

Satellite laser ranging network: Where should a new station be placed?

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About 40 stations are being operational all over the world for satellite laser ranging but the distribution of the current station network is not uniform. To enhance the accuracy of the terrestrial reference frame promoted by the IAG's component GGOS, a simulation analysis is conducted assuming a new station is added to the existing network. A simulation data set for the new station is created based on the actual data yield statistics of the existing stations. Six geodetic satellites, LAGEOS-1, -2, Ajisai, LARES, Starlette and Stella are used in this study. The space geodesy analysis software 'c5++' is run, in its simulation mode, with and without the new station, and the difference of the estimated error for each parameter is examined. It is found that the network gaps especially in the southern hemisphere should be filled and also that the best position depends on a target geodetic parameter. For instance, a high latitude station performs best for the X and Y components of the geocenter but a low latitude station performs best for the Z component.

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