

Determination of the tectonic plates motion by satellite laser ranging in 1999-2003

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The paper presents results of the tectonic plates motion determination from satellite laser ranging in the period 1999-2003. The SLR station velocities were calculated from station geocentric coordinates determined from one month orbital arcs of Lageos-1 and Lageos-2 satellites for the first day of each arc. The mean orbital RMS-of-fit for 5 years was equal to 15 mm. The station velocities were determined for 29 stations and points in 1999-2003, it means for all SLR stations with data time span longer than 20 months. The accuracy of station velocities determination varied from 0.4 mm/year to 3 mm/year dependent on quality of data and data span. The difference of station velocities between ITRF2000 and the presented results were in the range 0-5 mm/year. Only for four stations: Riyadh, Maidanak-2, Beijing and Arequipa (after earthquake in 2001) the differences were statistically significant. For the most stations is a good agreement with the NUVEL1A model of tectonic plates motion. The significant differences were detected for stations Arequipa, Concepcion, Shanghai and Simosato. The results differs from the model NUVEL1A in the station velocities and azimuths for South America tectonic plate and Japan.