



Research activities at the IDS Combination Center

Guilhem Moreaux

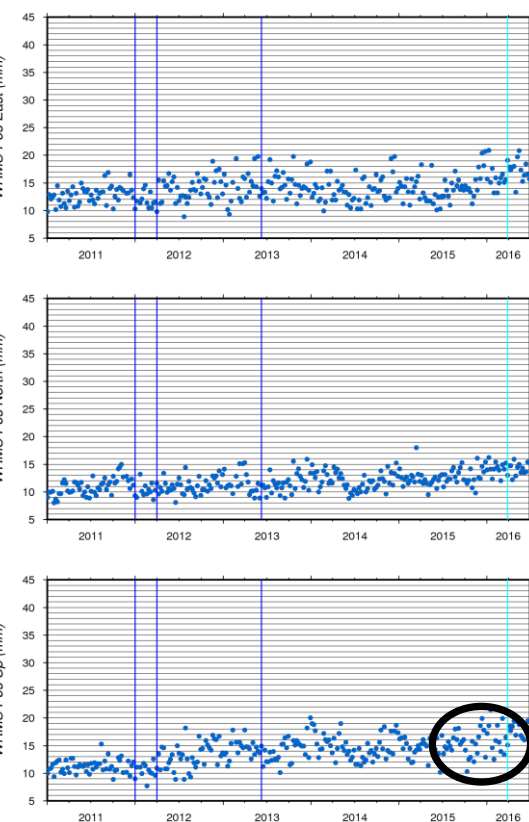
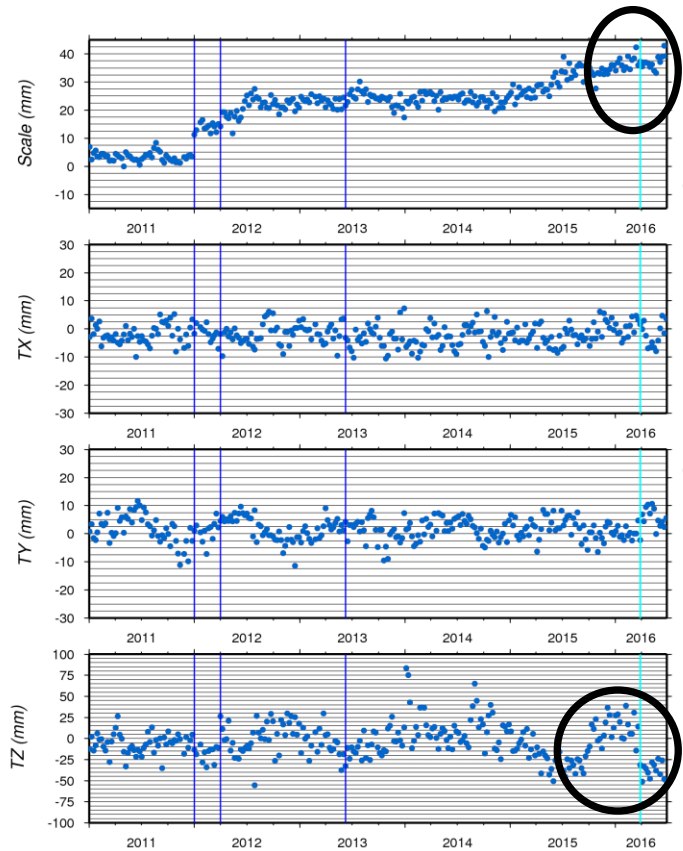
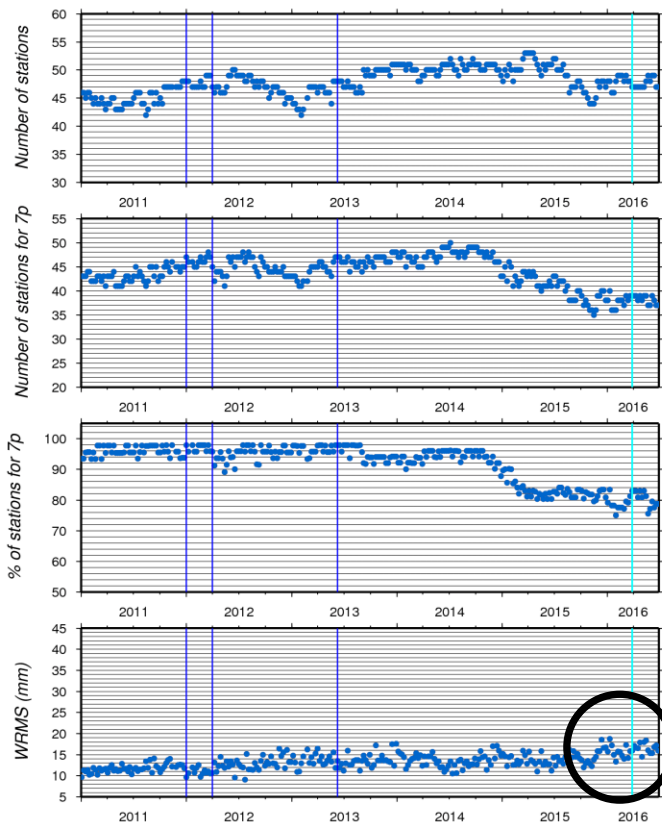
Latest Series Available

AC	Series Nb	Time period	Comments
ESA	10	1993:003 – 2015:179	2014:166 – 2014:362 missing Not available at IDS Data Centers Nothing new → no evaluation
GOP	43	1993:003 – 2016:178	
GRG	40	1993:003 – 2016:178	
GSC	26	1993:003 – 2016:087	
GSC	27	2013:076 – 2016:178	GSC 26 + Saral
GSC	28	2008:195 – 2016:178	GSC 27 + modeling improvements on Jason-2 solar array (quaternions)
IGN	15	1993:003 – 2016:178	New delivery since 2008:188 without CADB, SANB et KRUB for Jason-2
INA	10	1993:003 – 2015:354	INA 08 (ITRF2014) + Phase laws + HY-2A + Saral
IDS	12	1993:003 – 2016:087	ESA10 + GOP43 + GRG40 + GSC26/27 + IGN 15 + INA10 All the ACs contribute to the combined scale Include all the stations treated by at least 2 ACs



