



Preliminary Result of Determination of Terrestrial Reference Frame and Earth Orientation Parameters Based on Four Space-Geodetic Techniques at SHAO

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A new realization of the International Terrestrial Reference System and corresponding Earth Orientation Parameters was computed at Shanghai Astronomical Observatory (SHAO). The input data used are time series of SINEX files containing station positions and daily Earth Orientation Parameters estimated from GPS, VLBI, SLR and DORIS (specifically, weekly estimated parameters from GPS, SLR and DORIS and 24-h session-wise equation systems from VLBI). To ensure the stability and reliability, the input data span is as long as possible. To define an underlying TRF two different constraints strategies have been applied separately and discussed carefully. Earth Orientation Parameters are used both as the input data in SINEX files and as the output of four technique combinations. On the one hand, EOP are used as one kind of 'global tie' between four techniques to ensure the consistency and stability of the combined TRF. On the other hand, the output EOP results, as the combination product of four techniques, are in high agreement with the combined reference frame. As each technique has its strengths and weaknesses concerning the determination of various parameters, we apply the variance component estimation method both when we decide the weight of every single SINEX input and when we decide the weights of different techniques during combination. Finally, We evaluate the accuracy of our TRF and EOP combination results based on ITRF2008 and IERS EOP C04. The statistical root mean squares of the difference between our EOP results and EOP C04 are better than 0.05mas for polar motion components and better than 0.03ms for UT1-TAI and LOD .