

First experience with GNSS data quality monitoring in the distributed EPOS e-infrastructure

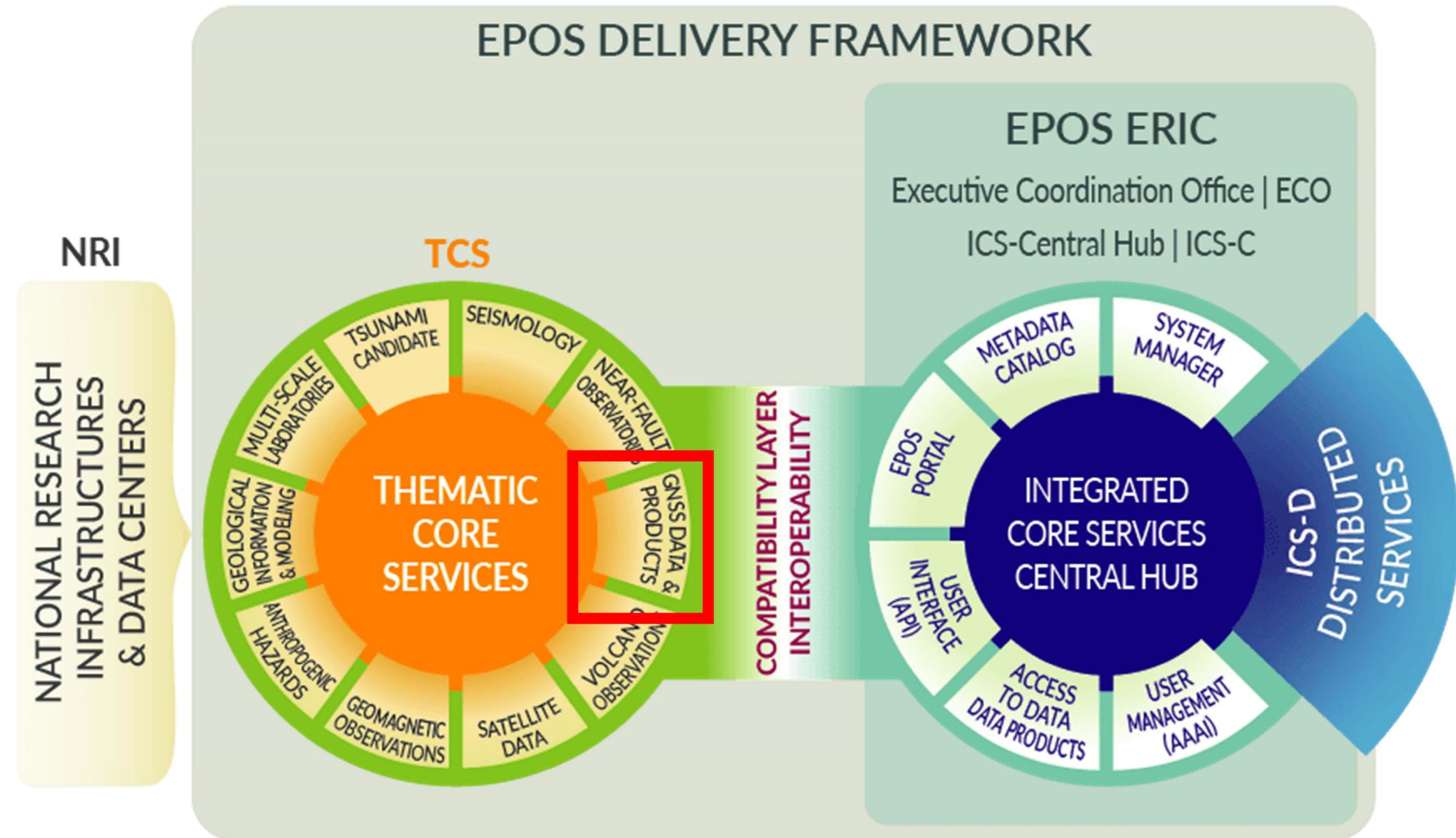
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Royal Observatory of Belgium