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GOP 43 wrt ITRF2014

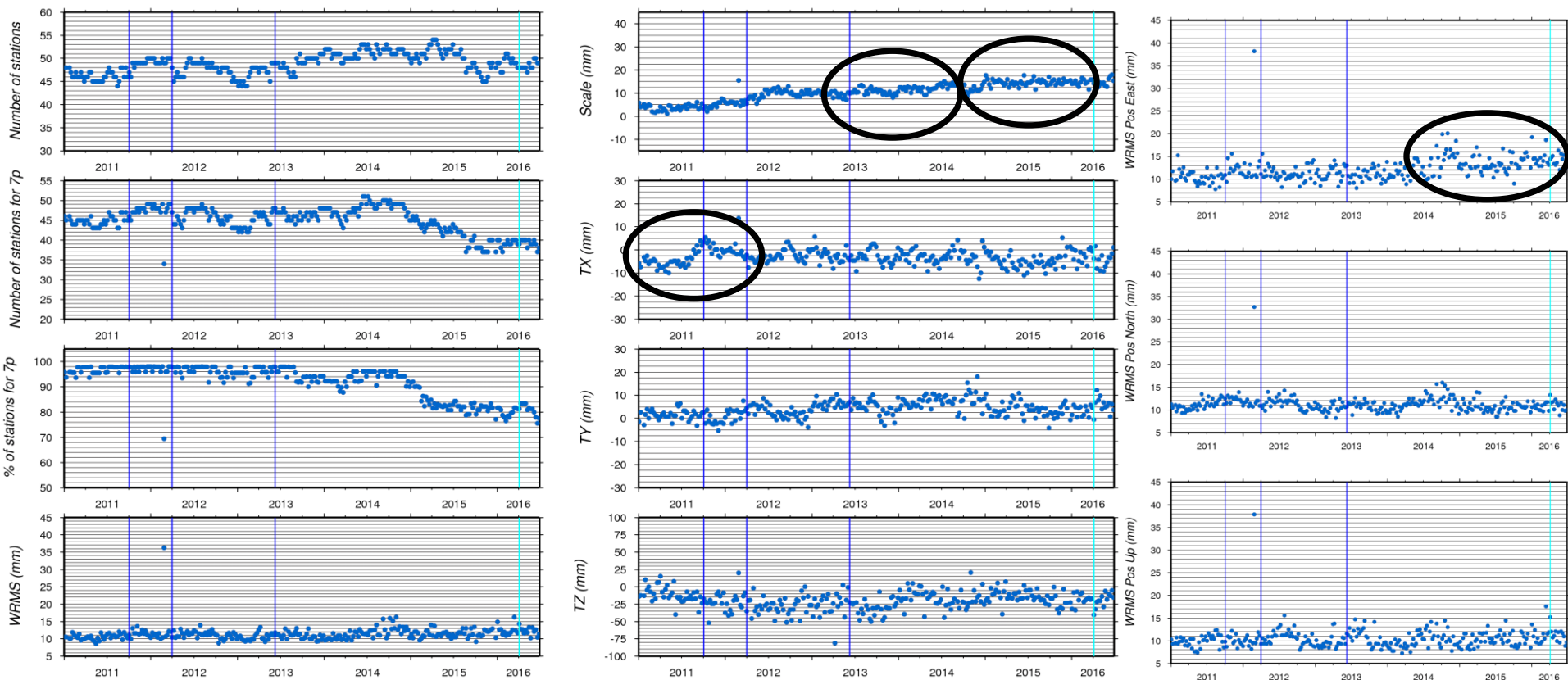


- Scale increase early 2015.
- Tz: discontinuity in 2016:087.
- WRMS: degradation in the up correlated to the scale increase in 2012.



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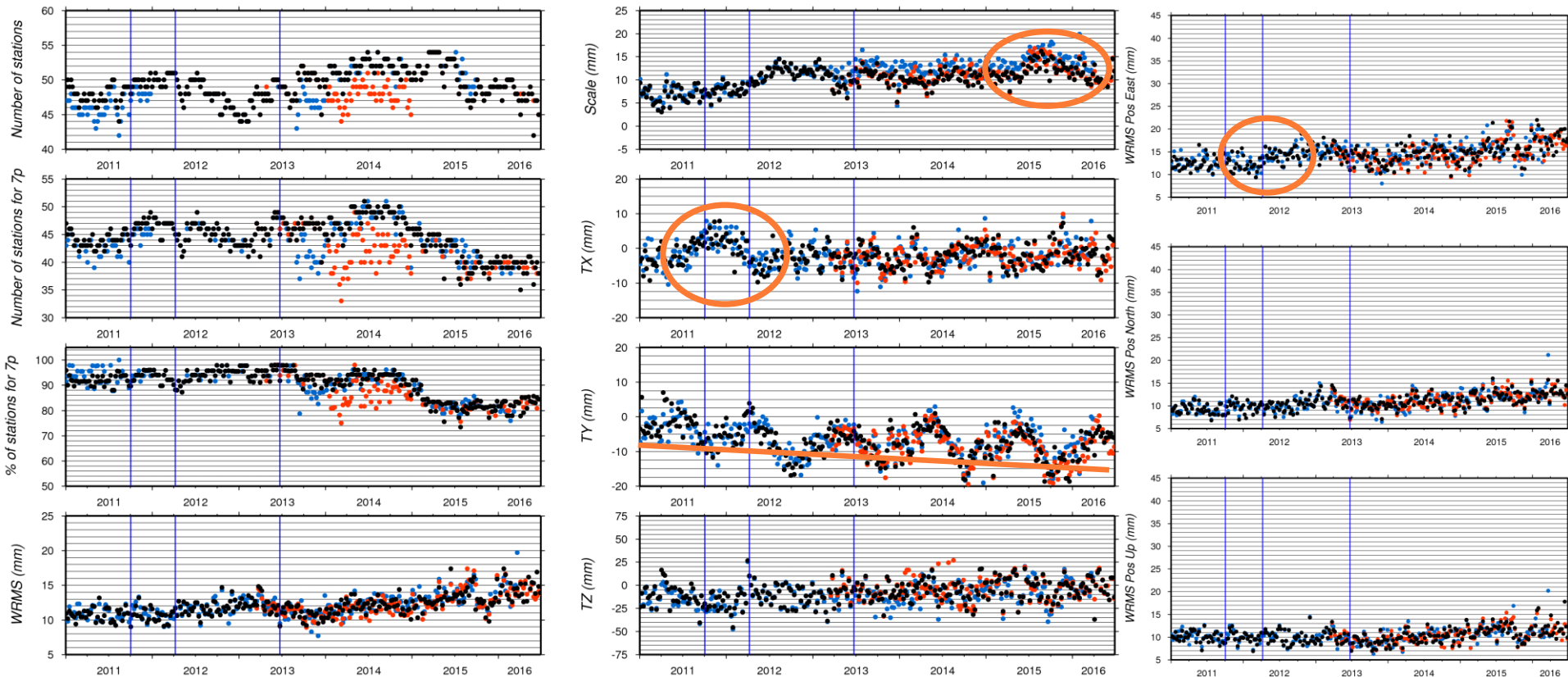
GRG 40 wrt ITRF2014



- Scale: jump after end of SPOT4 and jump early 2015.
- Tx: pattern in the second part of 2011.
- WRMS: degradation in the East direction since last quarter of 2014.

