



LAND SURVEY OFFICE

C Z E P  S

EUPOS 2021

Land Survey Office, Department of Geodetic Control

Jan Řezníček

Administration of CZEPOS network

C Z E P O S

compatibility of CZEPOS services with
global navigation satellite systems

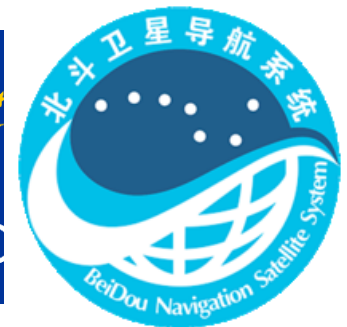
2004
GPS NAVSTAR



2012
GLONASS



2017/18/19
GALILEO
BeiDou



Upgrade of Receivers 2018/19

Leica GRX 1200+ GNSS

- case since 2004
- new motherboard since 2012
- Leica support finished 2017



GPS+GLO+GAL+BEI compatible,

- not all current frequencies (f.e. GLONASS L2C or Galileo E6 is missing)
- not compatible with Trimble software used in APOS/ASG-EUPOS/SKPOS

Leica GR30

- 2018 first 8 stations
- 2019 remaining 17 stations



Galileo/BeiDou MSM services since 2018

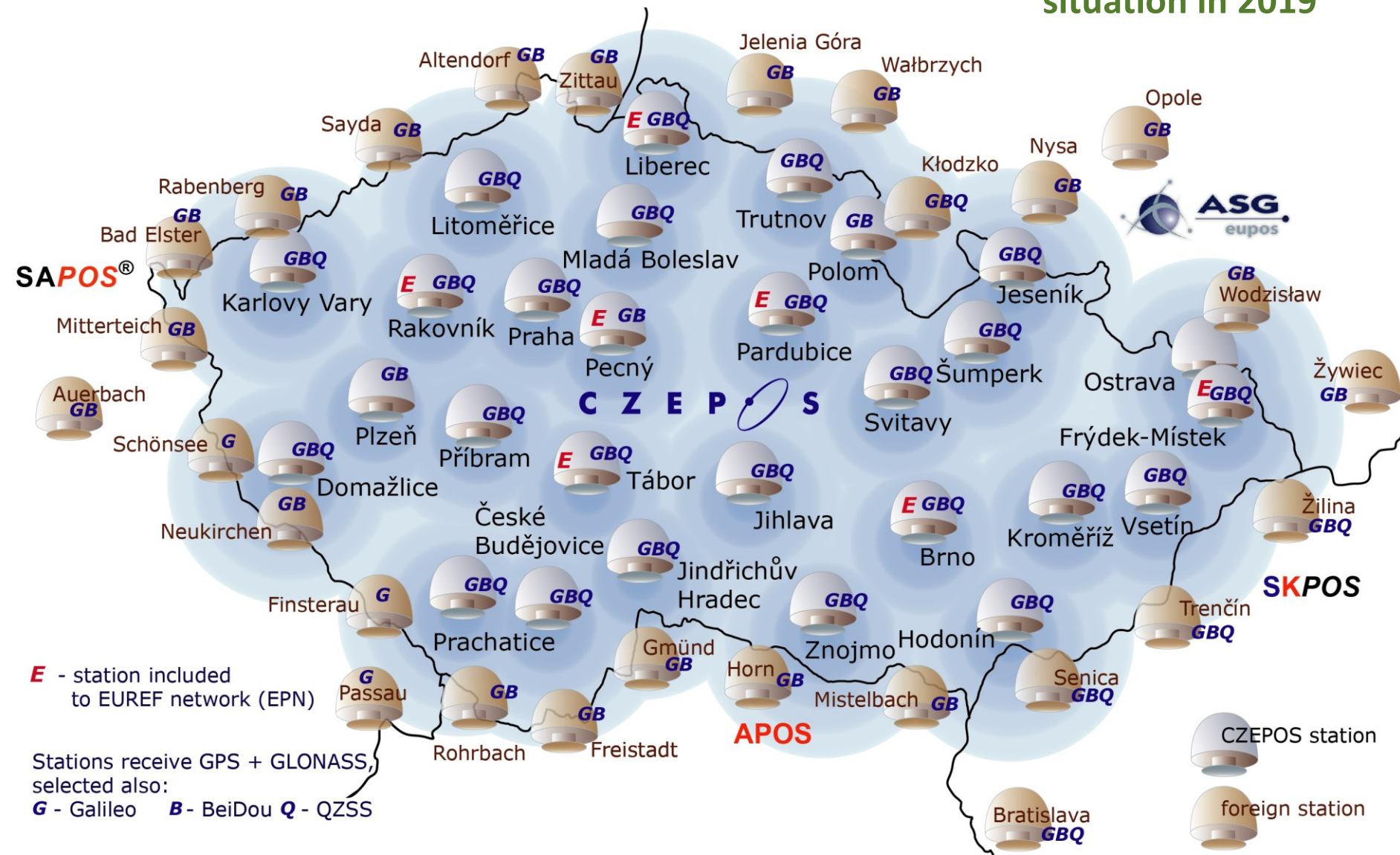
situation in 2018



MSM services only as a single site solution !

Galileo/BeiDou MSM services since 2019

situation in 2019



MSM services also as network solution (VRS)

Galileo/BeiDou RINEX3 services since 2021

The screenshot shows the CZEPOS web interface for RINEX data. The header includes the CZEPOS logo and a language dropdown set to 'čeština'. The breadcrumb trail is 'Home / Post Processing / RINEX Data'. The main section is titled 'RINEX Data' and includes a progress