SLR monthly gravity solutions using the C5++ software

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Monthly gravity solutions up to degree and order 4 for the period 1993-2015 were derived from Satellite Laser Ranging (SLR) data using the C5++ software [Otsubo et al., 1994]. Here, we applied the following modifications to the previous solutions by Matsuo et al. (2013). First, Range/time biases were estimated for per station and per satellite. Secondly, station coordinates were solved for using no-net-rotation constraints. Thirdly, non-tidal effects for atmosphere, ocean, hydrology were corrected using geophysical fluid models. Last, one-per-rev empirical accelerations were estimated in along-track and cross-track. Consequently, we confirmed our new SLR solutions exhibited better consistency with those from Gravity Recovery And Climate Experiment (GRACE) than the previous solutions in the degree 3 and 4 components. The improvements of SLR gravity solutions provides further insight into the mass variability of the earth prior to the launch of GRACE in 2002.

C5++ソフトウェアを用いた SLR 重力解

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（C5++ソフトウェアを用いて SLR データから 1993-2015 年までの次数/位数 4 までの重力解を導出した。本研究では、Matsuo et al. (2013)による解に、次の 4 つ修正を適用した：(1)レンジバイアスの推定、(2)NNR 拘束による局位置の推定、(3) 表層荷重変位モデルによる補正、(4) one-per-rev 経験的加速度の導入。その結果、新たな重力解に品質の改善が見られた。SLR 重力解の改良は、GRACE 打ち上げ以前の地球の質量変動場について更なる洞察を与える。）