



News related to **SKPOS**®

October 2014

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1st EUPOS® Council and Technical Meeting

October 15-16.10.2014, Warsaw, Poland



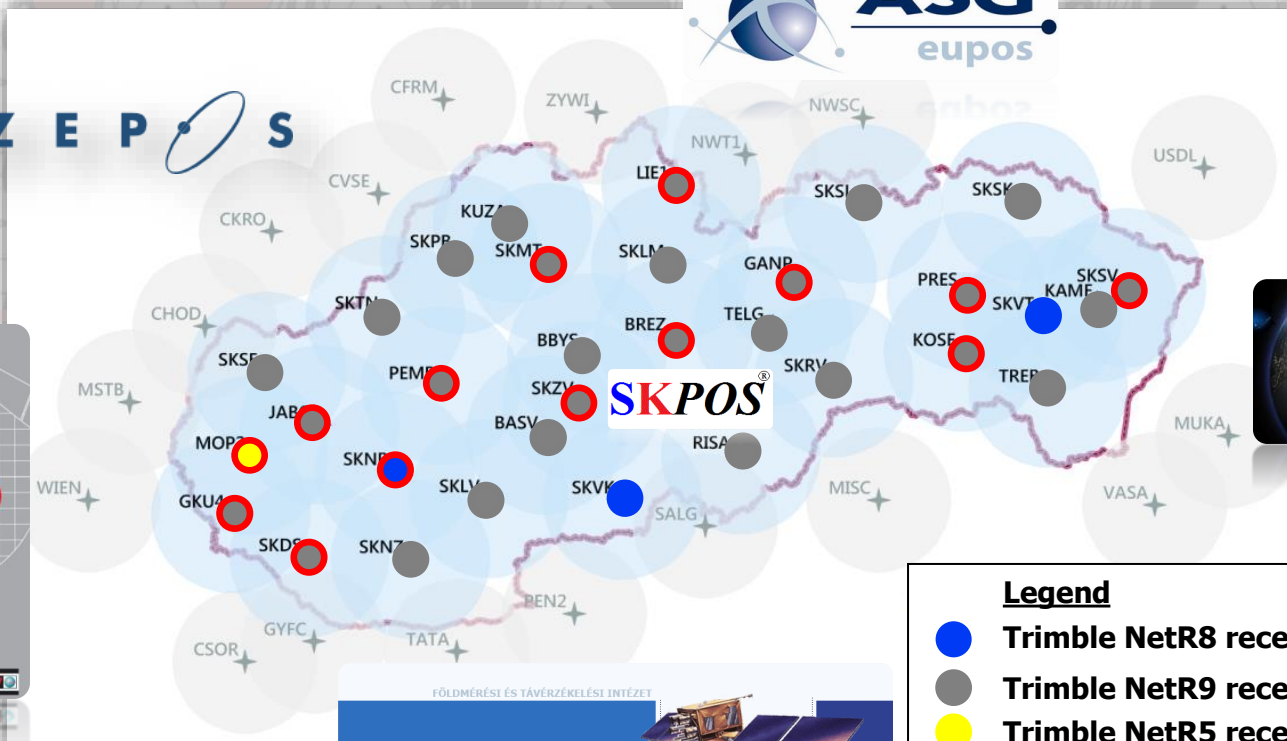
Agenda

- **SKPOS**[®]
 - status in October 2014
 - new foreign permanent station introduction
 - control software upgrade,
 - provided services,
 - number of users,
 - charges
- News from applications related to **SKPOS**[®]
- **SKPOS**[®] quality monitoring news
- Contributions to *EUPOS Combination Center*
- Digital Terrain Model from **SKPOS**[®] RTK measurements

SKPOS[®] infrastructure

Status: October 2014

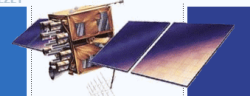
- **32 Slovakian permanent stations (14 individual calibrated)**
 - All stations with TRIMBLE receivers and antennas
 - All stations observe GPS+GLONASS signals (few Galileo, BeiDou)
- **18 foreign permanent stations**



