

Systematic range residuals 2021-2022

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Following our reports presented at the previous workshops (e.g. Otsubo, 2017 ILRS Technical Workshop; Otsubo, 21st International Workshop on Laser Ranging, 2018), we apply the precise investigation into the latest SLR data.

First, global SLR data to the six satellites, LAGEOS-1, 2, AJISAI, STARLETTE, STELLA and LARES, of one year span, July 2021 to June 2022, are precisely reduced in one batch by our software c5++. In addition to the orbital parameters, Earth gravity field coefficients (up to 5x5) and station positions and range biases are adjusted where the station velocity and the earth orientation 26 parameters are fixed to ITRF2020 and EOPC04 respectively. Time-varying atmospheric loading displacement of Strasbourg EOT is applied.

Second, the post-fit residuals were related to other parameters, such as number of normal point returns, bin rms, applied system delay, meteorological data etc. Systematic trends have been detected in various "satellite x station" combinations. We hope that the latest result will be useful motivation to improve the measurement quality of each SLR station, and then to improve global geodetic parameters derived from SLR.

We plan to upload the station-by-station charts to our website that is linked from the ILRS NESC Forum (<http://sgf.rgo.ac.uk/forumNESC>), before or after the workshop.