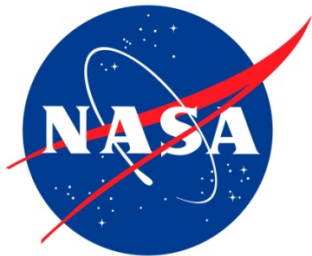# Processing of SPOT-5 & Jason-1 Doris data with the SAA correction

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Jason 1 SAA Doris data Test

The corrective model for Jason 1 doppler data of J.M. Lemoine & H. Capdeville (2006) is regularly used in computing J1 orbits for POD purposes. Hitherto, Jason-1 has not been included in the DORIS weekly solutions. We make tests w.r.t. the SINEX series wd15.

Test1: Jason 1 arcs are computed with standard station weights – no special treatment of SAA stations.

Test2: Jason 1 arcs are computed with downweighting of 29 designated SAA stations (*weighting scheme at end of this presentation*).

• **49 weekly arcs for 2011 (***no data for 3 weeks***)**

• **Single-satellite SINEX files & solutions are computed in both cases, and w.r.t a combination (wd15).**

• **For the combination with wd15, the SAA stations from Jason-1 are suppressed (***not allowed to contribute to the general weekly solution or normal equatio***n).**
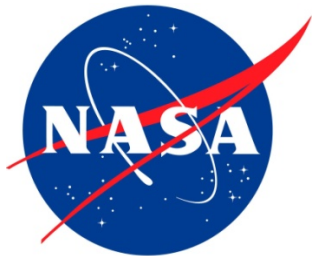
SPOT-5 SAA Doris data test

1. **Data so far are processed without any SAA corrective model (**e.g. ITRF2008, wd15, wd18 series**).**

2. **Use data that are modified with SPOT5-specific corrective model (***cf. message of H. Capdeville***)**

- **52 weekly arcs for 2011.**

- **No special treatment of SAA stations (***stations are not downweighted***).**

- **Single-satellite SINEX files & solutions are computed in both cases, and w.r.t a combination (***wd15***).**
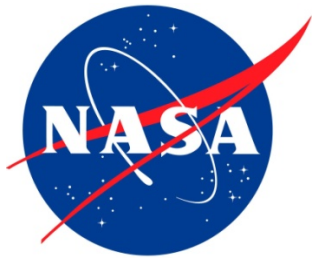
Summary Overall RMS of fit for SPOT-5 (mm/s)

	Standard	w/SAA correction
Overall (avg. 52 arcs)	0.434	0.429
CADB	0.657	0.548
ARFB	0.532	0.461
SANB	0.518	0.472
KRUB	0.702	0.676
HEMB	0.412	0.412
YASB	0.380	0.379
GREB	0.402	0.403
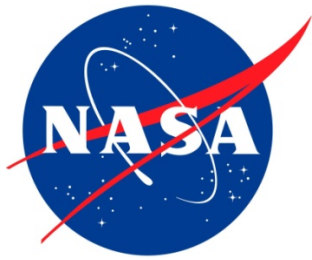
Summary Overall RMS of fit for Jason-1 (mm/s)

	Standard (no deweighting)	With deweighting of SAA stations
Overall (avg 49 arcs)	0.427	0.366
Avg. SLR fit (cm)	1.347	1.232
CADB	0.846	0.844
ARFB	0.388	0.336
SANB	0.425	0.336
KRUB	0.879	0.871
HEMB	0.739	0.745
YASB	0.348	0.333
GREB	0.323	0.320
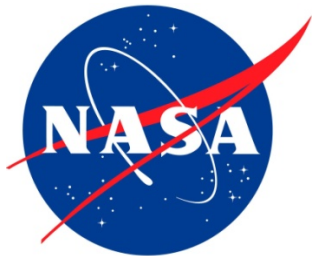
Summary Single Satellite SPOT5 Solution Parameters

|	Standard	With SAA correction
Avg. WRMS (mm)	22.65	19.05
Helmert Parameters of Weekly Solutions		
Tx (mean, std) mm	-7.46 / 6.09	-0.79 / 5.87
Ty (mean, std) mm	-13.50 / 9.43	-23.40 / 7.45
Tz (mean, std) mm	7.78 / 14.98	8.46 / 15.80
Scale (mean, std) mm	3.07 / 4.85	3.17 / 4.66
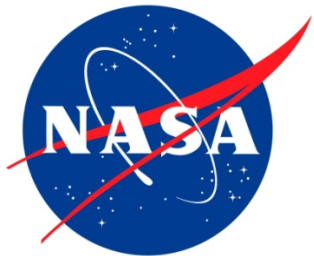
Summary Combination of Spot 5 with wd15 Solution Parameters

