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Local ties verification based on analysis of long-term SLR and GPS solutions

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The ITRF is determined on the basis of long-term observations by the following four techniques: GNSS, SLR, DORIS and VLBI. Analysis of the data delivered by different techniques provides a stable reference frame. Improvement of further ITRS realizations requires the advancement in the geometry of co-location network and the increase of agreement between the local ties in co-location sites, while many significant disagreements between techniques are being noticed. Ground local ties measurements are usually made once over a period of time, whereas different factors can cause change of its real value (earthquakes, change of GNSS antennas or different method of their calibration which result in different coordinates values in ITRF), which lead to the idea of co-locations vectors monitoring for the purpose of its verification.
The authors analyzed solutions from several distributed globally SLR-GNSS sites. The data gathered between 1996-2011 by these two techniques were processed using coherent strategies (the same models and parameters were used). Up to now, results of coordinates and velocities determination with exemplary times series were introduced. The presentation goal is to show the results of analysis of NEU time series of SLR and GPS solutions reduced to the SLR markers positions using local ties in order to verify their values. Agreement of both types of solutions proves the good quality and timeliness of ground measurements, while high discrepancies point out that there is a need for their repetition to improve next ITRS realizations (e.g. ITRF2013).