GSC 26/27/28 wrt ITRF2014

GSC 26 - GSC 27 - GSC 28

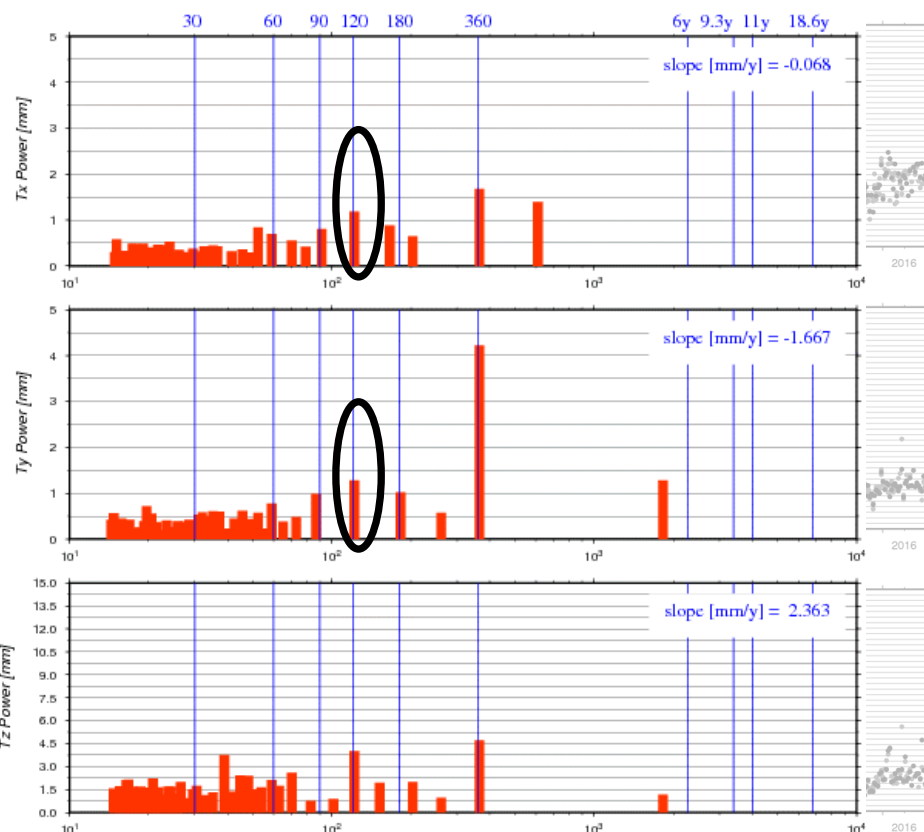
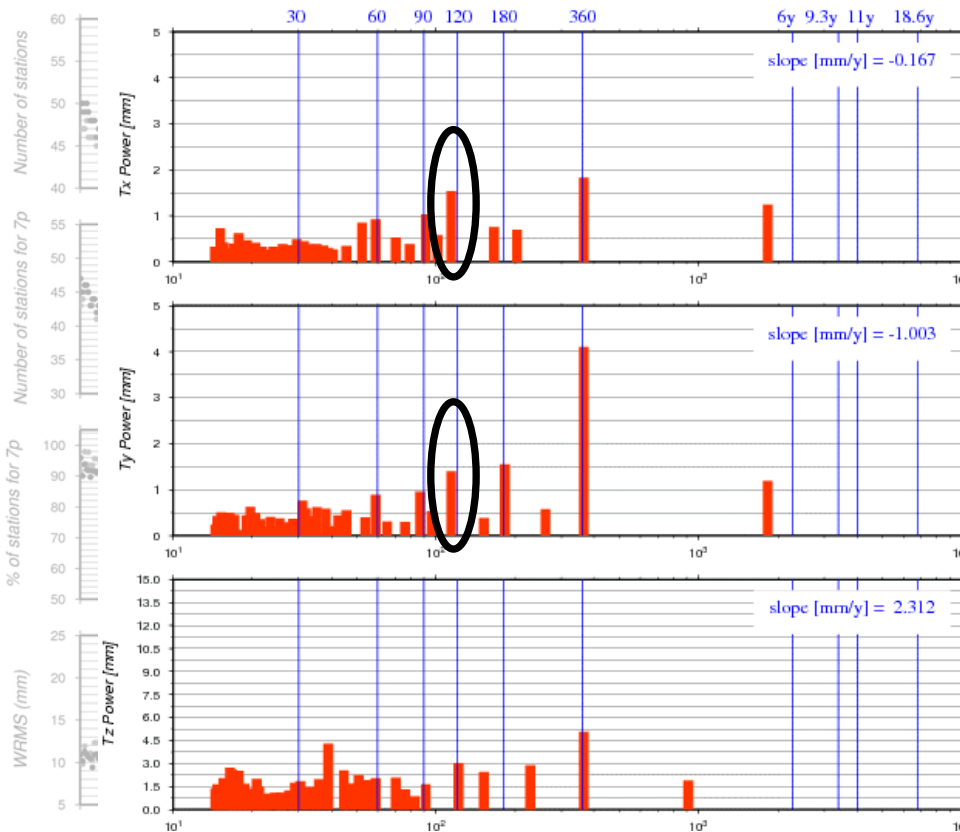


- Similar performances for GSC 26, 27 and 28.
- Scale: scale pattern mid 2015.
- Tx: annual pattern in the second part of 2011. Reduction of 120-day signal with GSC 28.
- Ty: negative linear trend + annual signal. Reduction of 120-day signal with GSC 28.
- WRMS: degradation in East since end of Envisat.

