

SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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Satellite Id	ScatSat-1	Start Orbit	17193	Total Scans	318
Sensor Name	Scatterometer	End Orbit	17194	No of Inner FootPrints	281
Processor Version	v1.1.3	Rev. Number	17193_17194	No Of Outer FootPrints	282
Half Orbit Direction	SN	Data Production Date	26-12-2019	No. Of Inner Slices	9
Equator Crossing Date	25-12-2019	Equator Crossing Time	23:45:46.000	No Of Outer Slices	15

Brightness Temperature(k) Footprint trace

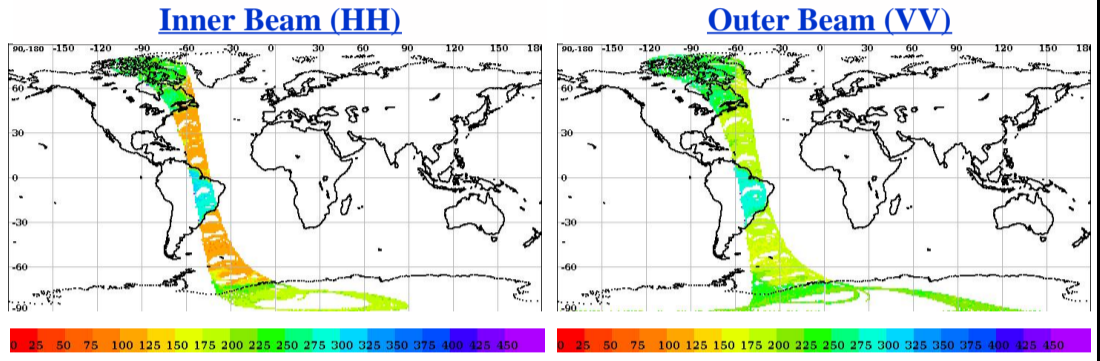


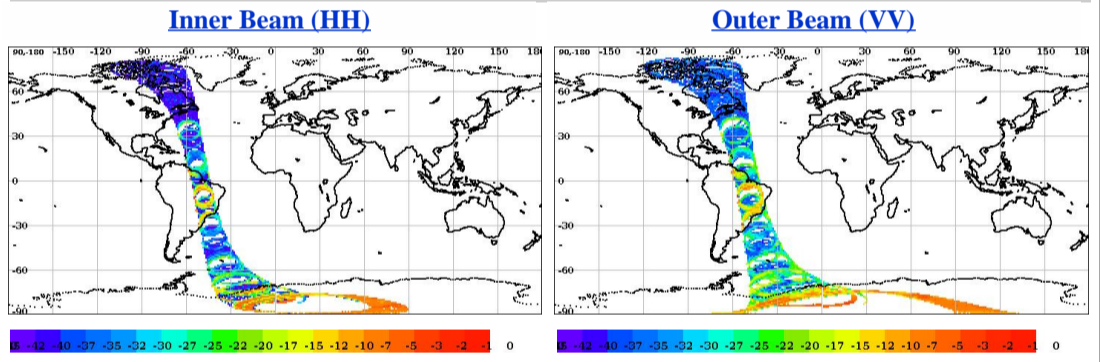
Image Snapshot for Inner & Outer Beam

Inner (HH)

Outer (VV)



Sigma0(dB) Footprint trace



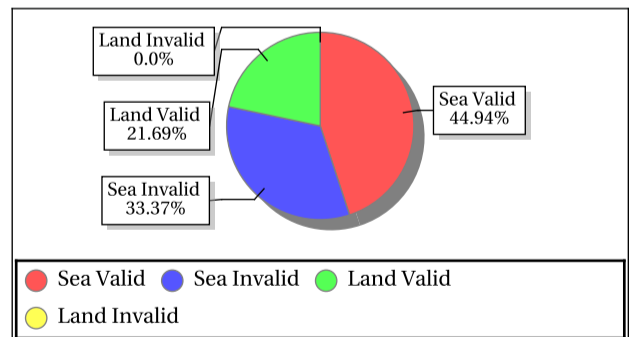
Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	45.11	45.73
Data Not Available From Payload (%)	73.96818	72.93629
Slice not within sample array limits (%)	26.03	27.06
C(S+N) - C(N) < 0.1 (%)	0.00	0.00
Poor Sigma0(%)	22.24	13.35
Noise samples for blending Saturated	0.0	0.0
Count samp. for interpol. saturated (%)	0.00	0.00
Sigma0 < lower bound (-96dB) (%)	0.0	0.0
Sigma0 > upper bound (0 dB) (%)	0.00	0.00
SNR < -65 dB (%)	0.087234	0.133662

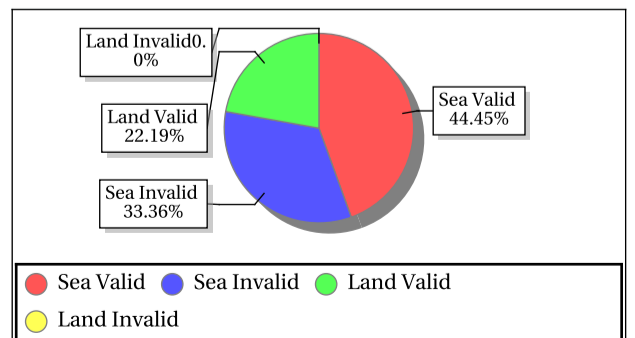
*DP Format Document

Sigma-0 Quality Flag Statistics for Inner/Outer Footprints

Inner Beam (HH)



Outer Beam (VV)



Overall statistics for the Static Parameters (Footprint-wise)

Inner Beam (HH)																
	Sea Aft				Sea Fore				Land Aft				Land fore			
	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)
Kp	0.12	298.99	1.02	13.563	0.12	358.55	2.44	36.485	0.12	309.37	0.40	3.904	0.12	360.84	2.35	33.708
Kpa	0.01	0.03	0.02	0.000	0.01	0.04	0.02	0.000	0.01	0.03	0.01	0.000	0.01	0.03	0.02	0.000
Kpb	0.02	0.04	0.02	0.000	0.02	0.05	0.02	0.000	0.02	0.04	0.02	0.000	0.02	0.04	0.02	0.000
Kpc	0.01	0.02	0.01	0.000	0.01	0.03	0.01	0.000	0.01	0.02	0.01	0.000	0.01	0.02	0.01	0.000
SNR	-33.81	21.01	1.25	0.000	-34.60	18.99	-3.24	0.000	-33.95	27.66	17.65	9.006	-34.62	29.28	5.30	6.988

Outer Beam (VV)																
	Sea Aft				Sea Fore				Land Aft				Land fore			
	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)
Kp	0.09	254.22	0.74	10.705	0.09	302.09	2.24	32.719	0.09	39.07	0.12	0.538	0.09	218.40	1.72	26.639
Kpa	0.01	0.02	0.01	0.000	0.01	0.02	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.02	0.01	0.000
Kpb	0.01	0.02	0.01	0.000	0.01	0.02	0.01	0.000	0.01	0.02	0.01	0.000	0.01	0.02	0.01	0.000
Kpc	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000
SNR	-34.19	14.01	-0.89	0.000	-34.94	11.85	-4.56	0.000	-26.04	21.38	13.25	0.000	-33.53	21.56	2.79	0.000

Parameter Specifications					
Parameter	Kp	Kpa	Kpb	Kpc	SNR
Min	0.00	0.00	0.00	0.00	-65.00
Max	1.00	1.00	1.00	1.00	22.00

- Normal
- Deviations
- Alarming
- High Errors

Overall statistics for static parameter (Footprint-wise)

	Inner Beam (HH)				Outer Beam (VV)				Parameter Specifications		
	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Parameter	Min	Max
Incidence Angle (deg)	48.40	49.44	48.97	0.000	57.15	58.49	57.75	7.266	Inci.(Inner)	47.10	49.90
Azimuth Diff. (deg)	0.0000	263.65	1.16	55.297	0.0000	290.84	1.16	57.450	Inci.(Outer)	57.30	58.90
Range(Km)	1028.45	1086.47	1055.78	0.000	1202.26	1276.87	1237.98	7.442	Azimuth Diff.	0.60	2.00
X Factor(dbm)	-95.23	-90.05	-91.36	0.000	-96.19	-92.10	-93.40	0.000	Range(Inner)	1025.00	1095.70
Across Distance (Km)	15.30	9773.99	40.59	1.000	20.13	9747.39	42.16	1.000	Range(Outer)	1210.00	1280.00
Along Distance (Km)	19.01	9804.80	1536.06	68.000	18.63	9967.32	1579.60	68.000	X-Factor	-100.00	-80.00
									Ac.Distance(Inner)	15.00	20.00
									Ac.Distance(Outer)	15.00	22.00
									Al.Distance(Inner)	15.00	30.00
									Al.Distance(Outer)	10.00	30.00

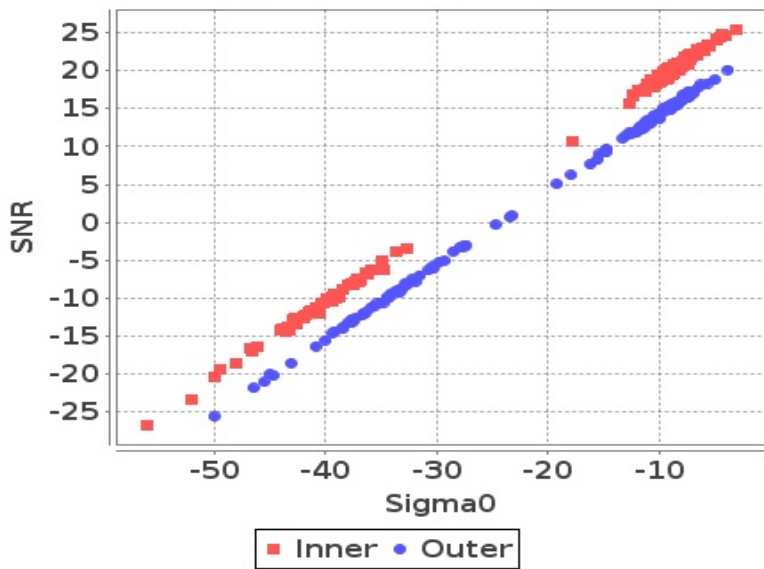
- Normal
- Deviations
- Alarming
- High Errors



Sigma0 Behaviour (Sigma0 Vs SNR)

