COUNTRY REPORT BERLIN
GERMAN FEDERAL STATE

Dr. Christian Rentsch, Senate Department for Urban Development, Building and Housing
10th EUPOS, Skopje, North Macedonia, Okt. 24th+25th 2024

BERLIN

Outline

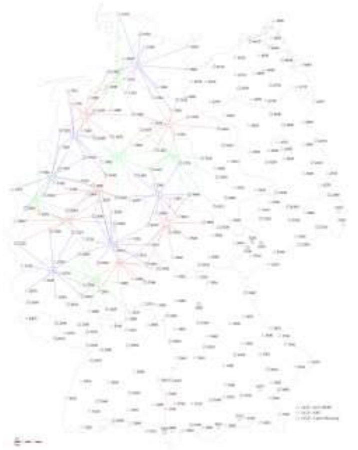
- ETRS89/DREF91 (Realization 2025)
- Developments of SA*POS*® in Berlin
- Summary

ETRS89/DREF91 (Realization 2025)

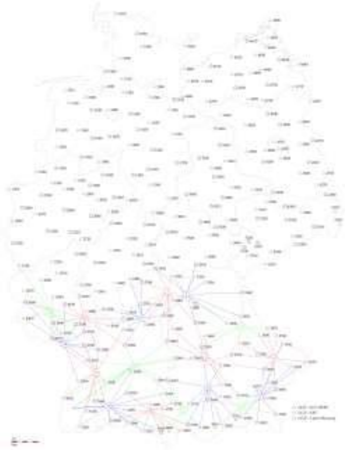
- Measurement campaign all over Germany in 2021 where
  - Observations on the Geodetic Ground Network Points (>270 GGN)
    - ≥ 2 sessions each 24 h with 4G and 1 Hz
    - 15 measuerement troups in 3 subnetworks
    - Same equipment for each troup

- Analyses in 3 steps
  - At two individual computation centers (BKG, LGLN)
  - Net A: Only GGN
  - Net B: GGN + GNSS ground stations
  - Net C: GGN + all GNSS reference stations

  - Analyses with inidvidual cammer and roboter calibration or mean type calibrations for each GNSS antenna



Block West



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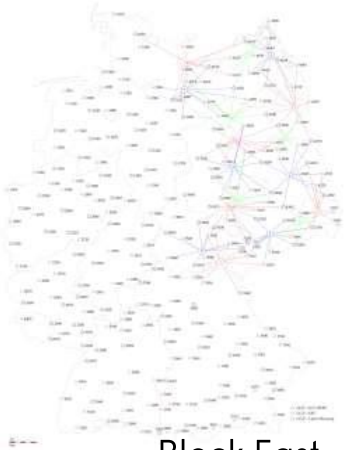
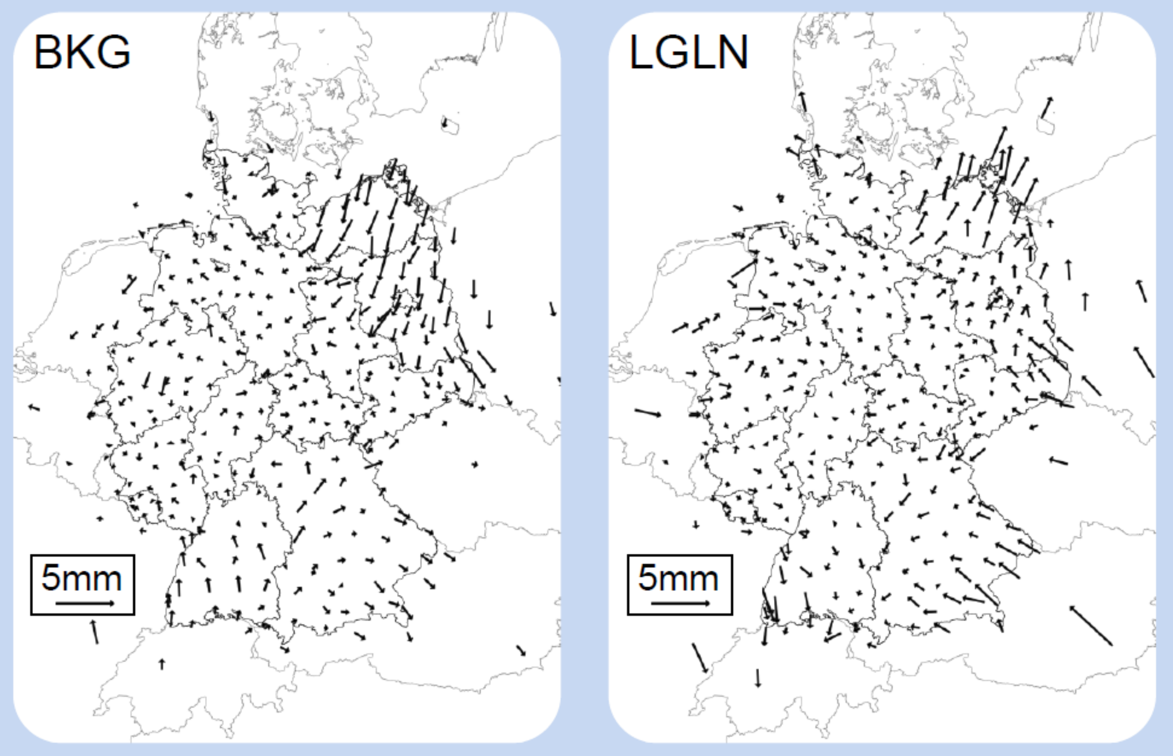


