

Extension of the Combination to 2009 and analysis of ITRF2008P

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Summary

IDS-3 comparison with ITRF2008P

IDS- 3 weekly combination: 2009 continuation

EOPs analysis

Analysis of solutions including Jason-2

ITRF2008P

Stations # 131 (DORIS code : XXXX A domes#)

but MALA B & GALA B & DAKA B because of GPS conflicts

Station discontinuities # 117 (67 in IDS-3)

Stations with high 3D sigmas (> 1 cm in POS., > 3mm in VEL.)

STATION	POS (cm)	VEL (cm/y)
GAVB 1	1.091	0.827
DAKA 1	1.161	0.144
TRIA 1	1.178	0.133
FAIA 1	1.217	0.118
GOMB 1	1.226	0.164
WALA 1	1.309	0.167
AREA 1	1.319	0.202
GOMA 1	1.399	0.164
FAIB 5	1.407	0.583
SANA 1	1.414	0.123
DJIB 2	1.543	0.188
AREB 1	1.597	0.023
DJIA 1	1.680	0.188
DJIB 1	1.687	0.188
GAVB 2	1.984	0.827
GOLA 1	1.995	0.164
COLA 2	2.153	0.272
SAKA 2	2.445	0.291
COLA 1	3.051	0.272
SAKA 1	3.237	0.291
ARMA 1	4.575	0.477
HBLB 1	5.786	4.689
KRAB 3	6.762	0.112
FAIB 3	7.015	4.176
REZB 3	12.561	3.404
FAIB 2	23.881	11.701
REUB 2	29.208	7.727

STATION]	POS (cm)	VEL (cm/y)
ARMA 1	4.575	0.477
TRIB 2	0.762	0.561
FAIB 4	0.496	0.566
FAIB 5	1.407	0.583
GAVB 1	1.091	0.827
GAVB 2	1.984	0.827
REZB 3	12.561	3.404
FAIB 3	7.015	4.176
HBLB 1	5.786	4.689
REUB 2	29.208	7.727
FAIB 2	23.881	11.701

IDS-3 comparison wrt ITRF2008P

- After stacking IDS-3 weekly solutions applying ITRF2008P breaks, using Internal Constraints (DORIS intrinsic origin and scale) and propagating ITRF2008P at central epoch of IDS-3

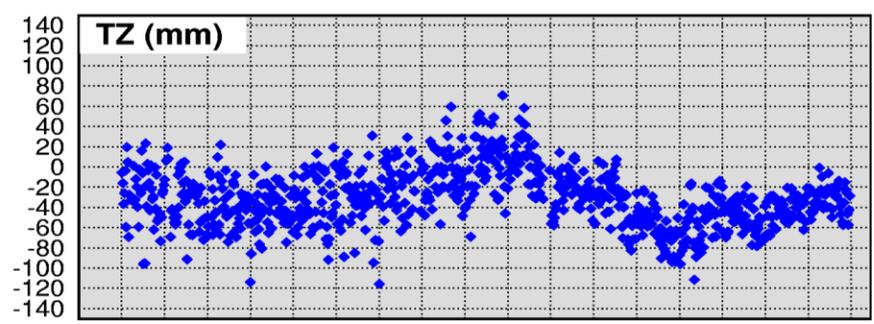
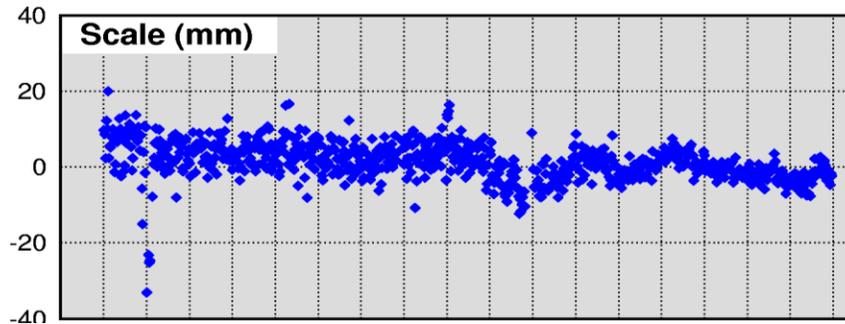
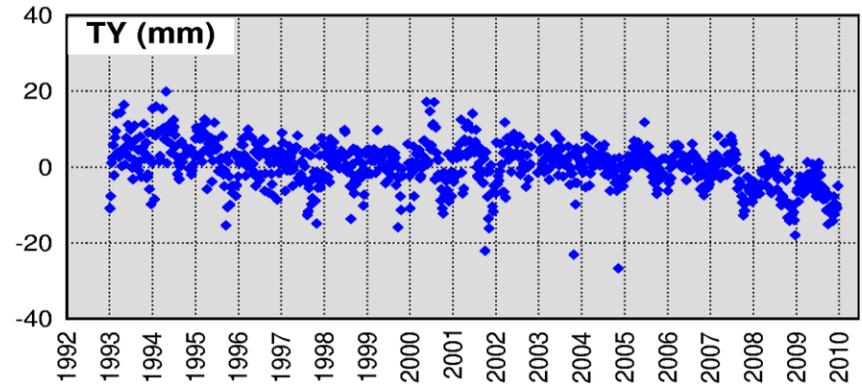
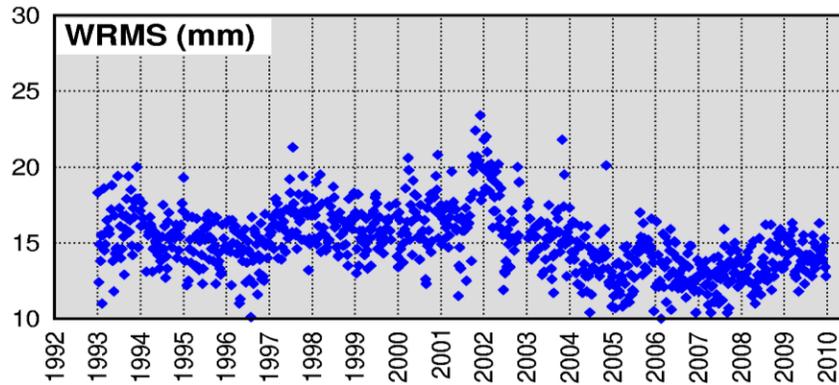
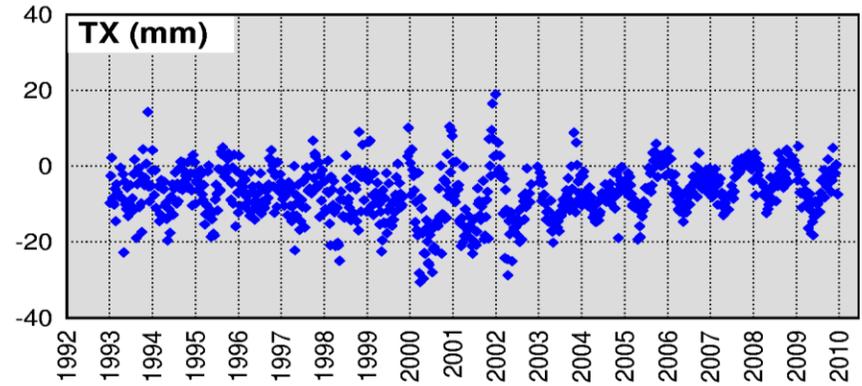
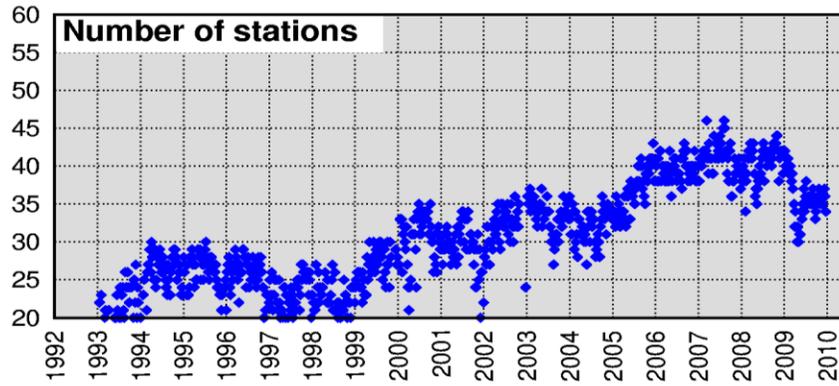
TRF				TRF rates			
TX (mm)	TY (mm)	TZ (mm)	Scale (10 ⁻⁹)	dTX (mm/yr)	dTY (mm/yr)	dTZ (mm/yr)	dScale (10 ⁻⁹ /yr)
-4.8	0.7	-16.8	0.57	0.0	-0.4	-0.3	-0.06

Points #	RMS-Position (mm)			RMS-Velocity (mm/year)		
	East	North	Up	East	North	Up
130	3.9	2.8	3.5	1.0	0.7	0.9

