

Evaluation of the IDS Contribution to ITRF2008

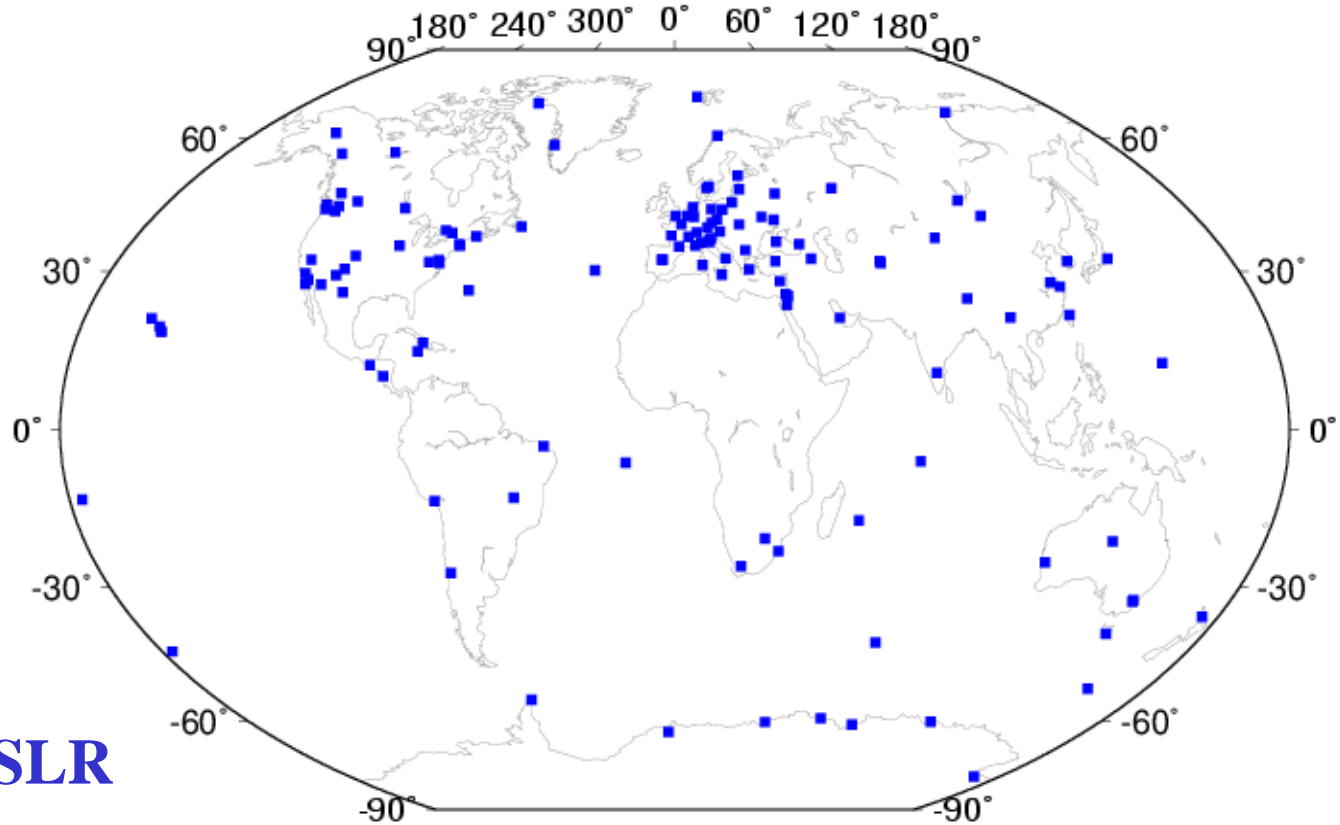