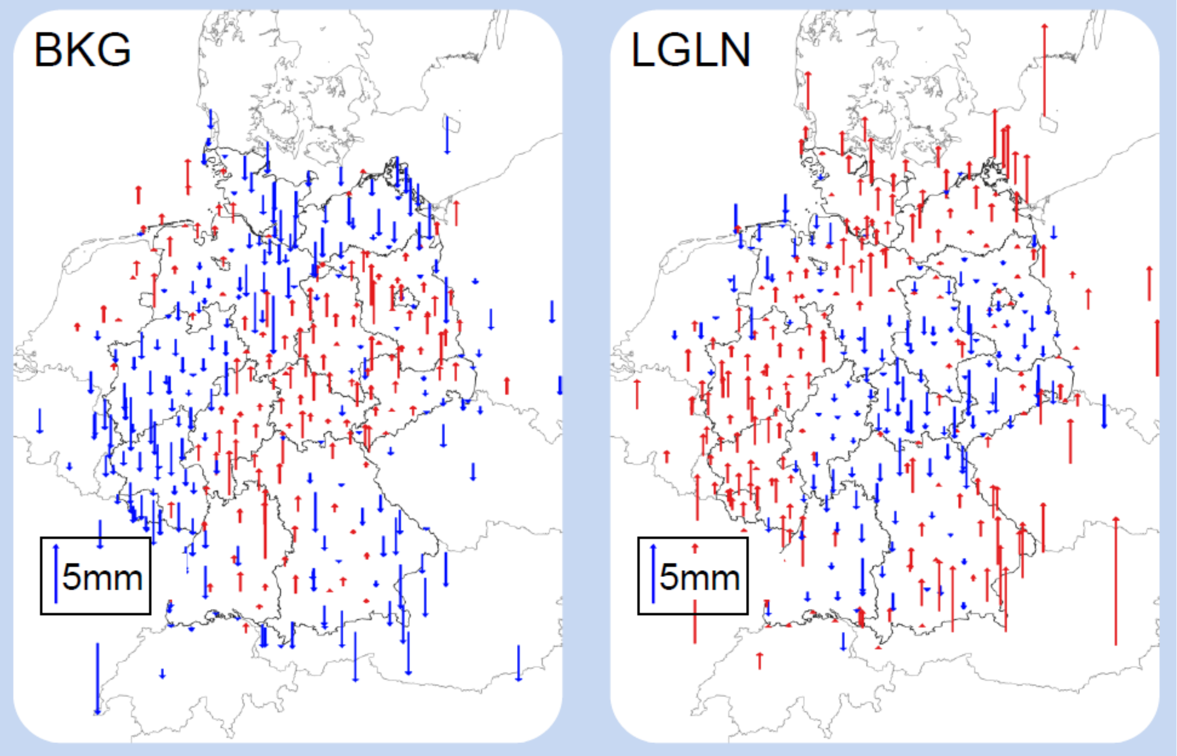
Block East

ETRS89/DREF91 (Realization 2025)

