29th EUREF Symposium

National report of Slovenia

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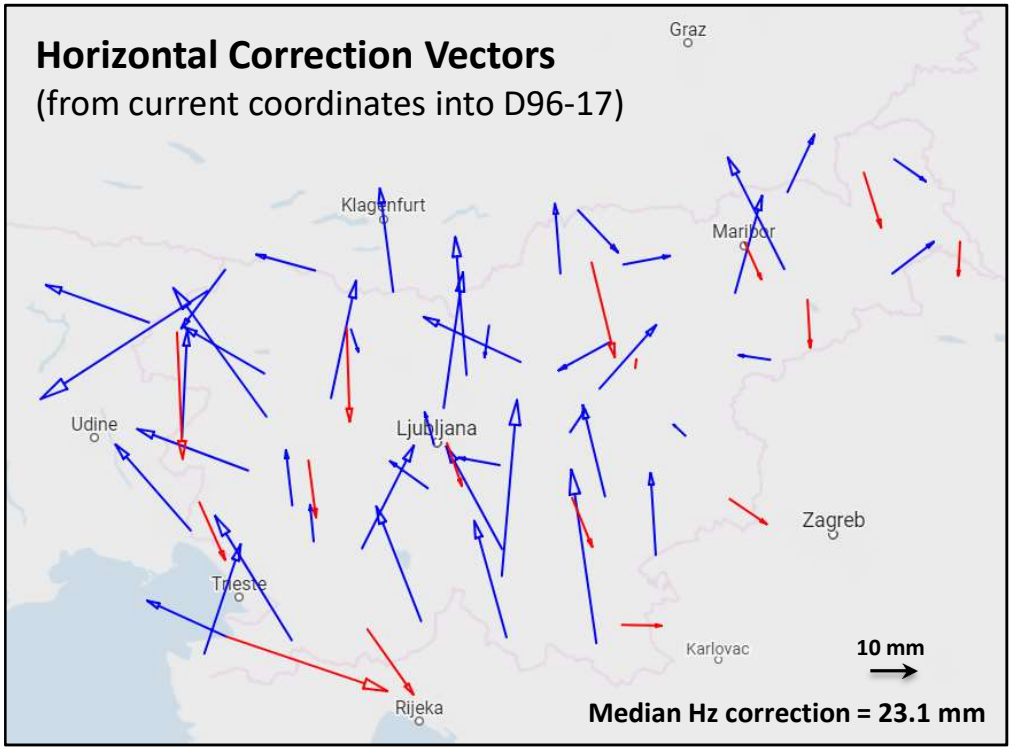
Terrestrial Reference Frame

EUREF Slovenia 2016 Campaing

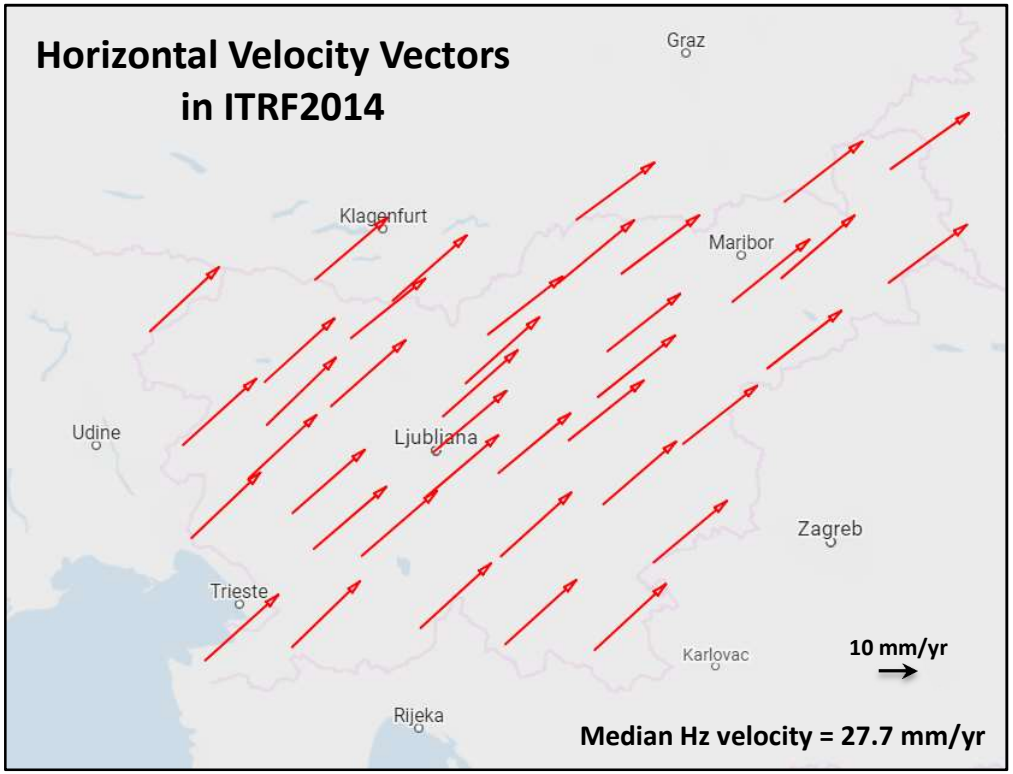
- Complete campaign computation
  - 117 sites (48 passive + 69 active)
  - 80 consecutive daily sessions
  - 5554 daily RINEX files
- Coordinates in ETRS89/D17
  (IGb08/ETRF2000, epoch 2016.75)
  ↓
- **Coordinates in ETRS89/D96-17**
  (6-parameter transformation of
  of ETRS89/D17 into ETRS89/D96
  considering both, passive and active
  networks)



