Results of intercalibration between AMSR2 and TMI/AMSR-E (AMSR2 Version 1.1)

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Summary

- Brightness temperatures (Tbs) of AMSR2 (Version 1.1) were intercalibrated with those of TMI and AMSR-E.
- Differences were found between the calibration of AMSR2 and TMI/AMSR-E. The differences seem to be Tb-dependent.
- Intercalibration coefficients (slope and intercept) were derived to compensate the calibration differences.

* Note that these coefficients are just to cancel out calibration differences. Differences originated from instrument's characteristics (e.g., center frequency and incidence angle) should be handled by users.

- Investigation of the causes of the calibration differences are underway.
- Further intercalibrations are in progress, including comparison with polar orbiting radiometers through TMI or by polar region match-ups, and direct comparison with AMSR-E Tbs obtained by slow rotation observation (from December 2012).

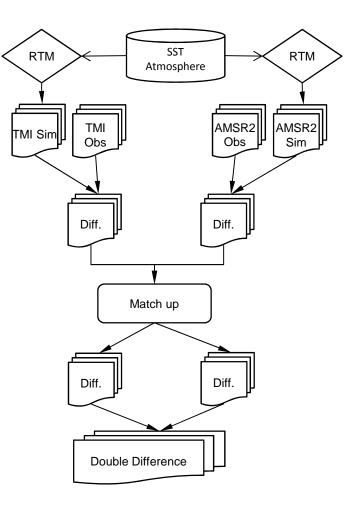
Data and Models

- Tb products for intercalibration
 - AMSR2: Level-1B (Version 1.1)
 - TMI: 1B11 (Version 7)
 - AMSR-E: Level-1B (Version 3)
- Radiative transfer model (RTM)
 - RTTOV 10.2 distributed by NWP SAF.
 - Used surface emissivity model/atlas built-in RTTOV 10.2:
 FASTEM 5 for ocean and TELSEM for land surface emissivity.
- Global analysis data
 - ECMWF ERA-Interim analysis and JMA Merged satellite and in situ data Global Daily Sea Surface Temperatures (MGDSST) are used as atmospheric profile and SST, respectively.

Methodology

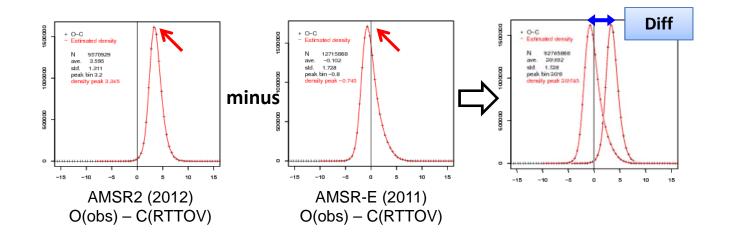
• TMI intercalibration

- Create collocation dataset from AMSR2 and TMI (15 minutes and 0.1 degrees grid).
- Compute differences between observed- and calculated-Tb (O-C) for both AMSR2 and TMI, over rainforest and cloud-free/calm ocean areas. Global analysis data and RTM are used to derive calculated-Tbs.
- Further create "double difference" to cancel out the differences in frequency and incidence angle: AMSR2(O-C) – TMI(O-C).



Methodology

- AMSR-E intercalibration
 - Calculate differences between observed- and simulated-Tb (O-C) over rainforest and cloud-free/calm ocean areas for 2012 AMSR2 Tbs, by using global analysis data and RTM. Data period is from July to September in this report.
 - Obtain peak values from O-C histogram.
 - Follow the same steps for 2011 AMSR-E data in the same period.
 - Differences between O-Cs indicate calibration differences within the limits of accuracy of global analysis.