GSC 26/27/28 wrt ITRF2014

GSC 26

GSC 28



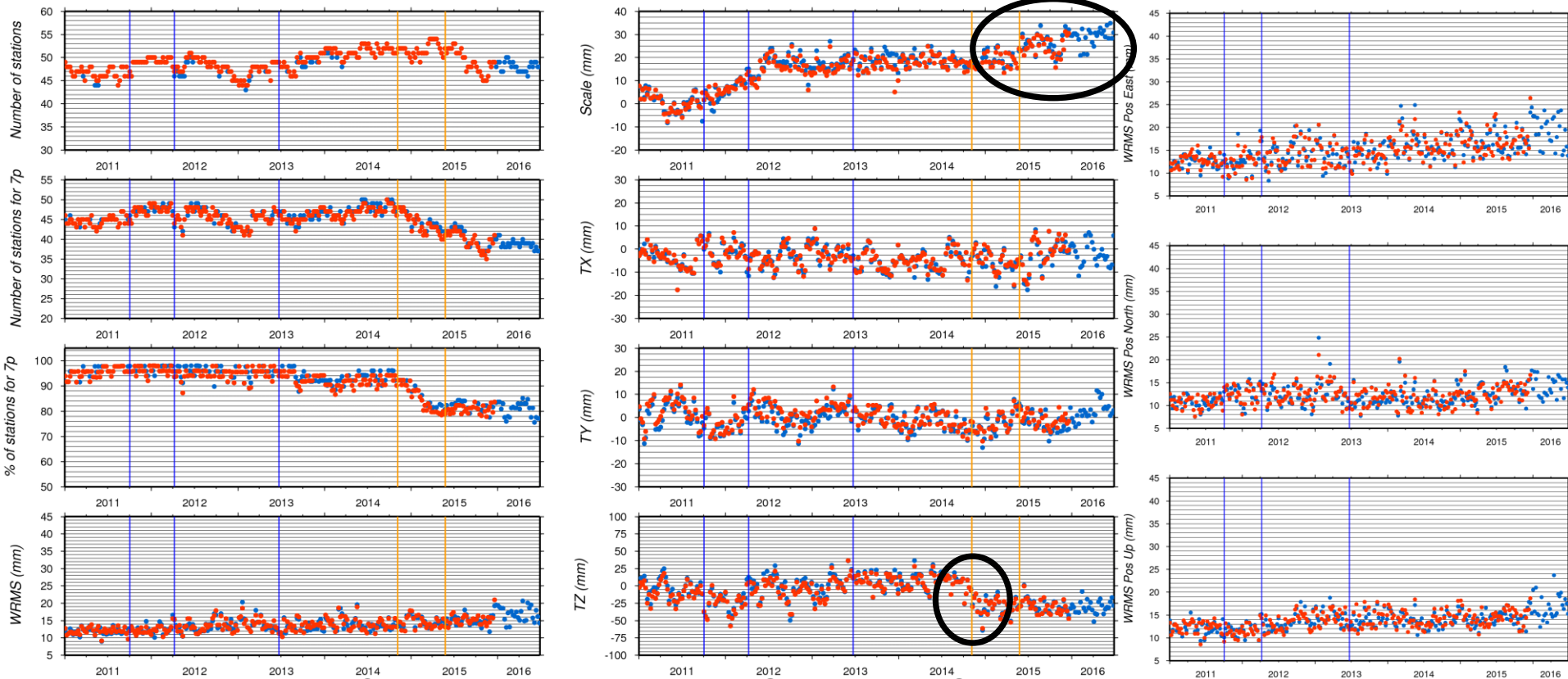
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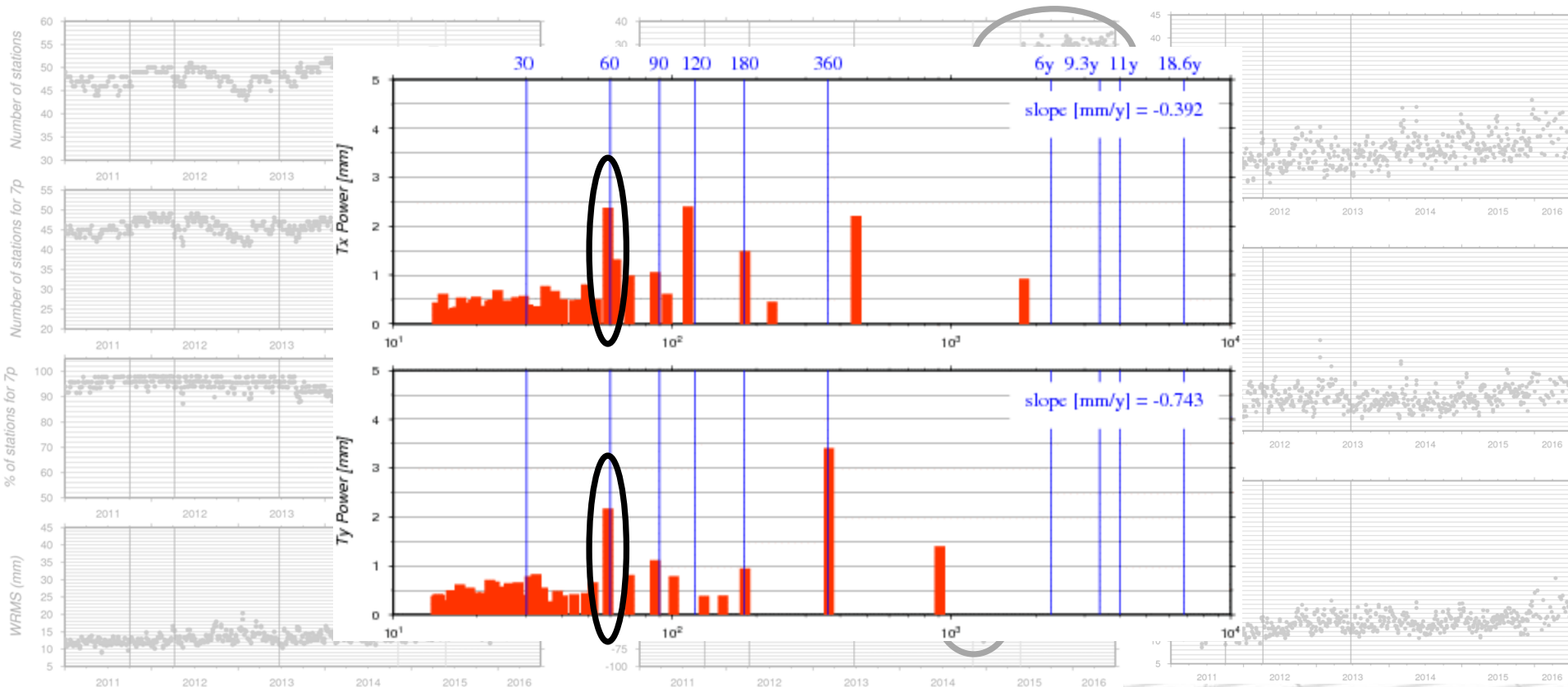
IGN 15 wrt ITRF2014P

IGN 15 – IGN 16 == IGN15 wo SAA stations in Jason-2



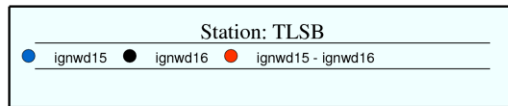
- Similar performances for IGN 15 and IGN 16.
- Scale: higher increase early 2012 and scale increase late 2015.
- Tx, Ty: 60-day signal.
- Tz: discontinuity late 2014 – early 2015.
- WRMS: degradation in East since end of Envisat.

IGN 15 – IGN 16 == IGN15 wo SAA stations in Jason-2

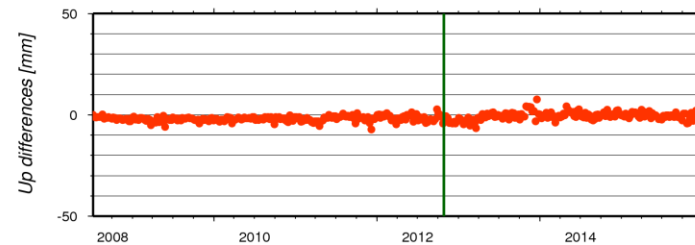
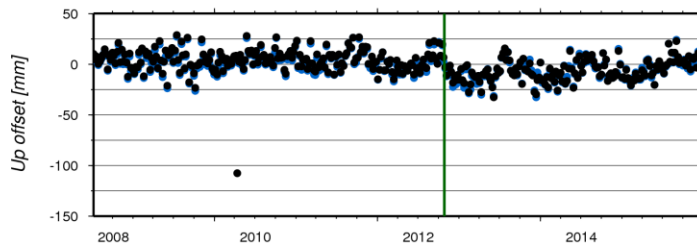
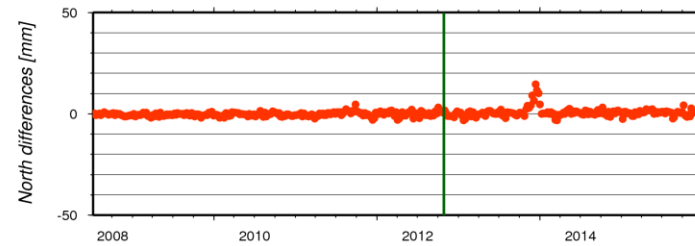
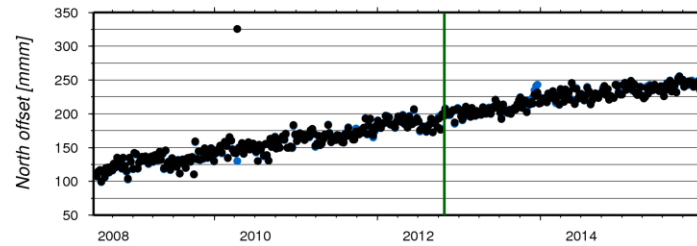
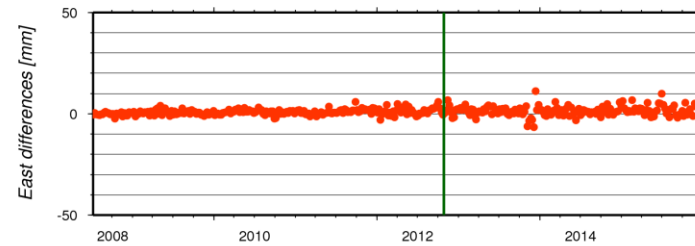
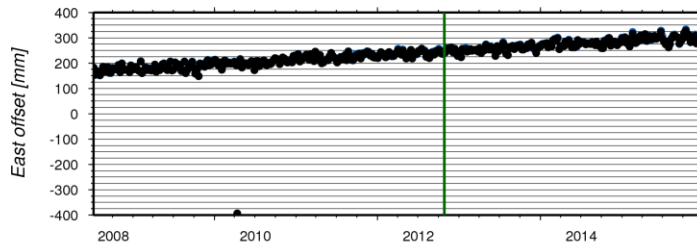