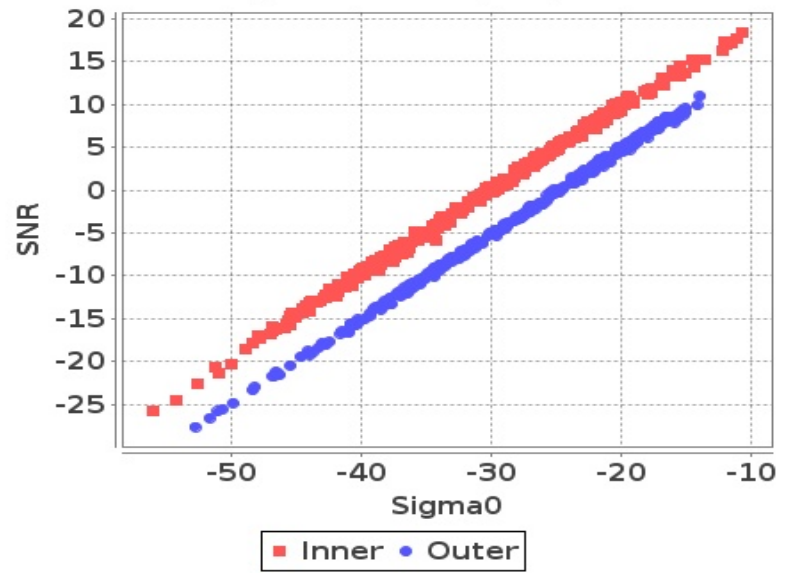
Footprint-Land

Sigma0 Vs SNR (Land)



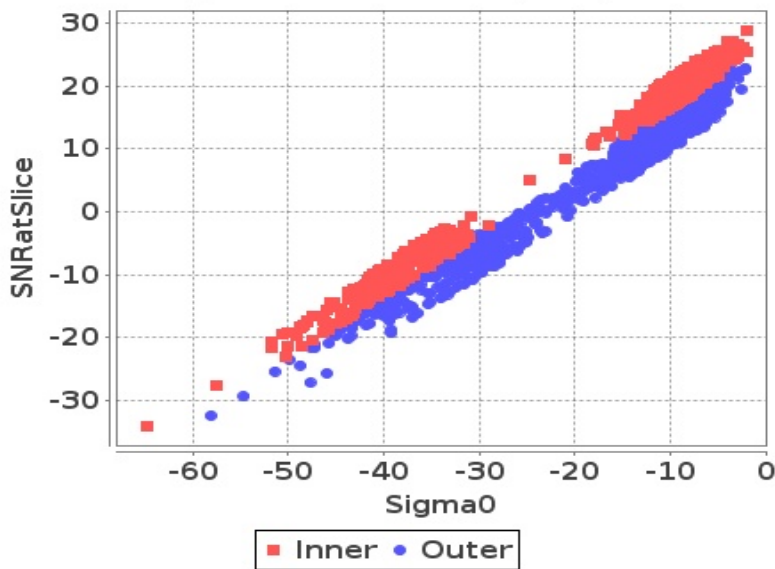
Footprint-Sea

Sigma0 Vs SNR (Sea)



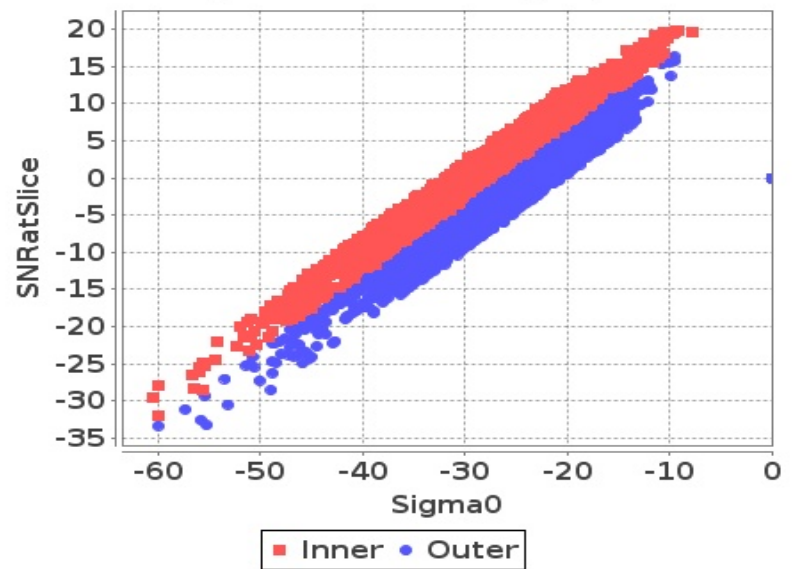
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

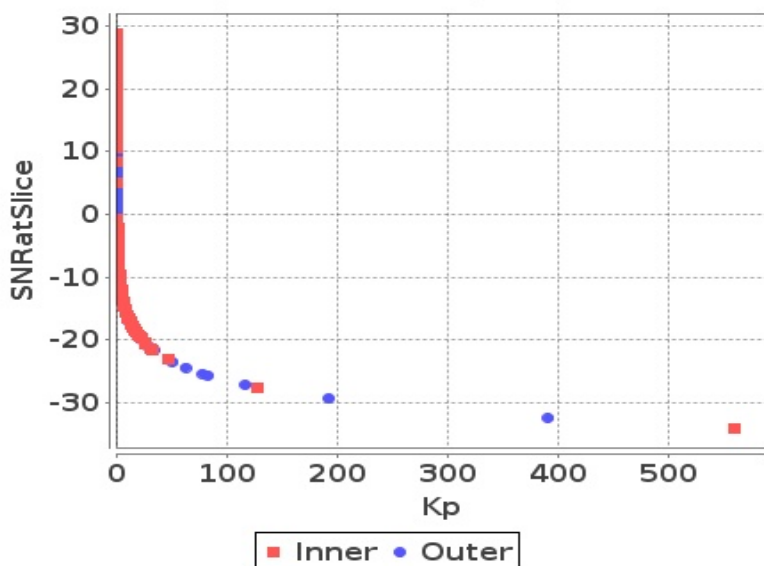
Sigma0 Vs SNRatSlice (Sea)



Sigma0 Behaviour (Kp Vs SNR)

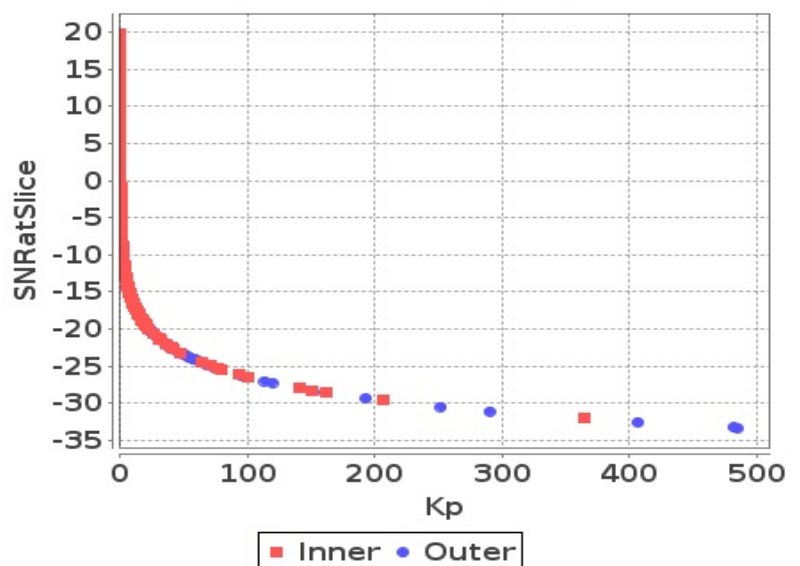
Slice

Kp Vs SNRatSlice (Land)



Slice

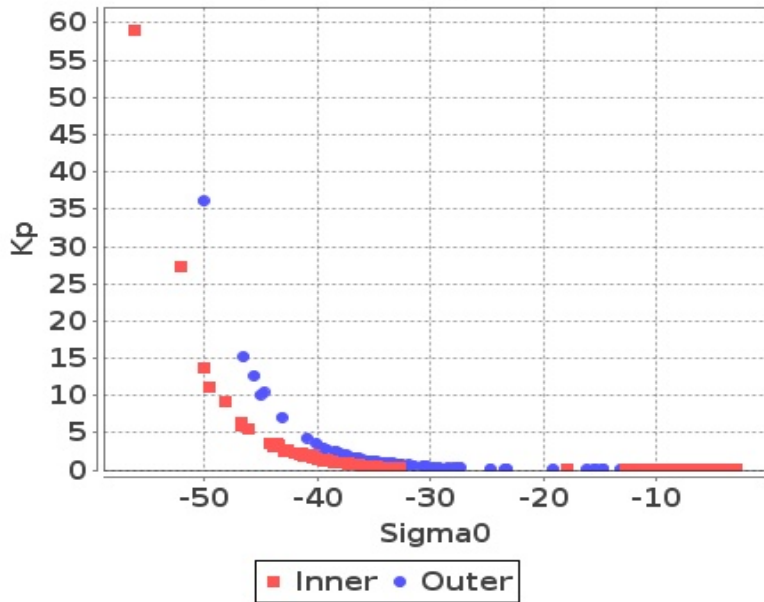
Kp Vs SNRatSlice (Sea)



Sigma0 Behaviour(Sigma0 Vs Kp)

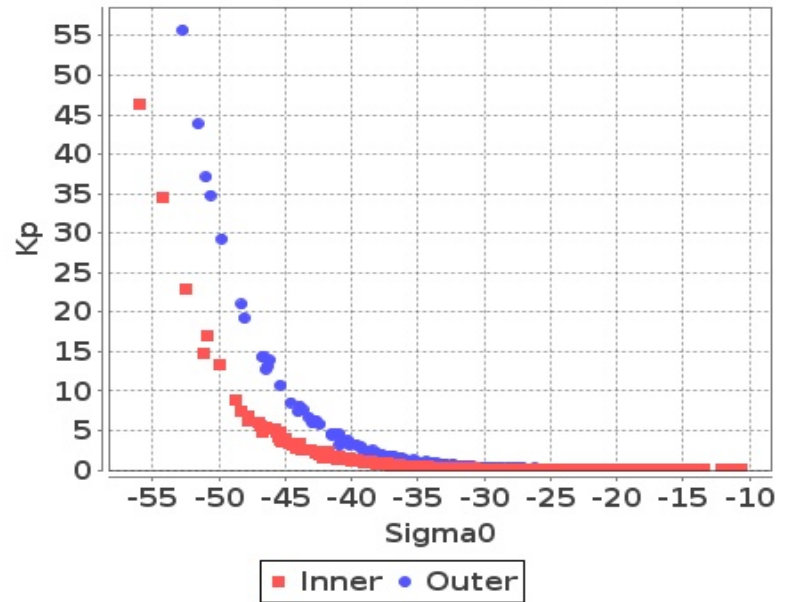
Footprint-Land

Sigma0 Vs Kp (Land)



