



<https://gnss-metadata.eu>

Quality Assurance of EPOS-GNSS station metadata provided by M³G

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The GNSS station metadata distributed by the EPOS TCS “GSS data and products” (EPOS-GNSS) originate from the “Metadata Management and Distribution System for Multiple GNSS Networks” (M³G). M³G consists of a web portal (<https://gnss-metadata.eu>) and an Application Program Interface (API).

EPOS-GNSS Operational Centers maintain their GNSS station metadata through M³G, which ingests, validates, standardizes, and distributes the provided information.

The GNSS station metadata collected by M³G contain a description and digital pictures of the installations and environment of the GNSS stations, the license of use of the station's GNSS dataset, its Digital Object Identifier, and information on the data providers. The GNSS station metadata can be uploaded in the standard ‘site log’ formation maintained by the International GNSS Service (IGS) or/and inserted in an on-line form (using controlled vocabularies/code lists).

For each GNSS station, M³G allows only one unique registered agency to edit/upload station metadata. The list of GNSS stations associated with a registered agency is maintained manually by the M³G administrator.

M³G will not accept and distribute GNSS station metadata that has not passed the build-in M³G validation rules, such as:

- Mandatory metadata fields cannot be empty or missing
- Usage of controlled vocabularies¹ for GNSS antenna and receiver types
- Consistency of GNSS station ownership with ownership indicated in EPOS-GNSS data supplier letter

All additional verifications done by M³G are based on the standards in use within EUREF (<https://epncb.oma.be>) and the International GNSS Service (<https://igs.org>).

If GNSS station metadata do not comply, M³G will request correction and not store or distribute the metadata.

Once the GNSS station metadata have been validated and inserted into M³G, they are exported in the standard IGS site log and GeodesyML² formats and will be

- Available from the M³G FTP site (<ftp://gnss-metadata.eu>), through the M³G portal (<https://gnss-metadata.eu>) or the M³G API (<https://gnss-metadata.eu/site/api-docs>)

¹ As used within the International GNSS Service (<https://igs.org>)

² GeodesyML is a Geography Markup Language (GML) application schema for transfer of geodetic information (which is presently adapted to include the necessary metadata required to respect FAIR data principles).



- Sent to the EPOS-GNSS data gateway, which provides a selection of M³G's GNSS station metadata to the ICS.

To ensure the metadata provided by M³G are up-to-date, the data nodes of the TCS "GNSS data and products" compare the station metadata in their GNSS datasets with the station metadata provided by M³G. If critical inconsistencies are found, the GNSS data will not become discoverable at the EPOS ICS and the data node will contact the data provider to correct the error. The data provider will then update the GNSS station metadata in M³G or correct the metadata in the GNSS data files.