

Holger Steffen¹, Rui Fernandes², Carine Bruyninx³, Luis Carvalho², Paul Crocker², Gaël Janex⁴, Juliette Legrand³, Jean-Luc Menut⁵, Michela Ravanelli⁵, Anne Socquet⁴, Mathilde Vergnolle⁵

¹Lantmäteriet, Sweden ²University of Beira Interior, Portugal ³Royal Observatory of Belgium, Belgium ⁴University of Grenoble, France ⁵Observatory of Cote d'Azur, France

EPOS-GNSS Team:

Fabian Andras, Antonio Avallone, Cíntia Ascensão, Fikri Bamahry, Rui Cardoso, Ruben Carvalho, Nathalie Cotte, Nicola D'Agostino, Aline Deprez, Nikolay Dimitrov, Jeff Freymueller, Athanassios Ganas, Fernando Gerales, Vassilis Kapetanidis, Ambrus Kenyeres, Oleg Khoda, Karin Kollo, Martin Lidberg, Tomasz Liwosz, Anna Miglio, Patrizia Pizzulo, Daniele Randazzo, Vasco Senra, Maria Serra, José Sobriño, Wolfgang Soehne, Sandor Toth, Rafael Vitoria, Guy Wöppelmann, David Zuliani

ABSTRACT

EPOS provides integrated access to data, services, and expertise for Solid Earth science. Within EPOS, the GNSS Thematic Core Service (EPOS-GNSS TCS) disseminates quality-controlled GNSS data and products that support the study of crustal deformation and its temporal variability. EPOS-GNSS currently integrates data from more than 2,100 permanent GNSS stations across Europe, providing homogeneous access to station metadata, daily GNSS observations, coordinate time series, velocity fields, strain rate maps, and long-term data-quality information through distributed data nodes, dedicated portals, APIs, and the GLASS software suite. These services provide a consistent basis for analyzing deformation signals associated with tectonic processes, volcanic activity, loading effects, and environmental mass redistribution. For example, coordinate time series and velocity fields are essential for separating secular deformation from transient signals, identifying regional strain patterns, and supporting the interpretation of geodynamic processes across different spatial and temporal scales. In addition to the daily data and products currently provided, EPOS-GNSS is working on enabling high-rate GNSS products that would further strengthen its role in multi-disciplinary applications, particularly through closer interaction with the EPOS Seismology and Volcano Observations TCSs. This development will support rapid co-seismic displacement estimation, volcano monitoring, and improved characterization of short-period deformation processes. This poster summarizes the status of EPOS-GNSS services and discusses their relevance for multi-disciplinary applications.

GNSS Data & Products Thematic Core Service (TCS) aims to:

- facilitate access, through EPOS, portals and web sites to relevant GNSS data, metadata, and data products;
- coordinate the archiving long-term storage of relevant GNSS data, metadata and data products;
- promote best practice for GNSS station operation, data quality, and metadata management;
- maintain and distribute GLASS, an open-source software for GNSS data, metadata, and data products discoverability;
- maintain and develop GNSS data products.