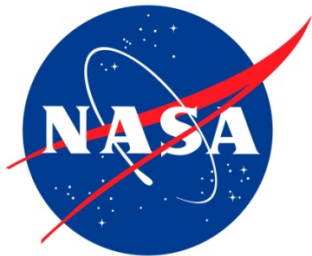|	Standard (wd15)	Wd15 w. SPOT-5 SAA correction
Avg. WRMS (mm)	12.63	13.02
Helmert Parameters of Weekly Solutions		
Tx (mean, std) mm	-3.15 / 4.21	-1.39 / 3.95
Ty (mean, std) mm	-15.56 / 4.70	-17.79 / 4.52
Tz (mean, std) mm	1.92 / 13.04	2.44 / 12.85
Scale (mean, std) mm	-4.30 / 2.91	-4.22 / 2.49
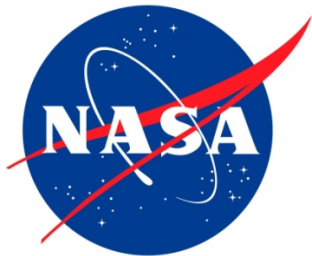
Summary Single Satellite Jason-1 Solution Parameters

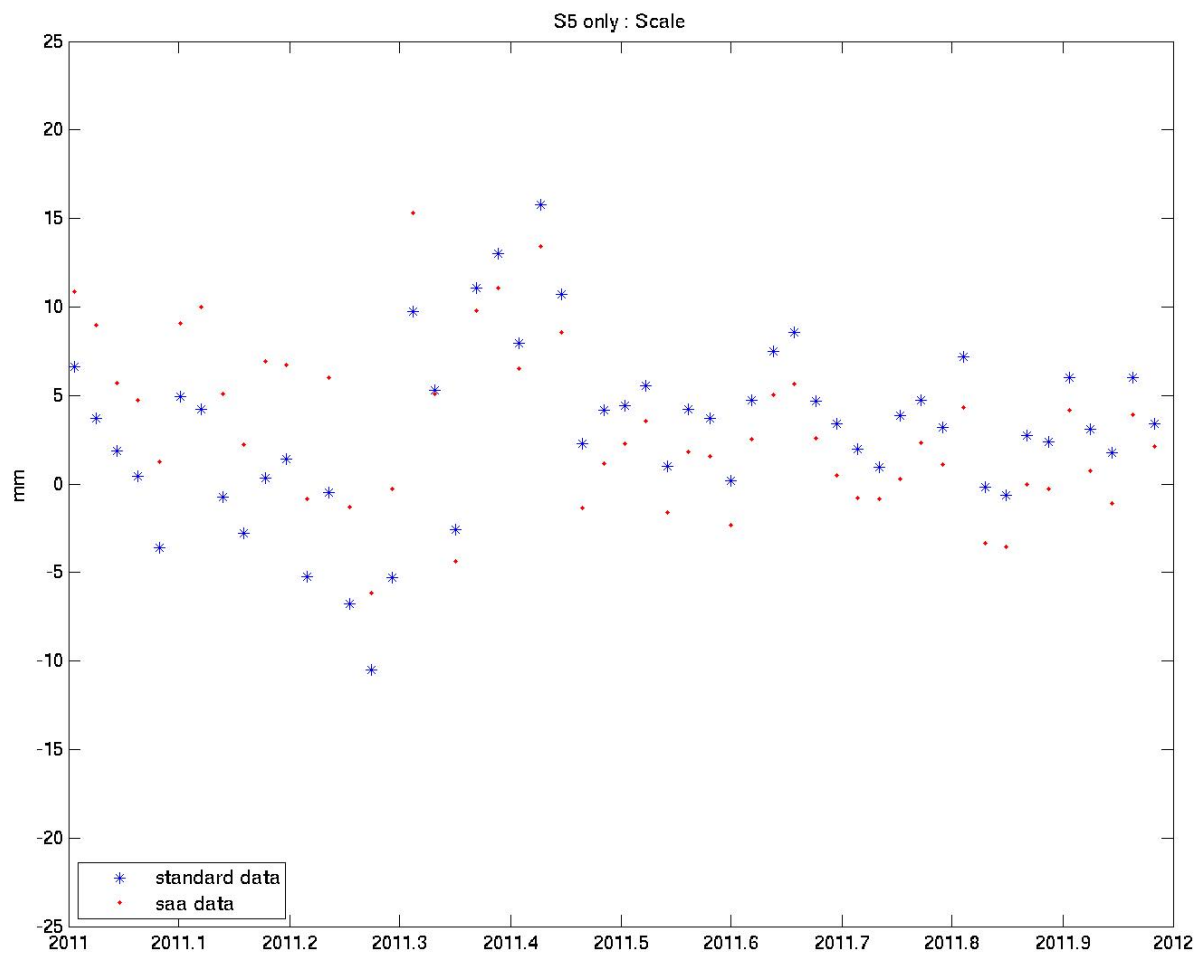|	Test1	Test2
Avg. WRMS (mm)	94.86	86.07
Helmert Parameters of Weekly Solutions		
Tx (mean, std) mm	-72.93 / 11.16	-64.87 / 10.15
Ty (mean, std) mm	62.65 / 10.94	57.20 / 9.19
Tz (mean, std) mm	-19.19 / 22.96	-4.11 / 15.94
Scale (mean, std) mm	13.87 / 10.32	26.30 / 8.25
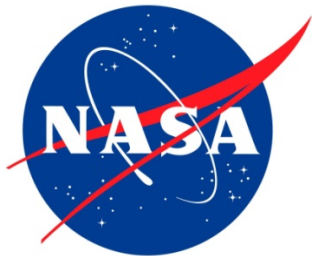
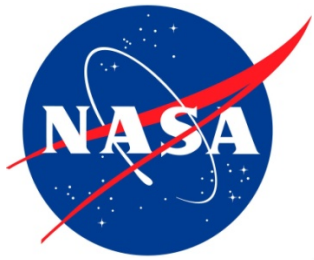# Summary wd15 Combination with Jason-1 Solution Parameters