indicator 'DOSTUPNOST DAT 17.47 %' for the last 30 days. A descriptive text explains that the service provides RINEX v. 3.x data with a 1-second interval and 15-minute files, supporting output interval and file merging up to 960 files per request. The search interface includes a date range from 2021-04-07 8:30 to 2021-04-07 09:00, a project name field, and a search button 'Hledání Stanic'. A 'Virtuální RINEX' checkbox is present. Below the search bar is a map of the Czech Republic with station locations marked. To the right of the map is a table of selected stations and their data status.

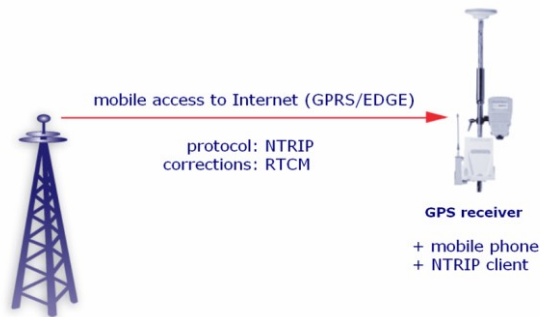
Station	System	Antenna	Receiver	Files	Completion	Selection
CRAK	GPS+GLO+GAL+BDS+QZSS	LEIAR25.R4 LEIT	LEICA GR30	2 Soubory	(100.00%)	<input type="checkbox"/>
CSUM	GPS+GLO+GLO+BDS+QZSS	LEIAR25.R4 LEIT	LEICA GR30	2 Soubory	(100.00%)	<input type="checkbox"/>
CSVI	GPS+GLO+GAL+BDS+QZSS	LEIAR25.R4 LEIT	LEICA GR30	2 Soubory	(100.00%)	<input checked="" type="checkbox"/>

till 2021: Leica SpiderWeb software:
since 2021: Leica X-Pos software:

only RINEX2 (GPS+GLO)
only RINEX3 (GPS+GLO+GAL+BDS)

Administration of CZEPOS network

- 28 Czech stations
- 27 neighboring stations
- real-time services
- post-processing products
- GPS/GLONASS