Legend

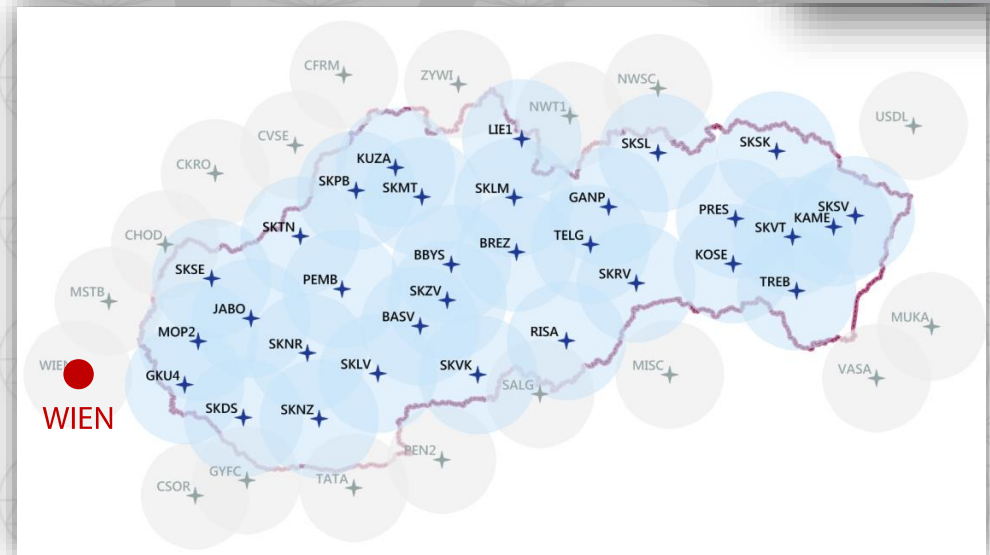
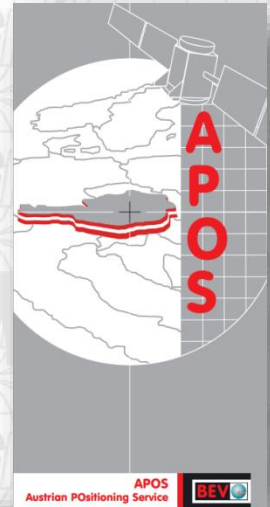
- Trimble NetR8 receiver
- Trimble NetR9 receiver
- Trimble NetR5 receiver
- Individual calibrated antenna

GNSSnet.hu
GNSS SZOIGÁLTATÓ HŐZPONT



APOS station WIEN entered into **SKPOS**[®] network solution

- October 2014 - APOS (Austrian POsitioning Service) permanent station **WIEN** was connected to **SKPOS**[®] control software
- cooperation with BEV (Austria) is on bilateral agreement = exchange of 2 stations on both sides:
 - MSTB and WIEN (APOS permanent stations)
 - SKSE and GKU4 (**SKPOS**[®] permanent stations)



SKPOS®

control software & receivers firmware upgrade

- **Trimble® Pivot™ Platform GNSS Infrastructure Software**

- Upgrade to new version 3.14 – support RTCM 3.2 MSM
- I-Scope modul

RTCM3.2
We are ready for testing!
Suggestions for testing scenario?



SKPOS®

Portál Slovenskej priestorovej observanej služby GNSS

A screenshot of the SKPOS software interface. It shows a network map on the right side with various nodes and connections. On the left, there is a list of components and their status. Below the network map, there is a section titled "VRS (iScope™) Live" which displays a map of a geographical area with several green and yellow markers indicating receiver locations. The interface is in a light blue and white color scheme.