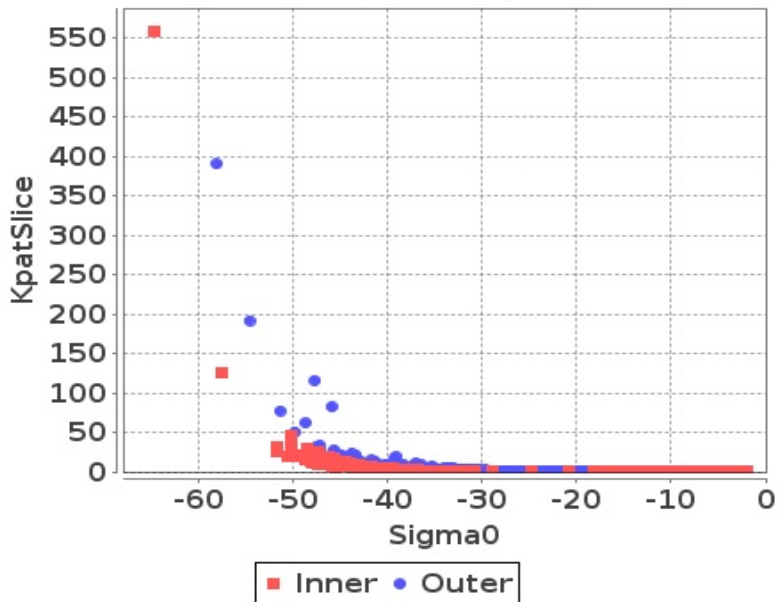
Footprint-Sea

Sigma0 Vs Kp (Sea)



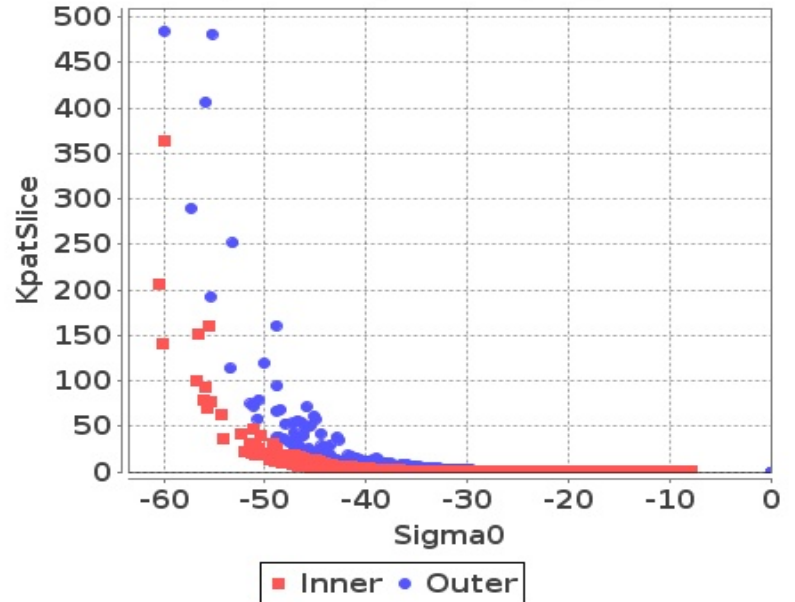
Slice-Land

Sigma0 Vs KpatSlice (Land)



Slice-Sea

Sigma0 Vs KpatSlice (Sea)

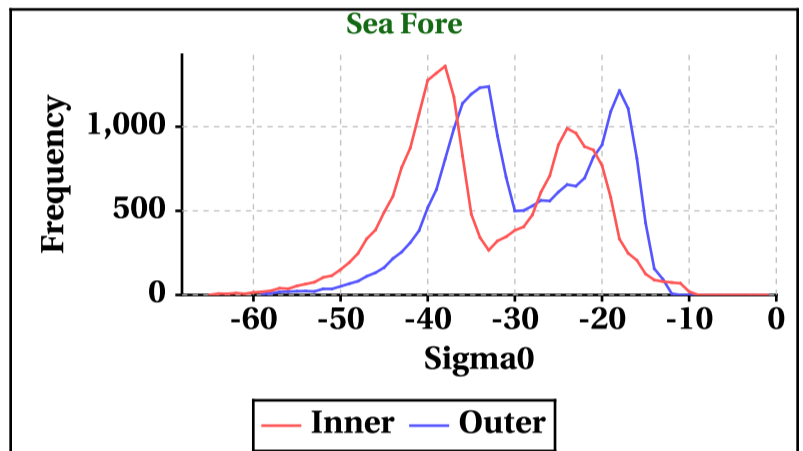
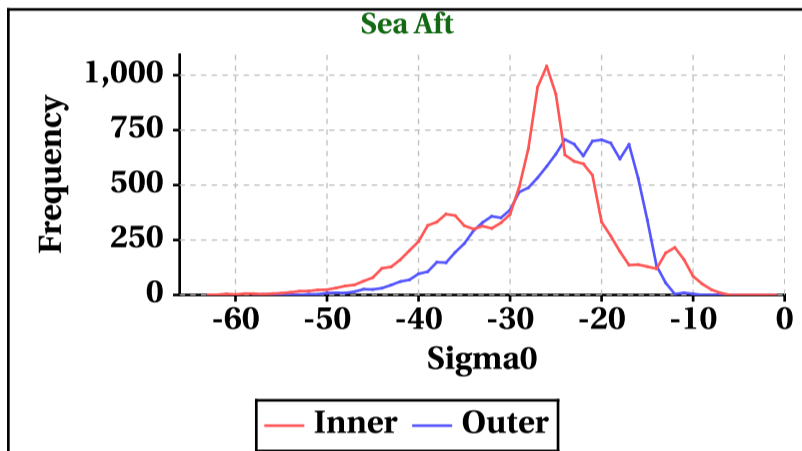
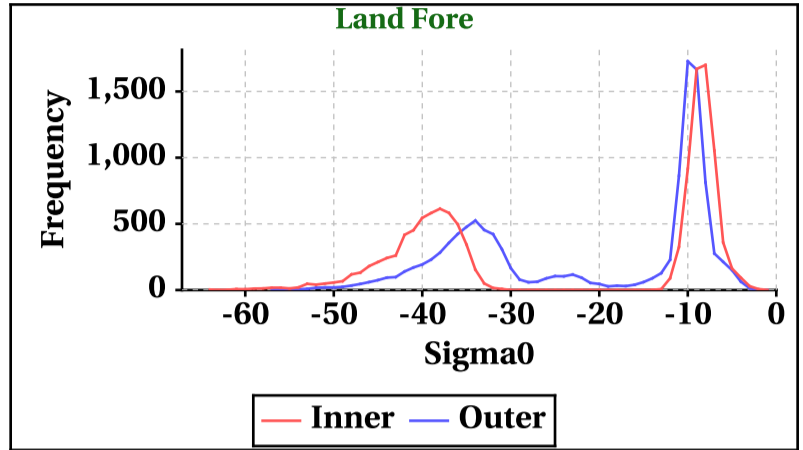
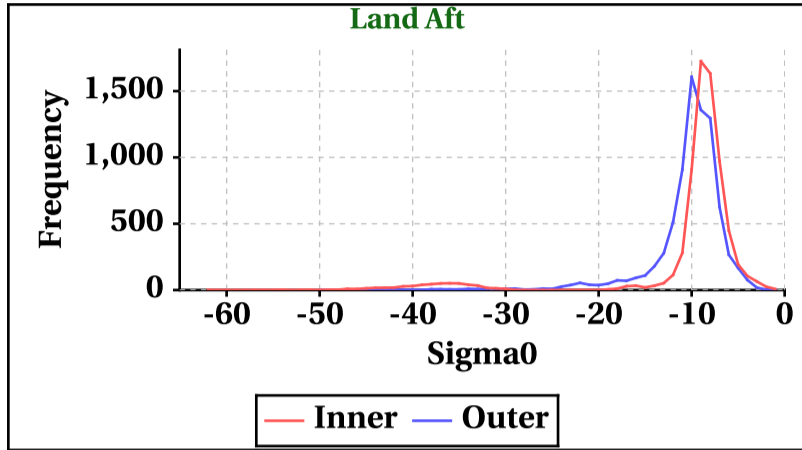


Dynamic Range (Data Histograms)

Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-62	-64	-63	-65
Max	0	0	0	0

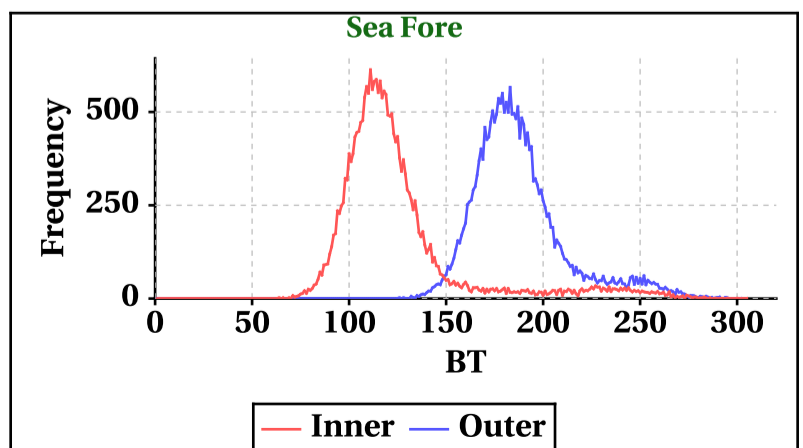
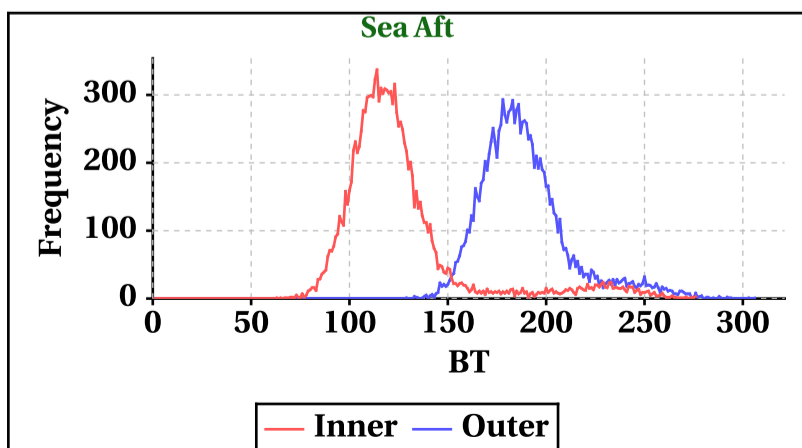
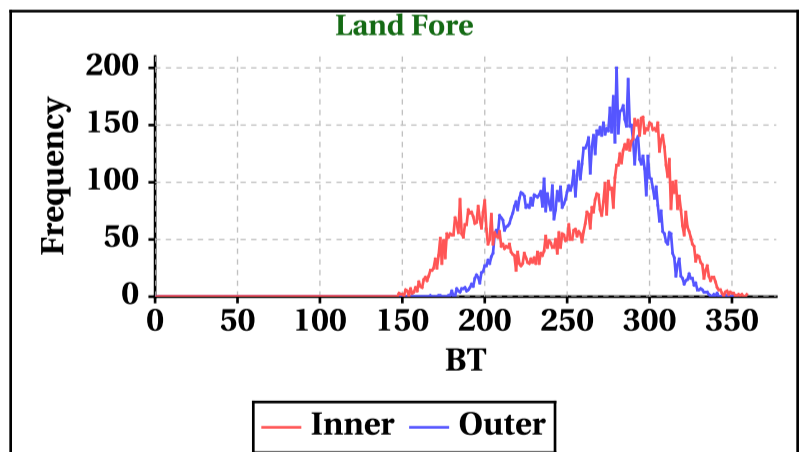
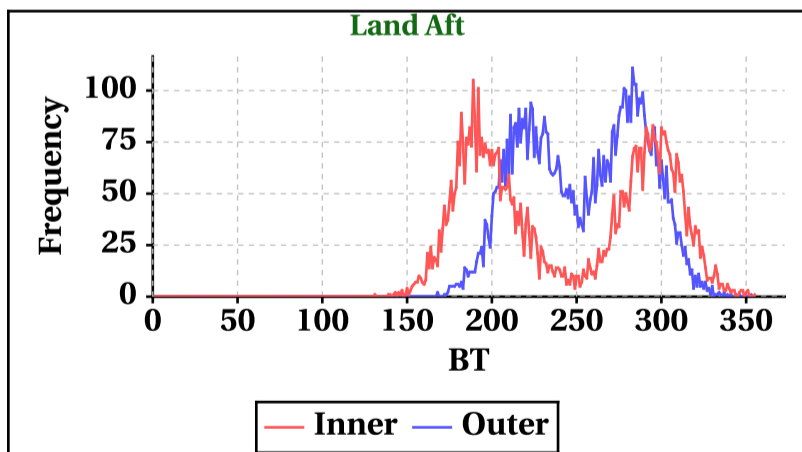
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-50	-57	-58	-59
Max	0	0	0	0



Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	355	359	276	305

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	353	355	306	302

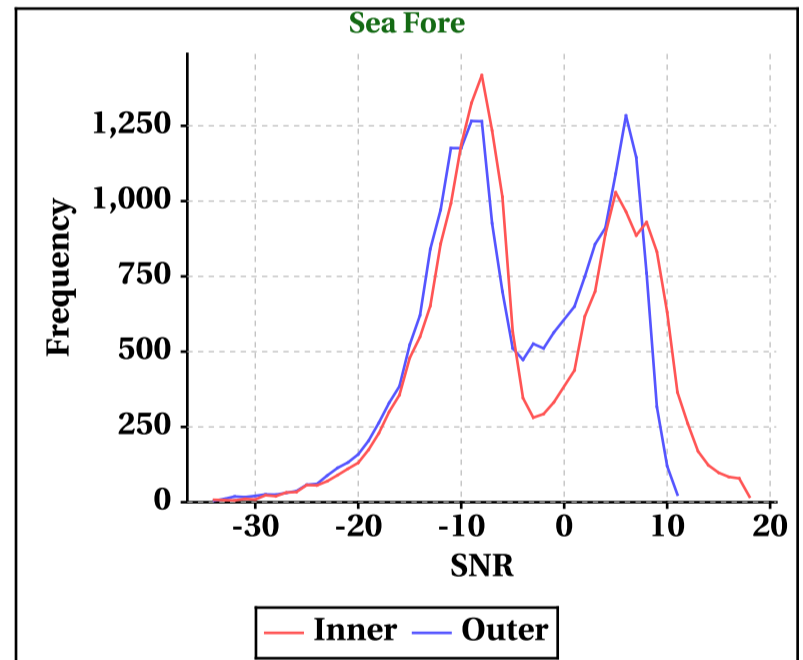
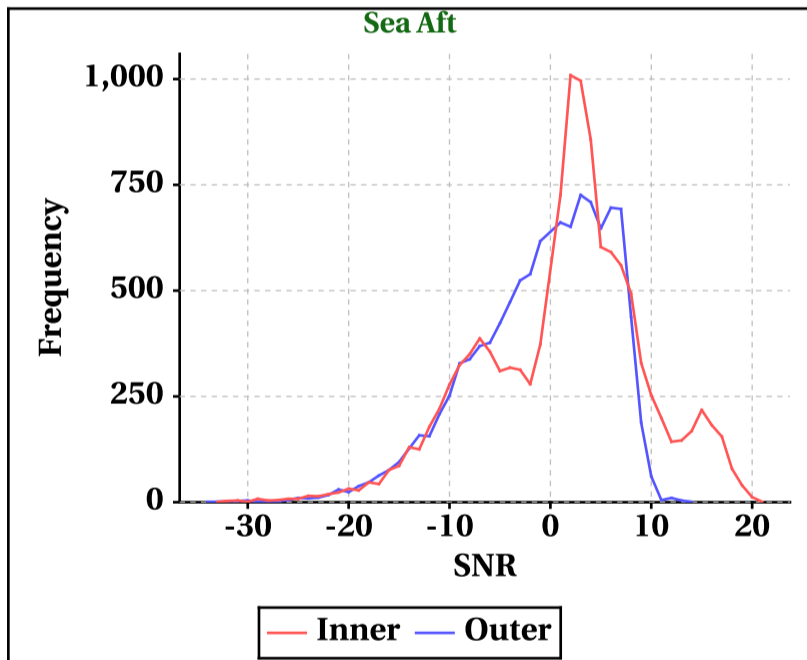
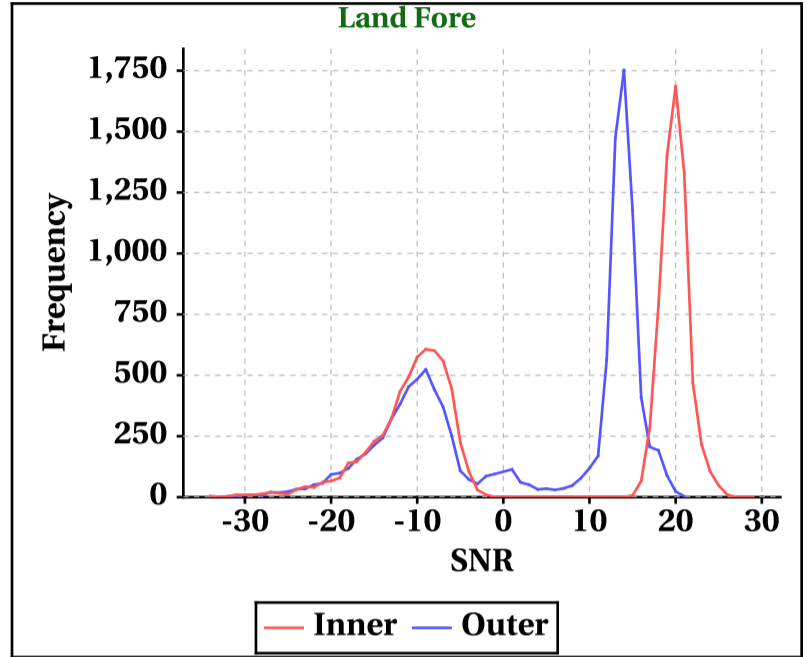
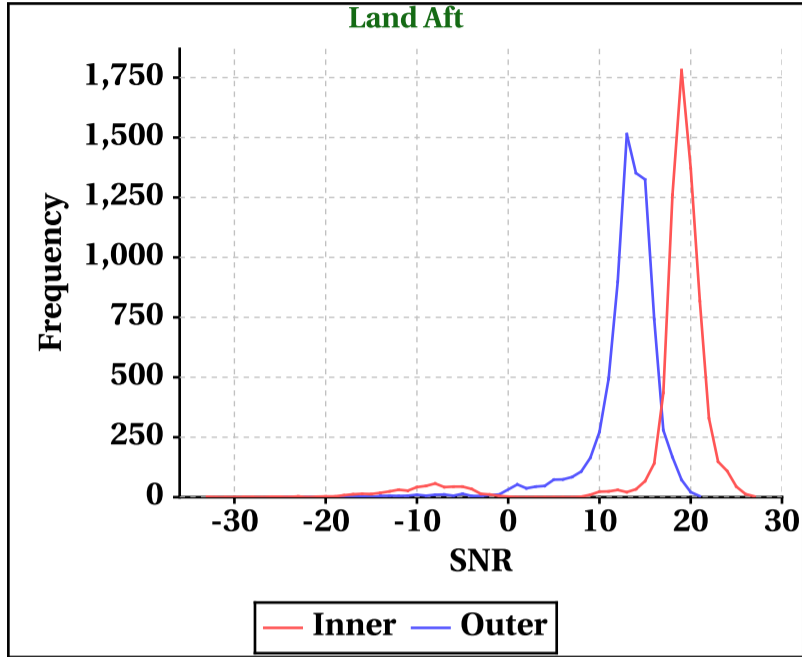


Dynamic Range (Data Histograms)

SNR(dBm)

