31st EUREF Symposium

National Report of Slovenia

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Virtually from Zagreb, Croatia, June 1–3, 2022

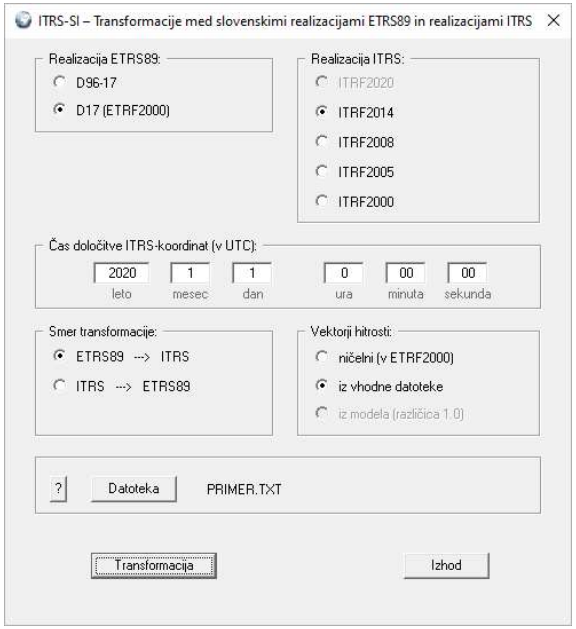
Terrestrial Reference Frame

New realisation of ETRS89 in Slovenia (D96-17) implemented on 1st January 2020

New freeware tool (standalone desktop application) for time-dependent transformations between the Slovenian and international terrestrial reference frames – **ITRS-SI**

Six terrestrial reference frames are supported:

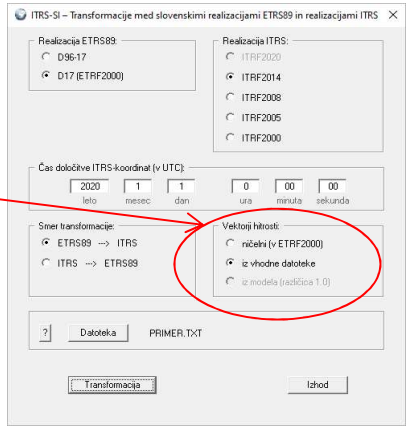
- ETRS89/D17
- ETRS89/D96-17
- latest four releases of the ITRF (2000, 2005, 2008, 2014)

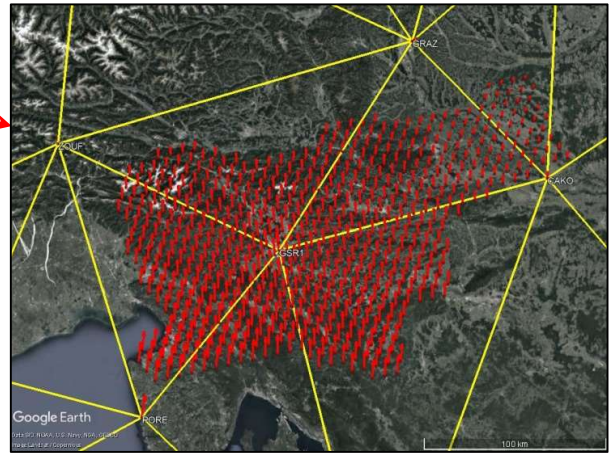


Terrestrial Reference Frame

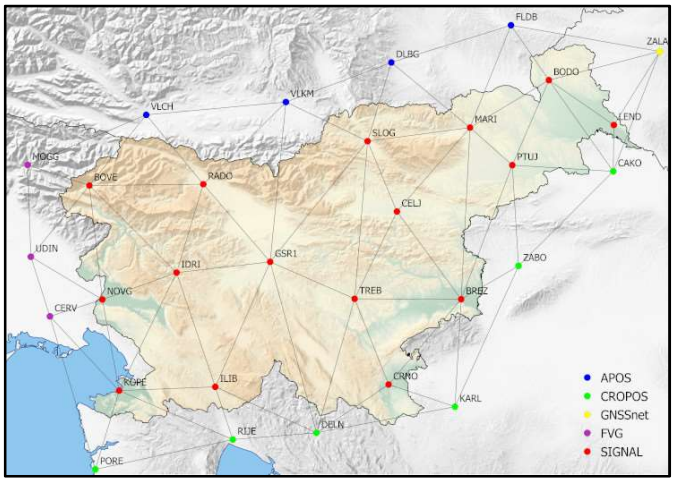
There are three options for handling velocities

