Belgium National Report

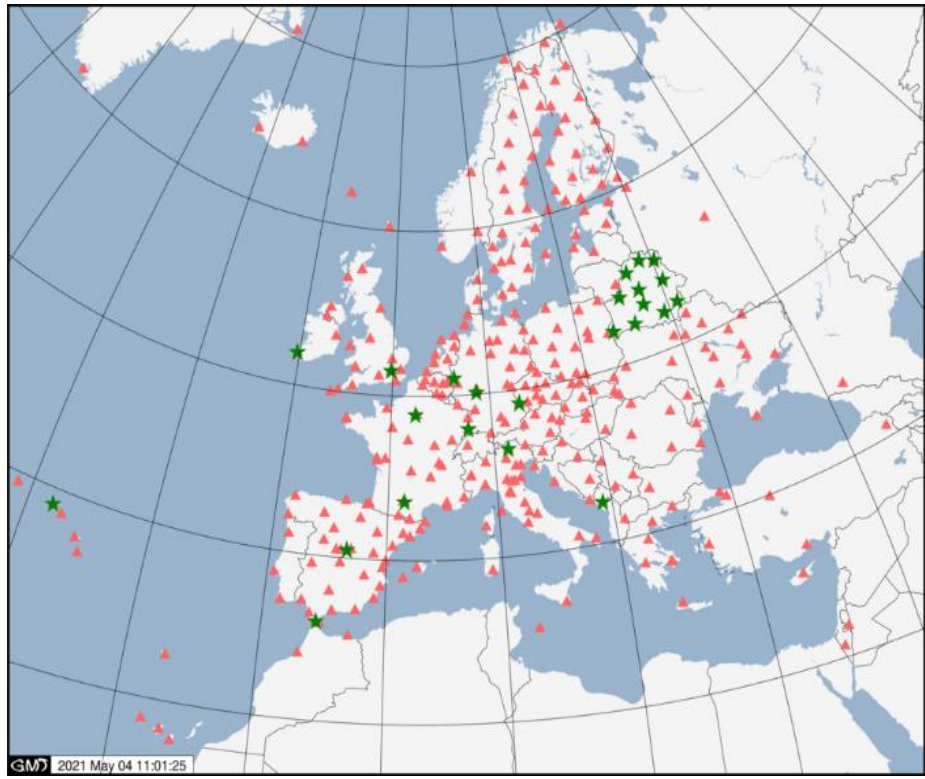
- Royal Observatory of Belgium :

- National Geographical Institute :

Contribution to the EUREF Permanent Network

Manage the EUREF Permanent Network Central Bureau

- EPN tracking stations (status May 2021)
- ✸ indicates 27 new stations included in the network in since July 2019



Data analysis

- daily rapid position
- final position
- tropospheric zenith path delay estimates

ROB is responsible for the Reference Frame Coordination of the EPN

- Not all stations in EUREF reference frame are suitable for reference stations
- New online web tool for assessing the suitability of EPN stations as reference station

Troposphere

Tropospheric Products and E-GVAP Analysis Centre

- participating to the E-GVAP program and provided European meteorological institutes with tropospheric Zenith Path Delay (ZPD) estimates
- An Hourly European analysis with about 740 stations
- An hourly global analysis with about 300 stations
- A processing running every 15 minutes -> nowcasting applications Benelux + UK area

Long-term Stability of GNSS-based Tropospheric Zenith Path Delays

- Tropospheric time series homogenization
- The “Homogenizing GPS integrated water vapor time series: benchmarking break detection methods on synthetic datasets” has been published in Earth and Space Science (Van Malderen et al., 2020)

Ionosphere

Ionospheric Products and Space Weather impacts

- maintain the near real-time products dedicated to Space Weather generated by the ROB-IONO software