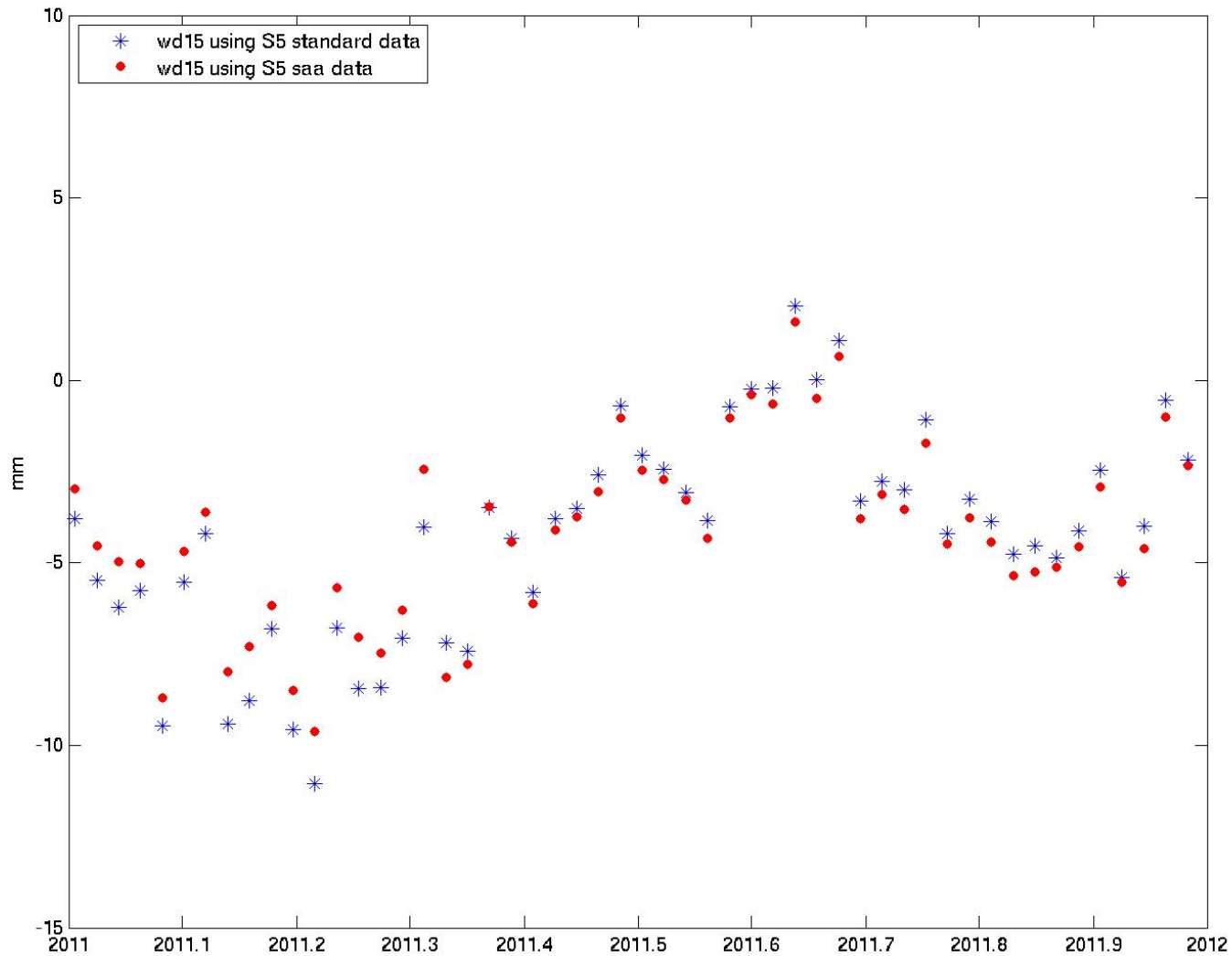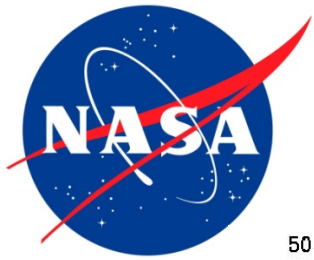|	Test1	Test2
Avg. WRMS (mm)	13.01	11.28
Helmert Parameters of Weekly Solutions		
Tx (mean, std) mm	-1.72 / 3.82	-4.70 / 4.10
Ty (mean, std) mm	-17.71 / 4.63	-14.09 / 5.07
Tz (mean, std) mm	2.70 / 13.12	4.02 / 12.34
Scale (mean, std) mm	-4.28 / 2.53	0.44 / 2.88