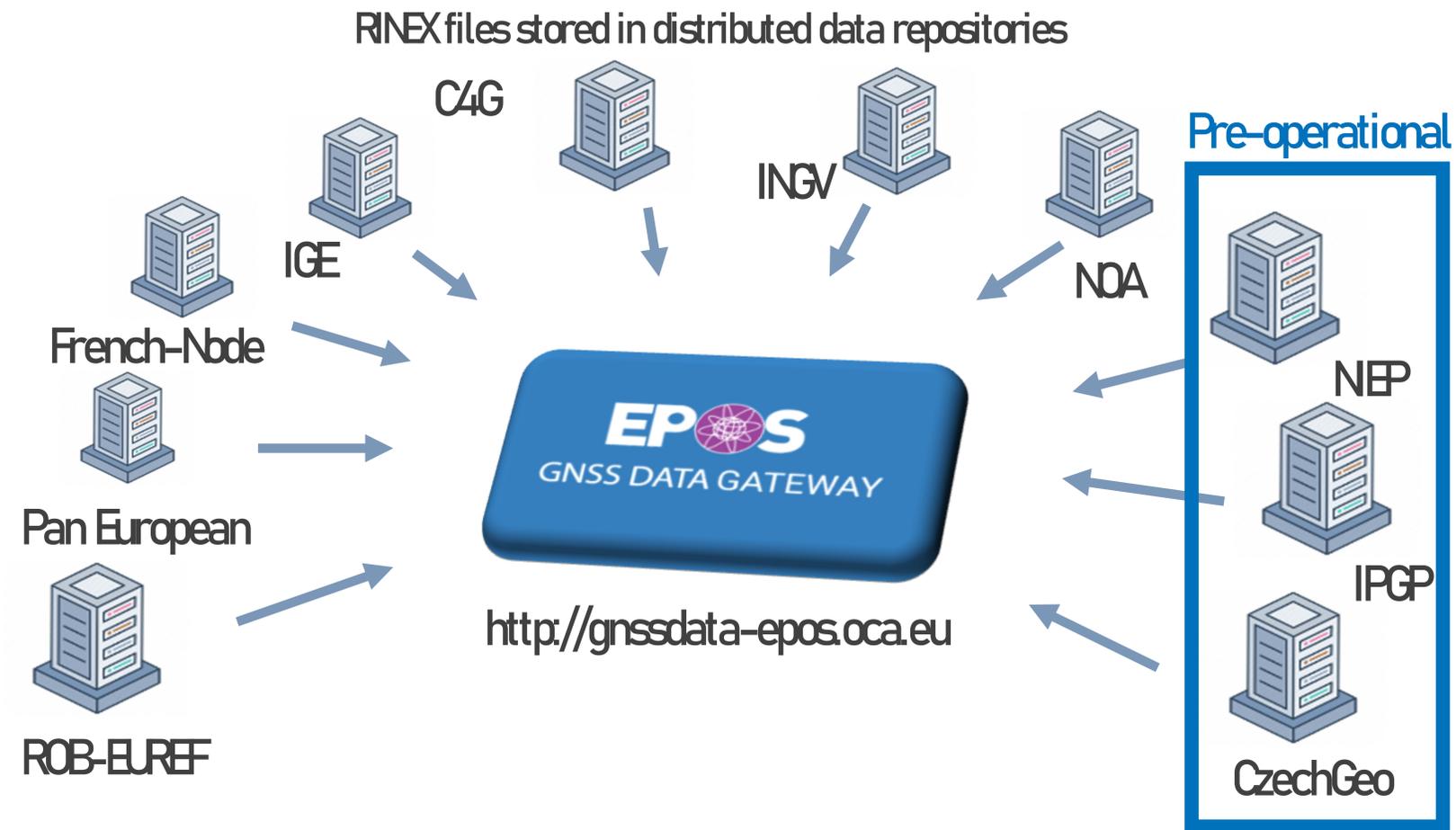
24 May 2022

What is EPOS?

