5th EUPOS Meeting

# REPORT OF SLOVENIA

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(SURVEYING AND MAPPING AUTHORITY OF THE REPUBLIC OF SLOVENIA, LJUBLJANA)

Tallinn, 14. – 15. November 2018

# PRESENTATION TOPICS:

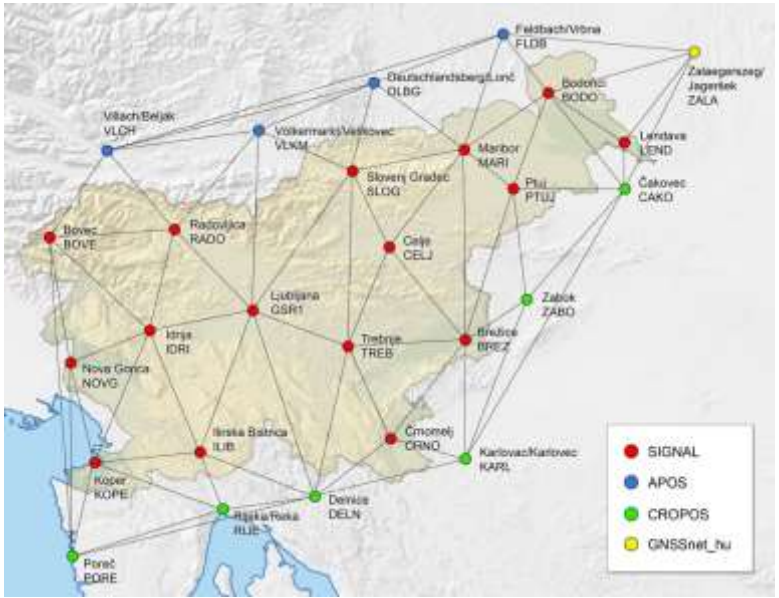
**SIGNAL network (Slovenian GBAS Network)**

**” EUREF Slovenia 2016” GNSS Campaign**

**Other activities (EPSG datasets)**

# SIGNAL NETWORK

- Slovenian network of **16** continuously operating GNSS stations
- One EPN station (GSR1)
- SW: Trimble Pivot + Alberding QC
- GNSS stations: 8 Trimble + 8 Leica  stations



# NEW 2018

- Different APOS stations (BLEI, KLAG and LANK replaced by VLKM,DLBG)
- Cooperation with italians (A. Marussi network from FVG Region)

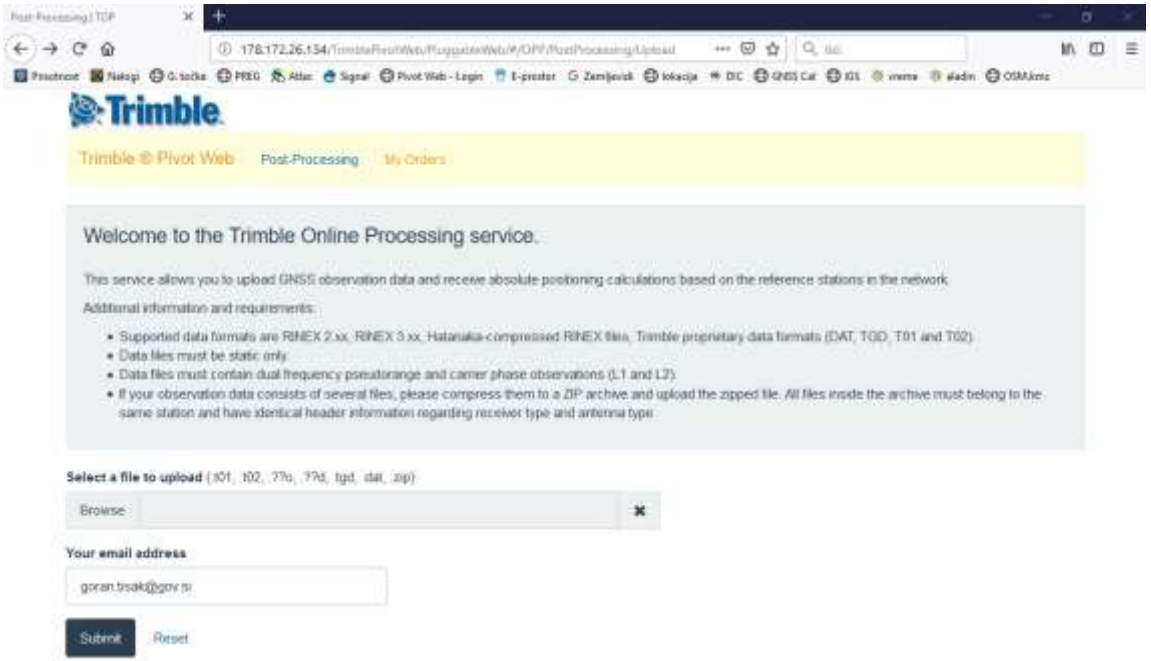
- Upgrade 8 Trimble station with Galileo (end of 2018)
- In next 2 years upgrade of Pivot SW + 8 Leica stations

