



The ILRS contribution to ITRF2008

E C Pavlis (1), V Luceri (2), C Sciarretta (3), and R Kelm (4)

(1) JCET/UMBC and NASA Goddard 698, Baltimore, MD, United States (epavlis@umbc.edu / +1 410 4555868), (2) e-GEOS S.p.A., Matera, Italy, (3) Telespazio S.p.A., Roma, Italy, (4) DGFI, München, Germany

Since over two decades, Satellite Laser Ranging (SLR) data contribute to the definition of the Terrestrial Reference Frame (TRF). Until the development of ITRF2000, the contributions were submitted in the form of a set of normal equations or a covariance matrix of station coordinates and their linear rates at a standard epoch. The development of ITRF2005 ushered a new era with the use of weekly or session contributions, allowing greater flexibility in the relative weighting and the combination of information from various techniques. Moreover, the need of a unique, official, representative solution for each Technique Service, based on the rigorous combination of the various Analysis Centers' contributions, gave the opportunity to all techniques to verify, as a first step, the intra-technique solution consistency and, immediately after, to engage in discussions and comparison of the internal procedures, leading to a harmonization and validation of these procedures and the adopted models in the inter-technique context. In many occasions, the time series approach joint with the intra- and inter-technique comparison steps also highlighted differences that previously went unnoticed, and corrected incompatibilities. During the past year we have been preparing the ILRS contribution to a second TRF developed in the same way, the ITRF2008. The ILRS approach is based strictly on the current IERS Conventions 2003 and our internal standards. The Unified Analysis Workshop in 2007 stressed a number of areas where each technique needed to focus more attention in future analyses. In the case of SLR, the primary areas of concern were tracking station biases, extending the data span used in the analysis, and target characteristics. The present re-analysis extends from 1983 to 2008, covering a 25-year period, the longest for any of the contributing techniques; although the network and data quality for the 1983-1993 period are significantly poorer than for the latter years, the overall SLR contribution will reinforce the stability of the datum definition, especially in terms of origin and scale. Engineers and analysts have also worked closely over the past two years to determine station biases, rationalize them through correlation with engineering events at the stations, and validate them through analysis. A separate effort focused on developing accurate satellite target signatures for the primary targets contributing to the ITRF product (primarily LAGEOS 1 & 2). A detailed discussion of these works will be presented in a separate presentation. Here, we will restrict our presentation to the description of the individual series contributing to the combination, examine their relative quality and temporal coverage, and statistics of the initial, preliminary combined products.