



Diurnal and semi-diurnal tidal variations in earth rotation based on GNSS and VLBI data

S. English, K. Snajdrova, R. Weber, H. Schuh

Institute of Geodesy and Geophysics, Vienna University of Technology, Vienna, Austria
(senglish@mars.hg.tuwien.ac.at / Fax: +43 1 58801 12896 / Phone: +43 1 58801 12867)

The steadily increasing accuracy of space-geodetic techniques and the availability of continuous data of global observation networks allow for the derivation of various parameters of interest to geophysical research with an unprecedented high temporal resolution. Thus Earth Rotation Parameter series based on GNSS and VLBI data are currently available with hourly resolution, at least over the limited time frame of special observation campaigns. In this study GNSS observation data of the IGS global tracking network is used to establish an ERP time series covering the observation period of GPS weeks 1339-1343 (Sep. 4th - Oct. 8th, 2005). For the computations a subset of 79 fairly stable stations out of the IGB00 reference frame sites were selected. Earth rotation parameters, i.e. polar motion and LOD, were estimated from GPS observation data with hourly resolution using the Bernese GPS Software Version 5.0. In order to strengthen the ERP solution the inclusion of GLONASS observation data was tested too. In a second step VLBI observation data gathered during the CONT05 (Continuous VLBI Campaign 2005, Sep.12th-Sep.27th) campaign) has been processed by means of the OCCAM software in order to establish a comparable ERP series. Both technique specific series were compared in time domain and a combined ERP series was generated by solving the combined inter-technique normal equation system. On basis of the combined ERP time series the variation of Earth rotation parameters was analyzed concentrating on the deduction of ocean tidal terms with diurnal and semi-diurnal periods.