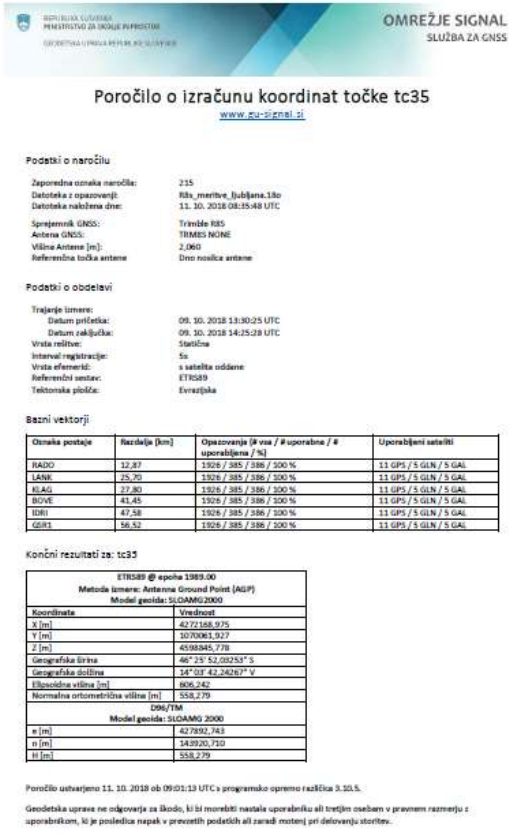
- Question ?: Trimble SW vs. Leica recivers

# NEW 2018

## Trimble Online Post Processing (TOP) modul for users

- Tested, public use January 2019



**TOP modul**

**Trimble Post Processing**

+ very user friendly interface

+ users don‘t need to invest in sw

- no settings („black box“)
- unknown algorithms (Trimble)

Only for „**non-demanding users“.**

Test showed deviations in extreme situations.

# EUREF SLOVENIA 2016 GNSS CAMPAIGN

The Goals of the Campaign

- **To check and improve the consistency** of coordinates in the passive (EUREF points) and active (SIGNAL stations) networks
- **To connect EUREF and SIGNAL Networks** with the newly established Zero-Order Network
- **To find an evidence for active tectonics** in the EUREF densification area (20 years after the first realization of ETRS89)

# EUREF SLOVENIA 2016 GNSS CAMPAIGN

48 Passive Network Sites

# EUREF SLOVENIA 2016 GNSS CAMPAIGN

## 6 Zero-Order Network Stations

Korada (KDA1 & KDA2)

Šentvid pri Stični (STA1 & STA2)

Areh (ARA1 & ARA2)