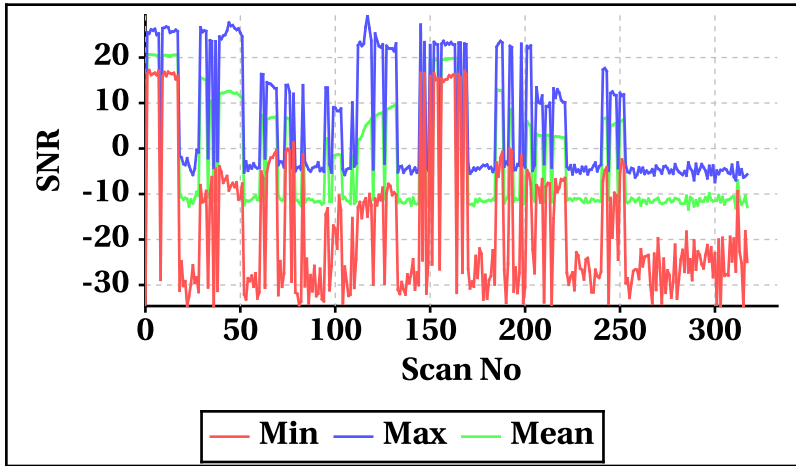
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-33	-34	-33	-34
Max	27	29	21	18

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-26	-33	-34	-34
Max	21	21	14	11

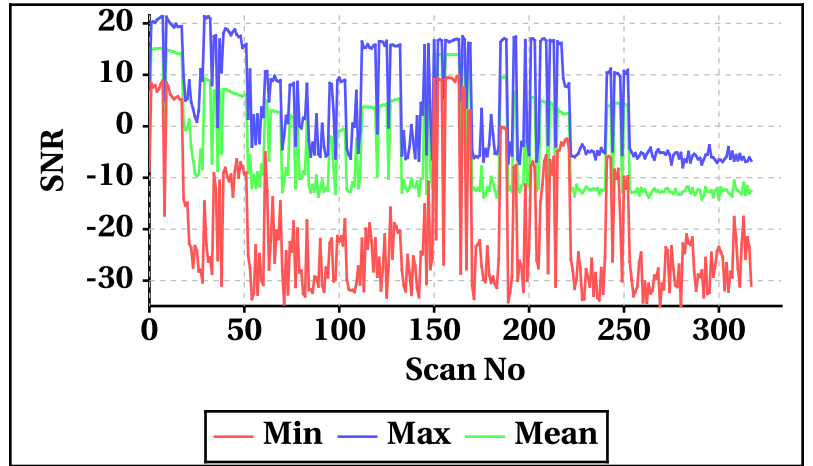


Orbit-wise behaviour of SNR

Inner Beam (HH)

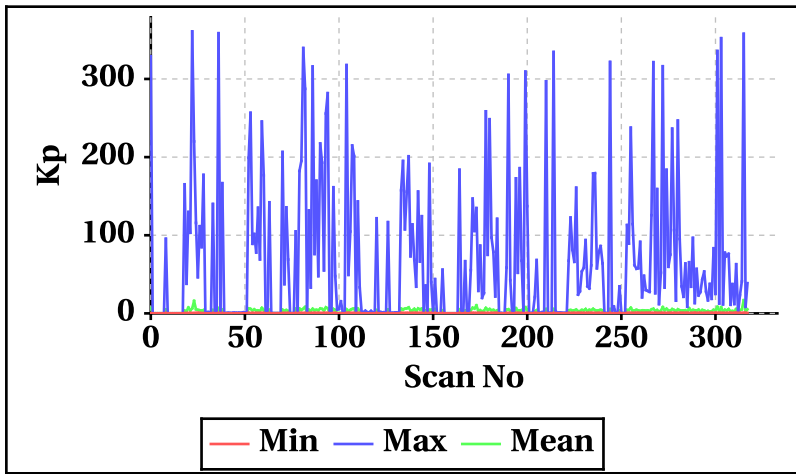


Outer Beam(VV)

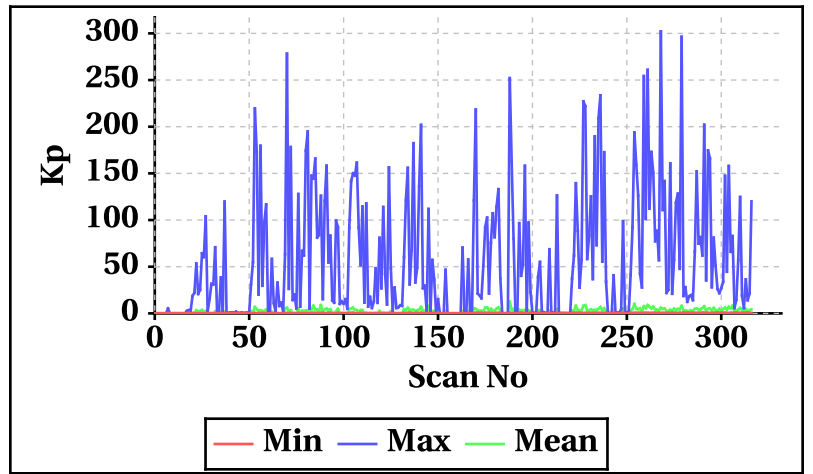


Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

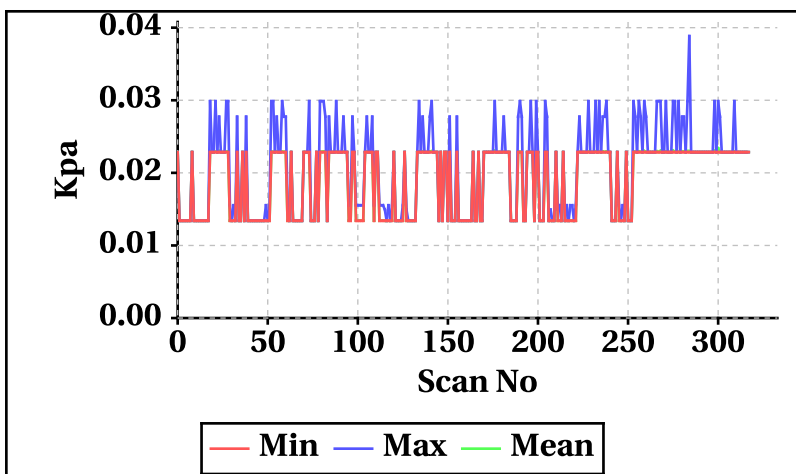
Inner Beam(HH)



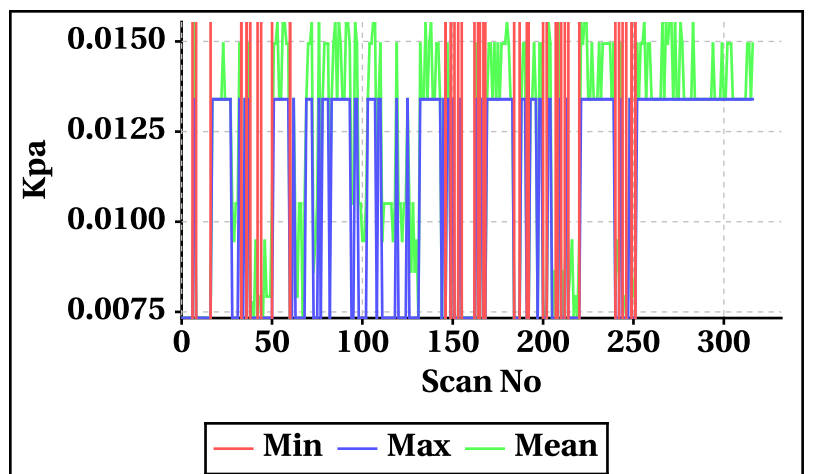
Outer Beam(VV)



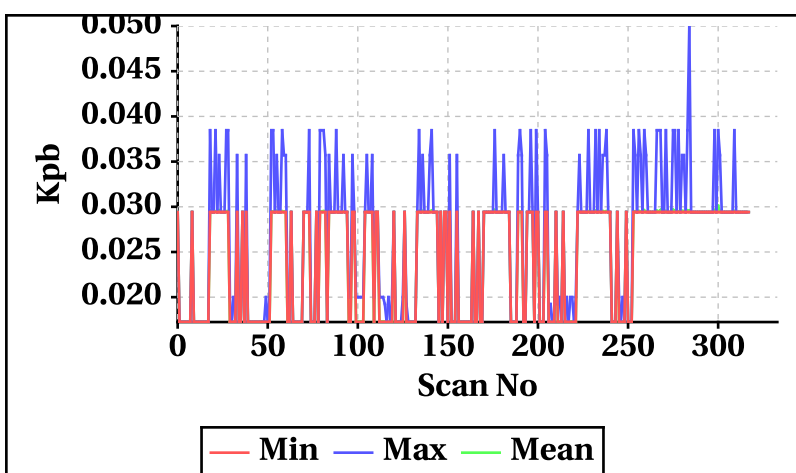
Inner Beam(HH)



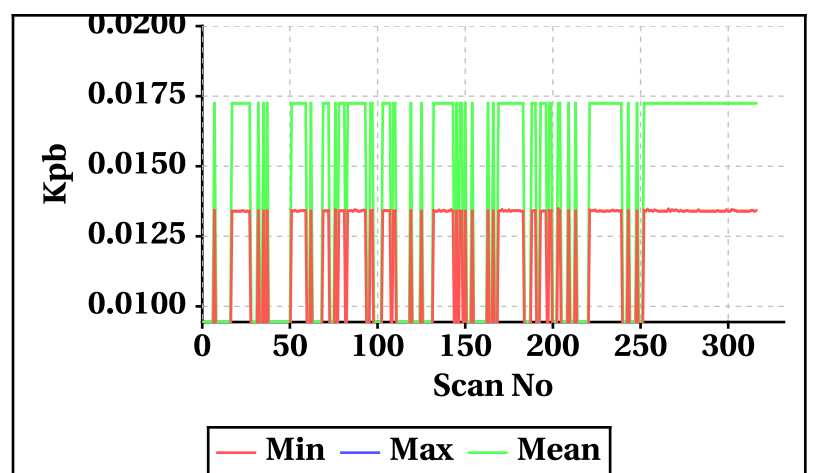
Outer Beam(VV)