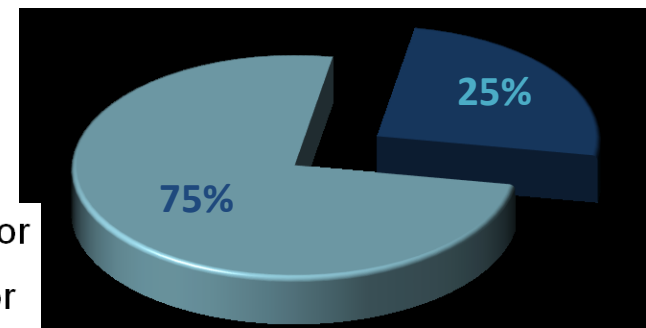


- 7 stations involved in EUREF permanent network (EPN)
- cooperation within EUPOS project



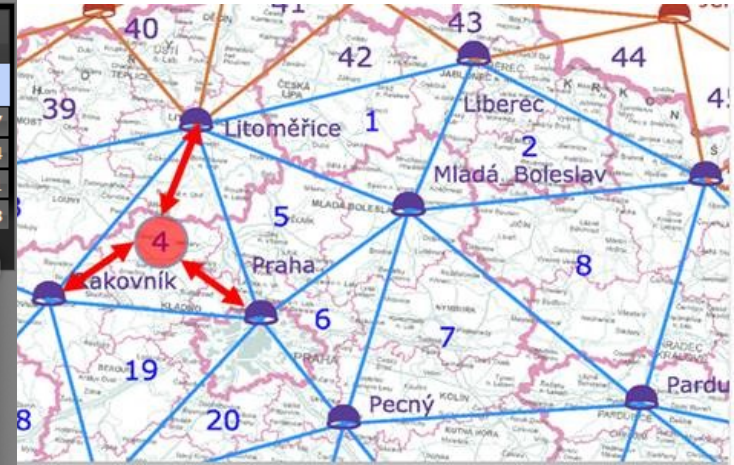
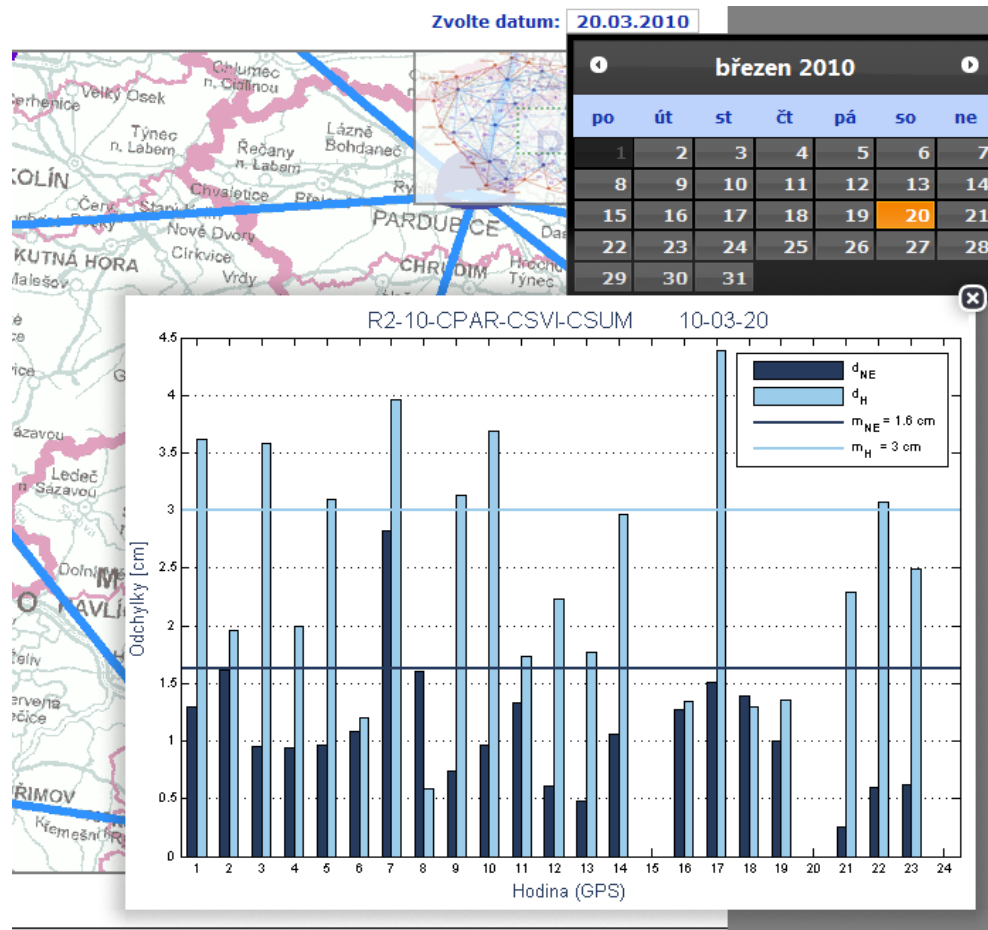
**2021/11: 2130 users
+100 since last year**