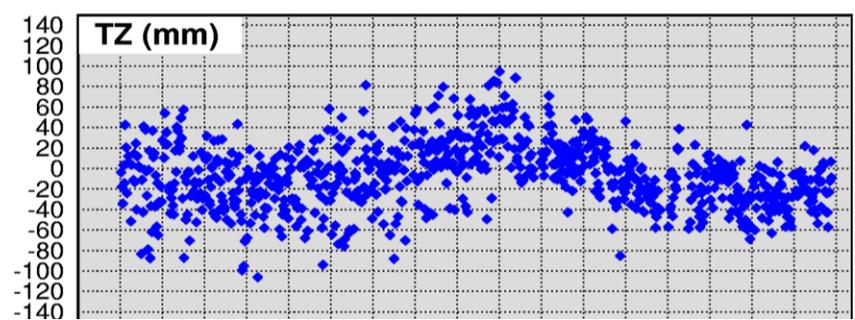
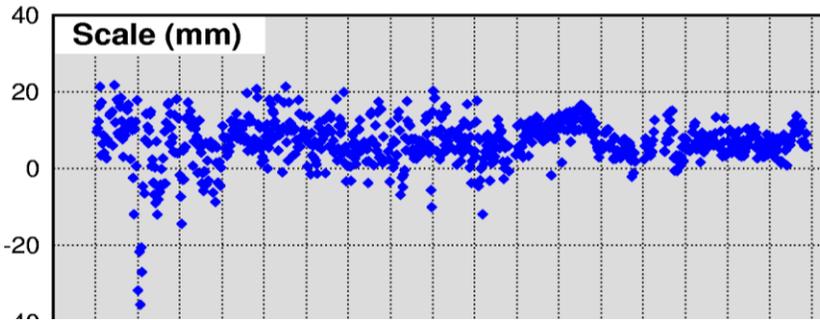
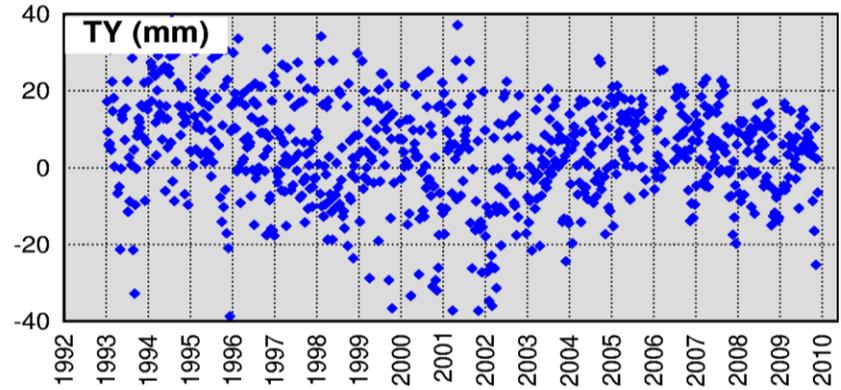
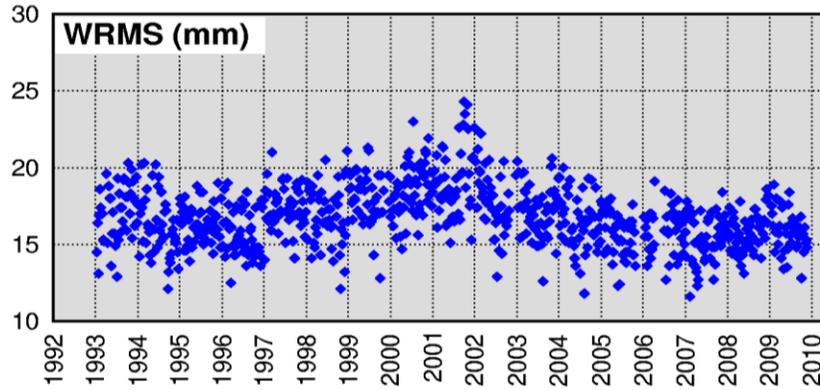
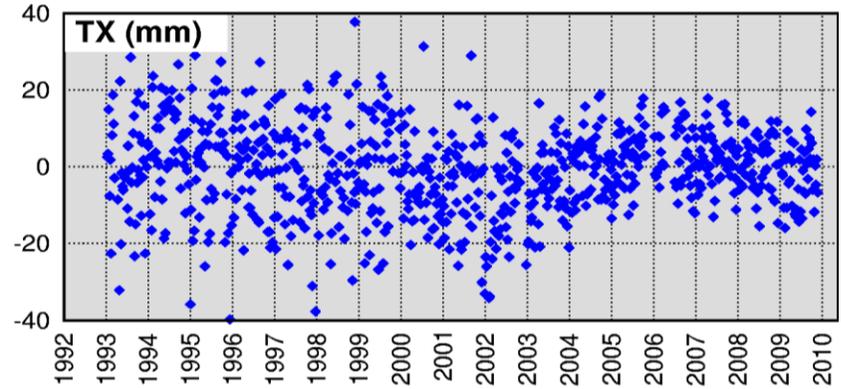
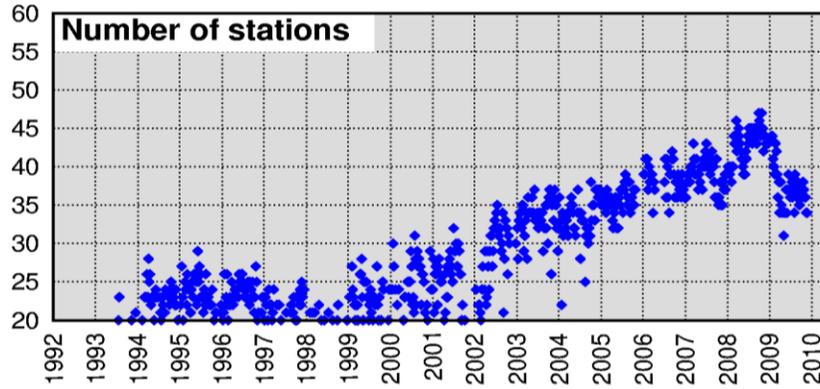
IDS- 3 weekly combination 2009 continuation

- **All series except gauwd06:
esawd03, gopwd31, gscwd10, ignwd10, inawd06, lcawd24**
- **2009 data preprocessing**
 - (1) Verification of DORIS station identification (DOMES number, station acronym),
 - (2) Rejection of selected stations over the whole time period,
 - (3) Rejection of selected stations over specific periods,
 - (4) Verification/update of position discontinuities,
 - (5) Inversion of the free singular normal equations for ESA and GSC,
 - (6) Projection using minimal constraints and rejection of perturbing stations,
 - (7) Comparison with ITRF2005 or recent datum (internal solution) at the epoch of each weekly solution,
 - (8) Analysis and rejection of high residual stations
- **Comparison of each complete series wrt ITRF2008P**

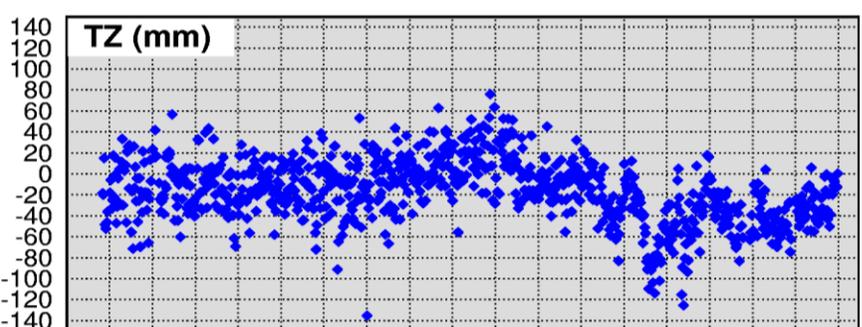
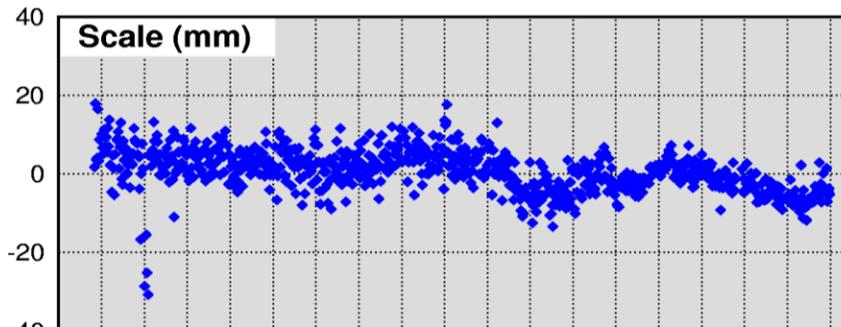
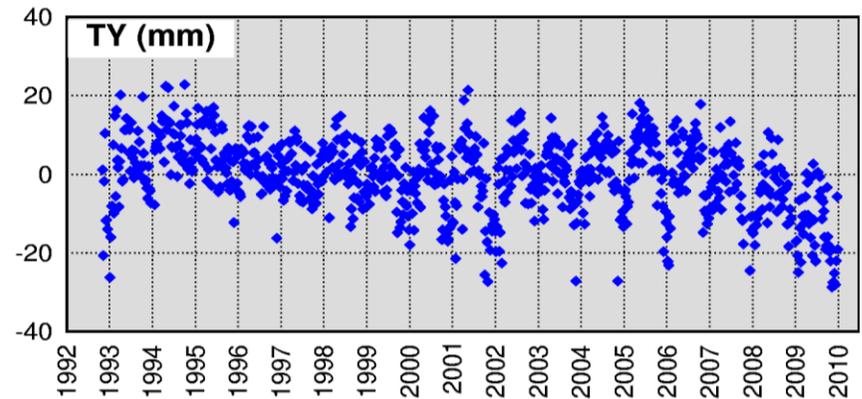
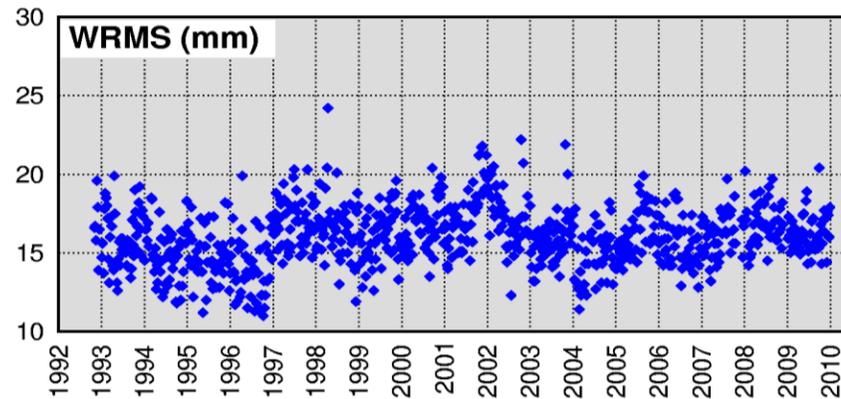
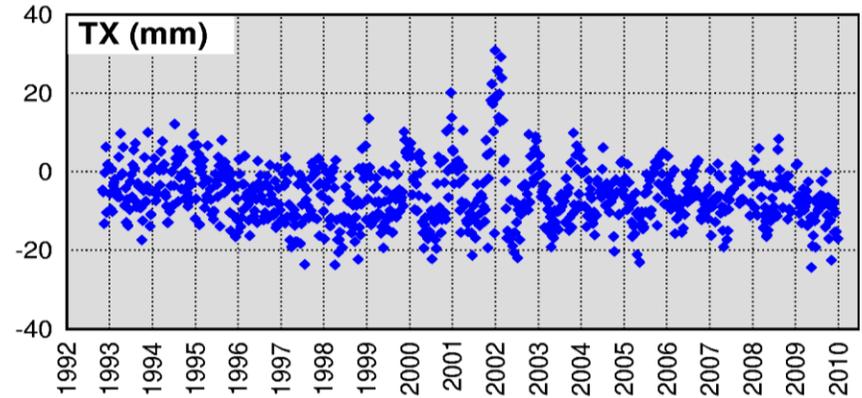
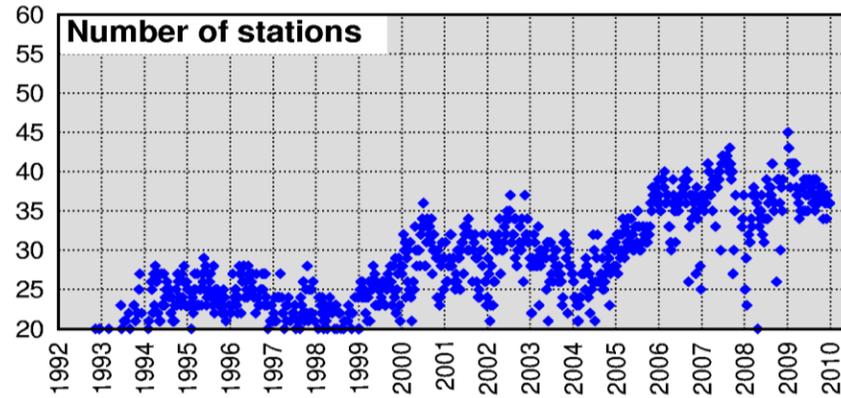
Per week comparison to ITRF2008P : esawd03



