

Impact of GPS antenna offsets on GPS-based precise orbit determination

Z. Kang, B. Tapley, J. Ries , S. Bettadpur and P. Nagel

Center for Space Research, University of Texas, USA (kang@csr.utexas.edu / Phone: +1-512-471-0163)

GPS-based precise orbit determination for LEO satellites (such as GRACE) has been become a popular method. In order to achieve high-accuracy results, it is necessary to know what is the impact of various error sources. One of them is the GPS antenna offset. As you know, most of GPS data processing institutions are using relative GPS antenna offsets, and there are big differences (meter level) between the relative and absolute antenna offsets. In addition, the good antenna offset values can be only estimated from processing GPS data with an accuracy of about cm to dm levels. Based on these motivations, we studied the impact of GPS antenna offsets on GPS-based precise orbit determination. The preliminary results show that there are big effects of the antenna offsets on the GPS onboard receiver antenna estimation and relatively small effects on the satellite orbits.