- private sector
- public sector



Administration of CZEPOS network

• monitoring of accuracy



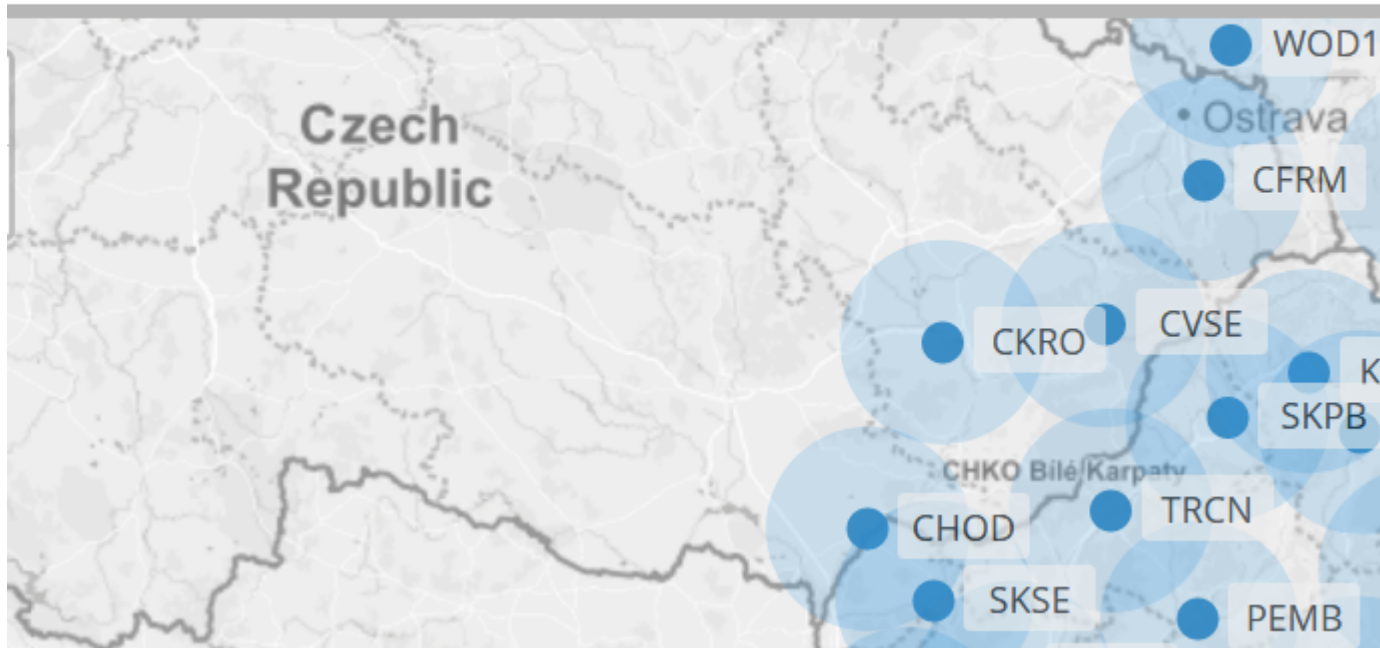
- Internet application, created in cooperation with CTU
- 75 testing areas on the territory of CR including border areas
- there are 3 testing baselines in each area
- each baseline is tested from RTK x VRS service

