

Satellite Laser Ranging Evaluation to Quasi-Zenith Satellite System

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The Quasi-Zenith Satellite System (QZSS) that is operated by Japan (Cabinet Office(CAO)) is a regional satellite positioning system in Asia-Pacific region. The QZSS are constructed by Quasi-Zenith orbit (QZO) satellite, Geostationary orbit (GEO) satellite and ground station. Four satellites constellation(3-QZO, 1-GEO) was established in 2017, and the full operational service will be started in Nov.2018.

One of the most important feature of the QZSS is, it can be sending the positioning signal with fully compatible with US-GPS. The QZSS at high elevation angles reduces the multipath effect especially in near JAPAN Area. The service users can obtain to improve Dilution Of Precision (DOP) by mutual use with US-GPS and QZSS.

The QZS-1, which was launched on Sep. 2010 by Japan Aerospace Exploration Agency (JAXA), was transferred from JAXA to CAO on Mar. 2017 and the parameter tuning for precise orbit determination by the new ground control system was carried out by using the SLR tracking data.

Furthermore, the QZS-2, 3 and 4 were launched on June, August and October respectively in 2017, and the parameter tuning to improve the precise orbit determination was also carried out thanks to the SLR data.

This presentation will show the feature of Japanese QZSS system and also the evaluation result of each QZS's ephemeris error with reference to the SLR tracking data after the four satellite constellation started.