- **Upgrade receivers firmware**

- Version 4.85

A screenshot of a software window titled "Trimble NetR9". The window displays the following information: Receiver Type: NetR9, System Name: GKU4, Serial Number: 5212K83327, Ethernet IP: 192.168.244.218, Firmware Version: 4.85, and Date: 2014-02-12. There is a "More..." link at the bottom. The Trimble logo is visible on the left side of the window. The background of the window is light blue and white.



SKPOS®

services (mountpoints)

Only network solution (Network RTK in VRS concept) no
Single RTK is provided!

Service (mountpoint)	Accuracy	Data format	Interval
SKPOS_MM post-processing (VRS or permanent station data)	mm - cm	RINEX: 2.10, 2.11, 3.0 DAT, TGD, T01, T02	1 sec. – x sec.
SKPOS_CM_23 SKPOS_CM_31 SKPOS_CM_CMRX SKPOS_CM_CMR+	2 – 4 cm	RTCM 2.3 RTCM 3.1 CMRX CMR+	1 sec.
SKPOS_DM_SVK SKPOS_DM_SVK_23	0,3 – 1 m	RTCM 2.1 RTCM 2.3	1 sec.

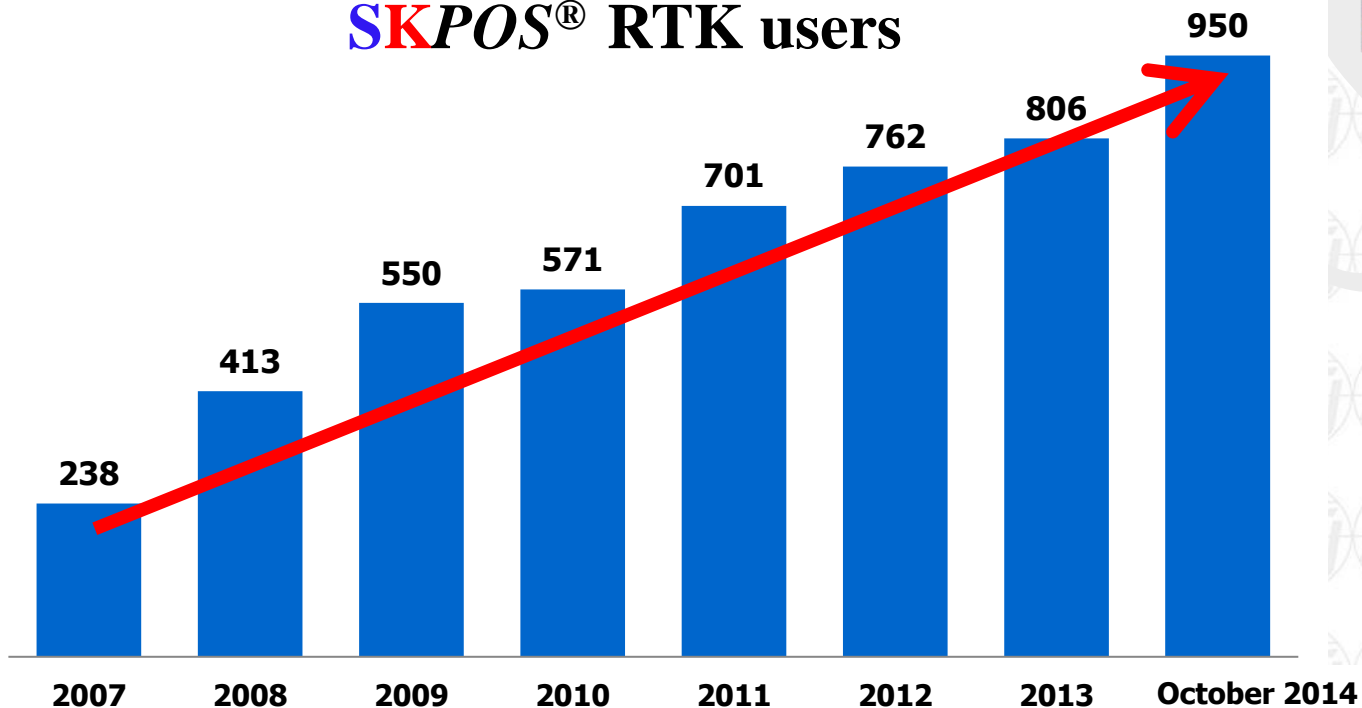


SKPOS®

number of registrations (users)