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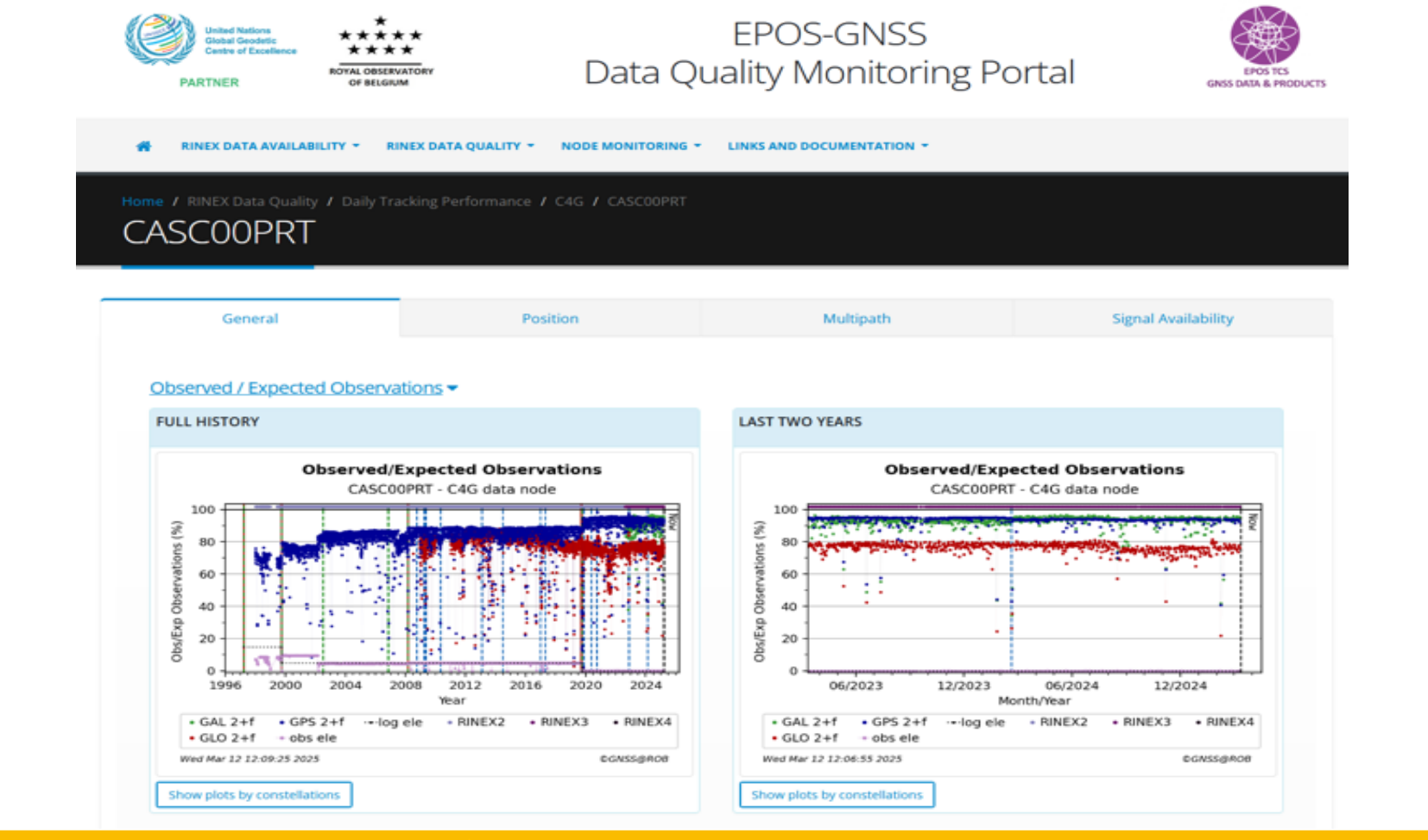
See also the
corresponding
paper

A new European service to share GNSS Data
and Products

Rui Fernandes^{*,1}, Carine Bruyninx², Paul Crocker¹, Jean-Luc Menut⁵, Anne Socquet⁴, Mathilde Vergnolle³, Antonio Avallone⁵, Machiel Bos¹, Sergio Bruni⁵, Rui Cardoso¹, Luis Carvalho¹, Nathalie Cotte⁴, Nicola D'Agostino⁵, Aline Deprez⁴, Andras Fabian², Fernando Gerales¹, Gaël Janex⁴, Ambrus Kenyeres⁷, Juliette Legrand², Khai-Minh Ngo⁵, Martin Lidberg⁶, Tomasz Liwosz⁸, José Manteigueiro¹, Anna Miglio², Wolfgang Soehne⁹, Holger Steffen⁶, Sandor Toth¹, Jan Dousa¹⁰, Athanassios Ganas¹¹, Vassilis Kapetanidis¹¹, Gabriela Batti¹