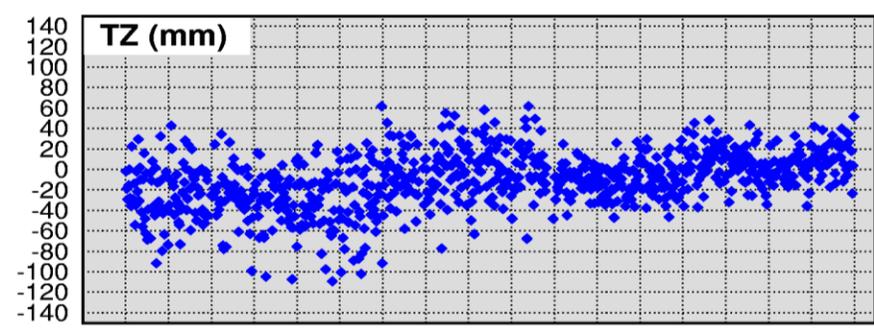
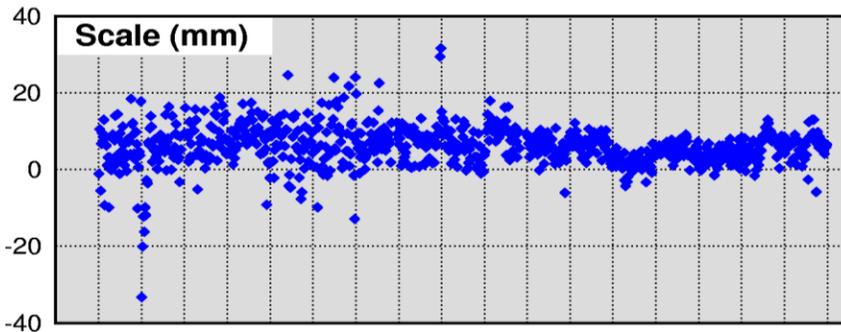
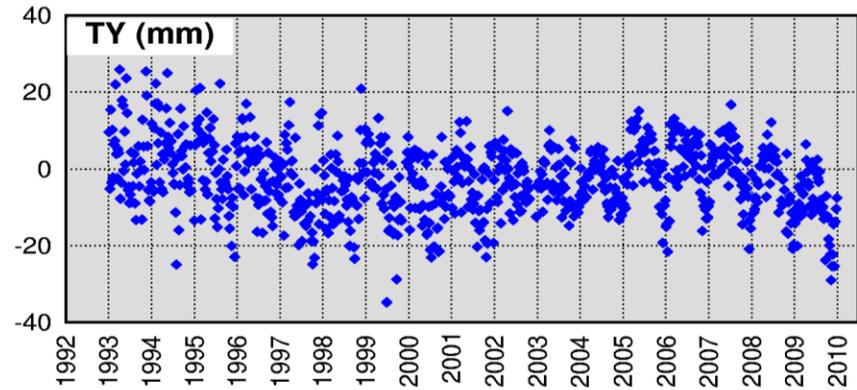
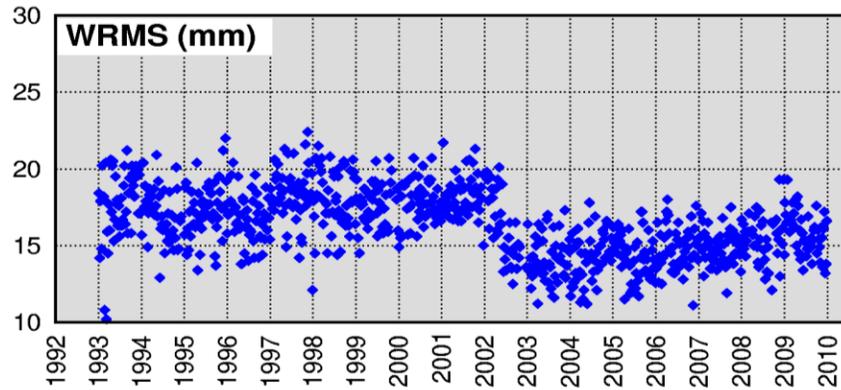
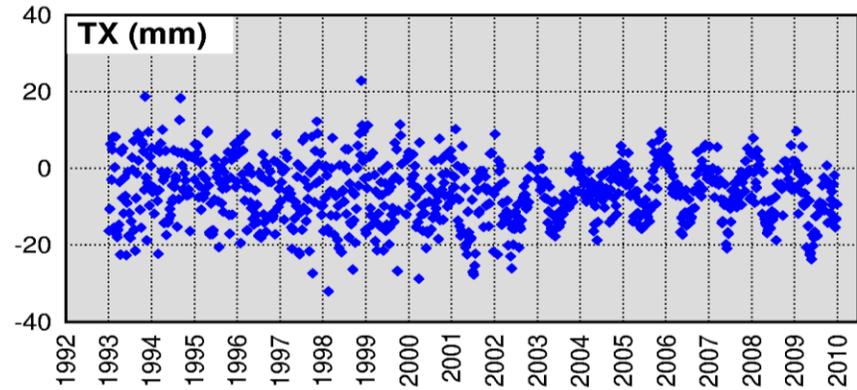
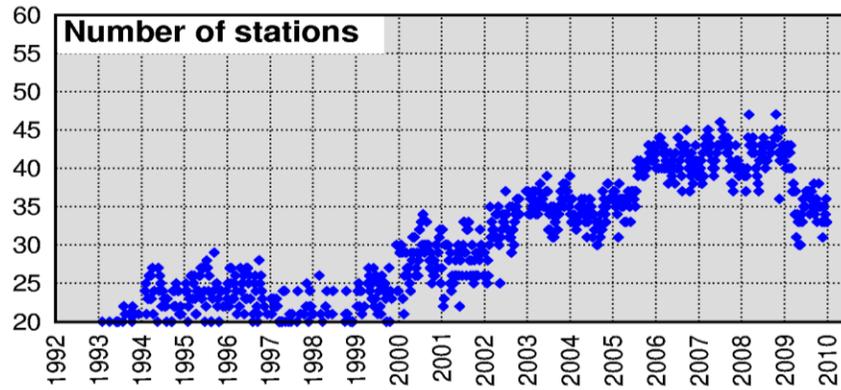
Per week comparison to ITRF2008P : gopwd31



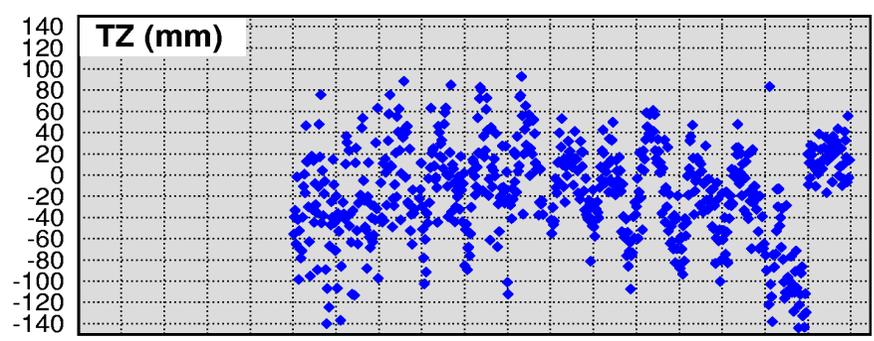
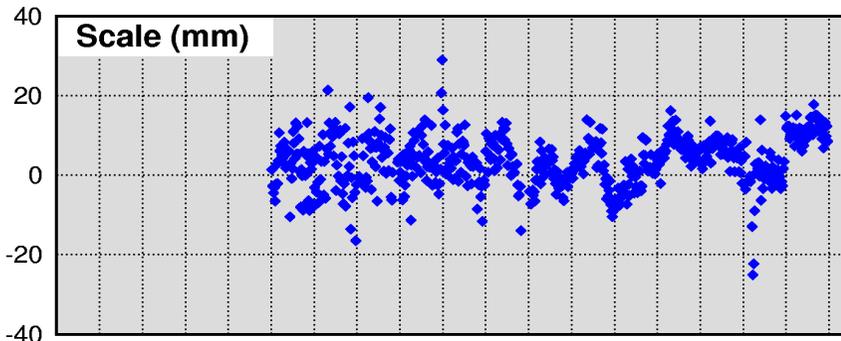
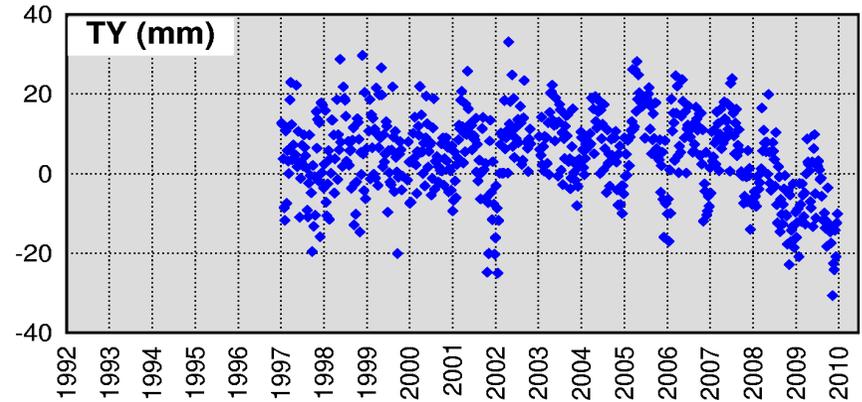
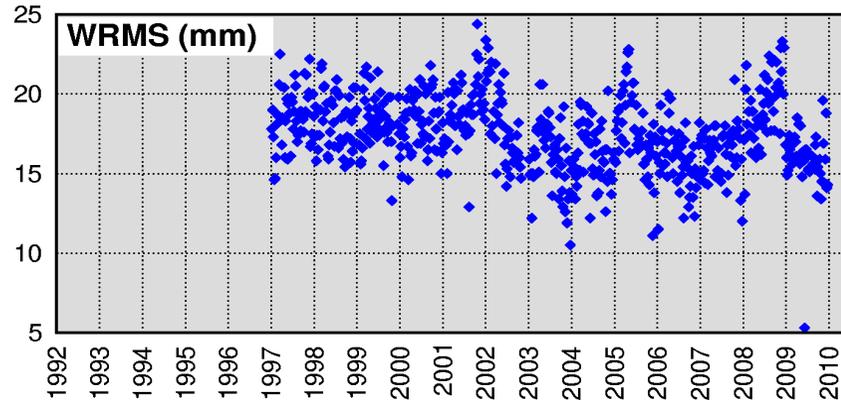
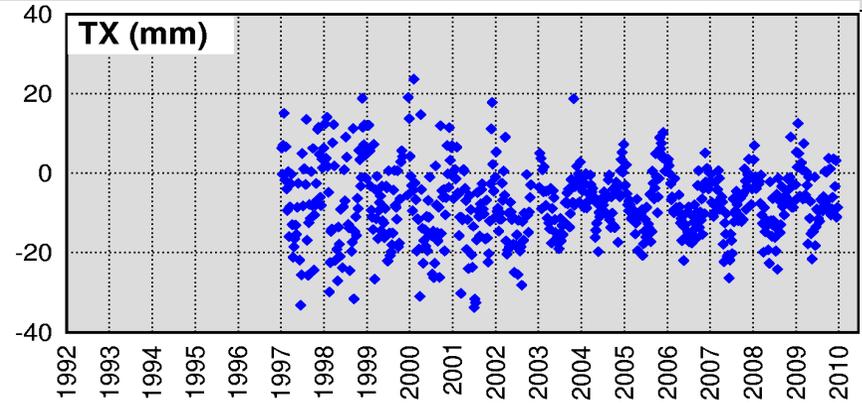
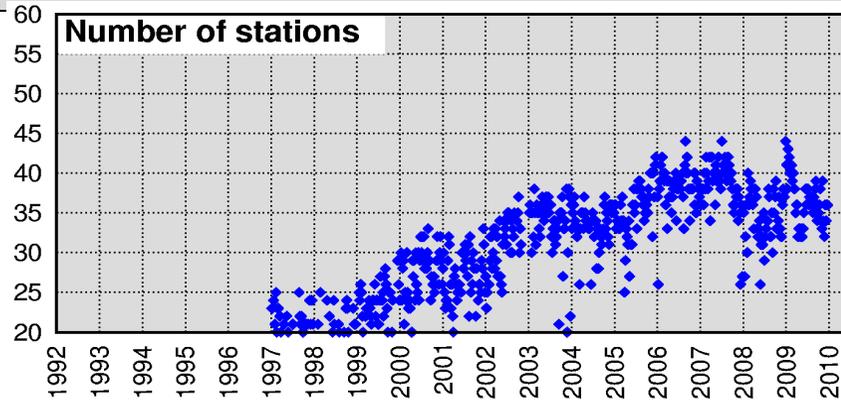
Per week comparison to ITRF2008P : gscdw10