SPOT-5 Single-satellite Solution Scale (without & with SAA-corrected Data)
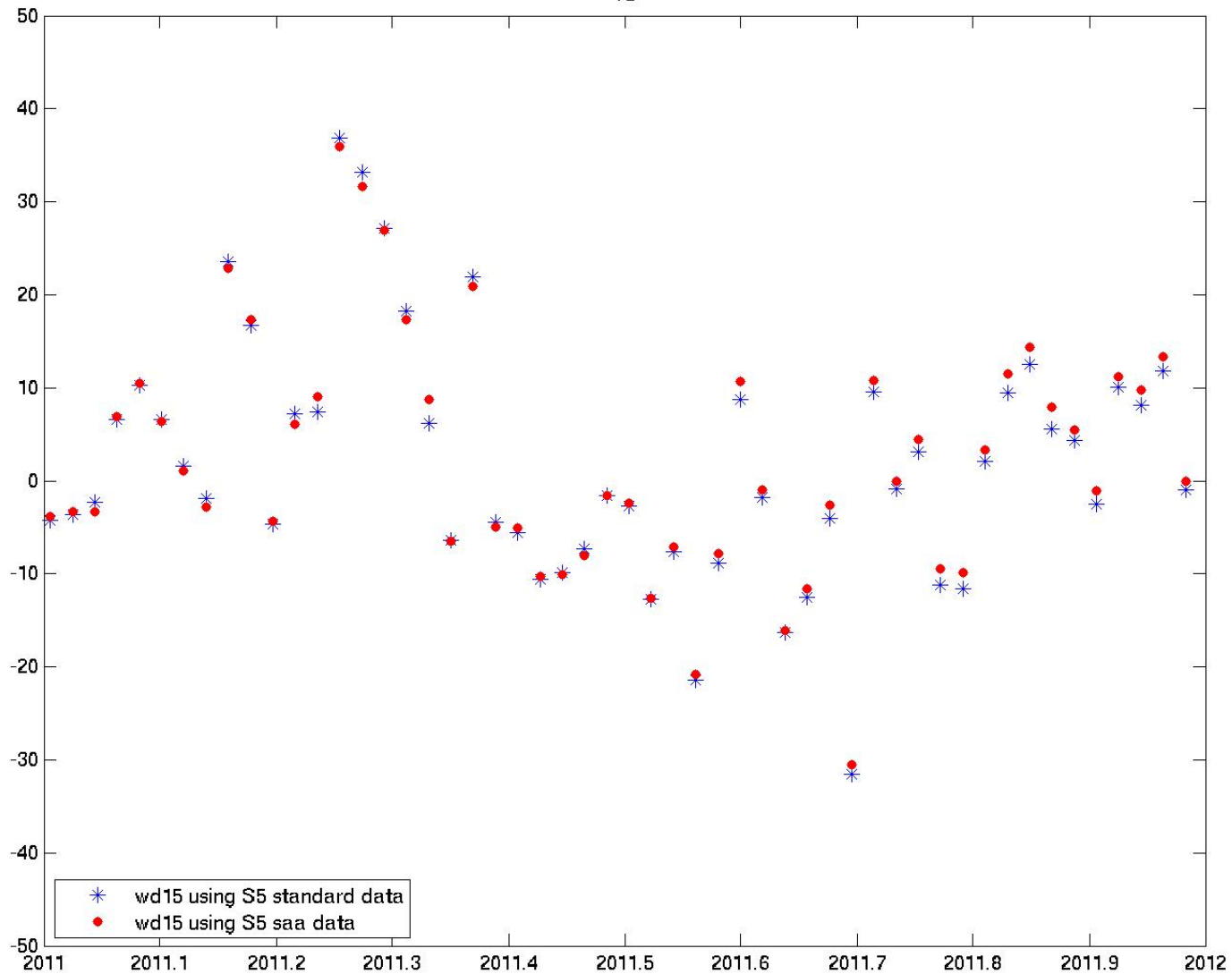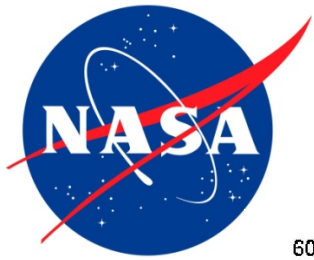