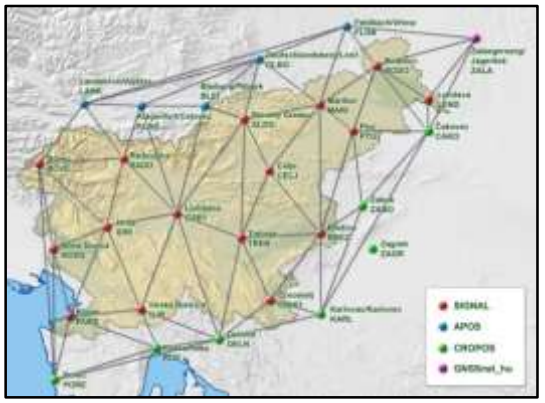
Kog (KGA1)

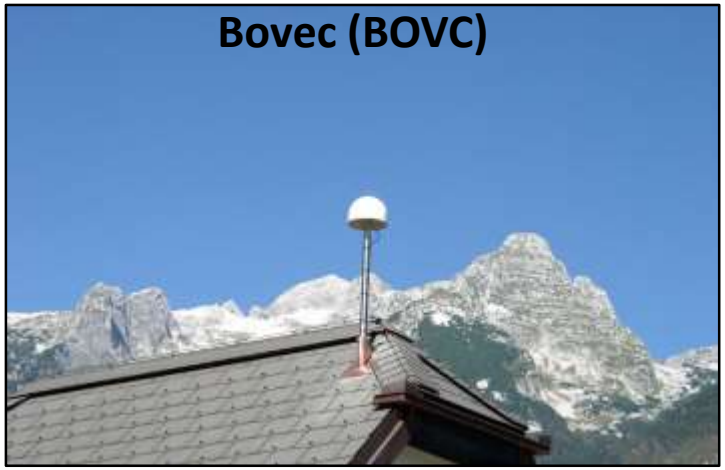
Koper (KOPE)

Prilozje (PZA1 & PZA2)

# EUREF SLOVENIA 2016 GNSS CAMPAIGN

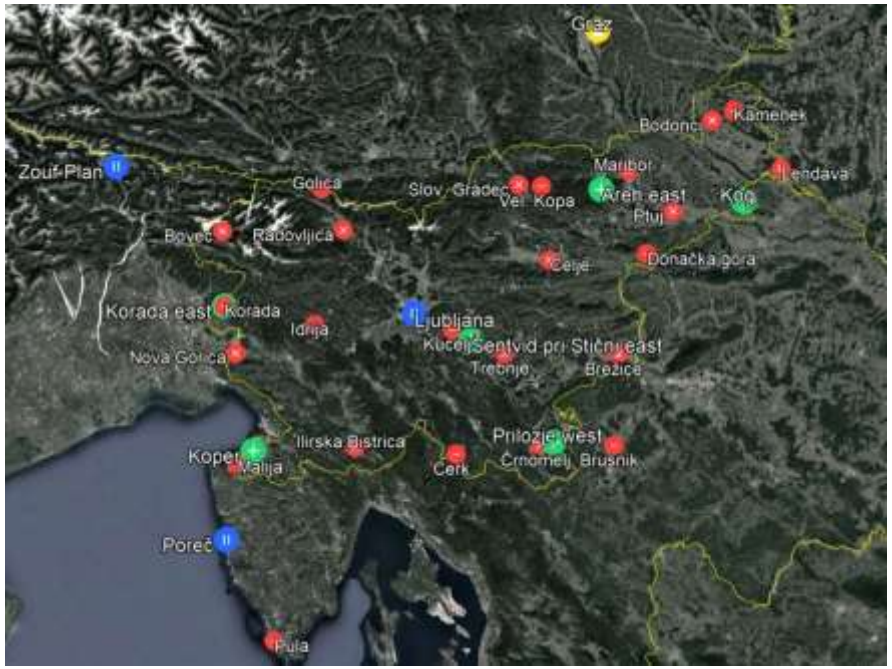
15 SIGNAL Network Stations





# EUREF SLOVENIA 2016 GNSS CAMPAIGN

Sites in Slovenia Involved in the EUREF-Computation
(Presented at the EUREF Symposium in Amsterdam)