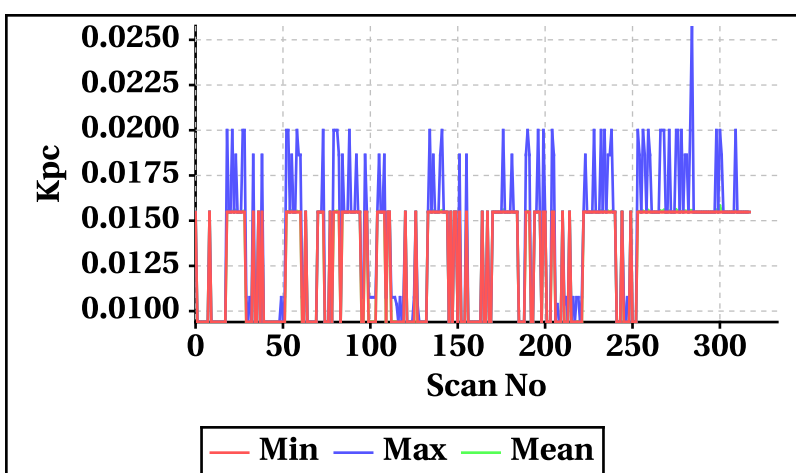
Inner Beam(HH)



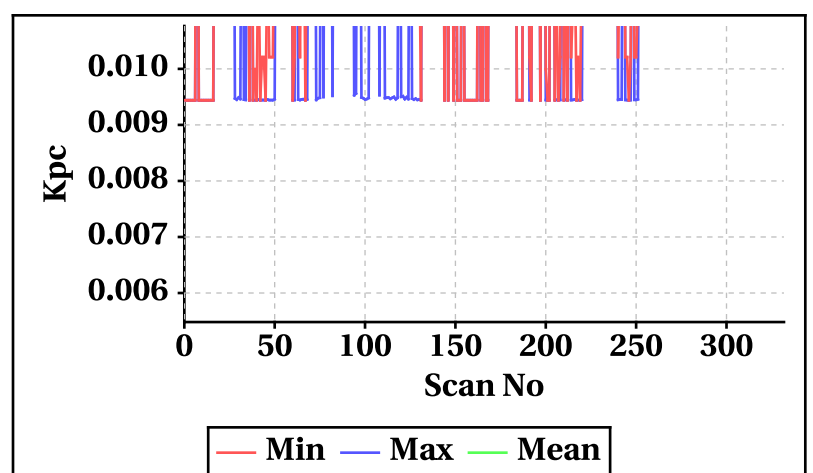
Outer Beam(VV)



Inner Beam(HH)

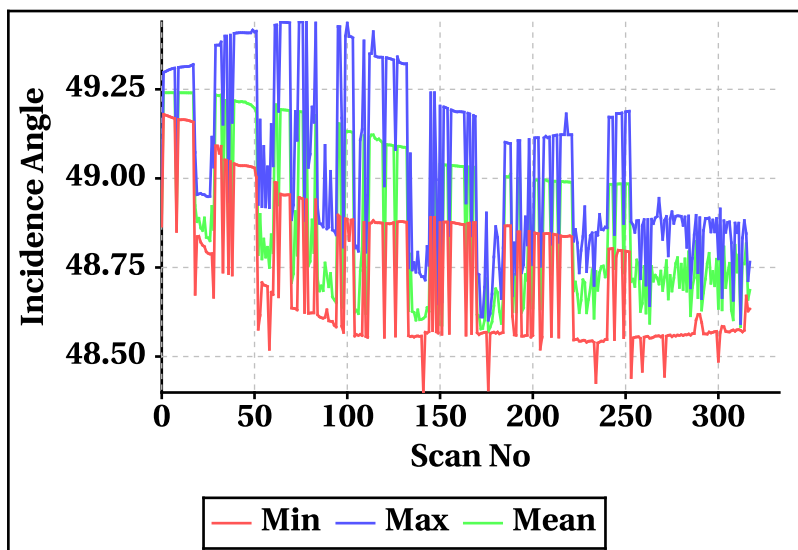


Outer Beam(VV)

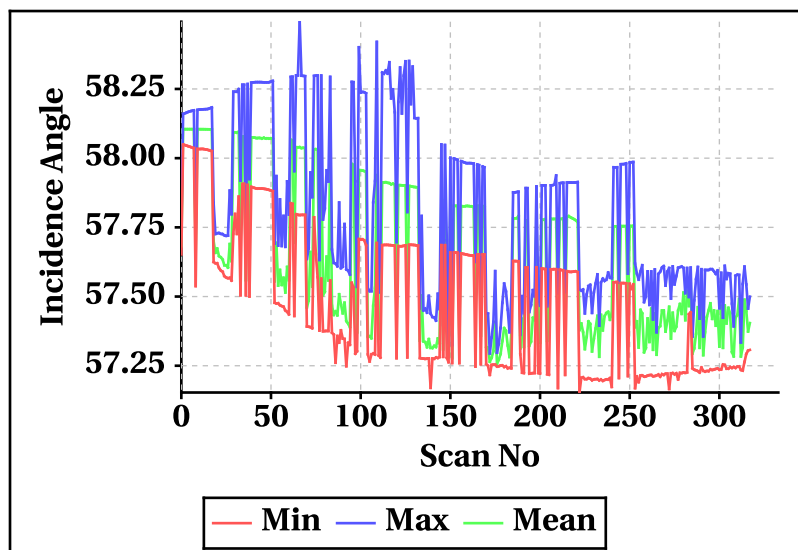


Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

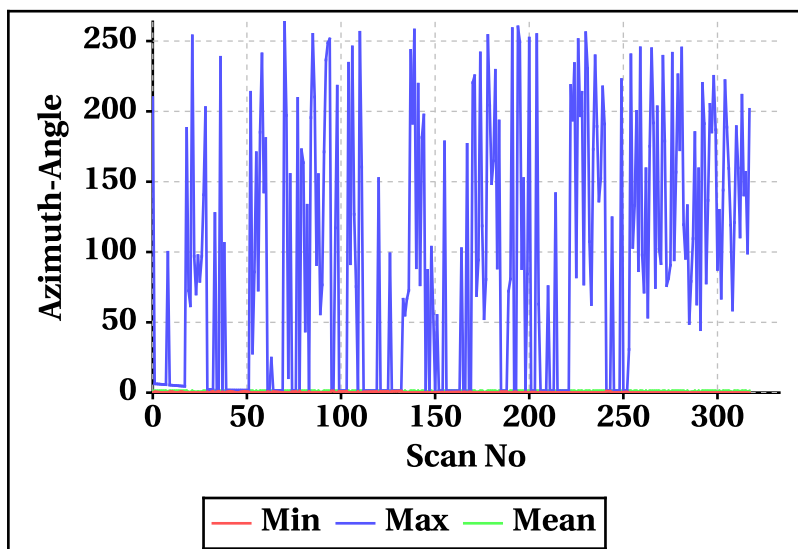
Inner Beam (HH)



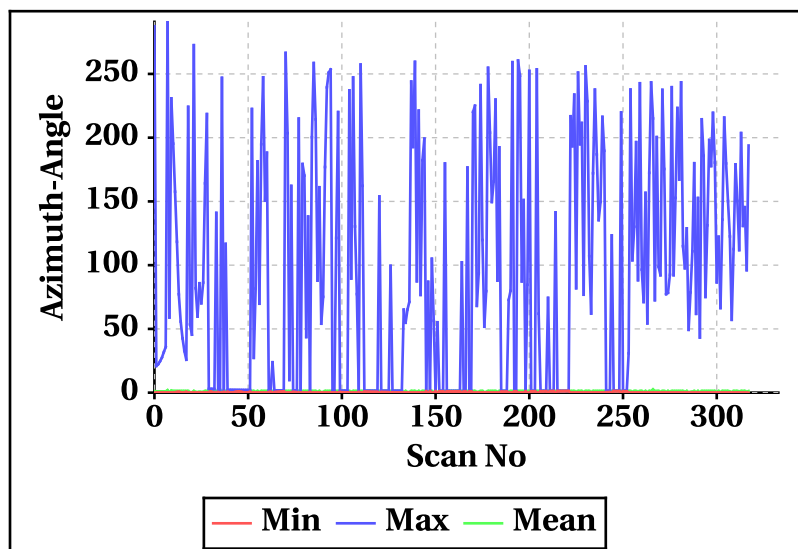
Outer Beam(VV)



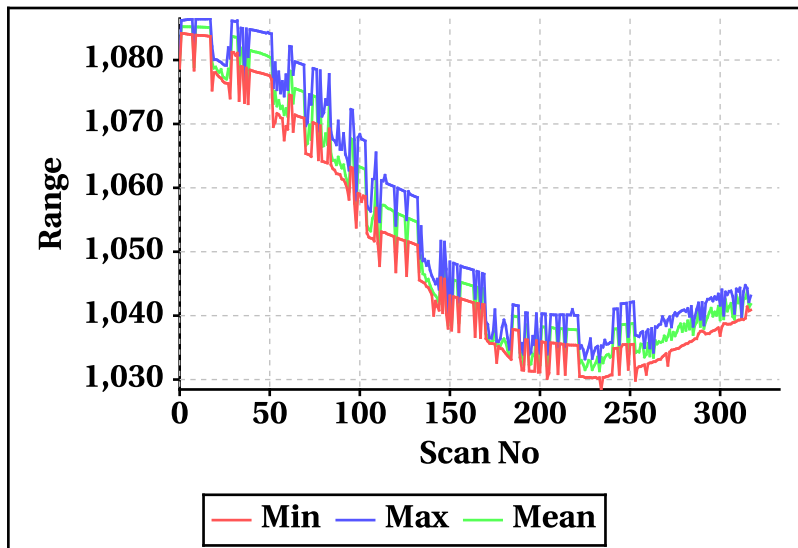
Inner Beam (HH)



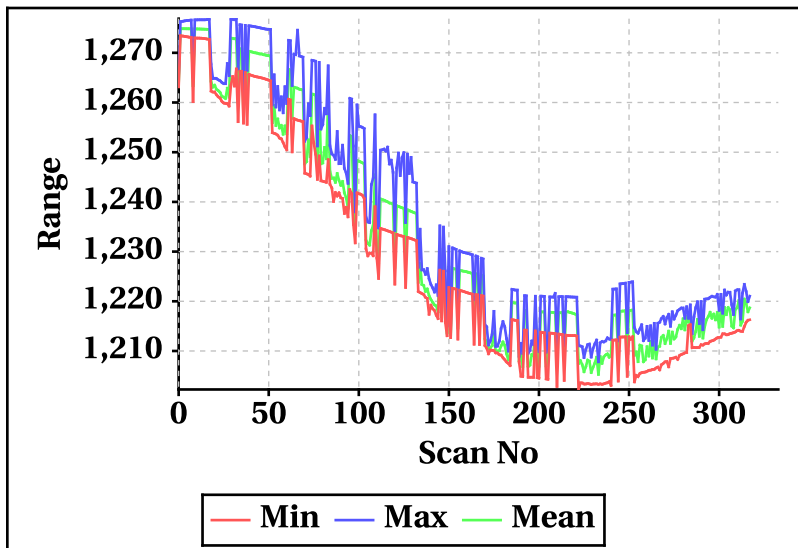
Outer Beam(VV)



