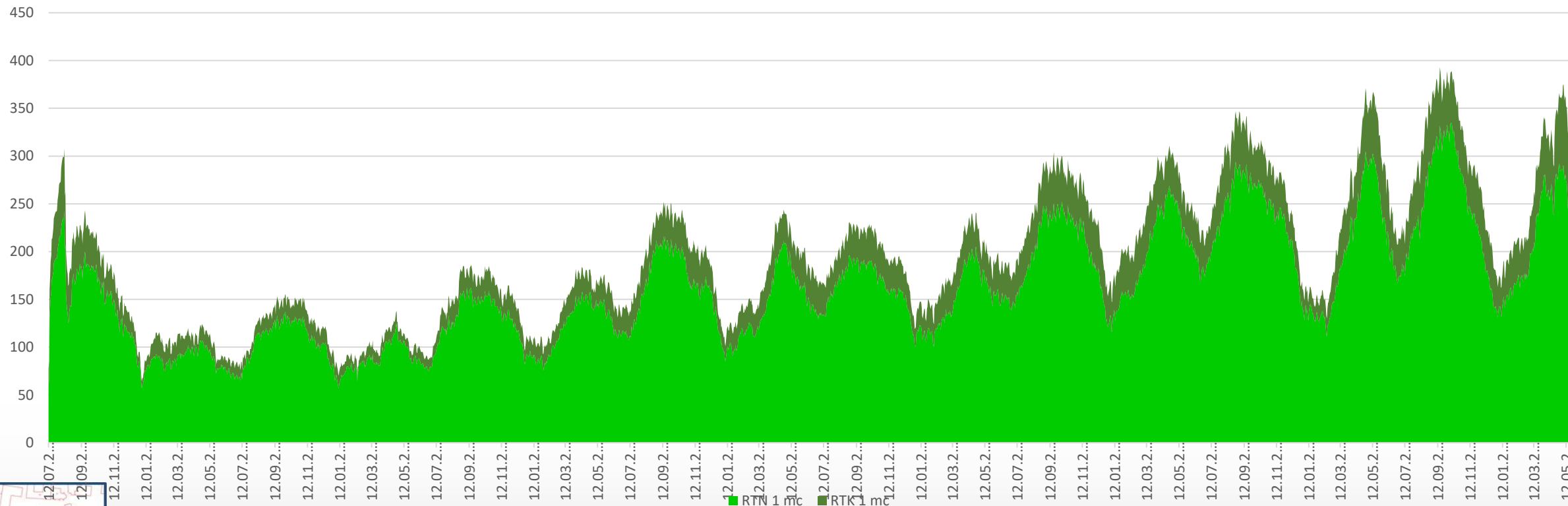
Number of active licences year to year

**30% increase during last 3 years**



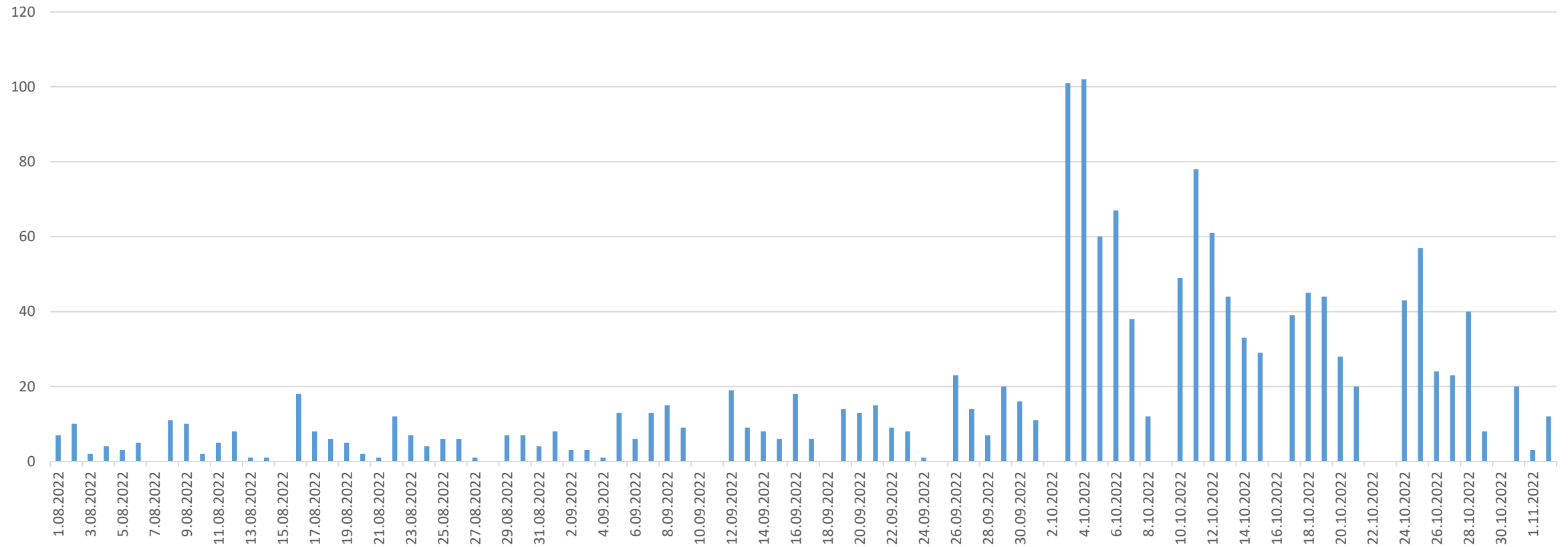
## Seasonal increase of real-time services utilization from the sector of precise agriculture:

1-month licenses RTK & RTN



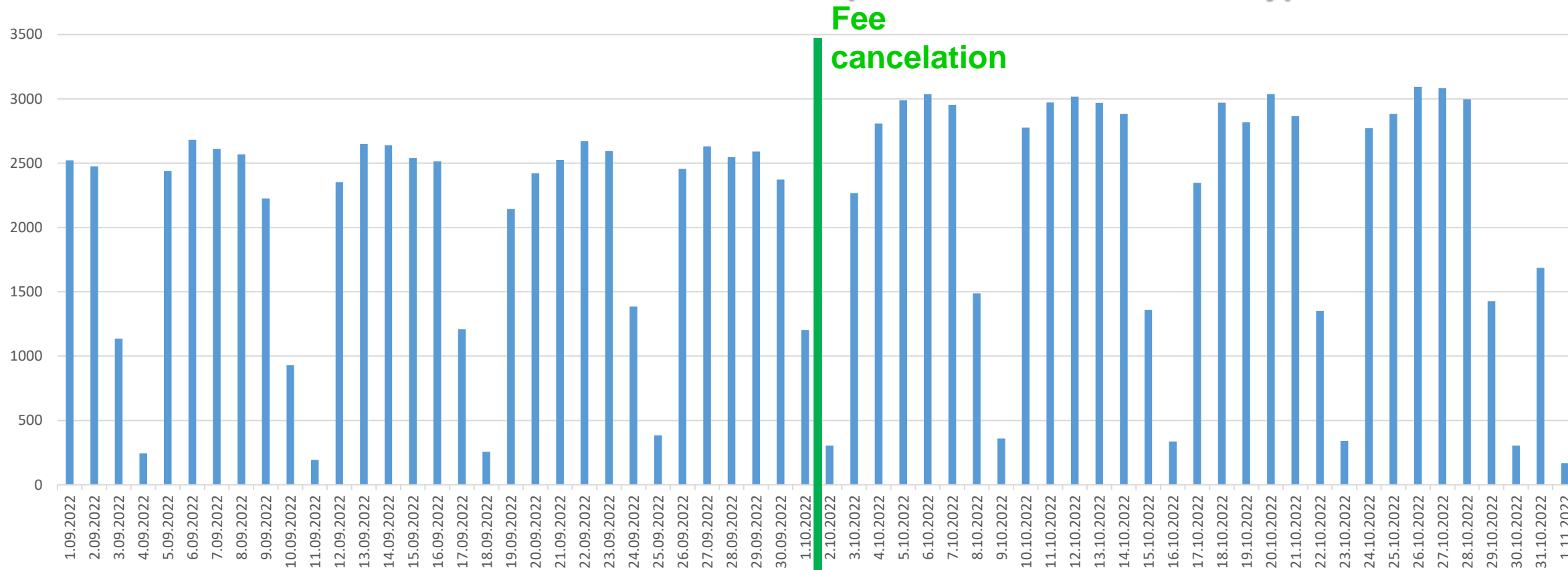
# Statistics – fee cancelation

## Daily number of new users registrations



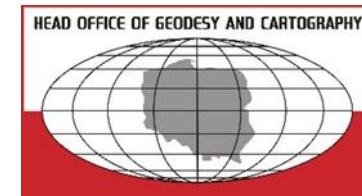
# Statistics – fee cancelation