- since 2010
- upgrade 2021 (Galileo/BeiDou)

Administration of CZEPOS network



Service quality monitoring



- **since 2019 EUPOS SQM – 4 stations**

Administration of CZEPOS network

- monitoring of operation

ZEMĚMĚŘICKÝ ÚŘAD - CZEPOS - Mozilla Firefox

Soubor Úpravy Zobrazení Historie Záložky Oblíbené Nástroje Nápověda

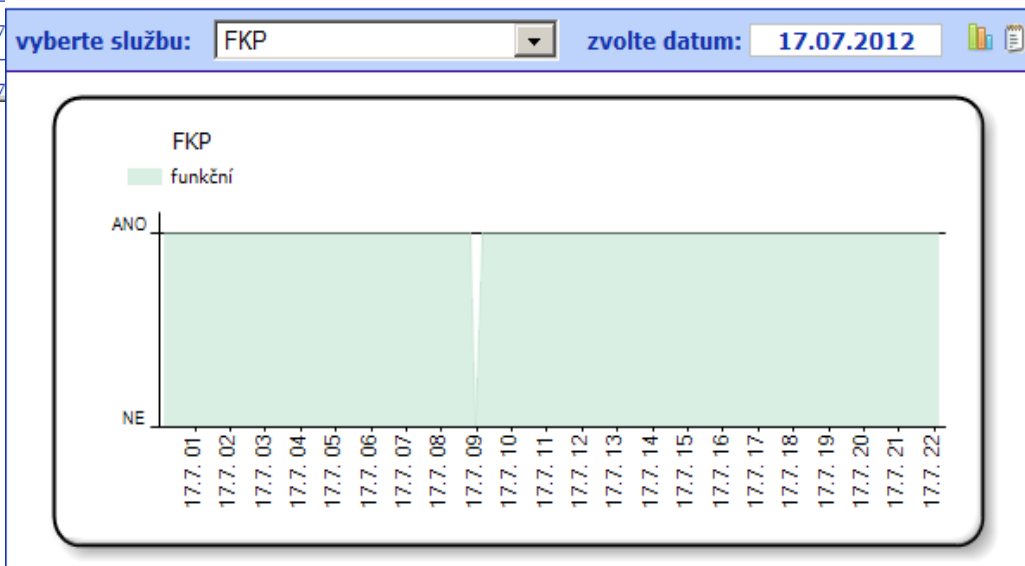
ZEMĚMĚŘICKÝ ÚŘAD - ...