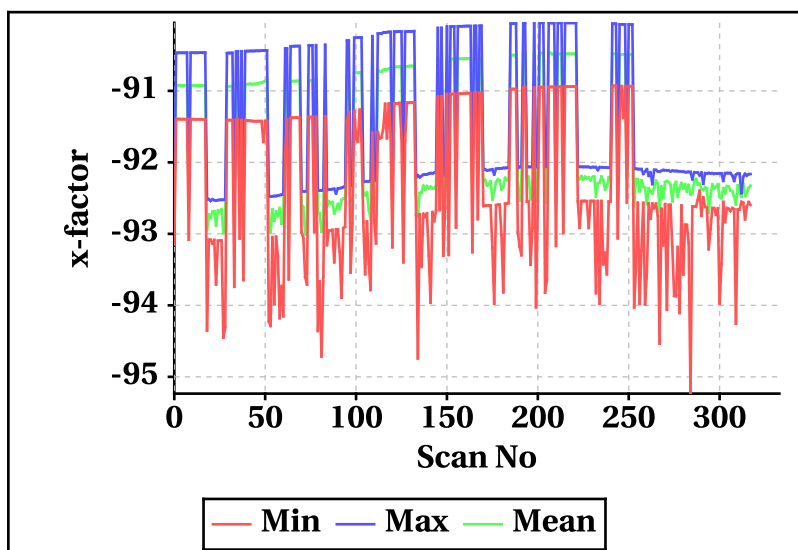
Inner Beam (HH)



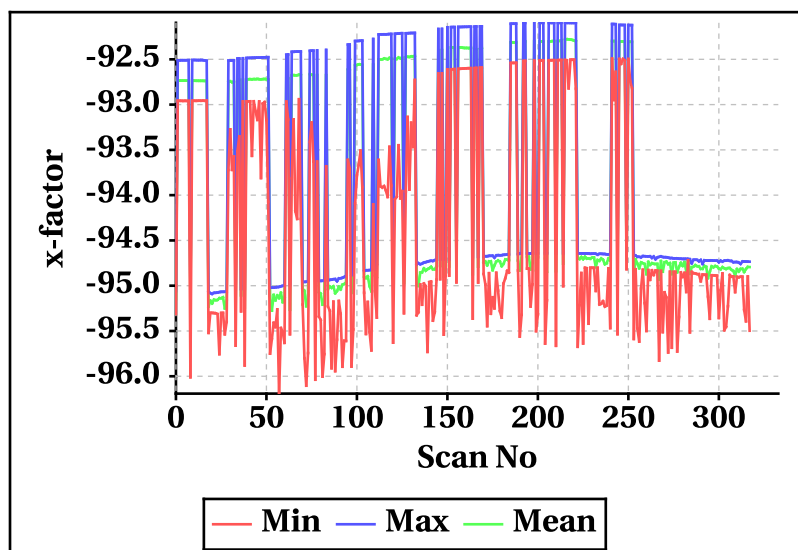
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)

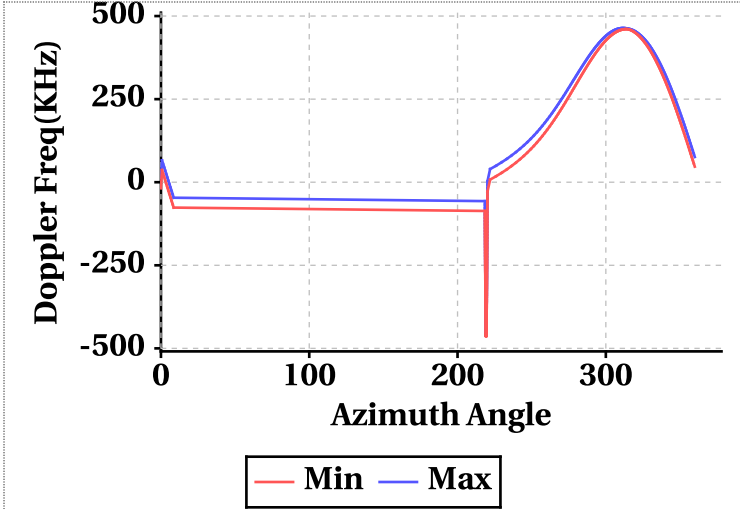


Doppler Frequency Variation

Doppler Frequency(KHz) variation statistics Over the half Orbit

	Inner Beam (HH)	Outer Beam (VV)
Min	-462.70	-518.70
Max	463.88	519.72

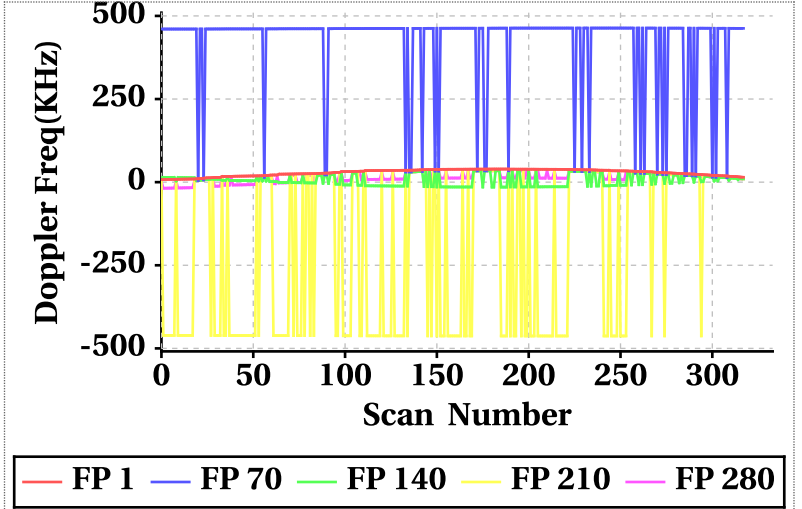
Footprint wise Doppler frequency variation Inner Beam (HH)



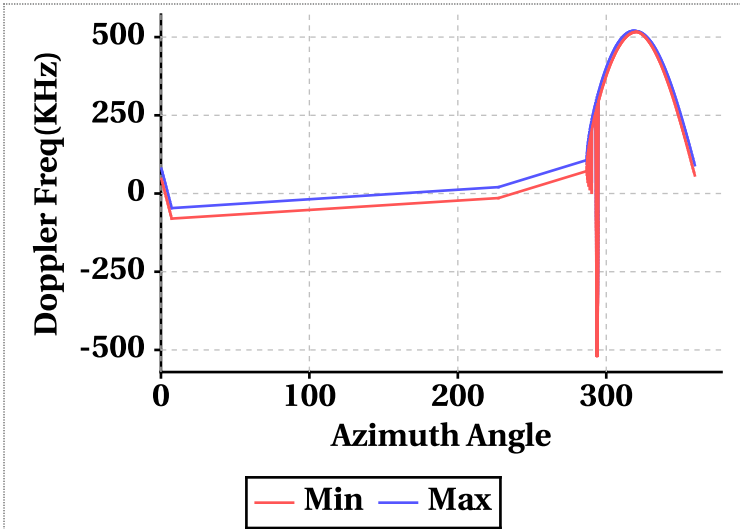
Doppler Frequency(KHz) variation

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	7.80	39.46	28.92	3.20	38.44	26.72
Doppler_70	5.06	463.50	419.69	5.86	519.50	472.02
Doppler_140	-14.92	34.36	6.16	-22.70	38.48	3.30
Doppler_210	-462.64	34.38	-197.70	-518.50	38.50	-221.56
Doppler_280	-18.26	34.32	15.23	-14.52	38.44	19.45

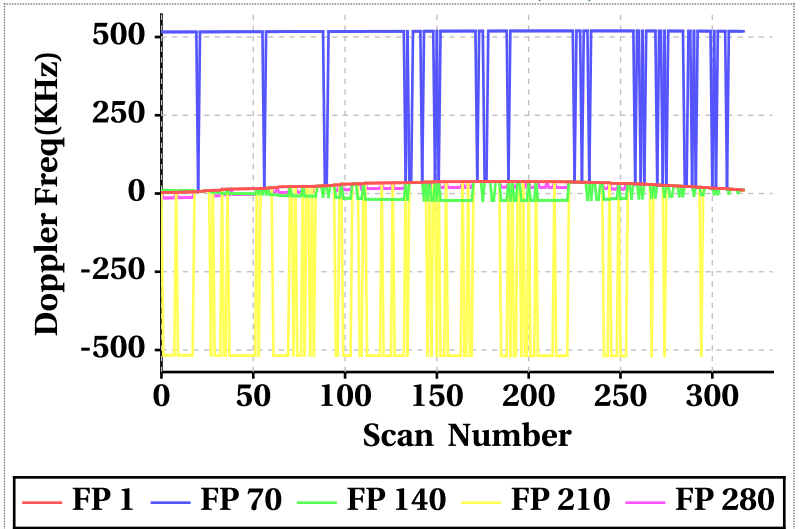
Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)



Footprint wise Doppler frequency variation Outer Beam (VV)

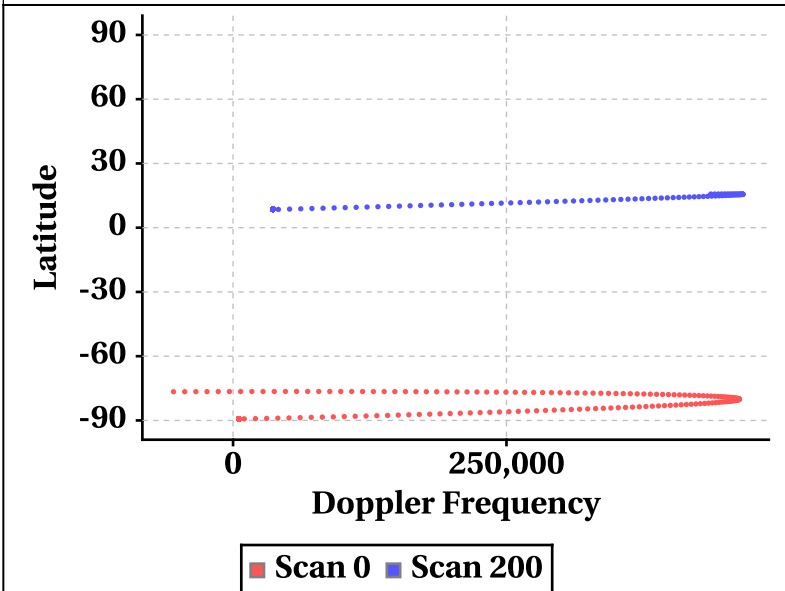


Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)

