EUREF Symposium 2024

Institut Cartogràfic i Geològic de Catalunya
Parc de Montjuïc, 08038 Barcelona

CEGRN v2.0

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Agenda

1. The CEGRN
2. Towards CEGRN v2.0
3. Conclusions

The Central European GPS Geodynamic Reference Network (CEGRN)

The Central European GPS Geodynamic Reference Network (CEGRN) Consortium has its origin in the framework of the project called CERGOP (Central European Research on Geodynamics Project) that started in 1994

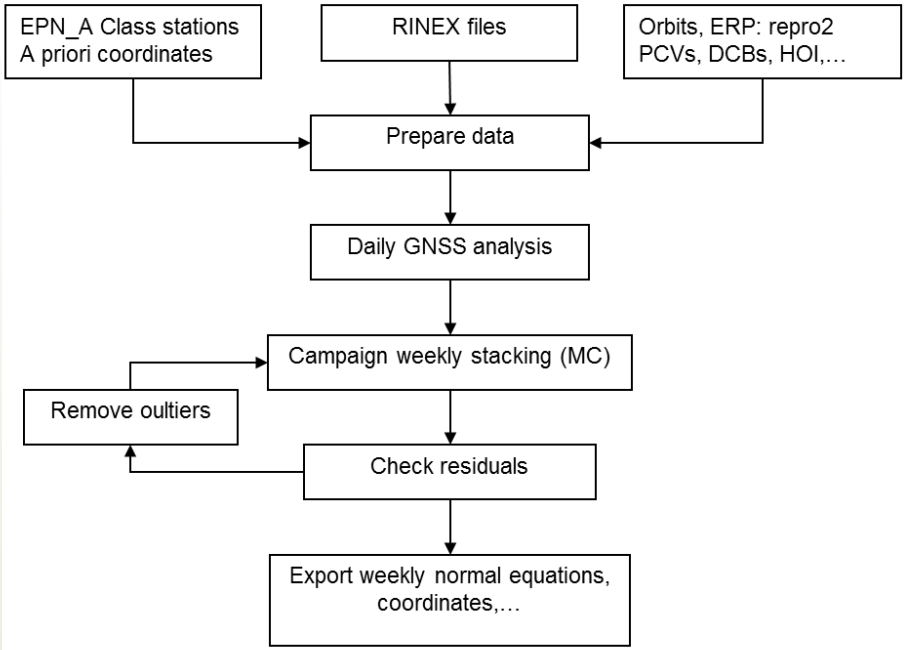
The CERGOP consisted originally of 11 countries of Central Europe. In 1998, 3 more countries joined this initiative and, altogether, agreed to organize the CEGRN consortium to operate, maintain and develop the (CEGRN network). The long term project is running since 1994 and was sponsored twice by EU projects: CERGOP-1 and CERGOP-2 (Environment Central European Geodynamics Project, funded by the European Union from 2003 to 2006) under the 5th Framework Programme. The main study areas cover the Adriatic Microplate, the Balkans and Dinarides, the Carpathians, the Eastern Alps and the Pannonian Basin, being all of them active tectonic zones.