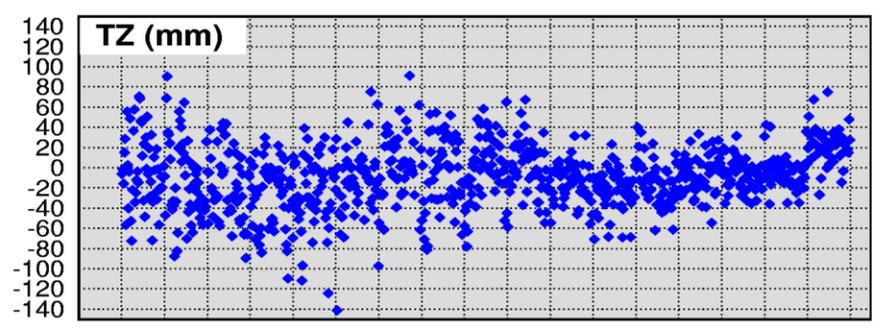
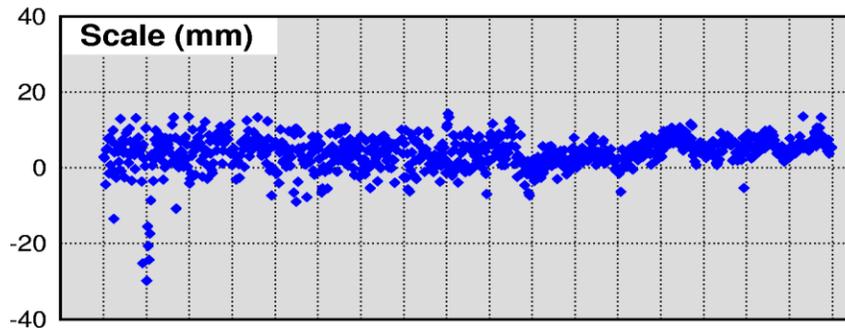
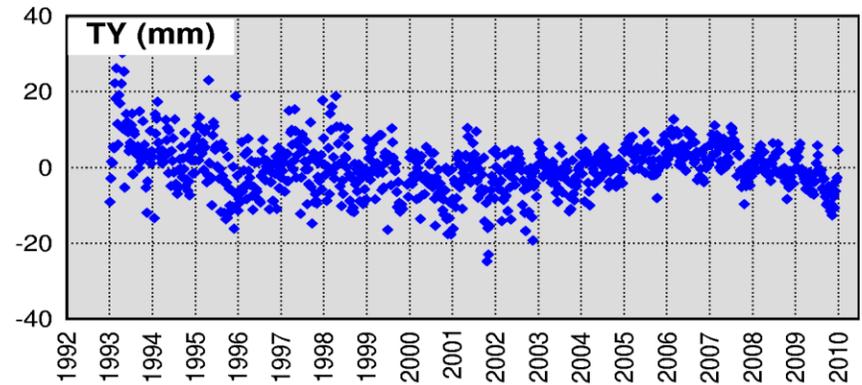
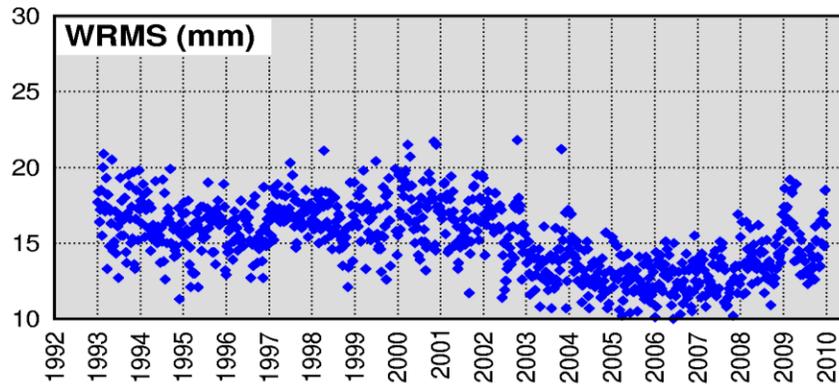
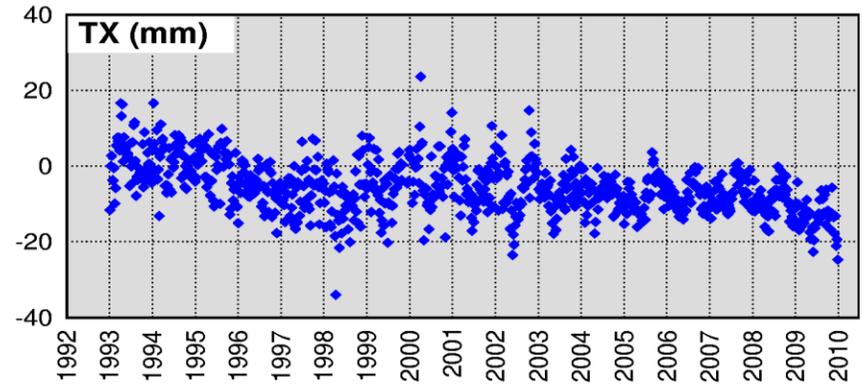
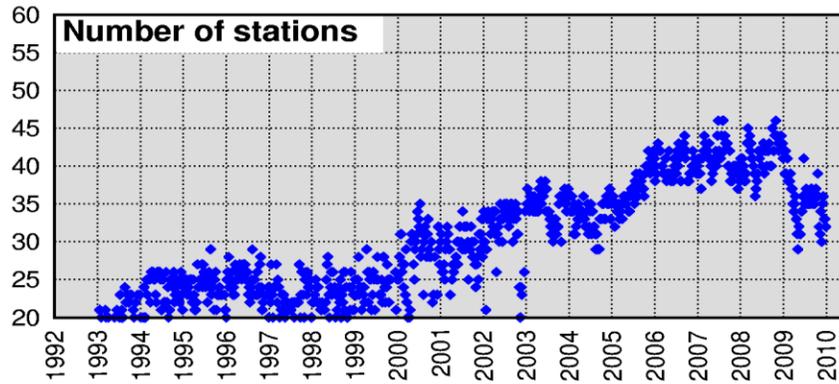
Per week comparison to ITRF2008P : ignwd08



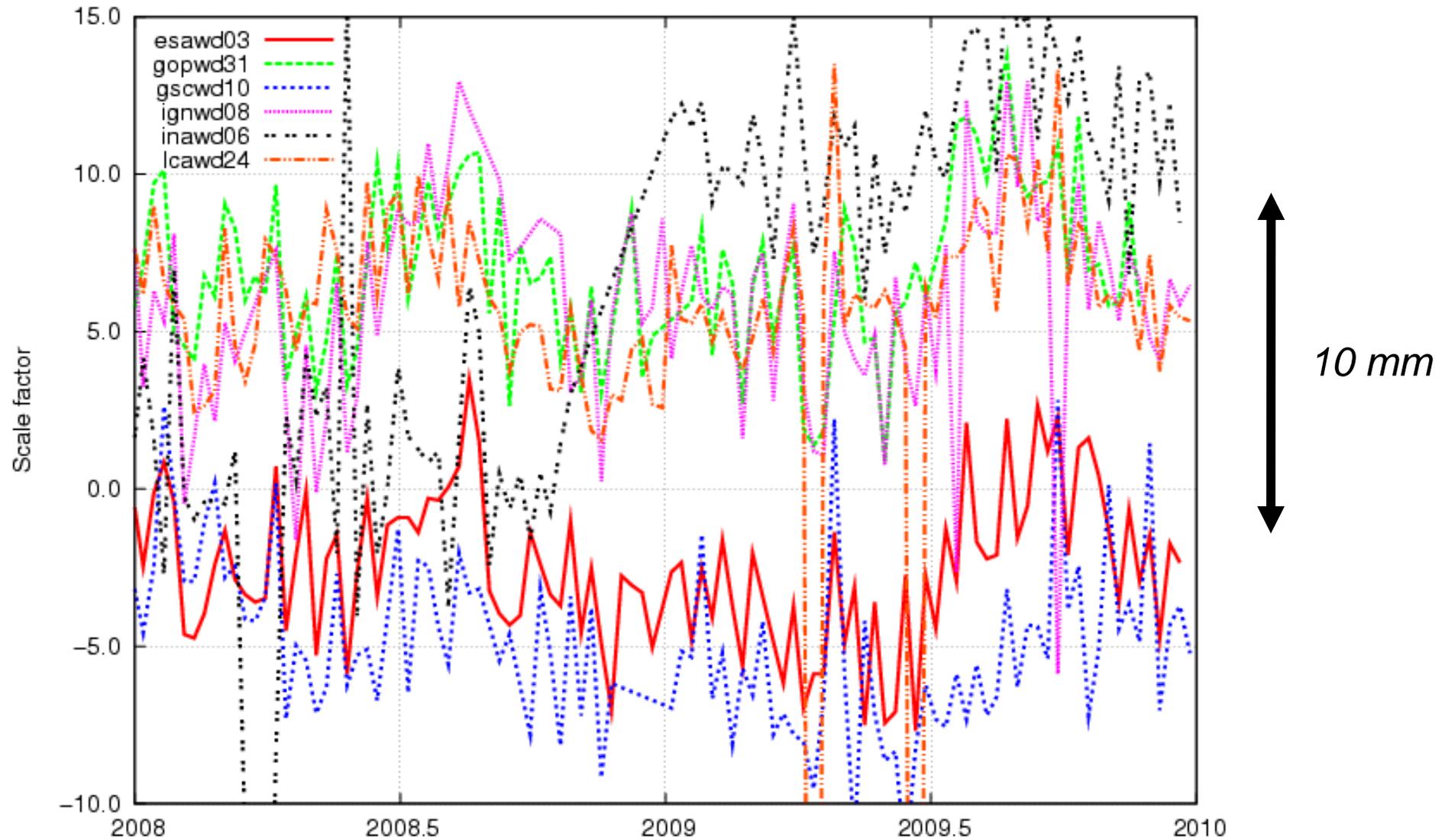
Per week comparison to ITRF2008P : inawd06



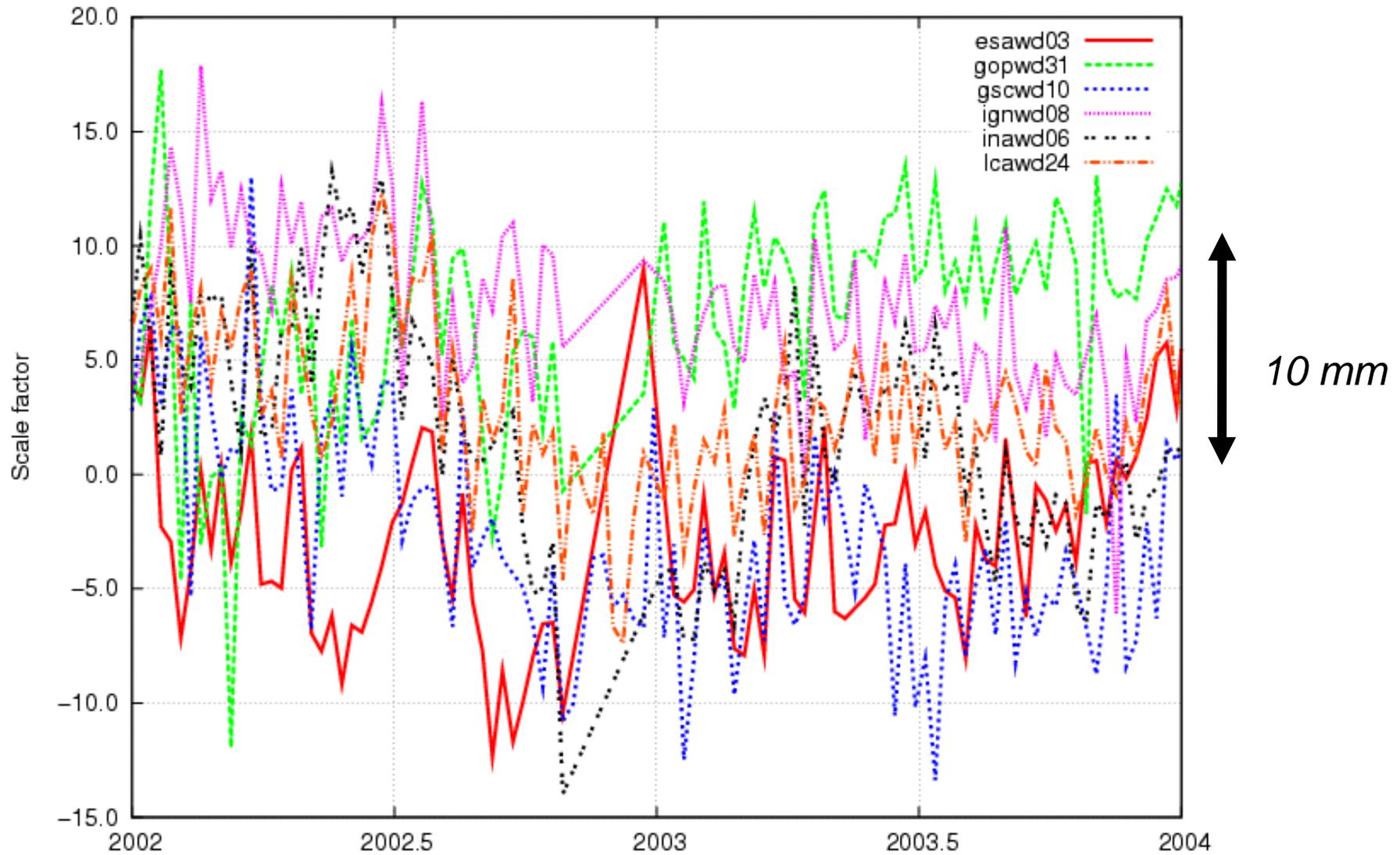
Per week comparison to ITRF2008P : Ica wd24