Terrestrial Reference Frame

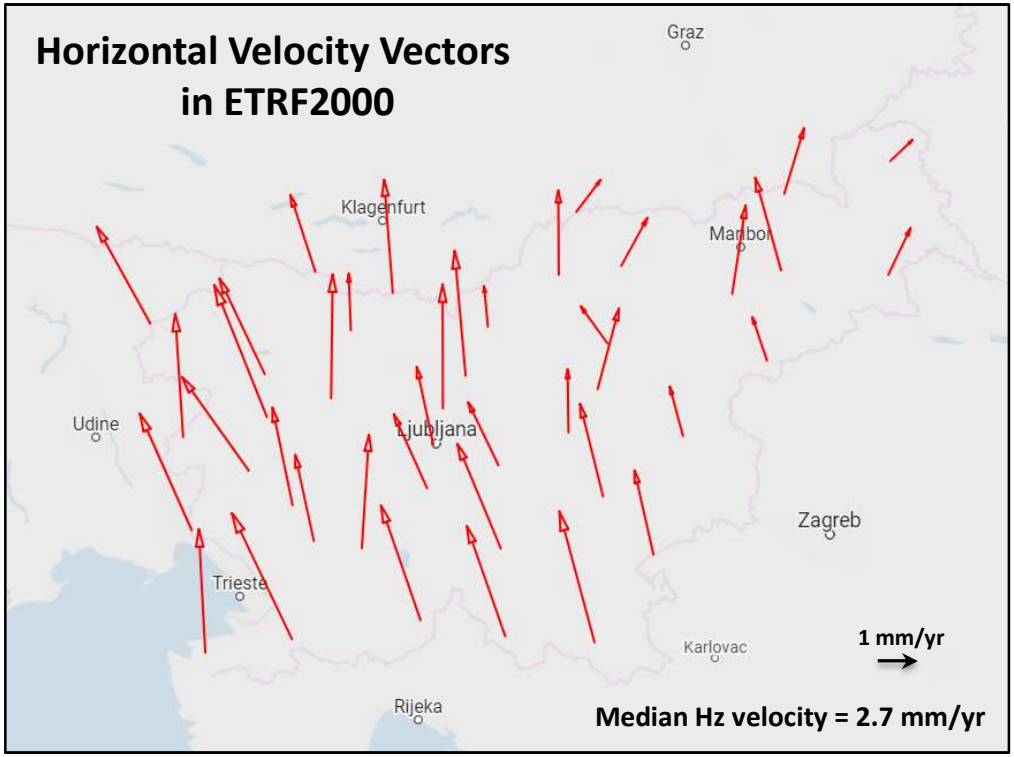
Time series from EUREF Campaings

- Collecting ITRFyy coordinates
  - EUREF CRO&SLO ’94, epoch 1994.41
  - EUREF SLO ’95, epoch 1995.74
  - EUREF CRO ’96, epoch 1996.68
  - Mini EUREF SLO ’07, epoch 2007.26
  - EUREF SLO ’16, epoch 2016.75
- Sets of coordinates in ITRF2014
  (keeping the original epochs
  for each campaign)
- **Velocities in ITRF2014**
  (time series analysis with
  Bernese GNSS Software)



