

EUREF 2005 Symposium

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**NATIONAL REPORT OF
SLOVENIA**

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ADOPTION OF THE NEW (EUROPEAN) REFERENCE SYSTEM IN SLOVENIA

- **Government of the Republic of Slovenia in 2004 accepted the proposal for the adoption of a new national reference system,**
- **Emphasis from the proposal:**
 - **Establishment of ESRS in Slovenia,**
 - **Establishment of National GPS network and GPS service (SIGNAL),**
 - **Procedures for the transformation of old coordinate system to the new one have to be defined for all the types of geodetic data,**
 - **Legislation and regulations for this transition have to be prepared according to the results of thorough testing on a considerable number of test fields.**

NEW REFERENCE SYSTEM OF SLOVENIA

- **Definition of the system according to the ISO standards,**
- **New Slovenian reference system is part of European reference system (ESRS),**
- **ESRS system is spatial reference sistem**
 - horizontal part (ETRS89),
 - height system (EVRS),
 - gravimetric system (IGSN71),
- **Cartographic projection(s):**
 - Gauss-Krueger (modulation ?),
 - Lambert conformal projection (standard parallels ?)

OLD SYSTEM - NEW SYSTEM

- **HORIZONTAL SYSTEM**

- **Questions:**

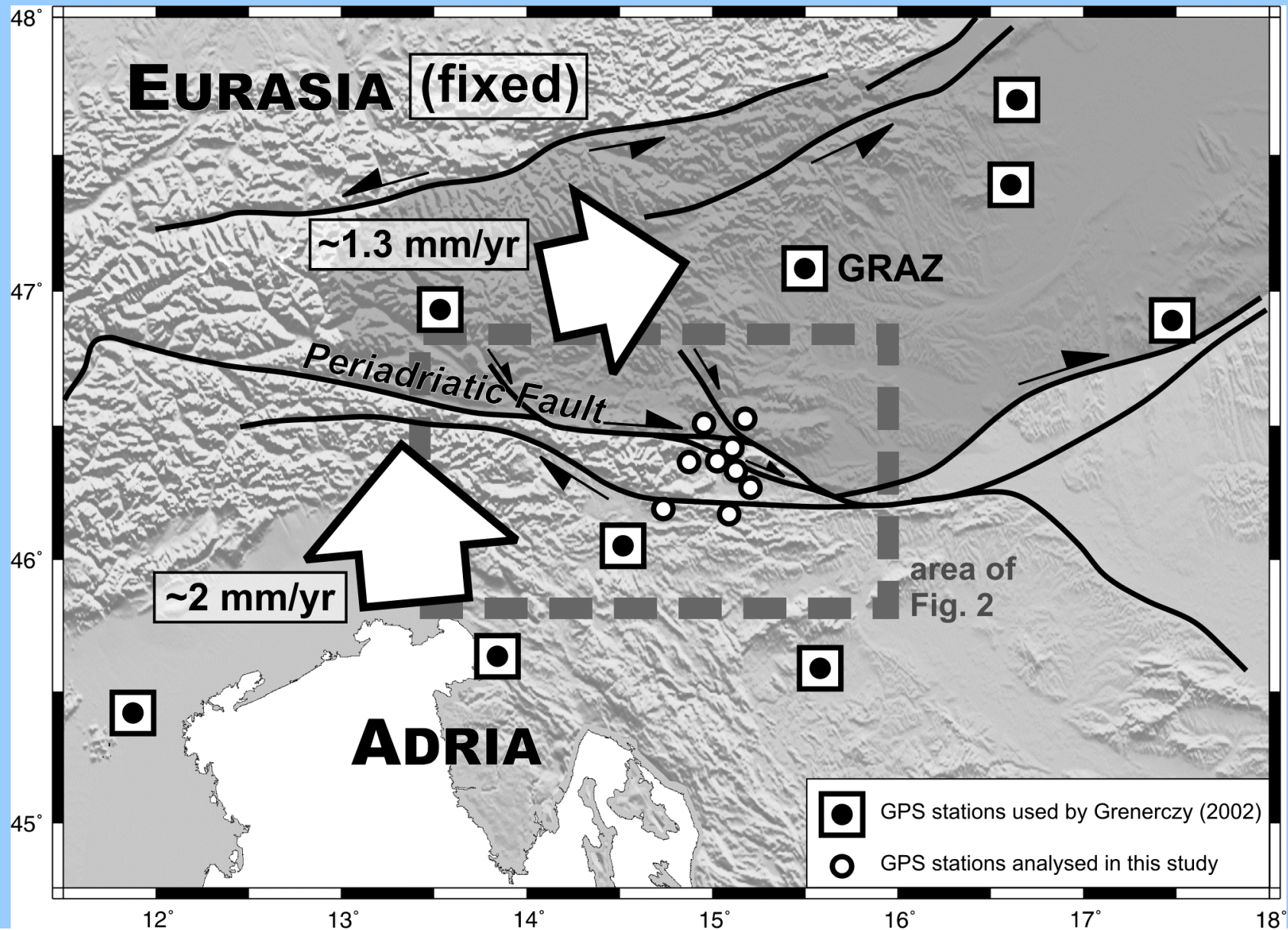
- EUREF campaigns and geodynamics at the area (> 5 mm/y)
 - EUREF campaigns and permanent GPS network