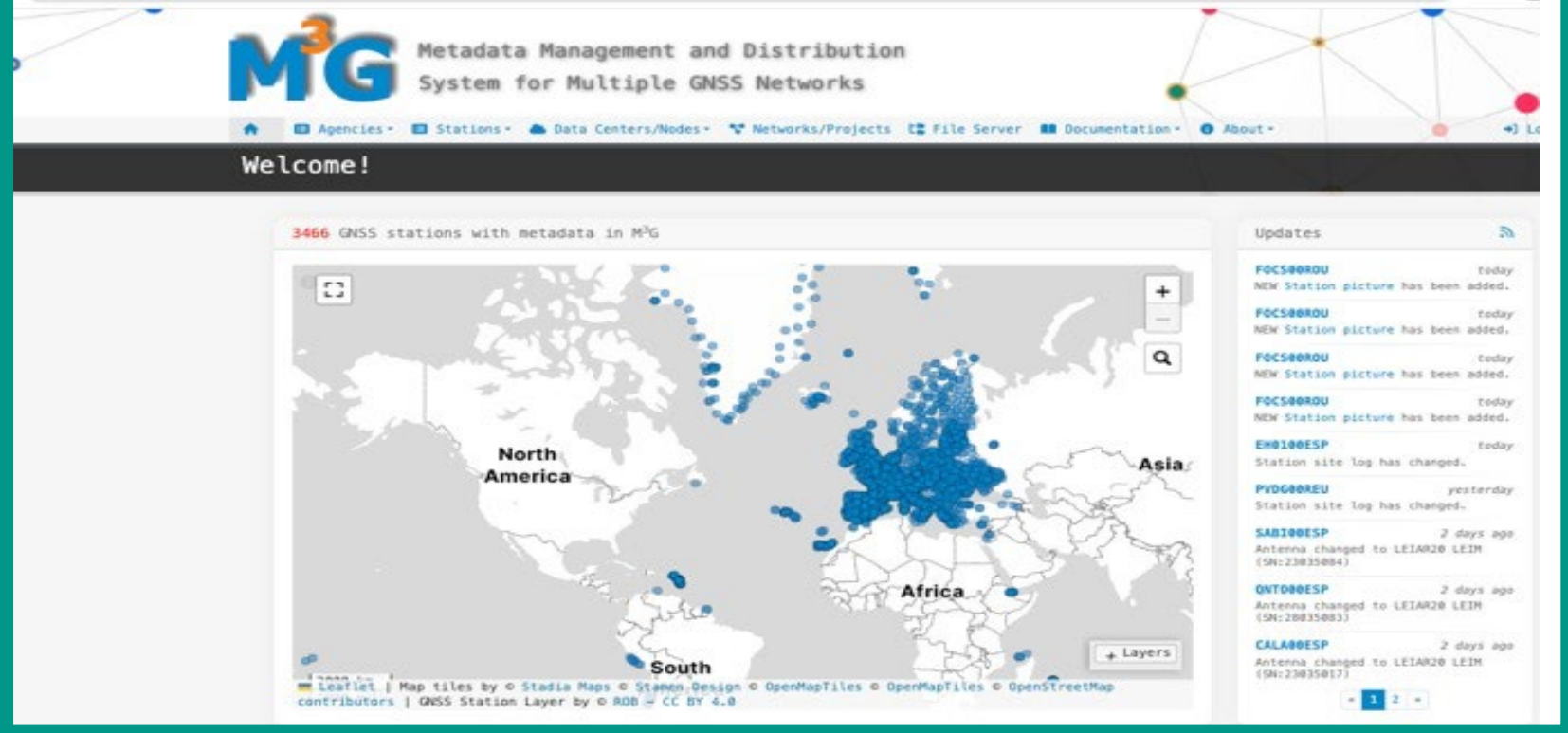
The EPOS-GNSS DQMS monitors the availability and quality of daily GNSS observation data that are discoverable through EPOS.

It collects the results of the quality-control carried out at each node (using software "Anubis") when a new RINEX file enters in the system and provides several Data Quality Indicators (DQI) about the station and files.