Terrestrial Reference Frame

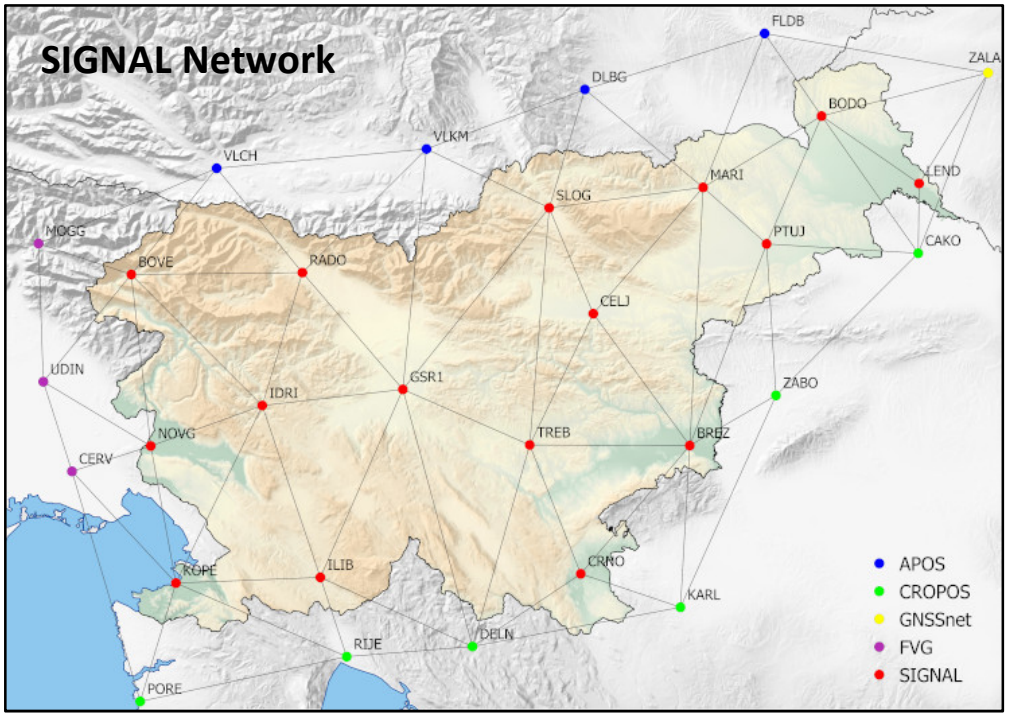
- Velocities in ITRF2014
  (time series analysis with
  Bernese GNSS Software)
  ↓
- **Velocities in ETRF2000**
  (transformed from velocities
  in ITRF2014):
  - Preliminary solution
    delivered to the WG on
    European Dense Velocities



National CORS Networks

SIGNAL Network

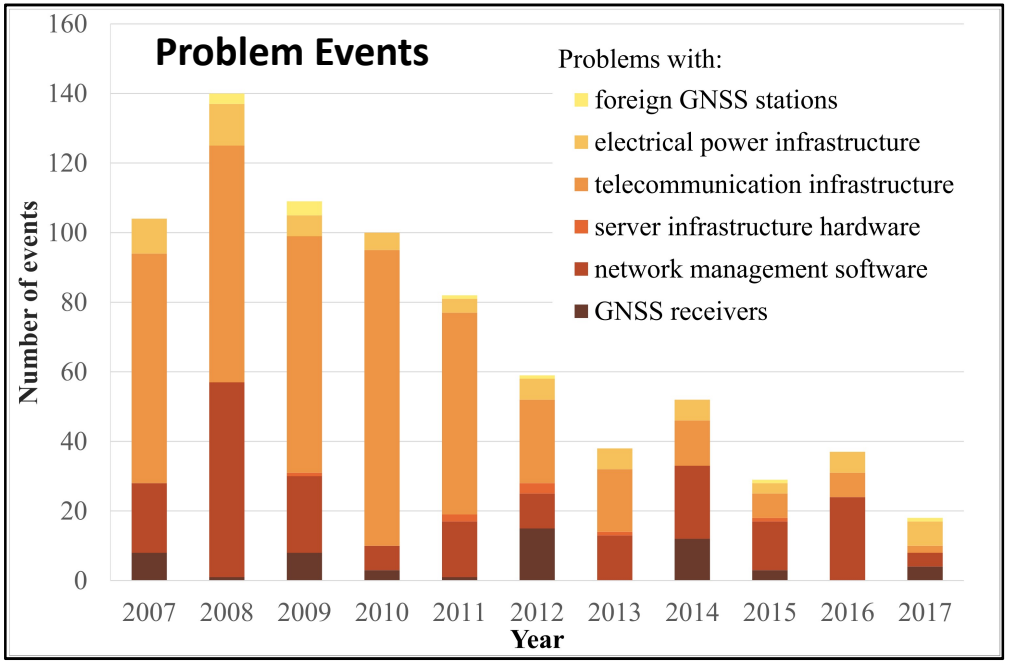
- New network configuration
  - 3 Italian stations included,
  - 3 Austrian stations removed, and
  - 2 new Austrian stations included instead
- Equipment changes at 3 stations
- Trimble Online Processing (TOP Service) started in 2019