- **HEIGHT SYSTEM**

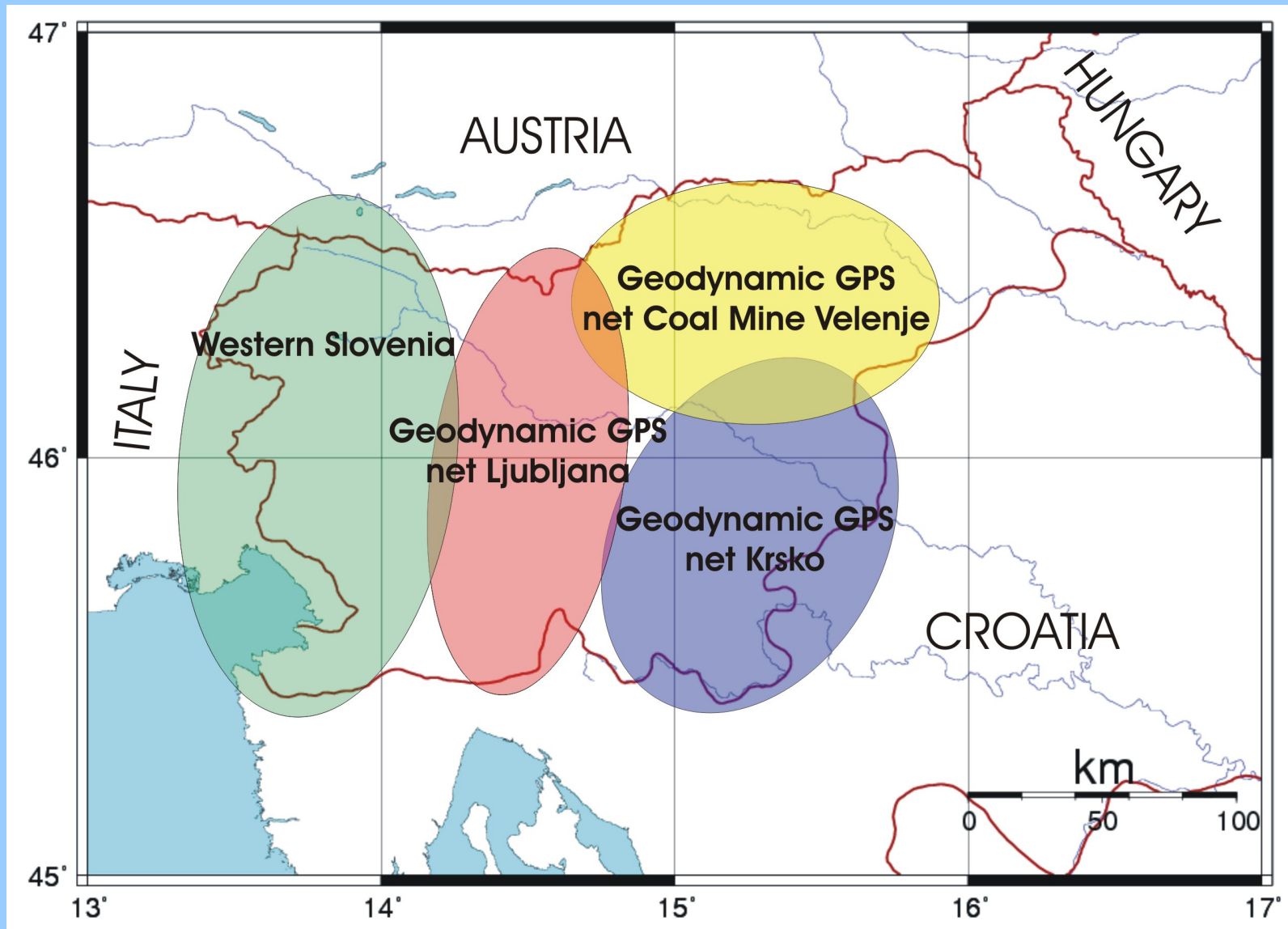
- **Questions:**

- Quality of (old) data
 - Geodynamics of the area (>10 mm/y)