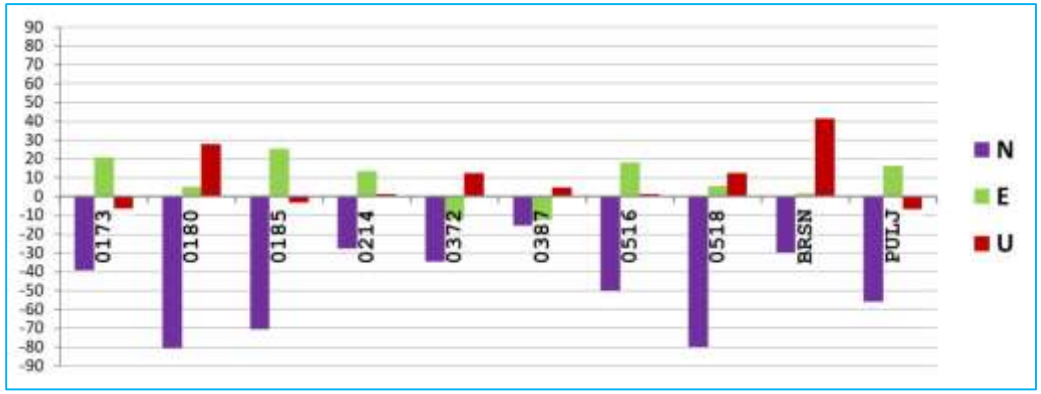



The EUREF Sites Used in the EUREF-Computation

# EUREF SLOVENIA 2016 GNSS CAMPAIGN

Result of the EUREF Densification

- is a **new realization of ETRS89** in Slovenia (ETRS89/D17), which will not be directly implemented as the new national terrestrial datum (from practical reasons)




Coordinate Differences between the old (D96) and new realization (D17) of ETRS89 exceed **8 cm**