Weekly sol. wrt ITRF2008P : 2008-2009 scales



Weekly sol. wrt ITRF2008P : 2002-2004 scales

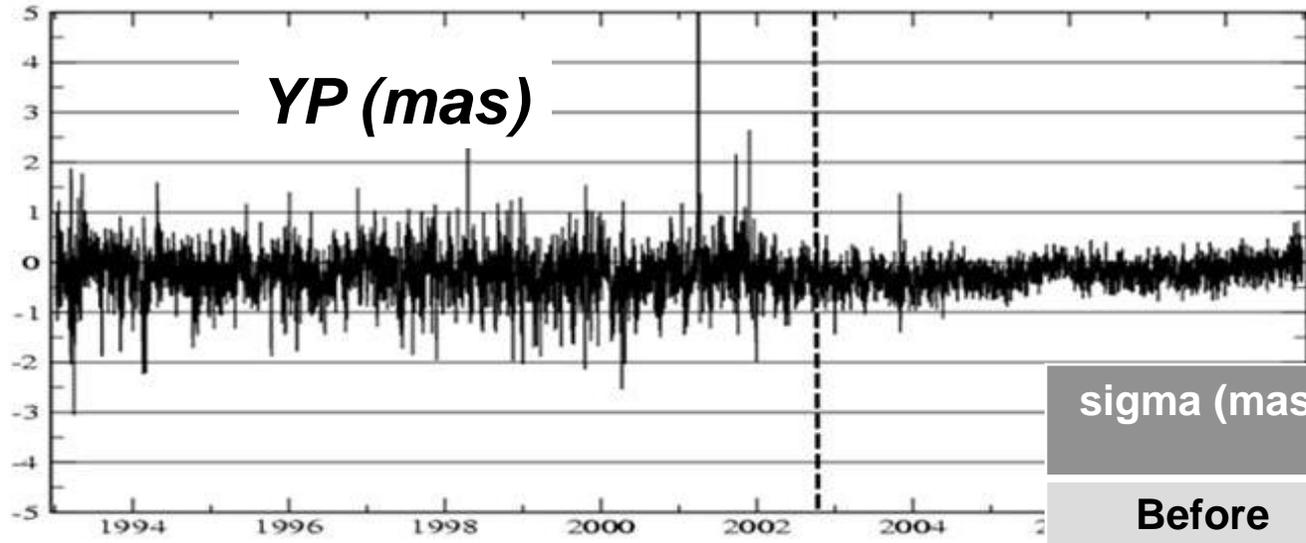


EOPs analysis

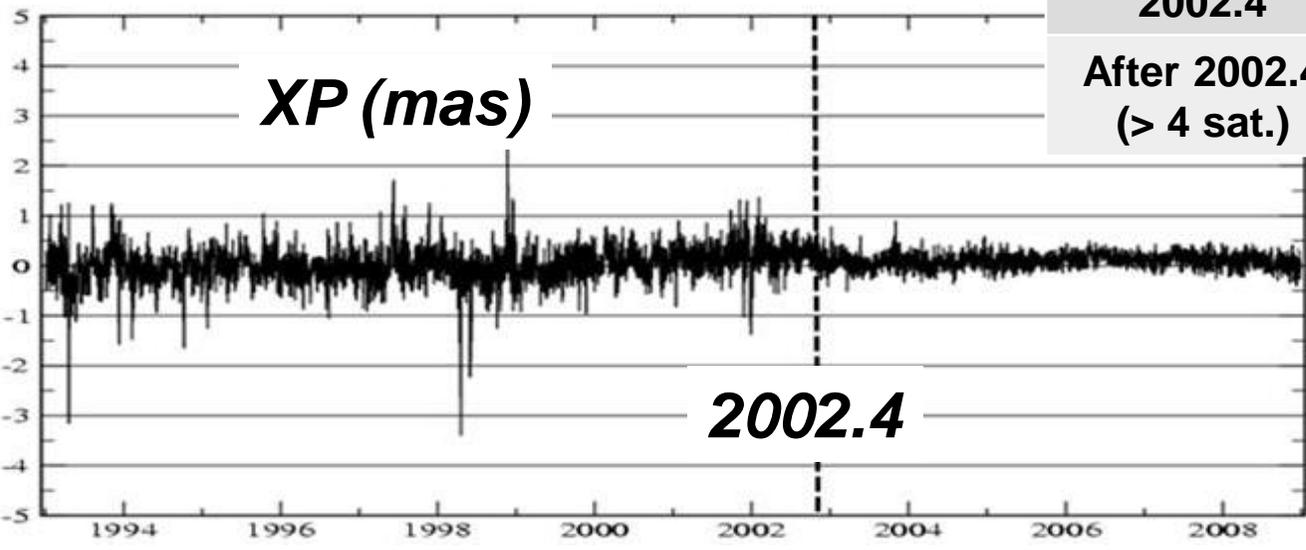
- IDS-3 combined solutions
- Per AC analysis

AC	EOPs
GOP	<i>motion, rate</i>
INA	<i>motion rate (constrained) LOD, UT1</i>
LCA	<i>Motion</i>
IGN	<i>motion rate (constrained) LOD rate, UT1</i>
GAU	<i>motion UT1</i>
ESA	<i>motion, rate LOD</i>
GSC	<i>Motion</i>

EOPs : IDS-3 (wrt IERS05-C04)



sigma (mas)	XP	YP
Before 2002.4	0.32	0.43
After 2002.4 (> 4 sat.)	0.16	0.26



Origin of lower precision on YP?

EOPs per AC (wrt IERS05-C04)

Preliminary stat.

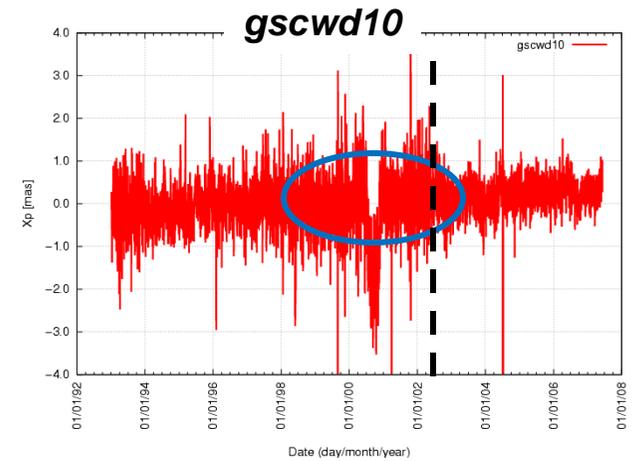
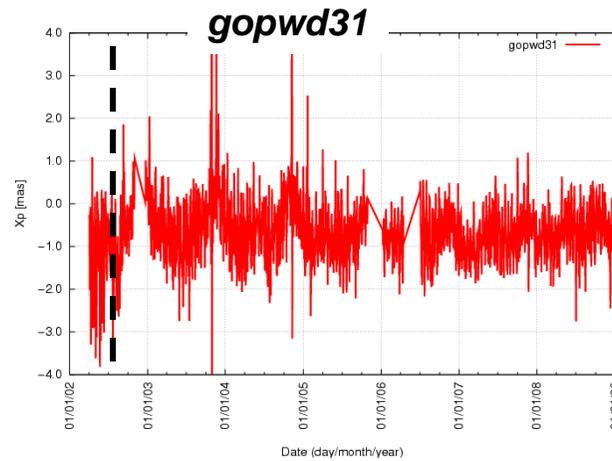
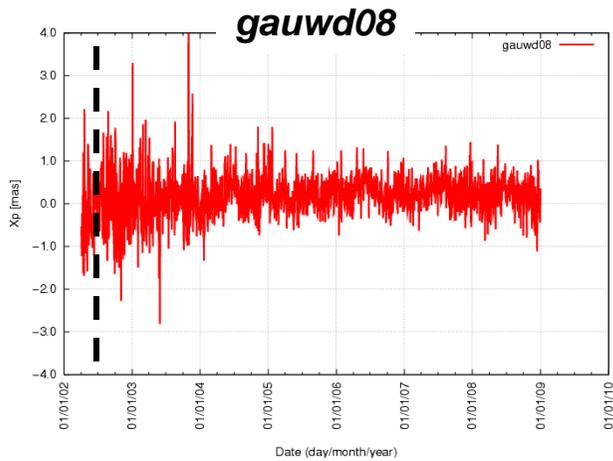
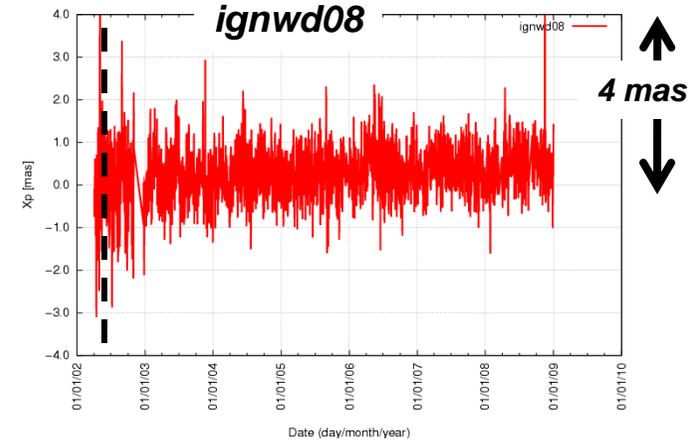
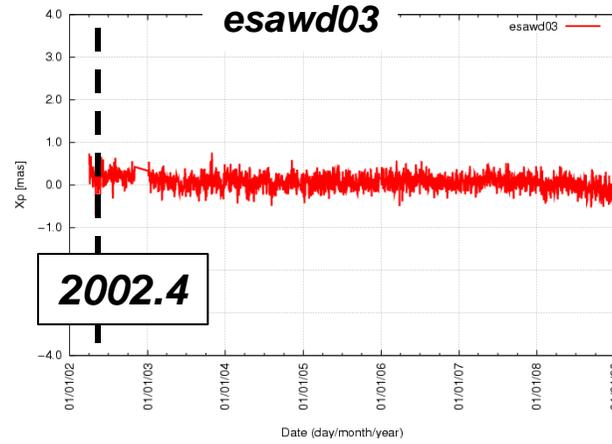
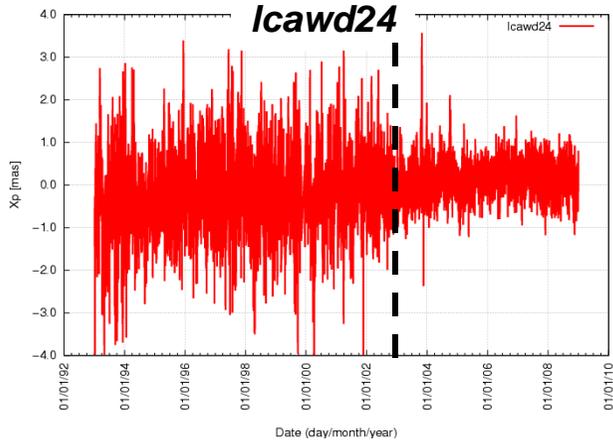
YP (mas)

sigma (mas)	lcawd24	ignwd08	esawd03	gopwd31	gscwd10	gauwd08	IDS-3
Before 2002.4	0.88	1.30	0.60	2.09	0.73	-	(0.43)
After 2002.4 (> 4 sat.)	0.42	0.56	0.32	0.95	0.70	0.70	<u>(0.26)</u>