## Utilization of real time services (number of users – daily)

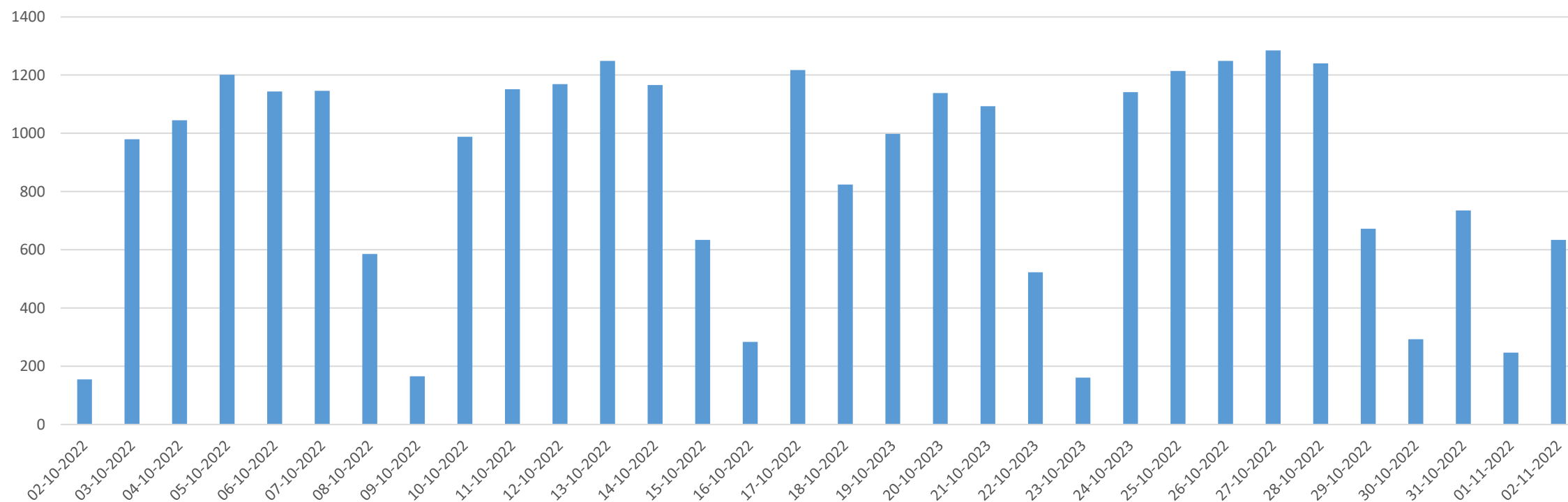




# Statistics – fee cancelation



## Maximum number of paralel connections



# Thank you for your attention

**Szymon Wajda**