M3G validates the station metadata (site logs) and gathers other metadata related to networks, agencies, doi, etc.

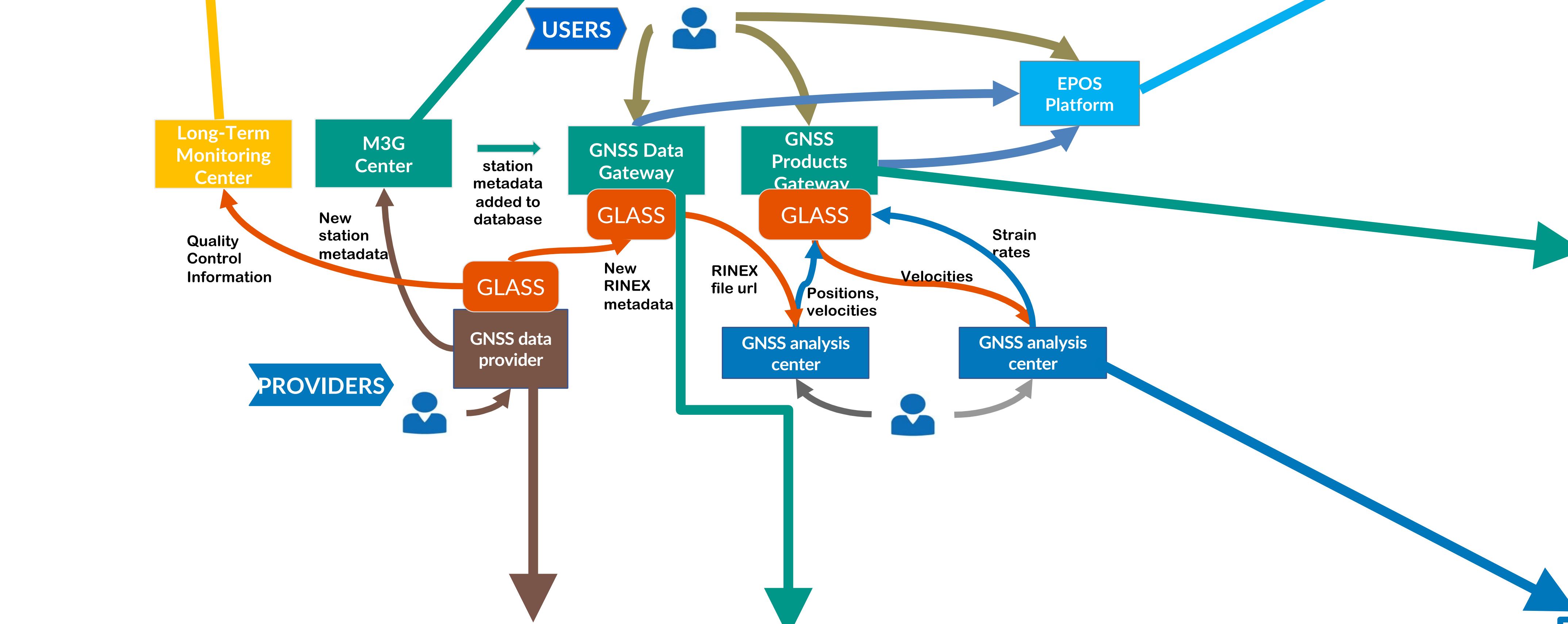
The GLASS framework is designed to cross-check the consistency between the station metadata and RINEX header and to alert data providers if necessary.



