



EPN ACC activities: combination of reprocessed solutions

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	AS0	GO0	GO1	GO4	IG0	LP0	LP1	MU0	MU1	MU4
SW	GIPSY 6.2	BSW 5.2			BSW 5.2	BSW 5.2		GAMIT 10.5		
GNSS	G	G			G + R (since 1147)	G + R (since 1222)		G		
SOLUTION TYPE	PPP	NET			NET	NET		NET		
STATIONS	ALL EPN+ IGS CORE	ALL EPN			PART EPN	PART EPN + IGS(8)		ALL EPN		
ORBITS	JPL R2 (prelim.)	CODE R2			CODE R2	CODE R2		CODE R2		
ANTENNAS	IGS08	IGS08 + IND.			IGS08 + IND.	IGS08	IGS08 + IND.	IGS08	IGS08 + IND.	IGS08
IRS	2010	2010			2010	2010		2010		
GRAVITY	EGM08	EGM08			EGM08	EGM08		EGM08		
TROPOSPHERE Estimated Param	ZTD (5min)	ZTD (1h)			ZTD (1h)	ZTD (1h)		ZTD (1h)	ZTD (1h)	
	GRAD (5min)	GRAD (6h)			GRAD (6h)	GRAD (24h)		GRAD at 10° (24h)	GRAD in zenith (24h)	
MAPPING FUNCTION	VMF1	GMF	VMF1	VMF1	GMF	GMF	VMF	VMF1		
ZTD/GRAD time stamp	hh:30 24 estimates/day	hh:00 and hh:30 (hh:30 interpolated)24 estimates/day			hh:30 24 estimates/day	hh:00 and hh:30 24+(24) estimates/day		hh:30 24 estimates/day		
IONOSPHERE	(HOI included)	CODE (HOI included)			CODE (HOI included)	CODE (HOI included)		CODE IONEX + IGRF11 (HOI included)		
REF. FRAME	IGb08	IGb08			IGb08	IGb08		IGb08		
OCEAN TIDES	FES2004	FES2004			FES2004	FES2004		FES2004		
ATM. TID. LOAD.	NO	NO			YES	YES	YES	YES		
ATM. NONTID. LOAD.	NO	NO	NO	YES	NO	NO	YES	YES	NO	NO
ELEV. CUTOFF	3	3			3	3		5		
Delivered SNX/TRO Files	0835-1772	836-1824			835-1816	835-1772		835-1771		

Processing Options for EPN-Repro2 and delivered products (Ch. Voelksen)



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Daily solution combined from 5 individual solutions provided by ACs.

	AS0	GO4	IG0	LP1	MU2
SOFTWARE	GIPSY 6.2	BSW 5.2	BSW 5.2	BSW 5.2	GAMIT 10.5
GNSS	G	G	G + R	G + R	G
SOLUTION TYPE	PPP	NET	NET	NET	NET
STATIONS	ALL EPN	ALL EPN	PART EPN	PART EPN	ALL EPN
ORBITS	JPL R2	CODE R2	CODE R2	CODE R2	CODE R2
ANTENNAS	IGS08	IGS08 + IND.	IGS08 + IND.	IGS08 + IND.	IGS08 + IND.
ATM. TIDAL LOADING	-	-	+	+	+
ATM. NONTIDAL LOADING	-	+	-	+	+
ELEVATION CUTOFF	3	3	3	3	5
SOLUTION	COV	NEQ	NEQ	NEQ	COV
TIME SPAN	834-1824	836-1824	835-1816	835-1772	834-1824



Combination:

- Combination on the NEQ level.
- Bernese GNSS software 5.2 (ADDNEQ).
- Reference frame: IGB08
- Reference station elimination criterion: 10/10/25 millimeters (N/E/U).
- Station elimination criterion:
 - 1st iteration: 25/25/40 millimeters,
 - 2nd iteration: 8/8/16 millimeters.

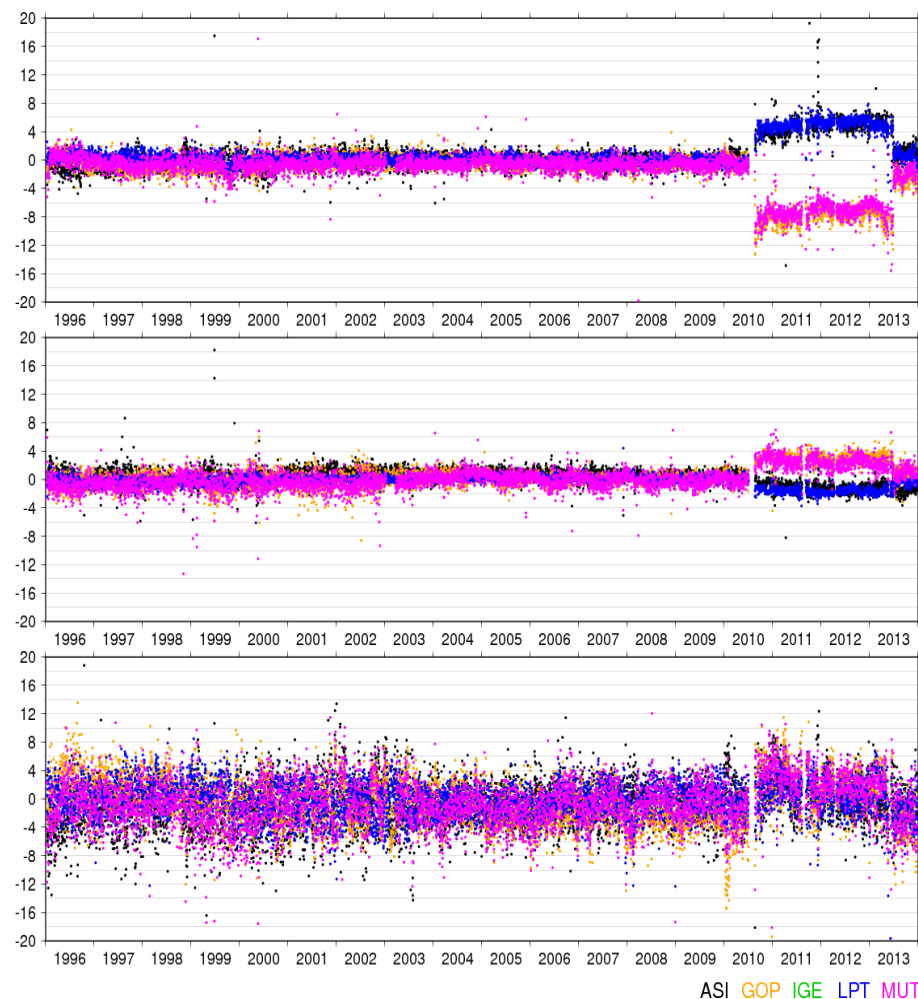
(in agreement with routine analysis)



Individual vs type antennas calibrations

- Many of the affected stations can be improved by applying antennas corrections.

