END-TO-END GNSS OCCULTATION SIMULATIONS LIVE - EGOPS4 SOFTWARE DEMONSTRATION

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An EGOPS (End-to-end GNSS Occultation Performance Simulator) software demonstration, of the most recent version 4, EGOPS4, will be featured in order to show to interested colleagues some of the key functionalities of this comprehensive software tool. EGOPS work is organized in "projects" a project "EGOPS4Demo" will thus be used to serve as basic testbed for the demonstration. The project will contain Mission Analysis and Planning (MAnPl), Forward Modeling (FoMod), Observation System Modeling (OSMod), and Inversion/Retrieval (InRet) demonstration elements. The simulation results for each relevant simulation scenario will be analyzed and visualized afterwards by using a range of functions of the EGOPS4 post-processing and visualization part such as occultation event statistics, geographic coverage maps, profiles analysis, and volume data animation.

The MAnPl demonstration will involve a typical 1-day simulation for a small low Earth orbit (LEO) constellation equipped with GNSS occultation receivers; coverage by events and various statistics for the given GNSS/LEO/ground-station network will be shown. The FoMod simulation of occultation observations deals with forward modeling through the atmosphere-ionosphere system; resulting simulated phase delay and amplitude data will be shown. In the OSMod part, the forward-modeled data get disturbed by realistic errors due to relevant observation system error sources; resulting phase delay and amplitude observables will be shown. InRet processing, i.e., retrieval of atmospheric profiles by different processing chains, is performed for simulated and real (CHAMP) occultation data; results, such as refractivity, temperature, and specific humidity profiles, will be inspected. Also, the utility of visual 3D exploration of an exemplary high-resolution ECMWF analysis field will be shown.

While the demonstration itself, due to time constraints, can certainly only provide a quite rudimentary look at EGOPS4 capabilities, it hopefully will at the same time be a useful trigger of further informal discussions. Personal EGOPS4 hands-on trials will also be possible.