- Similar performances for IGN 15 and IGN 16.
- Scale: higher increase early 2012 and scale increase late 2015.
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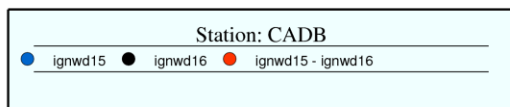
IGN 15 – Station positions



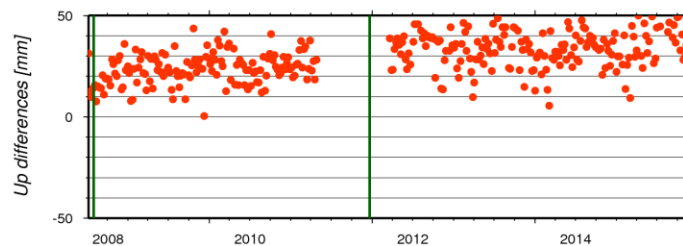
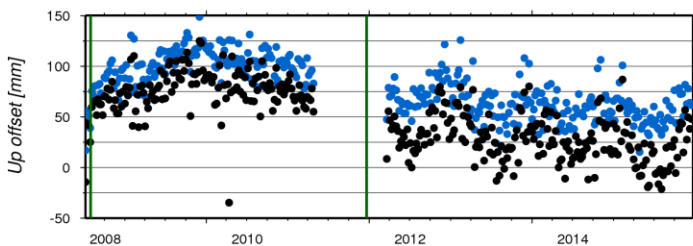
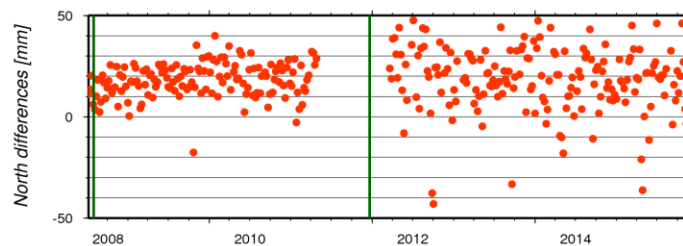
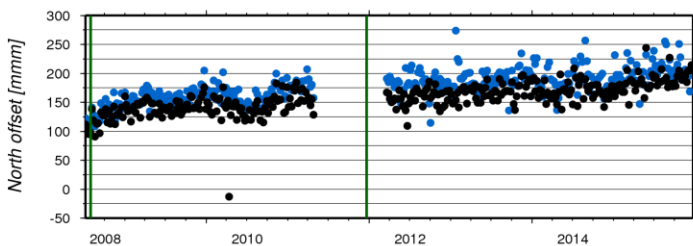
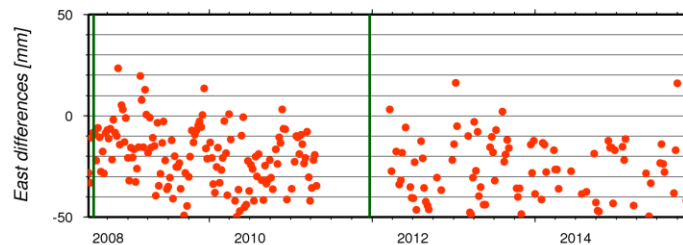
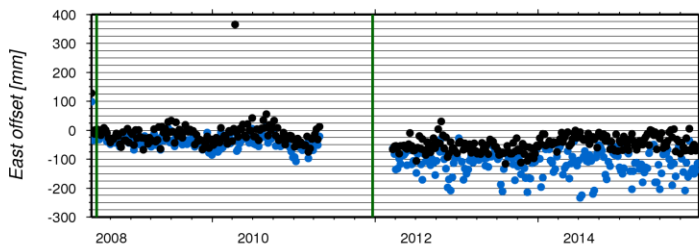
	days	min	max	mean	std
1990001-2099365 E diff.	390	-6.700	583.800	2.557	29.568
1990001-2099365 N diff.	390	-195.500	14.600	-0.345	10.049
1990001-2099365 U diff.	390	-7.200	112.400	-1.045	6.013



IGN 15 – Station positions



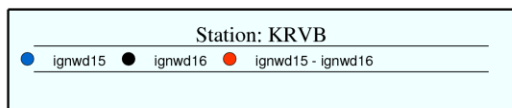
	days	min	max	mean	std
1990001-2099365 E diff.	344	-400.100	23.500	-47.310	45.946
1990001-2099365 N diff.	344	-43.000	177.000	20.466	18.821
1990001-2099365 U diff.	344	0.300	160.700	30.297	12.930