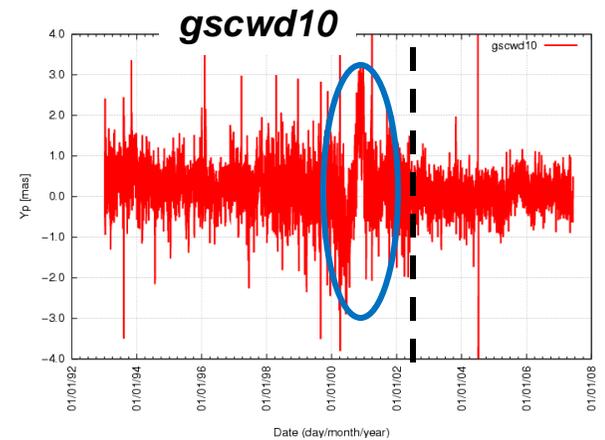
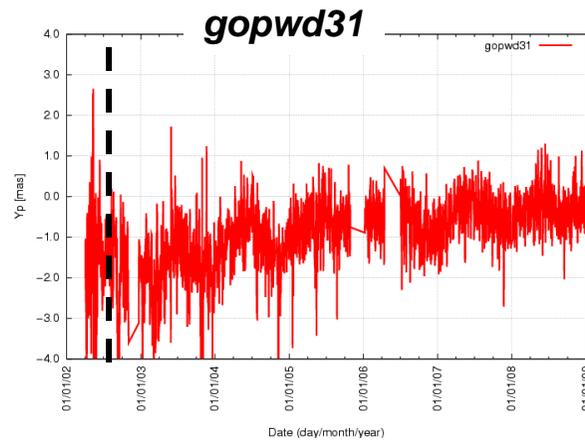
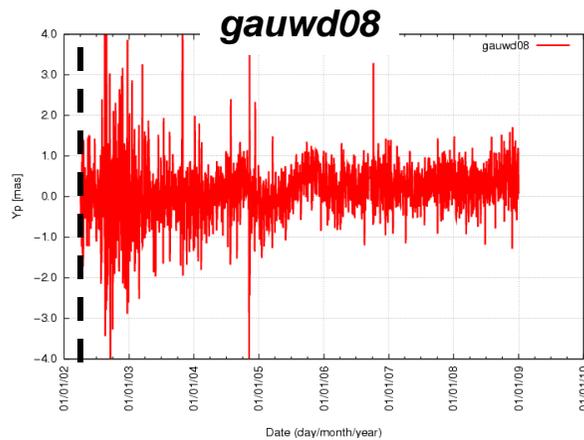
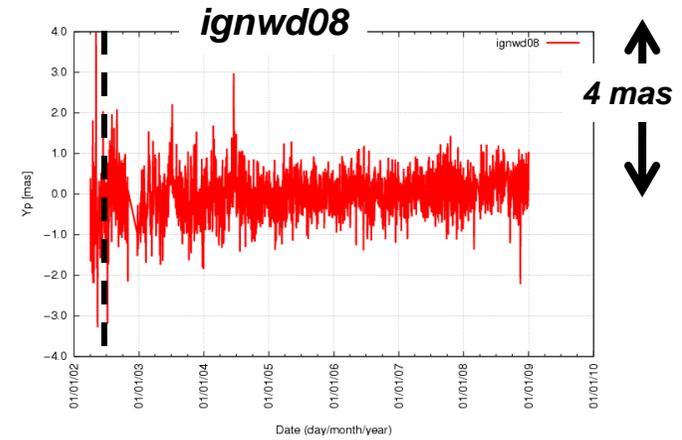
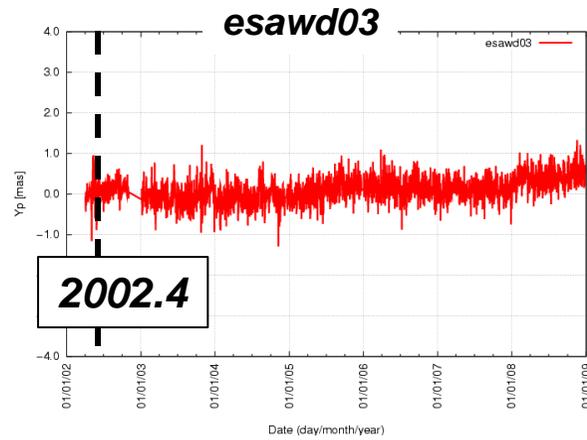
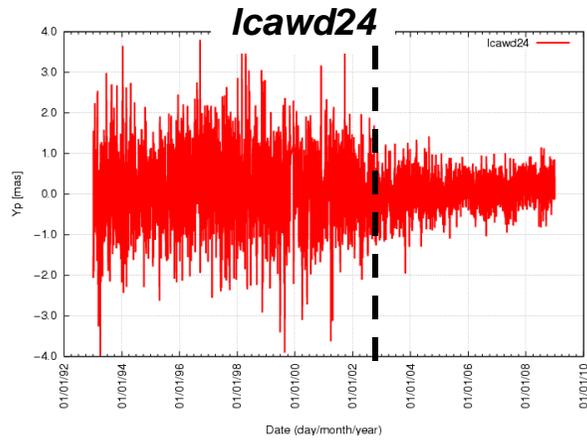
XP (mas)

sigma (mas)	lcawd24	ignwd08	esawd03	gopwd31	gscwd10	gauwd08	IDS-3
Before 2002.4	0.99	1.27	0.40	1.8	0.67	-	(0.32)
After 2002.4 (> 4 sat.)	0.50	0.64	0.18	0.72	0.62	0.48	<u>(0.16)</u>

XP wrt IERS05-C04 (analysis to be continued)



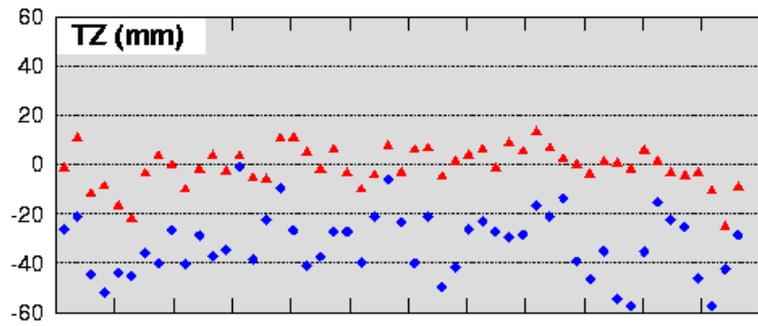
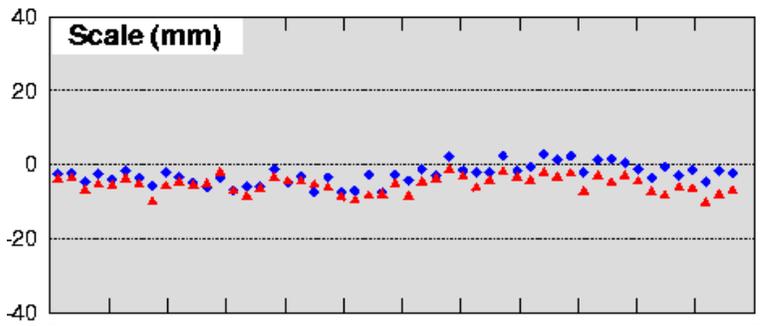
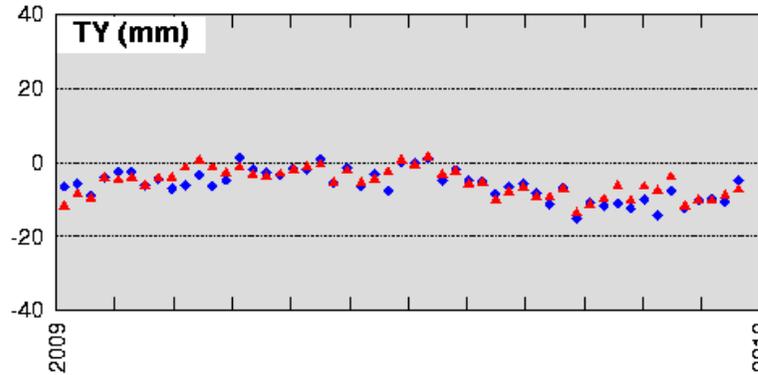
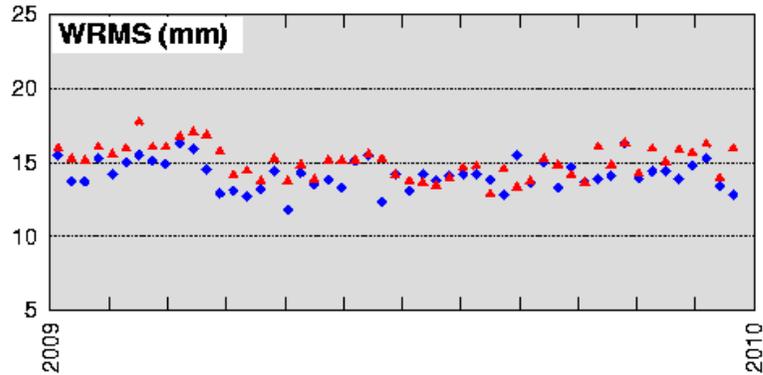
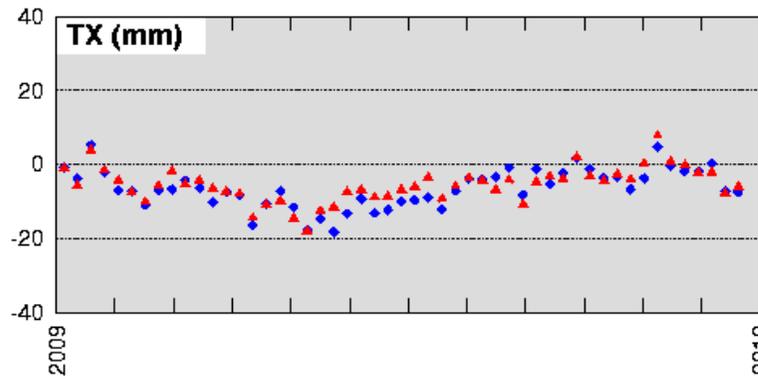
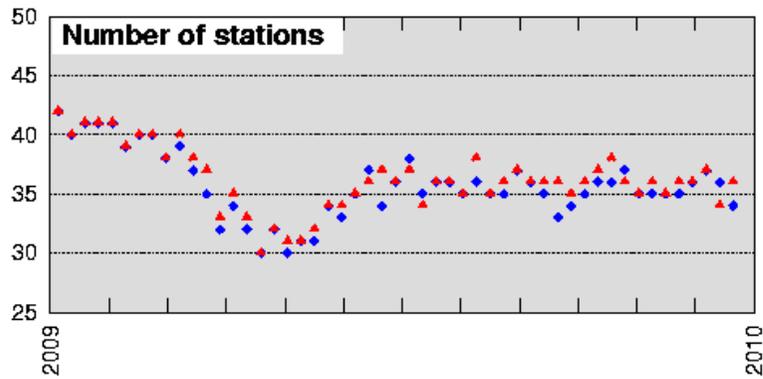
YP wrt IERS05-C04 (analysis to be continued)



