Geophysical Research Abstracts, Vol. 9, 03911, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-03911

Assessing the quality of GNSS orbit models using SLR

C. Urschl (1), G. Beutler (1), W. Gurtner (1), U. Hugentobler (2), L. Ostini (1), M. Ploner (1), S. Schaer (3)

(1) Astronomical Institute, University of Bern, Switzerland, (2) Institute of Astronomical and Physical Geodesy, Technical University of Munich, Germany, (3) Federal Office of Topography, swisstopo, Wabern, Switzerland

The quality of the GNSS satellite orbits impacts the quality of the GNSS derived terrestrial reference frame. It is therefore important to independently assess the GNSS orbit quality using SLR. Orbit validation based on Laser ranging measurements to GPS and GLONASS satellites,which are provided by the ILRS, reveals modeling deficiencies. These manifest themselves by a systematic pattern in the SLR residuals with a period of about 351 days that may be related to the GPS constellation repeat period. We generate GNSS orbits based on different orbit models and study their impact on the SLR residuals. The same procedure allows to investigate differences of SLR site coordinates in ITRF2000 and ITRF2005. To identify the impact of orbit models on GNSS site coordinates and TRF realization, time series covering several years have to be analyzed.