The present work deals with the computation of Laser stations coordinates and Earth Orientation Parameters (EOPs) based on observations of Low Earth Orbit (LEO) satellites, namely Starlette (STL) and Stella (STA) together with measurements of both LAGEOS satellites (L1A & L2A) which their derived solution is considered as standard solution. This subject is at the forefront of the researches currently carried out in the framework of the Analysis Working Group (AWG) of IUPS. The objective is to achieve good quality on the geodetic products by inter-satellite combination of Low and High satellites Laser data.

We compare two series of solutions (between 2002 and 2005): L1A-L2A (LL) only, and a four-satellite combination based on L1A+L2A+STA+L1S (LLSS), in terms of quality of the weekly stations positions, daily EOP and weekly Geocenter variations. The results presented show that the data obtained from LEO satellites such as Starlette and Stella can be successfully applied for precise determination of the SLR geodetic products.

**Key words:** SLR • Starlette • Stella • LAGEOS-II/III • LEO • EOP • Geocenter

**Pole variations**

- Estimation of pole parameters is satisfactory for the SLR technique and the obtained values are coherent with published values of IERS (Gambis, 2004).

**Geocenter variations**

- Coherence in annual amplitudes for LL & LLSS solutions and in comparison with geodynamical signals.

**Statations positions variations**

- Seasonal signals with mm amplitudes on Up component (which represents 2/3 station motion) of stations.

- Signals detected are probably related to residual atmospheric loading effects.

**CONCLUSION**

This study has showed, in one hand, the feasibility of precise calculation of a SLR network, Earth orientation parameters (EOP) and Transformation parameters, by using four years observations of low satellites namely Starlette and Stella, and in other hand, the methodology of analysis adopted for this work.

It will be useful and interesting to consider more observations of LEO satellites such as, Aliai, TopoPrecsion, Jason-1 & 2, with Starlette and Stella), during a long period, for the following:

- Contribution to the realization of new SLR reference frame and SLR solution for future version of ITRF;

- Analysis of geodetic products variations (stations motions, EOP, Geocenter, ...) with the adopted methodology.