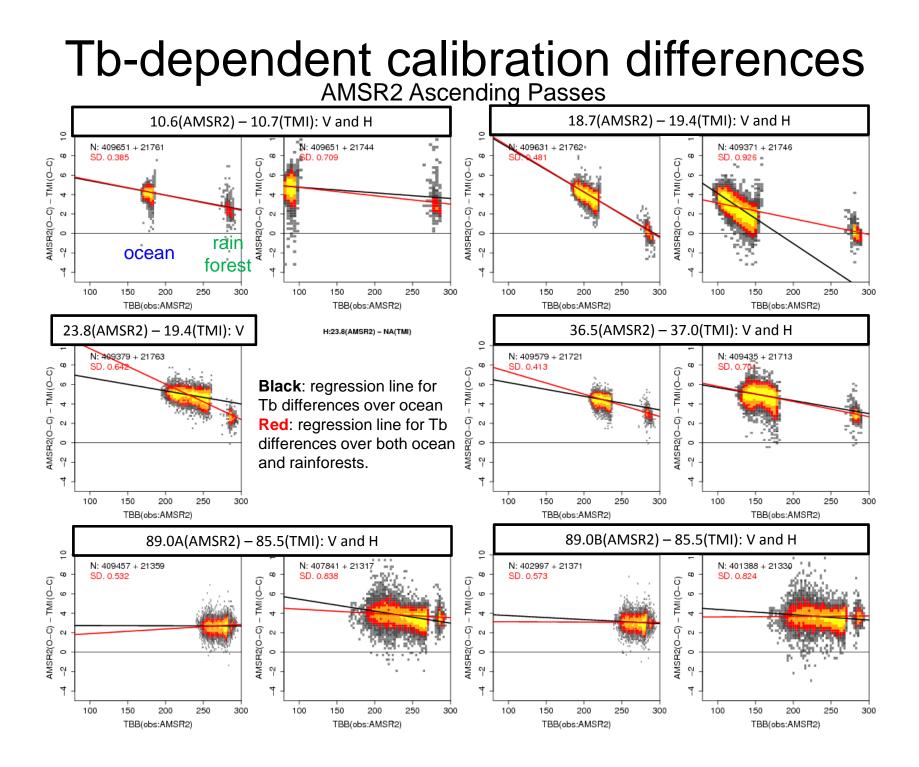


Summary of TMI intercalibration

- Intercalibration coefficients (slope/intercept) were derived by linear regression (no physical meaning of straight-line approximation). Calibration differences at typical Tbs are also shown in table below based on the intercalibration coefficients.
- Characteristics of the difference sometimes differ for ocean/land and ascending/descending (see next slide). Coefficients below were determined by using both ocean and rainforests values, and averaged over ascending and descending. Separated coefficients for ascending and descending are provided in Appendix.

Asc+Dsc	slope	intercept	TB@ocean	∆T@ocean	TB@land	$\Delta T@land$
10V	-0.01662	6.99952	179	+4.0	285	+2.3
10H	-0.00975	5.61573	91	+4.7	283	+2.9
18V	-0.05124	13.80014	205	+3.3	286	-0.8
18H	-0.01944	4.62348	131	+2.1	284	-0.9
23V	-0.03970	13.47956	237	+4.1	288	+2.0
23H	-	-	-	-	-	-
36V	-0.02711	9.66059	224	+3.6	285	+1.9
36H	-0.02108	7.84445	160	+4.5	284	+1.9
89AV	-0.00141	1.75392	270	+1.4	287	+1.3
89AH	-0.00975	4.97772	242	+2.6	287	+2.2
89BV	-0.00618	3.37024	269	+1.7	287	+1.6
89BH	-0.00545	3.80564	241	+2.5	287	+2.2

 $\Delta Cal_{AMSR2-TMI}[K] = Tb_{AMSR2}[K] * slope + intercept$ $\Delta Cal_{TMI-AMSR2}[K] = -(Tb_{AMSR2}[K] * slope + intercept)$



Summary of AMSR-E intercalibration

- Intercalibration coefficients (slope and intercept) provided below are those of lines passing through two O-C values over ocean and rainforest (no physical meaning for straight-line approximation). Calibration differences at typical Tbs are shown based on the coefficients.
- Averaged over ascending and descending passes. Separated coefficients for ascending and descending orbits are provided in Appendix.