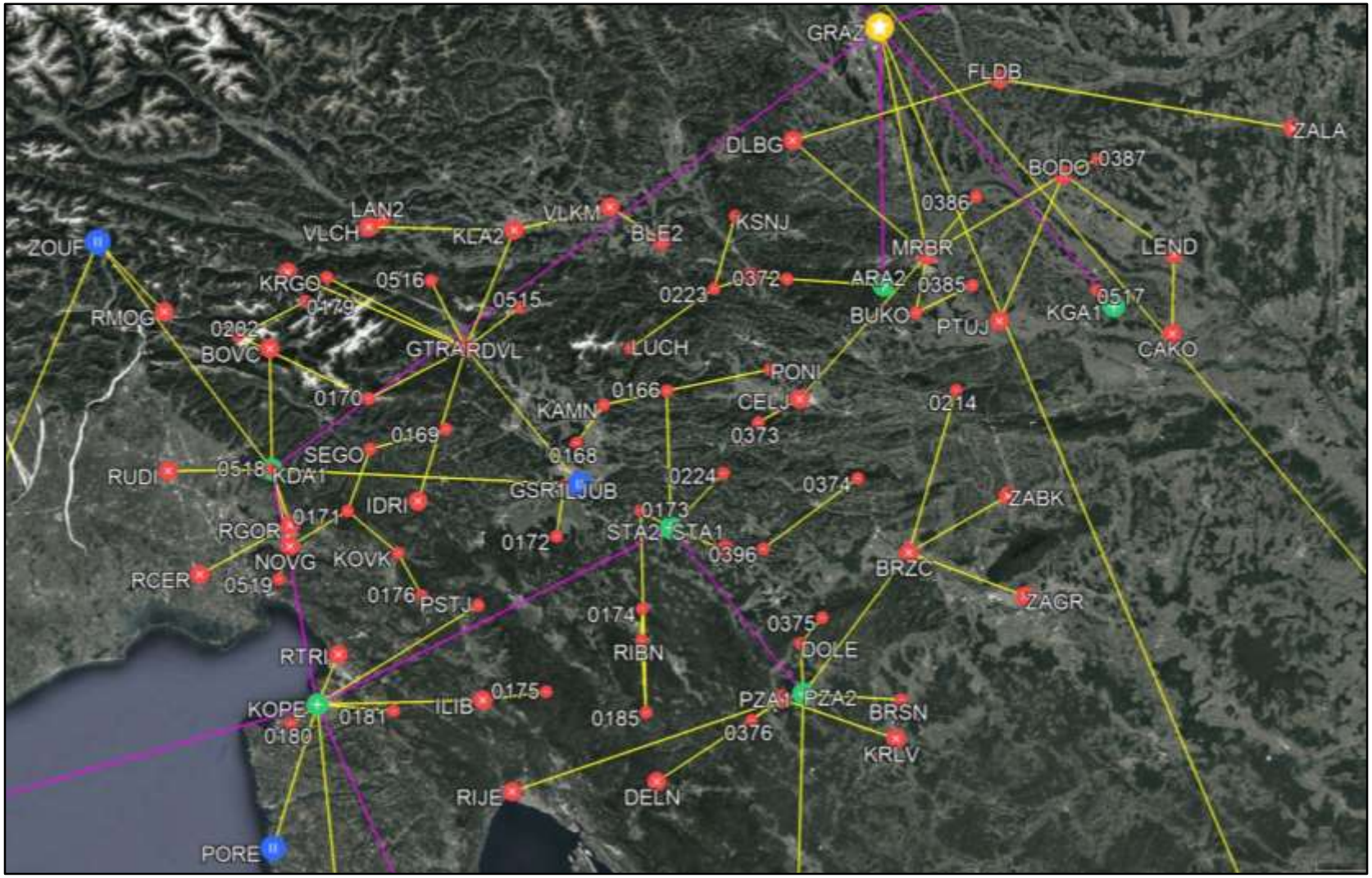
- D17 will be used **to improve the consistency** of the active and passive GNSS networks in Slovenia

- **connected the past** (EUREF sites) **and the future** (Zero-Order Network) geodetic reference frames

# EUREF SLOVENIA 2016 GNSS CAMPAIGN

## Sites in Slovenia Involved in the Full Network Computation

(Current Activity)



# Discussion of How to Maintain Coordinate reference Systems in Long Term – Four Scenarios

1) **Only minor improvement of the consitency** of active and passive networks and try to keep coordinates (in the spatial datasets) unchanged (D96 datum)

2) **A new static datum** (D17) and future datum changes on each 10 to 20 years, which need coordinate transformations (~10 cm) in the spatial datasets (annoying for the cadastral community …)

3) **Change to a semidynamic datum**; keep coordinates in the spatial datasets frozen in space and time by using the future **national deformation model** (on-line transformation between measured and registred coordinates)

4) **Change to a dynamic datum**; four dimensional coordinate reference system (e, n, h, t) with on-line changes of the coordinates in the spatial datasets with the time (trying to avoid this if not really necessary)

# EPSG Geodetic Parameter Dataset

- A review of EPSG codes for Slovenia was carried out
- Some new EPSG codes were proposed
- Updates available in the v9.5 of the EPSG Dataset:
  - New vertical datum and vertical CRS (Datum Koper, SVS2010)
  - New countrywide datum transformations (D48/ϕλ → D96/ϕλ, D48/ϕλ → WGS84/ϕλ)
  - New projected CRS used for military purposes (D96/UTM33N)
  - Correction of data for the former CRS, used in Slovenia before independence (D48/BGK)
- Activities are in progress

**Thank you for your attention**