- 950 registrations (October 2014)
- number is still increasing (due to price reduction in May 2014)

SKPOS® RTK users



SKPOS® Charges



Post processing 1000 hours RINEX files	RINEX 2.x, 3.x	50 € / 365 days
Network RTK (year) 1000 hours network RTK 50 hours RINEX files	RTCM 2.3, 3.1, CMR _x , CMR ₊	50 € / 365 days
Network RTK (month)	RTCM 2.3, 3.1, CMR _x , CMR ₊	19 € / 30 days
DGNSS	RTCM 2.1	20 € / 365 days

WITHOUT CHANGE

Application „Monitoring of the number of online logged-in SKPOS® users“

- application is written in PHP scripting language
- purpose: help administrator to monitor the number of online connected users = help administrator to optimise the purchase of licences

■ Application display:

- Number of online connected users
- Real-time plot of online connected users
- History of connections
- Peak number

Pripojení uživatelů

GPS čas	RTK	Dualpack	Single
08.10.2014 12:05:16	77	14	44
08.10.2014 12:00:16	76	14	44
08.10.2014 11:55:16	84	12	44
08.10.2014 11:50:16	79	14	44
08.10.2014 11:45:16	87	14	44

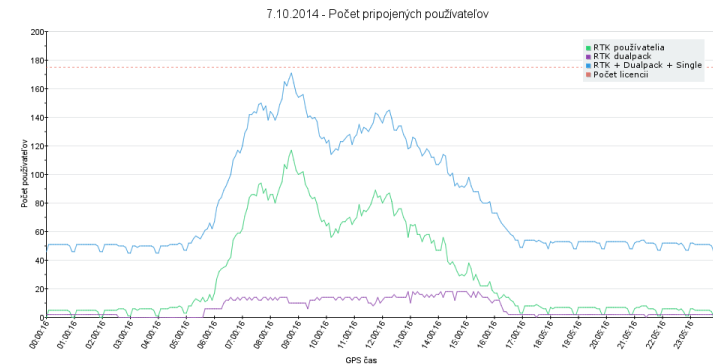
Max. počet pripojení