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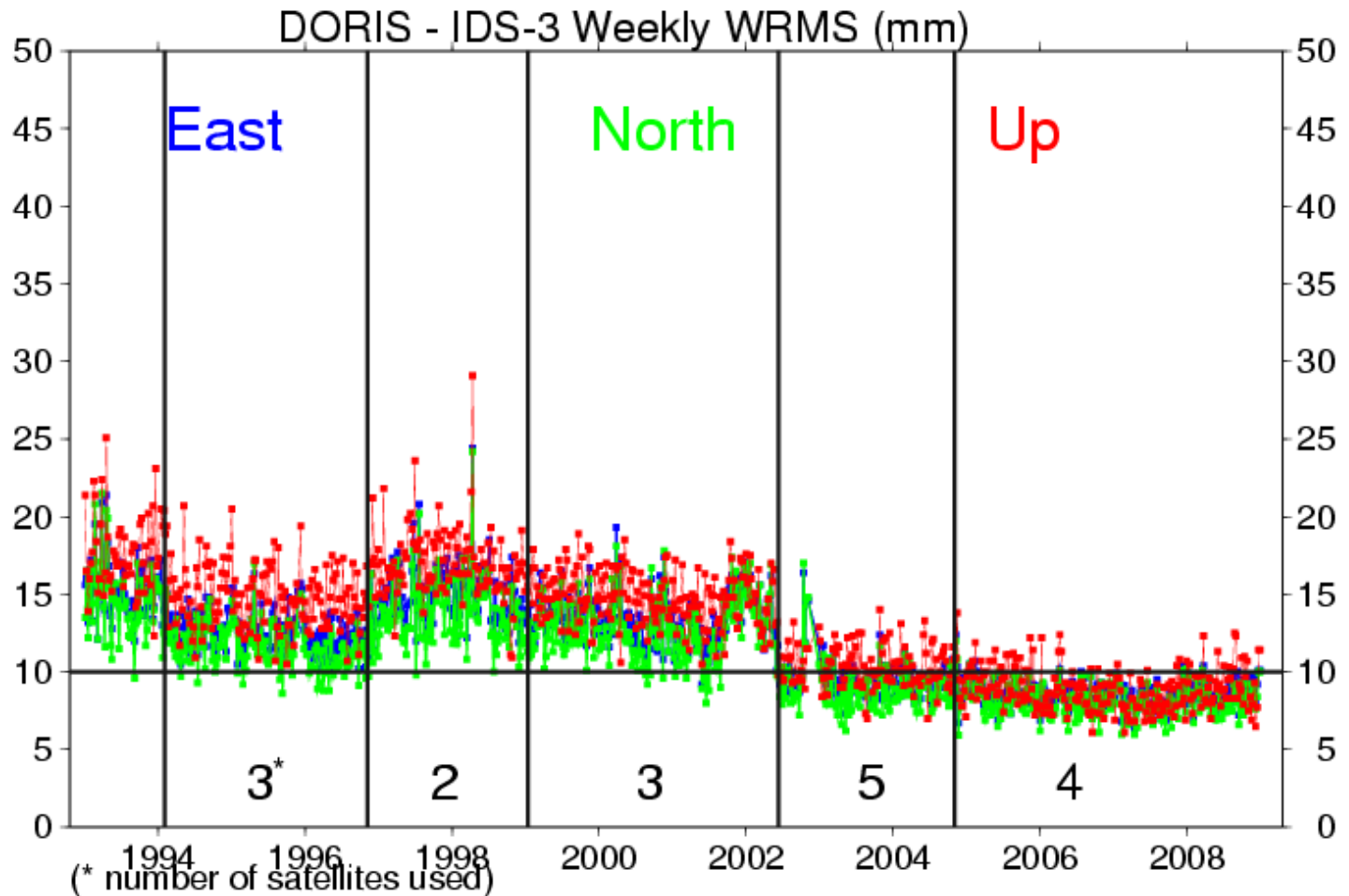