National CORS Networks

SIGNAL Network

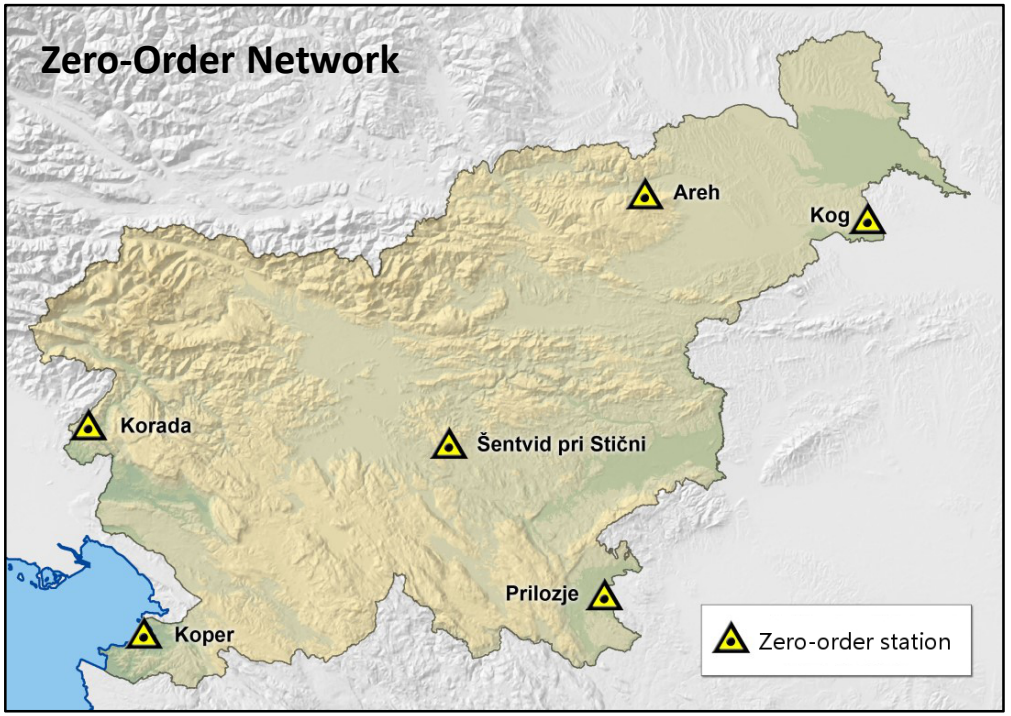
- Study of the network's performance 2007–2017
  - the quality and availability of products and services improved significantly
  - 54% of all problems related to telecomunication infrastructure