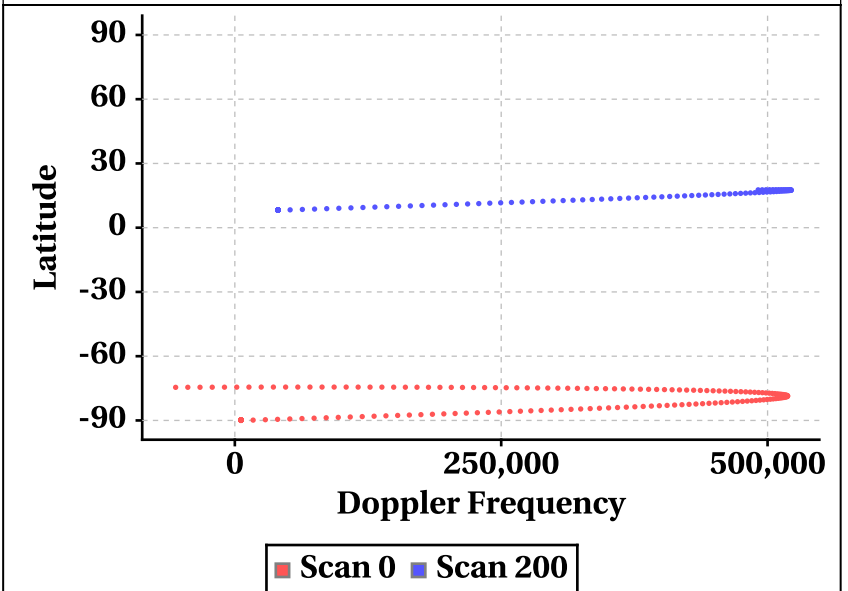


Latitude Vs Doppler Frequency

Doppler Frequency at Scan Interval of 200 [Inner Beam(HH)]



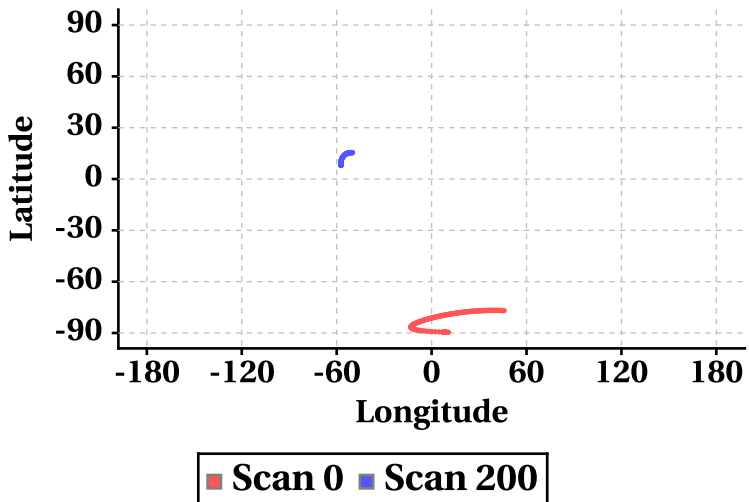
Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]



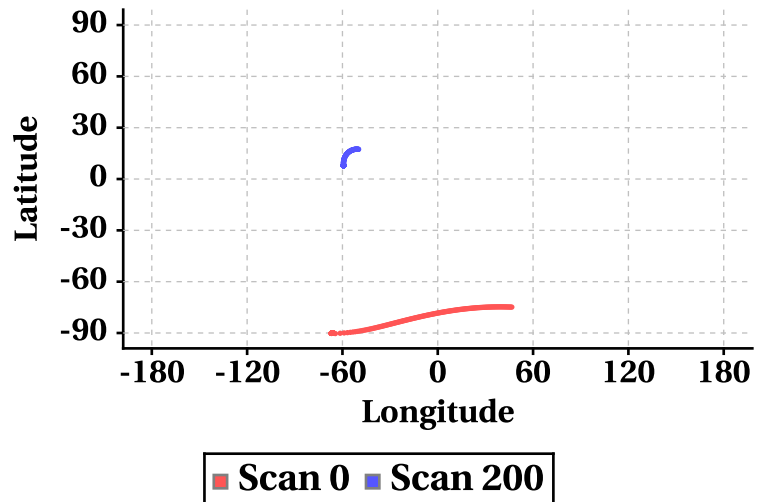
Parameter as a function of Latitude

Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]

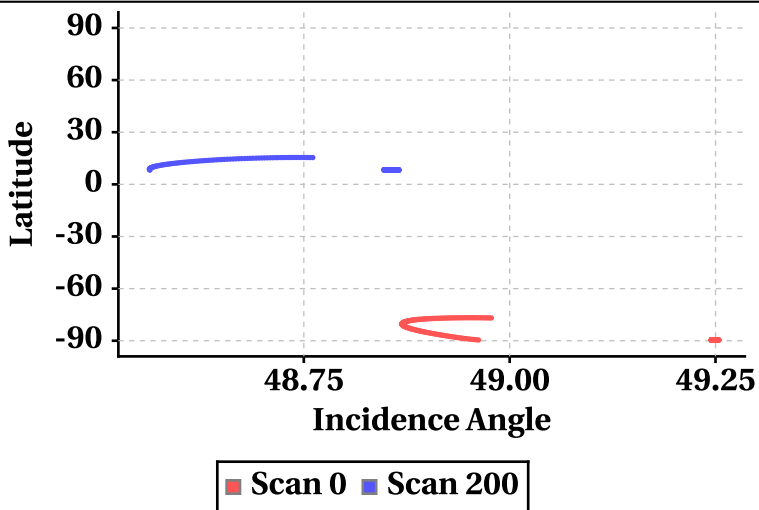


Scan Trace [Outer Beam (VV)]

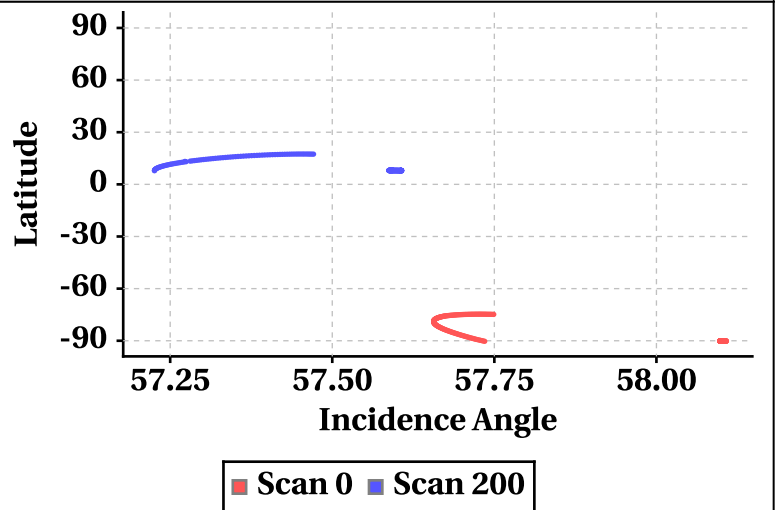


Latitude Vs Incidence Angle

Incidence Angle at Scan Interval of 200 [Inner Beam(HH)]

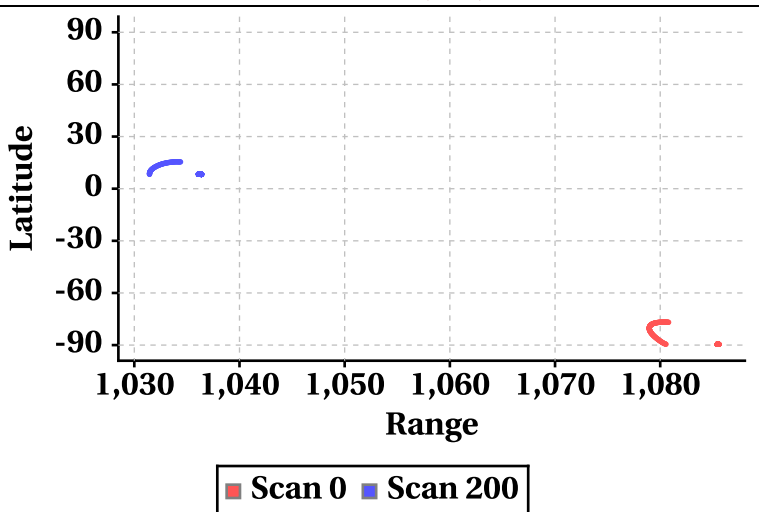


Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]

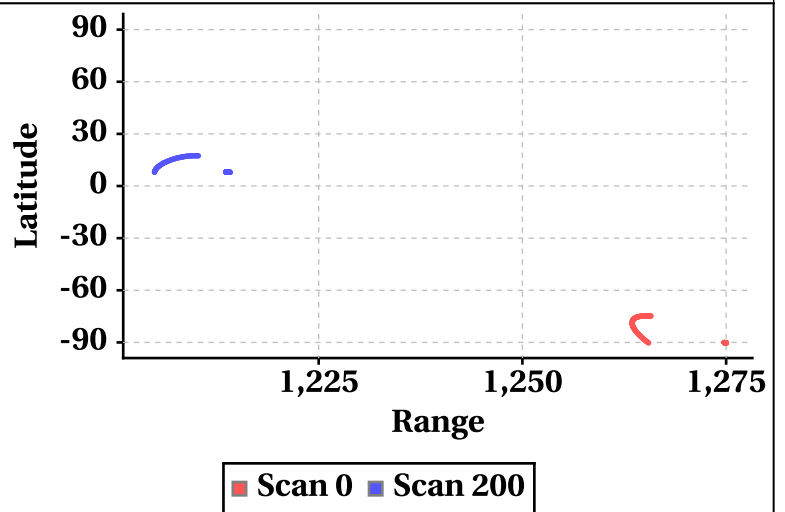


Latitude Vs Range

Range at Scan Interval of 200 [Inner Beam(HH)]



Range at Scan Interval of 200 [Outer Beam(VV)]



Variation in Orbit and Attitude Parameters