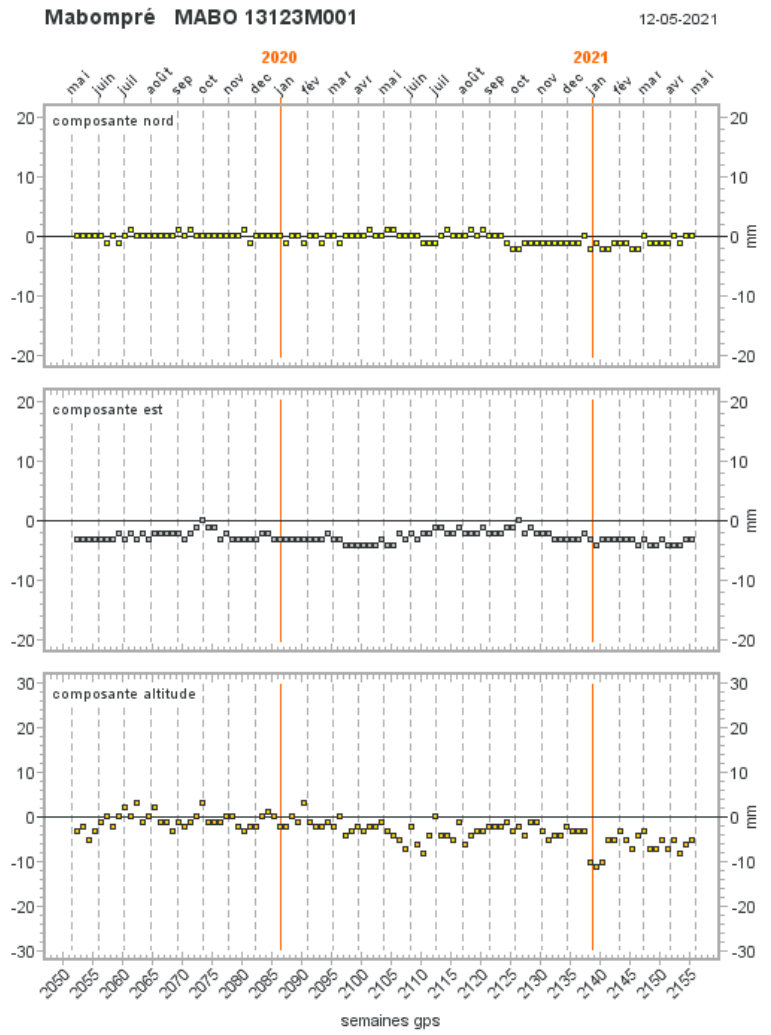
Inter-hemispheric comparison (Europe – South Africa) of the ionosphere-plasmasphere system

- for the period 1998-2019

GPS Flex Power Monitoring

- “Anti-jam flex power” on certain satellites -> power change in the GPS signal since 2017
- Those power changes were interfering in the solar radio burst monitoring
- Since July 2020 monitors these changes and locate the zones

AGN (Active Geodetic Network)