ITRF2008 Datum Specification

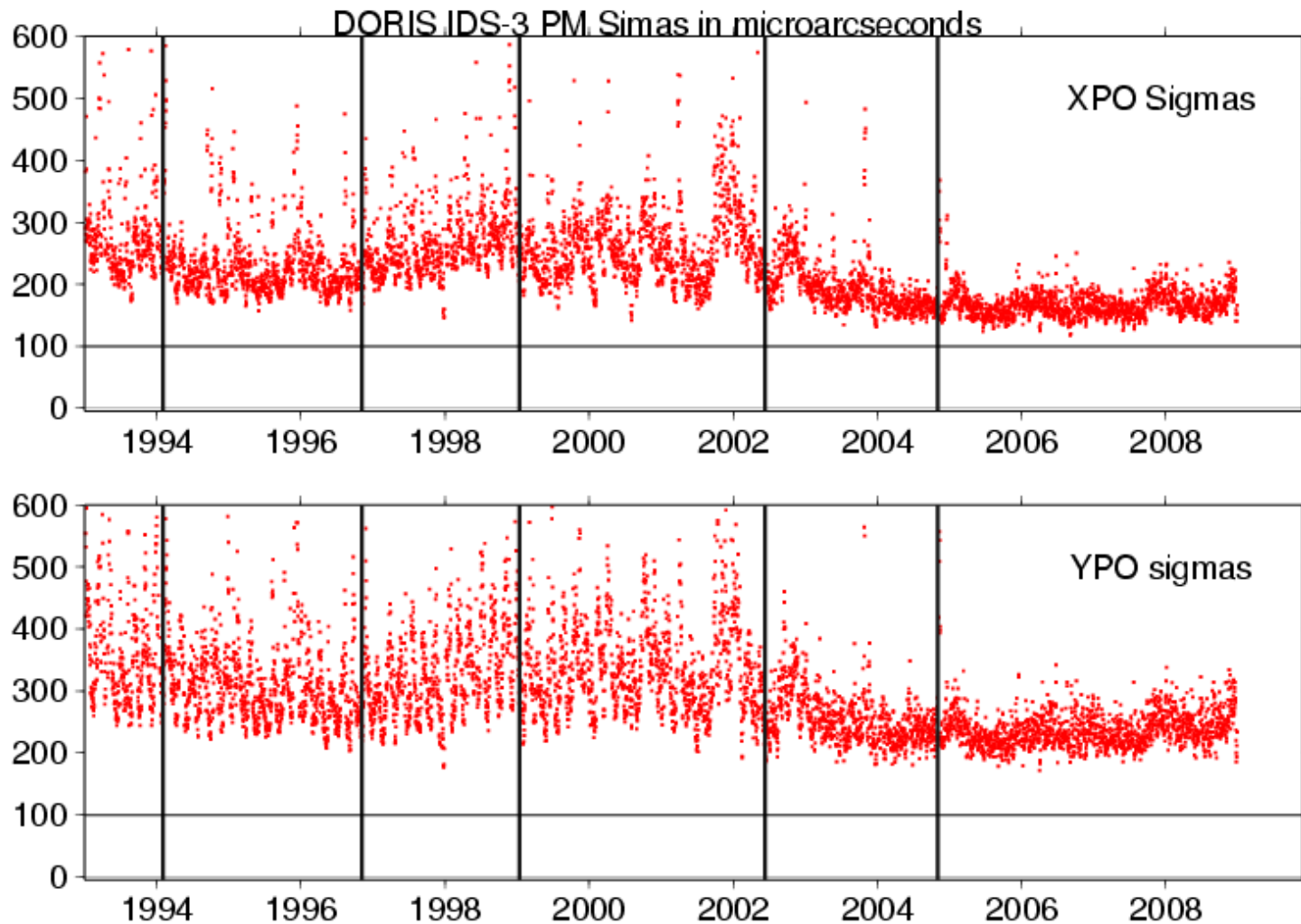


- **Origin: SLR**
 - **Scale : Mean of SLR & VLBI**
 - **Orientation: Aligned to ITRF2005**
- using 179 stations located at 13 sites: (Include 13 DORIS)
- 104 at northern hemisphere - 27 at southern hemisphere