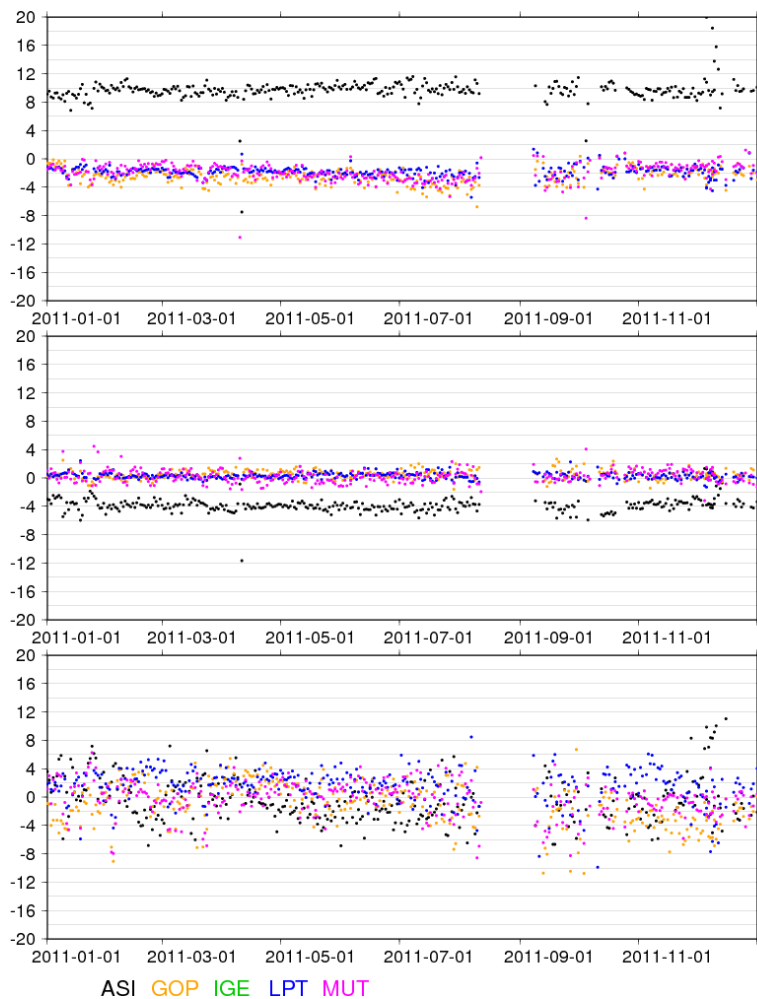
Agreement between individual solutions (METS)



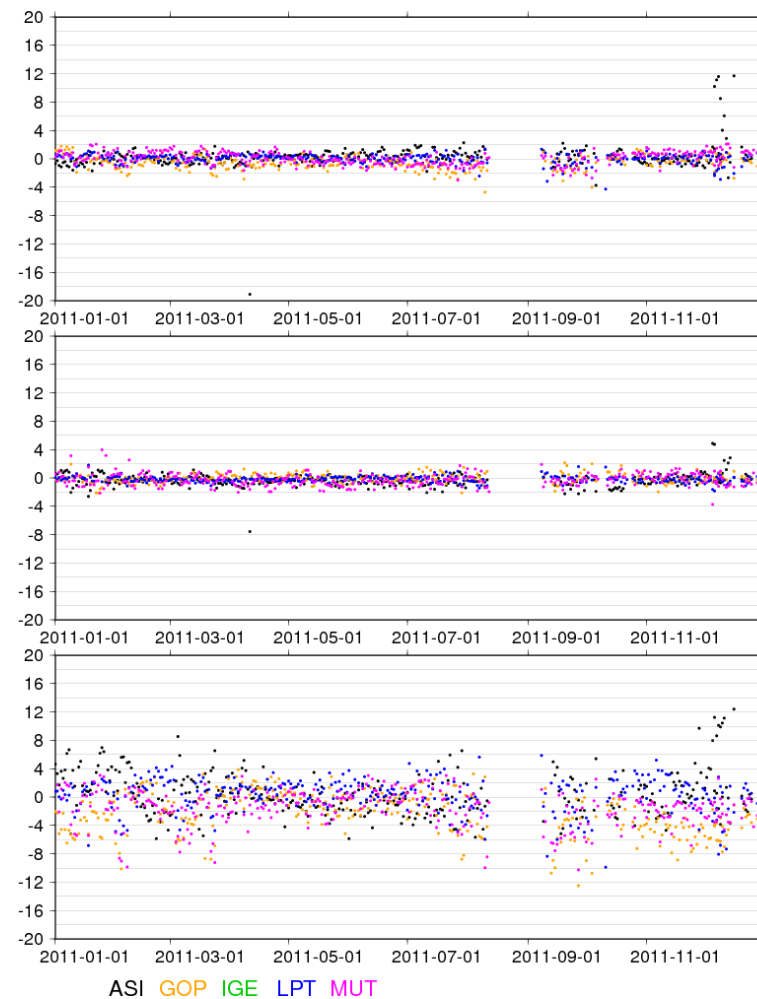


Individual vs type antennas calibrations

Agreement between individual solutions (METS)



Agreement between individual solutions (METS)

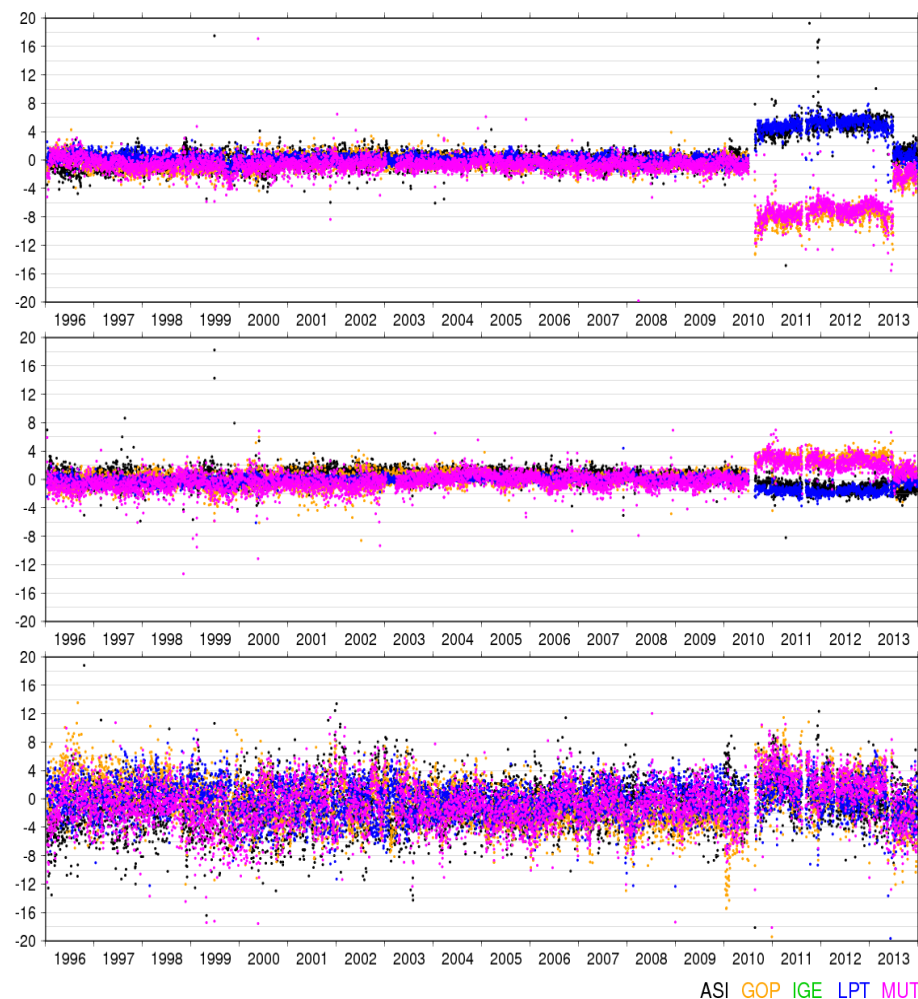




Individual vs type antennas calibrations

- Many of the affected stations can be improved by applying antennas corrections.
- However, several stations for which the improvement would be questionable.
- Relatively small discrepancies (below rejection criterion).

