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The presentation covers recent radio occultation (RO) activities at EUMETSAT. It starts with a short overview that includes e.g. updates to the operational GRAS Near-Real-Time processor, upcoming updates of the GRAS instrument for tracking into the lower ionosphere, an overview of future EUMETSAT RO missions, assessment of commercial RO data quality. The focus though will be on the just completed reprocessing activity, as well as the on-going commissioning activities on Sentinel-6 / Jason-CS RO data.

The EUMETSAT reprocessing covers data from CHAMP, GRACE, COSMIC and GRAS, up to mid-2020 where available, all processed in a consistent setup. CHAMP, GRACE, COSMIC were for this delivery processed from the UCAR atmPhs data, albeit EUMETSAT has also the framework to process data from level 0. The Metop GRAS data was reprocessed from level 0. All data shows very similar characteristics throughout the reprocessed period, validation against the same processing stream from UCAR or the ROM SAF also confirms that the data quality is very similar. Generally, the number of daily occultations is slightly lower for EUMETSAT data when comparing to UCAR’s CHAMP, GRACE, or COSMIC, but is higher for our own GRAS instrument. Against the ROM SAF reprocessing, the picture is more variable.

The Sentinel-6 / Jason-CS satellite was launched on 21 November 2020. About a week later, the TriG RO instrument was switched on, and first data was already analysed at EUMETSAT on that switch-on date, confirming that GPS and GLONASS occultations are observed. First validations against ECMWF data were performed 2 days later, showing generally high data quality. Further instrument updates performed by NASA/JPL and processing improvements at EUMETSAT over the following weeks improved data further, though currently the number of occultations per day is still very close to the requirement of 770. An on-board s/w update is

scheduled for the March/April 2021 timeframe, which should bring daily numbers further up. NASA/JPL is responsible for the Near-Real-Time data provision, while EUMETSAT / ROM SAF provide a delayed Non-Time-Critical service that makes use of improved GNSS orbit / clock data. The current delayed setup uses improved JPL GPS orbit / clocks, GLONASS data is used from a JPL provided Real-Time data. Analysis with respect to the 2 observed GNSS constellation shows that GPS data has lower random uncertainties from about 35km upwards, while systematic uncertainties of the two GNSS systems are similar.

Presentation file

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