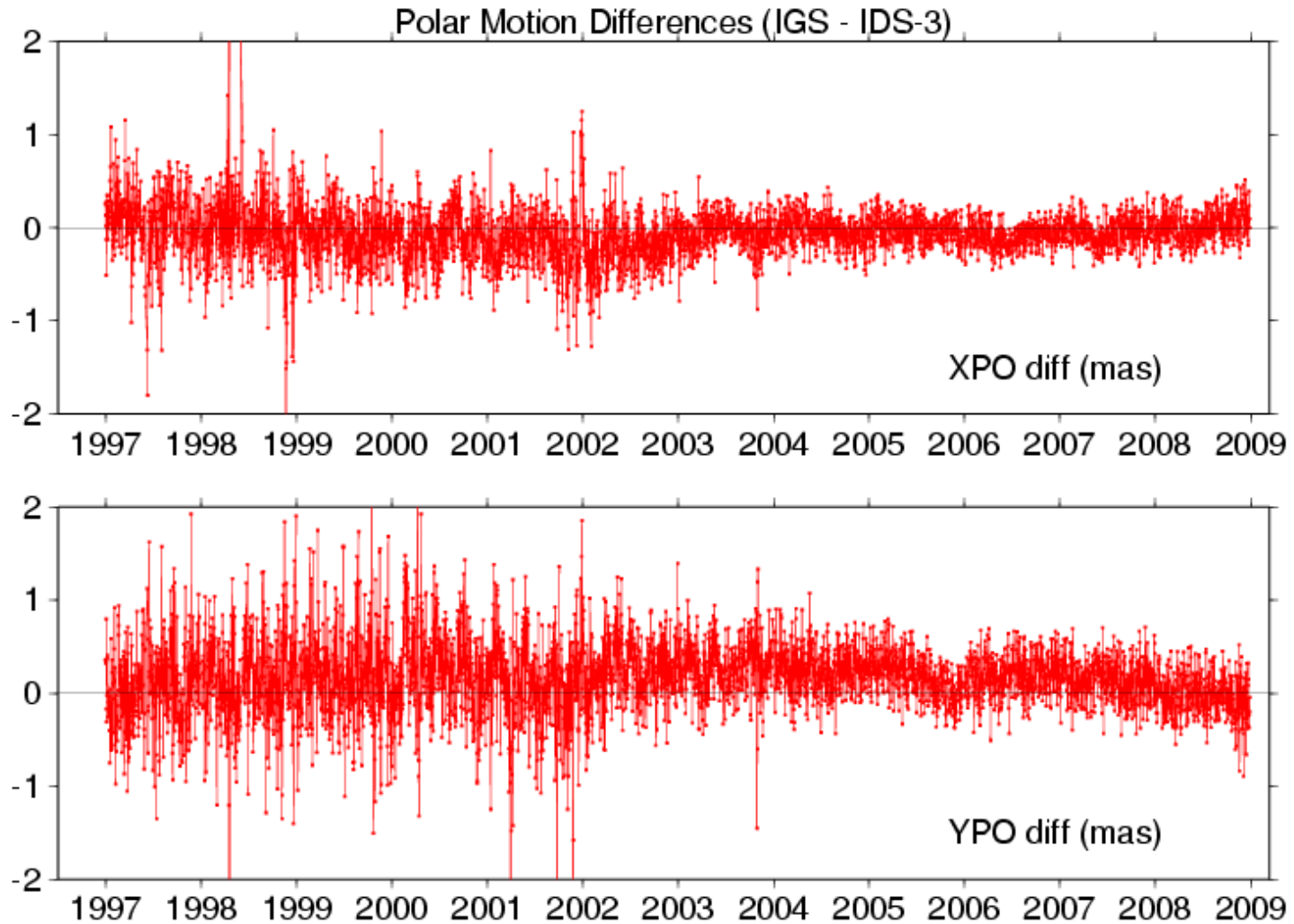
IDS-3 internal precision



IDS-3 Polar Motion