Asc+Dsc	AMSR-E(O-C)		AMSR-2(O-C)		AMSR(2-E)		Ocean		Land	
ASC+DSC	Ocean	Land	Ocean	Land	Slope	Intercept	TB	ΔT	TB	ΔT
06V	-1.8	-2.6	-0.3	-2.7	-0.01412	3.89494	167	+1.5	282	-0.1
06H	+0.3	-3.3	+2.3	-3.3	-0.00982	2.83897	82	+2.0	281	+0.1
07V	NA	NA	-0.1	-1.1	-0.00203	2.08485	168	+1.7	284	+1.5
07H	NA	NA	+2.8	-2.3	-0.00805	3.30649	83	+2.6	282	+1.0
10V	-1.6	-3.9	+2.6	-1.1	-0.01351	6.70216	175	+4.3	284	+2.9
10H	+0.3	-4.0	+3.4	-1.5	-0.00293	3.42724	87	+3.2	282	+2.6
18V	+0.7	-1.5	+4.4	-2.1	-0.04960	13.49461	195	+3.8	284	-0.6
18H	+3.1	-1.5	+3.8	-2.3	-0.00945	1.82686	113	+0.8	283	-0.8
23V	+1.5	-1.6	+4.0	+0.1	-0.01237	5.29143	217	+2.6	287	+1.7
23H	+3.9	-1.6	+6.5	-0.4	-0.01114	4.49098	155	+2.8	286	+1.3
36V	-0.5	-1.5	+2.9	+1.1	-0.01103	5.78519	216	+3.4	283	+2.7
36H	+2.1	-1.2	+5.1	+1.3	-0.00440	3.78759	144	+3.2	283	+2.5
89AV	NA	NA	+3.1	+0.2	-0.01578	5.71765	257	+1.7	286	+1.2
89AH	NA	NA	+7.1	+0.2	-0.01738	5.61016	213	+1.9	286	+0.6
89BV	+1.6	-0.9	+3.4	+0.6	-0.01304	5.33198	257	+2.0	286	+1.6
89BH	+5.4	-0.4	+6.9	+0.3	-0.01133	4.04361	213	+1.6	286	+0.8

 $\Delta Cal_{AMSR2-AMSRE}[K] = Tb_{AMSR2}[K] * slope + intercept$ $\Delta Cal_{AMSRE-AMSR2}[K] = -(Tb_{AMSR2}[K] * slope + intercept)$

