The comparison of the station coordinates between SLR and GPS

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SLR data from 1 January 1993 to 31 December 2003 (Eurolas Data Center)

**main models and parameters:**
- Earth gravity field: EIGEN GRACE02S  20x20
- Earth and ocean tide model: EGM96
- polar motion: IERS C04
- arc length: 1 month
- satellites: LAGEOS-1 and LAGEOS-2
- 15 reference stations in ITRF2005 for orbit determination

**estimated parameters:**
- satellite state vector
- station geocentric coordinates
- acceleration parameters along-track, cross-track and radial at 5 days intervals
GPS data

  
  Thank you Dr. Michael HeFlin for results and explanation

- The ITRF2005 reference frame was realized each day through application of a 7-parameters Helmert transformation

- Transformation to epoch 2000.0 by JPL NASA station velocities

- Corrections to SLR reference point through local ties used in ITRF2005

- Data for epoch of the first day of each month
# List of the SLR-GPS stations in 1993.0-2004.0

<table>
<thead>
<tr>
<th>STATION</th>
<th>SLR</th>
<th>GPS</th>
<th>NUMBER OF COMMON POINTS</th>
<th>PERIOD (months)</th>
<th>POSITION STABILITY [mm]</th>
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<tr>
<td></td>
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<td>YAR1</td>
<td>109</td>
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</tbody>
</table>
CONCLUSIONS

horizontal components - good agreement of station positions for GPS and SLR

vertical component - too large differences for several stations, up to 3 cm

stability of GPS positions are significantly better than SLR positions

several the best SLR stations are little better than GPS

differences between GPS and SLR velocities are on the level 1 mm (also ITRF2005), we don’t observe any systematical shift between both techniques

station velocities are in good agreement with tectonic plate model NNR-NUVEL1A, with exception Chinese stations and Arequipa

future task: what to do for elimination of 2-3 cm differences between SLR and GPS in vertical positions?
The authors wishes to thank

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