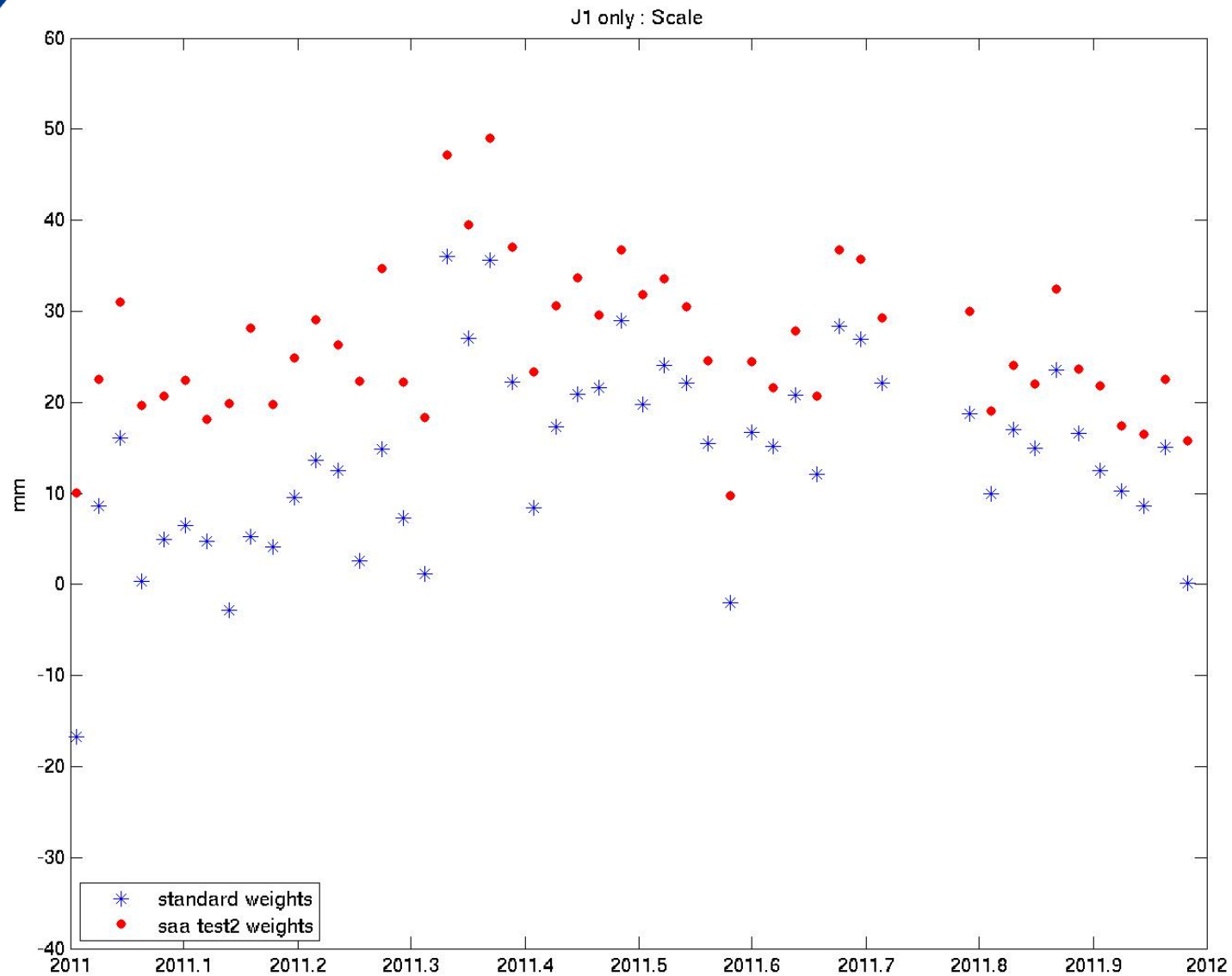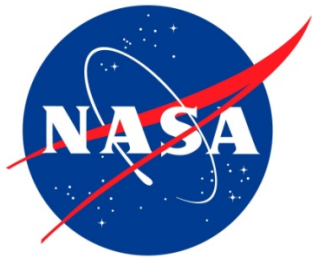# SPOT-5 wd15 combination Solution Scale (without & with SAA-corrected Data)