As for CERGOP, new members have been joined the CEGRN over time

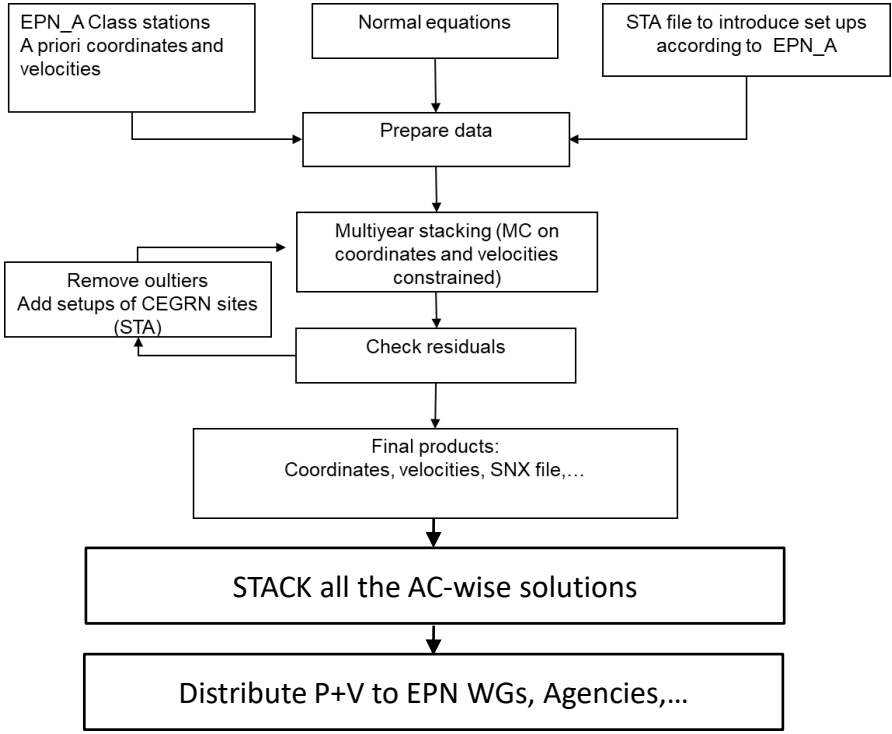
2011: EUREF – CEGRN MoU

The CEGRN Network

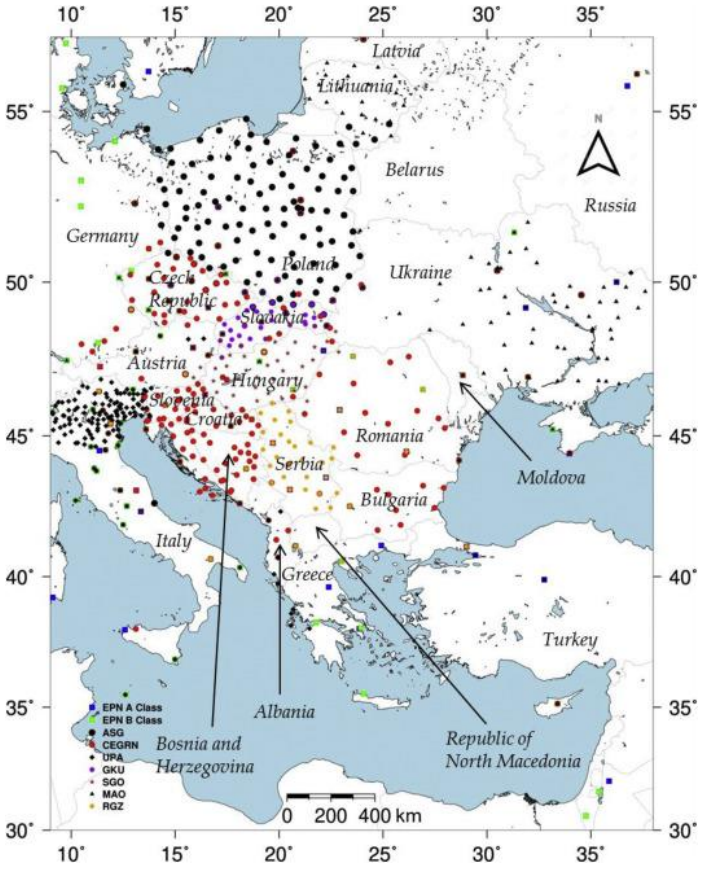
A) 2-year CEGRN Campaign (RINEX):