07.10.2014 08:45:16

RTK Dualpack Single
117 + 10 + 44 = 171

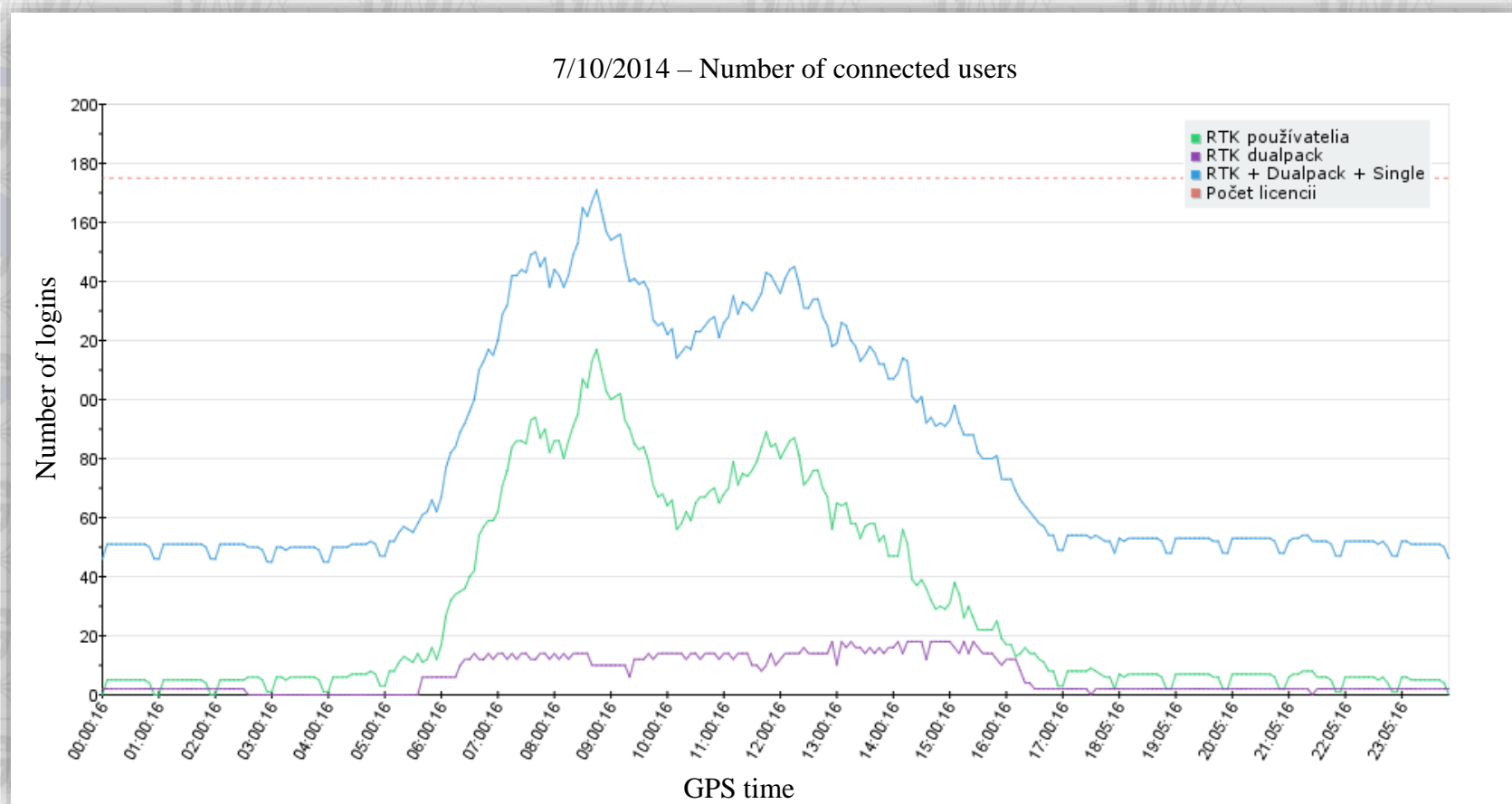
Vyber datum:

< 7.10.2014 >



SKPOS[®] - Simultaneous login peak

■ Simultaneous login peak **171** (7/10/2014)



Application for SKPOS® Monitoring And RTK Users Performance (ASMARUP)

- application for SKPOS® user initialisation time analysis
- available only for administrators (GKU)

The screenshot displays the ASMARUP application interface. At the top, there is a search bar with the URL `172.16.5.146/asmarup/index.php?date1=&date2=&user=&time1=&time2=&ini_time1=&ini_time2=&sat1=&sat2=&rtcm=&skpos=&send=&lang=en`. Below the search bar, there are several filter fields: Date from/to, User, Time (SEC) from/to, Initializations from/to, Number of satellites from/to, and MountPoint (radio buttons for SKPOS_CM_2,3, SKPOS_CM_3,0, and SKPOS_CM_CMR). There is also a checkbox for "Display the reference stations SKPOS:" and a "Choose location:" checkbox. A "Show" button is located below these filters.

A large red watermark "NO new analysis" is overlaid on the interface.