Appendix

Summary of TMI intercalibration

- Ascending and Descending -

Ascending	slope	intercept	TB@ocean	∆T@ocean	TB@land	∆T@land
10V	-0.01919	7.43988	179	+4.0	287	+1.9
10H	-0.01074	5.79105	91	+4.8	285	+2.7
18V	-0.05379	14.12539	204	+3.2	287	-1.3
18H	-0.02127	4.85403	129	+2.1	286	-1.2
23V	-0.04087	13.47508	235	+3.9	289	+1.7
23H						
36V	-0.02910	9.95147	223	+3.5	286	+1.6
36H	-0.02182	7.90710	158	+4.5	285	+1.7
89AV	-0.00165	1.79027	269	+1.4	288	+1.3
89AH	-0.00929	4.86461	239	+2.6	287	+2.2
89BV	-0.00528	3.04011	268	+1.6	288	+1.5
89BH	-0.00585	3.81577	238	+2.4	287	+2.1
1						
Descending	slope	intercept	TB@ocean	∆T@ocean	TB@land	$\Delta T@land$
Descending 10V	slope -0.01405	intercept 6.55917	TB@ocean 179	∆T@ocean +4.0	TB@land 283	∆T@land +2.6
10V	-0.01405	6.55917	179	+4.0	283	+2.6
10V 10H	-0.01405 -0.00876	6.55917 5.44041	179 91	+4.0 +4.6	283 281	+2.6 +3.0
10V 10H 18V	-0.01405 -0.00876 -0.04869	6.55917 5.44041 13.47488	179 91 206	+4.0 +4.6 +3.4	283 281 284	+2.6 +3.0 -0.4
10V 10H 18V 18H	-0.01405 -0.00876 -0.04869 -0.01760	6.55917 5.44041 13.47488 4.39293	179 91 206 132	+4.0 +4.6 +3.4 +2.1	283 281 284 282	+2.6 +3.0 -0.4 -0.6
10V 10H 18V 18H 23V	-0.01405 -0.00876 -0.04869 -0.01760	6.55917 5.44041 13.47488 4.39293	179 91 206 132	+4.0 +4.6 +3.4 +2.1	283 281 284 282	+2.6 +3.0 -0.4 -0.6
10V 10H 18V 18H 23V 23H	-0.01405 -0.00876 -0.04869 -0.01760 -0.03852	6.55917 5.44041 13.47488 4.39293 13.48404	179 91 206 132 238	+4.0 +4.6 +3.4 +2.1 +4.3	283 281 284 282 287	+2.6 +3.0 -0.4 -0.6 +2.4
10V 10H 18V 18H 23V 23H 36V	-0.01405 -0.00876 -0.04869 -0.01760 -0.03852 -0.02511	6.55917 5.44041 13.47488 4.39293 13.48404 9.36971	179 91 206 132 238 225	+4.0 +4.6 +3.4 +2.1 +4.3 +3.7	283 281 284 282 287 283	+2.6 +3.0 -0.4 -0.6 +2.4 +2.3
10V 10H 18V 18H 23V 23H 36V 36H	-0.01405 -0.00876 -0.04869 -0.01760 -0.03852 -0.02511 -0.02035	6.55917 5.44041 13.47488 4.39293 13.48404 9.36971 7.78179	179 91 206 132 238 225 161	+4.0 +4.6 +3.4 +2.1 +4.3 +3.7 +4.5	283 281 284 282 287 287 283 283 282	+2.6 +3.0 -0.4 -0.6 +2.4 +2.3 +2.0
10V 10H 18V 18H 23V 23H 36V 36H 89AV	-0.01405 -0.00876 -0.04869 -0.01760 -0.03852 -0.02511 -0.02035 -0.00117	6.55917 5.44041 13.47488 4.39293 13.48404 9.36971 7.78179 1.71757	179 91 206 132 238 225 161 270	+4.0 +4.6 +3.4 +2.1 +4.3 +3.7 +4.5 +1.4	283 281 284 282 287 283 283 282 286	+2.6 +3.0 -0.4 -0.6 +2.4 +2.3 +2.0 +1.4

 $\Delta Cal_{AMSR2-TMI}[K] = Tb_{AMSR2}[K] * slope + intercept$ $\Delta Cal_{TMI-AMSR2}[K] = -(Tb_{AMSR2}[K] * slope + intercept)$