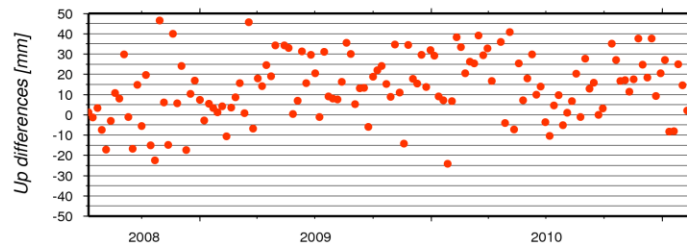
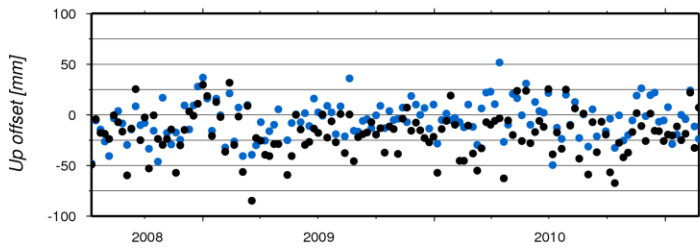
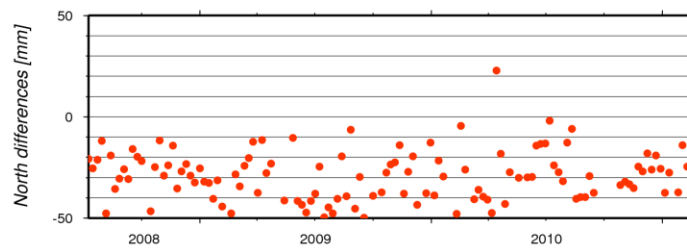
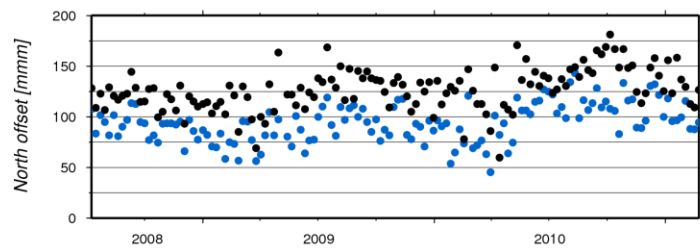
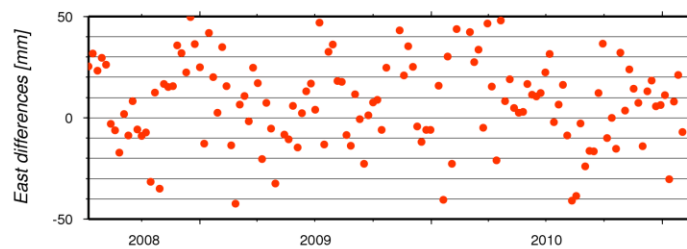
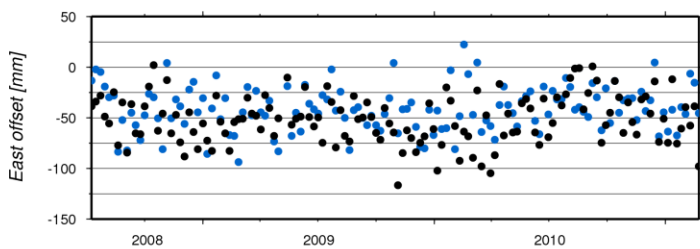


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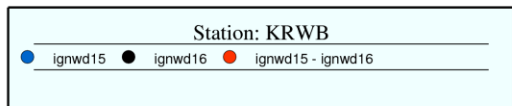
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1990001-2099365	E diff.	137	-42.300	85.900	10.225	23.721
1990001-2099365	N diff.	137	-76.100	22.800	-32.717	15.391
1990001-2099365	U diff.	137	-31.100	55.000	13.578	16.588



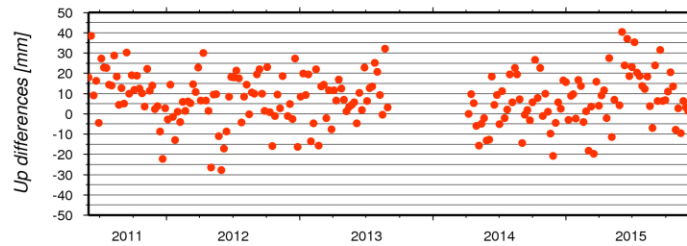
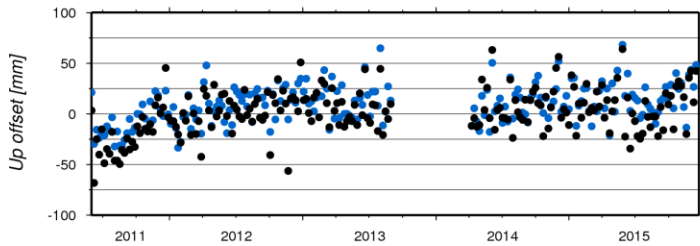
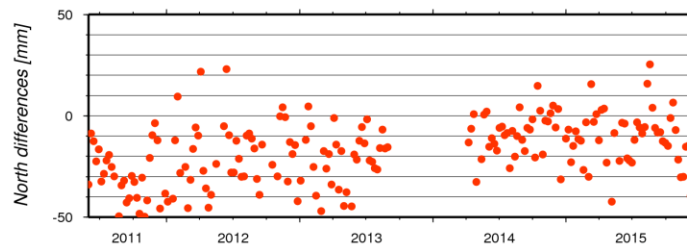
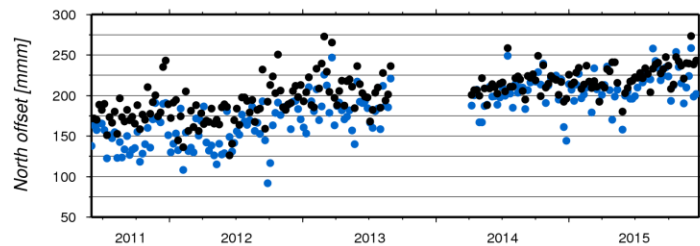
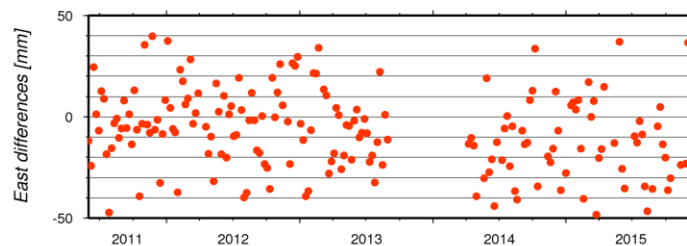
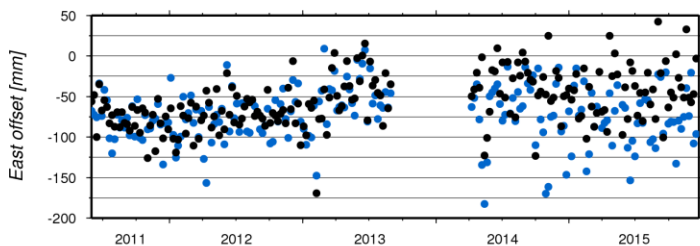


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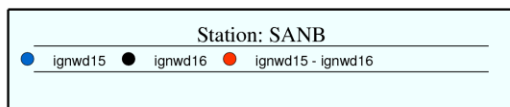
	days	min	max	mean	std	
1990001-2099365	E diff.	207	-186.200	50.200	-17.192	34.723
1990001-2099365	N diff.	207	-100.600	25.300	-20.710	19.460
1990001-2099365	U diff.	207	-27.700	51.100	7.691	12.871



