I. Introduction

Since its establishment in 1988, the International Earth Rotation Service (IERS) published on an annual basis a new complete realization of the International Terrestrial Reference System (ITRS).

Each year, the IERS Central Bureau collected among contributing analysis centers their solutions for Earth Rotation Parameters together with the associated Terrestrial Reference Frame (TRF) (and Celestial if available) data. These contributions are currently available for several space techniques: Satellite Laser Ranging (SLR), Lunar Laser Ranging (LLR), VLBI, GPS and DORIS.

Such a realization is now widely known under the label ITRFyy. Up to yy=94, this solution was obtained by a combination of all data submitted to the IERS central bureau at the begining of yy+1. It was assumed that all individual analysis centers would provide by this was their best and most complete individual solution, in particular including data for the year yy.

The succession of these results, from ITRF88 to ITRF94, did actually show an improvement both in accuracy for positions of stations as well as in the geographical coverage of the corresponding network. Nevertheless, the accuracy reached was ranging from a few millimeters to a few centimeters, and a lot of details concerning modeling were raised at this level (in particular relativistic and geodynamical effects).

At that time, IERS decided to establish a primary solution upon specifications of an international working group (WG on ITRF datum). Although this is exactly a task for this WG to recommend the precise definition of what should be a primary ITRF solution, the main concept is to provide a consistent, homogeneous set of positions (and time variations) at the subcentimetric level (in precision and reliability) for a well distributed network. This work is presently in progress, in particular by performing pilot experiments on the geocenter which is one of the new topics to be investigated before establishing these general recommendations. The final recommendations of this group are expected at the ITRF Workshop in 1998.

Considering on the other hand the numerous and increasing requirements of the users, mostly outside the restricted IERS community, IERS decided to continue the annual series of ITRF publications for a complete solution along the line of the series up to ITRF94.

ITRFyy is specified to be the best complete solution produced on an annual basis by IERS. In particular, any data set estimated to bring a useful contribution should be included, and not only the data from the annual submission to the Central Bureau. In this scope, a specific work was done for GPS and DORIS contributions. A close cooperation with IGS permitted to obtain very useful contributions as shown after. Furthermore, in the case of VLBI, we reutilized a past solution from an analysis center which stopped its activity in this field (NOAA). Multiple solutions for each technique are a key condition for a good combination.