

How to tie the EPN to the ITRF2005 ?

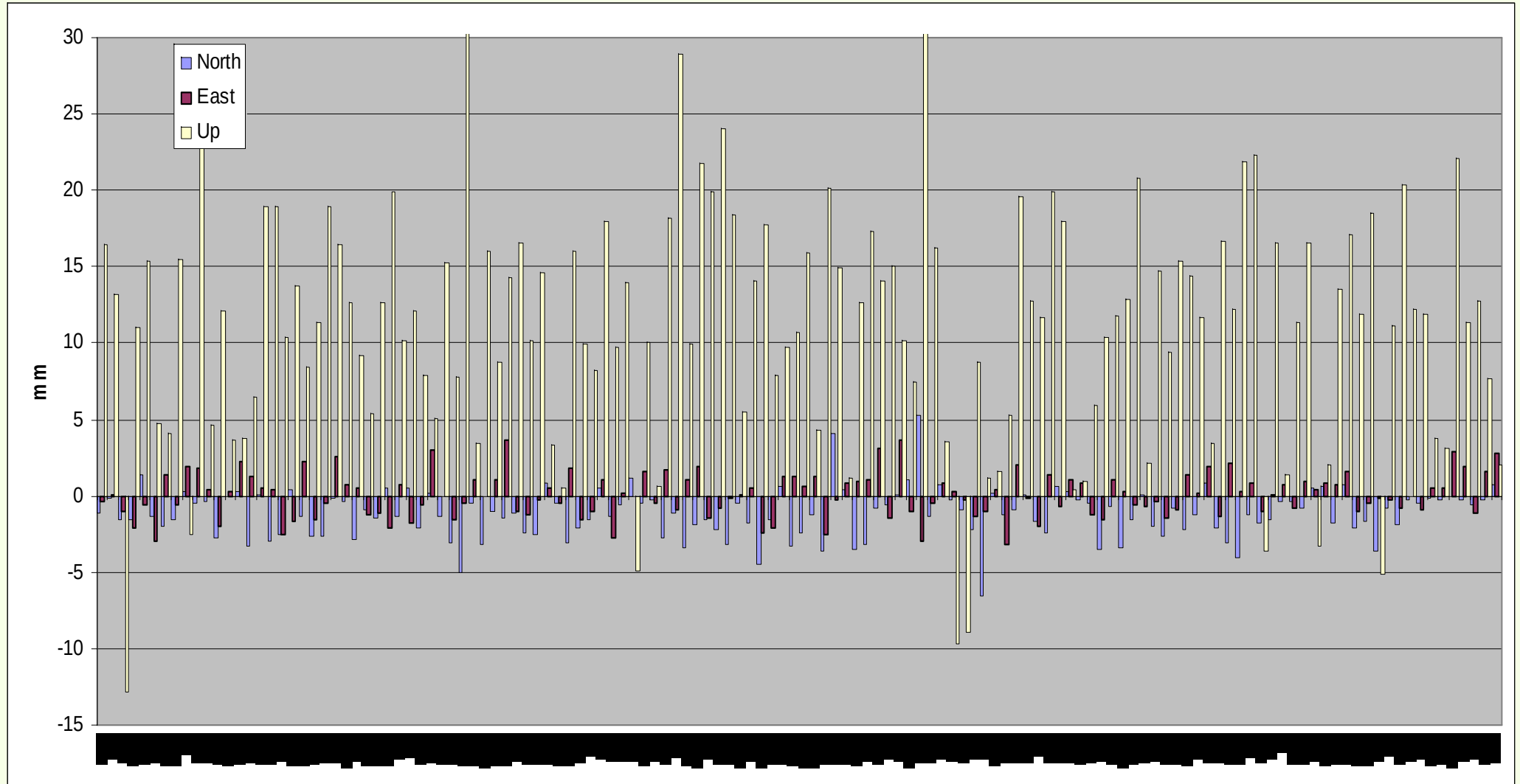
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IGS and ITRF2005

1. ITRF2005 released Oct. 2006
2. IGS contribution to ITRF2005 is based on IGS cumulative solution computed with relative antenna phase center (APC) models
3. On GPS week 1400 (Nov. 5, 2006) IGS will introduce absolute APC models and align its orbits with ITRF2005 (IGS05)
4. How did IGS use ITRF2005 (based on relative APC models) as reference when using absolute APC models ?

