

The ILRS contribution to the development of ITRF2013

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Satellite Laser Ranging (SLR) data have been fundamental over the past three decades for the realization of the International Terrestrial Reference Frame (ITRF), which is based on an inter-technique combination of the geodetic solutions obtained from an intra-technique combination strategy performed at each IAG Technique Centre. This approach provides an opportunity to verify the internal consistency for each technique and a comparison of Analysis Center (AC) adherence to internal procedures and adopted models.

The International Laser Ranging Service (ILRS) contribution is based on the current IERS Conventions 2010 as well as on internal ILRS ones, with a few documented deviations.

The main concern in the case of SLR is monitoring systematic errors at individual stations, accounting for undocumented discontinuities, and improving the satellite target signature models. The SLR data re-analysis for ITRF2013 extends from 1983 to the end of 2013 and was carried out by 8 ACs according to the guidelines defined by the ILRS Analysis Working Group (AWG). These individual solutions have been then combined in the official solution by the ILRS Combination Center.

This work allows point-wise monitoring of the quality of the SLR contribution and a thorough investigation on the time behaviour of its characteristic products, i.e. origin and scale of ITRF. The stability and consistency of these products are discussed for the individual and combined SLR time series. The critical issues from this analysis will be presented to highlight the key points that SLR should take into account to contribute in the best possible way to the present and future ITRF realizations.