New SINEX including Jason-2

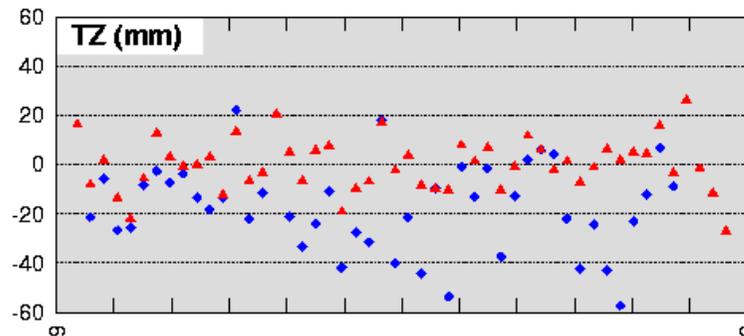
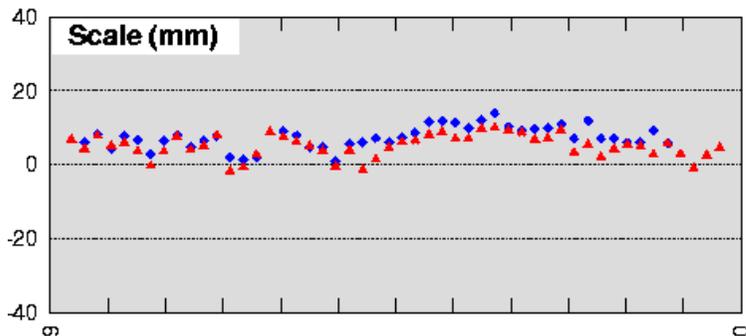
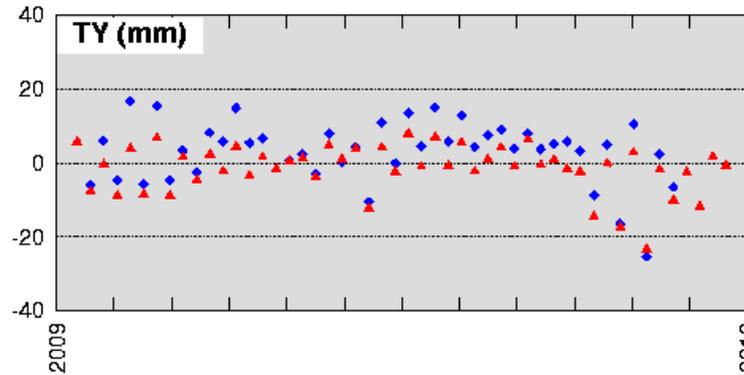
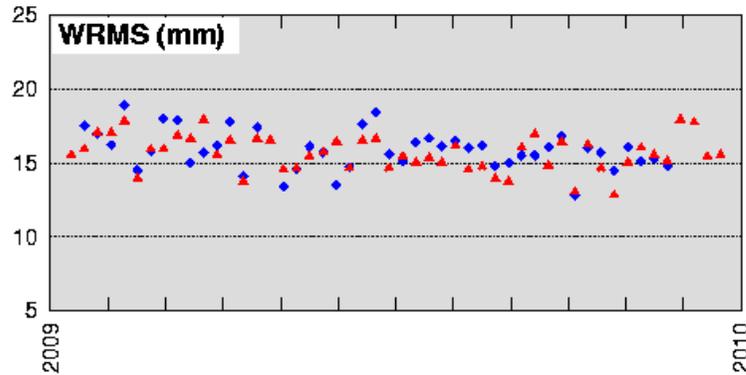
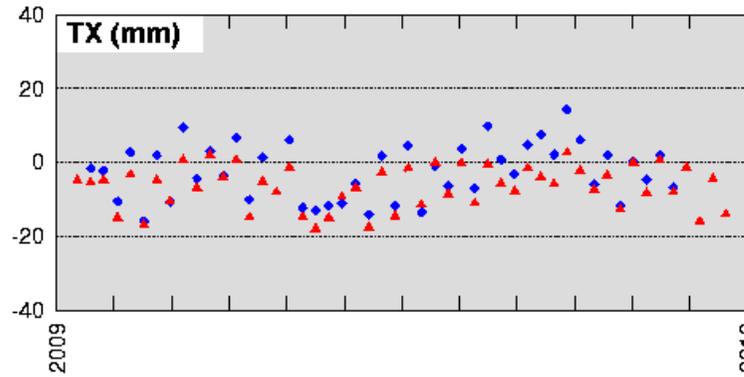
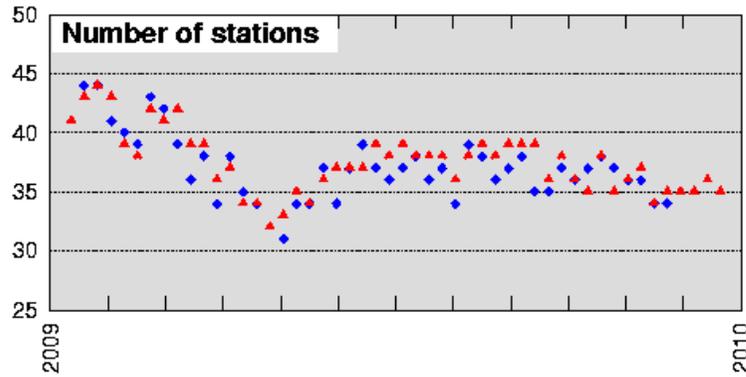
- **Contributing ACs : esa, gop, lca, gsc**
- **Period : 2009**
- **Satellites :**
 - **SPOTs series, ENVISAT+ JASON-2**
- **Per week comparison to ITRF2008P**

ITRF2008P comparisons: ESA 03(without J2) & ESA 04(with J2)



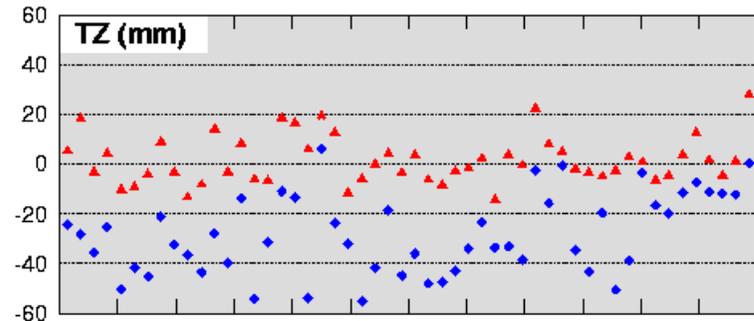
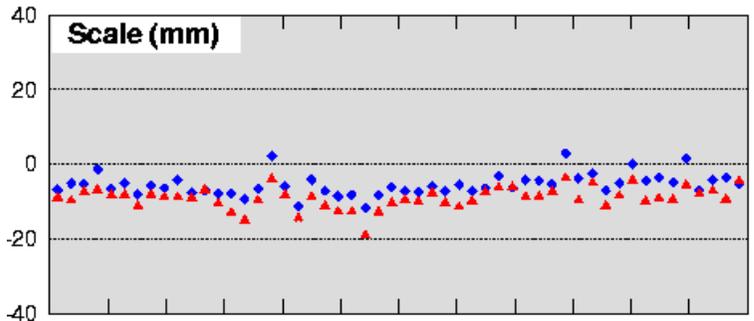
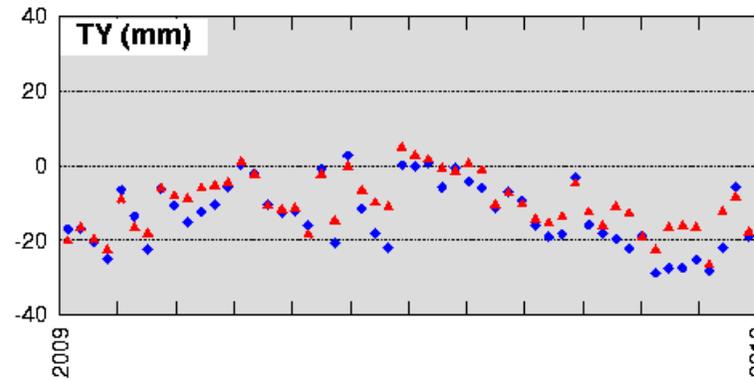
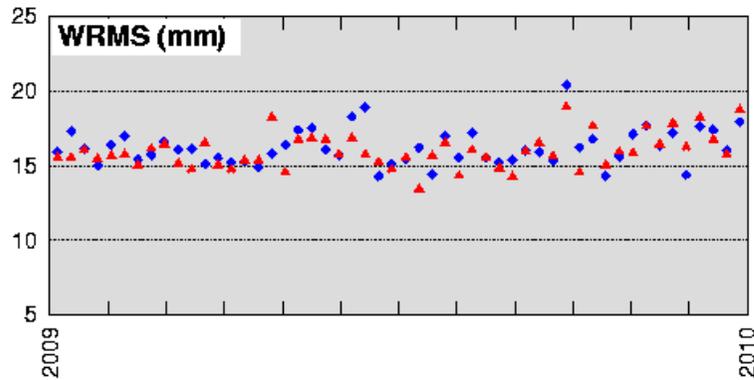
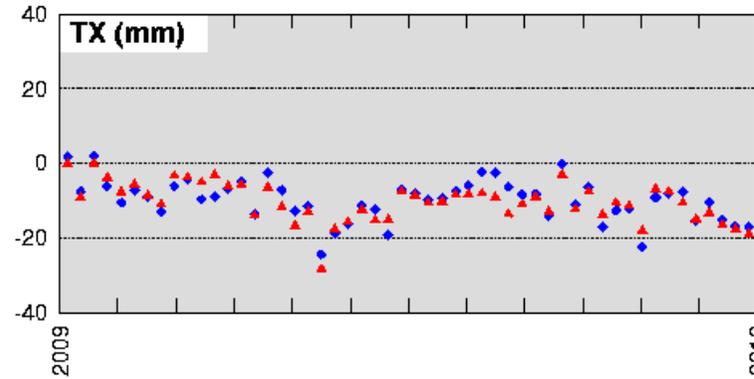
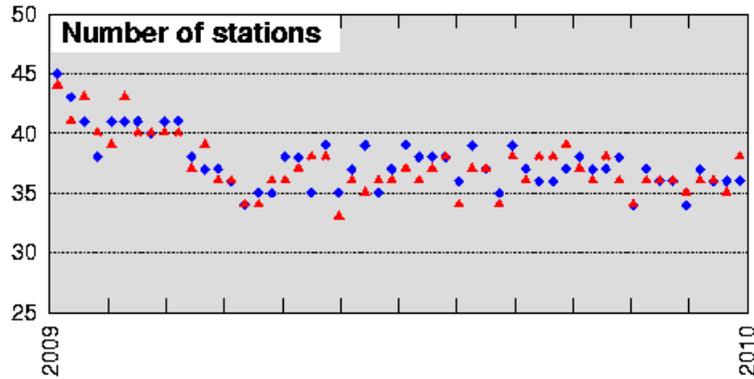
⇒ *higher stability & better centering of TZ*

ITRF2008P comparisons: GOP 31 (without J2) & GOP 32 (with J2)