- zero velocities in ETRF2000 (i.e., assuming that the country is part of tectonically stable Europe),
- velocities taken from the input file (transformation of CORS stations with known velocities), or
- interpolated velocities based on a verified position/velocity dataset (velocity field modelling).





National CORS Networks – **SIGNAL Network**



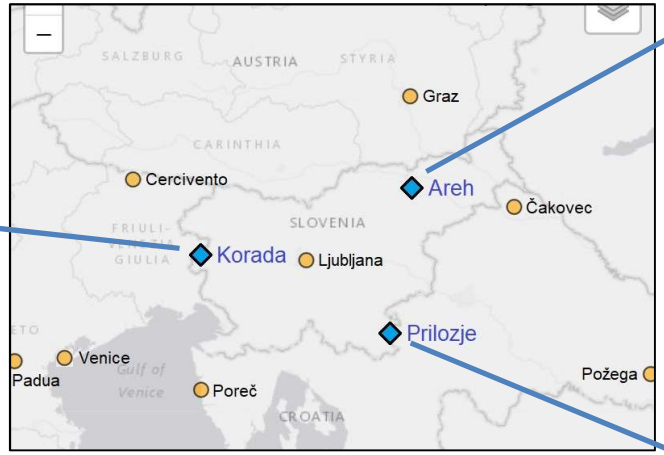
16 stations in Slovenia
14 stations in neighbouring countries
Trimble & Leica recivers and antennas
Platform: Trimble Pivot

- Major upgrade in April 2022 – adding Gallileo GNSS capabilities for users
- Upgrade/changes of equipment (new server, some antennas + recivers …)
- 1 station was replaced KOPE → KOPR (due to the lack of stability)

Zero-Order Geodetic Network

- 3 new EPN stations from January 2022

KDA2 … Korada



ARA2 … Areh

PZA2 … Prilozje

- Data are sent to two EPN Data Centres (BEV and BKG),
- Included to sub-networks of four EPN Analysis Centres (BEV, RGA, SGO, and UPA)