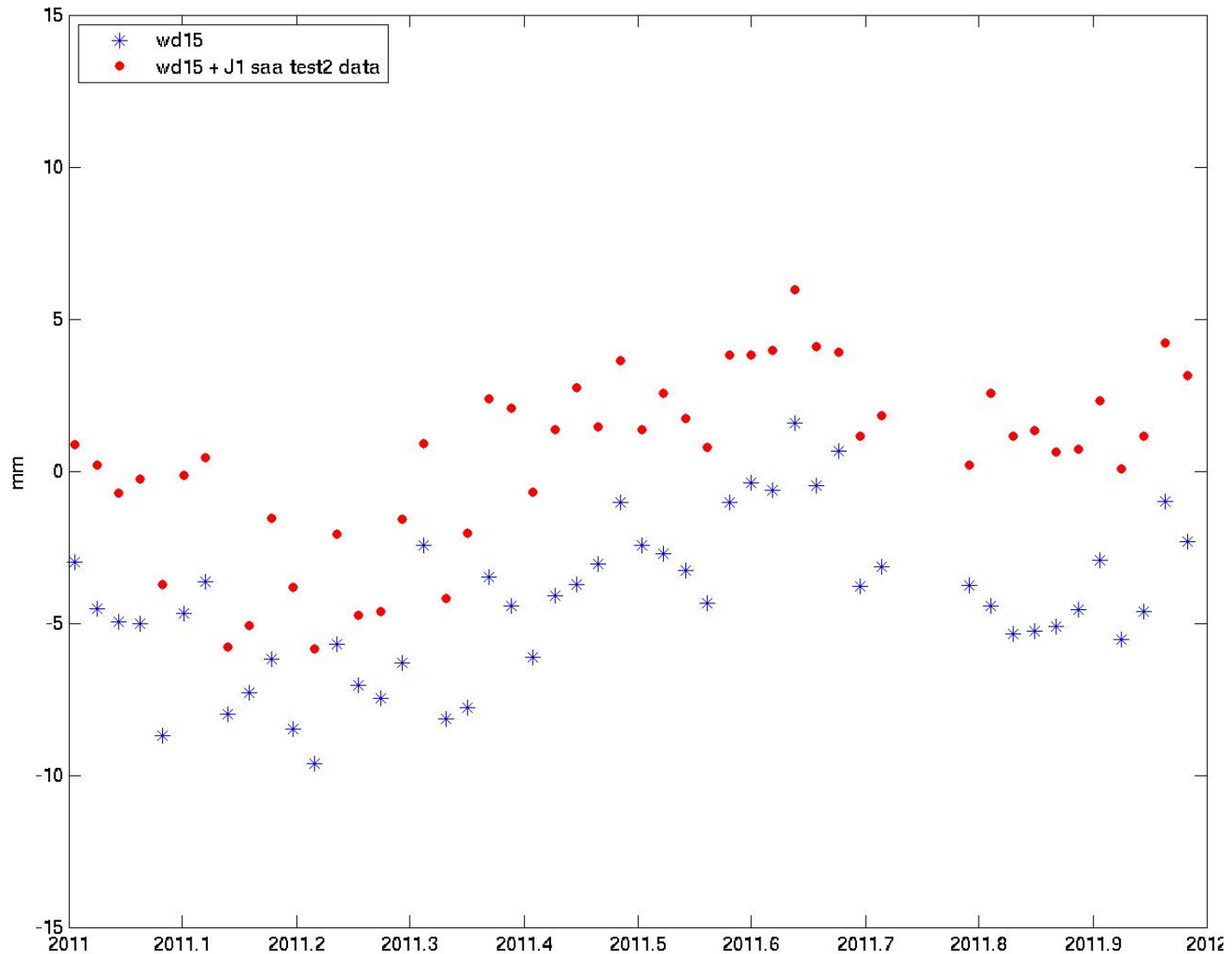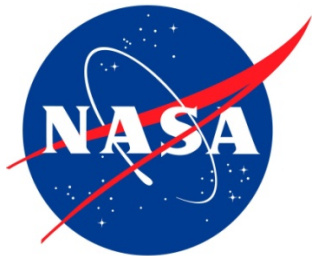# SPOT-5 wd15 combination Solution Tz (without & with SAA-corrected Data)