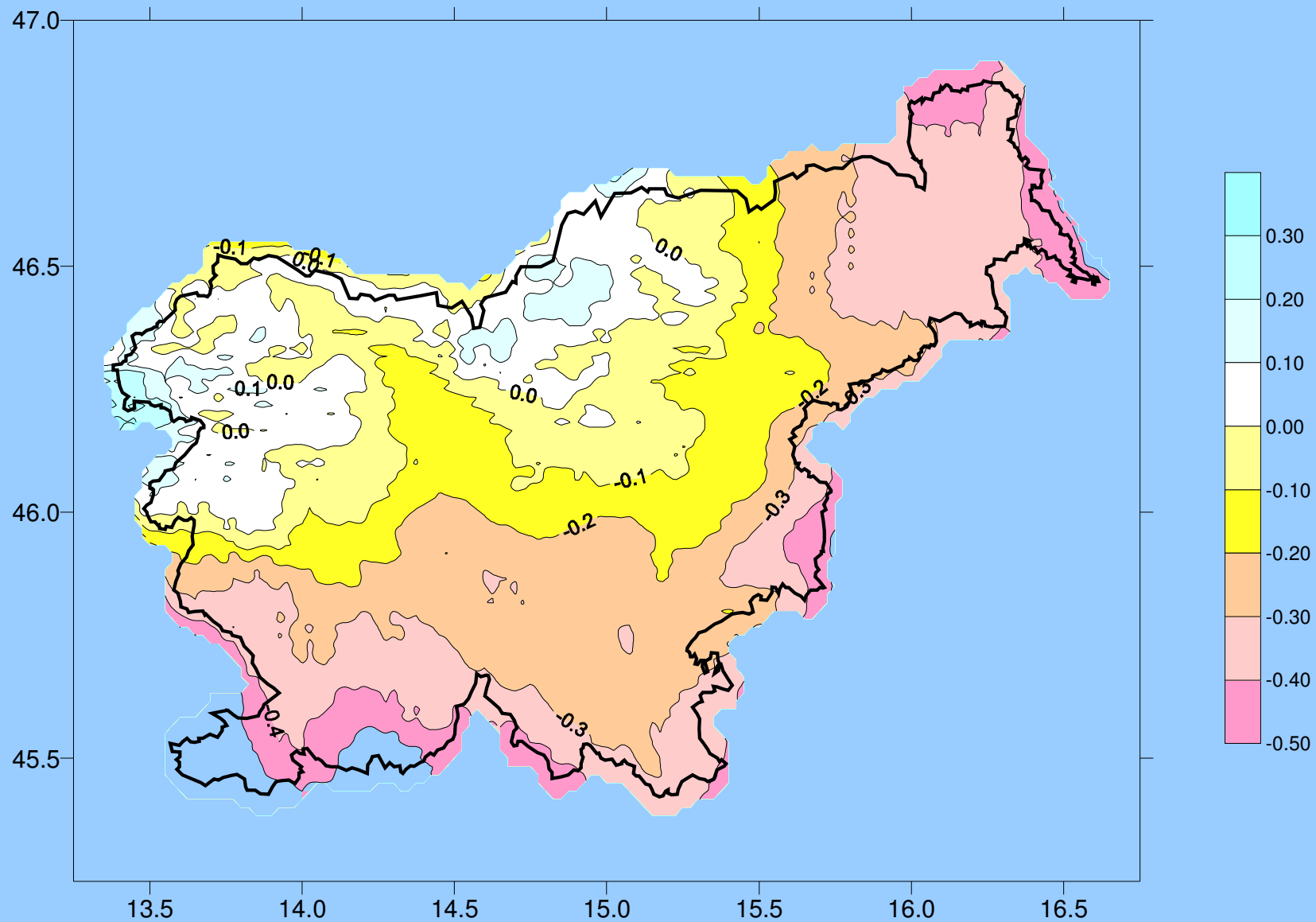
GENERAL GEODYNAMICS AT THE AREA



PLANNED GEODYNAMIC PROJECTS



NEW SLOVENIAN GEOID AND EGG 97



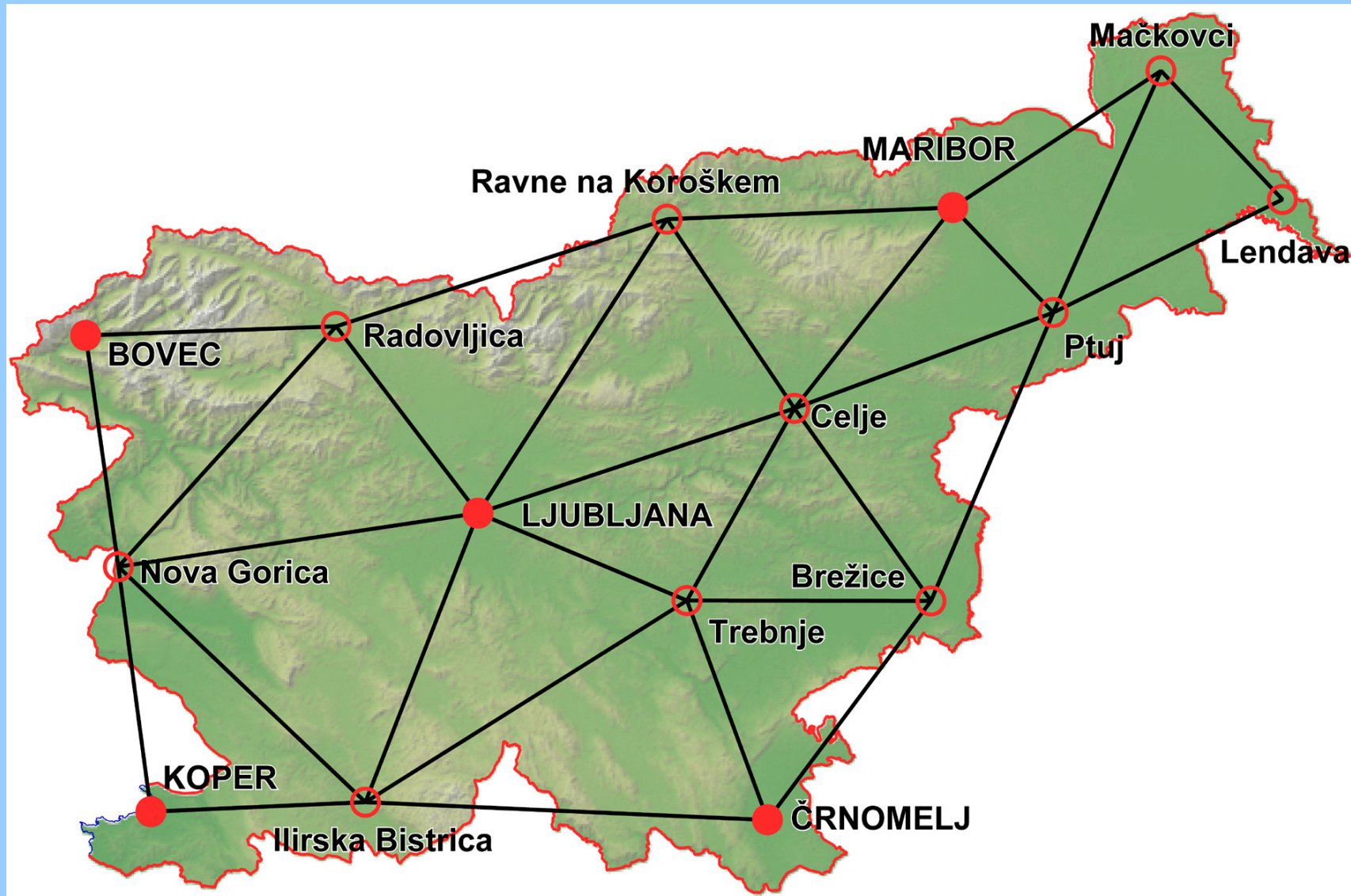
The map displays vertical movement rates across Slovenia, with data points represented by black dots and lines. The legend indicates that solid lines represent significant lifted areas, dashed lines represent significant sinking areas, and dots represent areas with not significant vertical movement rates. The data points are labeled with values such as 3.60 ± 0.8 , 2.80 ± 0.7 , 2.00 ± 0.6 , 1.50 ± 0.5 , 1.90 ± 0.6 , 0.70 ± 0.6 , 1.30 ± 0.6 , 1.20 ± 0.5 , 1.00 ± 0.5 , 1.70 ± 0.6 , 1.30 ± 0.5 , 1.80 ± 0.8 , 1.20 ± 0.8 , 1.40 ± 0.8 , 1.00 ± 1.0 , 1.50 ± 1.1 , 0.60 ± 0.4 , 0.40 ± 0.3 , 0.15 ± 0.1 , 0.25 ± 0.2 , 0.40 ± 0.2 , 0.50 ± 0.4 , -1.00 ± 0.4 , -1.60 ± 0.4 , -2.60 ± 0.5 , -2.80 ± 0.6 , -2.20 ± 0.6 , -3.60 ± 0.6 , -0.80 ± 0.5 , -0.60 ± 0.4 , -0.30 ± 0.3 , -1.30 ± 0.5 , -1.00 ± 0.6 , -1.30 ± 0.6 , -1.00 ± 0.6 , -1.40 ± 0.8 , -1.70 ± 0.8 , -2.00 ± 1.0 , -3.10 ± 1.0 , -3.30 ± 1.1 , -3.80 ± 1.1 , -4.00 ± 1.1 , -3.00 ± 1.1 , -1.20 ± 0.9 , -1.00 ± 0.9 , -1.40 ± 0.9 , -1.20 ± 0.9 , -1.40 ± 0.9 , -1.70 ± 0.8 , -2.50 ± 1.0 , -3.10 ± 1.0 , -3.30 ± 1.1 , -3.80 ± 1.1 , -4.00 ± 1.1 , -3.00 ± 1.1 , -1.20 ± 0.9 , -1.00 ± 0.9 , -1.40 ± 0.9 , -1.70 ± 0.8 , -2.50 ± 1.0 , -3.10 ± 1.0 , -3.30 ± 1.1 , -3.80 ± 1.1 , -4.00 ± 1.1 , -3.00 ± 1.1 , -1.20 ± 0.9 , -1.00 ± 0.9 , -1.40 ± 0.9 , -1.70 ± 0.8 , -2.50 ± 1.0 , -3.10 ± 1.0 , -3.30 ± 1.1 , -3.80 ± 1.1 , -4.00 ± 1.1 , -3.00 ± 1.1 , -1.20 ± 0.9 , -1.00 ± 0.9 , -1.40 ± 0.9 , -1.70 ± 0.8 , -2.50 ± 1.0 , -3.10 ± 1.0 , -3.30 ± 1.1 , -3.80 ± 1.1 , -4.00 ± 1.1 , -3.00 ± 1.1 , -1.20 ± 0.9 , -1.00 ± 0.9 , -1.40 ± 0.9 , -1.70 ± 0.8 , -2.50 ± 1.0 , -3.10 ± 1.0 , -3.30 ± 1.1 , -3.80 ± 1.1 , -4.00 ± 1.1 , -3.00 ± 1.1 , -1.20 ± 0.9 , -1.00 ± 0.9 , -1.40 ± 0.9 , -1.70 ± 0.8 , -2.50 ± 1.0 , -3.10 ± 1.0 , -3.30 ± 1.1 , -3.80 ± 1.1 , -4.00 ± 1.1 , -3.00 ± 1.1 , -1.20 ± 0.9 , -1.00 ± 0.9 , -1.40 ± 0.9 , -1.70 ± 0.8 , -2.50 ± 1.0 , -3.10 ± 1.0 , -3.30 ± 1.1 , -3.80 ± 1.1 , -4.00 ± 1.1 , -3.00 ± 1.1 , -1.20 ± 0.9 , -1.00 ± 0.9 , -1.40 ± 0.9 , -1.70 ± 0.8 , -2.50 ± 1.0 , -3.10 ± 1.0 , -3.30 ± 1.1 , -3.80 ± 1.1 , -4.00 ± 1.1 , -3.00 ± 1.1 , -1.20 ± 0.9 , -1.00 ± 0.9 , -1.40 ± 0.9 , -1.70 ± 0.8 , -2.50 ± 1.0 , -3.10 ± 1.0 , -3.30 ± 1.1 , -3.80 ± 1.1 , -4.00 ± 1.1 , -3.00 ± 1.1 , -1.20 ± 0.9 , -1.00 ± 0.9 , -1.40 ± 0.9 , -1.70 ± 0.8 , -2.50 ± 1.0 , -3.10 ± 1.0 , -3.30 ± 1.1 , -3.80 ± 1.1 , -4.00 ± 1.1 , -3.00 ± 1.1 , -1.20 ± 0.9 , -1.00 ± 0.9 , -1.40 ± 0.9 , -1.70 ± 0.8 , -2.50 ± 1.0 , -3.10 ± 1.0 , -3.30 ± 1.1 , -3.80 ± 1.1 , -4.00 ± 1.1 , -3.00 ± 1.1 , -1.20 ± 0.9 , -1.00 ± 0.9 , -1.40 ± 0.9 , -1.70 ± 0.8 , -2.50 ± 1.0 , -3.10 ± 1.0 , -3.30 ± 1.1 , -3.80 ± 1.1 , -4.00 ± 1.1 , -3.00 ± 1.1 , -1.20 ± 0.9 , -1.00 ± 0.9 , -1.40 ± 0.9 , -1.70 ± 0.8 , -2.50 ± 1.0 , -3.10 ± 1.0 , -3.30 ± 1.1 , -3.80 ± 1.1 , -4.00 ± 1.1 , -3.00 ± 1.1 , -1.20 ± 0.9 , -1.00 ± 0.9 , -1.40 ± 0.9 , -1.70 ± 0.8 , -2.50 ± 1.0 , -3.10 ± 1.0 , -3.30 ± 1.1 , -3.80 ± 1.1 , -4.00 ± 1.1 , -3.00 ± 1.1 , -1.20 ± 0.9 , -1.00 ± 0.9 , -1.40 ± 0.9 , -1.70 ± 0.8 , -2.50 ± 1.0 , -3.10 ± 1.0 , -3.30 ± 1.1 , -3.80 ± 1.1 , -4.00 ± 1.1 , -3.00 ± 1.1 , -1.20 ± 0.9 , -1.00 ± 0.9 , -1.40 ± 0.9 , -1.70 ± 0.8 , -2.50 ± 1.0 , -3.10 ± 1.0 , -3.30 ± 1.1 , -3.80 ± 1.1 , -4.00 ± 1.1 , -3.00 ± 1.1 , -1.20 ± 0.9 , -1.00 ± 0.9 , -1.40 ± 0.9 , -1.70 ± 0.8 , -2.50 ± 1.0 , -3.10 ± 1.0 , -3.30 ± 1.1 , -3.80 ± 1.1 , -4.00 ± 1.1 , -3.00 ± 1.1 , -1.20 ± 0.9 , -1.00 ± 0.9 , -1.40 ± 0.9 , -1.70 ± 0.8 , -2.50 ± 1.0 , -3.10 ± 1.0 , -3.30 ± 1.1 , -3.80 ± 1.1 , -4.00 ± 1.1 , -3.00 ± 1.1 , -1.20 ± 0.9 , -1.00 ± 0.9 , -1.40 ± 0.9 , -1.70 ± 0.8 , -2.50 ± 1.0 , -3.10 ± 1.0 , -3.30 ± 1.1 , -3.80 ± 1.1 , -4.00 ± 1.1 , -3.00 ± 1.1 , -1.20 ± 0.9 , -1.00 ± 0.9 , -1.40 ± 0.9 , -1.70 ± 0.8 , -2.50 ± 1.0 , -3.10 ± 1.0 , -3.30 ± 1.1 , -3.80 ± 1.1 , -4.00 ± 1.1 , -3.00 ± 1.1 , -1.20 ± 0.9 , -1.00 ± 0.9 , -1.40 ± 0.9 , -1.70 ± 0.8 , -2.50 ± 1.0 , -3.10 ± 1.0 , $-$