Below the filters, there is a table with the following columns: Uživatel', Datum, Čas [s], Inicializačný čas [s], Počet satelitov, and MountPoint. The table contains one row of data for user "uzivatel1" on "15.11.2011" at "17:00:00" with an initialization time of 22s, 13 satellites, and MountPoint "SKPOS_CM_2,3".

To the left of the table is a histogram showing the distribution of initialization times. The x-axis is labeled "Inicializačný čas [s]" and ranges from 0 to 300. The y-axis is labeled "Počet inicializací" and ranges from 0 to 200,000. The histogram shows a sharp peak at approximately 20 seconds, with a long tail extending to 300 seconds.

To the right of the table is a map of the Czech Republic showing the locations of reference stations. A legend indicates three categories of initialization times: 0-40 seconds (black dots), 41-80 seconds (red dots), and 81-300 seconds (green dots).

SKPOS[®] quality monitoring

Application „SKPOS[®] network solution quality monitoring“

<http://monitoringskpos.gku.sk>

desktop version

SKPOS[®]

SKPOS network solution quality monitoring

Home
About application
How to use the application
FAQ
Back to the SKPOS web page

Locality selection
Select date: 12.12.2013

SKPOS[®]

SKPOS network solution quality monitoring

Home
About application
How to use the application
FAQ
Back to the SKPOS web page

Locality selection
Select date: 02.12.2013

Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

SKPOS[®]

SKPOS network solution quality monitoring

Home
About application
How to use the application
FAQ
Back to the SKPOS web page

Locality selection
Select date: 02.12.2013

SKPOS[®]

SKPOS network solution quality monitoring

Home
About application
How to use the application
FAQ
Back to the SKPOS web page

Locality selection
Select date: 02.12.2013



SKPOS[®] network solution quality monitoring

Select date: 10.04.2014

SKPOS[®] network solution quality monitoring

Select date: 10.04.2014

SKPOS[®] network solution quality monitoring

SKPOS[®] network solution quality monitoring

Su Mo Tu We Th Fr Sa

24 25 26

1 2 3

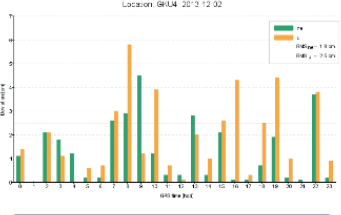
8 9 10

15 16 17

22 23 24

29 30 31

Location: GKUA 2013-12-02



Close

mobile version

<http://monitoringskpos.gku.sk/m>

SKPOS[®] quality monitoring

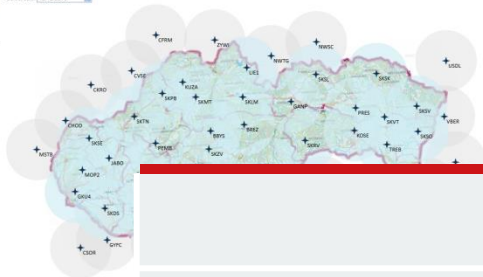
Application „SKPOS[®] network solution quality monitoring“ statistics

SKPOS[®]

SKPOS network solution quality monitoring



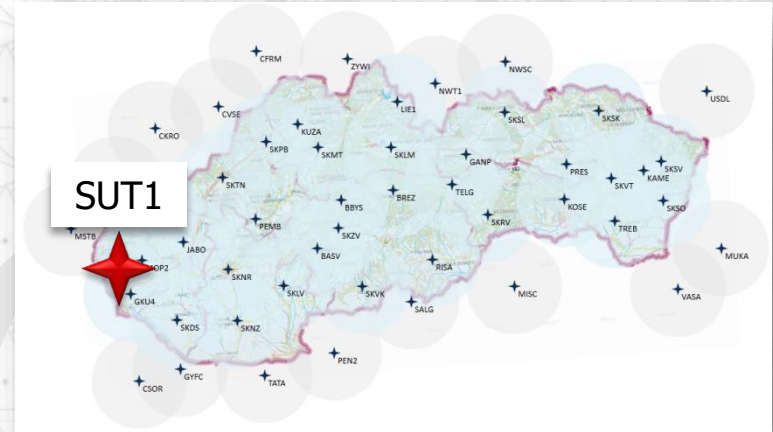
Home
About application
How to use the application
FAQ
Back to the SKPOS web page



