



Improving the determination of the terrestrial reference frame with an enhanced satellite laser ranging network

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Future requirements for the Terrestrial Reference Frame (TRF) are expected to be about an order of magnitude more accurate than currently being achieved. These requirements arise from the need for ensuring that the temporal changes we observe in the Earth system, such as global mean sea level, sea surface topography changes, crustal deformation and gravity changes due to mass transport, are real geophysical signals and not artifacts of the measurement system. Considerable investment in the improvement and deployment of the ground components of the geodetic network is going to be required to achieve this. While the SLR technique provides unique information regarding the origin of the TRF, the SLR stations are not well distributed geographically for robust determination of the origin along the three axes. This paper presents the results of a preliminary analysis to test the benefit to the reference frame determination from improving the geographic distribution of the SLR network as well as improvements in the performance of existing sites