

FFI Technology Development Center—Software Development

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Abstract

FFI's contribution to the IVS as a Technology Development Center focuses primarily on the development and validation of the GEOSAT software for a combined analysis at the observation level of data from VLBI, GPS (ground-based and LEO), SLR, altimetry, and gradiometry. This report shortly summarizes the latest improvements of the GEOSAT software. FFI is currently an Analysis Center for IVS and ILRS, and a Technology Development Center for IVS.

1. The GEOSAT Software and Activities in 2010

FFI's contribution to the IVS as a Technology Development Center focuses primarily on the development and validation of the GEOSAT software for a combined analysis at the observation level of data from VLBI, GPS (ground-based and LEO), SLR, altimetry, accelerometry, and GRACE KBR. The advantages of the combination of independent and complementary space geodetic data at the observation level is discussed in Andersen [1].

Space borne accelerometry has been implemented, and a small set of data has been tested (GOCE and GRACE). A complete production line for altimetry (Topex, ENVISAT, JASON 1 & 2) has been implemented and tested. The IERS 2010 Conventions have been implemented and tested. The GEOSAT orbit model has been validated against external LEO orbits. The RMS difference between JPL GRACE orbits and internal GEOSAT orbits is typically 4 mm in each cartesian direction. The corresponding RMS difference between external GOCE orbits (ESA official, approximately 250 km altitude) and internal GEOSAT orbits is typically 11 mm. This work will continue in 2011.

The Norwegian Mapping Authority (NMA) and FFI have started a close cooperation in analysis of space geodetic data using the GEOSAT software. NMA has recently been given the status of an Associate Analysis Center of IVS. The GEOSAT software is to be used in the analysis of VLBI data. We are right now trying to get our GEOSAT-generated SINEX files accepted by the IVS combination software. There are options in GEOSAT so that the VLBI model is in compliance with the other analysis software packages.

2. Staff

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References

- [1] Andersen, P. H. Multi-level arc combination with stochastic parameters. *Journal of Geodesy* (2000) 74: 531-551.