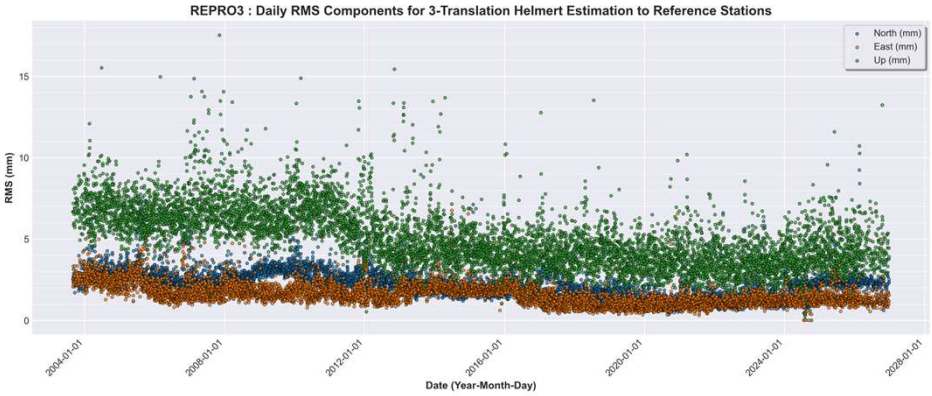
EUREF 2026
National Report Belgium

NGI Nationaal Geografisch Instituut — IGN Institut Géographique National

KSB - ORB

Belgian Reference Frame – Reprocessing GNSS data

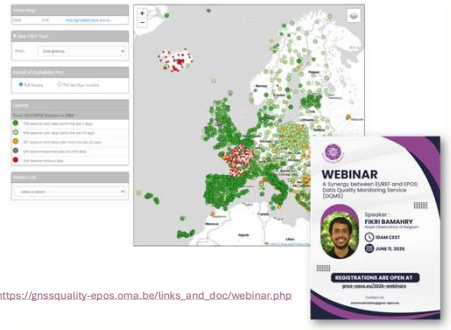


European Plate Observing System

Belgium is founding member of EPOS European Research Infrastructure Consortium and plays an active role in EPOS:

- GNSS network and software coordinator
- Belgian and EUREF GNSS data nodes
- GNSS Data Quality Monitoring Service (portal + alarms)

GNSS data availability as provided by the portal of the EPOS-GNSS data quality monitoring services (~2400 GNSS stations) https://gnssquality-epos.oma.be



https://gnssquality-epos.oma.be/links_and_doc/webinar.php

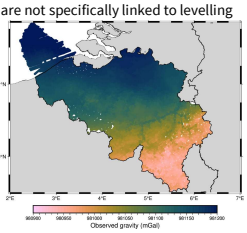
Gravimetry

Integration of gravimetric data with the levelling network

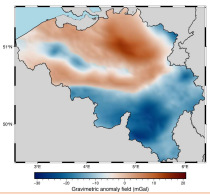
Belgium benefits from good coverage of gravimetric measurements… but they are not specifically linked to levelling measurements!

Re-evaluation of previous Belgian gravimetric surveys and improvements

- Following international conventions
- Uniform heights system
- Topographic correction
- Development of high resolution DTM including bathymetry
- Rock density variations



→ Interpolation of data to obtain a gravity field in Belgium



Allows to

- express height in geopotential number
- correct the orthometric heights when gravity is varying
- improve the geoidal model of Belgium

Belgian GNSS data repository

- Operated by ROB
- Daily GNSS data from 87 GNSS stations from Belgium and G.-D. Luxembourg (ROB, NGI, ESA, ACT, regional governments, universities, scientific agencies)
- Open access via Open Data Portal via https://gnss.be/opendataportal/belgiandata.php or via EPOS https://www.ics-c.epos-eu.org/
- FAIR-aligned: REST API, GNSS-DCAT-AP metadata and Digital Object Identifiers for all datasets (96% FAIR-ness score obtained using FU-JI tool)



Map of GNSS stations whose data are included in the Belgian open data portal

M³G

- GNSS Metadata Management System for Multiple GNSS networks (M³G)
- Web portal, REST API, developed and operated by ROB https://gnss-metadata.eu
- New repository hosting M³G-related tools (scripts, notebooks etc) from the M³G user community https://gitlab.com/m3g-toolbox

EQUIP-G

The Horizon Europe project "European QUantum Infrastructure Project for Gravimetry" (EQUIP-G) is a 4-year project launched in June 2025 and starts to build a Europe-wide network of advanced quantum gravimeters.

ROB is responsible for evaluating FAIRness of gravity data and issue recommendations for the future.



Geodetic Network

- **1st order altimetric network**
  - Levelling across the country
  - Connecting BE, NL, FR, DE, LU
  - Supporting national and international geodesy



- **Integrated Geodetic Reference Stations**
  - 6 installed, 2 planned
  - Tests with low-cost receiver and solar panel





Other

- **Transition to a new national projection (Lambert 2008)**
  - Replacing Lambert 1972 on Belgian Datum 1972
  - Conical conformal projection on ETRS89
  - Introduced by NGI in 2008
  - Regional governments start data transition now
- **Multilateral Memorandum with the Netherlands and Luxembourg**
  - Reference frame alignment across the three national geodetic systems
  - A joint GNSS densification analysis centre
  - A shared RTK validation system
  - EVRS realisation and coordination for the vertical reference frame
  - Positioning in international discussions



- **Outreach activities**
  - BE Geodesy track at the BeGeo conference, a national event with European reach
  - BE Tourist information boards on geodesy installed across the country
  - EU Benelux geodesists meeting initiated and hosted
  - EU Session hosted at the BeNeLux Geography Conference : BeNeLux observation, monitoring and measurement

EUREF

- EUREF Governing Board
- Four EPN stations
- EPN historical data center and real-time broadcaster
- EPN Central Bureau, network coordinator and reference frame coordinator
- EPN analysis center (rapid and final solutions, Repro3 solution submitted)
- 2 EPN densification analysis centers (ROB Repro3 submitted)

International Cooperation

- **UN-GGIM** – Subcommittee on Geodesy – Global Geodetic Centre of Excellence – GRF Europe
- Partner of **UN Global Geodetic Centre of Excellence**
- **IGS**: member of Reference frame, real-time, troposphere, Antenna working groups and infrastructure committee
- **EPOS**: member of EPOS ERIC executive committee, member of EPOS-GNSS Consortium Board, network coordinator, software coordinator
- **EUPOS**: full member
- **IAG**: member of several working groups
- **E-GVAP**: national delegate and member of the expert group on GNSS data processing, analysis centre
- **Research Data Alliance**: member of the "Complex Citations" working group
- **GGOS**: member of "Data and Information Systems" and "DOIs for Geodetic Data Sets" Committees
- **EuroGeographics**: member

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