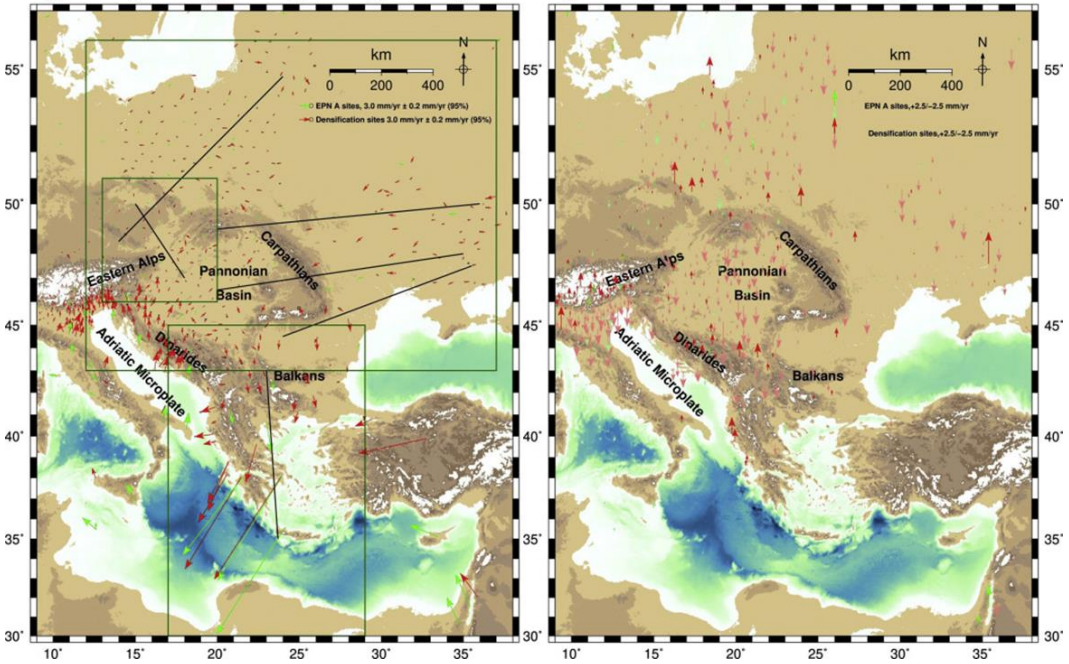
B) Multiyear stacking AC-wise/final solution (SNX):



The CEGRN Network (DiB, 2019)



The CEGRN dataset, published in 2019, comprises 1229 (P+V) stations differ with **EPN C1980** (class A) by 0.0 ± 1.1, 0.5 ± 1.0 and 0.1 ± 2.7 mm (coordinates) in NEU, epoch 2010.0, and 0.06 ± 0.13, -0.07 ± 0.12, 0.38 ± 0.28 mm/yr (velocities), in VNEU



Towards CEGRN v2.0

The 2023 CEGRN Consortium Governing Board (CCGB) meeting was held during the EUREF2023 Symposium in Gothenburg (Sweden). One of the most important discussion points was the role of the CEGRN in the current geodetic/GNSS/Geokinematics scenario: should we move to daily seamless solutions instead of 1 week of data every2 years?

It was agreed that a CEGRN solution would be provided on a daily basis, including the observations that the data providers would submit. Summarizing:

- Starting July 2023, a CEGRN solution using DAILY data, is being computed, strictly following IGS20 standards.
- The daily solutions include the computed RINEX observations
- Acs are welocome to provide daily SINEX solutions
- To avoid inconsistencies between the former CEGRN solutions and the new ones, all the CEGRN RINEX observations will be recomputed using repro3 products (IGS20 compliant)
- All the provided SINEX solutions must be recomputed following IGS20 standards

Towards CEGRN v2.0

In addition to the CEGRN agreements, some Agencies have agreed to participate in the CEGRN in several ways:

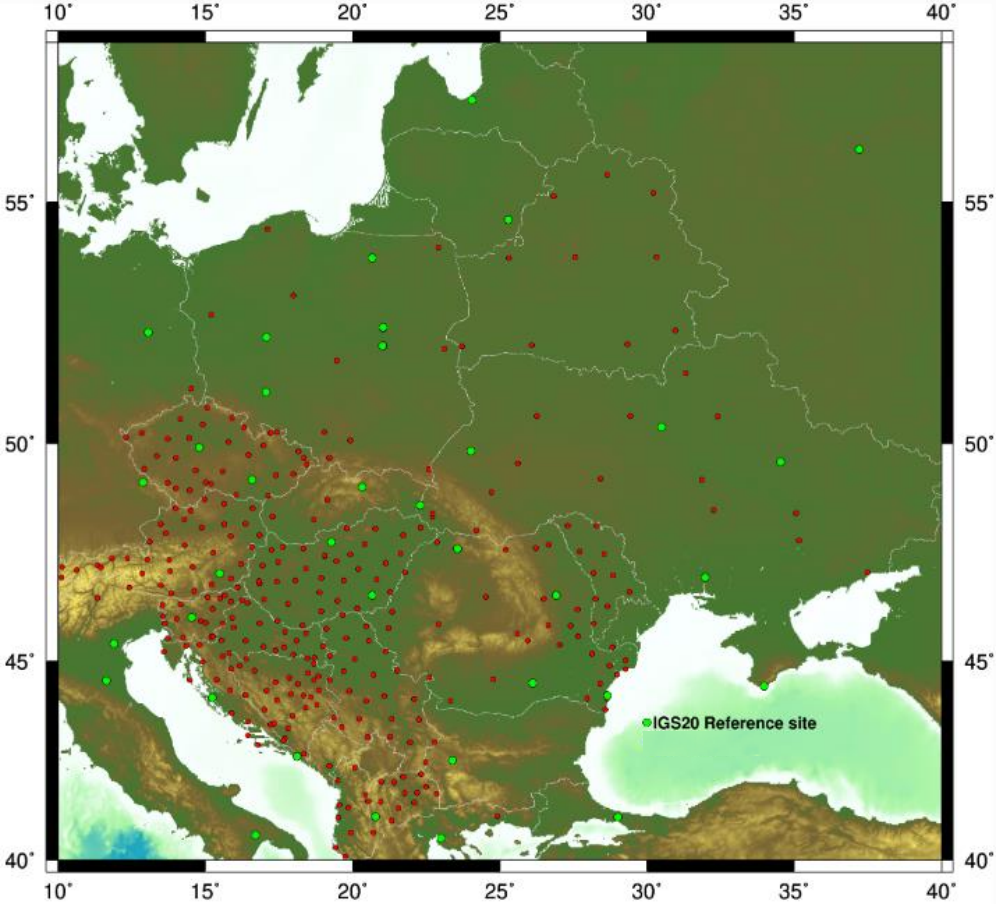
- Daily RINEX files: BEV (Austria), RGA (Serbia) and Slovenia (Surveying and Mapping Authority of the Republic of Slovenia, Geodesy Office)
- SINEX solutions: BAS (new agreement, Bulgaria), GKU (Slovakia), MAO (Ukraine), WUT (Poland; MUT SINEX files)
- New CEGRN Consortium Governing Board members:
  - New agencies: membership right
  - Proposed members
  - Former members replaced: G. Stangl and M. Marlic (passed away); M. Mulic (retired), and G. Grenerczy and O. Odalovic (replaced).

More agencies are expected in the upcoming months, so the list will keep on growing

The CEGRN v2.0 initiative seems to have encouraged to many new agencies to participate

Towards CEGRN v2.0

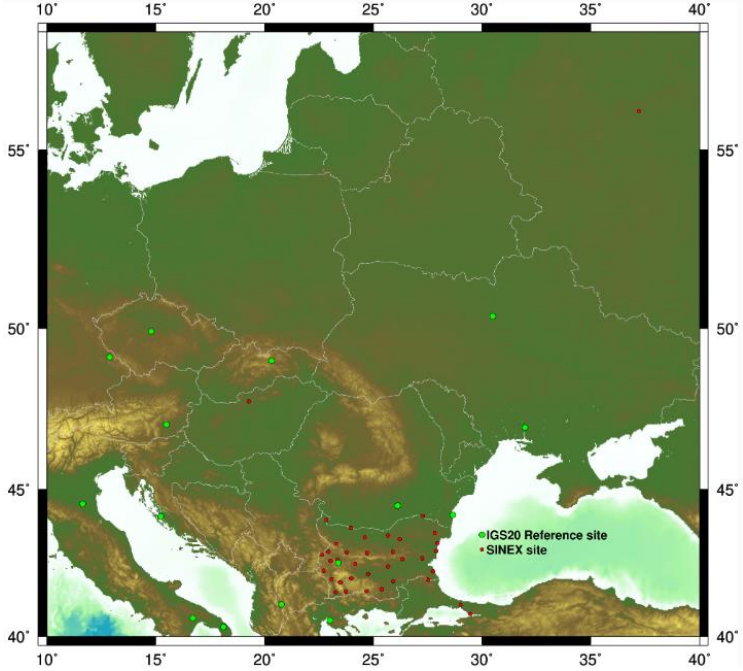
RINEX files computed on a daily basis: repro3 2019 and 2021 CEGRN data included.

