

Evaluation of GPS satellites with corner-cube reflector

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We have been developing orbit analysis software 'convertor v4' or c4. c4 will be able to solve a satellite orbit by both dynamic or kinematic methods with GPS observation data.

The accuracy of determined low earth orbit is dependent the accuracy of GPS satellite orbits. Therefore, we need precise GPS orbit. International GPS Service provides the GPS precise orbit for public users, and it is most popularly used in the world. The IGS orbit is determined based on the carrier phase data of IGS observation network, and its accuracy is better than several cm.

Two GPS satellites, SV35 and SV36, are equipped with corner-cube reflector for satellite laser ranging. These satellites have been observed by means of not only radio wave but also laser. By using SLR data, we were able to evaluate IGS precise orbit with laser ranging data, and they were coincide within a few cm.