Agreement between individual solutions (METS)





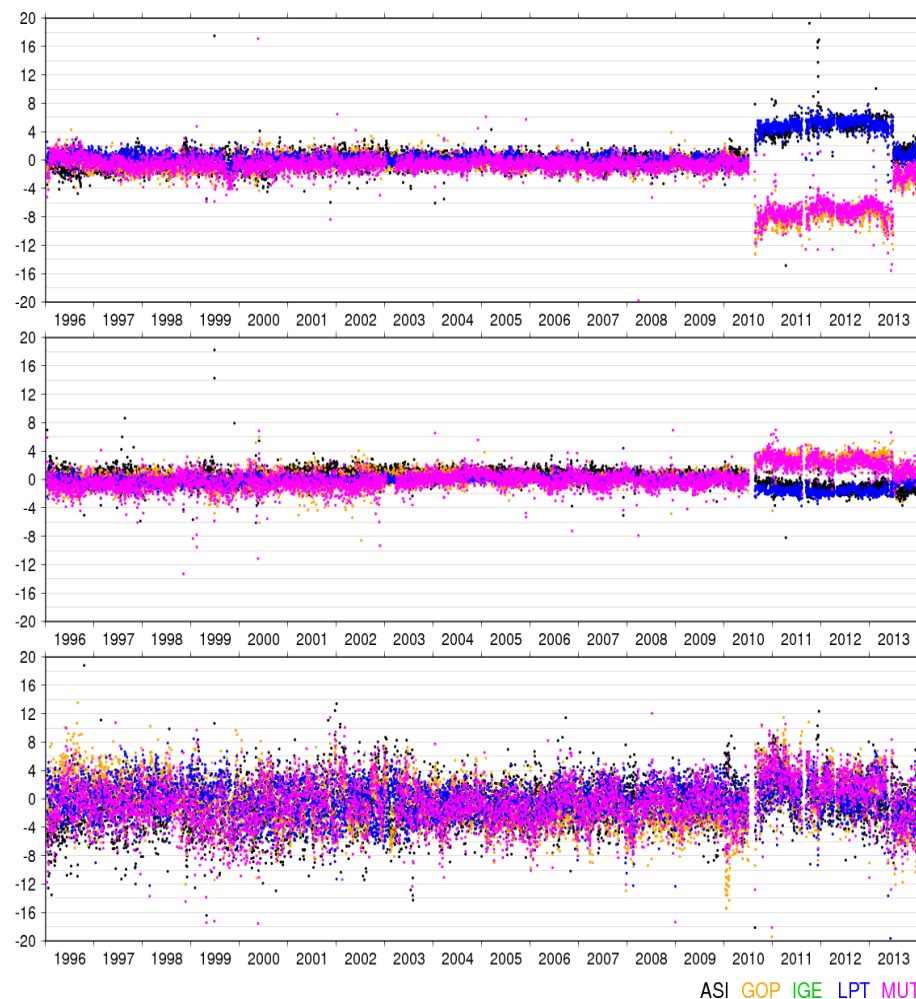
Individual vs type antennas calibrations

Comparison of biases and proposed corrections for selected stations (Up component, mm):

ALAC	1.0	2.1
ALBA	5.2	-0.1
BORJ	0.1	-1.9
EUSK	-0.7	2.1
KLOP	3.2	5.6
MELI	0.3	-2.7
REYK	-0.3	-2.4
SWKI	5.2	-1.7
TRF2*	-5.2	-6.8
WARN	1.2	-1.6
WTZR	-1.2	1.7

*Good agreement between AS0, GO4 and MU2, no consistency with LPT.

Agreement between individual solutions (METS)





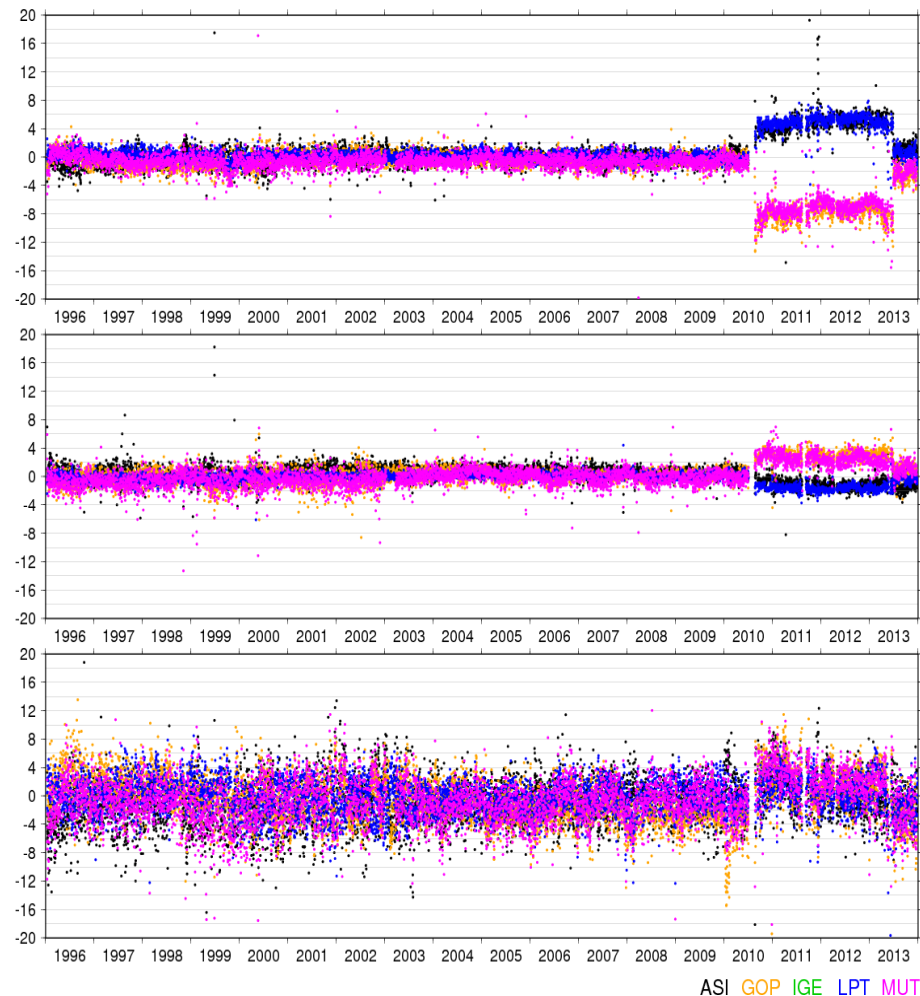
Individual vs type antennas calibrations

- Many of the affected stations can be improved by applying antennas corrections.
- However, several stations for which the improvement would be questionable.
- Relatively small discrepancies (below rejection criterion).