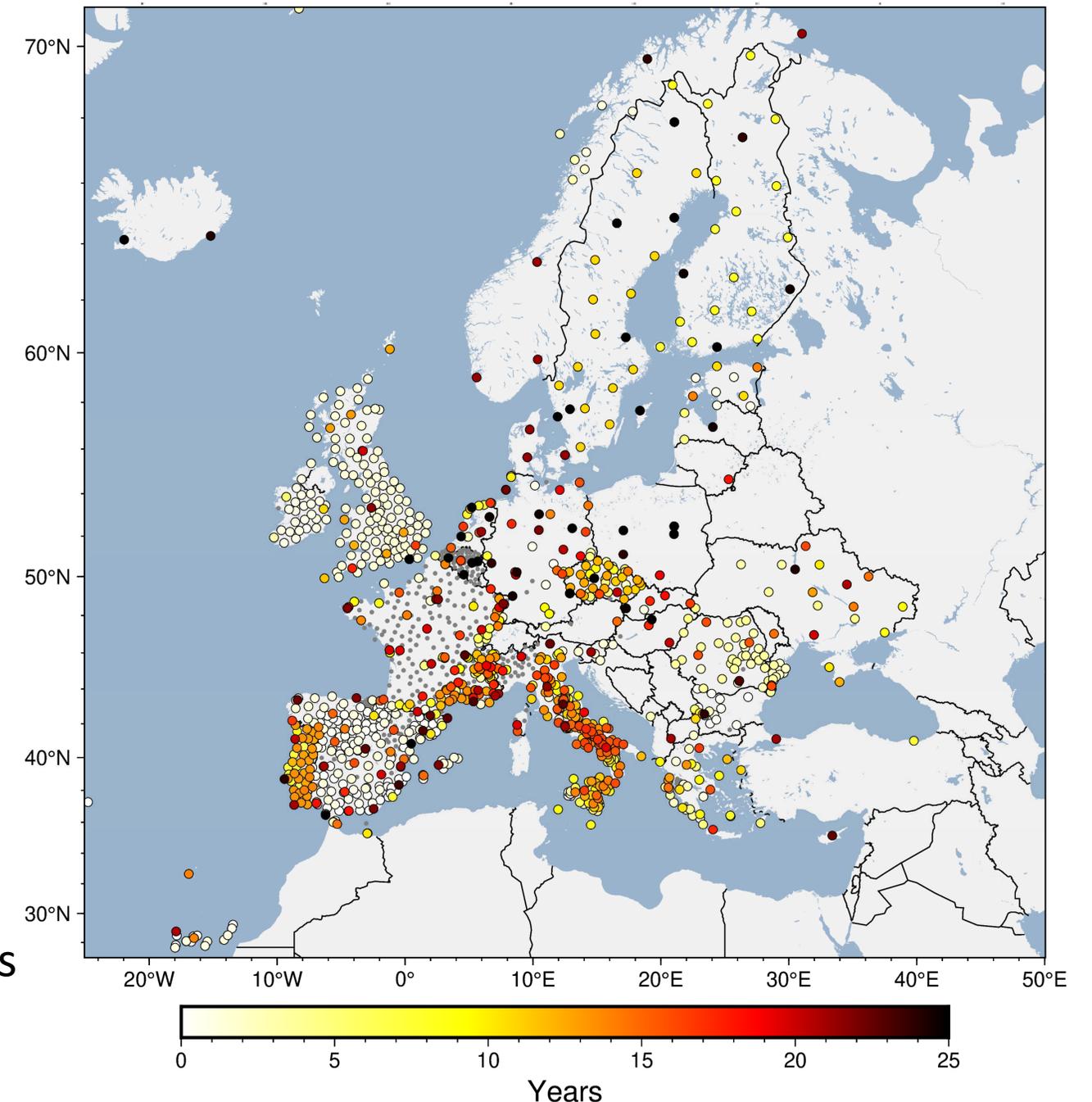
The European Plate Observing System (EPOS) a very large and complex European e-infrastructure that provides pre-operational access to a first set of datasets and services for Solid Earth research.