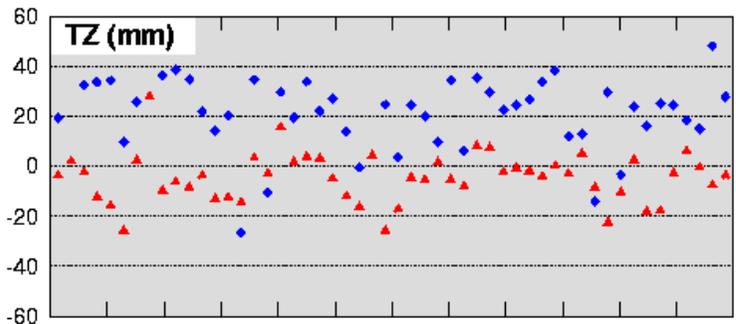
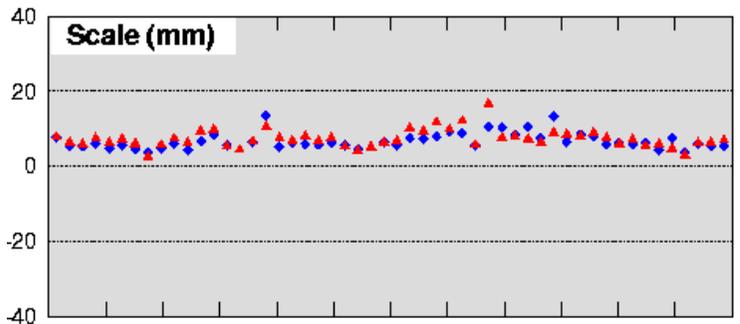
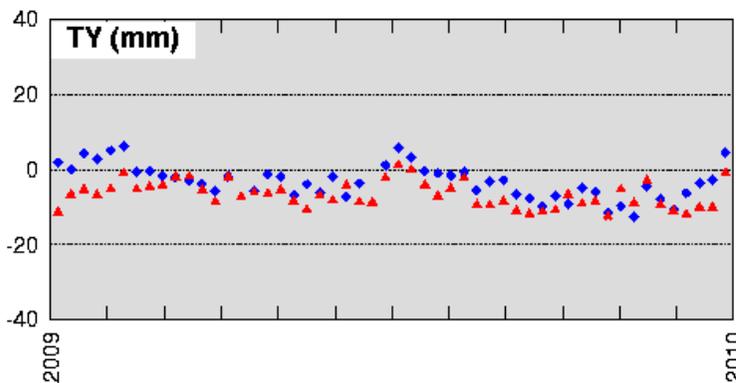
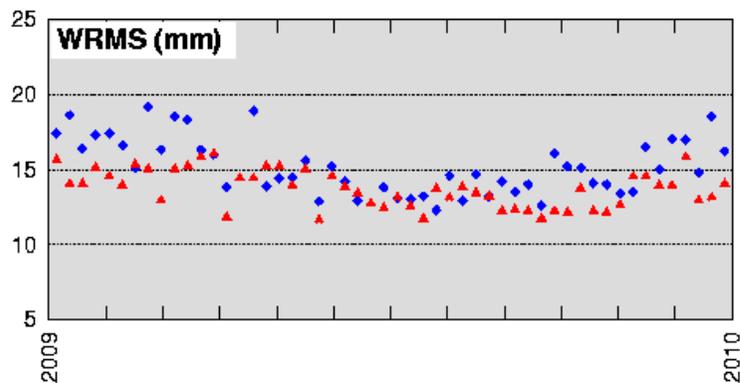
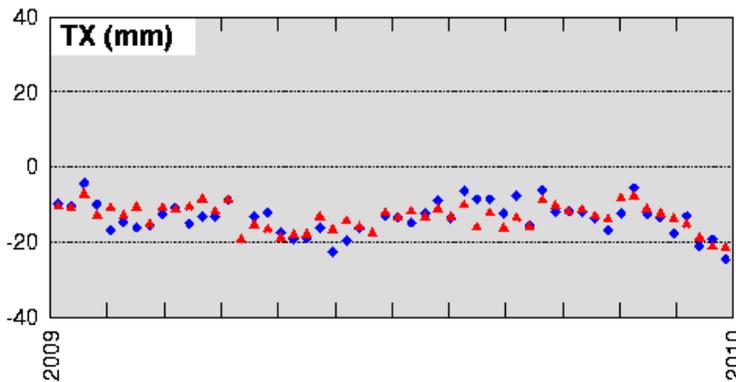
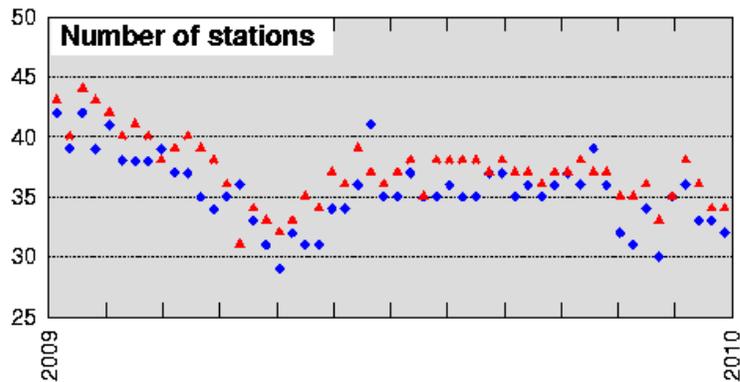
⇒ *higher stability & better centering of TZ*

ITRF2008P comparisons: GSC 10 (without J2) & GSC 11 (with J2)



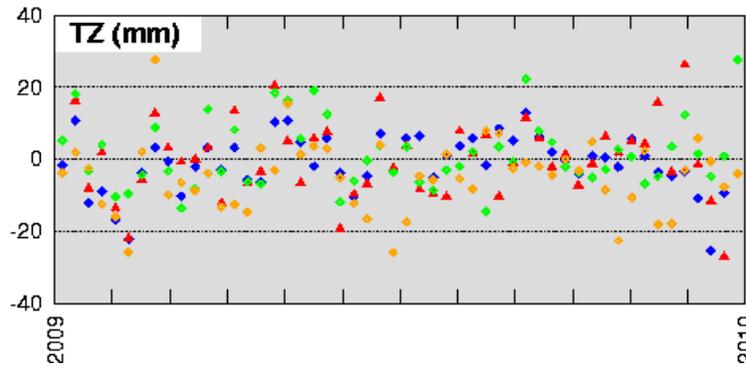
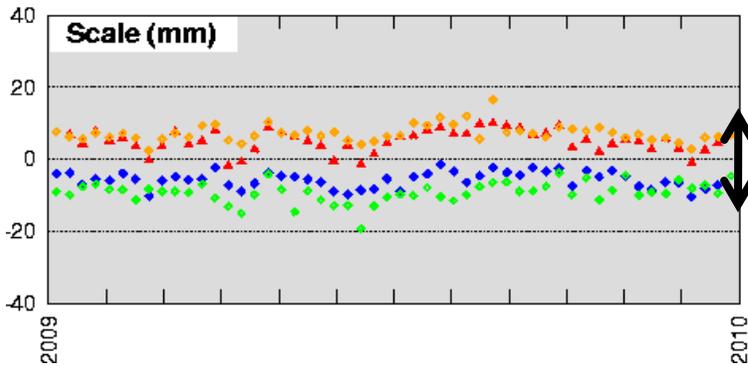
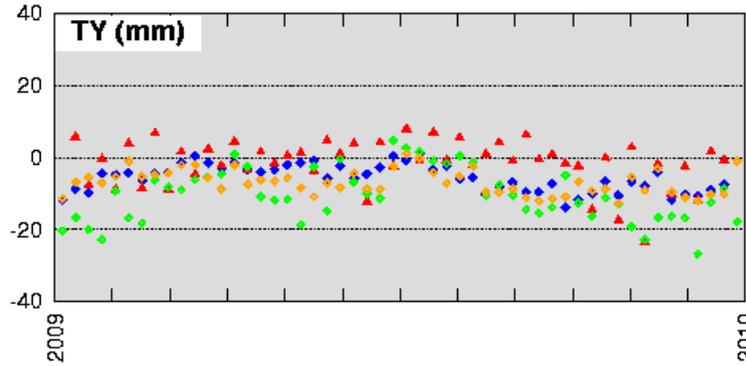
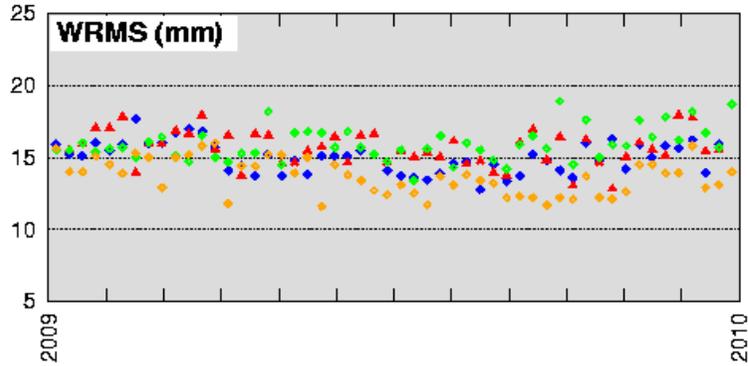
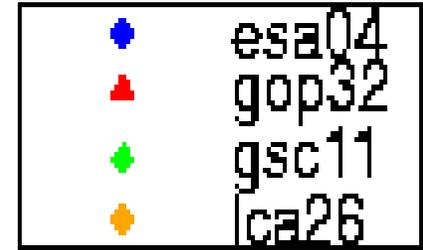
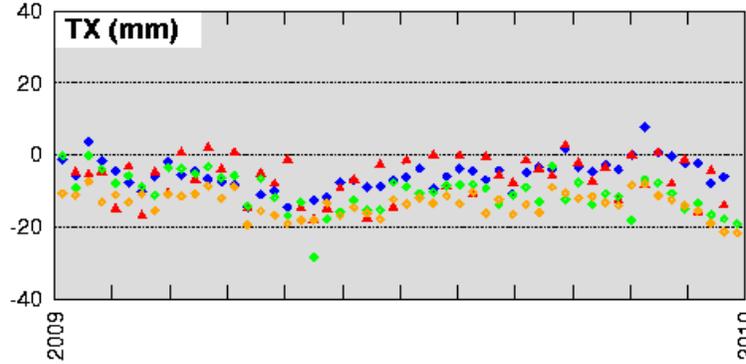
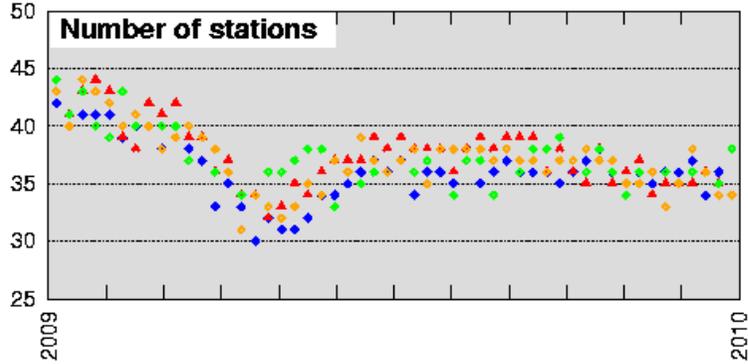
⇒ *higher stability & better centering of TZ*

ITRF2008P comparisons: LCA 24 (without J2) and LCA 26 (with J2)



⇒ *better centering of TZ*

Preliminary results with Jason-2 (ESA/GOP/GSC/LCA)



NEAR FUTURE

- **Remaining open points**
 - 1994 & 2002-2004 high residuals, scales after 2002
 - some EOPs inconsistencies
- **Specific analysis combinations**
 - Jason-2, Cryosat-2
 - per satellite (EOPs...)
 - Periodic signals (TRF param., wrms, per station)
 - ...
- **Regular continuous combination**
 - Every 3 months, 3 months delay (if compatible with ACs prod.)
 - Online summary report and products
- **+ NCL**