czepos.cuzk.cz/_serviceStatus.aspx

aktuální stav služeb RTK a DGPS
služby RTK a DGPS, závislé na výběru stanice

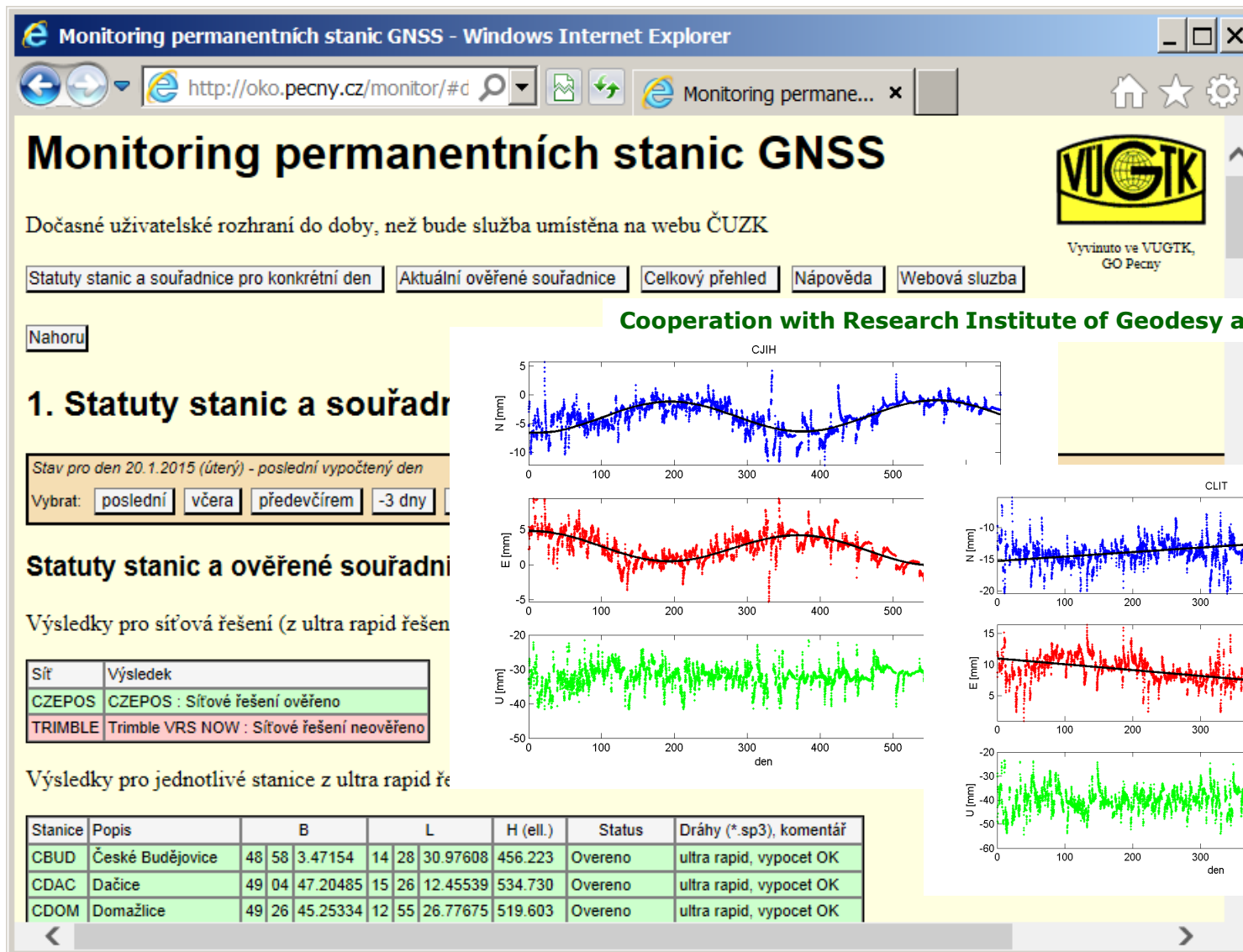
n	stanice	kód	RTK funkční	DGPS funkční	testováno
1	Pardubice	CPAR	ANO	ANO	7/17/2012 9:31:36 PM
2	Svitavy	CSVI	ANO	ANO	7/17/2012 9:33:04 PM
3	Jihlava	CJIH	NE	NE	7/17/2012 9:34:32 PM
4	Dačice	CDAC	ANO	ANO	7/17
5	Tábor	CTAB	ANO	ANO	7/17
6	Příbram	CPRI	ANO	ANO	7/17

výpis historie - služby virtuální referenční stanice a nejbližší stanice



Administration of CZEPOS network

- monitoring of operation



New prices since 2017

DGPS Differential GPS	• DGPS	20 Kč (0.78 €) / 1 hour
RTK Real Time Kinematic	<ul style="list-style-type: none"> • RTK • RTK3-GG • RTK3-NS-GG 	80 Kč (3.13 €) / 1 hour 60 Kč (2.35 €) / 1 hour
VRS Virtual Reference Station	<ul style="list-style-type: none"> • RTK-PRS • RTK-FKP • VRS3-MAX, VRS3-iMAX • VRS3-MAX-GG, VRS3-iMAX-GG • VRS-MAX-GG_L4G • VRS-iMAX-GG_CMR, VRS-iMAX-GG_CMR+ • VRS3-VirtualRS-GG 	80 Kč (3.13 €) / 1 hour 60 Kč (2.35 €) / 1 hour