Uncertainties



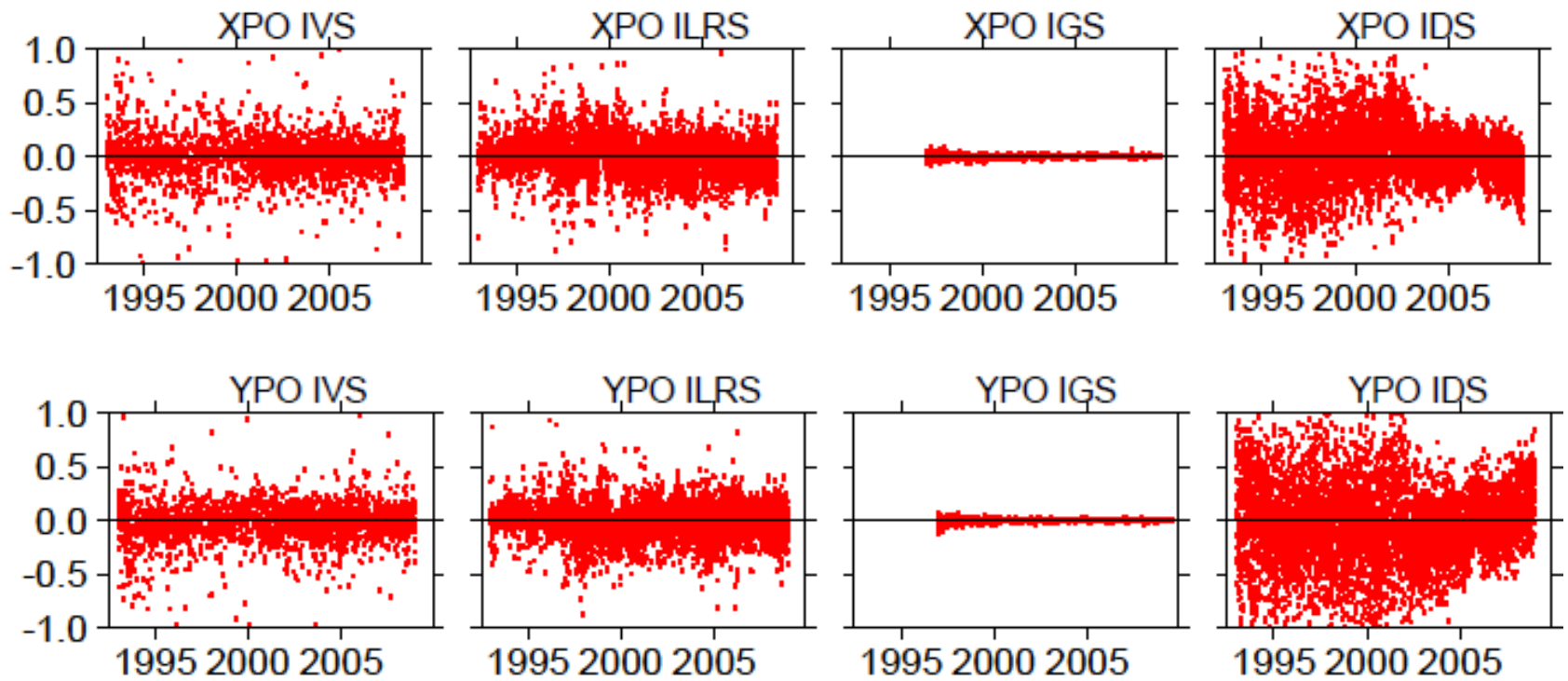
IDS-3 Polar Motion wrt IGS (IG1)



