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Comparative Analysis of non-linear position variations using the time series of station coordinates in some ITRF co-location sites

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The reprocessed time series (weekly from SLR, daily from GNSS, and 24h session-wise from VLBI) of co-located station position solutions spanning their full observation histories up to the end of 2014 are analyzed with the goal to detect nonlinear time-variable effects in station positions, such as periodic variations or discontinuities caused e.g. by instrumental changes or earthquakes. This information is then used to assess the reliability of the results about the nonlinear changes of all technique stations in each colocation site since they can be verified with each other. Next, the iterative adjustment is performed, i.e. jumping changes, post-seismic deformation and periodical signals are determined altogether for accurate estimation of station velocity. Finally, the information of the relative motion among the stations equipped with different technique instruments per colocation site is determined which can offer a reference for the necessary arrangement of local resurvey in the future.