New prices since 2017

Real-time services:

- fixed monthly payment

RTK-PRS, RTK-FKP, MAX, iMAX, MAX-GG, iMAX-GG,
RTK, RTK3-NS, RTK3-GG,
DGPS

~~6 000 Kč (231.71 €)~~

1 000 Kč (39.12 €)

- fixed annual payment

RTK-PRS, RTK-FKP, MAX, iMAX, MAX-GG, iMAX-GG,
RTK, RTK3-NS, RTK3-GG,
DGPS

~~25 000 Kč (978.89 €)~~

10 000 Kč (391.24 €)

Post-processing products:

data interval: 1 – 4 seconds

~~80 Kč (3.13 €)~~ **50 Kč (1.96 €)**

5 – 9 seconds

~~16 Kč (0.63 €)~~ **10 Kč (0.39 €)**

10 – ... seconds

~~8 Kč (0.31 €)~~ **5 Kč (0.20 €)**

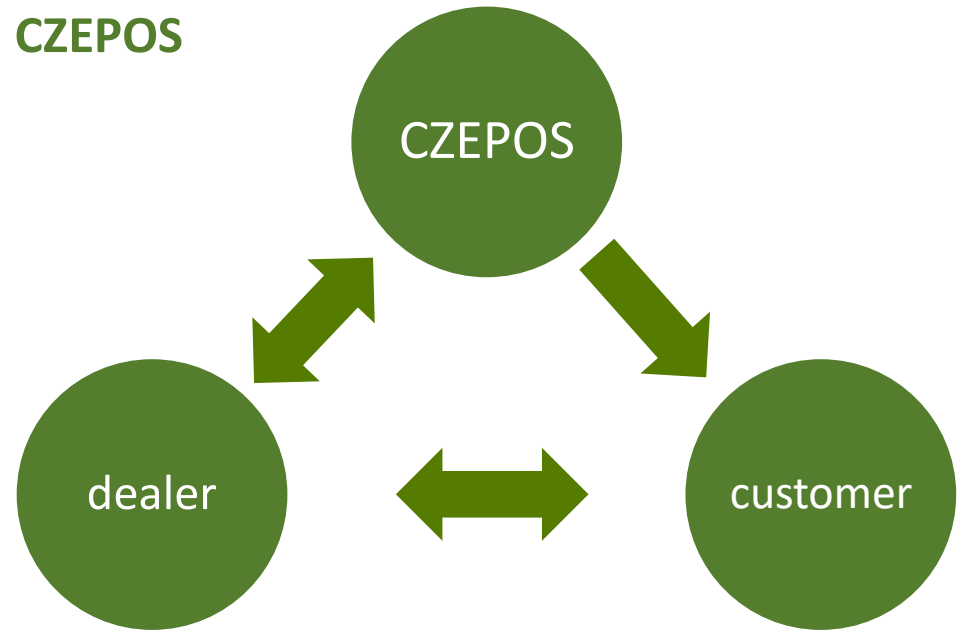
computation service

free of charge

CZEPOS – cooperation with dealers since 2018

- dealer register customers within CZEPOS

customers are still registered within CZEPOS



- dealer operates own GNSS software (virtual GNSS network)