		SKPOS[®]
Values		319,049
Maximal value	ne	47.9 cm
	u	49.6 cm
Average value	ne	1.2 cm
	u	2.4 cm
No fix		18%

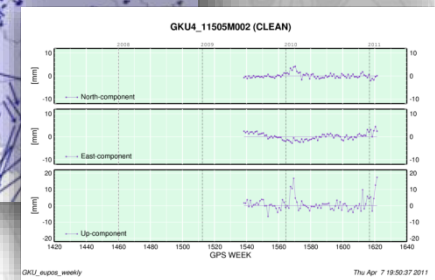
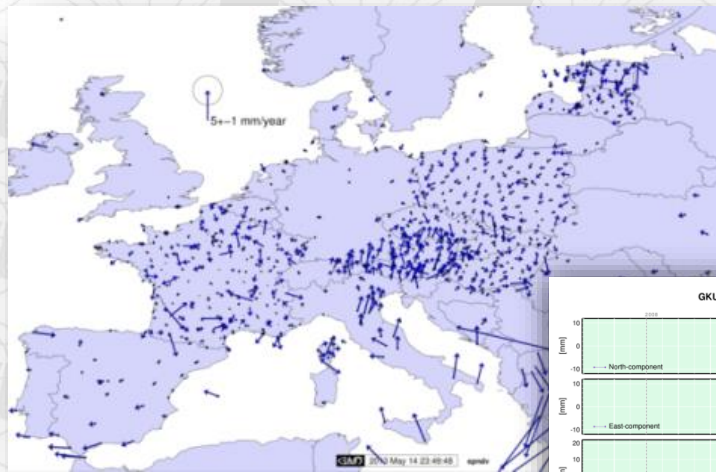
SKPOS[®] quality monitoring SUT1 – new real monitoring station

- **SUT1** monitoring station
 - Location: Bratislava (urban area)
 - 4 km from the GKU4 SKPOS[®] reference station
 - established in June 2014
 - station owner: Slovak University of Technology in Bratislava
 - Equipment
 - Receiver: Trimble NetR9
 - Antenna: TRM55971.00 NONE
 - Comparison with SKPOS[®] quality monitoring application
 - see EUPOS WG SQM presentation



