



VLBI/GNSS Rapid combination for generating Earth Orientation Parameters

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Earth Orientation Parameters (EOPs) are derived from various space geodetic observation techniques such as GNSS, SLR, DORIS and VLBI. The combination of the different techniques leads to a complete EOP series which is officially released by the IERS after a processing time of approximately 30 days in the case of the final IERS series (C04). In order to reduce the latency for near-real time applications, the so-called Intensive and Rapid products are utilized for VLBI and GNSS, respectively. In this context, the data processing can be accelerated to a delay of 1-2 days. However, neither VLBI nor GNSS solely deliver a complete set of EOPs, and the combination is not done yet in a fully rigorous way, i.e. by taking into account all correlations, especially between polar motion and Universal Time (dUT). Therefore, the present study focuses on a combination of VLBI Intensive and GNSS Rapid solutions on the basis of Normal Equations (NEQ) containing all common parameters, i.e. station coordinates, polar motion and dUT. Regarding different constraint scenarios a daily stacking of the specific NEQs is carried out. The combined solution leads then to an improvement of the numerical NEQ stability and a fully consistent estimation of polar motion and dUT.

This contribution focuses on the combination of both VLBI Intensive and GNSS Rapid NEQs for a consistent estimation of a full set of EOPs. In this context, investigations of the obtained accuracies have been carried out. The combined estimates of polar motion, dUT and their associated rates are therefore discussed and compared with respect to the official reference series and the specific single-technique solutions. Regarding the time interval of the last three years, a significant improvement of the accuracy as well as of the reliability could already be shown.