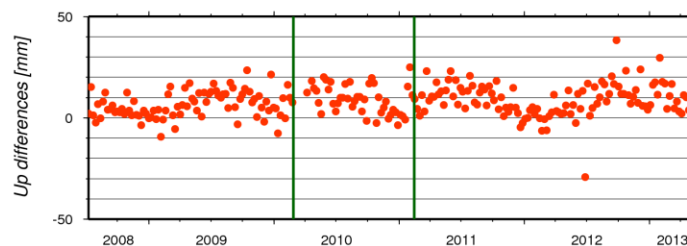
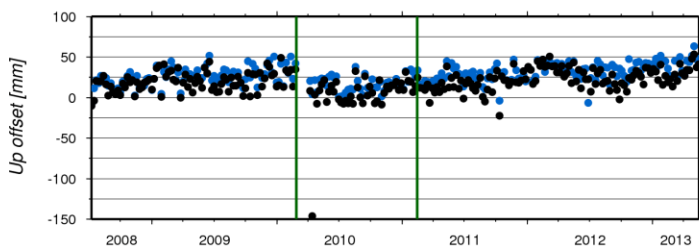
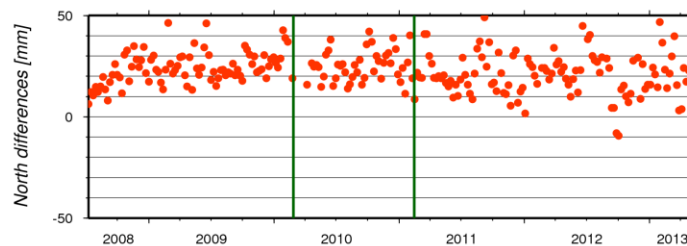
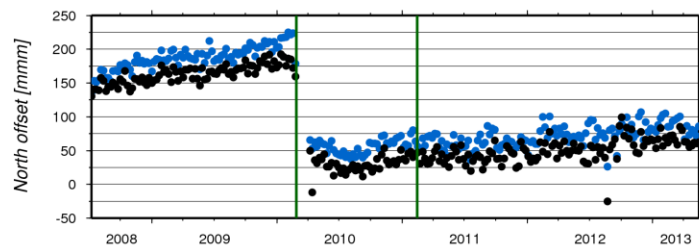
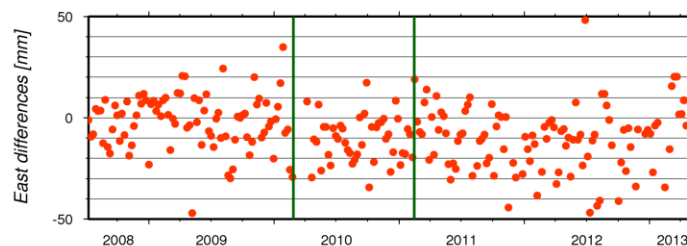
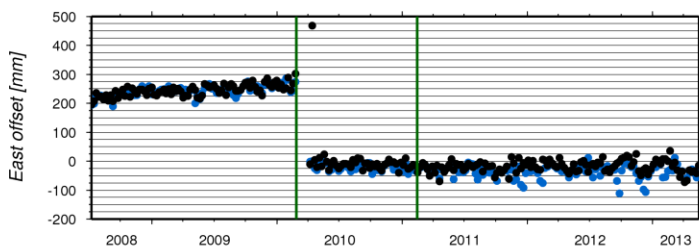


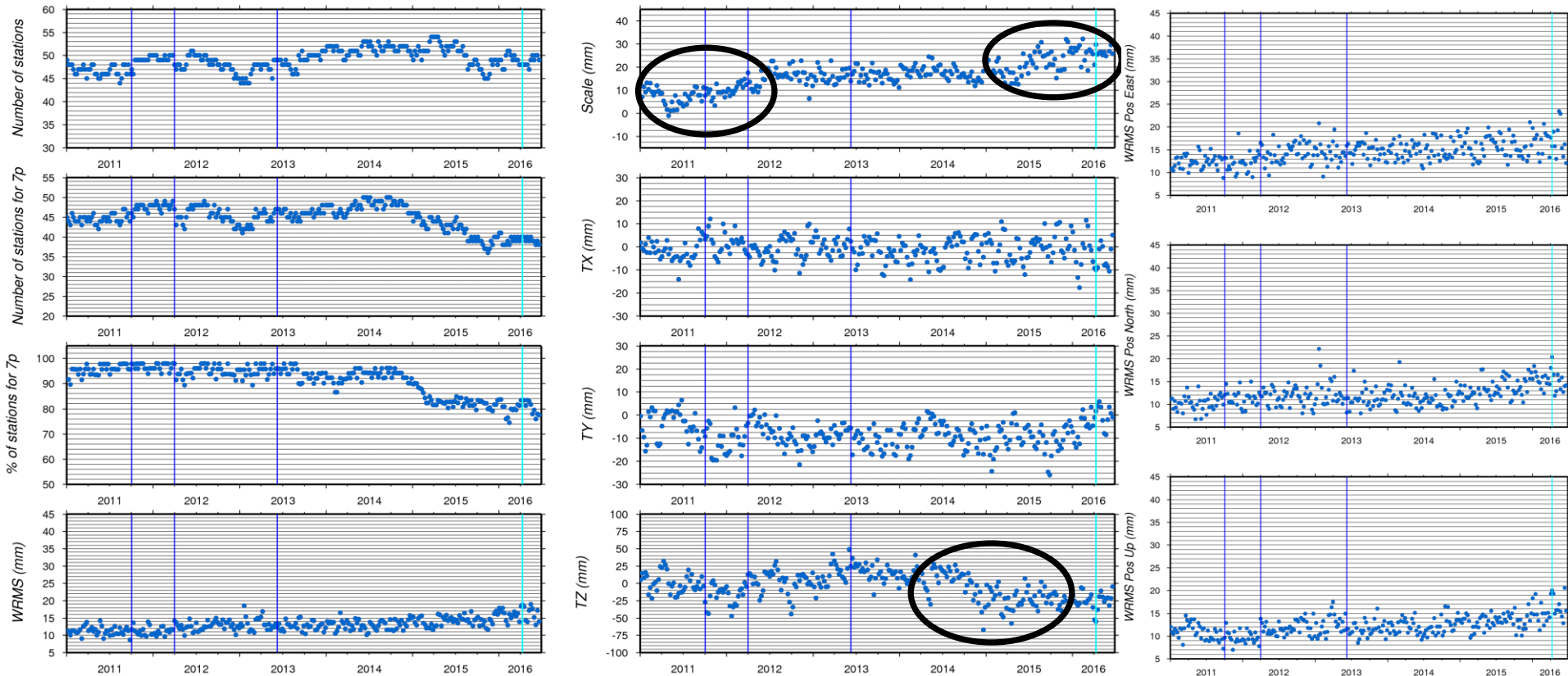
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IGN 15 – Station positions