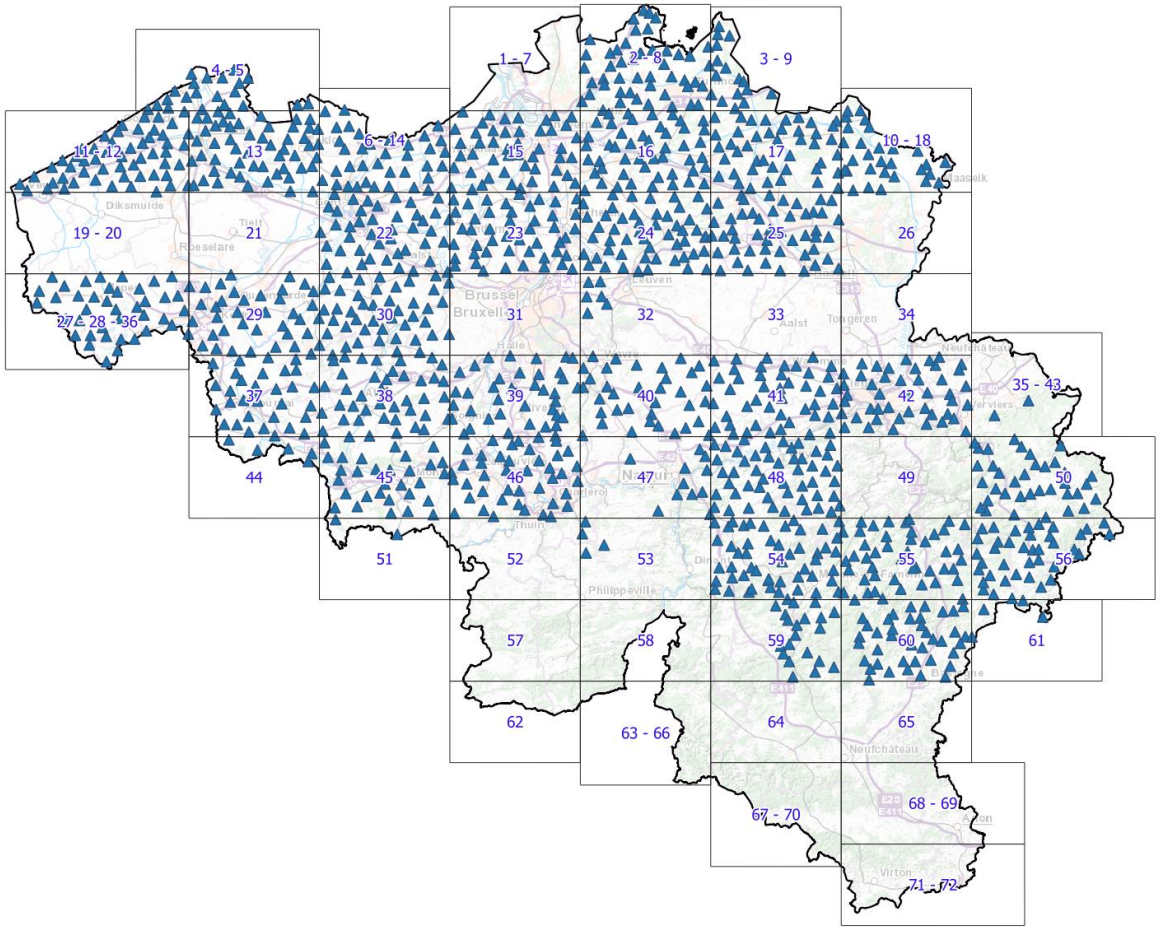
RTK networks: since 2003:

- Operated by regional governmental agencies and NGI
- NGI is responsible for initial coordinates and monitoring of stations
- All information and results on our website (http://www.ngi.be)

NGI Nationaal Geografisch Instituut
IGN Institut Géographique National

3D network

3D-network (1331 points) and 61% is done



- Started in 2018
- GNSS friendly
- Good accessibility
- Stainless steel nails in existing solid concrete surfaces
- Coordinates will be determined with static GNSS and spirit levelling

NGI Nationaal Geografisch Instituut
IGN Institut Géographique National

EPN Densification project

- Since the beginning of 2015, we are taking part in the EPN Densification project
- 1656 (2 October 2011) up to week 2156 (8 May 2021)

Ground motion Analyses using Radar Interferometry technique

Project together with “Geological Survey of Belgium”

- a cartography of the ground movements in Belgium highlighted by radar interferometry.
- characterizing the areas that undergo ground motion
- help us to decide new leveling
- want to put up 4 IGRS stations this year

Announcement

From 1871 till March 2020 'Abdij Ter Kameren' in Brussels

NATIONAAL GEOGRAFISCH INSTITUUT
INSTITUT GEOGRAPHIQUE NATIONAL

Since April 2020 moved to 'Campus Renaissance' – Royal Military School in Brussels

NGI Nationaal Geografisch Instituut
IGN Institut Géographique National

Our director of geodesy Pierre Voet has taken his retirement from 1 May 2021

Thank you