



Validation of DTRF2014, ITRF2014 and JTRF2014 by precise orbit determination of SLR and altimetry satellites

Sergei Rudenko, Mathis Bloßfeld, Horst Müller, Denise Dettmering, Detlef Angermann, and Alexander Kehm
DGFI-TUM, Munich, Germany (sergei.rudenko@tum.de)

Recently, three new realizations of the International Terrestrial Reference System (ITRS) have been released. They are DTRF2014 developed by the International Earth Rotation and Reference Systems Service (IERS) ITRS Combination Centre at Deutsches Geodätisches Forschungsinstitut of the Technische Universität München, ITRF2014 elaborated at the IERS ITRS Product Center at the Laboratoire de Recherches en Géodésie of the Institut National de l'Information Géographique et Forestière (IGN LAREG, France) and JTRF2014 created at the Jet Propulsion Laboratory (JPL, USA). In this paper, we validate these three ITRS realisations by precise orbit determination of high-orbit geodetic satellites Lageos-1 and Lageos-2 and some low-orbit satellites like Jason-2 and some others using SLR observations. We investigate the impact on the residuals of observations, estimated range biases, empirical accelerations and other parameters. For altimetry satellites, we study the impact of each ITRS realization on radial and geographically correlated errors as well as on the global and regional mean sea level trends estimated using the satellite orbits computed using these ITRS realizations.