NEW GRAVIMETRIC SYSTEM

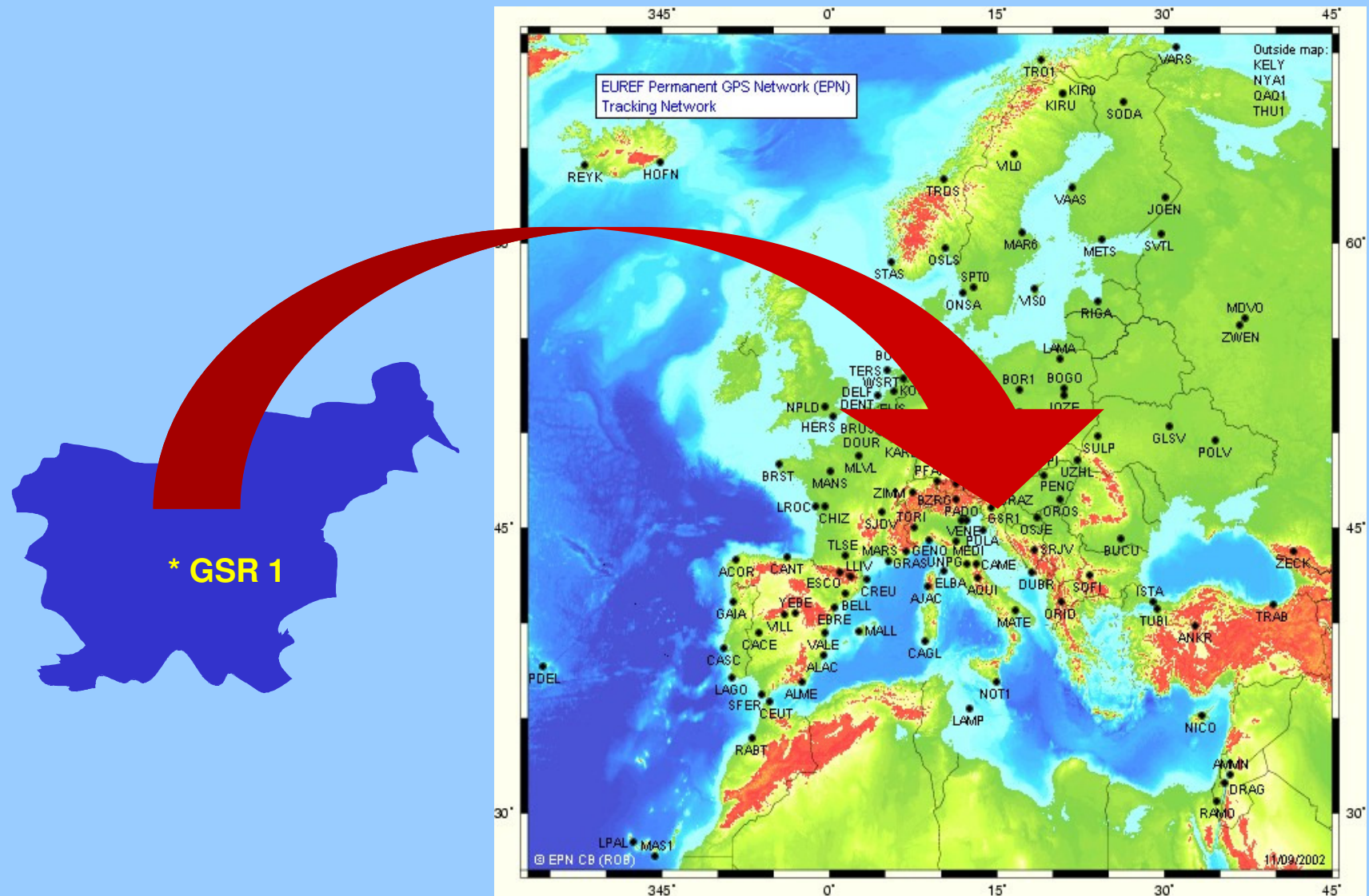
- Gravimetric system is based on IGSN71
- Zero order of the gravimetric network consist of 6 absolute gravimetric points
- First order gravimetric network will be consisted of 13 points and gravimetric point at a new tide gauge station in Koper