Summary of AMSR-E intercalibration

- Ascending and Descending -

	AMSR-I	E(O-C)	AMSR-	2(O-C)	AMSF	R(2-E)	Oc	ean	La	Ind
Ascending	Ocean	Land	Ocean	Land	Slope	Intercept	ΤB	ΔT	TB	ΔT
06V	-1.8	-3.5	-0.2	-4.0	-0.01721	4.48848	168	+1.6	288	-0.5
06H	+0.3	-4.4	+2.3	-4.5	-0.01060	2.92763	82	+2.1	287	-0.1
07V	NA	NA	+0.0	-2.4	-0.00492	2.66166	168	+1.8	291	+1.2
07H	NA	NA	+2.9	-3.6	-0.00891	3.39916	83	+2.7	288	+0.8
10V	-1.8	-4.7	+2.7	-2.1	-0.01734	7.63511	175	+4.6	290	+2.6
10H	+0.1	-4.8	+3.4	-2.6	-0.00537	3.83960	87	+3.4	289	+2.3
18V	+0.6	-2.1	+4.5	-3.2	-0.05307	14.31457	195	+4.0	290	-1.1
18H	+3.1	-2.6	+3.8	-3.2	-0.00826	1.72220	114	+0.8	289	-0.7
23V	+1.7	-1.9	+4.1	-0.7	-0.01686	6.25463	217	+2.6	291	+1.3
23H	+3.8	-2.3	+6.4	-0.8	-0.00956	4.27756	156	+2.8	290	+1.5
36V	-0.7	-2.0	+2.8	+0.4	-0.01534	6.88561	215	+3.6	288	+2.5
36H	+1.9	-2.0	+5.1	+0.3	-0.00618	4.16480	144	+3.3	287	+2.4
89AV	NA	NA	+3.2	-0.4	-0.01671	6.10373	257	+1.8	289	+1.3
89AH	NA	NA	+7.3	-0.2	-0.01846	6.26630	214	+2.3	289	+0.9
89BV	+1.7	-1.5	+3.5	+0.1	-0.01106	4.93692	257	+2.1	289	+1.7
89BH	+5.2	-1.0	+6.9	-0.2	-0.01304	4.62759	213	+1.8	289	+0.9
Descending	AMSR-I	()	AMSR-	· · · ·		R(2-E)		ean		nd
Descending	Ocean	Land	Ocean	Land	Slope	Intercept	TB	ΔT	ТВ	ΔT
06V	Ocean -1.8	Land -1.7	Ocean -0.3	Land -1.4	Slope -0.01018	Intercept 3.15977	TB 167	∆T +1.5	TB 282	∆T +0.3
06V 06H	Ocean -1.8 +0.2	Land -1.7 -2.3	Ocean -0.3 +2.2	Land -1.4 -2.1	Slope -0.01018 -0.00874	Intercept 3.15977 2.73023	TB 167 82	ΔT +1.5 +2.0	TB 282 281	ΔT +0.3 +0.3
06V 06H 07V	Ocean -1.8 +0.2 NA	Land -1.7 -2.3 NA	Ocean -0.3 +2.2 -0.1	Land -1.4 -2.1 +0.1	Slope -0.01018 -0.00874 0.00112	Intercept 3.15977 2.73023 1.46345	TB 167 82 168	ΔT +1.5 +2.0 +1.7	TB 282 281 284	ΔT +0.3 +0.3 +1.8
06V 06H 07V 07H	Ocean -1.8 +0.2 NA NA	Land -1.7 -2.3 NA NA	Ocean -0.3 +2.2 -0.1 +2.8	Land -1.4 -2.1 +0.1 -1.1	Slope -0.01018 -0.00874 0.00112 -0.00693	Intercept 3.15977 2.73023 1.46345 3.19522	TB 167 82 168 83	ΔT +1.5 +2.0 +1.7 +2.6	TB 282 281 284 282	ΔT +0.3 +0.3 +1.8 +1.2
06V 06H 07V 07H 10V	Ocean -1.8 +0.2 NA NA -1.5	Land -1.7 -2.3 NA NA -3.2	Ocean -0.3 +2.2 -0.1 +2.8 +2.5	Land -1.4 -2.1 +0.1 -1.1 -0.2	Slope -0.01018 -0.00874 0.00112 -0.00693 -0.00872	Intercept 3.15977 2.73023 1.46345 3.19522 5.60089	TB 167 82 168 83 175	ΔT +1.5 +2.0 +1.7 +2.6 +4.1	TB 282 281 284 282 282 284	ΔT +0.3 +1.8 +1.2 +3.1