EPOS-GNSS data distribution



- Centralized access through EPOS-GNSS Data Gateway
- RINEX files stay at the EPOS-GNSS data nodes
- Each data node generates data quality metrics using G-Nut/Anubis
- 1133/1562 EPOS-GNSS stations have quality metrics



EPOS-GNSS Data Quality Monitoring



<https://gnssquality-epos.oma.be>

Retrieves information from DGW and data nodes

Monitor:

- RINEX Data Availability
- RINEX Data Quality
- Data Nodes

The web portal provide helpful information for node managers or station users to:

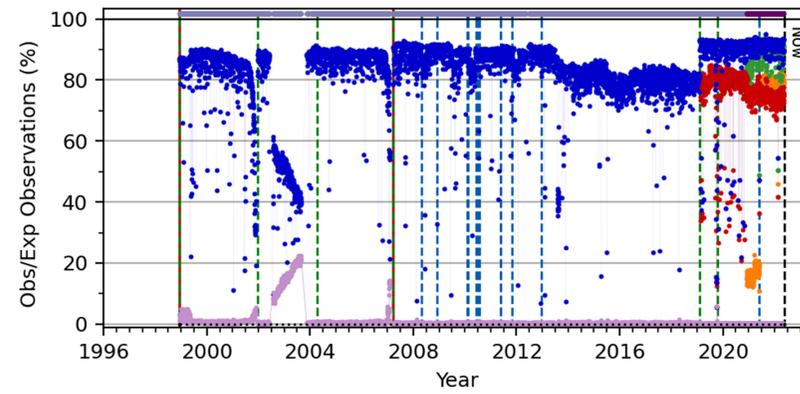
- assess and improve the EPOS-GNSS node's performance
- detect potential degradation of the RINEX data quality



DQI Plots

Observed/Expected Observations

ACOR00ESP - ROB-EUREF data node



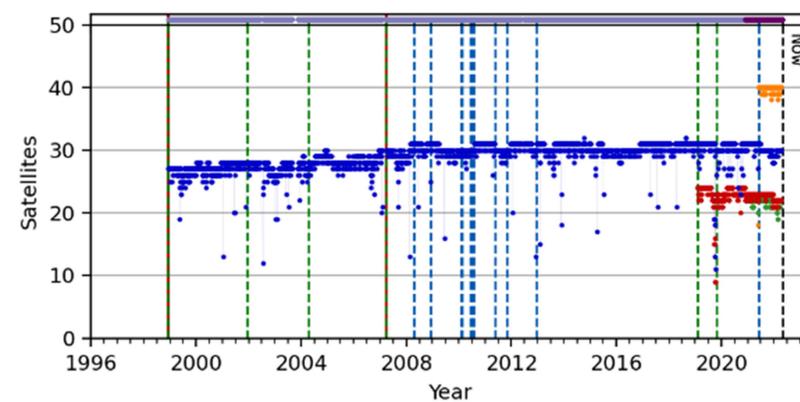
● BDS 2+f ● GLO 2+f ● obs ele ● log ele ● RINEX2 ● RINEX3
● GAL 2+f ● GPS 2+f