SLOVENIAN GPS NETWORK-SIGNAL



SIGNAL AND EPN



SIGNAL NETWORK

- **THE OBJECTIVE:**

- Geodetic accuracy (cm rank) over the whole national territory
- 15 stations
- Average distance 50 to 70 km
- GPS service in operation at the Geodetic Institute of Slovenia
- Exchange of data with neighbouring countries

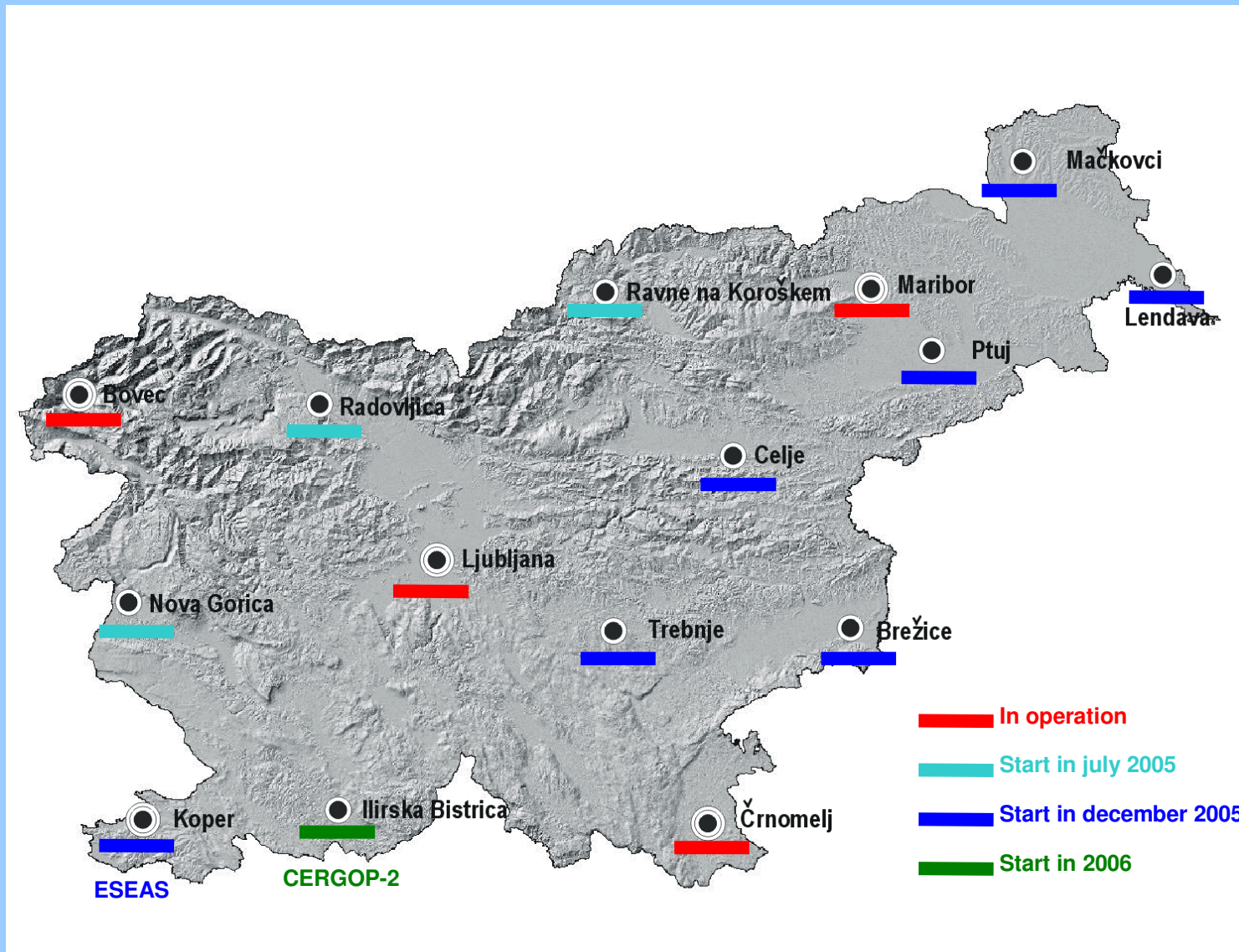
- **CURRENTLY:**

- 5 networked stations
- 1 of them part of EUREF-EPN (Ljubljana)
- Average distance 70 to 130 km
- Sub-decimeter accuracy
- Trimble VRS/FKP in operation
- 50 registered users
- Exchange of data: APOS – SIGNAL (1 station – 1 station)