**NO ANTENNAS
CORRECTIONS!**

Agreement between individual solutions (METS)

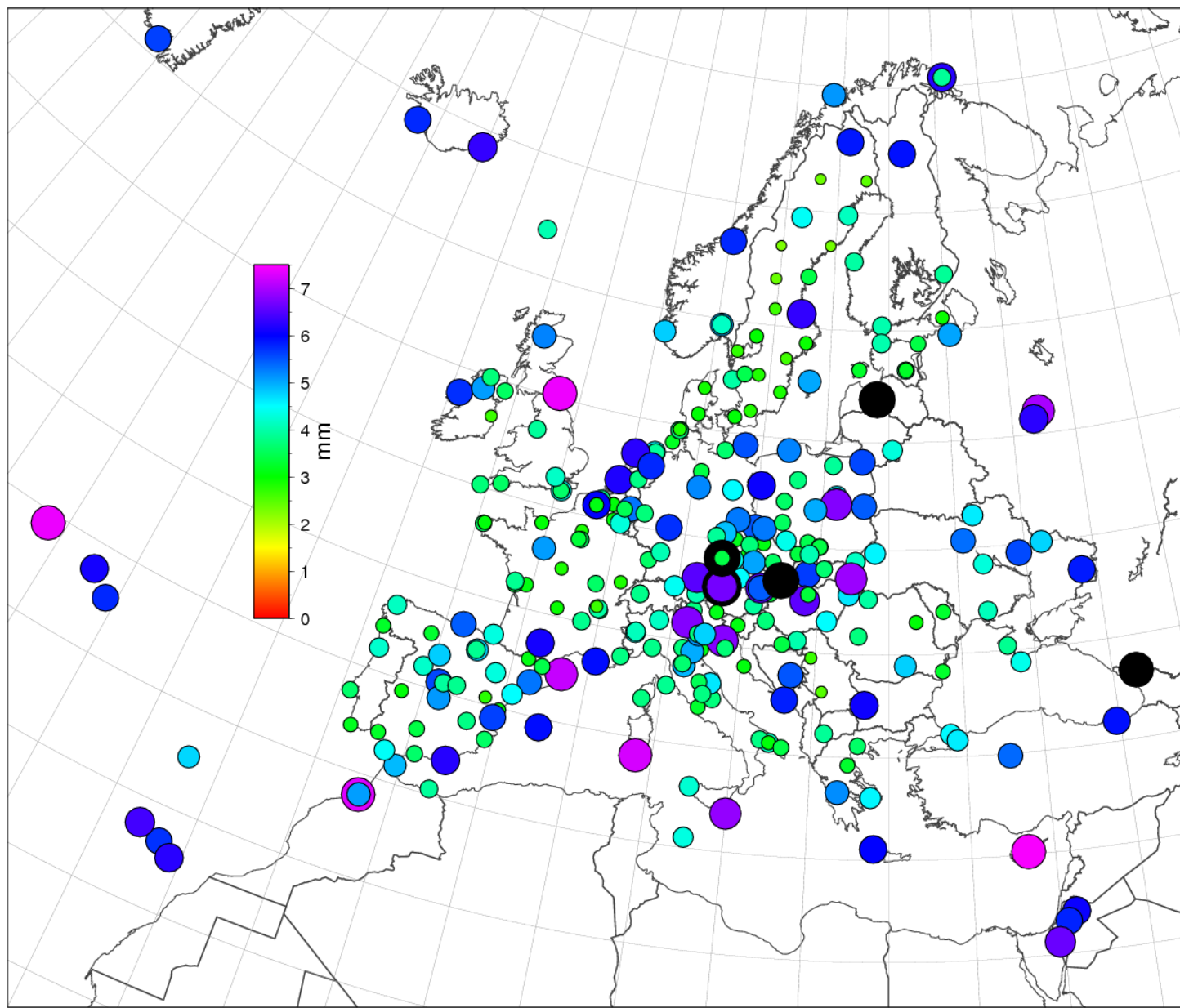


ASI GOP IGE LPT MUT



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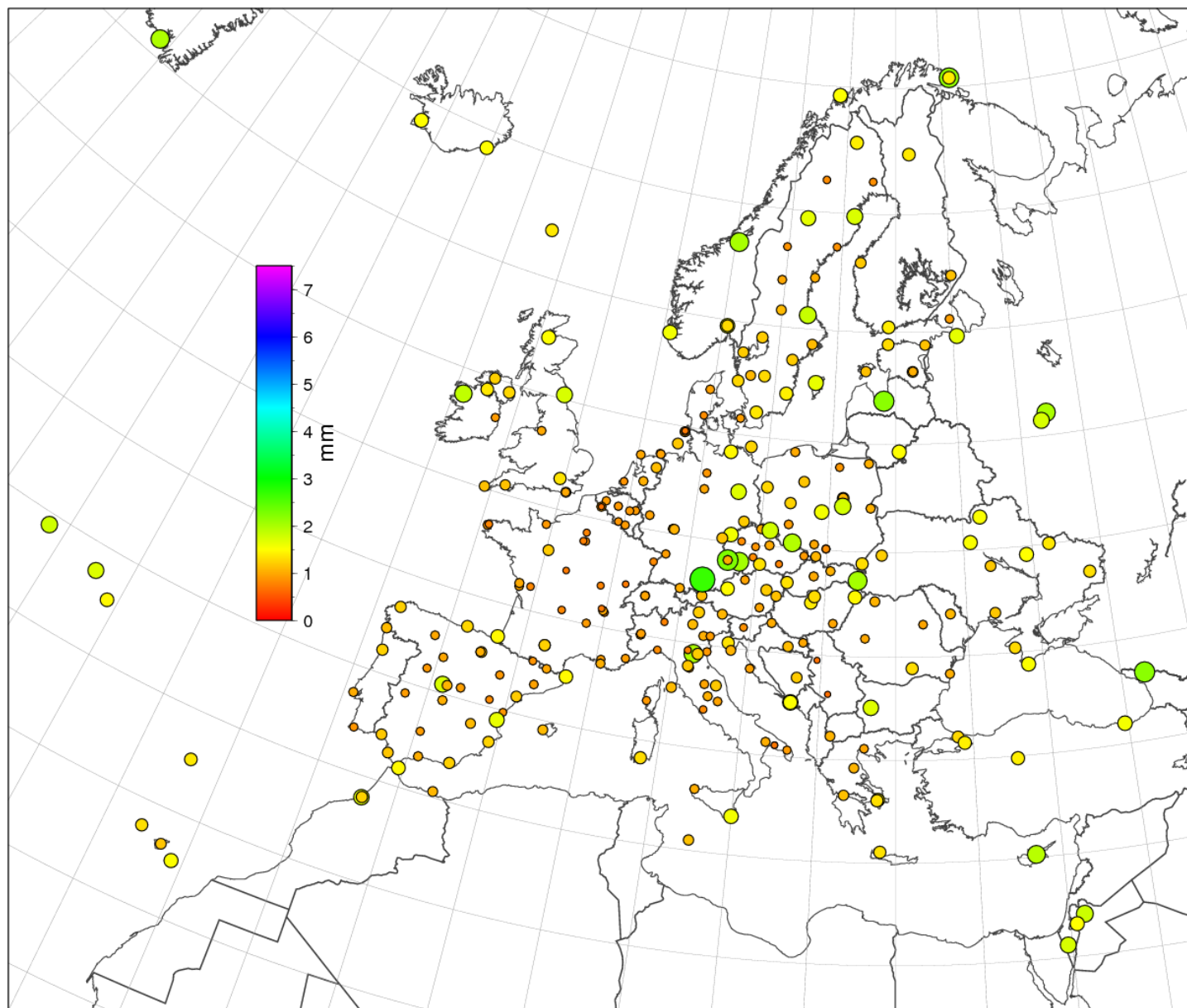


