The effect of SLR tracking scenarios to GNSS satellites in a combined GNSS/SLR solution

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The rigorous combination of GNSS and SLR techniques is possible using space ties, meaning that a SLR solution based on LAGEOS and Etalon is combined with a microwave-based GNSS solution using SLR observations to GNSS satellites.
Previously the ILRS organized three dedicated tracking campaigns with increased priorities and specific guidelines to collect normal points to GLONASS satellites and provided a higher number of GLONASS observations to the community.
Due to the increasing number of GNSS satellites extending the intensive tracking from GLONASS to all GNSS targets is not realistic. A feasible strategy to track the GNSS satellites is needed.
A simulation study considering the current tracking capability of the ILRS network was established. This study focused on the effect of tracking strategies on station coordinates, geocenter coordinates, Earth rotation parameters and the formal errors of these estimated parameters. The actual measurements to GLONASS satellites of 2016 were redistributed to different GLONASS satellites and the impact of these modified tracking scenarios on the combined GNSS/SLR solution was assessed.
Results from the following scenarios will be presented: GLONASS observations redistributed equally to all satellites of the constellation or focused on only two per plane, scenarios with a coordinated tracking of the European SLR stations and in order to investigate the potential impact of tracking more than just the GLONASS constellation, SLR normal points to GPS satellites at three planes were simulated (Galileo and BeiDou-MEO constellations contain three planes).
Recommendations for tracking strategies to GNSS satellites can be derived from this simulation study.