



## **Strategies for the analysis and implementation of local tie information within the inter-technique combination**

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Co-location sites and local ties are the key elements for the combination of reference frames of different techniques, GPS, VLBI, SLR and DORIS and thus fundamental for a consistent datum realisation in inter-technique combined networks. The realisation of a consistent kinematic datum in a combined multi year solutions requires additionally the combination of velocities at co-location sites. Actual more than hundred co-location sites do exist. Nevertheless the local tie situation is not satisfying. In some cases the local terrestrial measurements are not performed or the discrepancies between local tie and the estimates of the space techniques are very large. An interpretation of the existing discrepancies is difficult since various factors have to be considered, such as systematic biases between space geodetic solutions, local site dependent effects, remaining inconsistencies related to the datum definition, and errors in the local tie measurements itself or in their orientation in the TRF. Another problematic fact is the worse global distribution of co-location sites.

To ensure a high accuracy of the combined solution a careful selection of co-location sites is necessary. Presently two different methods are applied. Both have advantages and disadvantages and do not necessarily provide the same results for the local tie selection. The three components of the local ties are analysed separately, and in particular the effect on the inter-technique combination is studied. In this context the orientation of the terrestrial measurements is addressed, and investigations are performed, if only a part of the local tie information is introduced (e.g. horizontal components, distance between stations).