06V 06H 07V 07H 10V 10H	Ocean -1.8 +0.2 NA NA -1.5 +0.4	Land -1.7 -2.3 NA NA -3.2 -3.2	Ocean -0.3 +2.2 -0.1 +2.8 +2.5 +3.3	Land -1.4 -2.1 +0.1 -1.1 -0.2 -0.4	Slope -0.01018 -0.00874 0.00112 -0.00693 -0.00872 -0.00032	Intercept 3.15977 2.73023 1.46345 3.19522 5.60089 3.00164	TB 167 82 168 83 175 87	ΔT +1.5 +2.0 +1.7 +2.6 +4.1 +3.0	TB 282 281 284 282 284 284 282	ΔT +0.3 +0.3 +1.8 +1.2 +3.1 +2.9
06V 06H 07V 07H 10V 10H 18V	Ocean -1.8 +0.2 NA NA -1.5 +0.4 +0.7	Land -1.7 -2.3 NA NA -3.2 -3.2 -3.2 -0.9	Ocean -0.3 +2.2 -0.1 +2.8 +2.5 +3.3 +4.4	Land -1.4 -2.1 +0.1 -1.1 -0.2 -0.4 -1.0	Slope -0.01018 -0.00874 0.00112 -0.00693 -0.00872 -0.00032 -0.04296	Intercept 3.15977 2.73023 1.46345 3.19522 5.60089 3.00164 12.05713	TB 167 82 168 83 175 87 195	ΔT +1.5 +2.0 +1.7 +2.6 +4.1 +3.0 +3.7	TB 282 281 284 282 284 282 284 282 284	ΔT +0.3 +1.8 +1.2 +3.1 +2.9 -0.2
06V 06H 07V 07H 10V 10H 18V 18H	Ocean -1.8 +0.2 NA NA -1.5 +0.4 +0.7 +3.1	Land -1.7 -2.3 NA NA -3.2 -3.2 -0.9 -0.5	Ocean -0.3 +2.2 -0.1 +2.8 +2.5 +3.3 +4.4 +3.8	Land -1.4 -2.1 +0.1 -1.1 -0.2 -0.4 -1.0 -1.5	Slope -0.01018 -0.00874 0.00112 -0.00693 -0.00872 -0.00032 -0.04296 -0.01039	Intercept 3.15977 2.73023 1.46345 3.19522 5.60089 3.00164 12.05713 1.90624	TB 167 82 168 83 175 87 195 113	ΔT +1.5 +2.0 +1.7 +2.6 +4.1 +3.0 +3.7 +0.7	TB 282 281 284 282 284 282 284 282 284 282 284 282 284 282 284 282 284 283	ΔT +0.3 +0.3 +1.8 +1.2 +3.1 +2.9 -0.2 -1.0
06V 06H 07V 07H 10V 10H 18V 18H 23V	Ocean -1.8 +0.2 NA NA -1.5 +0.4 +0.7 +3.1 +1.4	Land -1.7 -2.3 NA NA -3.2 -3.2 -0.9 -0.5 -1.3	Ocean -0.3 +2.2 -0.1 +2.8 +2.5 +3.3 +4.4 +3.8 +3.9	Land -1.4 -2.1 +0.1 -1.1 -0.2 -0.4 -1.0 -1.5 +0.8	Slope -0.01018 -0.00874 0.00112 -0.00693 -0.00872 -0.00032 -0.04296 -0.01039 -0.00688	Intercept 3.15977 2.73023 1.46345 3.19522 5.60089 3.00164 12.05713 1.90624 4.11310	TB 167 82 168 83 175 87 195 113 217	ΔT +1.5 +2.0 +1.7 +2.6 +4.1 +3.0 +3.7 +0.7 +2.6	TB 282 281 284 282 284 282 284 282 284 282 284 282 284 282 284 282 284 283 287	ΔT +0.3 +0.3 +1.8 +1.2 +3.1 +2.9 -0.2 -1.0 +2.1
