Motivation
Timely availability and completeness of consistent Global Navigation Satellite System (GNSS) tracking data is a basic condition for the generation of best possible analysis products. The steadily increasing number of observation types is monitored for each individual station (and each relevant GNSS). Particular problems and anomalies concerning International GNSS Service (IGS) observation files are highlighted.

Database
For the data processing (and monitoring) at the Center for Orbit Determination in Europe (CODE), near real-time (hourly) and daily observation files are downloaded from IGS, EUREF and other data sources. This includes RINEX-2 and RINEX-3 files from more than 440 stations. Some basic meta information are automatically extracted and stored in XML files for a quick access. Based on these files CODE creates statistics of the downloaded RINEX files and makes them available at:
ftp://ftp.aiub.unibe.ch/igsdata/rnexdata
ftp://ftp.aiub.unibe.ch/igsdata/rnexdata_more
ftp://ftp.aiub.unibe.ch/igsdata/rnexdata_more sum

Availability of daily files
Looking at the 120-day period from March to June 2017, most of the stations have a complete set of daily RINEX-2 files, i.e., about 350 out of 415 stations submitting RINEX-2 data have a completeness of 95% and more during the whole period. The RINEX-3 dataset is steadily building up with more than half of the sites already delivering RINEX-3 data files. Within the mentioned 120-day period, we have on average 230 RINEX-3 files per day in our dataset. About 175 of them have a completeness of 95% and more over the 120-day period.

RINEX versions used at CODE

Verification of GLONASS frequency channel numbers
GLONASS frequency channel numbers are verified regularly for all tracking data collected at CODE. A data screening procedure is performed in a dedicated mode going through the complete range of possible GLONASS frequency numbers. It is assumed that the frequency number with the biggest number of valid observations (after the screening procedure) has been used by the receiver. Each thus obtained number is then compared to the default/reference frequency number (as defined in our satellite information file and given by the broadcasted frequency number). By this verification procedure, common switches in the GLONASS frequency channel numbers and also anomalies with respect to particular tracking stations (and receiver types) may be detected with short latency.

Summary and conclusions
Systematic quality control for GNSS tracking data is indispensable to ensure best possible analysis products. Supported by the XML-based meta-data monitoring of our dataset we may conclude that:

- The RINEX-3 data base is growing with the number and completeness of daily files.
- Some RINEX-3 files are delivered with a significant latency.
- Few RINEX-3 files contain data of "zombie" satellites (with undefined PRN).
- RINEX-3 files contribute to the CODE FINAL since 2017.
- There are still anomalies with GLONASS frequency channels.

Frequent receiver firmware updates may contribute to ensuring quality and completeness of RINEX data.