

Creative Commons Attribution 4.0 International (CC BY 4.0)

<https://creativecommons.org/licenses/by/4.0/>

Access to this work was provided by the University of Maryland, Baltimore County (UMBC) ScholarWorks@UMBC digital repository on the Maryland Shared Open Access (MD-SOAR) platform.

Please provide feedback

Please support the ScholarWorks@UMBC repository by emailing scholarworks-group@umbc.edu and telling us what having access to this work means to you and why it's important to you. Thank you.

EGU21-14739

<https://doi.org/10.5194/egusphere-egu21-14739>

EGU General Assembly 2021

© Author(s) 2023. This work is distributed under the Creative Commons Attribution 4.0 License.



The ILRS Contribution to ITRF2020

Vincenza Luceri¹, Erricos C. Pavlis², **Antonio Basoni**¹, David Sarrocco¹, Magdalena Kuzmicz-Cieslak², Keith Evans², and Giuseppe Bianco³

¹e-GEOS S.p.A., ASI/CGS Matera, Italy (cinzia.luceri@e-geos.it)

²Joint Center for Earth Systems Technology, University of Maryland, Baltimore, USA

³Agenzia Spaziale Italiana (ASI), CGS-Matera, Italy

The International Laser Ranging Service (ILRS) contribution to ITRF2020 has been prepared after the re-analysis of the data from 1993 to 2020, based on an improved modeling of the data and a novel approach that ensures the results are free of systematic errors in the underlying data. This reanalysis 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 new approach was developed after the completion of ITRF2014, the ILRS Analysis Standing Committee (ASC) devoting almost entirely its efforts on this task. The robust estimation of persistent systematic errors at the millimeter level permitted the adoption of a consistent set of long-term mean corrections for data collected in past years, which are now applied a priori (information provided by the stations from their own engineering investigations are still taken into consideration). The reanalysis used these corrections, leading to improved results for the TRF attributes, reflected in the resulting new time series of the TRF origin and especially in the scale. Seven official ILRS Analysis Centers computed time series of weekly solutions, according to the guidelines defined by the ILRS ASC. These series were combined by the ILRS Combination Center to obtain the official ILRS product contribution to ITRF2020.

The presentation will provide an overview of the analysis procedures and models, and it will demonstrate the level of improvement with respect to the previous ILRS product series; the stability and consistency of the solution are discussed for the individual AC contributions and the combined SLR time series.