



The measurement bias effects in the ILRS product for ITRF

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The latest generation of ITRF introduced a new computation strategy using time series of station positions and Earth Orientation Parameters instead of global long-term solutions. This approach forced each individual space geodesy service (ILRS, IVS, IGS, IDS) to provide its own official time series and gave the possibility to investigate inconsistencies, discontinuities and measurement problems.

The ILRS standard product for the ITRF is a time series of weekly site coordinates and daily Earth Orientation Parameters over a 7-day arc (15-day arc before 1993), in the period of time from 1983 to 2008. The time series is the result of a strong effort made by the ILRS official Analysis Centers to provide their individual time series; several submissions were requested from the Analysis Centers before delivering the official combined ILRS product for ITRF2005 and other re-analyses for ITRF2008. The reason for the reprocessing is mainly due to the improvements in the model harmonization and in a better understanding of some of the measurement corrections (biases). This latter aspect is both fundamental and crucial in order to reach the accuracy expected from the SLR technique.

The ideal SLR station should couple a low and constant value of any range bias with a high ranging precision but, frequently, this is not the case and analysts have to face the problem of biases, in particular when those are not detected at the stations. In the case of the weekly time series, the presence of a range bias is immediately mapped into the station coordinates, mainly in the Up component. A time series obtained from biased measurements can produce a scale inconsistency with respect to another geodetic technique and SLR is very sensitive in this respect. The talk will discuss measurement bias effects in the ILRS weekly series and present the effort made by the ILRS community, engineers and analysts working together, to determine station biases, correlate them with engineering events at the station and validate the corrections. Examples of the joint work and results will be given.