

SLR Measurements of the Forthcoming ESA Earth Observation Missions and Their Applications in the Reference Frames Realization

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There are several ESA missions that will be launched in the near future and will require highly accurate SLR measurements. The SWARM mission is a constellation of three LEO satellites to be launched in November 2012 and the Sentinel-3 mission consist of two altimetry satellites separated by 180° in the same orbital plane. We present science objectives, potential SLR tracking restrictions and discuss role and contribution of ILRS in those ESA missions. In sequel, we give an overview of the on-board laser retro-reflectors and present alternative strategies to assess relative and absolute SLR range biases and their impact on the two antipodal LEO satellites. In the last part, we focus on the applications of these two ESA missions in the realization of terrestrial reference frames by means of the LEO network consisting of these 5 satellites with an on-board SLR, GPS and DORIS (only Sentinel-3) and discuss future prospects in the reference frame realization.