Jason-1 wd15 single-satellite Solution Scale (Test1 & Test2)
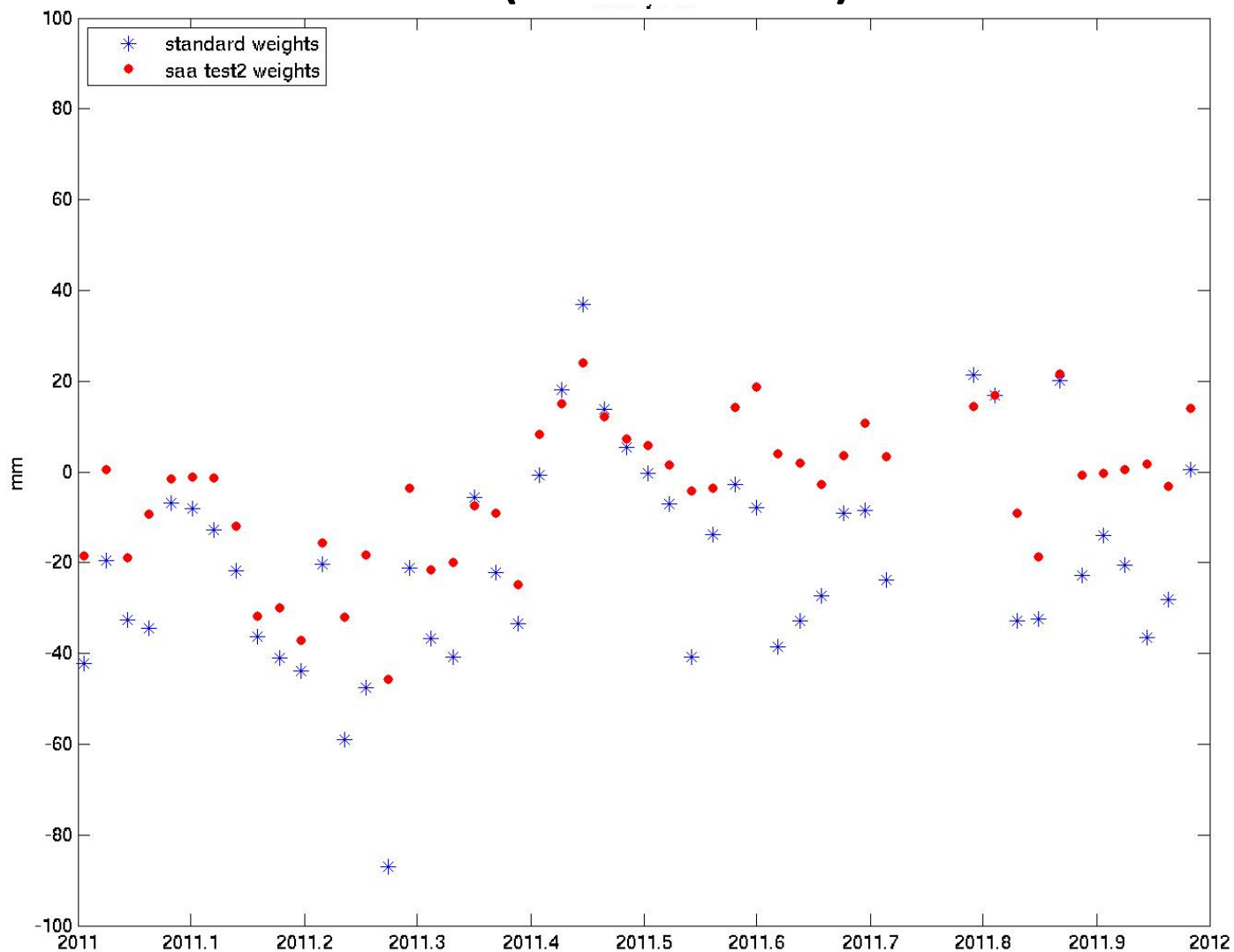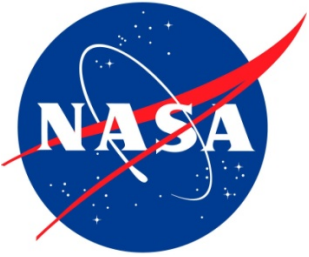