**Overall
agreement
(1996-2013)
3D**



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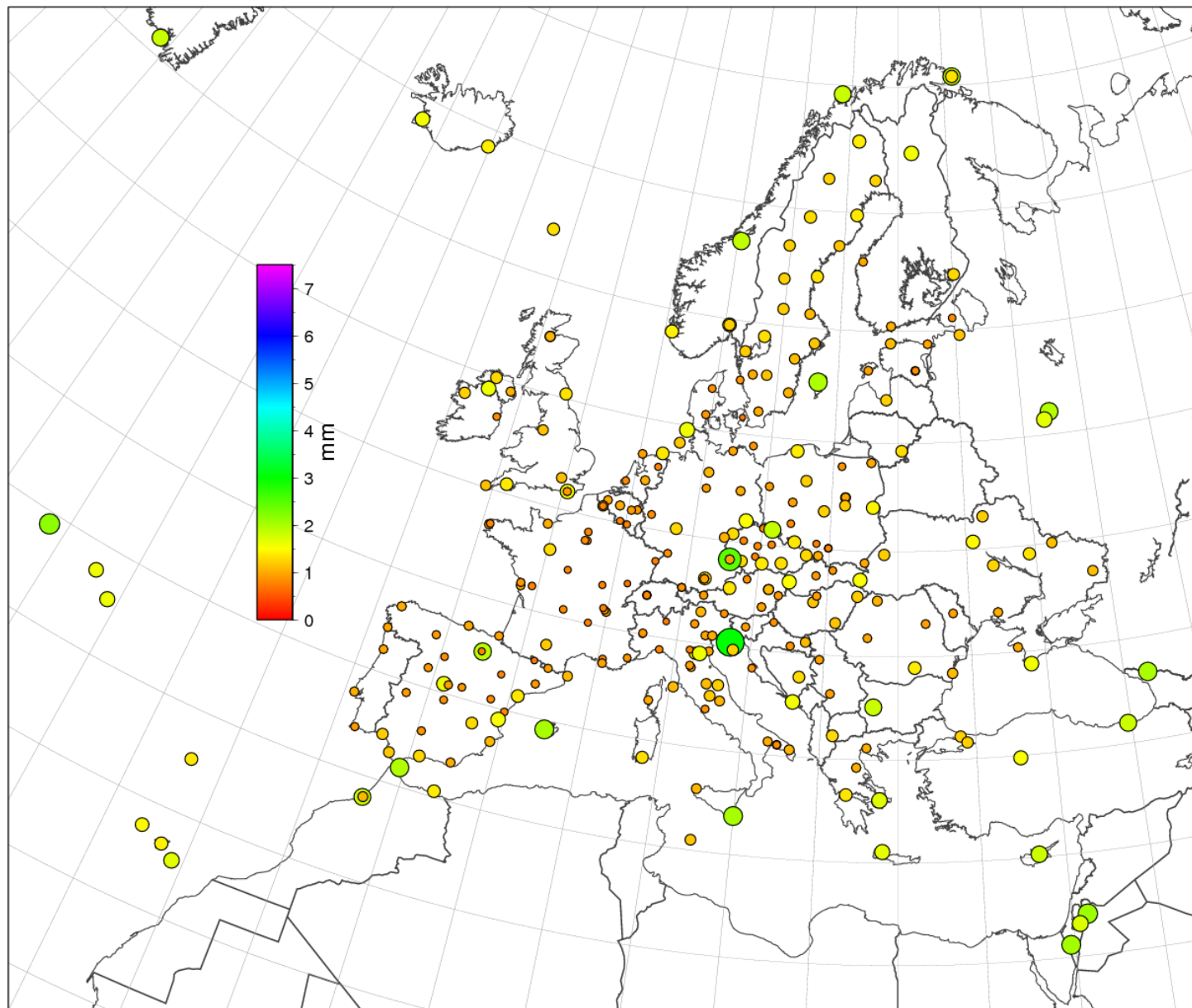


**Overall
agreement
(1996-2013)
North component**



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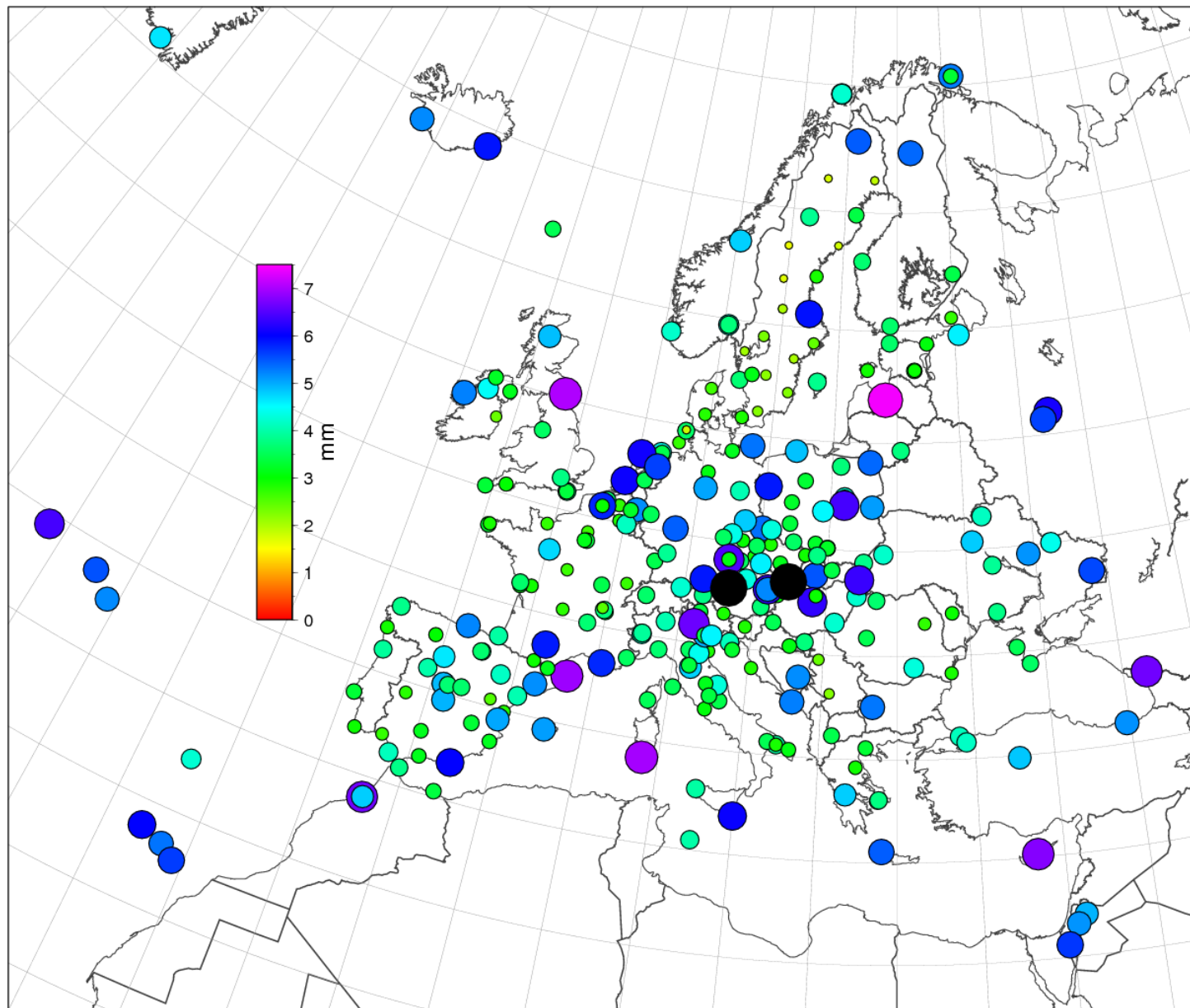


