

Systematic Error Monitoring and Modeling in ILRS Data and Products for ITRF2020 Development

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The ILRS ASC completed the re-analysis of the modern-era data set with improved modeling and the newly adopted approach for “systematic errors”-free results. The ASC devoted all its efforts to develop, evaluate and implement the new approach that will continuously monitor the systematic errors at all ILRS sites in the network. The new approach is used in the re-analysis of all five targets that will contribute in the development of the next ITRF2020: LAGEOS 1 & 2, Etalon 1 & 2, and LARES. This re-analysis incorporates an improved “target signature” model (CoM) that allows better separation of true systematic error of each tracking system from the errors in the model describing the target’s signature. The improved modeling results in improved TRF attributes that are reflected in the resulting new time series of the TRF origin and scale. The new approach is now used in the development of the operational products and as a tool to monitor station performance and extend the history of systematics at each station. The new approach will be used for future ITRF model developments. Following these developments, the ILRS operational products form now a seamless extension of the re-analysis series, providing a continuous product based on our best knowledge of the ground system behavior and performance. The presentation will demonstrate the level of improvement with respect to the previous ILRS product series and a glimpse of what we should expect after the development of ITRF2020.