



## **Combination of space geodetic techniques at the measurement Level**

**A. Pollet** (1), D. Coulot (1) and N. Capitaine (2)

(1) IGN/LAREG, (2) Observatoire de Paris/SYRTE

Combinations of space-geodetic technique solutions currently allow us to compute fundamental geodetic products such as the International Terrestrial Reference Frame (ITRF) and the Earth Orientation Parameters (EOPs)

In the framework of the French Groupe de Recherche en Géodésie Spatiale (GRGS) activities, a new approach of combination is studied, which directly combines the space-geodetic observations of DORIS, GPS, SLR, and VLBI techniques using the same models and software for all the individual data processing. The purpose is to better use all the information provided by the different techniques by reducing the number of steps of the combination processing to the minimum. In this work, we first present different ways to define the combined terrestrial reference frame at observation level. Then, we study the impact of the use of local ties between collocated instruments on weekly basis and we present some weighting techniques in order to consider the advantages of all techniques. It concerns the estimation of weights per technique, or the observation weights determination or even parameter weights to consider the fact that UT1 is better determined by VLBI than it is by satellite techniques, VLBI being the only IERS technique that can determine absolute UT1.