**Overall
agreement
(1996-2013)
East component**



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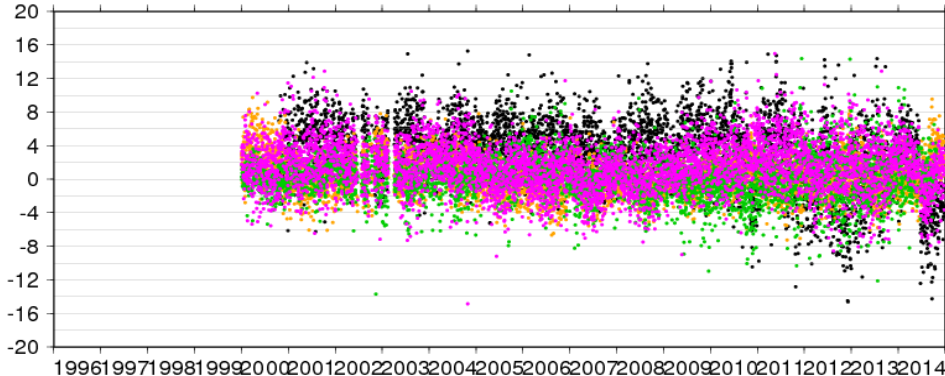
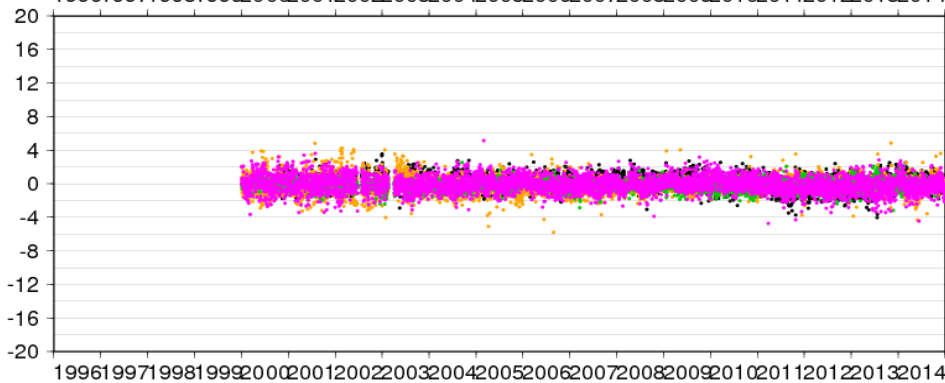
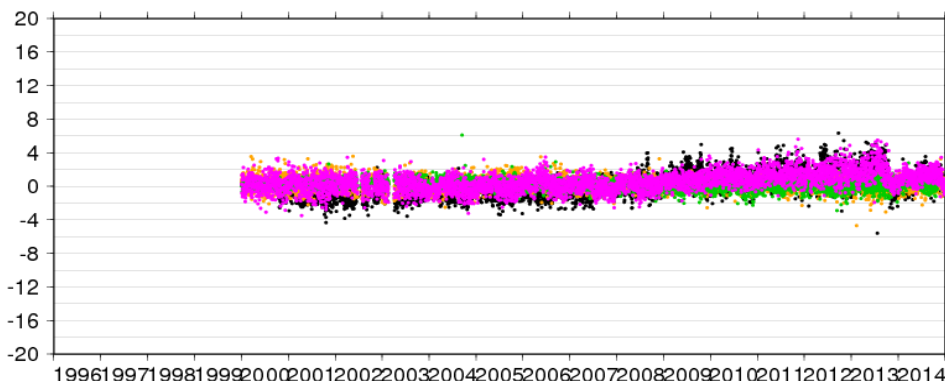
**Overall
agreement
(1996-2013)
Up component**



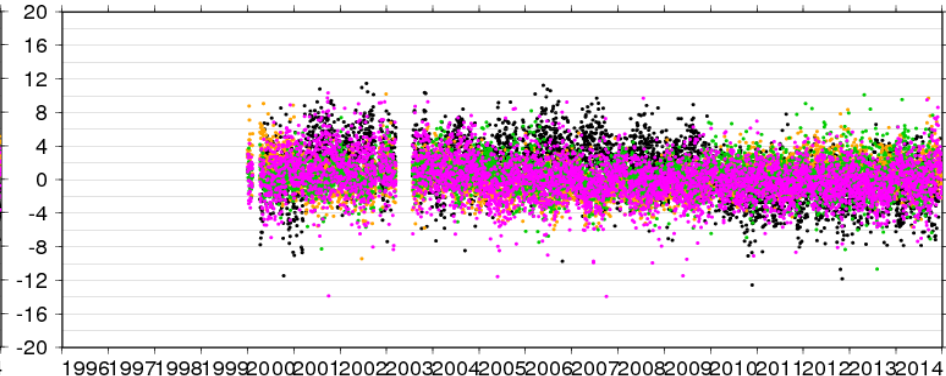
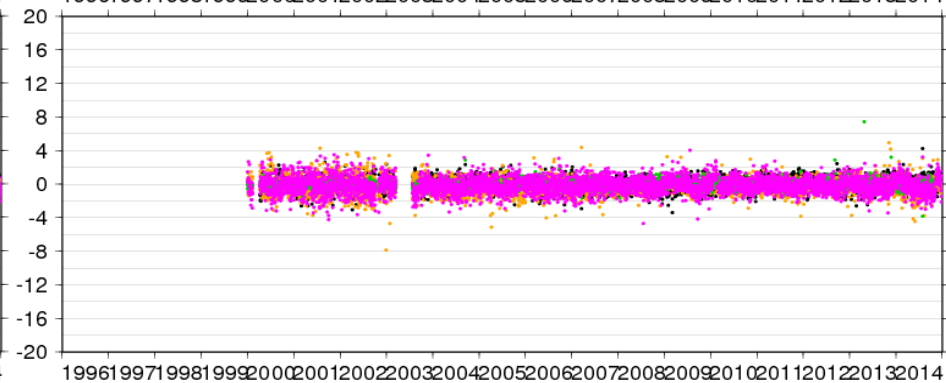
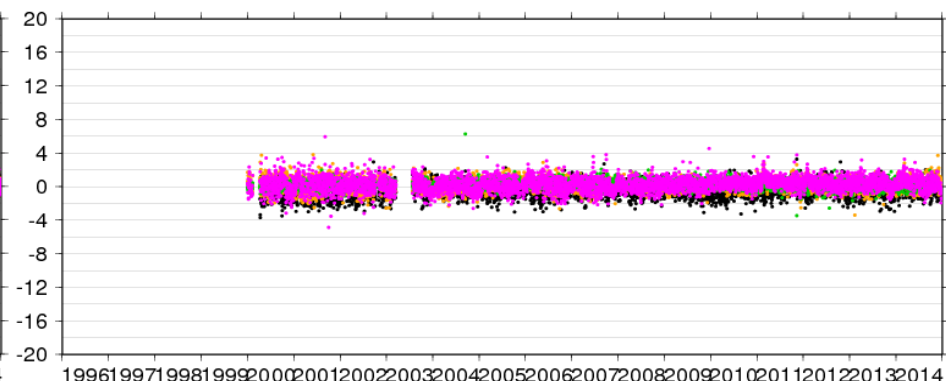
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GAIA