Mon May 16 14:14:04 2022

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Number of Satellites

ACOR00ESP - ROB-EUREF data node



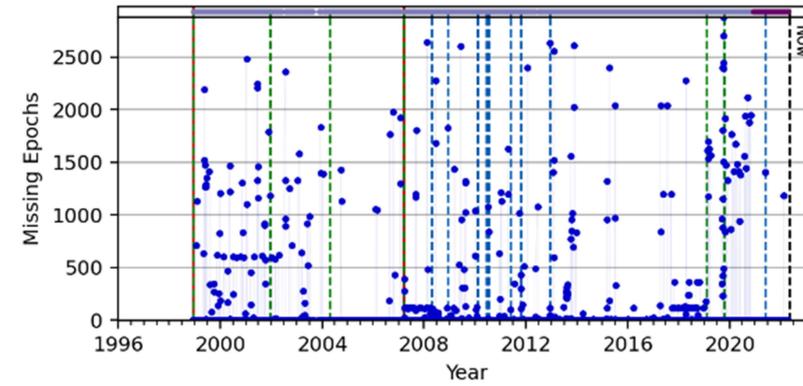
● BDS ● GAL ● GLO ● GPS ● RINEX2 ● RINEX3

Mon May 2 14:17:00 2022

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Number of GPS Missing Epochs

ACOR00ESP - ROB-EUREF data node



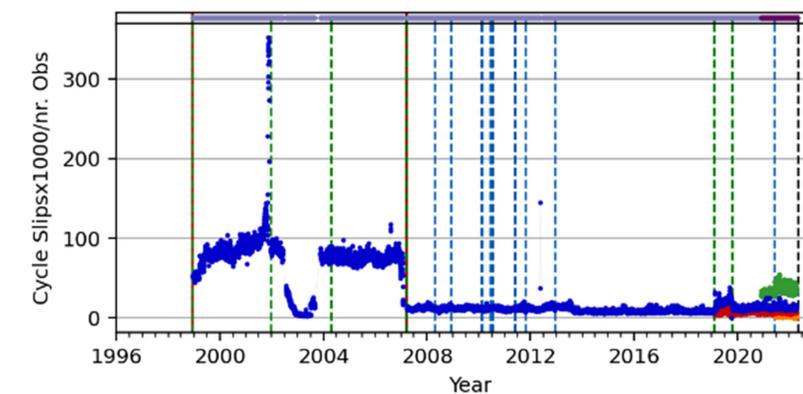
● GPS ● RINEX2 ● RINEX3

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Number of Cycle Slips

ACOR00ESP - ROB-EUREF data node



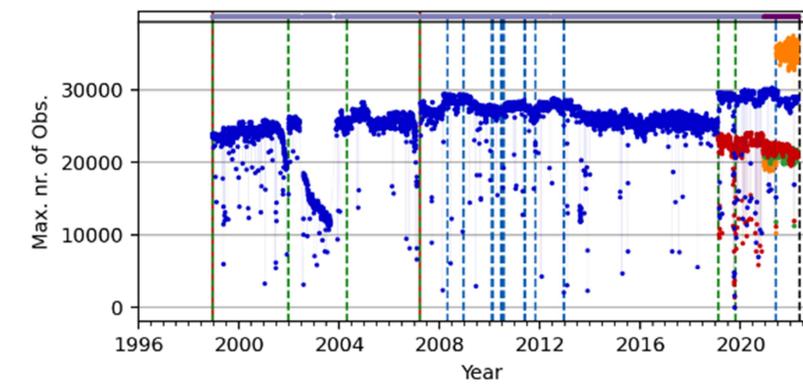
● BDS ● GAL ● GLO ● GPS ● RINEX2 ● RINEX3

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Maximum Number of Observation