Horizontal coordinates



Height



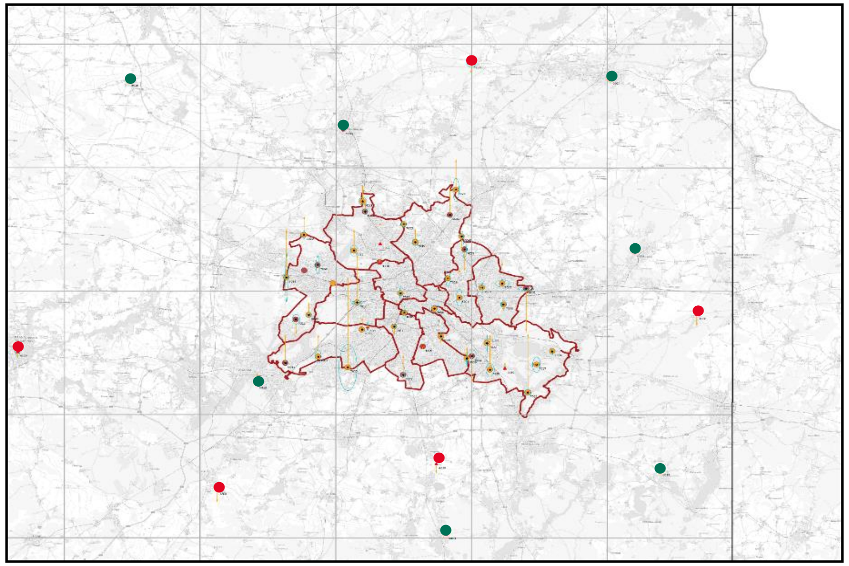
Results Net C with roboter calibration

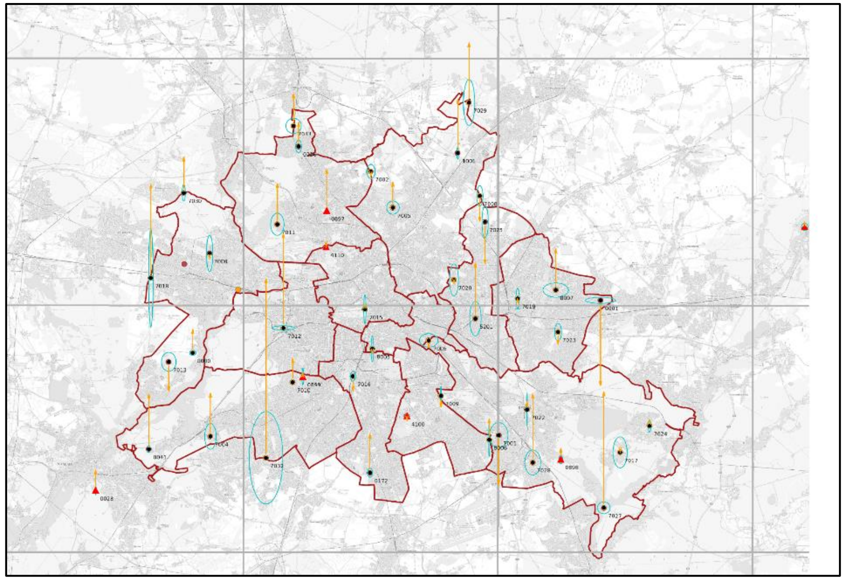
ETRS89/DREF91 (Realization 2025)

- New realization is going to be introduced in March 1st 2025. The final decision is made in November 2024 at the AdV.
- New coordinates for the GNSS-reference stations will be introduced and new coordinates for the GGN and the GGP in Berlin

GGP campaings in Berlin

- Observation on 42 Geodtic Ground Points (GGP) in Berlin and 5 GGN in Brandenburg
  - ≥ 2 sessions each 2 h with 4 G and 1 Hz
  - 2 campaigns in 2022 and 2023
- For some points is ground motion visible. Investigation of the reason is ongoing:
  - Visible effects: lowering ground water, constructions, hydrostatic effects caused by a nearby canal …





Developments of SAPOS® in Berlin

- Signal interference detection from Leica at the reference stations are activated and are detectible.

- Developments to fullfill IT-security standards following the „Federal Office for Information Security“ (Bundesamt für Sicherheit in der Informationstechnik, BSI):

  - Investigations for a change from local hosted server to IaaS or PaaS
  - Testing and buying new router based on the end of the update service for the currently used ones ...
  - Testing new ways for the redundant data transmission (LTE-Accesspoints, 5G ...)
  - Installation of a testing enviroment for changes in the system configuration and for new releases of GNSmart
  - ...

Aims in the federal state Berlin for 2025

- Setting-up of 1-2 GNSS ground based reference stations with Corner Relector
- Setting-up a tool for detected interferences at the GNSS stations
- Changing the redundant data transmission to 5G+
- Introduction of new router …
- Improving the IT-security standards to achieve a basic security following the BSI standards (? NIS-2 ?)
- …

Thank you.

Senate Department für Urban Development, Building and Housing
Dept. III – Geoinformation
Group III B 1 - Geodetic Reference Systems
Dr. Christian Rentsch
Fehrbelliner Platz 1
Germany

Tel.: +49 (0) 90139 5370
Mail: Christian.Rentsch@Senstadt.berlin.de

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