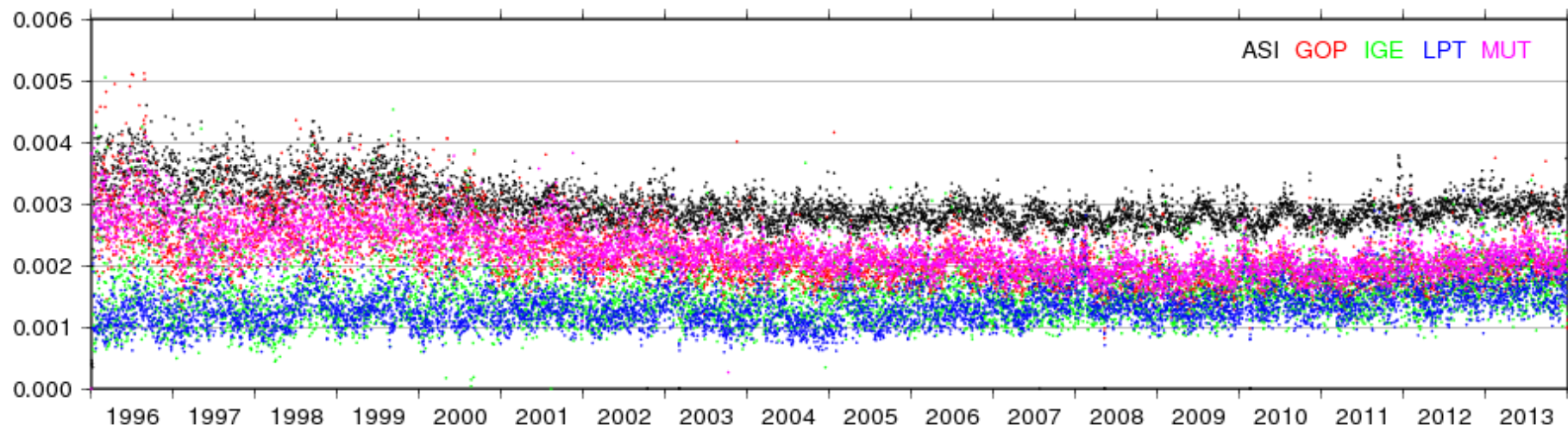
LAGO



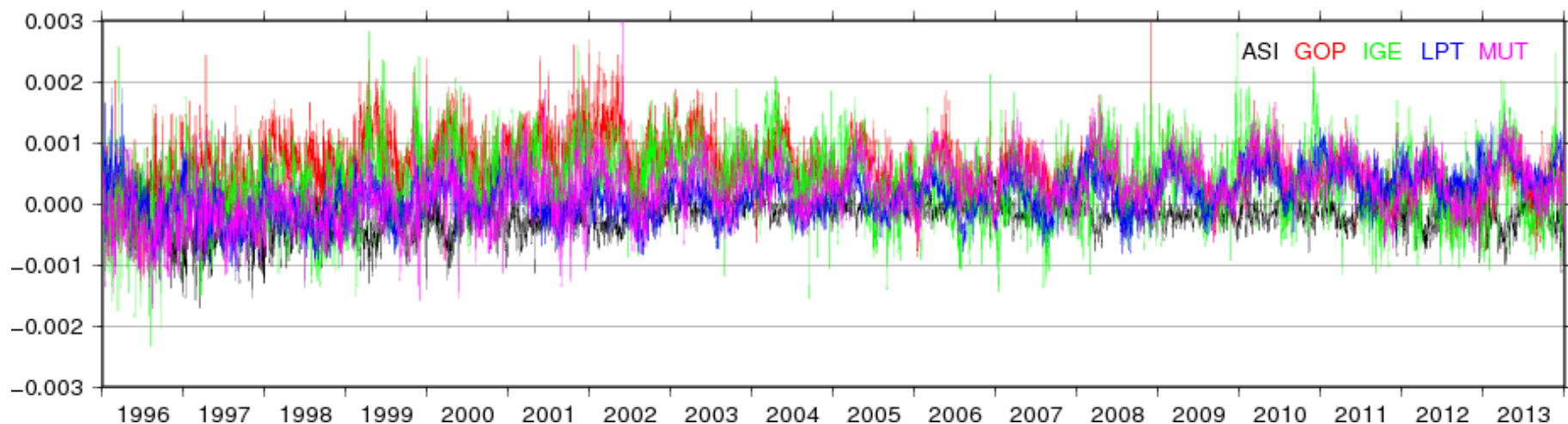


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RMS of Helmert transformation