- **Outside SIGNAL:**

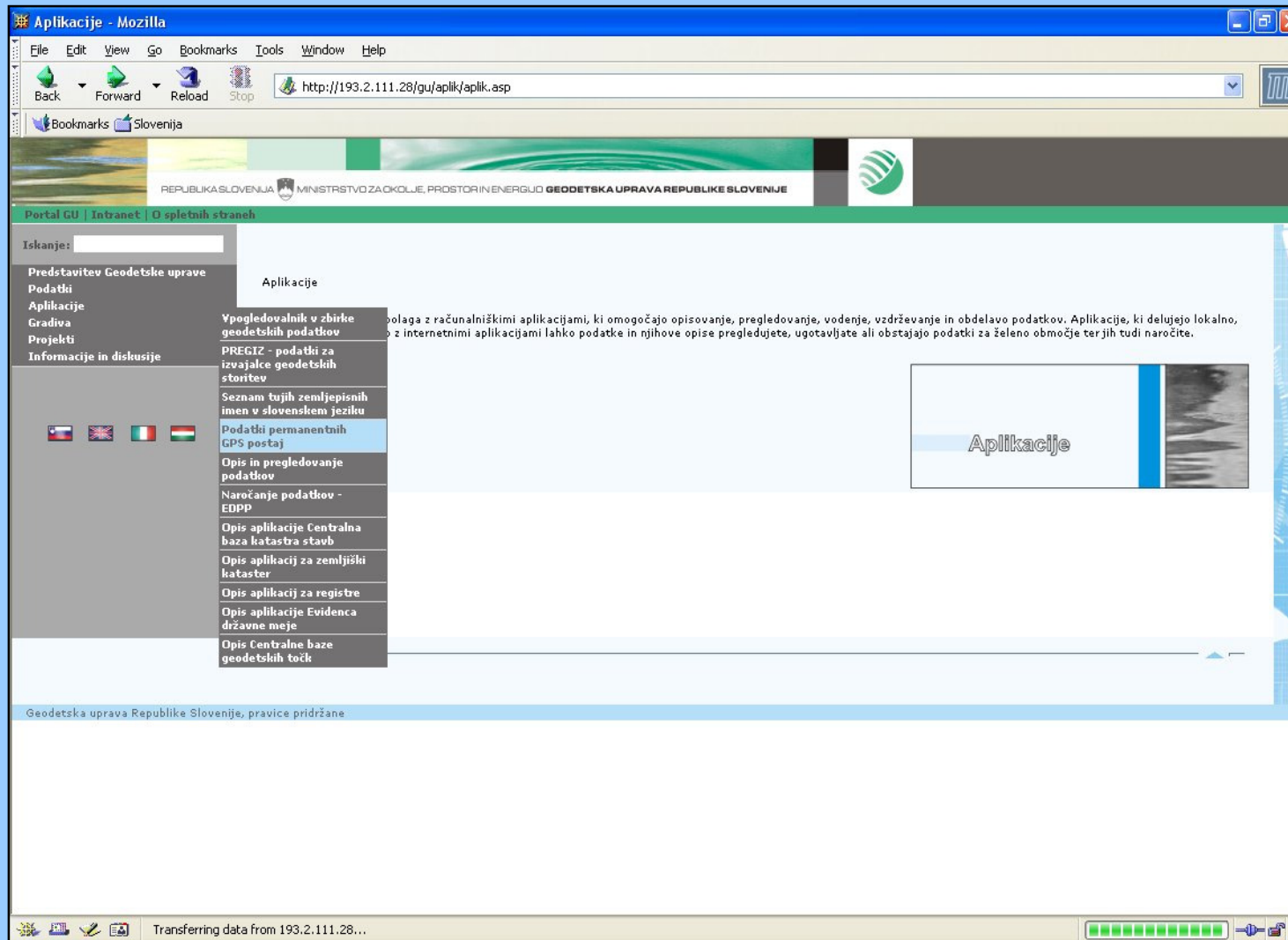
- 8 private GPS stations exist (not networked)