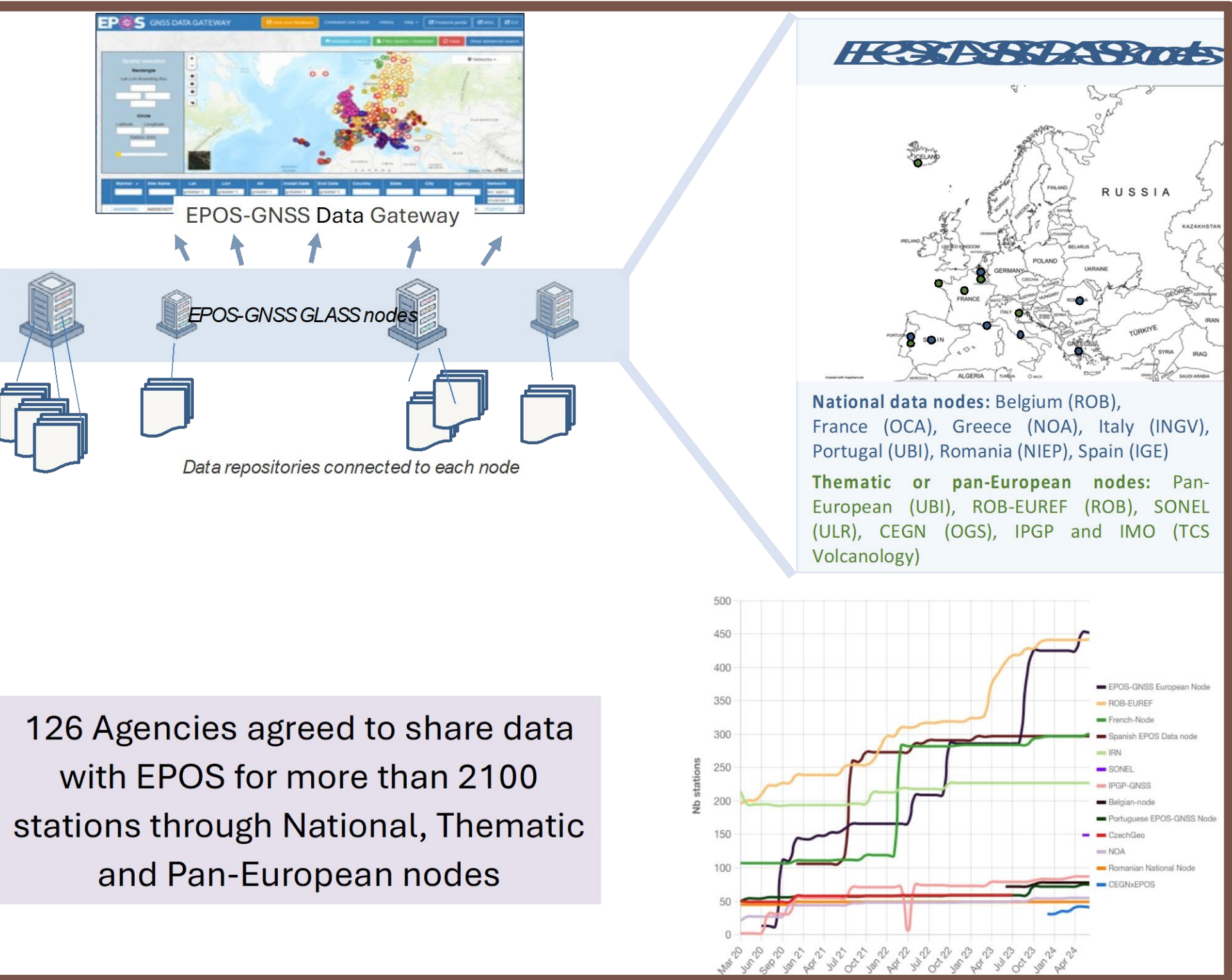
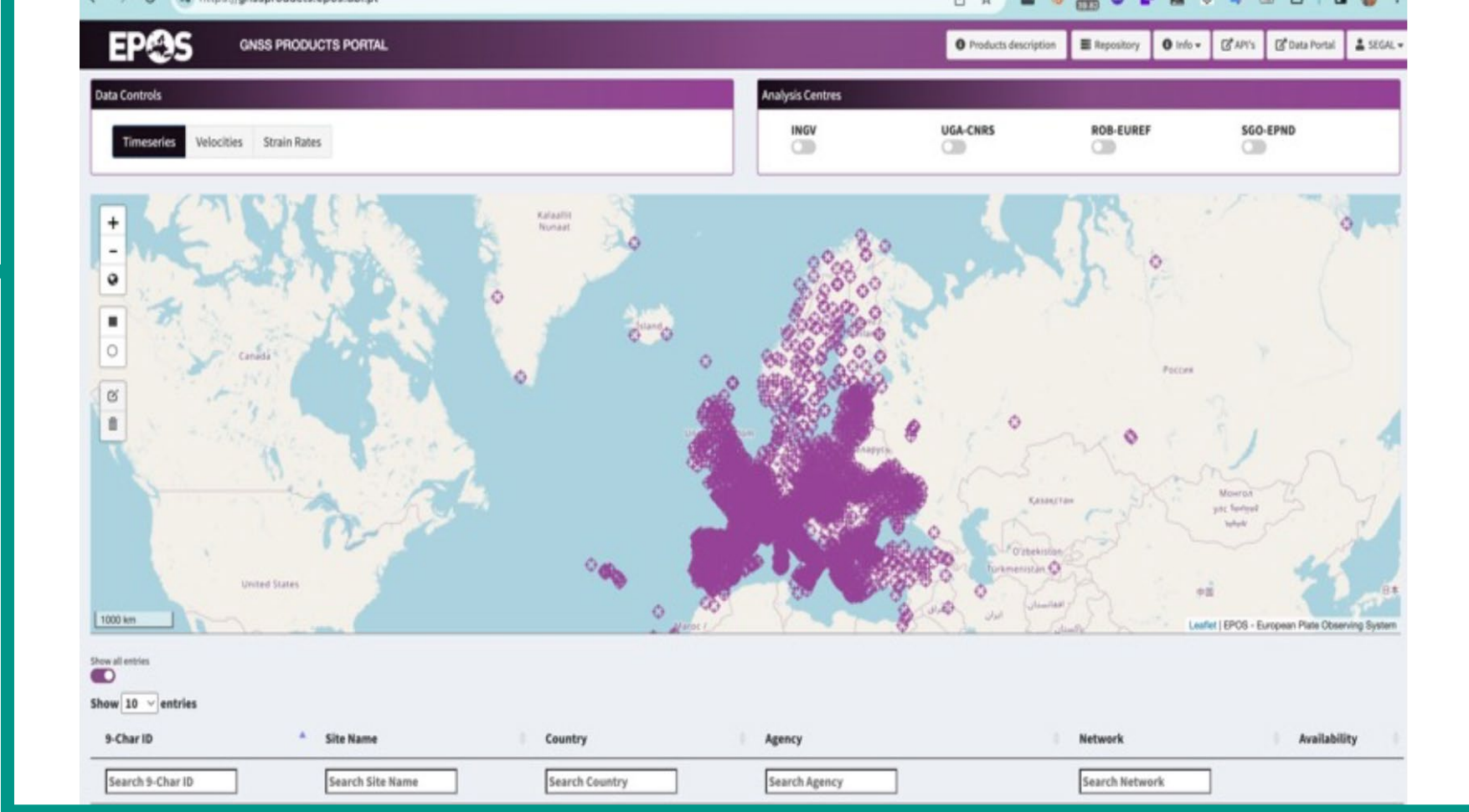
EPOS-GNSS is fully integrated in the EPOS Platform by providing 16 Services (3 implemented in 2024) to access Metadata, Data, and Products:



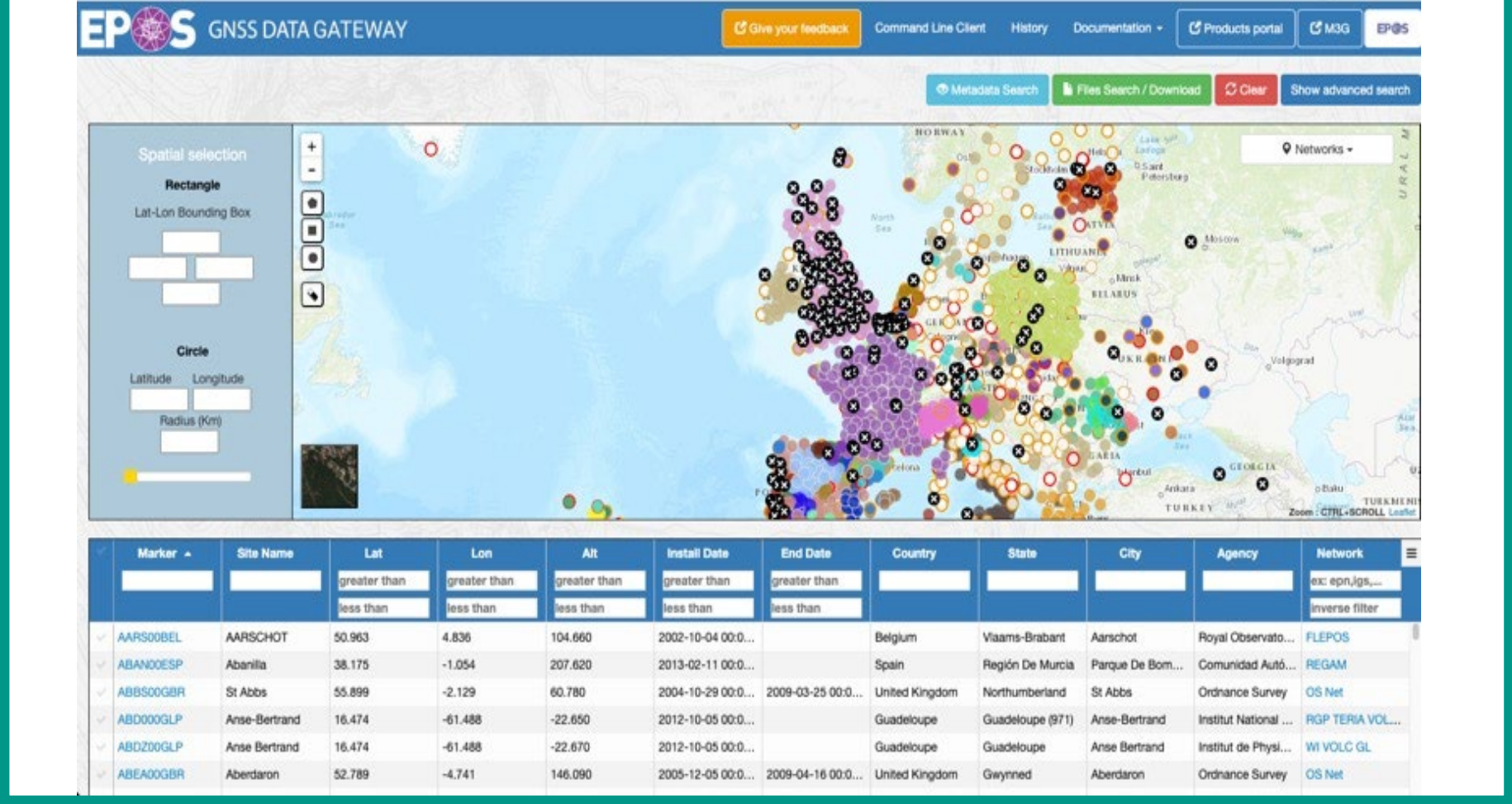
The **GLASS** system is integrated in the EPOS Platform. It also provides interoperability with the other TCS (in particular, Volcanology and Near Fault Observatories) and allow users to queries the services of all TCS at the same time.



The EPOS-GNSS Product Portal is the gateway for the EPOS-GNSS Products. It disseminates the products computed by different Analysis Centers.



The EPOS-GNSS DGW is designed to be the gateway for accessing the data and metadata of more than 2000 stations from different regional, national and Pan-European data centers. The DGW hosts the centralized station and file metadata.



There are four dedicated EPOS Analysis Centers (CNRS-UGA, France; INGv, Italy; SGO, Hungary; LM, Sweden). In addition, EPOS also disseminates solutions computed by EUREF partners (WUT, Poland; ROB, Belgium).

