STATUS OF THE ITRF2005

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ABSTRACT. Unlike the previous realization of the International Terrestrial Reference System (ITRS), the ITRF2005 input data are time series of station positions (weekly solutions from satellite techniques and daily solutions from VLBI) and daily Earth Orientation parameters (EOPs). This paper summarizes the current status of the ITRF2005 in terms of submitted input data and the methodology used to construct the ITRF2005. Since this the first time that EOPs are included in the ITRF combination, we show some EOP preliminary results and in particular comparison to the IERS C04 series. These preliminary EOP results show a significant bias in the Y pole component (of the order of 200 micro-arc-second) between our combination and the C04 series. The ITRF2005 will be the occasion to re-calibrate the C04 results in order to make it consistent with the ITRF2005.

1. ITRF2005 INPUT DATA

The ITRF2005 input data are under the forme of time-series solutions, 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 Center (AC) solutions of that technique, except for DORIS for which individual analysis center time-series were submitted to the ITRF2005. Local tie vectors in about 100 sites will be used in the ITRF2005 combination that allow connection between the 4 techniques. The ITRF2005 will comprise about 800 stations located at about 500 sites. Figure 1 shows the distribution of ITRF2005 sites underlying the co-located ones.

2. DATA ANALYSIS

The strategy adopted for the ITRF2005 generation consists in the following steps :

- Remove original constraint (if any) and apply minimum constraints equally to all solutions

- Use as they are minimally constrained solutions

- Form per-technique combinations (TRF + EOP)

- Identify and reject/de-weight outliers and properly handle discontinuity using piece-wise approach

- Combine if necessary all solutions of a given technique into a unique solution

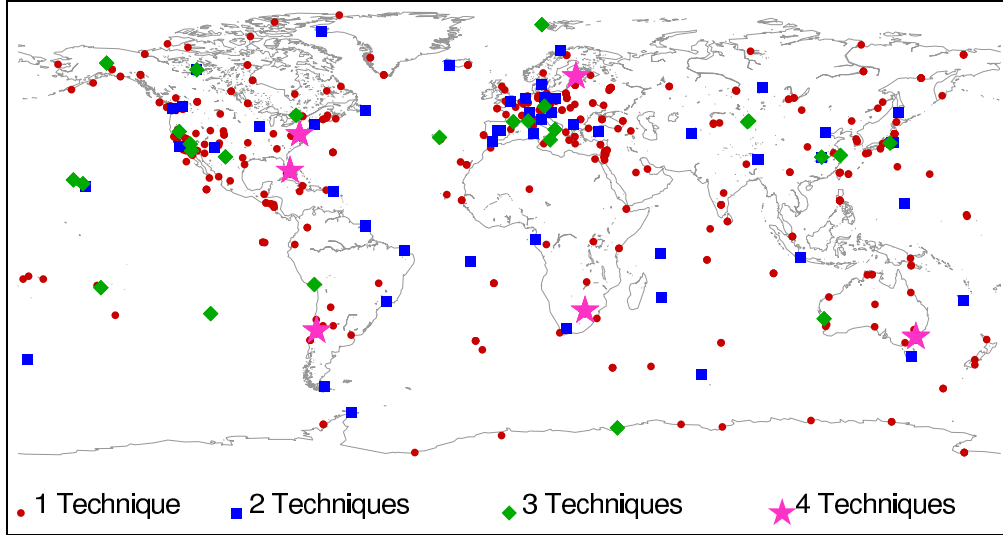- Combine per-technique combination adding local ties in co-location sites

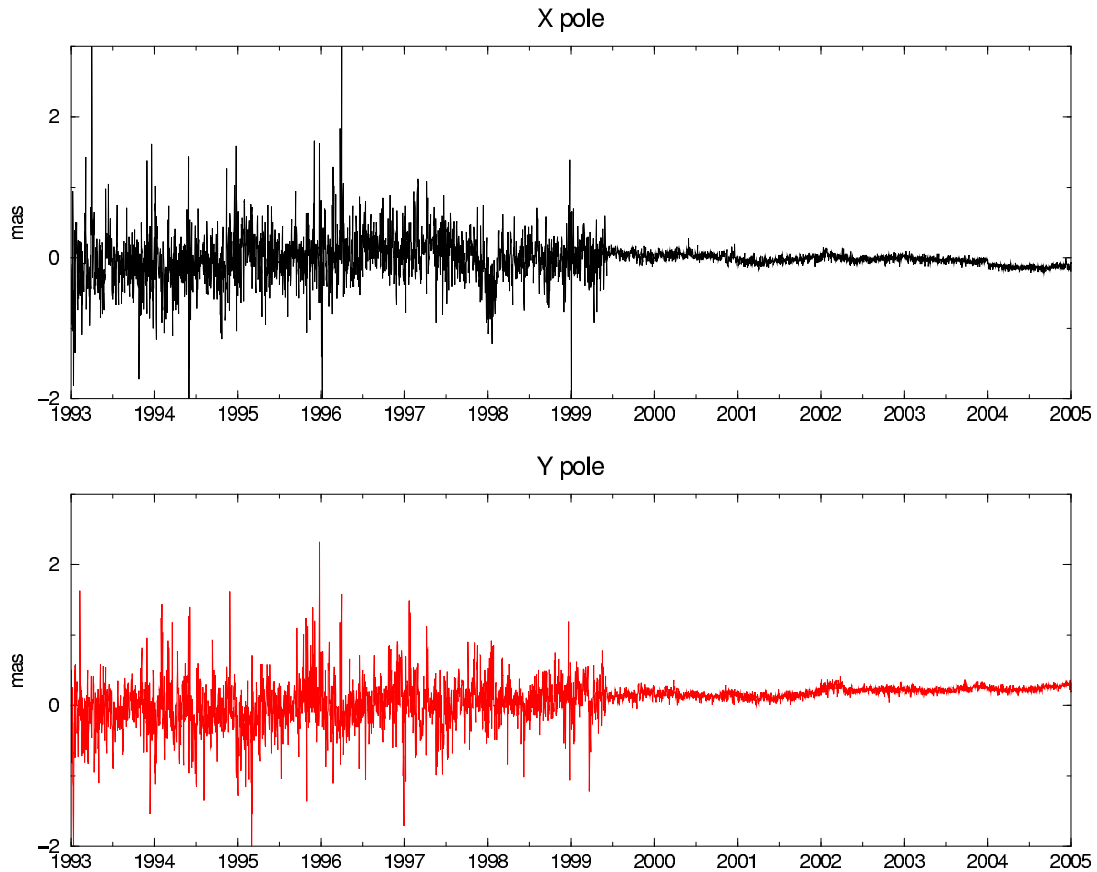
Figure 1: ITRF2005 Co-located sites

Figure 2: Polar motion differences between ITRF2005 preliminary solution and IERS C04.

3. SOME PRELIMINARY RESULTS

For the purpose of this paper we select to show EOP preliminary results since this is the first time that the EOPs are included in the ITRF combination.

As results from a preliminary global combination, similar to what will be the ITRF2005 solution, Figure 2 shows Polar Motion differences between our combination and the IERS C04 series. The mean of these differences indicates a significant bias of about 200 micro-arc-second in the Y component between our EOP series (expressed in ITRF2000) and the IERS C04. Therefore the ITRF2005 will be the occasion to re-calibrate the IERS C04 to make it consistent with the ITRF2005.

More preliminary results are published in (Altamimi et al., 2005).

REFERENCES

Altamimi Z., Collilieux X., Boucher C., 2005, Preliminary Analysis in view of the ITRF2005, Proceedings of IAG Symposium, the Dynamic Planet, submitted.