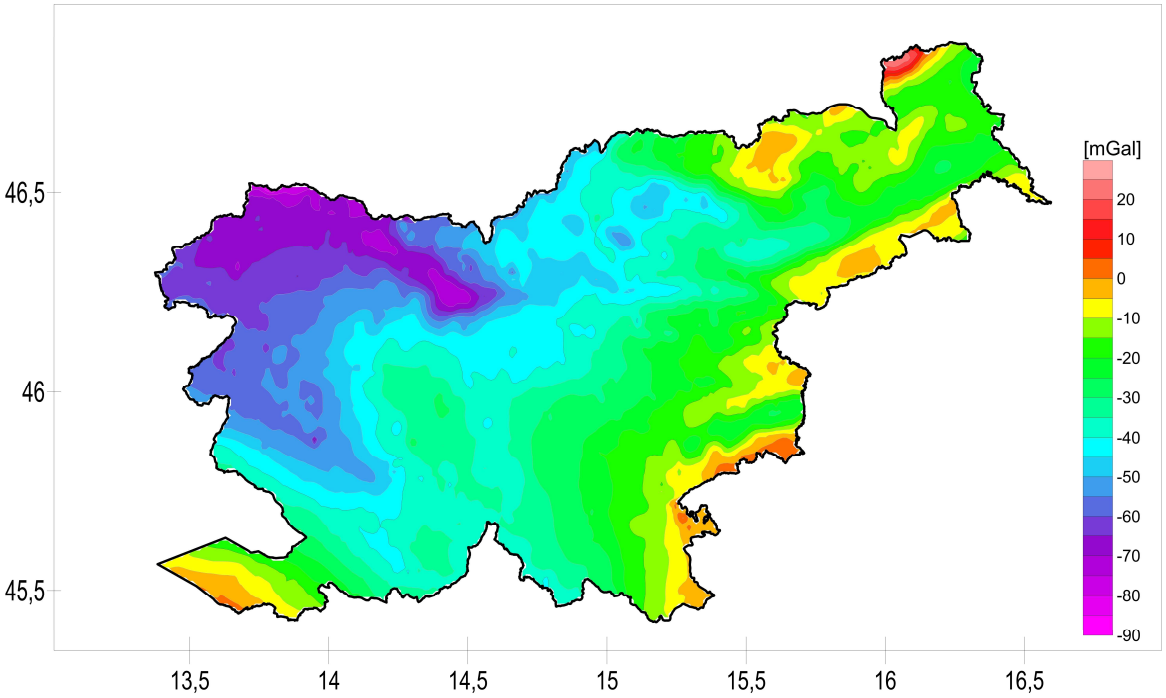
Vertical Reference Frame

<u>New Slovenian Height Reference System</u> (SVS2010) implemented in practice

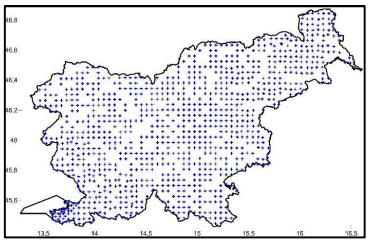
- Some shorter **levelling polygons in total distance of 40 km** have been re-measured
- **Heights** of the **old trigonometric points** (from II to IV order) have been systematically checked (elimination of gross errors)
- New height reference surface (SLO_ VRP2016/Koper):
  quality control by RTK GNSS levelling technique, **~2 cm accuracy** in Ljubljana city area

Vertical Reference Frame

National **Bouguer anomaly map** updated in 2021



- new gravimetric measurements



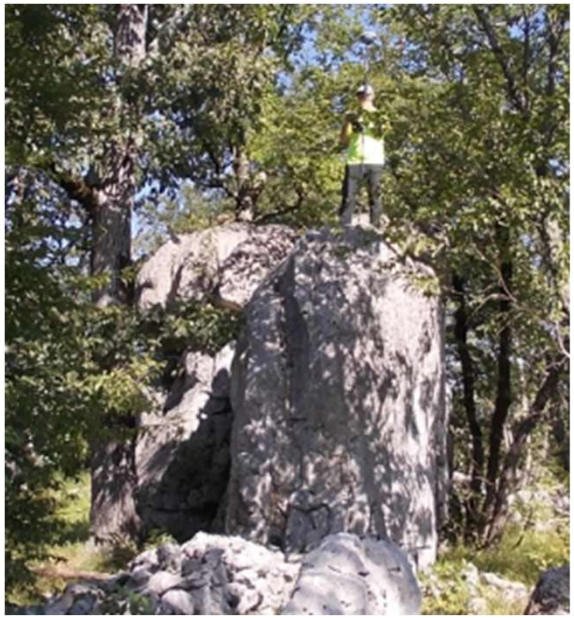
- high quality digital terrain models

Ongoing Research Projects

- Geokinematic Model of Slovenian Territory (SLOKIN)
- Development of Research Infrastructure for the International Competitiveness of the Slovenian Development of Research Infrastructure Space (RI-SI-EPOS)
- Reliability of Public GNSS Network
- Verification of Permanent GNSS Networks
- Permanent Geodetic Marks as a Basis for the High-Quality Performance of the Geodetic Profession

Other: Permanent Geodetic Marks

- Important permanent geodetic marks from the era of classical geodesy
- Inscription of selected old geodetic marks in the Registry of Cultural Heritage



Cadastral municipality boundary mark

More details in written report.

Thank you for your attention !