STATUS OF SIGNAL NETWORK



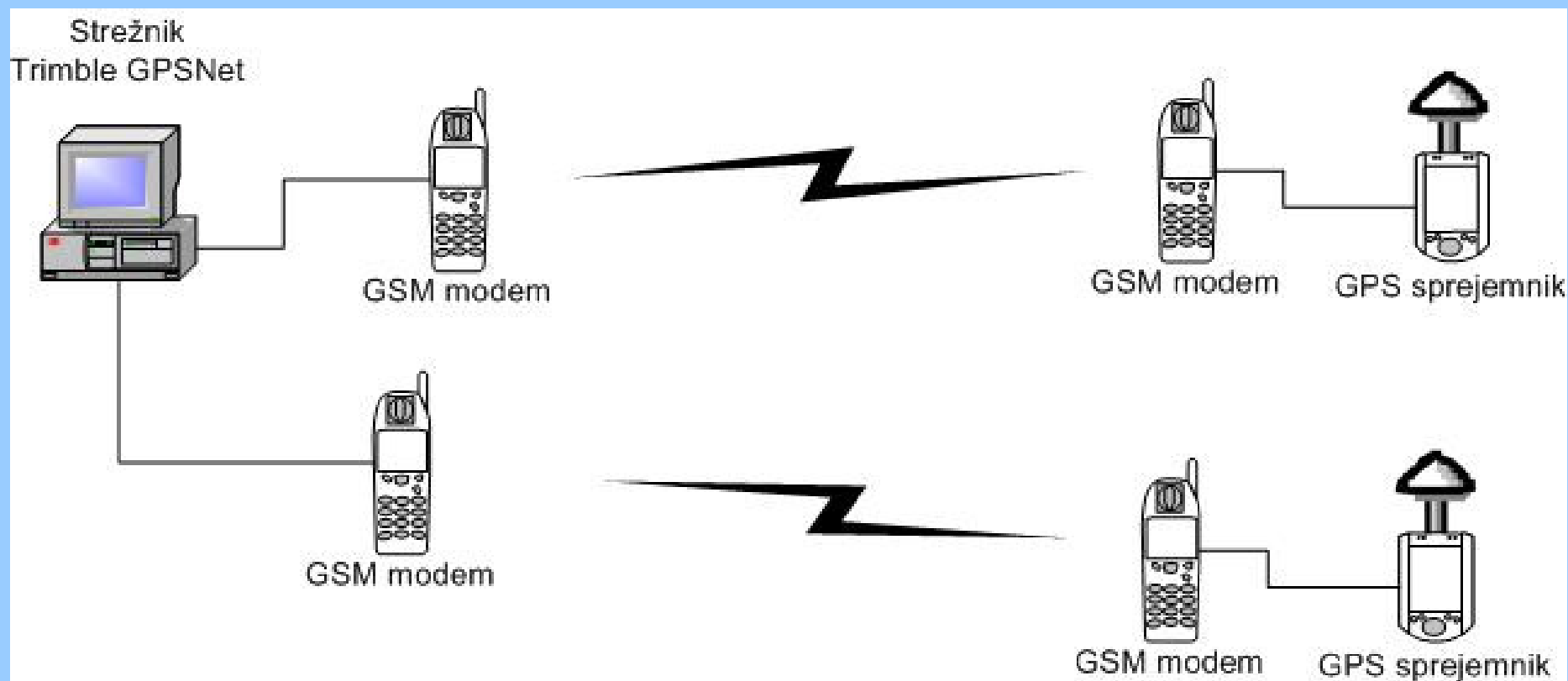
DATA DISTRIBUTION

POST PROCESSING - Via web server (SMA's home page)



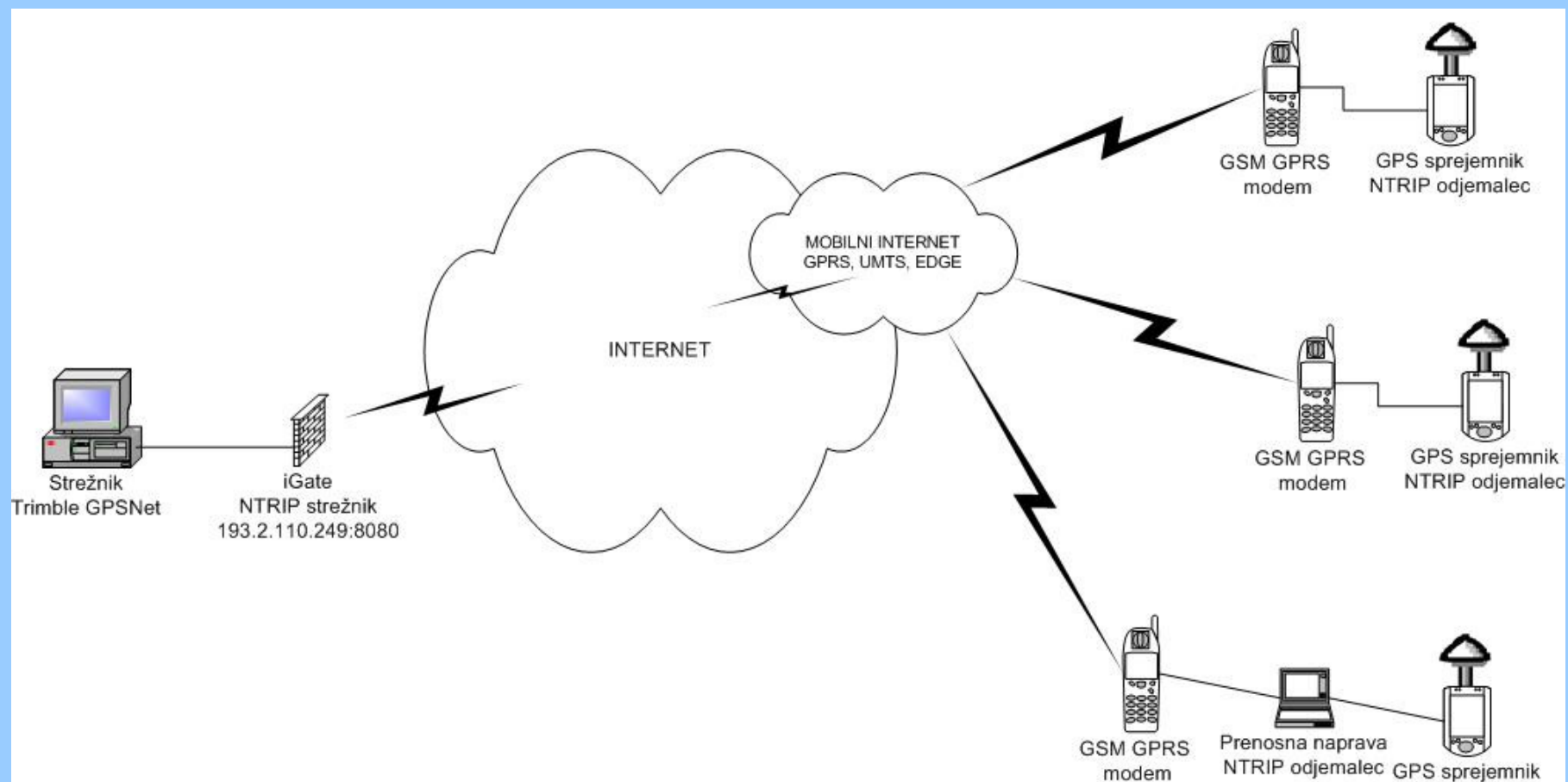
DATA DISTRIBUTION

REAL TIME – Via GSM with GSM modems in the center



DATA DISTRIBUTION

REAL TIME – Via mobile internet – NTRIP



DATA DISTRIBUTION

REAL TIME - Via GSM provider