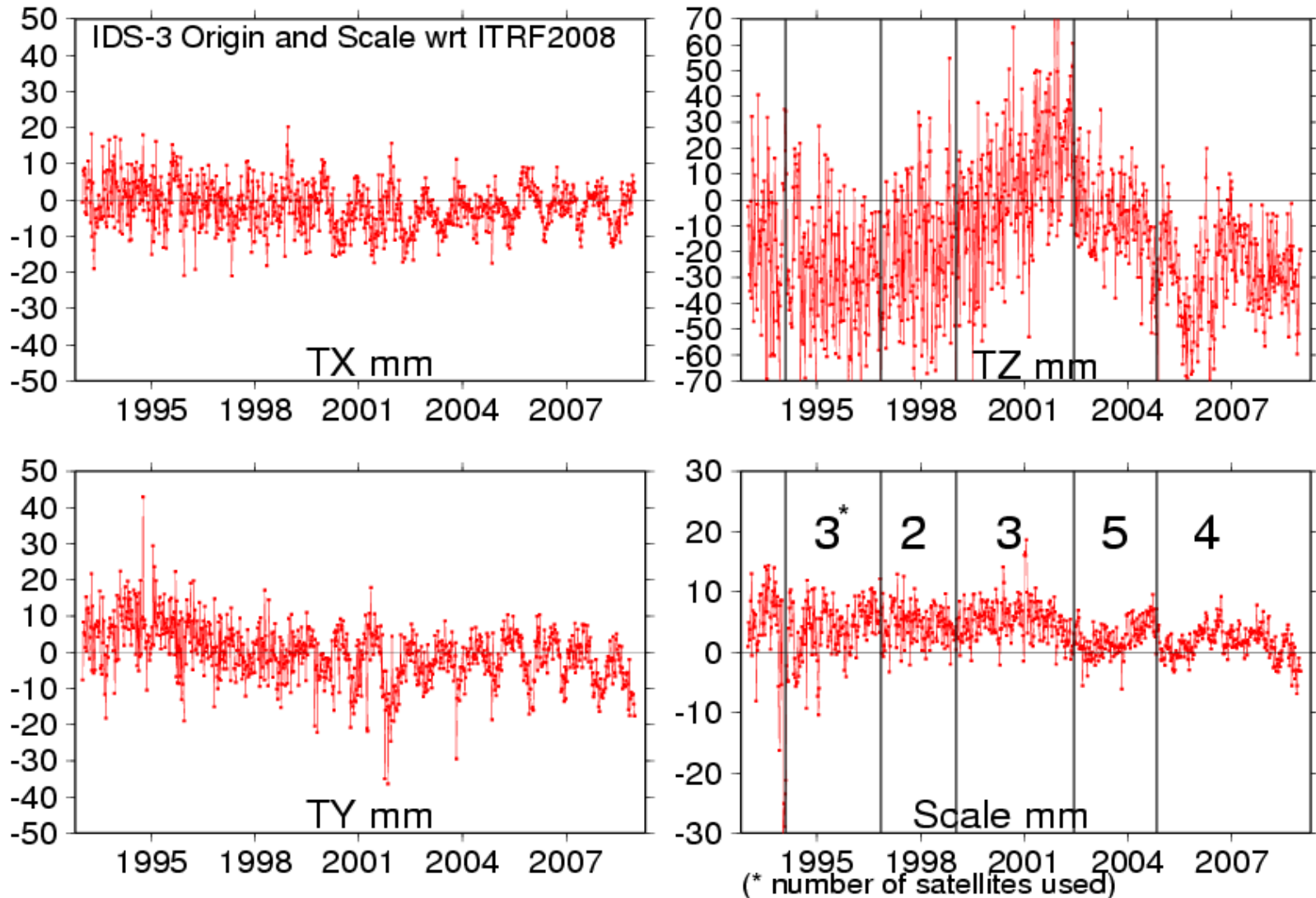
IDS-3 Polar Motion wrt IGS (IG1)

