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Determination of geocenter motion with satellite laser ranging data: methods, models and results

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Mass redistribution within the Earth affects the position of its center of mass whose translation, relative to the International Terrestrial Reference Frame (ITRF), ranges from a few millimetres to centimetres. Satellite space geodetic techniques are able to detect such geocenter motion, Satellite Laser Ranging (SLR) being the most accurate in this respect, since it has produced a long history of valuable observations which are particularly sensitive to the origin of the reference frame.
The Center for Space Geodesy of the Italian Space Agency (ASI/CGS) is one of the Analysis Centers and the primary Combination Center officially recognized by the International Laser Ranging Service and routinely performs the analysis of the SLR data collected from the worldwide network. The most recent and updated ASI/CGS analyses of Lageos-1 and Lageos-2 SLR data span three decades and provide time series of geocenter offsets with respect to the ITRF. Methods, models and results, together with accuracies and spectral content, will be shown and discussed.

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