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What could explain the relative scale bias estimated between SLR and VLBI solutions used in the ITRF2005 analysis?

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The Satellite Laser Ranging (SLR) technique plays an important role in the International Terrestrial Reference Frame (ITRF) computation. Indeed, until the last ITRF realization (ITRF2005), this space-geodetic technique provided the origin (geocenter) as well as the scale factor of these reference frames together with the Very Long Baseline Interferometry technique (VLBI). However, the ITRF2005 combination reveals a scale bias of about 1 ppb between the International VLBI service (IVS) and the International Laser Ranging Service (ILRS) stacked solutions. Due to its longer history, and better repeatability observed thanks to rigorous stacking of coordinate time series, IVS solution has been exclusively chosen to define the ITRF2005 scale. This study aims to try to explain and understand this relative scale bias. Possible contributions are listed and quantified: individual technique systematic errors, atmospheric modeling, unmodeled ground motion as well as local tie errors may contribute to that scale bias estimate. Simulations conducted by MATLO SLR data analysis software and ITRF2005 residuals of the inter-technique combination are analyzed for that purpose.