ACOR00ESP - ROB-EUREF data node



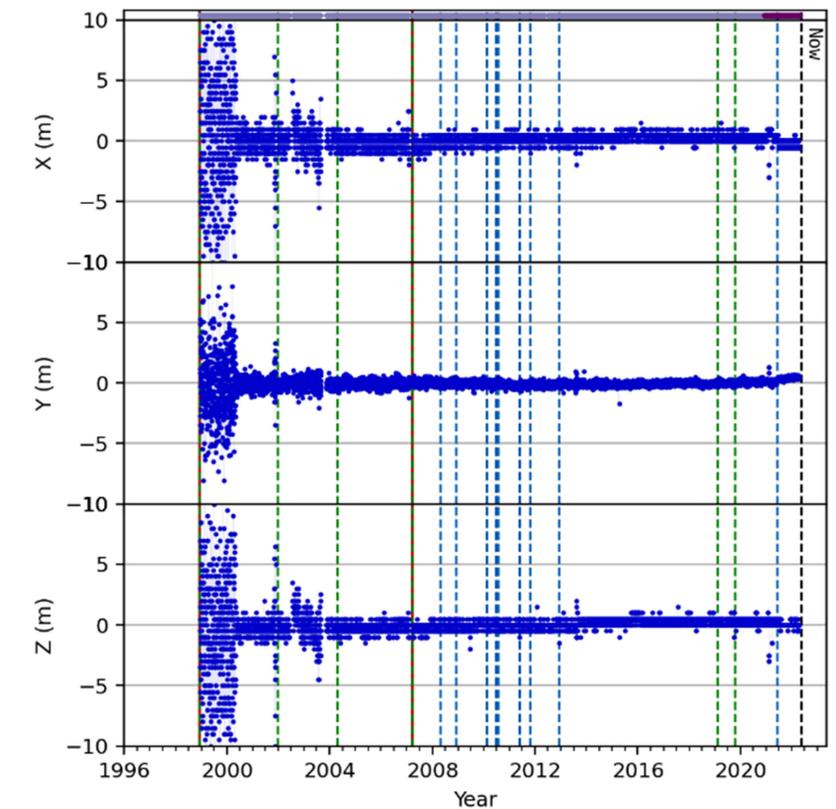
● BDS ● GAL ● GLO ● GPS ● RINEX2 ● RINEX3

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GPS Standard Point Positioning

ACOR00ESP - ROB-EUREF data node



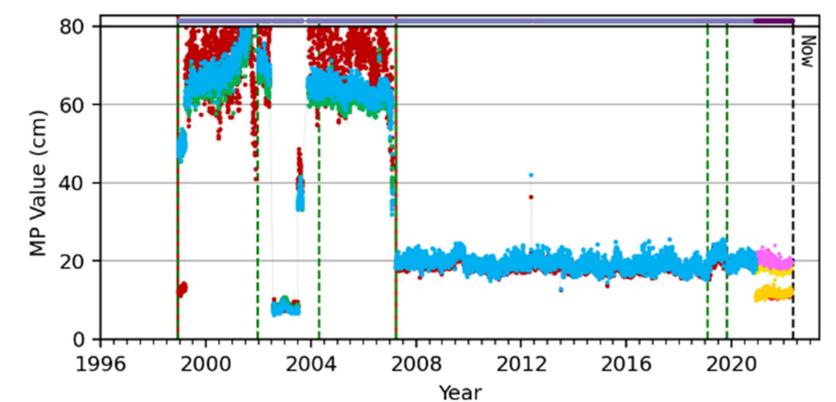
● GPS ● RINEX2 ● RINEX3

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GPS Multipath Values

ACOR00ESP - ROB-EUREF data node



● C1 ● C2S ● C5Q ● P2 ● RINEX2 ● RINEX3
● C1C ● C2W ● P1

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Conclusions

- Currently EPOS-GNSS Data Monitoring web portal (<https://gnssquality-epos.oma.be>) presents plots of the availability and the long-term tracking performance of 1000+ EPOS-GNSS stations
- Showing promising results to be used for high-precision GNSS analysis for geophysical or meteorological applications
- Please send your feedback and your ideas to epos@oma.be

Outlook:

- Investigate the possible usage of data quality metrics to detect unsuitable data
- Send notifications to station managers / nodes when problems occur with data availability/quality





Thank You

You can always contact us at epos@oma.be

Web Portal DOI: <https://doi.org/10.24414/ROB-EPOS-EGDM>