Technique Center/Technique	WRMS		time-span
	Xpole	Y-pole	
	μas	μas	
IVS/VLBI	284	393	1993.0 - 2009.0
	226	287	2002.0 - 2009.0
ILRS/SLR	292	387	1993.0 - 2009.0
	221	291	2002.0 - 2009.0
IGS/GPS	214	331	1997.0 - 2009.0
	169	261	2002.0 - 2009.0

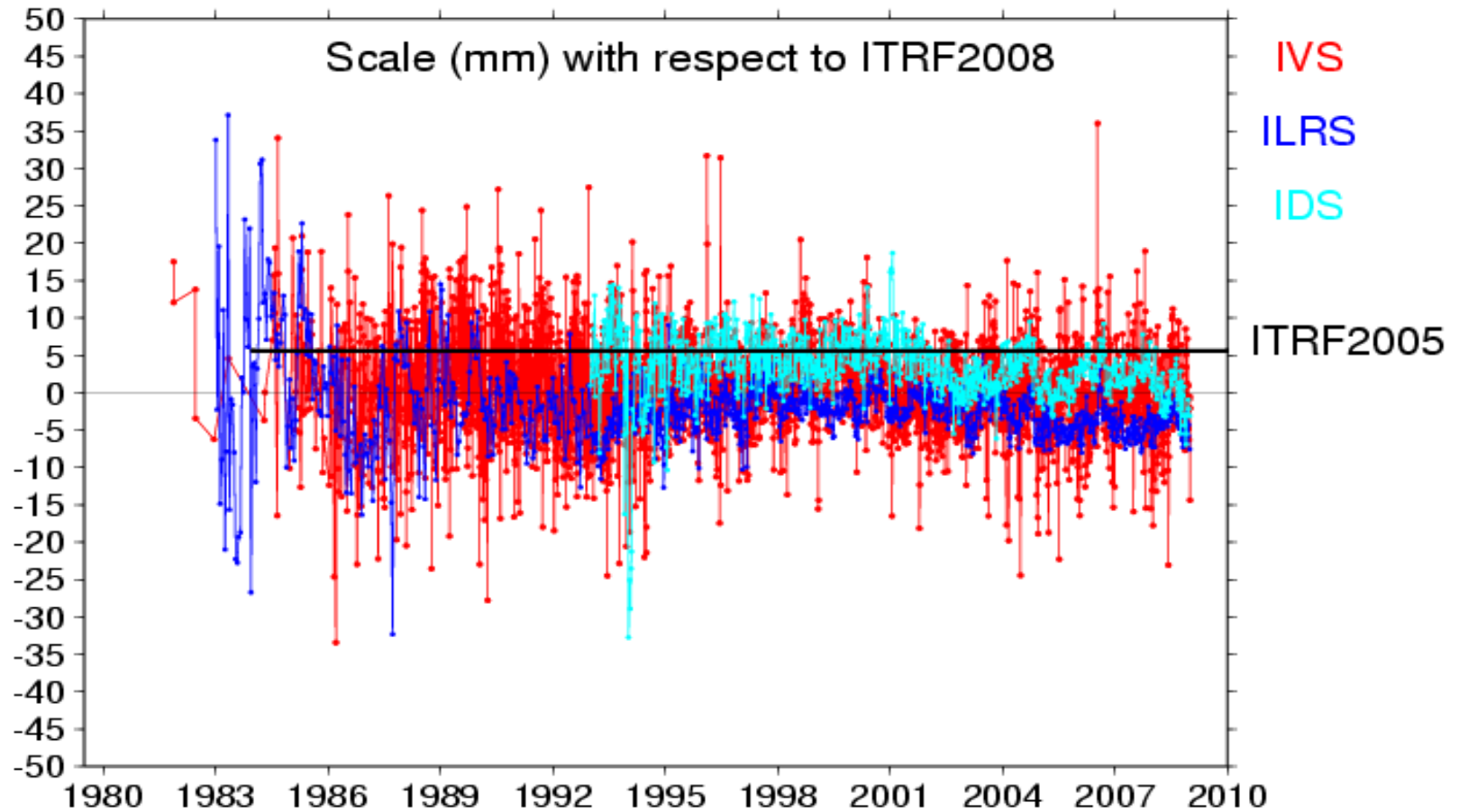
ITRF2008 PM residuals



IDS-3 Origin and Scale wrt ITRF2008



Scales wrt ITRF2008P



Scale FORMAL errors (1σ) via ties to GPS

	Scale ppb	Scale rate ppb/yr
VLBI	0.10	0.01
SLR	0.12	0.01
DORIS	0.20	0.03

Transformation Param Fm ITRF2008 To ITRF2005

Tx mm	Ty mm	Tz mm	Scale ppb	At epoch 2005.0
-0.5	-0.9	-4.7	0.94	
0.2	0.2	0.2	0.03	

Tx rate mm/yr	Ty rate mm/yr	Tz rate mm/yr	Scale rate ppb/yr
0.3	0.0	0.0	0.00
0.2	0.2	0.2	0.03

IDS-3 consistency with ITRF2008P (1/2)

WRMS in POS (EMV) & VEL at co-location sites

Positions			Velocities		
East	North	Up	East	North	Up
mm			mm/yr		
2.6	1.5	1.5	0.9	0.6	0.7

IDS-3 consistency with ITRF2008P (2/2)