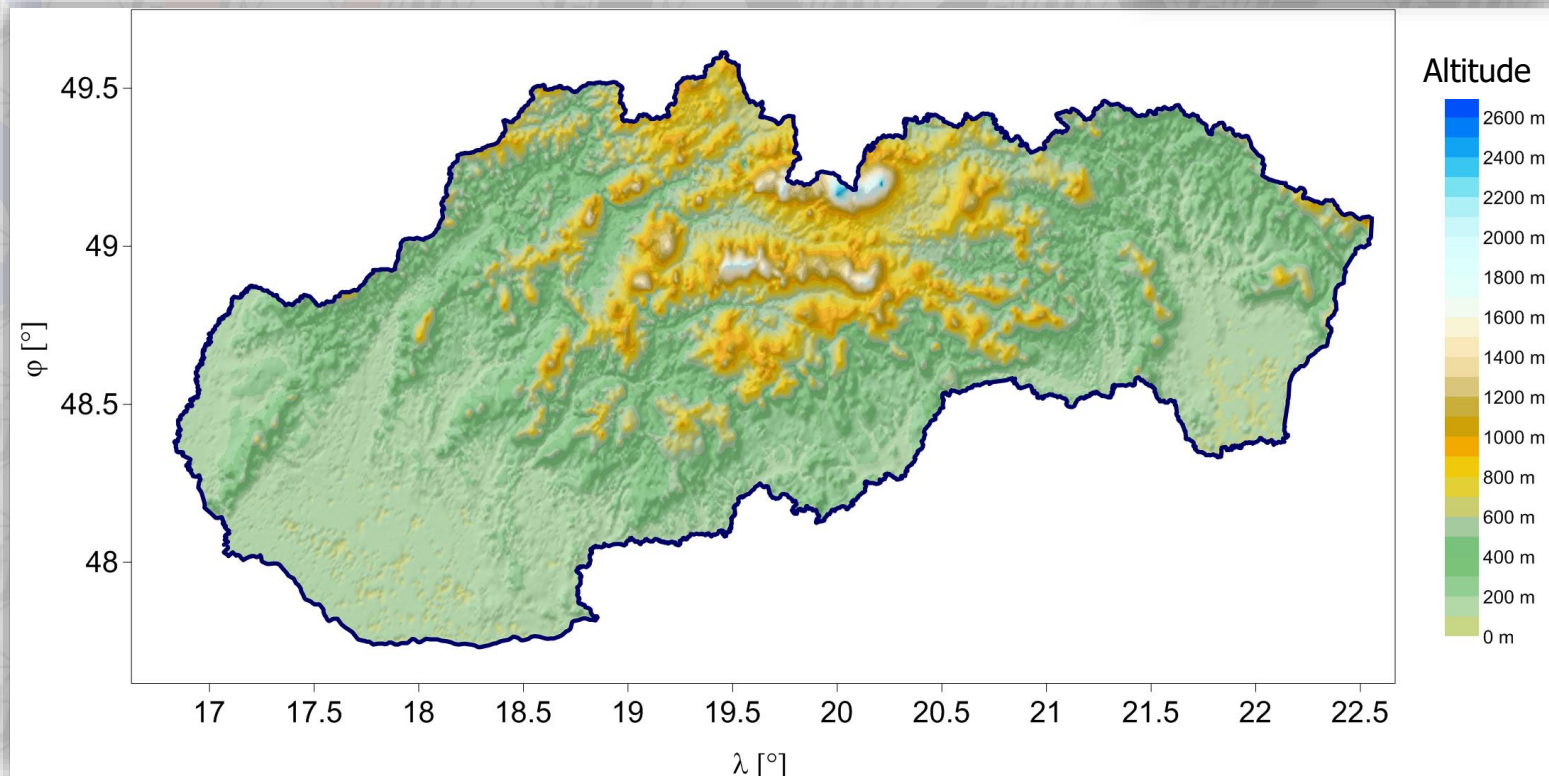
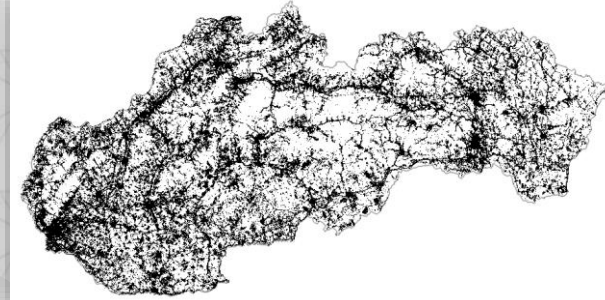
Contributions to *EUPOS* Combination Center

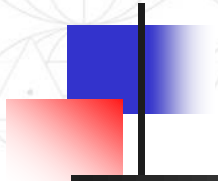
- contribution with GKU SINEX files to ECC
 - some problems occurred
 - problem with Bernese 5.2 compilation *fixed*
 - problem with server *fixed*
 - problem with resulted SINEX files *solving*



Digital Terrain Model from SKPOS[®] RTK measurements

- More than 1,000,000 RTK measurements (2007-2013)
- **physical heights from NMEA** (only fixed solution)
- Many possible errors in heights – need check
- Aim – testing or improvement of digital terrain model





SKPOS®

**Thank you for your
attention**