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SESSION Session 1: satellite tracking and scheduling

TYPE Poster

TITLE The Copernicus Sentinel-3 mission

ABSTRACT

Sentinel-3A, the first satellite of the Copernicus Sentinel-3 mission, was launched on 16 February 2016. The mission is jointly operated by ESA and EUMETSAT to deliver operational ocean and land observation services within the Copernicus project. In addition to the main payloads namely the SAR Radar Altimeter, the Ocean and Land Colour Instrument, the Microwave Radiometer and the Sea and Land Surface Temperature Radiometer the satellite carries a couple of GPS receivers, a Laser Retro Reflector (LRR), and a DORIS receiver for Precise Orbit Determination. Observations from all three techniques are equally important to fulfil the stringent orbit accuracy requirements of 2-3 cm in radial direction. The Copernicus Precise Orbit Determination (POD) Service, a GMV-led consortium being in charge of generating precise orbital products and auxiliary data files not only for Sentinel-3 but also Sentinel-1 and -2, is in charge of computing and delivering the CPF orbit files to the ILRS community and is a main user of the Satellite Laser Ranging (SLR) measurements to compute the precise orbital products of Sentinel-3. SLR is a key technique to calibrate the GPS and DORIS instrument and the overall POD processing chain. On ESA request Sentinel-3A advanced in the ILRS tracking priority list on 31 January 2017. The importance of the demanding accuracies of the altimetry mission is reflected by this step. A decent amount of SLR tracking data is needed for the entire mission life-time to perform regular checks of the biases that could exist between different tracking techniques. The SLR measurements confirm a Sentinel-3A orbit accuracy below 2 cm RMS. However, to be able to identify biases between different tracking techniques it has to be assured that the SLR observations themselves do not have biases. Therefore, the SLR data of the 25 SLR stations providing more or less frequently observations to Sentinel-3A are regularly checked for their quality. Status and performance of the Sentinel-3A SLR processing are presented in particular focussing on the station quality assessment. More than one year of data in the satellite's operational phase have been analysed. The excellent quality of the Sentinel-3A orbits from the Copernicus POD Service will be shown as well as the evolution of the tracking in terms of number of stations and number of passes and normal points.

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SESSION Session 1: satellite tracking and scheduling

TYPE Poster

TITLE The tandem constellation of Sentinel-3A and -3B

ABSTRACT

Sentinel-3B, the second satellite of the Copernicus Sentinel-3 mission, is planned to be launched in spring 2018. During the commissioning phase of the satellite it will be flying only 30 sec apart from Sentinel-3A. The tandem constellation will be hold for about 4-5 months. It shall guarantee a proper calibration of the instruments, mainly the SAR altimeter. After the tandem phase Sentinel-3B will be moved to its long-term orbit at a 140o phase shift with respect to Sentinel-3A. Sentinel-3B is identical to Sentinel-3A. Additionally to the main payloads it will also carry a couple of GPS receivers, a DORIS receiver, and a laser retro reflector for Satellite Laser Ranging (SLR). The mission support from ILRS is again very important and very much appreciated as well. The SLR tracking will be equally important for Sentinel-3B as for Sentinel-3A. In particular during the tandem phase it is of utmost importance to get evenly distributed tracking data for the two satellites. The Sentinel-3 project will send a request to ILRS for an interleaved tracking of the two satellites from those SLR stations able to do so. Other stations are requested to alternate the tracking evenly between Sentinel-3A and Sentinel-3B. The tracking scenarios will be similar to those from Jason-2 and Jason-3 during their tandem phase.The poster will present information and details about the commissioning phase of Sentinel-3B and the planned tandem phase of the two Sentinel-3 satellites.