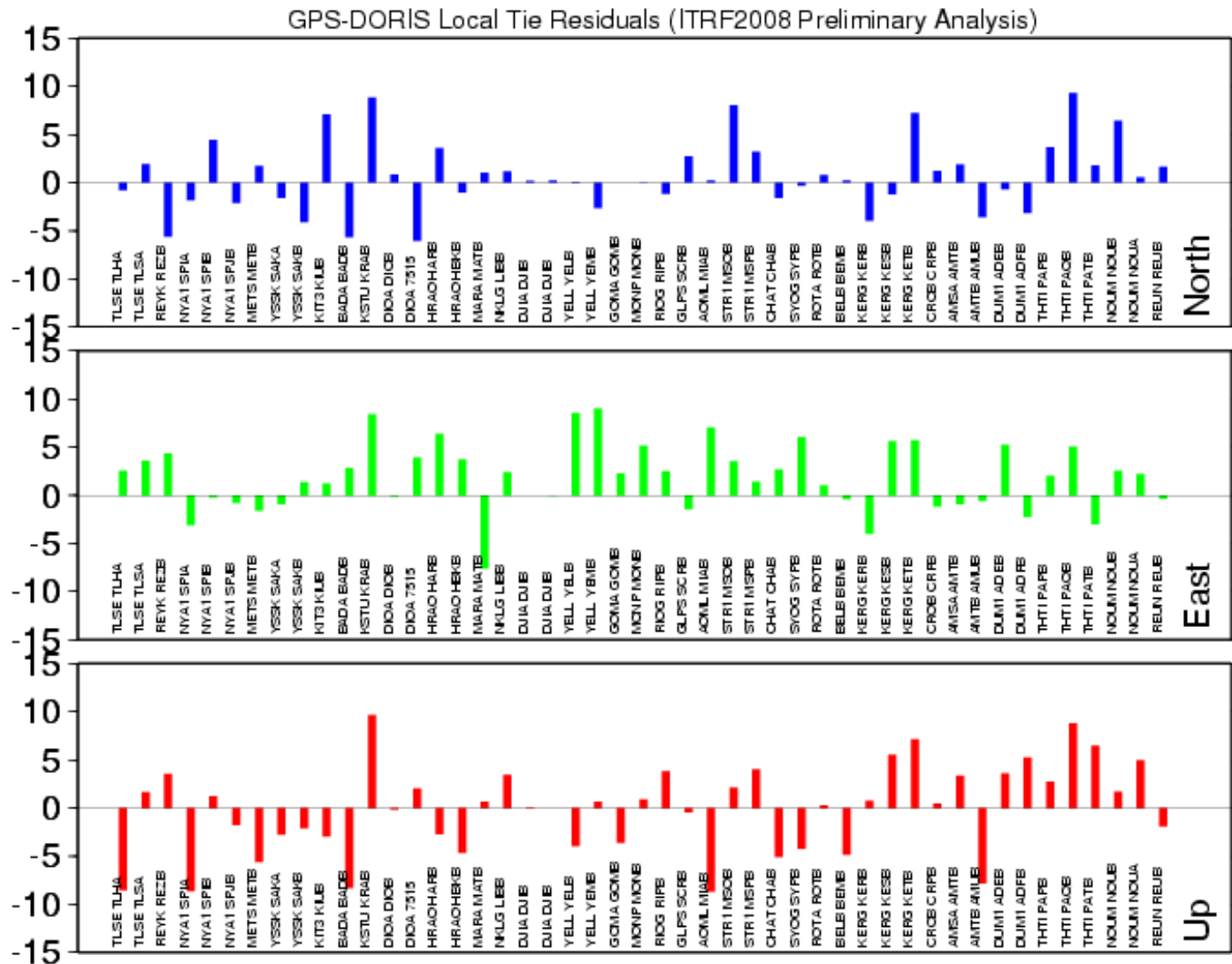
14-parameter transformation of IDS-3-IGN cumulative solution wrt ITRF2008P-IGN (From IDS-3-IGN To ITRF2008P)

Solution	T1 mm	T2 mm	T3 mm	D 10 ⁻⁹	R1 mas	R2 mas	R3 mas
IDS-3-IGN	-6.1	-0.1	-2.0	0.90	-0.118	-0.032	-0.103
+/-	0.3	0.3	0.3	0.05	0.012	0.011	0.012
Rates	-1.2	-1.4	4.7	-0.01	-0.008	0.006	-0.010
+/-	0.3	0.3	0.3	0.05	0.012	0.011	0.012

WRMS in POS (at epoch 2000.0) & VEL using 130 stations

Station #	RMS-Pos.			Epoch y	RMS-Vel.		
	E	N	U		E	N	U
	mm				mm/y		
130	5.6	3.7	4.1	0: 1	1.1	0.7	0.8

IDS-3 Tie Residuals < 1 cm (47 ties total) *



* 40 ties have residuals > 1 cm

Concluding remarks

- **ITRF2008: independent combination from ITRF2005**
- **Origin: almost the same as ITRF2005:**
 - IDS-3: Z component to be improved more !
- **Scale: mean of VLBI and SLR**
 - IDS-3: uneven behaviour after 2002
- **Polar motion: GPS dominate**
 - IDS-3: Y-pole seems better than X-pole
- **Results to be improved around 2002.0**
- **A factor of 3 to 5 improved results, compared to ITRF2005**
- **More in Altamimi and Collilieux (2010), *Adv. Space Res.***
Quality Assessment of the IDS Contribution to ITRF2008