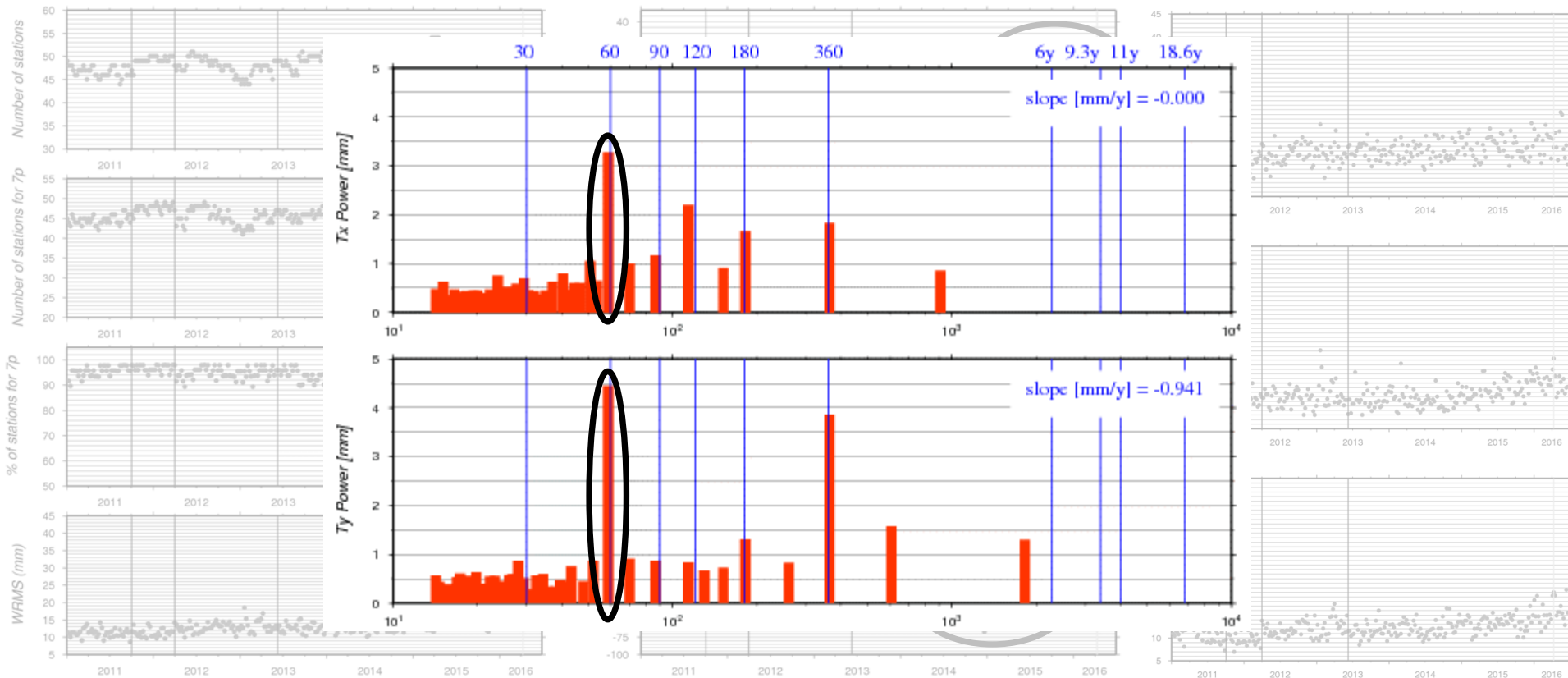


	days	min	max	mean	std
1990001-2099365 E diff.	249	-468.700	48.300	-12.402	35.448
1990001-2099365 N diff.	249	-9.300	64.800	23.435	10.550
1990001-2099365 U diff.	249	-29.300	150.600	8.688	11.710



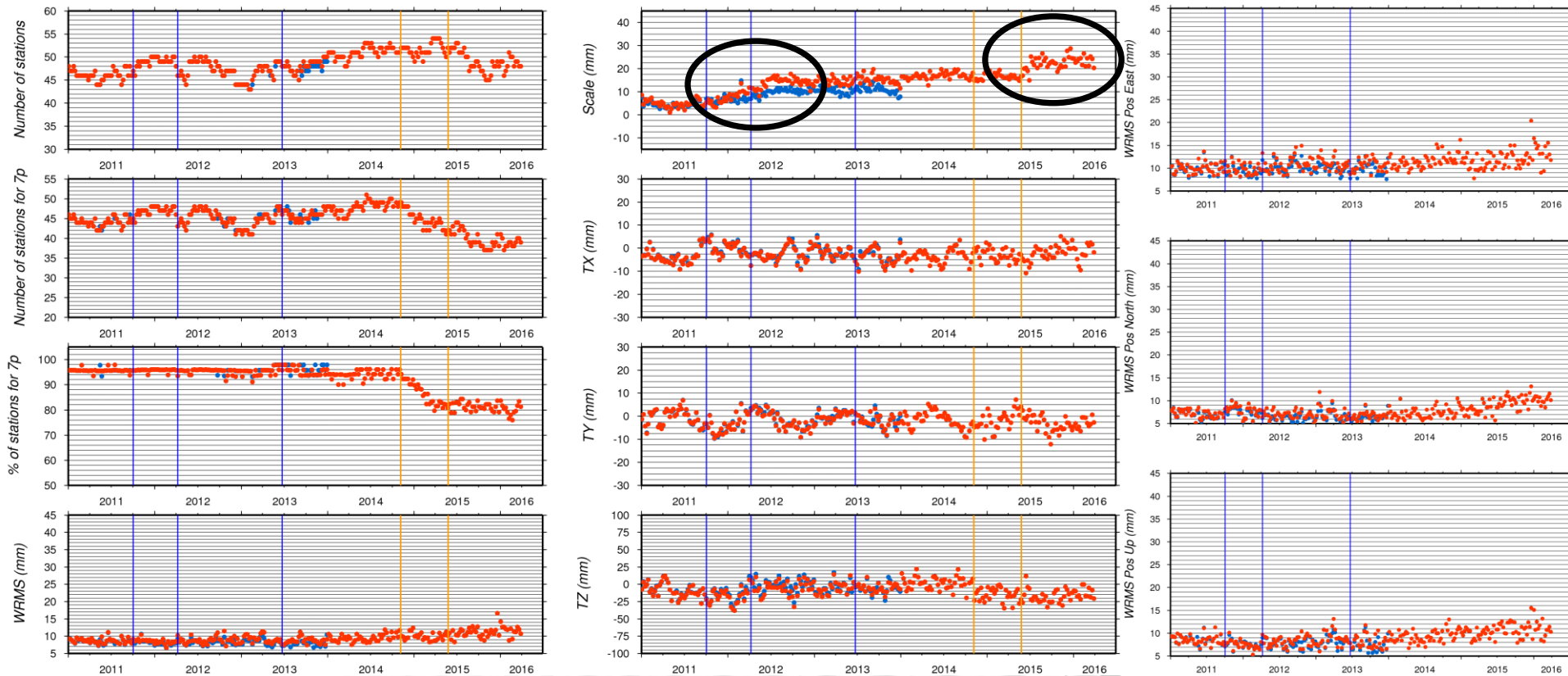


- Scale: jump mid 2012 and increase early 2015.
- Tx and Ty: strong 60-day signal.
- Tz: decrease early 2015.
- WRMS: degradation in all the directions correlated to the scale increase early 2012.



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IDS 12 – IDS 09



- Scale:
 - ✓ 2012 increase: higher for IDS 12 because all ACs contribute to the scale.
 - ✓ 2015 increase : consequence of ACs scale increases.
- Tz: decrease early 2015 – may be the consequence of IGN and INA pattern.

- **Points to investigate:**
 - **All:** Scale in 2015.
 - **GOP:** Tz discontinuity in 2016:087.
 - **GRG & GSC:** Tx pattern after mid 2011.
 - **IGN & INA:** Tz decrease late 2014 – early 2015, 60-day signal in Tx and Ty.
- **GSC 28 reduces 117/120-day signal on Tx and Ty.
Other candidates to use solar array quaternions ?**
- **IGN 15 wo SAA stations in Jason-2: as expected impact only on the coordinates of the 3 SAA stations (Cachoiera, Kourou and Santiago).
The IDS CC will compare the two IGN DORIS time series with the IGS coordinate time series at the co-located sites (Cachoiera and Kourou).**