dealer provides GNSS services to customers by his own GNSS software

CZEPOS – cooperation with dealers since 2021



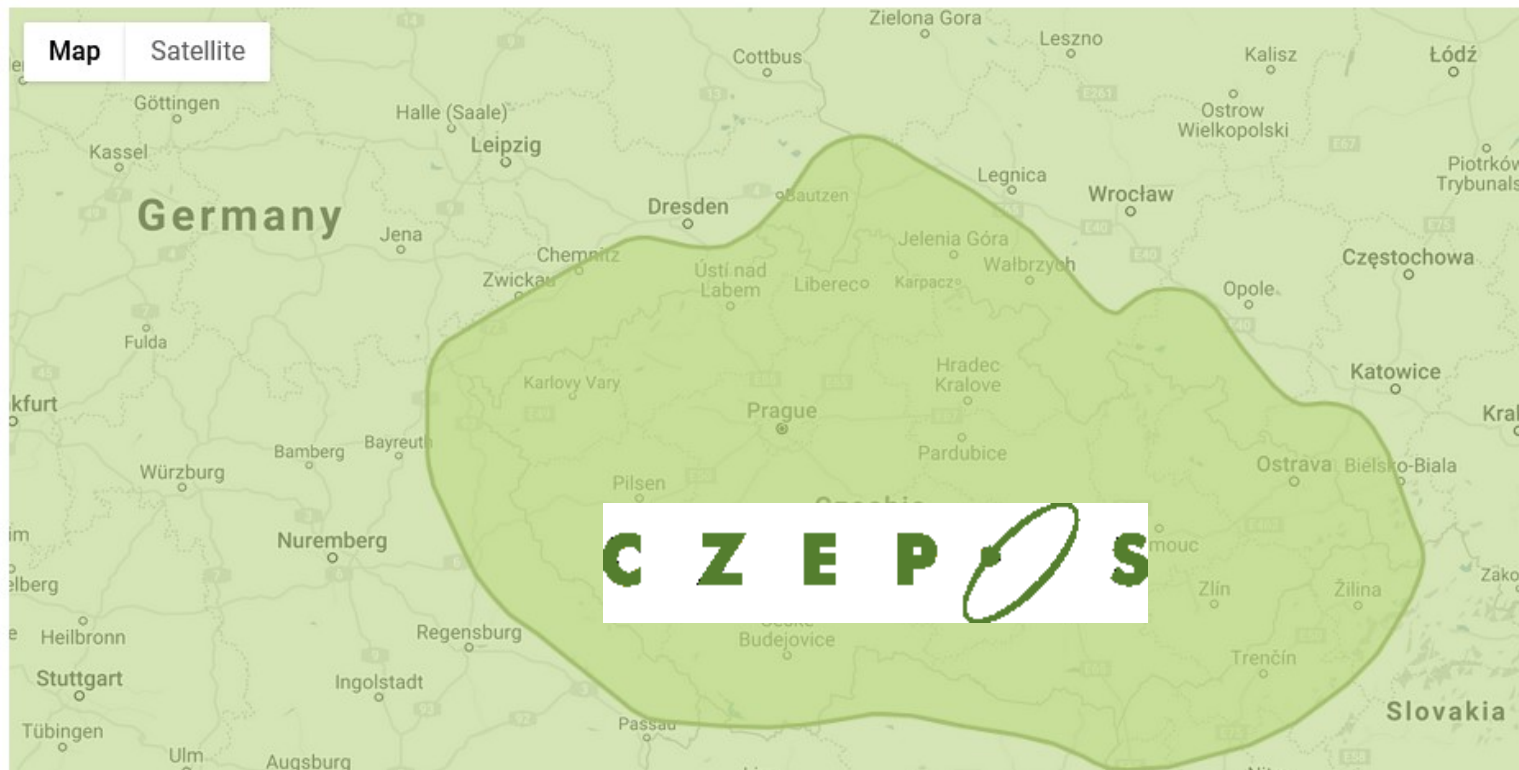
HEXAGON

HxGN SmartNet

Služby Podniky Aplikace Jak to fu

Domů > Pokrytí

Pokrytí





thank you for your attention