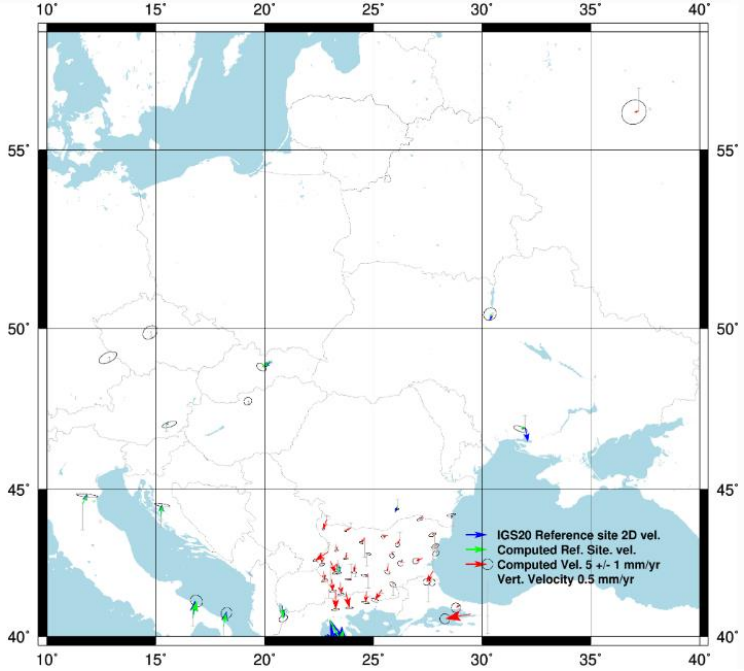


Towards CEGRN v2.0

SINEX files computed on a daily basis. Different time span fo the different contributors.

BAS, +4 years:

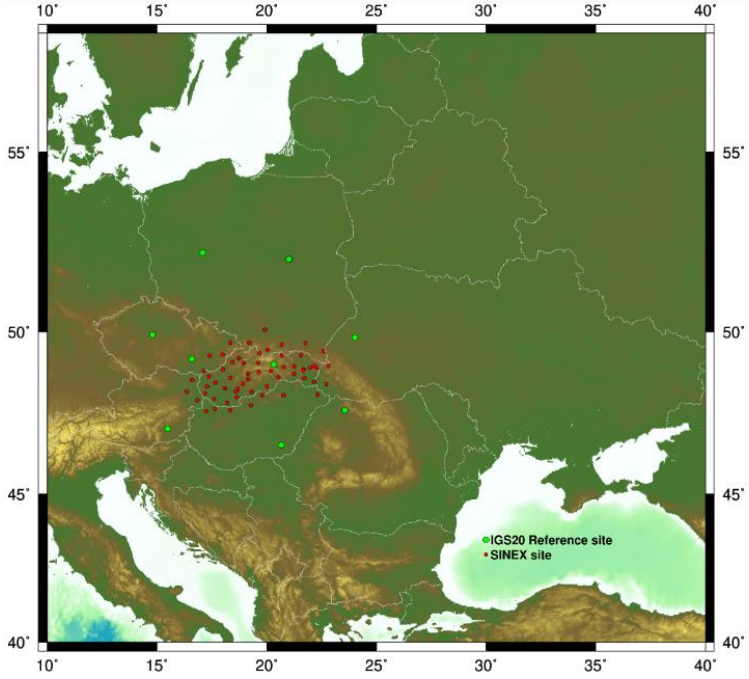


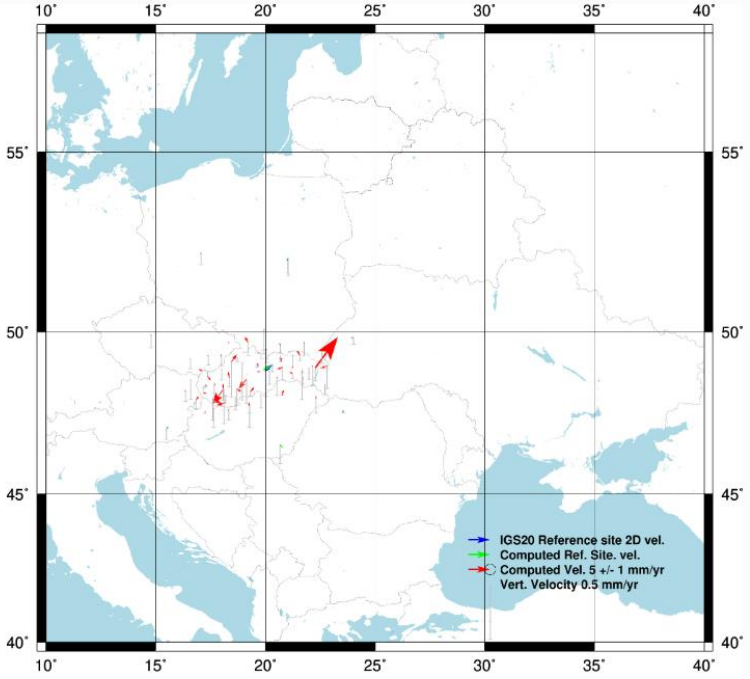


Towards CEGRN v2.0

SINEX files computed on a daily basis. Different time span fo the different contributors.

GKU, +4 years:

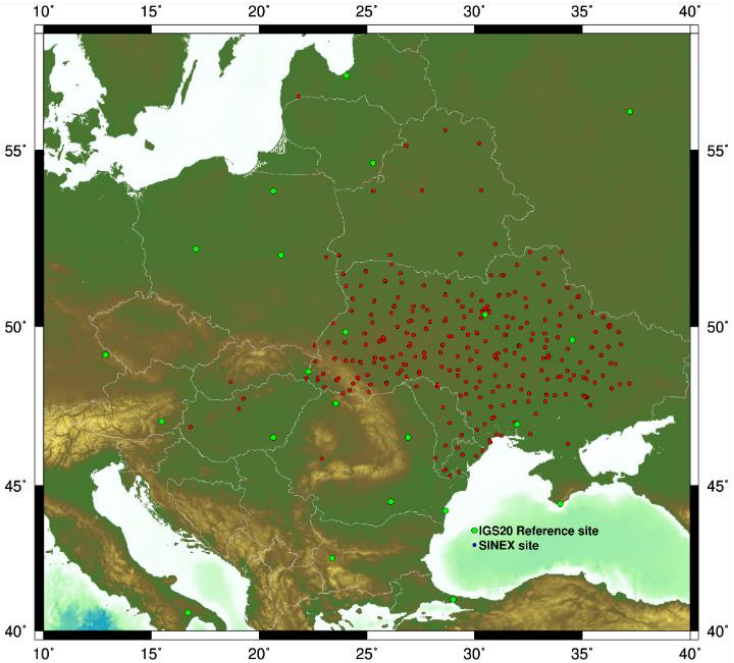


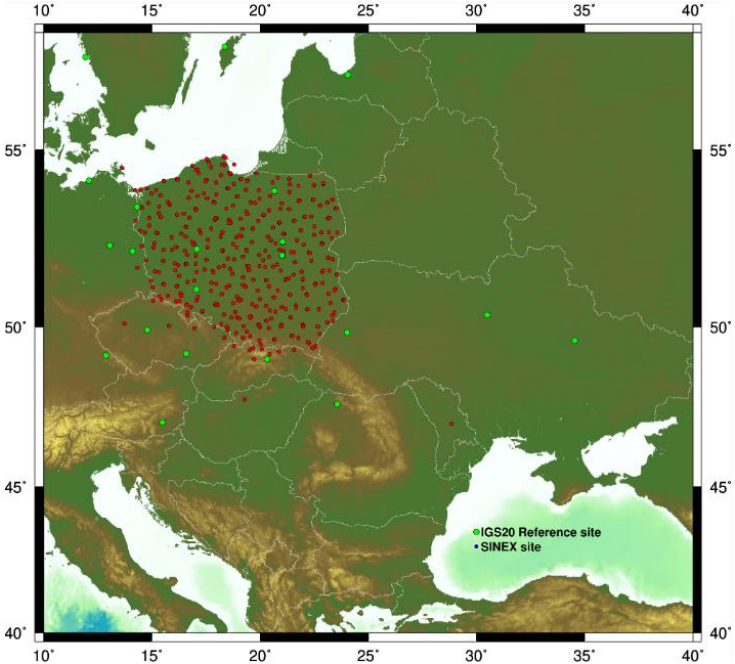


Towards CEGRN v2.0

SINEX files computed on a daily basis. Different time span fo the different contributors.

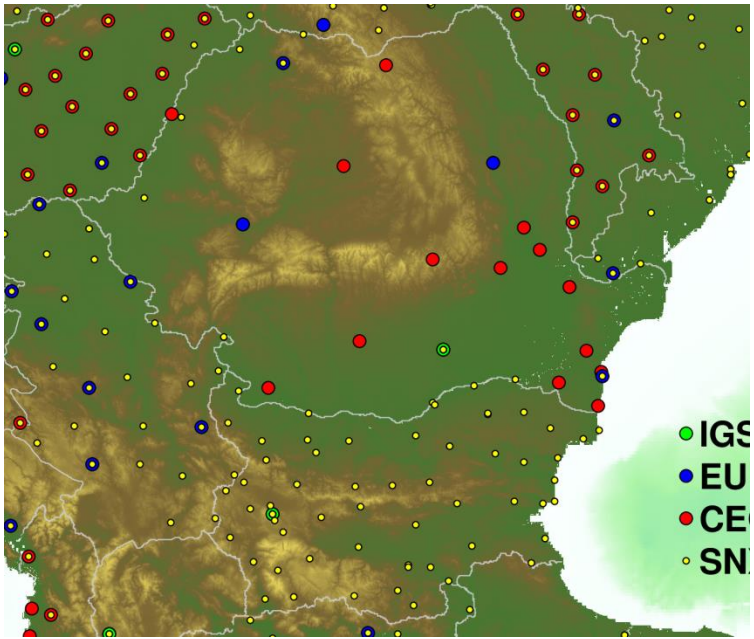
MAO and MUT < 4 years, no velocities should be computed





Towards CEGRN v2.0

We still have to fill some gaps:



Conclusions

After seeing the response of the CEGRN partners after the 2023 meeting, we believe that we are in a better shape than ever:

- We have a supply of data that can be computed daily,
- We have new CCGB members,
- We have new CCGB members (membership right + proposed),
- These new members can assist on improving the CEGRN taking different actions:
  - Help to develop new partnerships between other organizations,
  - QC of the RINEX data,
  - Split the Network in sub-networks for double checking the results,
  - Assist on the cumulative analysis,
  - Provide crustal deformation analyses (e.g. earthquakes) in the short and mid term
- Future work involves the delivery of IGS20-compliant solutions (repro3), that will still take some time

We plan to continue providing high quality dense P+V as an ETRS89 realization for all the CEGRN sites to all the Agencies and to any Group interested in very dense velocity fields for specific purposes

Thank you for your attention

Questions/suggestions/comments/want to take part?

At the EUREF2024 (anytime/any place), or
jzurutuza@gmail.com