

COPERNICUS SENTINEL-3 MISSION – ORBIT VALIDATION AND SLR STATION QUALITY ASSESSMENT

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The European Copernicus Sentinel-3 mission, a jointly operated mission by ESA and EUMETSAT, consists of two satellites. Sentinel-3A has been launched in February 2016 and Sentinel-3B in April 2018. Both satellites are equipped with a Laser Retro Reflector (LRR) array, which allows tracking the satellites by Satellite Laser Ranging (SLR). The observations are mainly used for validation of GPS- and/or DORIS-derived precise orbit solutions. Only a subset of the stations tracking the satellites is used for this purpose. The subset consists of stations delivering good quality observations on a long-term. The station selection is regularly reviewed to guarantee a continuous quality for the orbit validation.

Instead of using only a subset of the stations it would be preferable of course to use as many laser tracking data as possible. Quality assessment of all stations is, therefore, done to validate all stations based on the Sentinel-3 SLR measurements. The number of observations, their quality, and their continuity is analysed. Yearly reports on the Sentinel-3 orbit validation and on the quality assessment of all stations provide feedback to the ILRS (International Laser Ranging Service) to support the improvement of the overall station performance.

The orbit validation of both Sentinel-3 satellites is presented and the station quality assessment is shown for the entire mission lengths.