

Two-fold Quality Assessment of Global SLR Data. T. Otsubo¹, M. Kobayashi¹ and S. Takakura², ¹Hitotsubashi University (2-1 Naka, Kunitachi, 186-8601 Japan, email: t.otsubo@r.hit-u.ac.jp), ²NTT Communications Corporation (1-6 Uchisaiwai-cho, 1-chome, Chiyoda-ku, Tokyo 100-8019 Japan).

Routine quality-check analysis: Laser ranging stations should ideally yield error-free ranging observations, but observation errors will occur. It is often hard for a station to detect such an error, and therefore quick feedback from analysis centres is required to reduce the amount of anomalous data. Hitotsubashi University has issued daily reports and it was upgraded to 6-hourly report. The analysis reports are available on the website of Hitotsubashi University. We also implement an automatic error detection filter so that a human does not have to look into a large report file (~300 kbytes) every six hours [1]. In January-August 2014, the new filter has detected a number of anomalous cases, 8 of which have been instantly reported to the stations and the RapidServiceMail mailing list.

Systematic Error Detection: The detectable scale of error in the routine analysis is at the level of sub-metre in range and a few microseconds in time, because of the limited data amount, e.g. just 3 or 4 passes in the minimum case. By accumulating long-term data set, however, it is possible to extract much smaller signals. The post-fit residuals from precise orbit determination are sorted by related data, such as a number of single-shot returns per normal-point bin and an applied system delay. We can observe systematic errors at a sub-cm level and correctly guess the error source. We present a number of station-by-station ‘clinic’ charts that can help to improve the performance of each station.

References: [1] Otsubo T., Kobayashi M. and Takakura S. (2013) *18th International Workshop on Laser Ranging*, 13-0203.