

3.6.2.7 GeoForschungsZentrum Potsdam (GFZ)

Within the reporting period the activities of GFZ in the framework of the IERS Combination Research Center have been concentrated on two topics:

- (a) the co-location of techniques onboard of satellites, and
- (b) the possible impact of LEO data on IERS basic products.

Collocation of techniques

In 2003 intensive studies and tests have been performed using the software and procedures developed in 2002. This resulted in a number of improvements. The tests also clearly showed the benefits of the onboard co-location method for the following investigations:

- (a) the determination of the phase center correction of an onboard GPS receiver,
- (b) the investigation for significant differences between the GPS and SLR terrestrial reference frames, and
- (c) to strengthen the relation between these two frames.

The achieved results will be presented at the EGU 2004 meeting.

Impact of LEO data

The research on the possible impact of LEO satellite missions on IERS basic products have been continued in 2003. The identified software modifications to the EPOS-OC software at GFZ have been executed. A method for an integrated adjustment of LEO (used: CHAMP and GRACE) and ground GPS data has been developed. As the tests based on a small number of arcs have been very successful, preparations were started for a quasi-routine processing of the data of some years. Also first tests with JASON data gave very positive results.

The latest multi-year solution of the GFZ IGS AC for the station positions of the IGS network (using very loose a priori weights) confirmed the results of last year's study about the satellite antenna phase center offsets and scale errors in GPS solutions (Zhu et al. 2003). The solution clearly shows time variations of the scale, which are significantly correlated with the increasing number of Block IIR satellites.

Reference

Zhu, S.Y., Massmann, F.-H., Yu, Y.Q. and Ch. Reigber (2003): Satellite Antenna Phase Center Offset and Scale Errors in GPS Solutions; Journal of Geodesy, Vol. 76, 668-672

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