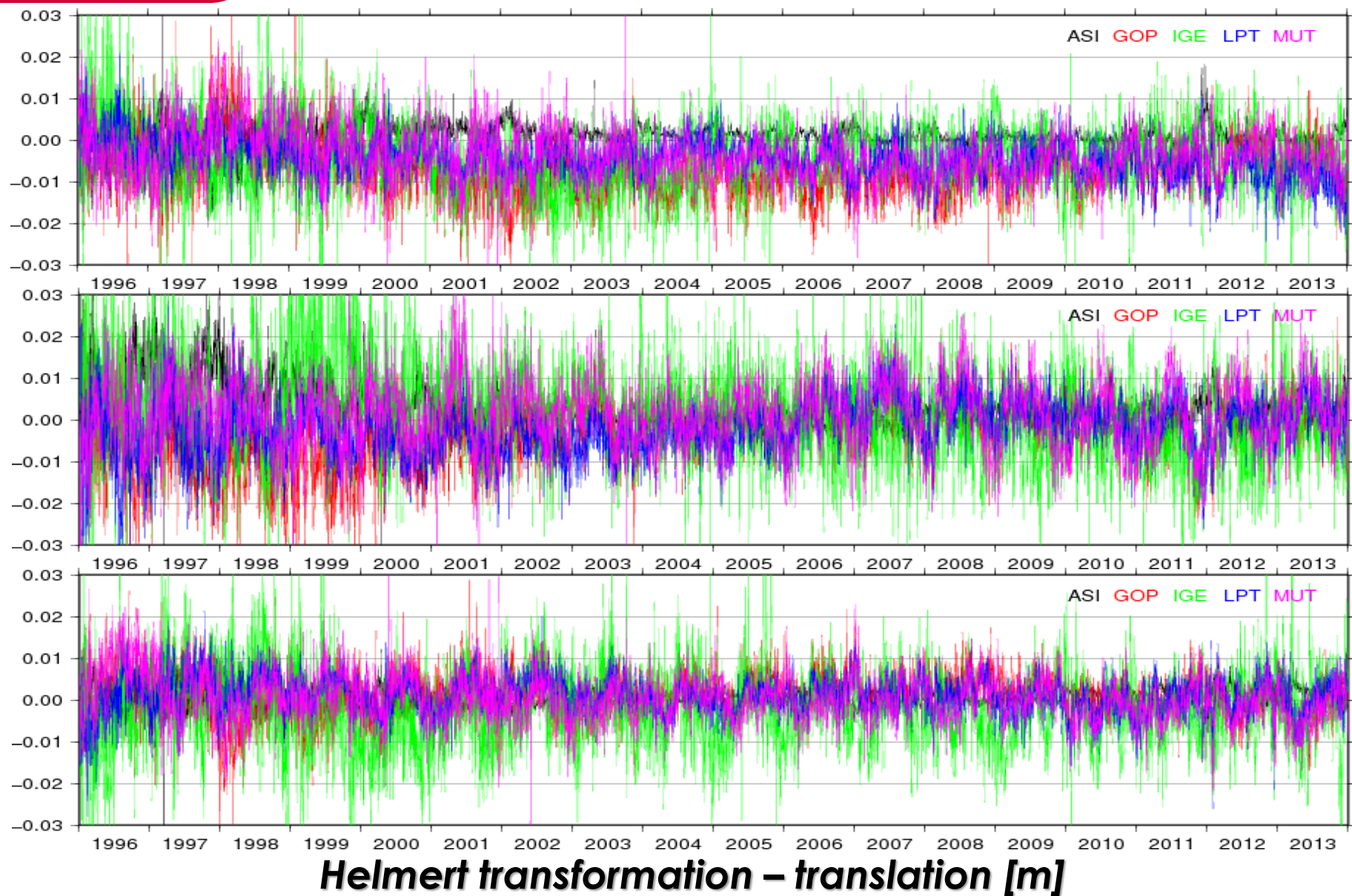


Helmert transformation – scale parameter [ppm]



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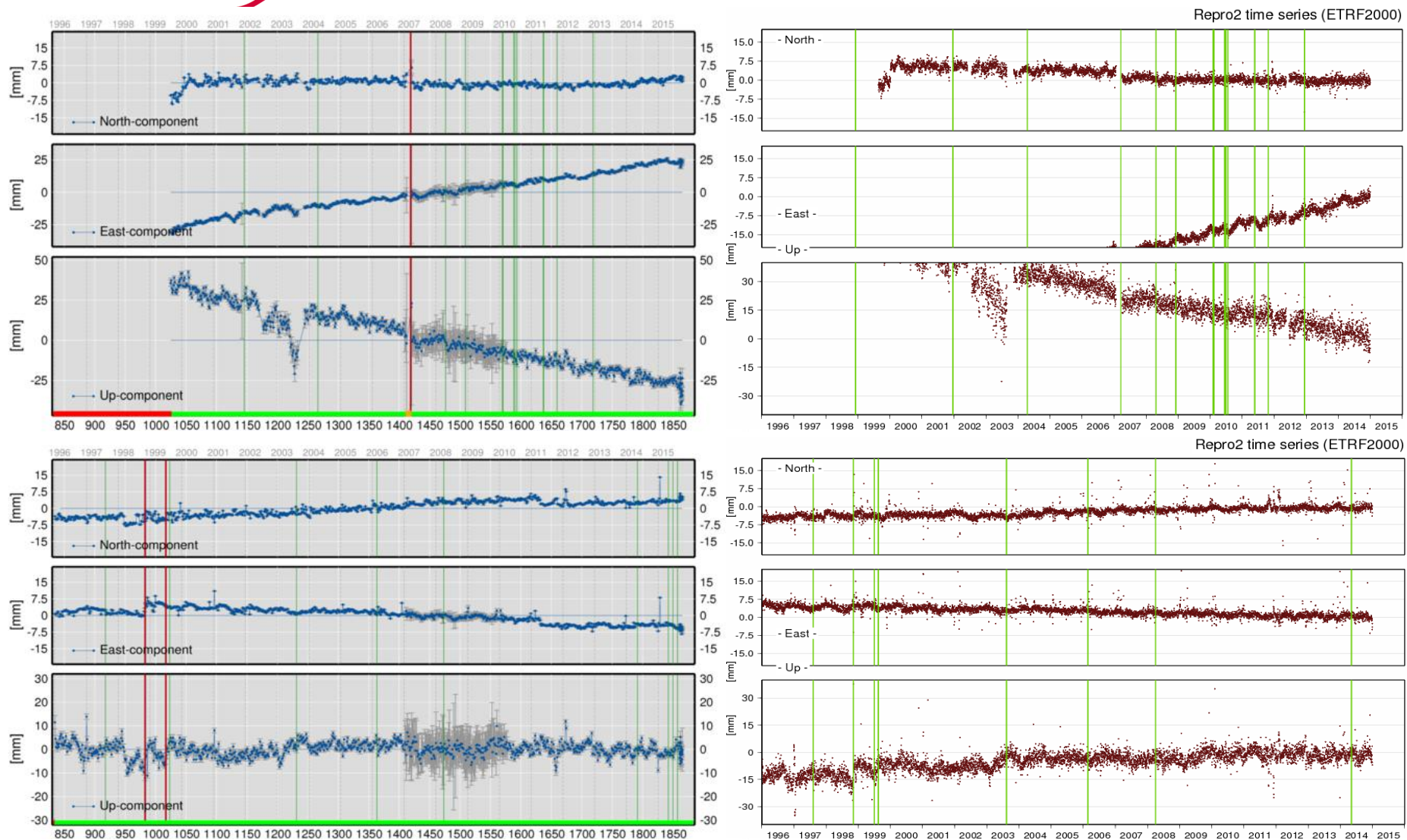


Helmert transformation – rotation ["]



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Weekly EPN solution (repro1 + routine) and daily solution (repro2): stations ACOR and ZIMM



Conclusions and outlook:

- **Final combination of all submitted solutions was done.**
- **No antennas corrections have been applied.**
- **„Raw” results - without sophisticated data cleaning (?)**
- **Database cleaning.**
- **2014 solutions – to be added (?)**
- **Solution will be used for:**
 - ✓ troposphere solution (R. Pacione),
 - ✓ cumulative solution (A. Kenyeres).
- **Recommendations for repro3.**