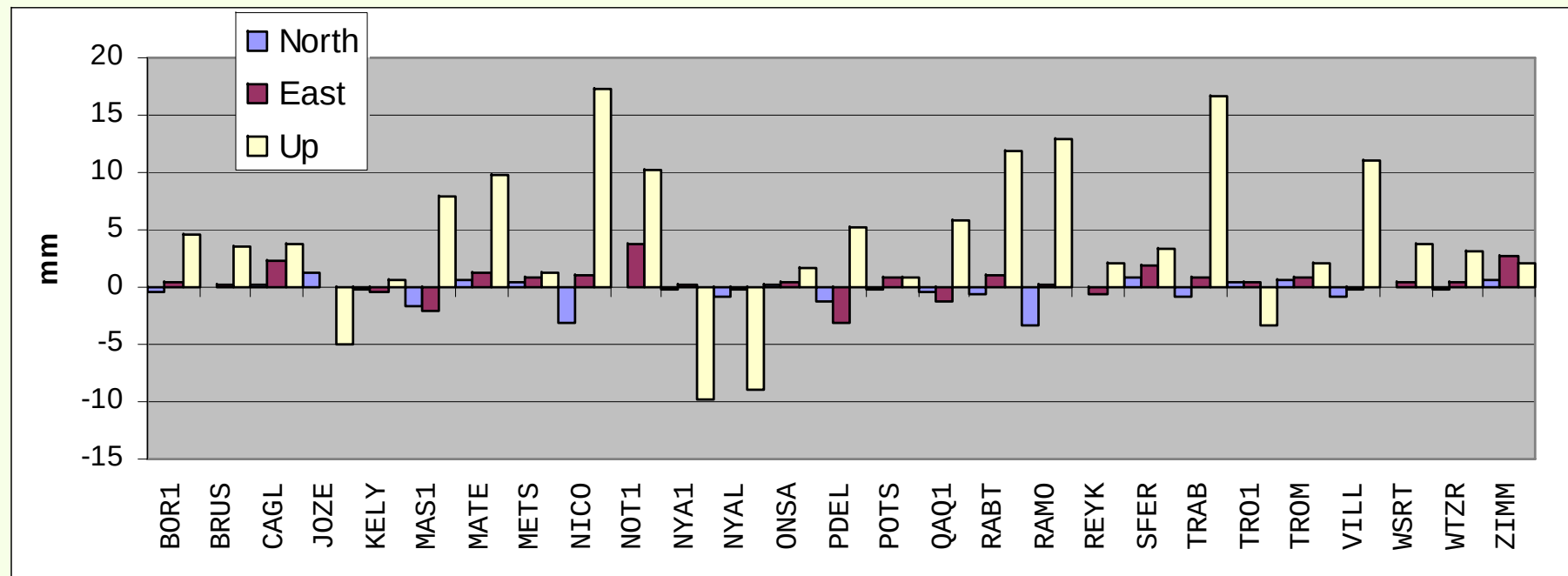
coordinate difference between absolute and relative models?

Influence of introduction of absolute antenna phase center models on IGS reference frame stations



Influence of introduction of absolute antenna phase center models on IGS reference frame stations

Extraction of EPN stations



Conclusion:

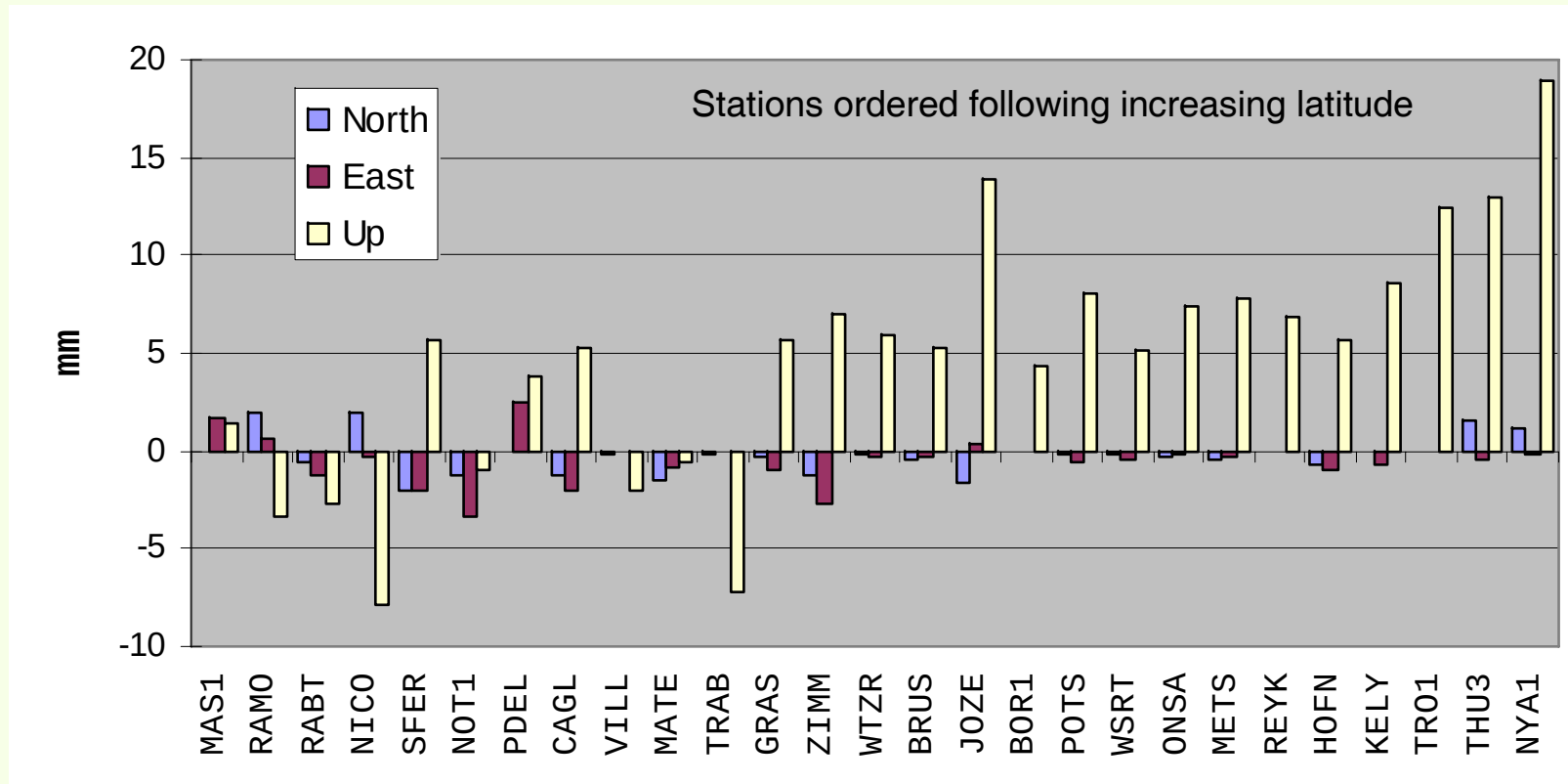
IGS needs to generate its own realization of ITRF2005, and this realization should be consistent with the absolute APC !

Procedure (Ferland, IGS mail 5547, Oct 19, 2006):

- ✓ Determine station-dependent correction for switch relative to absolute
 - Computation of two simultaneous solutions for 12 months
- ✓ Compute cumulative IGS solution and correct it for the station-dependent offset
- ✓ Align corrected cumulative IGS solution with ITRF2005 using 7 parameter Helmert transformation

Differences ITRF2005-IGS05

Extraction of EPN stations



Mean differences:

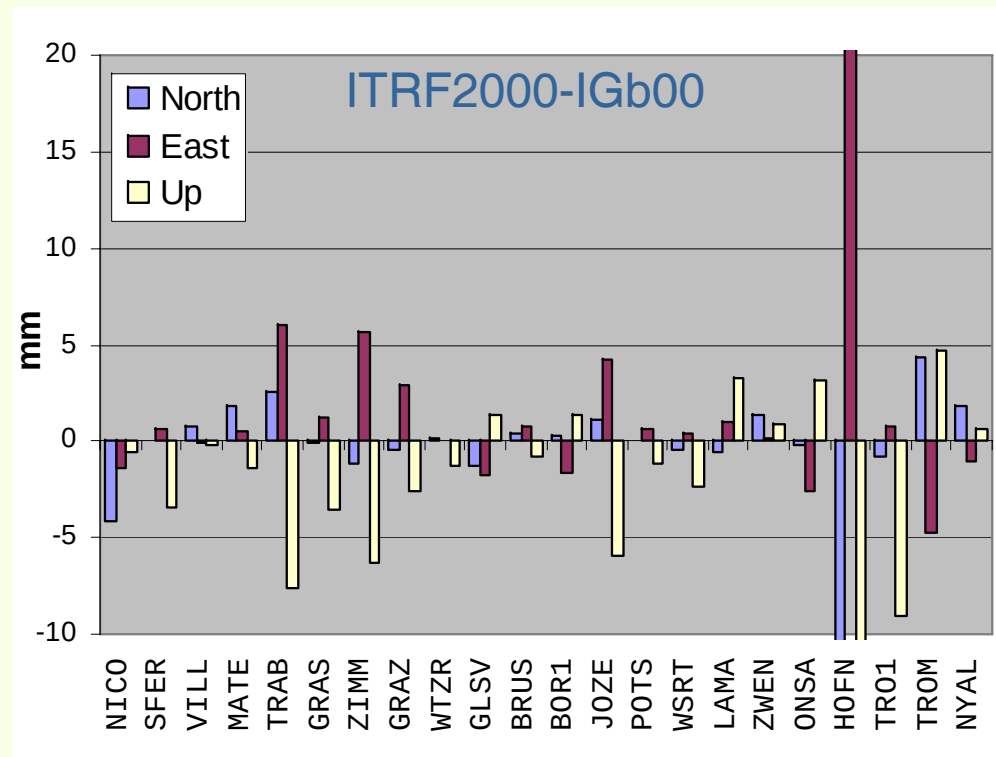
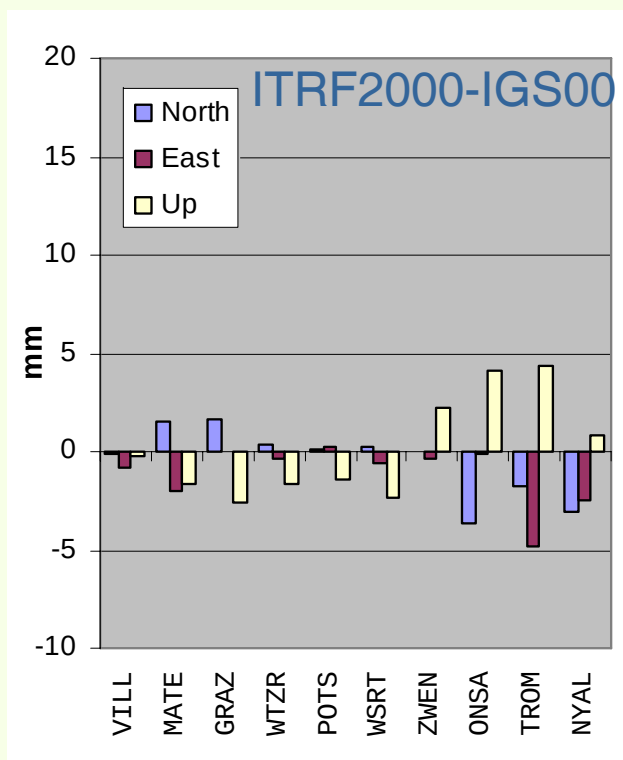
$N = -0.2 \text{ mm} \pm 1.0 \text{ mm}$

$E = -0.4 \text{ mm} \pm 1.4 \text{ mm}$

$U = 5.3 \text{ mm} \pm 6.5 \text{ mm}$

In the past EUREF always passed through ITRFyy to obtain ETRS89 coordinates

	Mean difference [mm]			Standard Dev. [mm]		
	N	E	U	N	E	U
ITRF2000-IGS00	-0.5	-1.1	0.2	1,7	1,6	2,6
ITRF2000-IGb00*	0.3	0.5	-1.5	1,7	2,5	3,6



of EPN stations included in:

ITRF2000	IGS00*	IGb00**	ITRF2005	IGS05
80	10	21	73	27

*IGS realization of the ITRF2000

**Updated IGS realization of the ITRF2000

Should EUREF tie its solutions to the ITRF2005 or IGS05?

IGS05? to be consistent with absolute APC models

Actions?

- **Determine transformation from IGS05 to ETRF2005 ?**
- **Determine station-dependent offset absolute-relative for remaining EPN stations (Procedure? Based on discontinuities we see at GPS week 1400?)**