J1 only : Scale

Jason-1 wd15 combination Solution Scale
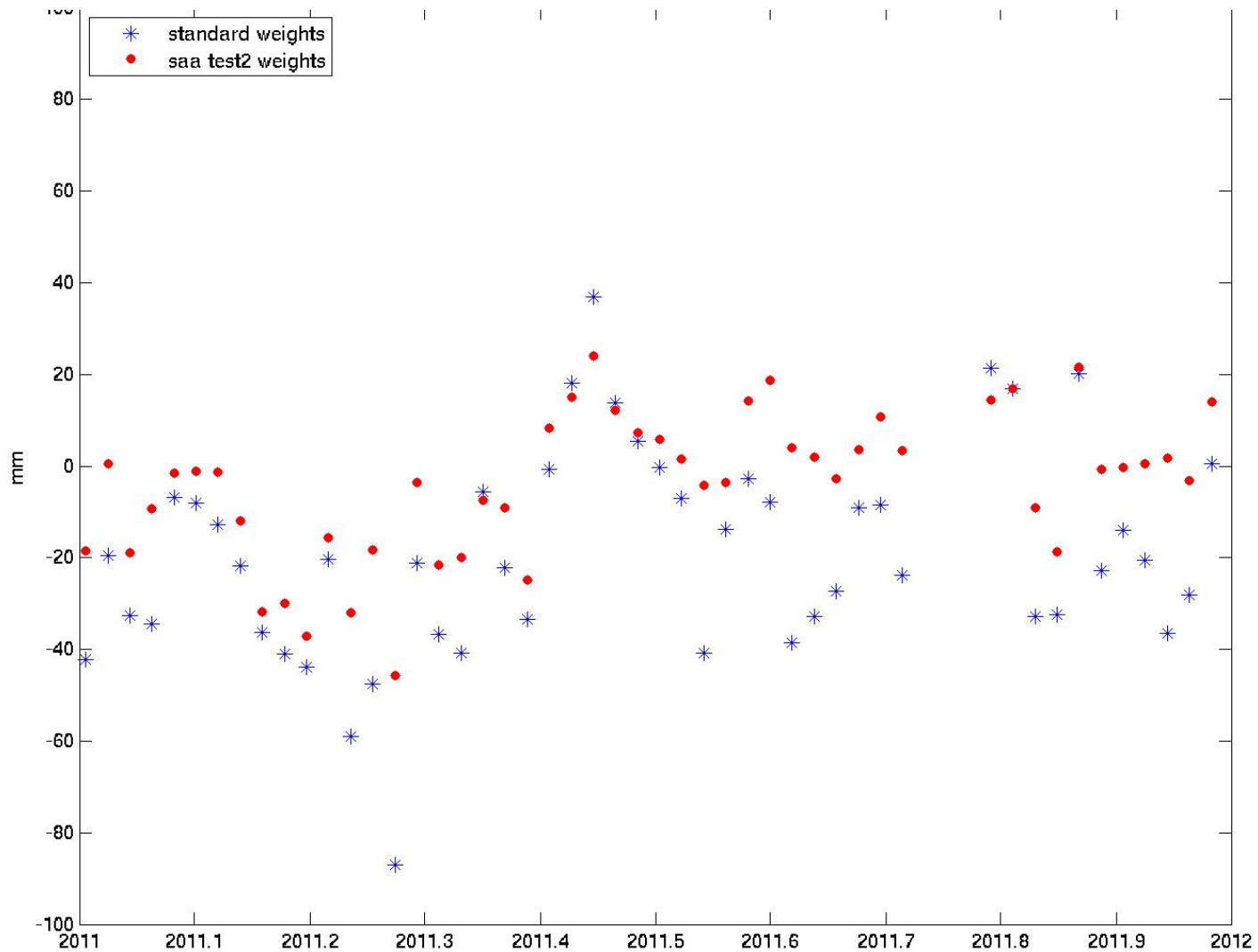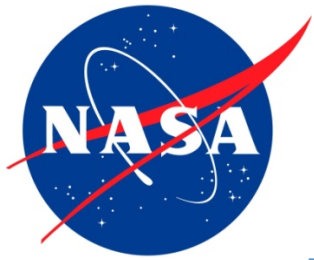## (standard wd15, wd15+Test2)

Jason-1 wd15 single-satellite Solution Tz
(Test1 & Test2)

Jason-1 wd15 combination Solution Tz (standard wd15, wd15+Test2)

Jason-1 station-specific
Data weights (gscwd15, 2011)

weights	Station	ID's
0.3 cm/s	**Non-SAA stations**	
0.8 cm/s	**Arequipa, Peru**	**AREA, AREB, ARFB**
	Ascension Island	**ASDB, ASEB**
	Cachoeira Paulista	**CACB, CADB**
	Easter Island	**EASA, EASB**
	Kourou	**KRUA, KRUB, KRVB, KRWB**
	Libreville, Gabon	**LIBA, LIBB, LICB**
	Santiago, Chile	**SANB, SAOB**
	St. Helena	**HELA, HELB, HEMB**
0.5 cm/s	**Galapagos, Ecuador**	**GALA**
	Hartebeesthoek	**HBKA, HBKB, HBLA, HBLB, HBMB**
	Sal, Cape Verde	**SALB**
	Santa Cruz, Ecuador	**SCRB**