National CORS Networks

Zero-Order Network

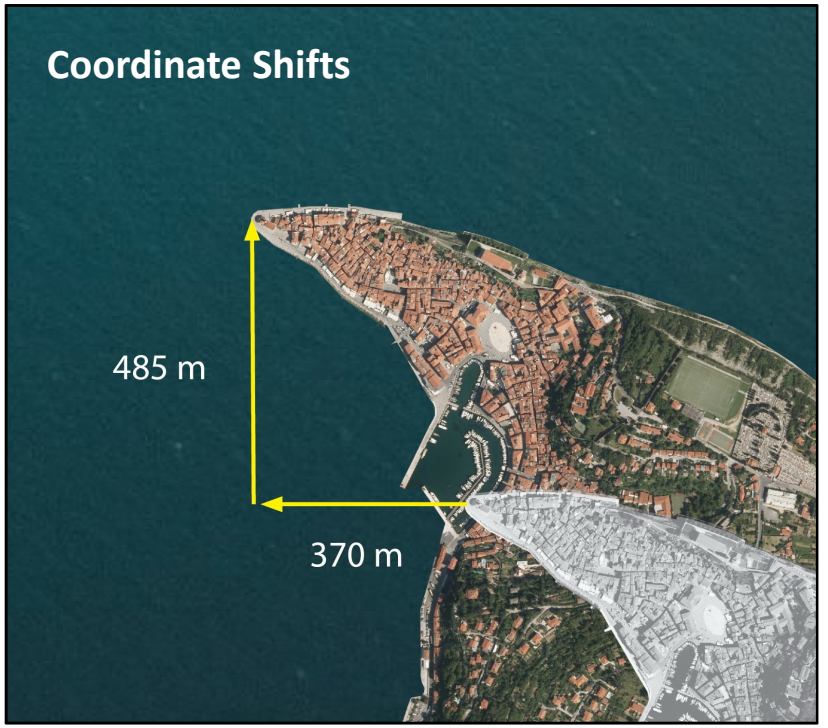
- Time series analyses from 2016
- Two different processing:
  - Bernese GNSS Software
  - gPPP software (self-made)
- GPS+GLONASS observations
- Coordinate repeatability:
  - ~2 mm for N/E
  - ~5 mm for heights



Local to ETRS89 Datum Transformation

Transformation of All Spatial Data

- Finished at the beginning of 2019
  for all spatial datasets of the SMA
- According to the Law from 2014
- National transformation model (Δ-grid)
  with specifications for its implementation
- Freeware transformation tools
- New EPSG codes for Slovenian
  coordinate reference systems (reference frames) and
  coordinate transformations (datum transformations)



Vertical Reference Frame

New Slovenian Height Reference System (SVS2010)

- Replaced SVS2000 (with normal-orthometric heights)
- New 1st order levelling
- New gravimetric survey
- Adjustment in the system of geopotential numbers
- Final result are **normal heights**

&

New Slovenian Height Datum (Koper)

- Replaced Trieste datum from 1875
- tide gauge measurements
  - 18.6-year cycle
  - Mean epoch is 10. 10. 2010
- New height reference surface (quasi-geoid model)

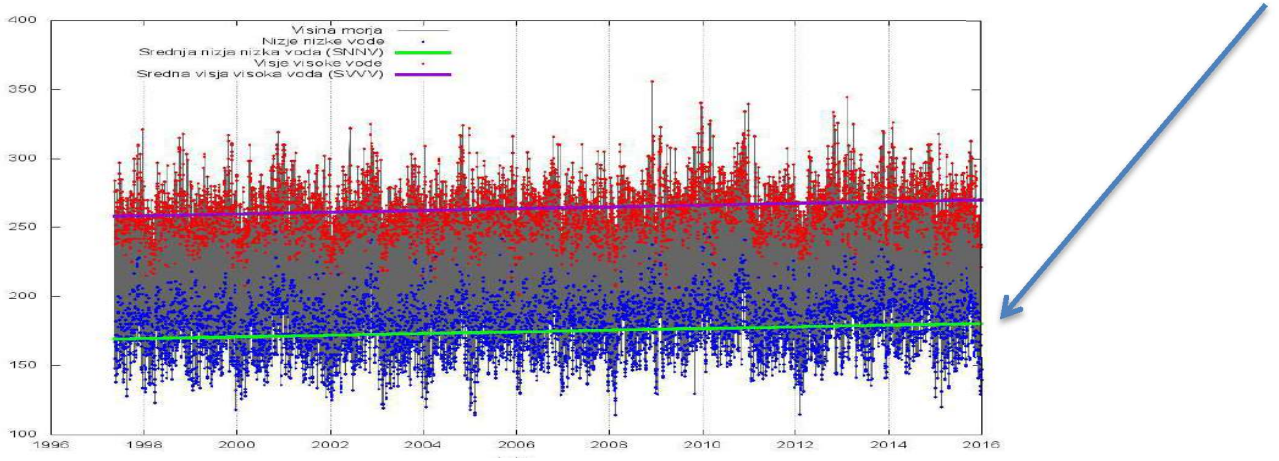
Height differences between SVS2000 and SVS2010 are from **5.3 cm** to **21.0 cm**.

Vertical Reference Frame

New Slovenian Depth Reference System & **New Slovenian Chart Datum**

- Established together with the new height reference system

- Based on the new Koper datum
- Mean lower low water spring



The new zero for bathymetry is **70 cm** below the zero for hypsometry.

Thank you for your attention