06V 06H 07V 07H 10V 10H 18V 18H 23V 23H	Ocean -1.8 +0.2 NA NA -1.5 +0.4 +0.7 +3.1 +1.4 +4.0	Land -1.7 -2.3 NA NA -3.2 -3.2 -0.9 -0.5 -1.3 -0.9	Ocean -0.3 +2.2 -0.1 +2.8 +2.5 +3.3 +4.4 +3.8 +3.9 +6.6	Land -1.4 -2.1 +0.1 -1.1 -0.2 -0.4 -1.0 -1.5 +0.8 +0.1	Slope -0.01018 -0.00874 0.00112 -0.00693 -0.00872 -0.00032 -0.04296 -0.01039 -0.00688 -0.01245	Intercept 3.15977 2.73023 1.46345 3.19522 5.60089 3.00164 12.05713 1.90624 4.11310 4.66638	TB 167 82 168 83 175 87 195 113 217 155	ΔT +1.5 +2.0 +1.7 +2.6 +4.1 +3.0 +3.7 +0.7 +2.6 +2.7	TB 282 281 284 282 284 282 284 282 284 282 284 282 284 282 284 283 287 286	ΔT +0.3 +0.3 +1.8 +1.2 +3.1 +2.9 -0.2 -1.0 +2.1 +1.1
06V 06H 07V 07H 10V 10H 18V 18H 23V 23H 36V	Ocean -1.8 +0.2 NA NA -1.5 +0.4 +0.7 +3.1 +1.4 +4.0 -0.3	Land -1.7 -2.3 NA NA -3.2 -3.2 -3.2 -0.9 -0.5 -1.3 -0.9 -1.0	Ocean -0.3 +2.2 -0.1 +2.8 +2.5 +3.3 +4.4 +3.8 +3.9 +6.6 +2.9	Land -1.4 -2.1 +0.1 -1.1 -0.2 -0.4 -1.0 -1.5 +0.8 +0.1 +1.9	Slope -0.01018 -0.00874 0.00112 -0.00693 -0.00872 -0.00032 -0.04296 -0.01039 -0.00688 -0.01245 -0.00552	Intercept 3.15977 2.73023 1.46345 3.19522 5.60089 3.00164 12.05713 1.90624 4.11310 4.66638 4.42327	TB 167 82 168 83 175 87 195 113 217 155 216	ΔT +1.5 +2.0 +1.7 +2.6 +4.1 +3.0 +3.7 +0.7 +2.6 +2.7 +3.2	TB 282 281 284 282 284 282 284 282 284 282 284 283 287 286 283	ΔT +0.3 +0.3 +1.8 +1.2 +3.1 +2.9 -0.2 -1.0 +2.1 +1.1 +2.9
06V 06H 07V 07H 10V 10H 18V 18H 23V 23H 36V 36H	Ocean -1.8 +0.2 NA NA -1.5 +0.4 +0.7 +3.1 +1.4 +4.0 -0.3 +2.2	Land -1.7 -2.3 NA NA -3.2 -3.2 -3.2 -0.9 -0.5 -1.3 -0.9 -1.0 -0.4	Ocean -0.3 +2.2 -0.1 +2.8 +2.5 +3.3 +4.4 +3.8 +3.9 +6.6 +2.9 +5.2	Land -1.4 -2.1 +0.1 -1.1 -0.2 -0.4 -1.0 -1.5 +0.8 +0.1 +1.9 +2.2	Slope -0.01018 -0.00874 0.00112 -0.00693 -0.00872 -0.00032 -0.04296 -0.01039 -0.00688 -0.01245 -0.00552 -0.00241	Intercept 3.15977 2.73023 1.46345 3.19522 5.60089 3.00164 12.05713 1.90624 4.11310 4.66638 4.42327 3.38051	TB 167 82 168 83 175 87 195 113 217 155 216 144	ΔT +1.5 +2.0 +1.7 +2.6 +4.1 +3.0 +3.7 +0.7 +2.6 +2.7 +3.2 +3.0	TB 282 281 284 282 284 282 284 282 284 282 284 283 287 286 283 283 283	ΔT +0.3 +0.3 +1.8 +1.2 +3.1 +2.9 -0.2 -1.0 +2.1 +1.1 +2.9 +2.7
06V 06H 07V 07H 10V 10H 18V 18H 23V 23H 36V 36H 89AV	Ocean -1.8 +0.2 NA NA -1.5 +0.4 +0.7 +3.1 +1.4 +4.0 -0.3 +2.2 NA	Land -1.7 -2.3 NA NA -3.2 -3.2 -3.2 -0.9 -0.5 -1.3 -0.9 -1.0 -0.4 NA	Ocean -0.3 +2.2 -0.1 +2.8 +2.5 +3.3 +4.4 +3.8 +3.9 +6.6 +2.9 +5.2 +2.9	Land -1.4 -2.1 +0.1 -1.1 -0.2 -0.4 -1.0 -1.5 +0.8 +0.1 +1.9 +2.2 +0.8	Slope -0.01018 -0.00874 0.00112 -0.00693 -0.00872 -0.00032 -0.04296 -0.01039 -0.00688 -0.01245 -0.00552 -0.00241 -0.01299	Intercept 3.15977 2.73023 1.46345 3.19522 5.60089 3.00164 12.05713 1.90624 4.11310 4.66638 4.42327 3.38051 4.85400	TB 167 82 168 83 175 87 195 113 217 155 216 144 257	ΔT +1.5 +2.0 +1.7 +2.6 +4.1 +3.0 +3.7 +0.7 +2.6 +2.7 +3.2 +3.0 +1.5	TB 282 281 284 282 284 282 284 282 284 283 287 286 283 283 283 283 283 286	ΔT +0.3 +0.3 +1.8 +1.2 +3.1 +2.9 -0.2 -1.0 +2.1 +1.1 +2.9 +2.7 +1.1
06V 06H 07V 07H 10V 10H 18V 18H 23V 23H 36V 36H 89AV 89AH	Ocean -1.8 +0.2 NA NA -1.5 +0.4 +0.7 +3.1 +1.4 +4.0 -0.3 +2.2 NA NA	Land -1.7 -2.3 NA NA -3.2 -3.2 -3.2 -0.9 -0.5 -1.3 -0.9 -1.0 -0.4 NA NA	Ocean -0.3 +2.2 -0.1 +2.8 +2.5 +3.3 +4.4 +3.8 +3.9 +6.6 +2.9 +5.2 +2.9 +7.0	Land -1.4 -2.1 +0.1 -1.1 -0.2 -0.4 -1.0 -1.5 +0.8 +0.1 +1.9 +2.2 +0.8 +0.5	Slope -0.01018 -0.00874 0.00112 -0.00693 -0.00872 -0.00032 -0.04296 -0.01039 -0.00688 -0.01245 -0.00552 -0.00241 -0.01299 -0.01555	Intercept 3.15977 2.73023 1.46345 3.19522 5.60089 3.00164 12.05713 1.90624 4.11310 4.66638 4.42327 3.38051 4.85400 4.79854	TB 167 82 168 83 175 87 195 113 217 155 216 144 257 213	ΔT +1.5 +2.0 +1.7 +2.6 +4.1 +3.0 +3.7 +0.7 +2.6 +2.7 +3.2 +3.0 +1.5 +1.5	TB 282 281 284 282 284 282 284 282 284 283 287 286 283 283 283 283 286 286 286 286 286 286 286	ΔT +0.3 +0.3 +1.8 +1.2 +3.1 +2.9 -0.2 -1.0 +2.1 +1.1 +2.9 +2.7 +1.1 +0.4
06V 06H 07V 07H 10V 10H 18V 18H 23V 23H 36V 36H 89AV	Ocean -1.8 +0.2 NA NA -1.5 +0.4 +0.7 +3.1 +1.4 +4.0 -0.3 +2.2 NA	Land -1.7 -2.3 NA NA -3.2 -3.2 -3.2 -0.9 -0.5 -1.3 -0.9 -1.0 -0.4 NA	Ocean -0.3 +2.2 -0.1 +2.8 +2.5 +3.3 +4.4 +3.8 +3.9 +6.6 +2.9 +5.2 +2.9	Land -1.4 -2.1 +0.1 -1.1 -0.2 -0.4 -1.0 -1.5 +0.8 +0.1 +1.9 +2.2 +0.8	Slope -0.01018 -0.00874 0.00112 -0.00693 -0.00872 -0.00032 -0.04296 -0.01039 -0.00688 -0.01245 -0.00552 -0.00241 -0.01299	Intercept 3.15977 2.73023 1.46345 3.19522 5.60089 3.00164 12.05713 1.90624 4.11310 4.66638 4.42327 3.38051 4.85400	TB 167 82 168 83 175 87 195 113 217 155 216 144 257	ΔT +1.5 +2.0 +1.7 +2.6 +4.1 +3.0 +3.7 +0.7 +2.6 +2.7 +3.2 +3.0 +1.5	TB 282 281 284 282 284 282 284 282 284 283 287 286 283 283 283 283 283 286	ΔT +0.3 +0.3 +1.8 +1.2 +3.1 +2.9 -0.2 -1.0 +2.1 +1.1 +2.9 +2.7 +1.1

 $\Delta Cal_{AMSR2-AMSRE}[K] = Tb_{AMSR2}[K] * slope + intercept$ $\Delta Cal_{AMSRE-AMSR2}[K] = -(Tb_{AMSR2}[K] * slope + intercept)$