3.6.1.2 Institut Géographique National (IGN)

The IGN ITRS Combination and Research Centre concentrates its activity on software enhancement, new combination strategy development and regular analysis of Global TRF solutions as well as time series solutions of TRF and EOP.

Data analysis and software enhancement

With interaction of IERS Analysis Centres (AC), individual solutions from the different techniques are frequently evaluated and tested, in order to improve the individual analyses as well as the ITRF combination. Thus both the individual ACs as well as the ITRS Combination Centre regularly test new analysis strategies. This cooperation between the IERS ACs and the ITRS CC is vital for quality control and improvement of IERS products. To achieve this goal, the software package Combination and Analysis of Terrestrial Reference Frames (CATREF), developed by IGN, is regularly updated and enhanced in order to perform proper analysis of the different solutions prepared by the IERS ACs. In particular modelling of the Earth Orientation Parameters (EOP) is included in the CATREF software, to be able to combine concisely and coherently station positions/velocities and EOPs.

Preparation for the ITRF2005: Analysis of Time Series of Station Positions and Earth Rotation Parameters

Unlike the previous ITRF versions, the ITRF2005 (previously ITRF2004) was designed to be built over time series of station positions and Earth Orientation Parameters. The ITRF2005 input time-series solutions are provided in a weekly sampling by the IAG International Services of satellite techniques (the International GNSS Service–IGS, the International Laser Ranging Service–ILRS and the International DORIS Service–IDS) and in a daily (VLBI session-wise) basis by the International VLBI Service (IVS). Each per-technique time-series is already a combination, at a weekly basis, of the individual Analysis Centre (AC) solutions of that technique, except for DORIS where two solutions are submitted by two ACs, namely the Institut Géographique National (IGN) in cooperation with Jet Propulsion Laboratory (JPL) and the Laboratoire d'Etudes en Geophysique et Oceanographie Spatiale (LEGOS) in cooperation with Collecte Localisation par Satellite (CLS), designated hereafter by (LCA).

Almost all the entire year 2005 was spent and devoted to the analysis of experimental solutions under the form of time series, submitted by the Technique Centres for the ITRF2005. This is because the individual Analysis Centres and their Technique Centres, except the IGS, were not sufficiently prepared to deliver the best of their results. The interaction between the ITRS Centre and Technique Centres and the regular feedbacks from the ITRS Centre allowed finally to have all the time series available at the end of 2005 as listed in Table 1.

Table 1. ITRF2005 Submitted solutions

TC – AC	Time span	Type of constraints/solution	EOPs
IVS	1980–2006.0	Normal Equation	Polar Motion, rate, LOD, UT1
ILRS	1993–2005.9	Loose; var-covar	Polar Motion, LOD
IGS	1996–2006.0	Minimal/Inner; var-covar	Polar Motion, rate, LOD
IDS – IGN/JPL	1993–2006.0	Loose; var-covar	Polar Motion, rate, LOD
IDS – LCA	1993–2005.8	Loose ; var-covar	Polar Motion

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Zuheir Altamimi, Xavier Collilieux, Bruno Garayt